# TeSys

> Control > Protect > Power > Active

**Catalog 2024**
Innovative and connected solutions for motor starters

**1924-2024: 100 years** since the world's first contactor by Schneider Electric

January, 2024

se.com/tesys

Life Is On Schneider Electric

# Legal Information

The information provided in this Catalog contains description of Schneider Electric products, solutions and services (“Offer”) with technical specifications and technical characteristics of the performance of the corresponding Offer.

**The content of this document is subject to revision at any time without notice due to continued progress in methodology, design and manufacturing.**

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any type of damages arising out of or in connection with (i) informational content of this Catalog not conforming with or exceeding the technical specifications, or (ii) any error contained in this Catalog, or (iii) any use, decision, act or omission made or taken on basis of or in reliance on any information contained or referred to in this Catalog.

**SCHNEIDER ELECTRIC MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND, WHETHER EXPRESS OR IMPLIED, AS TO WHETHER THIS CATALOG OR ANY INFORMATION CONTAINED THEREIN SUCH AS PRODUCTS AND SERVICES WILL MEET REQUIREMENTS, EXPECTATIONS OR PURPOSE OF ANY PERSON MAKING USE THEREOF.**

Schneider Electric brand and any trademarks of Schneider Electric and its subsidiaries referred to in this Catalog are property of Schneider Electric or its subsidiaries. All other brands are trademarks of their respective owners.

This Catalog and its content are protected under applicable copyright laws and provided for informative use only. No part of this Catalog may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Copyright, intellectual, and all other proprietary rights in the content of this Catalog (including but not limited to software, audio, video, text, and photographs) rests with Schneider Electric or its licensors. All rights in such content not expressly granted herein are reserved. No rights of any kind are licensed or assigned or shall otherwise pass to persons accessing this information.

# Trademarks

QR Code is a registered trademark of DENSO WAVE INCORPORATED in Japan and other countries.

# Start smart. Run smart. With **TeSys** motor controls.

## Stay smart with the world's best-selling motor control solutions from the inventor of the world's first contactor - Schneider Electric™.

For almost a century, TeSys motor controls have driven the industry with innovations in motor protection, monitoring, and control.

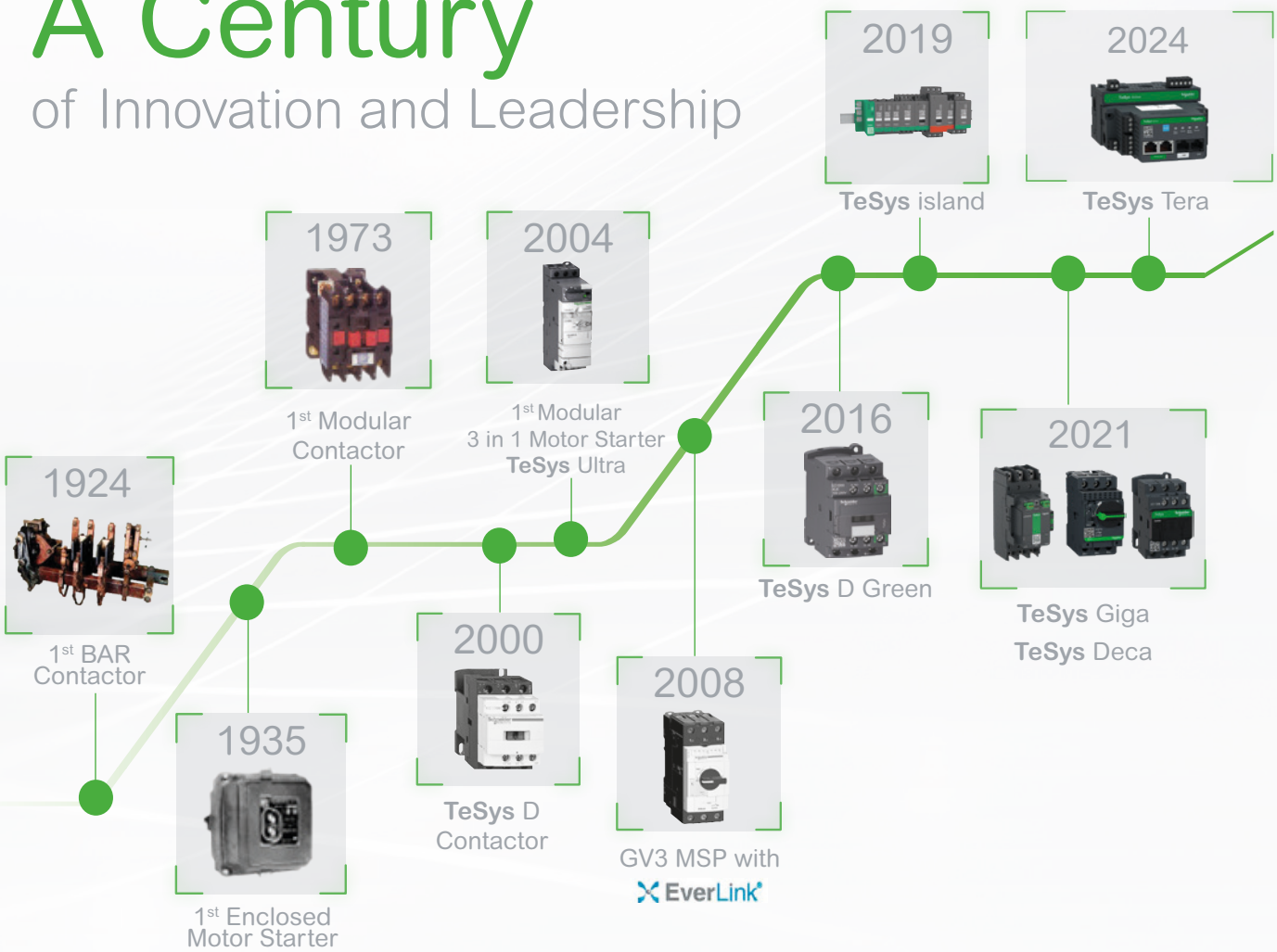
It started with the introduction of the industry's first BAR contactor in 1924, and today, the legacy of innovation is built into every **TeSys** motor control device.

Best-in-class safety and reliability, plug-and-play architecture, and flexible functionality mean TeSys motor control solutions can meet your requirements across a wide range of applications, from the most common to the most advanced.

Wherever you are and anywhere your projects come together, you can trust Schneider Electric and TeSys contactors, circuit breakers, relays, and switches for unmatched reliability, complete compatibility with international standards, and the robust support of the Schneider Electric global supply network.

# A Century

## of Innovation and Leadership



# Superior safety for all industries

TeSys motor controls come with all of the isolation, protection and emergency handling you need to comply with international codes. High-contrast covers identify safety-critical devices to prevent inadvertent manual operation. Every TeSys contactor is both mechanically linked and equipped with mirror contacts for safety applications and wherever auxiliary contact state reliability is critical.

## HVAC

Ensure 24/7 availability of your HVAC system with reliable products that can reach high ambient temperatures without derating.

## Conveying

Decentralize the control cabinet of your conveyor line and benefit from up to 80% space reduction.

## Genset

Make certain your generator starts even in the harshest conditions with robust TeSys solutions.

## Pumping

Optimize single or multi-drive boosters for industry or infrastructure with energy and cost-effective solutions.

## Packaging

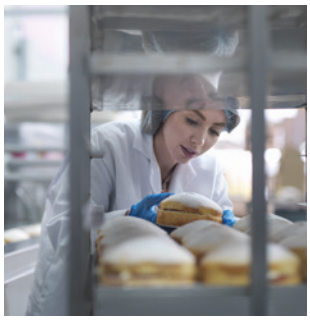
Keep pace with the most demanding, high-end packing applications with solutions that can perform 30 million AC53a electrical cycles, like TeSys H.

## Oil and Gas

Keep your employees and assets safe and improve uptime in onshore and offshore applications: pipeline operations: LNG and natural gas processing: and refining and petrochemical applications.

## Water and Waste-water

Optimize the treatment and delivery of safer water by reducing energy usage and lowering operating costs.



## Food and Beverage

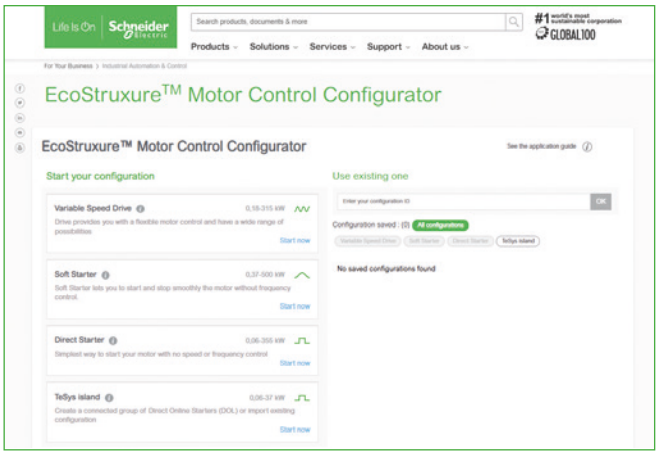
Serve your customers with environmentally friendly products to improve sustainability, efficiency, and flexibility, allowing you to adapt to changing customer habits.

# Online selection tool

## EcoStruxure™ Motor Control Configurator

For Direct-On-Line and Star-Delta starters, motor circuit breakers with advanced protection, motor management relays, configurations for total coordination, drives, and soft starters.

No matter what kind of starting method you need, our online EcoStruxure™ Motor Control Starter Configurator will help you to quickly and easily select the optimal combination of components to ensure maximized motor safety, protection, and uptime.




Scan or click on the QR code

# NEWS

## EDITO

Welcome to your NEW TeSys catalog!
Your catalog continues to evolve, as it does year after year.

- The first evolution concerns the products, it will bring a Premium design to your control panels thanks to the main TeSys components that now present the same visual homogeneity.
- The structuring of the components naming is the second point of evolution, it answers the need to classify the products by function and by range in the selection tools, the catalog and the Schneider Electric website (www.se.com).
- The last new feature is the presence of a product reference table at the end of the commercial part of each chapter (before the information for designers). It allows you to quickly check the availability of a product variant and access its technical data sheet online.

## NEW VISUAL ASPECT

The design of the TeSys core offer is evolving. Circuit breakers, contactors and several other components are now sharing a modern look giving the control panel a new and qualitative visual aspect.
Schneider Electric's identity is fully revealed by the green parts.

## NEW TESYS FUNCTION NAMES

TeSys components are grouped by function name, for easier identification.
These functions are related to motor, power, control and protection.

**> TeSys Power:**
Components for powering motors

**> TeSys Control:**
Components for controlling motors

**> TeSys Protect:**
Components for protecting motors

TeSys Active gathers the devices providing built-in communication with motor monitoring and control functions.

**> TeSys Active:**
Connected components for motor circuits

# NEWS

## NEW TESYS COMPONENT SERIES NAMES

- Series names group conventional components (circuit breakers, contactors, relays, overcurrent relays) by current rating ranges.
  - 0 to 16 A > **TeSys** K Series
  - 9 to 150 A > **TeSys 'Deca'** Series
  - 115 to 800 A > **TeSys 'Giga'** Series.

- TeSys advanced components have a specific classification.
  - 0 to 38 A All-in-one starters > **TeSys 'Ultra'** Series
  - 0 to 80 A Motor Control/Protection/Monitoring system > **TeSys 'island'** Series.

- Other TeSys component names remain unchanged (TeSys F, TeSys B, TeSys T).

## NEW TESYS COMPONENTS FULL NAMES AT A GLANCE

| Old names | > NEW names: TeSys Function - Component Series | Complementary indications |
|---|---|---|
| **TeSys** Vario,<br>mini Vario | **TeSys** Control – Switch-disconnectors | |
| **TeSys** DF<br>**TeSys** LS | **TeSys** Power – Fuse carriers | DF type<br>LS type |
| **TeSys** GS | **TeSys** Power – Switch-disconnector fuses | |
| **TeSys** GV2<br>**TeSys** GV3<br>**TeSys** GV4 | **TeSys** Power – **Deca** circuit breakers | Frame 2<br>Frame 3<br>Frame 4 |
| **TeSys** GV5<br>**TeSys** GV6 | **TeSys** Power – **Giga** circuit breakers | Frame 5<br>Frame 6 |
| **TeSys** D | **TeSys** Control – **Deca** control relays<br>**TeSys** Control – **Deca** contactors | |
| **TeSys** LRD, LR9D | **TeSys** Protect – **Deca** overload relays | |
| **TeSys** H | **TeSys** Control – **Hybrid** motor starters | |
| **TeSys** U | **TeSys** Control – **Ultra** motor starters | |
| **TeSys** island | **TeSys** Active – **island** motor starter | |

TeSys

# Enter in your CATALOGUE

**TeSys is an innovative motor control and management solution from the global market leader.** TeSys offers connected, efficient products and solutions for switching and protection of motors and electrical loads in compliance with all major global electrical standards.

## > ARCHITECTURE of your TeSys catalogue

> PART **A**

ASSEMBLED MOTOR STARTERS
Fully coordinated

**A1** — **TeSys** Control
Enclosed switch-disconnectors and motor starters

Enclosed starters

**A2** — **TeSys** Control
Open motor starters

Open motor starters

**A3** — **TeSys** Control
Hybrid motor starters

Hybrid motor starters

**A4** — **TeSys** Control
Ultra motor starters

Ultra motor starters

**A5** — Complementary technical information:
coordination and standards

Coordination and standards

## **TeSys** components are classified by function:

> **TeSys** Control
Components for controlling motors

> **TeSys** Protect
Components for protecting motors

> **TeSys** Power
Components for powering motors

> **TeSys** Active
Connected components for motor circuits

This PDF Catalog is updated twice a year. Please check on the link below that you are using the last version.
**Ref. MKTED210011EN**



Life Is On Schneider Electric

## > PART B

## COMPONENTS for conventional solutions:

**TeSys** K series
*(ex-**TeSys** K, LRK)*
- 0 to 16 A (AC-3)

**TeSys** Deca series
*(ex-**TeSys** GV2, GV3, GV4, **TeSys** D, LRD, LR9D)*
- 9 to 150 A (AC-3)

**TeSys** Giga series
*(ex-**TeSys** GV5, GV6, **TeSys** LRG)*
- 185 to 800 A (AC-3)


**B1** **Linergy** BZ, HK Busbar systems — Power busbar systems

**B2** GV, LAD, Ultra
Wiring systems for motor starters — Wiring systems

**B3** **TeSys** Control
Switch-disconnectors — Switch-disconnectors

**B4** **TeSys** Power
Fuse carriers — Fuse carriers

**B5** **TeSys** Power
Switch-disconnector fuses — Switch-disconnector fuses

**B6** **TeSys** Power
Deca, Giga and Modular
Motor circuit breakers — Motor circuit breakers

**B7** **TeSys** Control
SK, K, Deca Control relays — Control relays

**B8** **TeSys** Control
SK, K, SKGC, Deca, Modular and other Contactors — Contactors

**B9** **TeSys** Control
Giga High power contactors — High power contactors

**B10** **TeSys** Control
F High power contactors — High power contactors

**B11** **TeSys** Protect
LRK, Deca, Giga
Overload relays — Overload relays


## > PART C

## COMPONENTS for advanced solutions:

**TeSys** Ultra series
*(ex-**TeSys** U)*
- 0 to 38 A (AC-3)

**TeSys** T series
*(ex-**TeSys** T)*
- 0 to 800 A (AC-3)

**TeSys** island series
*(ex-**TeSys** island)*
- 0 to 80 A (AC-3)


**C1** **TeSys** Active
T motor management system — Motor management devices

**C2** **TeSys** Active
Island motor starters — Control and monitoring island

# Part A

# ASSEMBLED MOTOR STARTERS

## FULLY COORDINATED


**TeSys** Control
Enclosed switch-disconnectors and motor starters
From 0.25 to 40 kW A1/1

**TeSys** Control
Open motor starters
From 0.06 to 315 kW A2/1

**TeSys** Control
Hybrid motor starters
Up to 3 kW
From 9 A to 32 A A3/1

**TeSys** Control
Ultra motor starters
From 0.09 to 18.5 kW A4/1

Complementary technical information:
coordination and standards
A5/1




This PDF Catalog is updated twice a year. Please check on the link below that you are using the last version.
**Ref. MKTED210011EN**

# TeSys Control
## Enclosed switch-disconnectors and motor starters

Chapter A1



## Enclosed switch-disconnectors


| Content | | Page |
|---|---|---|
| **Product selector** | | A1/2 |
| Enclosed switch-disconnectors | | A1/3 |


## Enclosed standard starters


| | | |
|---|---|---|
| **Product selector** | | A1/6 |
| Direct-on-line starters<br>Accessories | | A1/7 |
| Reverser starters | | A1/13 |
| Star-delta starters | | A1/15 |


## Enclosed safety starters


| | | |
|---|---|---|
| **Product selector** | | A1/17 |
| Safety direct-on-line starters<br>Accessories | | A1/18 |
| Safety reverser starters | | A1/21 |


## Enclosures and components for customer assemblies


| | | |
|---|---|---|
| Enclosures (with buttons) | | A1/26 |
| Components | | A1/30 |


Technical Data for Designers A1/37

### Enclosed Motor Starter Solution Guide

The software to help you to select intuitively your enclosed motor starter solution.

The Enclosed Motor Starter Solution Guide software is available for both PC and iPad.

# Introduction & selection table

## Range of pre-assembled casings with handle and their rotary switch

They can be fixed on a wall, a panel, or on the chassis of a machine. For simple isolation and/or control of an electrical circuit. Red/yellow handle provides a clear indication of the device safety function (1), while black handle is usually dedicated to ON/OFF control.

**(1)** Conforming to IEC 60947-3 and IEC 60204.

**With numerous advantages to meet OEM's most common needs**

- IEC or UL
- Multiple ratings and sizes
- IP65
- Additional poles
- Replaceable switch bodies

## Selection in 2 steps

**1** Identify your need (1 line one or more) in the **Selection criteria** area (example.: Load 5 kW– Emergency Stop - IEC)

**2** Choose your enclosed switch-disconnector in the **Solutions** area, note the radical of the product references

| Selection criteria | | | | | | | | Solutions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ithe (A) | Load power (kW) | Circuit isolation | Emergency stop | IP55 | IP65 | IEC | UL & CSA | | | | | See page |
| 10...140 | 4...45 (400 V) | ● | | | ● | ● | | VBF | | | | A1/3 |
| 10...140 | 4...45 (400 V) | ● | ● | | ● | ● | | | VCF | | | A1/3 |
| 10...32 | 4...15 (400 V) | ● | ● | ● | | ● | | | | VCFN | | A1/3 |
| 32...175 (Ithe IEC) 20...115 (Ith UL) | 10...50 HP (480 V) | ● | ● | | ● | ● | ● | | | | VC●GUN | A1/4 |



Life Is On Schneider Electric

PB121471_1.eps

*VCF0GE*

PB121220.eps

*VCF3GE*

PB121472.eps

*VCF5GEN*

PB121473.eps

*VCFN12GE*

PB121223.eps

*VBF0GE*

PB121474.eps

*VBF6GEN*

## Control + Disconnection (IEC)

Enclosed switch-disconnectors, ready to be fixed on workshop wall or directly on the machine and wired to main supply circuit and to load.

Functions / Range / Specificities:
- Direct Control: ON/OFF of 3-phase motor (black handle) or ON/Emergency Stop (red handle)
- 23 IEC motor starters, for 3P motors from 4 to 45 kW (10 to 140 A)
- 6 UL motor starters for 3P motors from 5 to 30 HP (240 V)
- Padlockable handle (1 to 3 padlocks – not included)
- Sealable, lockable cover when handle in position 1 (up to 63 A rating).

Included:
- rotary switch-disconnector body
- handle.

### Enclosures for ON / Emergency Stop – IP65 – conforming IEC 60947-3, IEC 60204 (1)

| Operator | | Ithe | Power AC-23 at 400 V | Incorporated switch body | Possible attachments (2) | With ground plate | Reference (3) | Weight | Overall dimensions (4) WxHxD |
|---|---|---|---|---|---|---|---|---|---|
| Handle | Front plate Dim. | | | | | | | | |
| | mm | A | kW | | | | | kg | mm |
| Red, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank) | Yellow 60 x 60 | 10 | 4 | V02 | 2 | No | **VCF02GE** | 0.500 | 90x146x131 |
| | | | | | | Yes | **VCF02GEGP** | 0.560 | 90x146x131 |
| | | 16 | 5.5 | V01 | 2 | No | **VCF01GE** | 0.500 | 90x146x131 |
| | | | | | | Yes | **VCF01GEGP** | 0.560 | 90x146x131 |
| | | 20 | 7.5 | V0 | 2 | No | **VCF0GE** | 0.500 | 90x146x131 |
| | | | | | | Yes | **VCF0GEGP** | 0.560 | 90x146x131 |
| | | 25 | 11 | V1 | 2 | No | **VCF1GE** | 0.500 | 90x146x131 |
| | | | | | | Yes | **VCF1GEGP** | 0.560 | 90x146x131 |
| | | 32 | 15 | V2 | 2 | No | **VCF2GE** | 0.500 | 90x146x131 |
| | | 50 | 22 | V3 | 3 | No | **VCF3GE** | 0.930 | 157x180x152 |
| | | 63 | 30 | V4 | 3 | No | **VCF4GE** | 0.930 | 157x180x152 |
| Red, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shanks) | Yellow 90 x 90 | 100 | 37 | V5 | 1 | No | **VCF5GEN** | 2.190 | 241x291x190.5 |
| | | 140 | 45 | V6 | 1 | No | **VCF6GEN** | 2.190 | 241x291x190.5 |

Protection of sensitive equipment: ground plate available for VCF02GE…VCF1GE – see page A1/5.

### Enclosures for ON / Emergency Stop – IP65 - conforming IEC 60947-3 (1)

| Operator | | Ithe | Power AC-23 at 400 V | Incorporated switch body | Possible attachments (2) | Reference (3) | Weight | Overall dimensions (4) WxHxD |
|---|---|---|---|---|---|---|---|---|
| Handle | Front plate Dim. | | | | | | | |
| | mm | A | kW | | | | kg | mm |
| Red padlockable, either by 1 (Ø 8 shank) or by 3 padlocks (Ø 6 shank) | Yellow 60 x 60 | 10 | 4 | VN12 | 2 | **VCFN12GE** | 0.422 | 82.5x131x106 |
| | | 16 | 5.5 | VN20 | 2 | **VCFN20GE** | 0.422 | 82.5x131x106 |
| | | 20 | 7.5 | V0 | 0 | **VCFN25GE** | 0.512 | 82.5x131x106 |
| | | 25 | 11 | V1 | 0 | **VCFN32GE** | 0.512 | 82.5x131x106 |
| | | 32 | 15 | V2 | 0 | **VCFN40GE** | 0.512 | 82.5x131x106 |

### Enclosures for ON/OF F– IP65 – conforming IEC 60947-3, IEC 60204 (1)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Black, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank) | Black 60 x 60 | 10 | 4 | V02 | 2 | **VBF02GE** | 0.500 | 90x146x131 |
| | | 16 | 5.5 | V01 | 2 | **VBF01GE** | 0.500 | 90x146x131 |
| | | 20 | 7.5 | V0 | 2 | **VBF0GE** | 0.500 | 90x146x131 |
| | | 25 | 11 | V1 | 2 | **VBF1GE** | 0.500 | 90x146x131 |
| | | 32 | 15 | V2 | 2 | **VBF2GE** | 0.500 | 90x146x131 |
| | | 50 | 22 | V3 | 3 | **VBF3GE** | 0.930 | 157x180x152 |
| | | 63 | 30 | V4 | 3 | **VBF4GE** | 0.930 | 157x180x152 |
| Black, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank) | Black 90 x 90 | 100 | 37 | V5 | 1 | **VBF5GEN** | 2.190 | 241x291x190.5 |
| | | 140 | 45 | V6 | 1 | **VBF6GEN** | 2.190 | 241x291x190.5 |

*(1) For characteristics of switch-disconnectors, please consult your Regional Sales Office.*
*(2) Number of add-on modules that can be attached.*
*(3) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*
***Note:** For VCF and VBF enclosures from 02GE to 2GE, only one auxiliary contact block VZ7 or VZ20 can be mounted.*

Dimensions: page A1/38
Schemes: page A1/39

PB107201.eps

*VC1GUN*

PB107202.eps

*VC3GUN*

PB121472.eps

*VC5GUN*

## Control + Disconnection (UL)

**ON / Emergency Stop – IP65**
**Conforming UL508 CSA22.2 n° 14, IEC 60947-3, IEC 60204 (1)**

| Operator | | Rating | | Standard power ratings of UL motors | | | Incorporated switch body | Possible attachments | Reference (2) | Weight | Overall dimensions (1) WxHxD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Handle | Front plate Dim. | IEC (Ith) | UL | | | | | | | | |
| | | | 600 V | 240 V | 480 V | 600 V | | | | | |
| | mm | A | A | HP | HP | HP | | | | kg | mm |
| Red, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8) | Yellow 60 x 60 | 32 | 20 | 5 | 10 | 10 | V1 | 2 | **VC1GUN** | 0.500 | 121x164x132.1 |
| | | 40 | 25 | 5 | 10 | 15 | V2 | 2 | **VC2GUN** | 0.500 | 121x164x132.1 |
| | | 63 | 45 | 10 | 20 | 30 | V3 | 2 | **VC3GUN** | 0.930 | 164x193x132.1 |
| | | 80 | 63 | 15 | 30 | 40 | V4 | 2 | **VC4GUN** | 0.930 | 164x193x132.1 |
| Red, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8) | Yellow 90 x 90 | 125 | 100 | 25 | 50 | 50 | V5 | 1 | **VC5GUN** | 2.190 | 241x291x190.5 |
| | | 175 | 115 | 30 | 50 | 60 | V6 | 1 | **VC6GUN** | 2.190 | 241x291x190.5 |

## Additional modules for VZ switch bodies

Enclosed switches include a VZ switch body. Additional modules can be plugged on 1 or 2 sides of the switch body to provide additional contacts or extra connectivity.

580589.eps

*VZ0*
*Main pole*

580594.eps

*VZ11*
*Neutral pole*

580595.eps

*VZ15*
*Earthing terminal*

580596.eps

*VZ20*
*Auxiliary contacts*

**Common modules for enclosed switch disconnectors – with exceptions (3)**

| Description | Rating | Reference |
|---|---|---|
| | A | |
| Main pole module (mounted in enclosure) | 10 | **VZ02** (not for VCxGUN starters) |
| | 16 | **VZ01** (not for VCxGUN starters) |
| | 20 | **VZ0** (not for VCxGUN starters) |
| | 25 | **VZ1** |
| | 32 | **VZ2** |
| | 50 | **VZ3** |
| | 63 | **VZ4** |
| Neutral pole modules with early make and late break contacts | 10 to 32 | **VZ11** |
| | 50 and 63 | **VZ12** |
| | 100 and 140 | **VZ13** |
| Earthing modules | 10 to 32 | **VZ14** |
| | 50 and 63 | **VZ15** |
| | 100 and 140 | **VZ16** |
| **Description** | **Type of contacts** | **Reference** |
| Auxiliary contact block modules with 2 auxiliary contacts | N/O + N/C (4) | **VZ7** |
| | N/O + N/O | **VZ20** |

*(1) For characteristics of switch-disconnectors, please consult your Regional Sales Office.*
*(2) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(3) Not compatible with V●F5GEN, V●F6GEN, VC5GUN, VC6GUN, VCFN12GE, VCFN20GE.*
*(4) Late make N/O, early break N/C contacts.*

Dimensions:
page A1/40

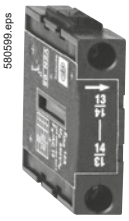
Schemes:
pages A1/39 and A1/40



Life Is On Schneider Electric

*VZN11*

*VZN14*



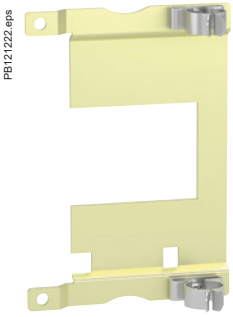

*VZN05*

## Additional modules for switch bodies

### Specific modules for VCFN12GE and VCFN20GE

| Description | Rating | Reference |
|---|---|---|
| | A | |
| Main pole modules | 10 | **VZN12** |
| | 16 | **VZN20** |
| Neutral pole module with early make and late break contacts | 10 and 16 | **VZN11** |
| Earthing module | 10 and 16 | **VZN14** |

| Description | Type of contacts | Reference |
|---|---|---|
| Auxiliary contact block modules | 1 N/O late make contact | **VZN05** |
| | 1 N/C early break contact | **VZN06** |




*VGP1*

*VGPCLIP1*

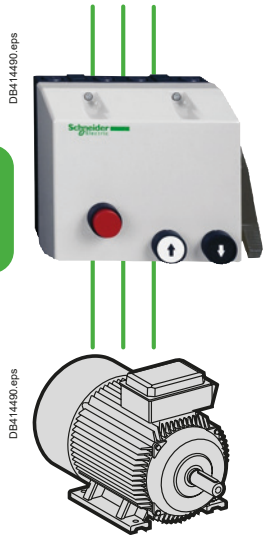
## Accessories for enclosed switch-disconnectors

### Ground plate and accessories for VCF02GE, VCF01GE, VCF0GE, VCF1GE

**Metallic ground plate, for shielded cables connection. To be installed between back of enclosed switch-disconnectors, 2 fixing screws. Cable shield grounding ensured by 2 clamps, clamping from Ø11 to 14 mm**

| For switch body | Reference |
|---|---|
| Ground plate + 2 clamps + 2 screws | **VGP1** |
| 2 clamps + 2 screws | **VGPCLIP1** |

Schemes:
page A1/39




## Range of pre-assembled motor starters, with pushbuttons, selectors, protection and control components in a robust casing

They can be fixed on a wall, on a panel, or on the chassis of a machine. They provide an operator with an easy access with visual simplicity

**Numerous advantages to meet OEM's most common needs**

- IEC
- Multiple ratings and sizes
- IP55, IP65
- IK08, IK09
- Totally or partially pre-wired

## Standard starters

They are used to isolate a circuit, to protect and/or to control a motor

### Customized protection

Enclosed starter offer is available in fully pre-equipped and pre-wired enclosures, also in partially pre-equipped enclosures to be completed with protective components of the required rating

### Accessories

Additional accessories provide reinforced sealing, padlock locking, additional contacts...

## Selection in 2 steps

**1** Identify your need (1 line one or more) in the **Selection criteria** area (example: Load 5 kW – ON/OFF control with overload protection)

**2** Choose your starter in the **Solutions** area by adding column contents, note the radical of the product references (example: LE1D + LRD)

| Selection criteria | | | | | | | Solutions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Load Power (kW) / 400V | Circuit isolation | Direct starter - ON/OFF | Reverser ON/REVERSE/OFF | Short circuit protection | Overload protection | Star - delta | | | | | Protection device to be added by customer *(of appropriate rating)* | See page |
| 0.25..7.5 | | ● | | | ● | | LE1M35 | | | | LRD | A1/7 |
| 4 … 30 | | | | | | | | | LE1D | | | A1/8 |
| 0.02… 30 | | ● | | ● | | | | GV2PC GV3PC | | | GV2L | A1/9 + A1/10 |
| 0.02… 30 | | | | | | | | GV2PC GV3PC | | | GV2P | A1/9 + A1/10 |
| 0.06… 11 | | ● | | ● | ● | | | GV2MC GV3MP | | | GV2ME | A1/11 |
| 2.2 … 15 | | | | | | | | | | LE4K LE4D | LR2K LRD | A1/12 |
| 2.2 … 30 | | | ● | | ● | | | | LE2K LE2D | | LR2K LRD | A1/13 |
| 2.2 … 15 | | | ● | ● | ● | | | | | LE8K LE8D | LR2K LRD | A1/14 |
| 7.5...30 | | ● | | | ● | ● | | | LE3D | | LRD | A1/15 |
| 7.5...18.5 | | ● | ● | ● | ● | ● | | | | LE6D | LRD | A1/16 |



Life Is On Schneider Electric

## Product references

PB121458.eps

*LE1M35●●●●*

## Control + Protection against Overloads

- Direct Control: ON/OFF of 3-phase motor
- Motor protection: motor OFF in case of overload – manual reset with the red push button.
- Indication: yellow light activated with the contactor coil.
- The LE1M35 starter, combined with short-circuit protection components, provides type 1 or type 2 coordination, depending on the type of devices used.

Range:
- 10 IEC motor starters, for 3P motors from 0.25 to 7.5 kW (400V AC)
- Configurable push buttons: impulse or latched
- Conforming to IEC 60947-4-1 standard
- Degree of protection IP65 , according IEC 60529
- Ambient air temperature in operation -5 to +40°C
- Operating position: same as K series contactors
- Material: self extinguishing ABS.

Included (standard version):
- 1 contactor LC1K●● (1)
- 1 thermal overload relay LR2K (2)
- 1 green Start button “I”,
- 1 red Stop/Reset button “O/R”,
- 1 yellow operating indicator
- earth + neutral terminals at bottom of enclosure.

For supply voltages between 380 and 440 V (codes Q7, V7, N7 or R7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

### Direct-on-line starters

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | Setting range of thermal overload relay LR2K | Basic reference, to be completed by adding the voltage code (3) (4) | Overall dimensions (5) WxHxD |
|---|---|---|---|---|---|---|
| 220 V 230 V | 240 V | 380 V 400 V | 415 V | | | |
| kW | kW | kW | kW | A | | mm |
| 0.12 | 0.12 | 0.25 | 0.25 | 0.54…0.8 | **LE1M35●●05** | 78x160x108 |
| 0.18 | 0.18 | 0.37 | 0.37 | 0.8…1.2 | **LE1M35●●06** | 78x160x108 |
| 0.25 | 0.25 | 0.55 | 0.55 | 1.2…1.8 | **LE1M35●●07** | 78x160x108 |
| 0.37 | 0.37 | 1.1 | 0.75 | 1.8…2.6 | **LE1M35●●08** | 78x160x108 |
| 0.55 | 0.55 | 1.5 | 1.5 | 2.6…3.7 | **LE1M35●●10** | 78x160x108 |
| 1.1 | 0.75 | 2.2 | 2.2 | 3.7…5.5 | **LE1M35●●12** | 78x160x108 |
| 1.5 | 1.1 | 3 | 3 | 5.5…8 | **LE1M35●●14** | 78x160x108 |
| 2.2 | 2.2 | 4 | 4 | 8…11.5 | **LE1M35●●16** | 78x160x108 |
| 3 | 3 | 5.5 | 5.5 | 10…14 | **LE1M35●●21** | 78x160x108 |
| 3.7 | 4 | 7.5 | 7.5 | 12…16 | **LE1M35●●22** | 78x160x108 |
| Replacement contactor | | | | | **LC1K●●A80** | - |

### Coil voltage codes

| Volts ~ 50/60 Hz | 24 | 110 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|
| **Code** | B7 | F7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |

*(1) K contactor characteristic: refer to chapter B8.*
*(2) LR2K overload relay characteristics: refer to chapter B11.*
*(3) Remove the 2 last numbers if the thermal overload relay is not required. Example: LE1M35P7 instead of LE1M35P714.*
***(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(5) Dimensions of standard versions, comprising (if any) handle, push button, indicator light.*

Dimensions: page A1/41
Schemes: page A1/41

# TeSys Control
## Enclosed standard starters / DOL / to be completed with Deca (1) overload relay
## Product references

LE1D●●

LRD●●

## Control + Protection against Overloads

■ ON/OFF motor starters: 1-way rotation control of 3-phase motor, by green & red push buttons
■ Motor protection against overload: manual reset with the red push button or remotely.

Range:
■ 8 direct-on-line starters for 3P motors from 4 to 30 kW (9 to 65 A AC-3)
■ Choice of up to 12 AC coil voltages for control supply circuit (depending on starter rating).

Enclosures characteristics:
■ Conforming to IEC 60947-4-1 standard
■ Degree of protection according IEC 60529:
□ IP65,
□ IK07 for LED09…D35,
□ IK09 for LE1D40A…D65A
■ Ambient air temperature in operation -5 to +40°C
■ Operating position: same that as contactors
■ Material: LE1D09… D35 polycarbonate (2)
■ LE●D40A… D65A steel sheet.

Included:
■ 1 pre-wired LC1D contactor
■ 2 Harmony XB5 push buttons.
An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

### Direct on-line starters

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | Max. current Ith up to | Basic reference, to be completed by adding the voltage code (3) | Weight | Overall dimensions (4) WxHxD |
|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | | | |
| kW | kW | kW | kW | kW | kW | A | | kg | mm |
| 2.2 | 4 | 4 | 4 | 5.5 | 5.5 | **9** | **LE1D09●●** | 0.920 | 88x166x128.5 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | **12** | **LE1D12●●** | 0.920 | 88x166x128.5 |
| 4 | 7.5 | 7.5 | 7.5 | 9 | 10 | **17** | **LE1D18●●** | 1.015 | 101x201x153.5 |
| 5.5 | 11 | 11 | 11 | 15 | 15 | **22** | **LE1D25●●** | 1.015 | 101x201x153.5 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | **26.5** | **LE1D35●●** | 4.320 | 101x201x153.5 |
| 11 | 18.5 | 22 | 22 | 22 | 30 | **40** | **LE1D40A●●** | 4.820 | 200x300x158.5 |
| 15 | 22 | 25 | 30 | 30 | 33 | **50** | **LE1D50A●●** | 4.850 | 200x300x158.5 |
| 18.5 | 30 | 37 | 37 | 37 | 37 | **65** | **LE1D65A●●** | 4.850 | 200x300x158.5 |

### Variants (pre-assembled)

| Description | Available variants for starter | Suffix to be added to the starter reference (3) |
|---|---|---|
| No pushbuttons on cover | LE1D09…D65A●● | **A04** |
| 1 blue Reset button “R” | LE1D09…D65A●● | **A05** |
| 1 3-position stay put selector switch (“I”-“O”-“II”)<br>(“I”: Automatic Start; “O”: Stop; “II”: Manual Start)<br>1 blue Reset button “R” | LE1D09…D25●● | **A09** |
| 1 2-position stay put selector switch “O”-“I”<br>(“O”: Stop; “I”: Manual Start)<br>1 blue Reset button “R” | LE1D09…D25●● | **A13** |
| Mounting of an LC1D09 contactor in an enclosure identical to LE1D18 | LE1D09P7<br>LE1D09P7A13 | **T** |

### Coil voltage codes (3)

| Volts ~ 50/60 Hz | 24 | 48 | 110 | 115 | 120 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LE1D09 to D35** | B7 | E7 | F7 | FE7 | G7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LE1D40A to D65A** | – | – | – | FE7 | – | – | P7 | – | Q7 | – | – | – |

*(1) LRD overload relay selection: product reference page A1/33, more details in chapter B11.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents ketones, alcohol, aromatic hydrocarbons).*
***(3) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(4) Dimensions of standard versions, comprising (if any) handle, push button, indicator light.*

Dimensions: page A1/46
Schemes: page A1/47

GV2PC01

GV2L

GV3PC02

GV3L

## Control + Isolation + Protection against Short circuits

2 solutions according to the required current rating.
GV2PC + GV2L > up to 23 A (Ithe)
GV3PC + GV3L > up to 55 A (Ithe)
The GV2L or GV3L circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Padlocking:
  - in ON or OFF position (GV2PC01, GV3PC01),
  - in OFF position (GV2PC02, GV3PC02).

Suitable circuit breakers:
- GV2L - 12 ratings (3P motors from 0.09 to 11 kW - 400/415 V AC)
- GV3L - 3 ratings (3P motors from 18.5 to 30 kW - 400/415 V AC).

Enclosures characteristics:
- Conforming to IEC 60947-2
- Degree of protection according IEC 60529:
  - IP65, IK08 (for GV2PC),
  - IK09 (for GV3PC)
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue): 690V
- Material: GV2PC polycarbonate (2), GV3PC steel sheet.

Included:
- GV rotary handle.

### Enclosures fitted with padlockable rotary handle

| Composition | Type | Reference | Overall dimensions (3) WxHxD |
|---|---|---|---|
| | | | mm |
| ■ Insulating enclosure<br>■ Black handle, padlockable in ON/OFF position | Surface mounting<br>For GV2L | **GV2PC01** | 88x166x163 |
| ■ Insulating enclosure<br>■ Red handle on yellow background, padlockable in OFF position | Surface mounting<br>For GV2L | **GV2PC02** | 88x166x163 |
| ■ Metal enclosure<br>■ Black handle, padlocking in ON/OFF position<br>■ Circuit breaker/handle adapter | Surface mounting<br>For GV3L | **GV3PC01** | 200x300x200 |
| ■ Metal enclosure<br>■ Red handle, padlocking in OFF position<br>■ Circuit breaker/handle adapter | Surface mounting<br>For GV3L | **GV3PC02** | 200x300x200 |

**GV2L, GV3L product references:** add code to product reference (4)

| Ithe (A) | 0.4 | 0.63 | 1 | 1.6 | 2.5 | 4 | 6.3 | 9 | 13 | 17 | 21 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GV2L codes | 03 | 04 | 05 | 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 | 22 |
| **Ithe (A)** | **35** | **41** | **55** | | | | | | | | | |
| GV3L codes | 40 | 50 | 65 | | | | | | | | | |

*(1) GV2, GV3 circuit breaker not included - characteristics: refer to chapter B6.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(3) Dimensions of standard versions, comprising (if any) handle, push button, indicator light.*
*(4) Example: for Ithe 17 A, magnetic circuit breaker is GV2L20.*

Dimensions: page A1/43
Schemes: page A1/43

# **TeSys** Control
## Enclosed standard starters / DOL / to be completed with Deca (1) thermal-magnetic circuit breaker
## Product references

PB124001.eps

*GV2PC01*

PB121672.eps

*GV2P●●*

PB124002.eps

*GV3PC02*

PB121680.eps

*GV3P●●*

## Control + Isolation + Protection against Short circuits and Overloads

For OEM, 2 solutions according to the required current rating.
GV2PC + GV2P > up to 23 A (Ithe)
GV3PC + GV3P > up to 55 A (Ithe)The enclosure includes a rotary handle.
The GV2P or GV3P circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Padlocking:
  - in ON or OFF position (GV2PC01, GV3PC01),
  - in OFF position (GV2PC02, GV3PC02).

Suitable circuit breakers:
- GV2P - 14 ratings (3P motors from 0.06 to 11 kW - 400/415 V AC)
- GV3P - 2 ratings (3P motors from 18.5 to 30 kW - 400/415 V AC).

Enclosures characteristics:
- Conforming to IEC 60947-2
- Degree of protection according IEC 60529: IP65, IK08 (for GV2PC), IK09 (for GV3PC)
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690V
- Material: GV2PC polycarbonate (2), GV3PC steel sheet.

Included:
- GV rotary handle.

### Enclosures fitted with padlockable rotary handle

| Composition | Type | Reference | Overall dimensions (3) WxHxD |
|---|---|---|---|
| | | | mm |
| ■ Insulating enclosure<br>■ Black handle, padlockable in ON/OFF position | Surface mounting For GV2L | **GV2PC01** | 88x166x163 |
| ■ Insulating enclosure<br>■ Red handle on yellow background, padlockable in OFF position | Surface mounting For GV2L | **GV2PC02** | 88x166x163 |
| ■ Metal enclosure<br>■ Black handle, padlocking in ON/OFF position<br>■ Circuit breaker/handle adapter | Surface mounting For GV3L | **GV3PC01** | 200x300x200 |
| ■ Metal enclosure<br>■ Red handle, padlocking in OFF position<br>■ Circuit breaker/handle adapter | Surface mounting For GV3L | **GV3PC02** | 200x300x200 |

**GV2P, GV3P product references:** add code to product reference (4)

| **Ithe (A)** | **0.16** | **0.25** | **0.4** | **0.63** | **1** | **1.6** | **2.5** | **4** | **6.3** | **9** | **13** | **17** | **21** | **23** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GV2P codes | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 | 22 |
| **Ithe (A)** | **35** | **41** | **55** | | | | | | | | | | | |
| GV3P codes | 40 | 50 | 65 | | | | | | | | | | | |

*(1) GV2, GV3 circuit breaker not included - characteristics: refer to chapter B6.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(3) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*
*(4) Example: for Ithe 17 A, magnetic circuit breaker is GV2P20.*

Dimensions: page A1/43
Schemes: page A1/43

*GV2MC02, GV2MC03*

*GV2ME●●*

*GV2MP01, GV2MP02*

*GV2ME●●*

## Control + Isolation + Protection against Short circuits and Overloads

For OEM, 2 solutions, according to the enclosure installation mode:
GV2MC surface mounting enclosure for GV2ME circuit breaker
GV2MP flush mounting enclosure for GV2ME circuit breaker.
The GV2ME circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Short-circuit and adjustable overload protection
- Padlocking in OFF position.

Suitable circuit breakers:
- GV2ME - 14 ratings (3P motors from 0.06 to 11 kW - 400/415 V AC).

Enclosures characteristics:
- Conforming to IEC 60947-2; IEC 60947-4-1
- Degree of protection according IEC 60529: refer to selection chart
- Operational voltage (Ue) 690 V
- Material: polycarbonate (2).

Included:
- GV2E01 or GV2E02 sealing kit (fixed on the front plate).

### Enclosures for thermal-magnetic circuit breakers GV2ME

| Type | Degree of protection | Possible no. of side mounting auxiliary contact blocks on GV2ME | | Reference | Weight | Overall dimensions (3) WxHxD |
|---|---|---|---|---|---|---|
| | | LH side | RH side | | kg | mm |
| Surface mounting, double insulated with protective conductor. Sealable cover | IP41 | 1 | 1 | **GV2MC01** | 0.290 | 93x147x84 |
| | IP55 | 1 | 1 | **GV2MC02** | 0.300 | 93x147x84 |
| | | | | or **GV2MCK04** (4) | 0.420 | 93x147x145.5 |
| | IP55 for temperature < +5 °C | 1 | 1 | **GV2MC03** | 0.300 | 93x147x84 |
| Flush mounting, with protective conductor | IP41 (front face) | 1 | 1 | **GV2MP01** | 0.115 | 106.5x140x83 |
| | IP41 (front face reduced flush mounting) | – | 1 | **GV2MP03** | 0.115 | 106.5x140x98 |
| | IP55 (front face) | 1 | 1 | **GV2MP02** | 0.130 | 106.5x140x83 |
| | IP55 (front face reduced flush mounting) | – | 1 | **GV2MP04** | 0.130 | 106.5x140x98 |

**GV2ME product references:** add code to product reference (5)

| Ithe (A) | 0.16 | 0.25 | 0.4 | 0.63 | 1 | 1.6 | 2.5 | 4 | 6.3 | 9 | 13 | 17 | 21 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GV2ME codes | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 | 22 |

**GV2MC, GV2MP enclosures with complementary circuit breaker and mushroom head pushbutton allow the construction of safety direct-on-line starters conforming INRS and VDE0113.**
Surface and flush mounting enclosures, mushroom heads, circuit breakers and undervoltage release cover a large number of applications.

*(1) Characteristics of **GV2ME** circuit breakers and additives: refer to page A1/32.*
*(2) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(3) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light*
*(4) Enclosure **GV2MCK04** is fitted with a **GV2K04** mushroom head Emergency stop pushbutton as standard.*
*(5) Example: for Ithe 17 A, magnetic circuit breaker is **GV2ME20.***

Dimensions:
page A1/44

Schemes:
page A1/45

# TeSys Control
## Enclosed standard starters / DOL / to be completed with LR2K, Deca (1) overload relays
## Product references

PB121460.eps

LE4K●●●●

+

PB123794.tif

LR2K●●

PB121463.eps

LE4D●●●●

+

PB121670.tif

LRD●●

## Control + Isolation + Protection against Short circuits and Overloads

■ ON/OFF motor starters: 1-way rotation control of 3-phase motor, by green & red pushbuttons
Option: no pushbutton on cover
■ Circuit disconnection by side black handle
■ Protection against short circuits by NFC fuses type aM (to be ordered separately)
■ Motor protection against overload – manual reset with the red pushbutton or remotely. Option: cover with just a “Reset” blue pushbutton.
An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor (1).

Ranges:
■ 8 partially pre-equipped enclosures to build-up 3P motor starters from 2.2 to 15 kW (6 to 35 A AC-3)
■ Choice of 5 coils for LE4K●●, 12 coils for LE4D●●, for control with different AC voltages.

Enclosures characteristics:
■ Conforming to IEC 60947-4-1 standard
■ Degree of protection according IEC 60529:
□ IP65, IK09 for LE4KIP65,
□ IK07 for LE4D,
■ Ambient air temperature in operation -5 to +40°C
■ Operating position: same that as contactors
■ Material: LE4K and LE4D polycarbonate (2).

Included:
■ 1 fuse carrier with external side handle
■ 1 pre-wired LC1K or LC1D contactor
■ 2 Harmony XB5 pushbuttons.

### Direct-on-line starters

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | Max. current Ith up to | Fuses to be fitted by the customer | | | Basic reference, to be completed by adding the voltage code (3) (4) | Weight | Overall dimensions (5) WxHxD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | Size | Type aM | | | | |
| kW | kW | kW | kW | kW | kW | A | | A | | | kg | mm |
| 1.5 | 2.2 | 2.2 | 3 | – | – | **6** | 10 x 38 | 10 | | **LE4K065●●** | 1.450 | 206x165x146 |
| 2.2 | 4 | 4 | 4 | – | – | **9** | 10 x 38 | 12 | | **LE4K095●●** | 1.450 | 206x165x146 |
| | | | | | | | | | or | **LE4D09●●** (6) | 1.960 | 217x348x175.5 |
| 2.2 | 4 | 4 | 4 | 5.5 | – | **9** | 10 x 38 | 12 | | **LE4D09●●** | 1.960 | 217x348x175.5 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | – | **12** | 10 x 38 | 16 | | **LE4D12●●** | 1.960 | 217x348x175.5 |
| 4 | 7.5 | 9 | 9 | 10 | – | **18** | 10 x 38 | 20 | | **LE4D18●●** | 2.200 | 217x348x175.5 |
| 5.5 | 11 | 11 | 11 | 15 | – | **25** | 10 x 38 | 25 | | **LE4D25●●** | 2.200 | 217x348x175.5 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | **26.5** | 14 x 51 | 32 | | **LE4D35●●** | 5.190 | 217x348x175.5 |

| Voltages code (4) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volts ~ 50/60 Hz | 24 | 48 | 110 | 115 | 120 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
| **LE4D** | B7 | E7 | F7 | FE7 | G7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LE4K** | – | – | – | – | – | M7 | P7 | U7 | Q7 | V7 | – | – |

Supply voltages between 380 and 440 V (codes Q7, V7, N7 or R7): pre-wired control circuit between phases.
Other supply voltages: control circuit must be wired by the customer.

*(1) LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons.*
*(3) LE4D●●● (with P7 and V7 coil) with no pushbutton on cover: add “A04” to product reference (example: LE4D25V7A04).*
*LE4D●●● (with P7 and V7 coil) with overload “Reset” blue pushbutton only on cover: > add “A05” to full product reference.*
***(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*
*(6) Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.*

Dimensions: page A1/48
Schemes: page A1/49

PB121465.eps

*LE2K09●●●*

PB123794.tif

*LR2K●●*

## Reverse Control + Isolation + Protection against Overloads

■ ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
□ by black I-II position spring return selector, red STOP/RESET pushbuttons for LE2K●● starters
□ by black ON ↑ , ON ↓ pushbuttons, red STOP/RESET pushbutton for LE2D●● starters
■ Motor protection against overload: manual reset with the red pushbutton or remotely.
An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Ranges:
■ for 3P motors from 4 to 30 kW (9 to 65 A AC-3), in 11 ranges of reverser starters
■ Choice of up to 7 AC coils voltages (depending on starter) for control supply circuit.

Enclosures characteristics:
■ Conforming to IEC 60947-4-1 standard
■ Degree of protection according IEC 60529: IP65, IK07 for LED09●●●D35, IK09 for LE2K and LE●D40A●●●D65A,
■ Ambient air temperature in operation -5 to +40°C
■ Operating position: same that as contactors
■ Material: LE2K and LE●D09●●●D35 polycarbonate (2)
■ LE●D40A●●● D65A steel sheet.

Included:
■ 2 pre-wired LC1K or LC1D contactor
■ 3 Harmony XB5 pushbuttons - or -1 Harmony XB5 pushbutton + 1 Harmony XB5 switch.

PB112274.eps

*LE2D12●●●*

PB121670.tif

*LRD●●*

## Reversing starters

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | Maximum current Ith up to | Basic reference, to be completed by adding the voltage code (3) | Weight | Overall dimensions (4) WxHxD |
|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | | | |
| kW | kW | kW | kW | kW | kW | A | | kg | |
| 1.5 | 2.2 | 2.2 | 3 | – | – | **6** | **LE2K065●●** | 1.080 | 175x165x146 |
| 2.2 | 4 | 4 | 4 | – | – | **9** | **LE2K095●●** | 1.080 | 175x165x146 |
| | | | | | | | **LE2D09●●** (5) | 2.100 | 101x201x153.5 |
| – | – | – | – | 5.5 | 5.5 | **9** | **LE2D09●●** | 2.100 | 101x201x153.5 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | **12** | **LE2D12●●** | 2.100 | 101x201x153.5 |
| 4 | 7.5 | 7.5 | 7.5 | 9 | 10 | **17** | **LE2D18●●** | 2.410 | 101x201x153.5 |
| 5.5 | 11 | 11 | 11 | 15 | 15 | **22** | **LE2D25●●** | 2.570 | 101x201x153.5 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | **26.5** | **LE2D35●●** | 4.100 | 101x201x153.5 |
| 11 | 18.5 | 22 | 22 | 22 | 30 | **40** | **LE2D40A●●** | 5.270 | 200x300x174 |
| 15 | 22 | 25 | 30 | 30 | 33 | **50** | **LE2D50A●●** | 5.470 | 200x300x174 |
| 18.5 | 30 | 37 | 37 | 37 | 37 | **65** | **LE2D65A●●** | 5.470 | 200x300x174 |

| Coil voltage codes (3) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts ~ 50/60 Hz** | **24** | **48** | **110** | **115** | **120** | **220** | **230** | **240** | **380** | **400** | **415** | **440** |
| **LE2D40A to D65A** | – | – | – | FE7 | – | – | P7 | – | Q7 | – | – | – |
| **LE2D09 to D35** | B7 | – | – | – | – | M7 | P7 | U7 | Q7 | V7 | N7 | – |
| **LE2K** | – | – | – | – | – | M7 | P7 | U7 | Q7 | V7 | – | – |

*(1) LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons.*
***(3) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*
*(5) Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.*

Dimensions: page A1/46
Schemes: page A1/47

# TeSys Control
## Enclosed standard starters / DOL / to be completed with LR2K, Deca (1) overload relays
## Product references

LE8K●●●●

LR2K●●

LE8D●●●●

LRD●●

## Reverse Control + Isolation + Protection against Short circuits and Overloads

■ ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
□ LE8K●●starters, by white ↑, black ↓, red Stop/Reset pushbuttons
□ LE8D●● starters, by black I-II position spring return selector, red Stop/Reset pushbutton
□ Option: no pushbutton on cover
■ Circuit disconnection by side black handle
■ Protection against short circuits by NFC fuses type aM (to be ordered separately)
■ Motor protection against overload: manual reset with the red pushbutton or remotely. LE8D option: cover with just a “Reset” blue pushbutton.
An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of a the contactor.

Ranges:
■ 8 partially pre-equipped enclosures to build-up 3P motor reversers from 2.2 to 15 kW (6 to 35 A AC-3)
■ Choice of 3 coils for control with different AC voltages.

Enclosures characteristics:
■ Conforming to IEC 60947-4-1 standard
■ Degree of protection according IEC 60529: IP65, IK09 for LE8KIP65, IK07 for LE8D
■ Ambient air temperature in operation -5 to +40°C
■ Operating position: same that as contactors
■ Material: LE8K and LE8D09●●●D35 polycarbonate (2).

Included:
■ 1 fuse carrier with external side handle
■ 2 pre-wired LC1K or LC1D contactors
■ 3 Harmony XB5 pushbuttons - or -1 Harmony XB5 pushbutton + 1 Harmony XB5 switch.

## Reversing starters

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | Maximum current Ith up to | Fuses to be fitted by the customer | | Basic reference, to be completed by adding the voltage code (3) (4) | Weight | Overall dimensions (5) WxHxD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | Size | Type aM | | | |
| kW | kW | kW | kW | kW | kW | A | | A | | kg | |
| 1.5 | 2.2 | 2.2 | 3 | – | – | **6** | 10 x 38 | 10 | **LE8K065●●** | 1.600 | 206x165x146 |
| 2.2 | 4 | 4 | 4 | – | – | **9** | 10 x 38 | 12 | **LE8D09●●** (6) | 3.550 | 217x348x182 |
| – | – | – | – | 5.5 | – | **9** | 10 x 38 | 12 | **LE8D09●●** | 3.550 | 217x348x182 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | – | **12** | 10 x 38 | 16 | **LE8D12●●** | 3.550 | 217x348x182 |
| 4 | 7.5 | 9 | 9 | 10 | – | **17** | 10 x 38 | 20 | **LE8D18●●** | 3.700 | 217x348x182 |
| 5.5 | 11 | – | – | – | – | **22** | 10 x 38 | 25 | **LE8D25●●** | 4.670 | 217x348x182 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | **26.5** | 14 x 51 | 32 | **LE8D35●●** | 5.800 | 217x348x182 |

| Voltage codes (4) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts ~ 50/60 Hz** | **24** | **48** | **110** | **115** | **120** | **220** | **230** | **240** | **380** | **400** | **415** | **440** |
| **LE8 K, LE8 D** | – | – | – | – | – | – | P7 | – | Q7 | V7 | – | – |

*(1) LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons.*
*(3) LE8K●●●●●, LE8D●●●● (with P7 and V7 coil) with no pushbutton on cover: add “A04” to product reference (example: LE8K065P7A04, LE8D25V7A04) LE4D●●●● (with P7 and V7 coil) with only one pushbutton on cover: overload “Reset” blue pushbutton > add “A05”to full product reference.*
***(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*
*(6) Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.*

Dimensions: page A1/48
Schemes: page A1/49

LE3D

+

LRD●●

## Star-delta Control + Protection against Overload

■ Star-delta starting of 3-phase motor: ON by green pushbutton, OFF by red pushbutton. Option: no pushbutton on cover
□ Maximum operating rate: 30 starts/hour.
□ Maximum starting time: 30 seconds.
□ Delay of 40 ms ±15 ms at changeover by LADS2 timer on delta contactor to provide sufficient time for star contactor to break.
■ Motor protection against overload: manual reset with the red pushbutton or remotely.
An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Range:
■ 4 partially pre-equipped enclosures to build-up 3P motor starters from 7.5 to 30 kW. Choice of 7 coils for control with different AC voltages.

Enclosures characteristics:
■ Conforming to IEC 60947-4-1 standard
■ Degree of protection according IEC 60529: IP65, IK07
■ Ambient air temperature in operation -5 to +40°C
■ Operating position: same that as contactors
■ Material: polycarbonate (2).

Included:
■ 3 pre-wired LC1D contactors
■ 2 Harmony XB5 pushbuttons.

### Star-delta starters

| Standard power ratings of squirrel cage motors Mains voltage - delta connection | | | | Basic reference, to be completed by adding the voltage code (3) (4) | Weight | Overall dimensions (5) WxHxD |
|---|---|---|---|---|---|---|
| 220 V | 380/400 V | 415 V | 440 V | | | |
| kW | kW | kW | kW | | kg | |
| 4 | 7.5 | 7.5 | 7.5 | **LE3D09●●** | 3.650 | 186x348x175.5 |
| 5.5 | 11 | 11 | 11 | **LE3D12●●** | 3.650 | 186x348x175.5 |
| 11 | 18.5 | 22 | 22 | **LE3D18●●** | 3.750 | 186x348x175.5 |
| 11 | 22 | 26 | 26 | **LE3D35●●** | 5.160 | 186x348x175.5 |

| Voltage codes (4) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Volts ~ 50/60 Hz** | **24** | **220** | **230** | **240** | **380** | **400** | **415** |
| **LE3 D** | B7 | M7 | P7 | U7 | Q7 | V7 | N7 |

*(1) LRD overload relay selection: product references page A1/33, more details in chapter B11 - Select appropriate overload relay for setting at 0.58 of the full load rated motor current.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(3) LE3D●●●● (with P7 and V7 coil) with no pushbutton on cover: add "**A04**"to product reference (example: LE3D18P7A04).*
***(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*

Dimensions: page A1/50
Schemes: page A1/50

PB121469.eps

*LE6D●●●●*

PB121670.tif

*LRD●●*

## Star-delta Control + Disconnection + Protection against Short circuits and Overloads

■ Star-delta starting of 3-phase motor: ON by green pushbutton, OFF by red pushbutton. Options: no pushbutton, “Reset” pushbutton only
□ Maximum operating rate: 30 starts/hour.
□ Maximum starting time: 30 seconds.
□ Delay of 40 ms ±15 ms at changeover by LADS2 timer on delta contactor to provide sufficient time for star contactor to break.
■ Circuit disconnection by side black handle
■ Protection against short circuits by NFC fuses type aM (to be ordered separately)
■ Motor protection against overload: manual reset with the red pushbutton or remotely.
An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Range:
■ 4 partially pre-equipped enclosures to build-up 3P motor starters from 7.5 to 30 kW choice of 7 coils for control with different AC voltages.

Enclosures characteristics:
■ Conforming to IEC 60947-4-1 standard
■ Degree of protection according IEC 60529: IP65, IK07
■ Ambient air temperature in operation -5 to +40°C
■ Operating position: same that as contactors
■ Material: polycarbonate (2).

Included:
■ 1 fuse carrier with external side handle
■ 3 pre-wired LC1D contactors
■ 2 Harmony XB5 pushbuttons.

### Star-delta starters

| Standard power ratings of squirrel cage motors Mains voltage - delta connection | | | | Fuses to be fitted by the customer | | Basic reference, to be completed by adding the voltage code (3) | Weight | Overall dimensions (4) WxHxD |
|---|---|---|---|---|---|---|---|---|
| 220 V | 380/400 V | 415 V | 440 V | Size | Type aM | | | |
| kW | kW | kW | kW | | | | kg | |
| 4 | 7.5 | 7.5 | 7.5 | 10 x 38 | 20 | **LE6D09●●** | 3.900 | 217x348x175.5 |
| 5.5 | 11 | 11 | 11 | 10 x 38 | 25 | **LE6D12●●** | 3.900 | 217x348x175.5 |
| 11 | 18.5 | 22 | 22 | 14 x 51 | 40 | **LE6D18●●** | 4.850 | 217x348x175.5 |

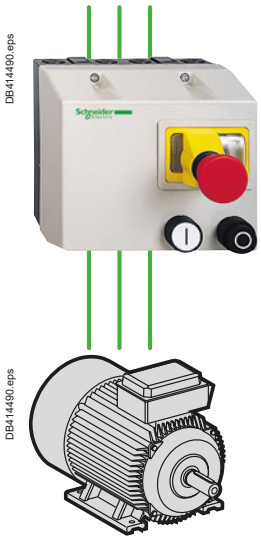
| Voltage codes | | | |
|---|---|---|---|
| **Volts ~ 50/60 Hz** | **24** | **230** | **400** |
| **LE6 D** | B7 | P7 | V7 |

*(1) LRD overload relay selection: product references page A1/33, more details in chapter B11 - Select appropriate overload relay for setting at 0.58 of the full load rated motor current.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
***(3) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*

Dimensions: page A1/42
Schemes: page A1/42

# Introduction & selection table






## Range of pre-assembled safety motor starters, with mushroom pushbuttons, protection and control components in a robust casing

They can be fixed on a wall, on a panel, or on the chassis of a machine. They provide the operator with safety machine controls complying with IEC 60204-1.

**With numerous advantages to meet OEM's most common needs**

- IEC
- Multiple ratings and sizes
- IP55
- IK07
- Pre-wired

## Safety starters

They provide similar functions as standard starters but also include emergency stops to comply with IEC 60204-1 machine safety standards.

## Selection in 2 steps

**1** Identify your need (on a single line) in the **Selection criteria** area (example: Load 5 kW – Visible circuit isolation, ON/OFF control with short circuit / overload protection)

**2** Choose your **Solutions** by adding column contents, note the radical of the product references (example: LG1D)

| Selection criteria | | | | | | | Solutions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Load Power (kW) / 400 V supply | Direct starter ON/OFF | Reverser ON/REVERSE/OFF | Short circuit / overload protection | Power circuit isolation | Visible isolation by rotary switch | Isolated control circuit by transformer | | | | | | | See page |
| 0.06...4 | ● | | ● | ● | | | LG7K | | | | | | A1/18 |
| 4 ... 9 | | | | | | | LG7D | | | | | | A1/18 |
| 0.06... 4 | ● | | ● | ● | ● | | | LG1K | | | | | A1/19 |
| 4... 9 | | | | | | | | LG1D | | | | | A1/19 |
| 0.06... 4 | ● | | ● | ● | | ● | | | LJ7K | | | | A1/20 |
| 0.06... 5.5 | | ● | ● | ● | | | | | | LG8K | | | A1/21 |
| 0.06 ... 4 | | ● | ● | ● | | ● | | | | | LJ8K | | A1/22 |
| 0.06 ... 15 | ● | | ● | ● | | | | | | | | GV2MCK04<br>GV2ME<br>GV2AX | A1/23 |

PB121470.eps

*LG7K06*

PB111886.eps

*LG7K09, LG7D●●*

## For Control + Isolation + Short circuit / Overload Protection

Enclosed safety motor starters complying with IEC 60204-1 “Safety of machinery” standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Emergency stop
- Electrical circuit isolation, lockable (from LG7K09) with up to 3 padlocks
- Short circuit protection
- Overload protection
- Undervoltage protection (LG7K06: with additional undervoltage release module).

Switching back on power supply after tripping must be a deliberate action.

Range:
- 12 pre-equipped enclosed safety starters from 0.06 to 9 kW.

Enclosures characteristics:
- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate (1).

Included:
- 1 GV2ME thermal magnetic circuit breaker (with mushroom emergency stop with LG7K06) (2)
- 1 LC1K or LC1D pre-wired contactor
- 1 Harmony emergency stop pushbutton (from LG7K09)
- 2 Harmony XB5 pushbuttons.
- 1 GVAX undervoltage release module (from LG7K09).

Additional GVAX●● undervoltage release module for LG7K06 – to be ordered separately.
Additional GV2SN●● Indicator light – to be ordered separately.

### Non-reversing starters (with pushbutton control of isolation)

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Circuit breaker | Dust & damp protected starter | Weight | Overall dimensions (4) WxHxD |
|---|---|---|---|---|---|---|
| | | | Setting range of thermal trips | Basic reference, to be completed by adding the voltage code (3) | | |
| 220/ 230 V | 400/ 415 V | 440 V | | | | |
| kW | kW | kW | A | | kg | |
| – | 0.06 | 0.06 | 0.16…0.25 | **LG7K06●●02** | 1.300 | 175x165x177 |
| 0.06 | 0.09 | 0.12 | 0.25…0.40 | **LG7K06●●03** | 1.300 | 175x165x177 |
| – | 0.18 | 0.18 | 0.40…0.63 | **LG7K06●●04** | 1.300 | 175x165x177 |
| 0.12 | 0.25 | 0.37 | 0.63…1 | **LG7K06●●05** | 1.300 | 175x165x177 |
| 0.25 | 0.55 | 0.55 | 1…1.6 | **LG7K06●●06** | 1.300 | 175x165x177 |
| 0.37 | 0.75 | 1.1 | 1.6…2.5 | **LG7K06●●07** | 1.300 | 175x165x177 |
| 0.75 | 1.5 | 1.5 | 2.5…4 | **LG7K06●●08** | 1.300 | 175x165x177 |
| 1.1 | 2.2 | 3 | 4…6.3 | **LG7K06●●10** | 1.300 | 175x165x177 |
| 1.5 | 4 | 4 | 6…10 | **LG7K09●●14** | 1.450 | 175x165x177 |
| 3 | 5.5 | 5.5 | 9…14 | **LG7D12●●16** | 1.600 | 175x165x177 |
| 4 | 7.5 | 9 | 13…18 | **LG7D18●●20** | 1.630 | 175x165x177 |
| 4 | 9 | 9 | 17…23 | **LG7D18●●21** | 1.630 | 175x165x177 |

| Voltage codes (3) | | | | | | |
|---|---|---|---|---|---|---|
| Volts ∼ 50/60 Hz | 24 | 220/ 230 | 230 | 380/ 400 | 400 | 400/415 for LG7K) |
| **LG7K, LG7D** | B7 | M7 | P7 | Q7 | V7 | N7 |

*(1) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(2) **LG7K09, D12, D18:** the Emergency Stop function is performed by an undervoltage trip module acting on the circuit breaker. This circuit breaker is always pre-wired for use on 380/400/415 V 50 Hz supply.*
*For a 60 Hz supply, please consult your Regional Sales Office.*
***(3) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*

Dimensions: page A1/52
Schemes: page A1/53

PB111894.eps

*LG1K065*

## For Control + Visible Isolation + Short circuit / Overload Protection

Enclosed safety motor starters complying with IEC 60204-1 “Safety of machinery” standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Emergency stop
- Electrical circuit isolation, lockable with up to 3 padlocks
- Short circuit protection
- Overload protection
- Undervoltage protection (with additional undervoltage release module).

Switching back on power supply after tripping must be a deliberate action.

Range:
- 12 pre-equipped enclosed safety starters from 0.06 to 9 kW.

Enclosures characteristics:
- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529 : IP55, IK07
- Ambient air temperature in operation -5 to + 40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate (1)
- Enclosure cannot be opened when energized in position “I”.

Included:
- 1 GV2ME thermal magnetic circuit breaker
- 1 LC1K (LG1K starters) or LC1D (LG1D starters) pre-wired contactor
- Switch with rotary red/yellow handle for isolation and emergency
- 2 Harmony XB5 pushbuttons.

Additional GVAX●● undervoltage release module – to be ordered separately.
Additional GV2SN●● indicator light – to be ordered separately.

### Non-reversing starters (with rotary operator for control of isolation)
Enclosure cannot be opened when energised in position “I”.

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Circuit breaker Setting range of thermal trips | Dust & damp protected starter Basic reference, to be completed by adding the voltage code (2) | Weight | Overall dimensions (3) WxHxD |
|---|---|---|---|---|---|---|
| 220/ 230 V | 400/ 415 V | 440 V | | | | |
| kW | kW | kW | A | | kg | |
| – | 0.06 | 0.06 | 0.16…0.25 | **LG1K065●●02** | 0.970 | 175x165x165 |
| 0.06 | 0.09 | 0.12 | 0.25…0.40 | **LG1K065●●03** | 0.970 | 175x165x165 |
| – | 0.18 | 0.18 | 0.40…0.63 | **LG1K065●●04** | 0.970 | 175x165x165 |
| 0.12 | 0.25 | 0.25 | 0.63…1 | **LG1K065●●05** | 0.970 | 175x165x165 |
| 0.25 | 0.55 | 0.55 | 1…1.6 | **LG1K065●●06** | 0.970 | 175x165x165 |
| 0.37 | 0.75 | 1.1 | 1.6…2.5 | **LG1K065●●07** | 0.970 | 175x165x165 |
| 0.75 | 1.5 | 1.5 | 2.5…4 | **LG1K065●●08** | 0.970 | 175x165x165 |
| 1.1 | 2.2 | 3 | 4…6.3 | **LG1K065●●10** | 0.970 | 175x165x165 |
| 1.5 | 4 | 4 | 6…10 | **LG1K095●●14** | 1.120 | 175x165x165 |
| 3 | 5.5 | 5.5 | 9…14 | **LG1D122●●16** | 1.270 | 175x165x165 |
| 4 | 7.5 | 9 | 13…18 | **LG1D182●●20** | 1.290 | 175x165x165 |
| 4 | 9 | 9 | 17…23 | **LG1D182●●21** | 1.290 | 175x165x165 |

| Voltage codes (2) | | | | | |
|---|---|---|---|---|---|
| Volts ∼ 50/60 Hz | 220/ 230 | 230 | 380/ 400 | 400 | 400/415 (for LG1K) |
| **LG1K, LG1D** | M7 | P7 | Q7 | V7 | N7 |

*(1) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
***(2) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(3) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*

Dimensions: page A1/52
Schemes: page A1/53

PB111880.eps

*LJ7K06*

## For Control + Isolation + Short circuit / Overload Protection, with isolated 24 V control circuit

Enclosed safety motor starters complying with IEC 60204-1 “Safety of machinery” standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Emergency stop (1)
- Electrical circuit isolation, lockable on LJ7K09 with up to 3 padlocks
- Short circuit protection
- Overload protection
- Protection against voltage drops for LJ7K09● For LJ7K06, a GVAX●● undervoltage trip may be added
- Possible signaling with GV2SN●● indicator (to be ordered separately). Switching back on power supply after tripping must be a deliberate action.

Range:
- 9 pre-equipped enclosed safety starters from 0.06 to 4 kW.

Enclosures characteristics:
- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate (2).

Included:
- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn),
- 1 LC1K pre-wired contactor
- 2 Harmony XB5 pushbuttons
- 1 Integral transformer: 400/24 V, 25 VA
- 1 GVAX undervoltage release module (with LJ7K09).

Additional GVAX●● undervoltage release module for LJ7K06 - to be ordered separately.
Additional GV2SN●● indicator light – to be ordered separately.
- Terminal allowing the connection of a volt-free contact, if required, in the control circuit.

### Non-reversing motor starters with integral transformer, pre-wired for operation on a 3-phase 380 to 400 V 50 Hz supply (with pushbutton control of isolator function)

| Standard power ratings of 3-phase motors 50 Hz in category AC-3 | Circuit breaker | Dust and damp protected starter | Weight | Overall dimensions (5) WxHxD |
|---|---|---|---|---|
| 380/400 V | Setting range of thermal trips | Reference (3) (4) | | |
| kW | A | | kg | |
| 0.06 | 0.16…0.25 | **LJ7K06Q702** | 2.270 | 175x165x177 |
| 0.09 | 0.25…0.40 | **LJ7K06Q703** | 2.270 | 175x165x177 |
| 0.25 | 0.63…1 | **LJ7K06Q705** | 2.270 | 175x165x177 |
| 0.55 | 1…1.6 | **LJ7K06Q706** | 2.270 | 175x165x177 |
| 0.75 | 1.6…2.5 | **LJ7K06Q707** | 2.270 | 175x165x177 |
| 1.5 | 2.5…4 | **LJ7K06Q708** | 2.270 | 175x165x177 |
| 2.2 | 4…6.3 | **LJ7K06Q710** | 2.270 | 175x165x177 |
| 4 | 6…10 | **LJ7K09Q714** | 2.270 | 175x165x146 |

### Variants (pre-assembled) (4)

| Description | Variants available for starter | Suffix to be added to the starter reference (6) |
|---|---|---|
| With Emergency Stop<br>No control pushbuttons | LJ7K06Q705...K09Q714 | **A04** |
| With padlocking facility<br>(fitted as standard on LJ7 K09) | LJ7K06Q705...K06Q710 | **A29** |
| Without circuit breaker (8)<br>(or undervoltage release voltage) | LJ7 | (7) |
| Without circuit breaker (8)<br>With Emergency Stop<br>No control pushbuttons | LJ7K09Q7 | **A04** |
| Without circuit breaker (8)<br>Without Emergency Stop<br>(if the emergency stop is on the machine) | LJ7K09Q7 | **A39** |
| Without circuit breaker (8)<br>Without Emergency Stop<br>No control pushbuttons | LJ7K09Q7 | **A04A39** |

*(1) LJ7K06: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.*
*LJ7K09: the Emergency Stop function is performed by an undervoltage trip* **GVAX385**, *acting on the circuit breaker. This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(3) In the reference, the voltage code* **Q7 (380/400 V) indicates the power supply voltage** *to which the starter will be connected, it being assumed that the contactor has a ∼ 24 V coil (see control circuit scheme).*
*(4) Some combinations of variants / control voltage may not be available. Please consult us.*
*(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*
*(6) Example:* **LJ7K06Q705A04**.
*(7) Delete the last 2 digits of the selected starter reference. Example:* **LJ7K06Q705** *becomes* **LJ7K06Q7**.
*(8) Circuit breaker to be ordered separately. References GV2ME: see chapter B6 “Circuit breakers”.*

Dimensions:
page A1/54

Schemes:
page A1/55



Life Is On Schneider Electric

PB111698.eps

*LG8K06*

PB111699.eps

*LG8K09*

## For Control + Isolation + Short circuit / Overload Protection

For OEM, the enclosed safety motor reverser starters comply with IEC 60204-1 “Safety of machinery” standards.

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
- Emergency stop (1)
- Electrical circuit isolation, lockable on LG8K09 and LG8K12 with up to 3 padlocks
- Short circuit protection (switching back on power supply after tripping must be a deliberate action)
- Overload protection
- Protection against voltage drops for LG8K09, LG8K12. For LG8K06, a GVAX●● undervoltage trip may be added.
- Possible signaling with GV2SN●● indicator (to be ordered separately).

Range:
- 10 pre-equipped enclosed safety inverter starters from 0.06 to 5.5 kW.

Enclosures characteristics:
- Conforming to IEC 60947-1, IEC 60204-1 (1)
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate (2) .

Included:
- 2 LC1K prewired contactors
- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn)
- 1 “Stop” black pushbutton + 1 2-position spring return selector switch “I – II”
- 1 GVAX undervoltage release module with LG8K09, LG8K12 (to be ordered separately for LG8K06).

### Reversing starters (with pushbutton control of isolation)

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Circuit breaker | Dust & damp protected starter | Weight | Overall dimensions (4) WxHxD |
|---|---|---|---|---|---|---|
| 220/ 230 V | 400/ 415 V | 440 V | Setting range of thermal trips | Basic reference, to be completed by adding the voltage code (3) | | |
| kW | kW | kW | A | | kg | |
| – | 0.06 | 0.06 | 0.16…0.25 | **LG8K06●●02** | 1.640 | 175x165x177 |
| 0.06 | 0.09 | 0.12 | 0.25…0.40 | **LG8K06●●03** | 1.640 | 175x165x177 |
| – | 0.18 | 0.18 | 0.40…0.63 | **LG8K06●●04** | 1.640 | 175x165x177 |
| 0.12 | 0.25 | 0.25 | 0.63…1 | **LG8K06●●05** | 1.640 | 175x165x177 |
| 0.25 | 0.55 | 0.55 | 1…1.6 | **LG8K06●●06** | 1.640 | 175x165x177 |
| 0.37 | 0.75 | 1.1 | 1.6…2.5 | **LG8K06●●07** | 1.640 | 175x165x177 |
| 0.75 | 1.5 | 1.5 | 2.5…4 | **LG8K06●●08** | 1.640 | 175x165x177 |
| 1.1 | 2.2 | 3 | 4…6.3 | **LG8K06●●10** | 1.640 | 175x165x177 |
| 1.5 | 4 | 4 | 6…10 | **LG8K09●●14** | 1.640 | 175x165x177 |
| 3 | 5.5 | 5.5 | 9…14 | **LG8K12●●16** | 1.640 | 175x165x177 |

| Voltage codes (3) | | | |
|---|---|---|---|
| Volts ∼ 50/60 Hz | 220/ 230 | 380/ 400 | 400/ 415 |
| | M7 | Q7 | N7 |

*(1)* **LG8K06***: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.*
**LG8K09, LG8K12***: the Emergency Stop function is performed by an undervoltage trip, acting on the circuit breaker.*
*This circuit breaker is always supplied pre-wired for use on 380/400/415 V 50 Hz.*
*For a 60 Hz supply, please consult your Regional Sales Office.*
*(2) Avoid allowing the material to come into contact with strong bases (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
***(3) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*

Dimensions:
page A1/52

Schemes:
page A1/53

PB111898.eps

*LJ8K06*

PB111899.eps

*LJ8K09*

## For Control + Isolation + Short circuit /Overload Protection, with isolated 24 V control circuit

For OEM, the enclosed safety motor reverser starters comply with IEC 60204-1 “Safety of machinery” standards.

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
- Emergency stop (1)
- Electrical circuit isolation, lockable on LJ8K09 with up to 3 padlocks
- Short circuit protection (switching back on power supply after tripping must be a deliberate action)
- Overload protection
- Protection against voltage drops for LJ8K09. For LJ8K06, a GVAX●● undervoltage trip may be added
- Possible signaling with GV2SN●● indicator (to be ordered separately).

Range:
- 9 pre-equipped enclosed safety inverter starters from 0.06 to 4 kW.

Enclosures characteristics:
- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate (2).

Included:
- 2 LC1K prewired contactors
- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn)
- 1 Integral transformer: 400/24 V, 25 VA
- 1 “Stop” black pushbutton + 1 2-position spring return selector switch “I – II”
- 1 GVAX undervoltage release module with LJ8K09 (to be ordered separately for LJ8K06).
- Terminal allowing the connection of a volt-free contact, if required, in the control circuit.

### Reversing motor starters with integral transformer, pre-wired for operation on a 3-phase 380 to 400 V 50 Hz supply (with pushbutton control of isolator function)

| Standard power ratings of 3-phase motors 50 Hz in category AC-3 | Circuit breaker | Dust and damp protected starter | Weight | Overall dimensions (5) |
|---|---|---|---|---|
| | Setting range of thermal trips | Reference (3) (4) | | WxHxD |
| 380/400 V | | | | |
| kW | A | | kg | |
| 0.06 | 0.16…0.25 | **LJ8K06Q702** | 2.650 | 175x165x177 |
| 0.18 | 0.40…0.63 | **LJ8K06Q704** | 2.650 | 175x165x177 |
| 0.25 | 0.63…1 | **LJ8K06Q705** | 2.650 | 175x165x177 |
| 0.55 | 1…1.6 | **LJ8K06Q706** | 2.650 | 175x165x177 |
| 0.75 | 1.6…2.5 | **LJ8K06Q707** | 2.650 | 175x165x177 |
| 1.5 | 2.5…4 | **LJ8K06Q708** | 2.650 | 175x165x177 |
| 2.2 | 4…6.3 | **LJ8K06Q710** | 2.650 | 175x165x177 |
| 4 | 6…10 | **LJ8K09Q714** | 2.650 | 175x165x146 |

### Variants (pre-assembled) (4)

| Description | Variants available for starter | Suffix to be added to the starter reference |
|---|---|---|
| Without circuit breaker (7) (or undervoltage release voltage) | LJ8 | (6) |

*(1)* **LJ8K06***: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.* **LJ8K09***: the Emergency Stop function is performed by an undervoltage trip* **GVAX385***, acting on the circuit breaker. This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.*
*(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(3) In the reference, the voltage code* **Q7 (380/400 V) indicates the power supply voltage** *to which the starter will be connected, it being assumed that the contactor has a a 24 V coil (see control circuit scheme).*
***(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***
*(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.*
*(6) Delete the last 2 digits of the selected starter reference. Example:* **LJ8K09Q714** *becomes* **LJ8K09Q7**.
*(7) Circuit breaker to be ordered separately. References GV2ME: see chapter B6 “Circuit breakers”.*

Dimensions: page A1/54
Schemes: page A1/55

## Product references

PB112215.eps

*GV2MCK04*

PB121673.tif

*GV2ME●●*

PB121677.eps

*GVAX●●●*

GV2MCK04 enclosure is fitted with a mushroom pushbutton.
It allows, with addition of a circuit breaker and undervoltage trip, the construction of a safety direct-on-line starter conforming INRS and VDE0113.

Enclosures characteristics:
- Conforming to IEC 60947-2; IEC 60947-4-1
- Degree of protection according IEC 60529: refer to selection chart
- Operational voltage (Ue) 690 V
- Material : polycarbonate (1).

### Enclosure

**Enclosure for thermal-magnetic circuit breakers GV2ME**

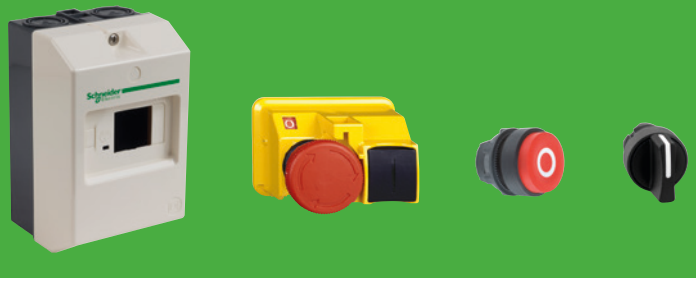
| Type | Degree of protection | Possible no. of side mounting auxiliary contact blocks on GV2ME | | Reference | Weight | Overall dimensions WxHxD |
|---|---|---|---|---|---|---|
| | | LH side | RH side | | kg | |
| Surface mounting, double insulated with protective conductor. Sealable cover | IP55 | 1 | 1 | **GV2MCK04** | 0.420 | 93x147x145.5 |

**GV2ME circuit beaker, GVAX undervoltage trip**
Product references: page A1/32.

*(1) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*

# TeSys Control

## Enclosures, components, for customer assemblies Spare parts



# Product references



PB121229.eps

*VCFXGE4*

PB121230.eps

*VBFXGE2*

## Empty enclosures with rotary handle

**IP65 enclosure with red padlockable handle operator and yellow front plate**
(for mounting a main or Emergency Stop switch-disconnector)

| Ithe | For switch body | Nb. of possible add. module attachments | Reference (1) | Weight |
|---|---|---|---|---|
| A | A | | | kg |
| 10…32 | VN12, VN20<br>V02…V2 | 2 | **VCFXGE1** | 0.340 |
| 10…32 | V02…V2 | 4 | **VCFXGE4** | 0.660 |
| 50…63 | V3 - V4 | 3 | **VCFXGE2** | 0.660 |
| 100.... 140 | V5 - V6 | 1 | **VCFXGE6** | 1.04 |

**IP65 enclosure with black padlockable handle and black front plate**
(for mounting a main switch-disconnector)

| | | | | |
|---|---|---|---|---|
| 10…32 | VN12, VN20<br>V02…V2 | 2 | **VBFXGE1** | 0.340 |
| 10…32 | V02…V2 | 4 | **VBFXGE4** | 0.660 |
| 50…63 | V3-V4 | 3 | **VBFXGE2** | 0.660 |
| 100.... 140 | V5 - V6 | 1 | **VBFXGE6** | 1.04 |

## Switch bodies to fit VCFX, VBFX enclosures (2)

**Standard applications**

| Description | Rating | Reference | Weight |
|---|---|---|---|
| | A | | kg |
| 3-pole switch-disconnectors | 10 | **VN12** | 0.110 |
| | 16 | **VN20** | 0.110 |

## High performance applications

| Description | Rating | Reference | Weight |
|---|---|---|---|
| | A | | kg |
| 3-pole switch-disconnectors | 10 | **V02** | 0.200 |
| | 16 | **V01** | 0.200 |
| | 20 | **V0** | 0.200 |
| | 25 | **V1** | 0.200 |
| | 32 | **V2** | 0.200 |
| | 50 | **V3** | 0.500 |
| | 80 | **V4** | 0.500 |
| | 125 | **V5** | 0.900 |
| | 175 | **V6** | 0.900 |

PB121728.eps

*V0*

PB121232.eps

*V4*

*(1) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(2) For characteristics of switch-disconnectors, please consult your Regional Sales Office.*

Dimensions:
page A1/38

Schemes:
page A1/39



Life Is On Schneider Electric

PB112286.eps

*LE1GVMEK, LE1GVMEKA59*

## Empty enclosures with sealing device

| Composition | Reference |
|---|---|
| Insulating enclosure with GV2E01 sealing device | **LE1GVMEK** |
| Insulating enclosure with GV2E01 sealing device, neutral terminal | **LE1GVMEKA59** |

## Direct-on-line starters characteristics

(based on LE1GVMEK enclosure + GV2ME circuit breaker + LC1K contactor assemblies)

Functions / range / specificities:
- ■ Circuit Isolation
- ■ Protection against short circuit
- ■ Motor protection: motor OFF in case of overload – manual reset with the black pushbutton.
- ■ ON/OFF motor control
- ■ Functions can be completed with optional components: remote control, signaling.

Enclosures characteristics:
- ■ Conforming to IEC 60947-4-1 standard
- ■ Degree of protection IP55 , according IEC 60529
- ■ Ambient air temperature in operation -5 to +40°C
- ■ Operating position: same as K series contactors
- ■ Material: polycarbonate (1).

■ 6 ratings of direct-on-line starters from 0.37 to 5.5 kW (400 V AC) can be realized, based the combinations of circuit breaker + contactor to be ordered separately:
- □ GV2ME thermal magnetic circuit breaker, of the required rating (see below)
- □ LC1K contactor, of the required rating (see below)
- □ optional accessories (indicating light, On pushbutton, sealing kit…).

PB121673.tif

*GV2ME●●*

## Circuit breakers + contactors - Type 1 coordination (2)

| Standard power ratings of 3-phase motors 50/60 Hz in AC-3 | | | Setting range of thermal trips | Fixed magnetic current 13 Irth | For customer assembly | |
|---|---|---|---|---|---|---|
| 400/ 415 V | 440 V | 500 V | | | Motor circuit breaker Reference | Contactor Reference to be completed with the coil voltage code (3) |
| kW | kW | kW | A | A | | |
| 0.37<br>0.55<br>- | 0.37<br>0.55<br>- | 0.37<br>0.55<br>0.75 | 1...1.6 | 22.5 | **GV2ME06** | **LC1K0610●●** |
| 0.75<br>- | 0.75<br>1.1 | -<br>1.1 | 1.6...2.5 | 33.5 | **GV2ME07** | **LC1K0610●●** |
| 1.1<br>1.5 | -<br>1.5 | 1.5<br>2.2 | 2.5...4 | 51 | **GV2ME08** | **LC1K0610●●** |
| 2.2<br>- | 2.2<br>3 | -<br>3 | 4...6.3 | 78 | **GV2ME10** | **LC1K0610●●** |
| 3<br>4 | -<br>4 | 4<br>5.5 | 6...10 | 138 | **GV2ME14** | **LC1K0910●●** |
| 5.5 | 5.5 | 7.5 | 9...14 | 170 | **GV2ME16** | **LC1K1210●●** |

### Coil voltage codes

| Volts | 24 | 110 | 220/230 | 230 | 230/240 | 380/400 |
|---|---|---|---|---|---|---|
| ∼ 50/60 Hz | B7 | F7 | M7 | P7 | U7 | Q7 |
| ⎓ | BW3 | - | - | - | - | - |

*BW3 coil: low consumption (1.5 W), wide range (0.7...1.3 Uc) with integral suppression device as standard.*

*(1) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).*
*(2) Extract from Coordination tables see chapter A6.*
***(3) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.***

PB123778.eps

*LC1K0610●●*

Dimensions:
page A1/51

Schemes:
page A1/51

## Product references



PB112264.eps

*DE1DS1A04*

PB112269.eps

*DE1DS1A05*

PB112259.eps

*DE1DS1*

PB112275.eps

*DE1DS1A13*

### Empty enclosures for starters without isolating device

| Head(s) mounted on cover | Designed for use with | Reference |
|---|---|---|
| Without | LE1D09 and D12 | **DE1DS1A04** |
| | LE1D18...D35 | **DE1DS2A04** |
| | LE2D09...D35 | **DE1DS2A04** |
| 1 flush blue head “R” | LE1D09 and D12 | **DE1DS1A05** |
| | LE1D18...D35 | **DE1DS2A05** |
| | LE2D09...D35 | **DE1DS2A05** |
| 1 flush green head “I”<br>1 projecting red head “O” | LE1D09 and D12 | **DE1DS1** |
| | LE1D18...D35 | **DE1DS2** |
| 1 flush blue head “R”<br>1 switch with 2 fixed positions | LE1D09 and D12 | **DE1DS1A13** |
| | LE1D18...D35 | **DE1DS2A13** |

Dimensions:
page A1/46



Life Is On Schneider Electric

# Product references

PB111891.eps

*DE1KS217A06*

PB111886.eps

*DE1KS217A06A37*

## Empty enclosures for security starters

| Designed for use with | Head(s) mounted on cover | Add-on blocks | Reference |
|---|---|---|---|
| LG7 | Without | | **DE1KS217A04** |
| | 1 flush white head “I”<br>1 projecting black head “O” | | **DE1KS217A06** |
| | 1 flush white head “I”<br>1 projecting black head “O”<br>1 head emergency stop | Padlocking devices | **DE1KS217A06A37** |

Enclosed starters

Dimensions:
page A1/52

# Product references



PB111915.eps

*GV2V01*

PB112390.eps

*GV2K011*

PG113130.eps

*GV2K021*

8274.eps

*GV2K031*

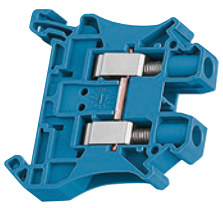
PB112393.eps

*GV2K04*

PB121228.eps

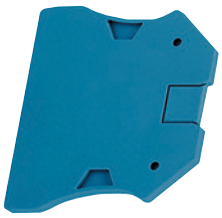
*GV2E01 – GV2E02*

PB502236.eps



*NSYTRV62BL*

PB502246.eps



*NSYTRAC22BL*

PB112218.eps

*GV2CP21*

## Accessories

| Description | | | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|
| Padlocking device [6] for GV2ME operator (padlocking is only possible in the "O" position) | | 1 to 3 padlocks Ø 4 to 8 mm | 1 | **GV2V01** | 0.075 |
| Mushroom head pushbutton Ø 40 mm, red, IP55 | Spring return [2] | | 1 | **GV2K011** | 0.052 |
| | Emergency stop Latching [2] | Key release, key n° 455 | 1 | **GV2K021** | 0.160 |
| | | Turn to release | 1 | **GV2K031** | 0.115 |
| | | Turn to release, padlockable | 1 | **GV2K04** [1] | 0.120 |
| Sealing kit | For enclosures and front plate | IP 55 for temperature between +5 °C and +40 °C | 10 | **GV2E01** | 0.012 |
| | | IP 55 for temperature between -20 °C and +40 °C | 10 | **GV2E02** | 0.012 |
| Linergy passthrough neutral terminal block – 6 mm² 41 A single-level 1x1 screw | | | 50 | **NSYTRV62BL** | 0.015 |
| End cover for Linergy screw single-level terminal block | | | 50 | **NSYTRAC22BL** | 0.003 |

*(1) Circuit breaker to be ordered separately. Commercial references of **GV2ME01** to **M22**: see chapter B6 "Circuit breakers".*
*(2) Supplied with IP55 **GV2E01** sealing kit. To be fitted with enclosure **GV2M●01**.*
*(3) Padlockable in "O" position using Ø 4 to 8 mm shank padlocks.*

## Separate front plate for GV2ME

Provides a sealing cover to GV2ME circuit breaker, on any kind of front panel.

| Front plate | | | |
|---|---|---|---|
| **Description** | | **Reference** | **Weight kg** |
| For direct control, through a panel, of a chassis mounted GV2ME | IP55 | **GV2CP21** | 0.800 |

# Product references



PB121233.eps

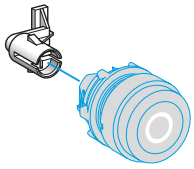
*ZB5AA331*

PB121234.eps

*ZB5AL432*

PB121235.eps

DB403452.eps



*LAD9091*

PF141168.eps

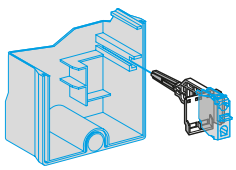
*ZB5AD●*

PB121236.eps

*ZENL1111*

PB121237.eps

DB403455.eps



*LAD90909*

## Heads for Start and Stop/Reset pushbuttons

| Description | For use on | Unit reference |
|---|---|---|
| Flush, green “I” (1) | LE1, LE3, LE4, LE6 D09...D35 | **ZB5AA331** |
| Projecting, red “O” (1) | LE●D09...D35 | **ZB5AL432** |
| Adaptation kit for head ZB5AL432 | LE1D09 and D12 | **LAD9091** |
| | LE1D18...D35, LE2D09...D35 | **LAD91810** |
| | LE3, LE4, LE6 and LE8 D09...D35 | **LAD9T4** |

## Heads for Reset pushbuttons

| | | |
|---|---|---|
| Flush, blue “R” (2) | LE●D09...D35 | **ZB5AA0** |
| | | + **ZBA639** (3) |
| Adaptation kit for head ZB5AA0 + ZBA639 | LE1D09 and D12 | **LAD9092** |
| | LE1D18...D35, LE2D09...D35 | **LAD91810** |
| | LE3, LE6, LE4 and LE8D09...D35 | **LAD9T4** |

## Heads for selector switches

| | | |
|---|---|---|
| 3-position stay put | LE1D09...D35●●A09 | **ZB5AD3** |
| 2-position stay put | LE1D09...D35●●A13 | **ZB5AD2** |
| 3-position spring return to centre | LE2D09...D35 LE8D09...D35 | **ZB5AD5** |

## Contact blocks

| | | |
|---|---|---|
| 1 N/O spring return | LE●D09...D35 | **ZENL1111** |
| 1 N/C spring return | LE●D09...D35 | **ZENL1121** |
| Mounting for contact block | LE1D09 and D12 | **LAD90909** |
| | LE1D18...D35, LE2, LE3, LE4, LE6 and LE8D09...D35 | **LAD91809** |

*(1) Remember to order adaptation kit LAD9091 or LAD91810 or LAD9T4, depending on size.*
*(2) Remember to order adaptation kit LAD9092 or LAD91810 or LAD9T4, depending on size.*
*(3) Sold in lots of 10.*

## Product references



PB121673.tif

*GV2ME●●*

### Thermal magnetic circuit breakers, with screw clamp terminals

#### GV2ME with pushbutton control

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Setting range of thermal trips (2) | Magnetic tripping current Id ± 20 % | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | |
| kW | kA | % | kW | kA | % | kW | kA | % | A | A | |
| – | – | – | – | – | – | **–** | – | – | 0.1…0.16 | 1.5 | **GV2ME01** |
| **0.06** | ★ | ★ | – | – | – | – | – | – | 0.16…0.25 | 2.4 | **GV2ME02** |
| **0.09** | ★ | ★ | – | – | – | – | – | – | 0.25…0.40 | 5 | **GV2ME03** |
| **0.12** | ★ | ★ | – | – | – | **0.37** | ★ | ★ | 0.40…0.63 | 8 | **GV2ME04** |
| **0.18** | ★ | ★ | – | – | – | **–** | – | – | | | |
| **0.25** | ★ | ★ | – | – | – | **0.55** | ★ | ★ | 0.63…1 | 13 | **GV2ME05** |
| **0.37** | ★ | ★ | **0.37** | ★ | ★ | **–** | – | – | 1…1.6 | 22.5 | **GV2ME06** |
| **0.55** | ★ | ★ | **0.55** | ★ | ★ | **0.75** | ★ | ★ | | | |
| **–** | – | – | **0.75** | ★ | ★ | **1.1** | ★ | ★ | | | |
| **0.75** | ★ | ★ | **1.1** | ★ | ★ | **1.5** | 3 | 75 | 1.6…2.5 | 33.5 | **GV2ME07** |
| **1.1** | ★ | ★ | **1.5** | ★ | ★ | **2.2** | 3 | 75 | 2.5…4 | 51 | **GV2ME08** |
| **1.5** | ★ | ★ | **2.2** | ★ | ★ | **3** | 3 | 75 | | | |
| **2.2** | ★ | ★ | **3** | 50 | 100 | **4** | 3 | 75 | 4…6.3 | 78 | **GV2ME10** |
| **3** | ★ | ★ | **4** | 10 | 100 | **5.5** | 3 | 75 | 6…10 | 138 | **GV2ME14** |
| **4** | ★ | ★ | **5.5** | 10 | 100 | **7.5** | 3 | 75 | | | |
| **5.5** | 15 | 50 | **7.5** | 6 | 75 | **9** | 3 | 75 | 9…14 | 170 | **GV2ME16** |
| **–** | – | – | **–** | – | – | **11** | 3 | 75 | | | |
| **7.5** | 15 | 50 | **9** | 6 | 75 | **15** | 3 | 75 | 13…18 | 223 | **GV2ME20** |
| **9** | 15 | 40 | **11** | 4 | 75 | **18.5** | 3 | 75 | 17…23 | 327 | **GV2ME21** |
| **11** | 15 | 40 | **15** | 4 | 75 | **–** | – | – | 20…25 | 327 | **GV2ME22** (3) |

**GV2ME** technical characteristics: see in chapter B6.

### Undervoltage trip, INRS (can only be mounted on GV2ME)
### Safety device for dangerous machines conforming to INRS and VDE0113

PB121677.eps

*GVAX●●●*

| | | | |
|---|---|---|---|
| **Side** (1 block on RH side of circuit breaker GV2 ME) | 110…115 V | 50 Hz | **GVAX115** |
| | | 60 Hz | **GVAX116** |
| | 127 V | 60 Hz | **GVAX115** |
| | 220…240 V | 50 Hz | **GVAX225** |
| | | 60 Hz | **GVAX226** |
| | 380…400 V | 50 Hz | **GVAX385** |
| | | 60 Hz | **GVAX386** |
| | 415…440 V | 50 Hz | **GVAX415** |
| | 440 V | 60 Hz | **GVAX385** |

**GVAX** technical characteristics: see in chapter B6.

*(1) As % of Icu.*
*(2) The thermal trip setting must be within the range marked on the graduated knob.*
*(3) Maximum rating which can be mounted in enclosures **GV2MC** or **MP**, please consult your Regional Sales Office.*
*★ > 100 kA.*

PB123794.tif

*LR2K●●*

## Thermal overload relays - selection table

LR2K thermal overload relays can be mounted on all 3P LC1K contactors with screw clamp connectors.

| Class 10 A (the standard specifies a tripping time of between 2 and 10 seconds at 7.2 In) | | | | |
|---|---|---|---|---|
| **Relay setting range** | **Fuses to be used with selected relay Maximum rating Type** | | | **Reference** |
| | **aM** | **gG** | **BS88** | |
| **A** | **A** | **A** | **A** | |
| 0.11…0.16 | 0.25 | 0.5 | – | **LR2K0301** |
| 0.16…0.23 | 0.25 | 0.5 | – | **LR2K0302** |
| 0.23…0.36 | 0.5 | 1 | – | **LR2K0303** |
| 0.36…0.54 | 1 | 1.6 | – | **LR2K0304** |
| 0.54…0.8 | 1 | 2 | – | **LR2K0305** |
| 0.8…1.2 | 2 | 4 | 6 | **LR2K0306** |
| 1.2…1.8 | 2 | 6 | 6 | **LR2K0307** |
| 1.8…2.6 | 4 | 8 | 10 | **LR2K0308** |
| 2.6…3.7 | 4 | 10 | 16 | **LR2K0310** |
| 3.7…5.5 | 6 | 16 | 16 | **LR2K0312** |
| 5.5…8 | 8 | 20 | 20 | **LR2K0314** |
| 8…11.5 | 10 | 25 | 20 | **LR2K0316** |
| 10…14 | 16 | 32 | 25 | **LR2K0321** |
| 12…16 | 20 | 40 | 32 | **LR2K0322** |

LRD thermal overload relays can only be mounted on LC1D contactors of same size ratio and with screw clamp connectors.

PB121670.tif

*LRD●●*

| Relay setting range (A) | Fuses to be used with selected relay | | | For use with contactor LC1 | Reference |
|---|---|---|---|---|---|
| | **aM (A)** | **gG (A)** | **BS88 (A)** | | |
| **Class 10 A [(1)] for connection by screw clamp terminals or connectors** | | | | | |
| 0.10…0.16 | 0.25 | 2 | – | D09…D38 | **LRD01** |
| 0.16…0.25 | 0.5 | 2 | – | D09…D38 | **LRD02** |
| 0.25…0.40 | 1 | 2 | – | D09…D38 | **LRD03** |
| 0.40…0.63 | 1 | 2 | – | D09…D38 | **LRD04** |
| 0.63…1 | 2 | 4 | – | D09…D38 | **LRD05** |
| 1…1.6 | 2 | 4 | 6 | D09…D38 | **LRD06** |
| 1.6…2.5 | 4 | 6 | 10 | D09…D38 | **LRD07** |
| 2.5…4 | 6 | 10 | 16 | D09…D38 | **LRD08** |
| 4…6 | 8 | 16 | 16 | D09…D38 | **LRD10** |
| 5.5…8 | 12 | 20 | 20 | D09…D38 | **LRD12** |
| 7…10 | 12 | 20 | 20 | D09…D38 | **LRD14** |
| 9…13 | 16 | 25 | 25 | D12…D38 | **LRD16** |
| 12…18 | 20 | 35 | 32 | D18…D38 | **LRD21** |
| 16…24 | 25 | 50 | 50 | D25…D38 | **LRD22** |
| 23…32 | 40 | 63 | 63 | D25…D38 | **LRD32** |
| 30…38 | 40 | 80 | 80 | D32 and D38 | **LRD35** |

# Product references



DE1DS1
DE1DS1A04
DE1DS1A05
DE1DS1A13
DE1DS2
DE1DS2A04
DE1DS2A05
DE1DS2A13
DE1KS217A04
DE1KS217A06
DE1KS217A06A29
DE1KS217A06A37
DE1KS217A29
DE1KS217A29A37
DE1KS217A37
DE2DS2
DK1FB005
GV2CP21
GV2E01
GV2E02
GV2E03
GV2K011
GV2K021
GV2K031
GV2K04
GV2MC01
GV2MC02
GV2MC03
GV2MCK04
GV2ME01
GV2ME02
GV2ME03
GV2ME04
GV2ME05
GV2ME06
GV2ME07
GV2ME08
GV2ME10
GV2ME14
GV2ME16
GV2ME20
GV2ME21
GV2ME22
GV2MP01
GV2MP02
GV2MP03
GV2MP04
GV2PC01
GV2PC02
GV2SN23
GV2SN24
GV2SN33
GV2SN34
GV2V01
GV3PC01
GV3PC02
GVAX115
GVAX116
GVAX225
GVAX226
GVAX385
GVAX386
GVAX415
KAD1PZ
KCC1Y
KZ101
KZ103
KZ106
KZ13
KZ14
KZ15
KZ16
KZ18
KZ20
KZ21
KZ27
KZ28
KZ30
KZ50
KZ52
KZ62
KZ65
KZ66
KZ67
KZ77
KZ93
LAD90909
LAD9091
LAD9092
LAD91809
LAD91810
LAD9T4
LC1KV7A80
LE1D09B7
LE1D09E7
LE1D09F7
LE1D09M7
LE1D09M7A04
LE1D09M7A13
LE1D09N7
LE1D09N7A04
LE1D09P7
LE1D09P7A04
LE1D09P7A05
LE1D09P7A09
LE1D09P7A13
LE1D09P7A13T
LE1D09P7A95
LE1D09P7T
LE1D09Q7
LE1D09Q7A04
LE1D09Q7A05
LE1D09Q7A13
LE1D09R7
LE1D09U7
LE1D09U7A13
LE1D09V7
LE1D09V7A04
LE1D09V7A09
LE1D09V7A13
LE1D12E7
LE1D12F7
LE1D12M7
LE1D12M7A04
LE1D12M7A09
LE1D12N7
LE1D12P7
LE1D12P7A04
LE1D12P7A05
LE1D12P7A13
LE1D12Q7
LE1D12R7
LE1D12U7
LE1D12U7A09
LE1D12V7
LE1D12V7A04
LE1D12V7A05
LE1D12V7A09
LE1D12V7A13
LE1D18E7
LE1D18F7
LE1D18M7
LE1D18N7
LE1D18N7A04
LE1D18P7
LE1D18P7A04
LE1D18P7A05
LE1D18P7A13
LE1D18Q7
LE1D18Q7A09
LE1D18R7
LE1D18U7
LE1D18V7
LE1D18V7A04
LE1D18V7A05
LE1D18V7A13
LE1D25B7
LE1D25F7
LE1D25M7
LE1D25M7A09
LE1D25N7
LE1D25P7
LE1D25P7A04
LE1D25P7A05
LE1D25P7A13
LE1D25Q7
LE1D25Q7A09
LE1D25R7
LE1D25U7
LE1D25V7
LE1D25V7A04
LE1D25V7A13
LE1D35B7
LE1D35E7
LE1D35F7
LE1D35M7
LE1D35N7
LE1D35P7
LE1D35P7A04
LE1D35P7A05
LE1D35Q7
LE1D35R7
LE1D35U7
LE1D35V7
LE1D40AFE7
LE1D40AP7
LE1D40AQ7
LE1D50AFE7
LE1D50AP7
LE1D50AP7A04
LE1D50AQ7
LE1D65AP7
LE1D65AP7A04
LE1D65AQ7
LE1GVMEK
LE1GVMEKA59
LE1M35B705
LE1M35B706
LE1M35B707
LE1M35B710
LE1M35B712
LE1M35B714
LE1M35B716
LE1M35F710
LE1M35M7
LE1M35M705
LE1M35M706
LE1M35M707
LE1M35M708
LE1M35M710
LE1M35M712
LE1M35M714
LE1M35M716
LE1M35M721
LE1M35M722
LE1M35N705
LE1M35N706
LE1M35N707
LE1M35N708
LE1M35N710
LE1M35N712
LE1M35N714
LE1M35N716
LE1M35N721
LE1M35N722
LE1M35P7
LE1M35P705
LE1M35P706
LE1M35P707
LE1M35P708
LE1M35P710
LE1M35P712
LE1M35P714
LE1M35P716
LE1M35P721
LE1M35P722
LE1M35Q7
LE1M35Q705
LE1M35Q706
LE1M35Q707
LE1M35Q708
LE1M35Q710
LE1M35Q712
LE1M35Q714
LE1M35Q716
LE1M35Q721
LE1M35Q722
LE1M35R705
LE1M35R706
LE1M35R708
LE1M35R710
LE1M35R714
LE1M35R716
LE1M35R721
LE1M35R722
LE1M35U706
LE1M35U707
LE1M35U708
LE1M35U710
LE1M35U712
LE1M35U714
LE1M35U716
LE1M35U721
LE1M35U722
LE1M35V7
LE1M35V706
LE1M35V707
LE1M35V708
LE1M35V710
LE1M35V712
LE1M35V714
LE1M35V716
LE1M35V721
LE1M35V722
LE2D09M7
LE2D09N7
LE2D09P7
LE2D09Q7
LE2D09U7
LE2D09V7
LE2D12B7
LE2D12N7
LE2D12Q7
LE2D12U7
LE2D12V7
LE2D18M7
LE2D18N7
LE2D18P7

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

# Product references



LE2D18V7
LE2D25M7
LE2D25N7
LE2D25P7
LE2D25V7
LE2D35P7
LE2D35V7
LE2D40AP7
LE2D40AQ7
LE2D65AQ7
LE2K064N7
LE2K065M7
LE2K065P7
LE2K065Q7
LE2K065U7
LE2K065V7
LE2K095U7
LE2K095V7
LE3D09B7
LE3D09N7
LE3D09P7
LE3D09P7A04
LE3D09Q7
LE3D09V7
LE3D09V7A04
LE3D12B7
LE3D12M7
LE3D12N7
LE3D12P7
LE3D12P7A04
LE3D12Q7
LE3D12U7
LE3D12V7
LE3D18B7
LE3D18M7
LE3D18N7
LE3D18P7
LE3D18P7A04
LE3D18Q7
LE3D18U7
LE3D18V7
LE3D35M7
LE3D35N7
LE3D35P7
LE3D35Q7
LE3D35U7
LE3D35V7
LE4D09B7
LE4D09M7
LE4D09P7
LE4D09P7A04
LE4D09P7A05
LE4D09Q7
LE4D09R7
LE4D09U7A05
LE4D09V7
LE4D09V7A04
LE4D12B7
LE4D12E7
LE4D12F7
LE4D12M7
LE4D12N7
LE4D12P7
LE4D12P7A04
LE4D12P7A05
LE4D12Q7
LE4D12V7
LE4D12V7A04
LE4D12V7A05
LE4D18B7
LE4D18F7
LE4D18M7
LE4D18N7
LE4D18P7
LE4D18Q7
LE4D18U7
LE4D18V7
LE4D18V7A05
LE4D25B7
LE4D25F7
LE4D25M7
LE4D25N7
LE4D25P7
LE4D25P7A05
LE4D25Q7
LE4D25V7
LE4D35B7
LE4D35M7
LE4D35N7
LE4D35P7
LE4D35U7
LE4D35V7
LE4K065P7
LE4K065V7
LE6D09B7
LE6D12B7
LE6D12P7
LE6D12V7
LE6D18B7
LE6D18P7
LE6D18V7
LE8D09V7
LE8D12P7
LE8D12Q7
LE8D12V7
LE8D18V7
LE8D25V7
LE8D35V7
LE8K065P7
LG1D122M716
LG1D122P716
LG1D122Q7
LG1D122Q716
LG1D182M720
LG1D182M721
LG1D182N720
LG1D182Q7
LG1D182Q720
LG1K065M703
LG1K065M705
LG1K065M705A37
LG1K065M706
LG1K065M707
LG1K065M707A37
LG1K065M708
LG1K065M710
LG1K065M710A37
LG1K065N705
LG1K065N706
LG1K065N708
LG1K065N710
LG1K065P703
LG1K065P707
LG1K065P708
LG1K065P710
LG1K065Q7
LG1K065Q702
LG1K065Q703
LG1K065Q704
LG1K065Q705
LG1K065Q706
LG1K065Q706A37
LG1K065Q707
LG1K065Q707A37
LG1K065Q708
LG1K065Q708A37
LG1K065Q710
LG1K065Q710A37
LG1K065V702
LG1K065V704
LG1K065V706
LG1K065V710
LG1K095M7
LG1K095M714
LG1K095M714A37
LG1K095N714
LG1K095P714
LG1K095Q7
LG1K095Q714
LG1K095Q714A37
LG7D12B716
LG7D12M7
LG7D12M716
LG7D12N716
LG7D12P716
LG7D12Q716
LG7D12V716
LG7D18B720
LG7D18B721
LG7D18M7
LG7D18M720
LG7D18M721
LG7D18P720
LG7D18Q7
LG7D18Q720
LG7D18Q721
LG7D18V720
LG7K06B703
LG7K06B704
LG7K06B706
LG7K06B707
LG7K06B710
LG7K06B710A04
LG7K06M7
LG7K06M702
LG7K06M703
LG7K06M704
LG7K06M705
LG7K06M705A04
LG7K06M705A29
LG7K06M706
LG7K06M707
LG7K06M707A04
LG7K06M707A39
LG7K06M708
LG7K06M708A04
LG7K06M708A29
LG7K06M710
LG7K06M710A04
LG7K06M710A29
LG7K06N704
LG7K06N705
LG7K06N706
LG7K06N707
LG7K06N710
LG7K06P704
LG7K06P708
LG7K06P710
LG7K06Q7
LG7K06Q702
LG7K06Q704
LG7K06Q705
LG7K06Q706
LG7K06Q706A29
LG7K06Q707
LG7K06Q707A29
LG7K06Q708
LG7K06Q708A29
LG7K06Q710
LG7K06Q710A29
LG7K06V707
LG7K06V708
LG7K06V710
LG7K09M7
LG7K09M714
LG7K09M714A04
LG7K09N714
LG7K09P714
LG7K09Q714
LG7K09V714
LG8K06B707
LG8K06M7
LG8K06M702
LG8K06M704
LG8K06M705
LG8K06M706
LG8K06M707
LG8K06M710
LG8K06N705
LG8K06N706
LG8K06N707
LG8K06Q7
LG8K06Q702
LG8K06Q703
LG8K06Q704
LG8K06Q705
LG8K06Q706
LG8K06Q707
LG8K06Q707A14
LG8K06Q708
LG8K06Q708A39
LG8K06Q710
LG8K09M7
LG8K09M714
LG8K09N714
LG8K09Q714
LG8K12Q716
LJ7K06Q7
LJ7K06Q702
LJ7K06Q703
LJ7K06Q705
LJ7K06Q705A04
LJ7K06Q705A29
LJ7K06Q706
LJ7K06Q706A04
LJ7K06Q707
LJ7K06Q707A04
LJ7K06Q707A29
LJ7K06Q708
LJ7K06Q708A04
LJ7K06Q708A29
LJ7K06Q710
LJ7K06Q710A04
LJ7K09Q7
LJ7K09Q714
LJ7K09Q714A04

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

# Product references



| | | | |
|---|---|---|---|
| LJ7K09Q7A04A39 | VBD0 | VCD01 | VZ0 |
| LJ8K06Q702 | VBD01 | VCD02 | VZ01 |
| LJ8K06Q704 | VBD02 | VCD1 | VZ02 |
| LJ8K06Q705 | VBD1 | VCD2 | VZ1 |
| LJ8K06Q706 | VBD2 | VCDN12 | VZ10 |
| LJ8K06Q707 | VBDN12 | VCDN20 | VZ11 |
| LJ8K06Q707A04 | VBDN20 | VCF0 | VZ12 |
| LJ8K06Q708 | VBF0 | VCF01 | VZ13 |
| LJ8K06Q710 | VBF01 | VCF01GE | VZ14 |
| LJ8K09Q7 | VBF01GE | VCF01GEGP | VZ15 |
| LJ8K09Q714 | VBF02 | VCF02 | VZ16 |
| LR2K0301 | VBF02GE | VCF02GE | VZ17 |
| LR2K0302 | VBF0GE | VCF02GEGP | VZ17L127 |
| LR2K0303 | VBF1 | VCF0GE | VZ17L69 |
| LR2K0304 | VBF1GE | VCF0GEGP | VZ18 |
| LR2K0305 | VBF2 | VCF1 | VZ2 |
| LR2K0306 | VBF2GE | VCF1GE | VZ20 |
| LR2K0307 | VBF3 | VCF1GEGP | VZ26 |
| LR2K0308 | VBF3GE | VCF1YZ | VZ27 |
| LR2K0310 | VBF4 | VCF2 | VZ28 |
| LR2K0312 | VBF4GE | VCF2GE | VZ29 |
| LR2K0314 | VBF5 | VCF3 | VZ3 |
| LR2K0316 | VBF5GEN | VCF3GE | VZ30 |
| LR2K0321 | VBF6 | VCF4 | VZ31 |
| LR2K0322 | VBF6GEN | VCF4GE | VZ4 |
| LRD01 | VBFXGE1 | VCF5 | VZ45 |
| LRD02 | VBFXGE2 | VCF5GEN | VZ7 |
| LRD03 | VBFXGE4 | VCF6 | VZ8 |
| LRD04 | VBFXGE6 | VCF6GEN | VZ9 |
| LRD05 | VC1GUN | VCFN12GE | VZN05 |
| LRD06 | VC2GUN | VCFN20GE | VZN06 |
| LRD07 | VC3GUN | VCFN25GE | VZN08 |
| LRD08 | VC4GUN | VCFN32GE | VZN11 |
| LRD10 | VC5GUN | VCFN40GE | VZN12 |
| LRD12 | VC6GUN | VCFXGE1 | VZN14 |
| LRD14 | VCCD0 | VCFXGE2 | VZN17 |
| LRD16 | VCCD01 | VCFXGE4 | VZN19 |
| LRD21 | VCCD02 | VCFXGE6 | VZN20 |
| LRD22 | VCCD1 | VGP1 | VZN26 |
| LRD32 | VCCD2 | VGPCLIP1 | VZN30 |
| LRD35 | VCCDN12 | VN12 | Z01 |
| NSYTRAC22BL | VCCDN20 | VN20 | ZB5AA331 |
| NSYTRV62BL | VCCF0 | VVD0 | ZB5AD2 |
| V0 | VCCF01 | VVD1 | ZB5AD3 |
| V01 | VCCF02 | VVD2 | ZB5AD5 |
| V02 | VCCF1 | VVD3 | ZB5AL432 |
| V1 | VCCF2 | VVD4 | ZENL1111 |
| V2 | VCCF3 | VVE0 | ZENL1121 |
| V3 | VCCF4 | VVE1 | |
| V4 | VCCF5 | VVE2 | |
| V5 | VCCF6 | VVE3 | |
| V6 | VCD0 | VVE4 | |

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Enclosed starters

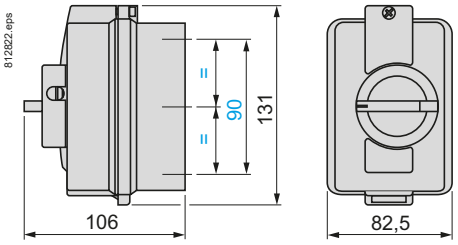
# Technical Data for Designers

Contents

Switch-disconnectors ..... A1/38 to A1/40
Direct-on-line starters ..... A1/41, A1/43 to A1/49
.....and A1/51
Star-delta starters ..... A1/42 and A1/50
Starters for safety applications ..... A1/52 to A1/55

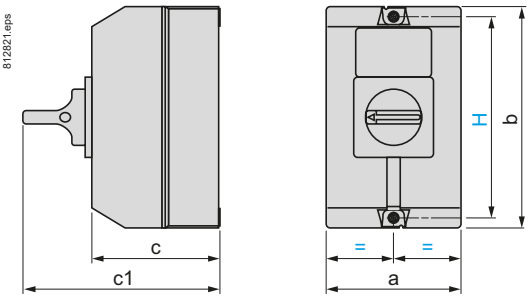
## Dimensions

### VCFN12GE to VCFN40GE




*Cable glands: 2x ISO 20 top and bottom, 2x ISO 16 rear.*

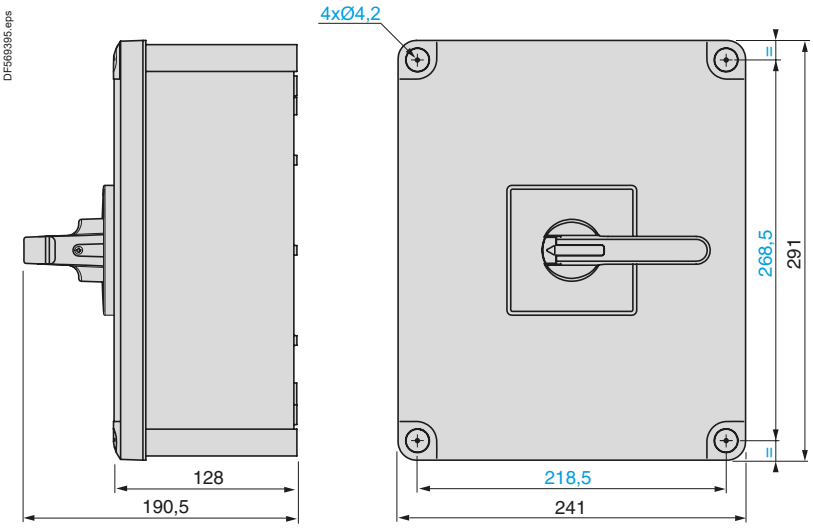
### VCF or VBF02GE to 4GE, VCF••GEGP and VCF•GEGP, VCFX or VBFXGE1 to GE4




| | a | b | c | c1 | H |
|---|---|---|---|---|---|
| **V•F02GE to V•F2GE, V•FXGE1 VCF••GEGP and VCF•GEGP** (1) | 90 | 146 | 85 | 131 | 130 |
| **V•F3GE** and **V•F4GE** (2) | 157 | 180 | 107 | 152 | 164 |
| **V•FXGE2** and **V•FXGE4** (2) | 157 | 180 | 107 | 152 | 164 |

*(1) Cable glands: 2x ISO 16 rear, 4x ISO 20/25 top and bottom.*
*(2) Cable glands: 4x ISO 25/32 rear, 4x ISO 25/32 top and bottom.*

### VCF or VBF5GEN and 6GEN




References:
pages A1/3 and A1/26

Schemes:
page A1/39

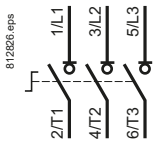


Life Is On Schneider Electric

# Schemes

## Schemes

### Switch-disconnectors

| Enclosed or switch bodies | Main pole module | Neutral pole module |
|---|---|---|
|  | | |



### Auxiliary contact blocks

| VZ7 | VZ20 | VZN05 | VZN06 |
|---|---|---|---|
| | | | |



References:
pages A1/3 and A1/26

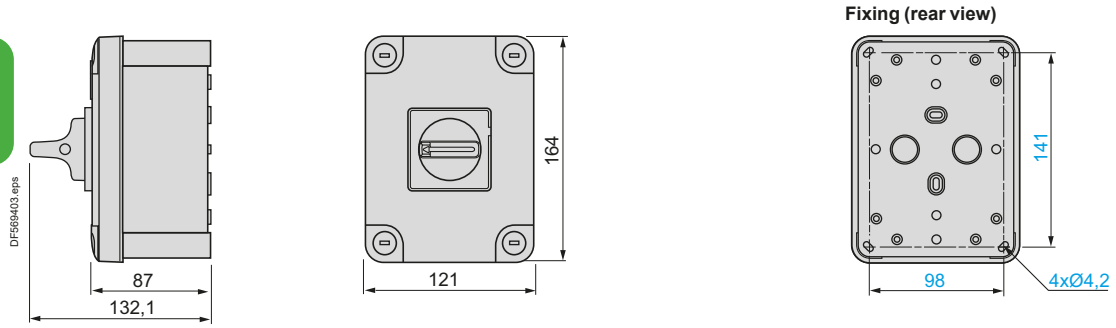
Dimensions:
page A1/38

# Dimensions, schemes

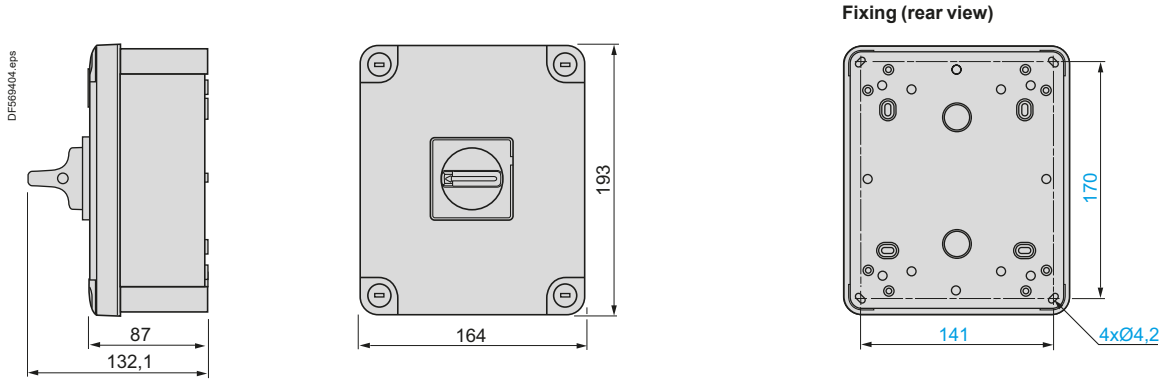


## Dimensions

### VC1GUN and VC2GUN

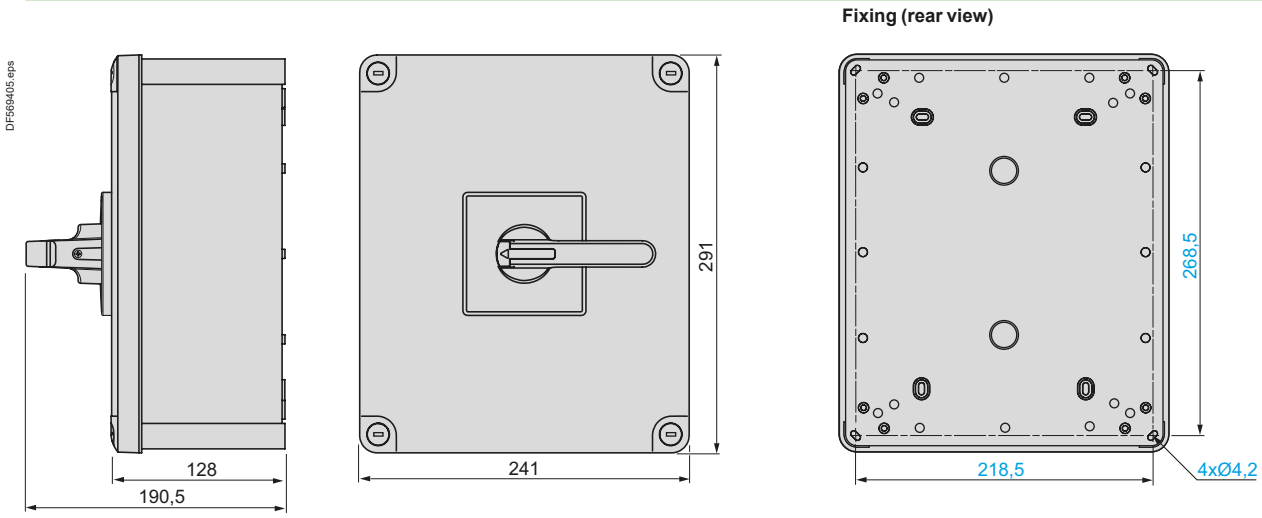



### VC3GUN and VC4GUN





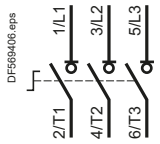

### VC5GUN and VC6GUN




## Schemes

### Switch-disconnectors

**Enclosed switch-disconnectors or switch bodies**




**Main pole module**

**Neutral pole module**

### Auxiliary contact block modules

**VZ7**

**VZ20**

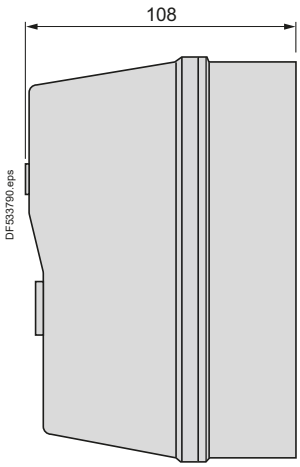
References:
page A1/4

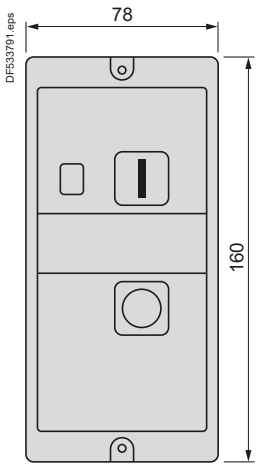
# Dimensions, schemes

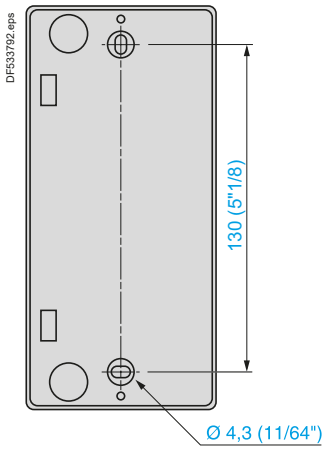


## Dimensions

### LE1M35 (1)



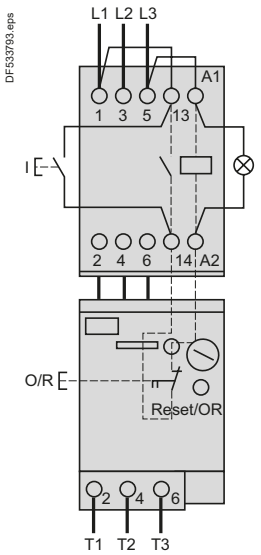

| Knock-outs or blanking plugs for cable glands | | | | |
|---|---|---|---|---|
| **Enclosure type** | **At top** | | **At bottom** | |
| | **PG** | **ISO** | **PG** | **ISO** |
| **LE1 M** | 2 x 13 to 2 x 21 | 2 x 20 or 2 x 25 | 2 x 13 to 2 x 21 | 2 x 20 or 2 x 25 |

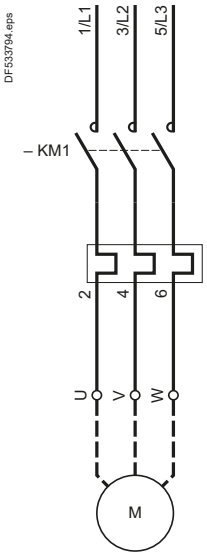
*(1) Can be mounted on machine panel or frame. Knock-outs for 4 x 13 P cable glands.*

Ref.

## Schemes

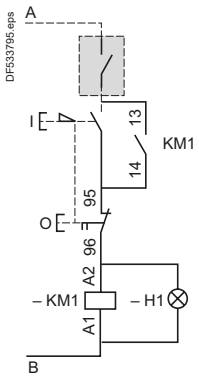
### LE1M35



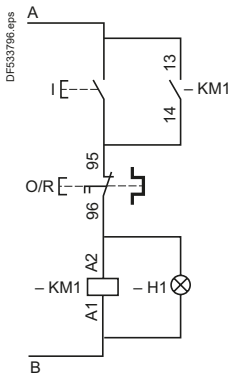




### Choice of type of control built into the product

**Control by latching pushbuttons**




**Control by spring return pushbuttons**




## Connections

| Power voltage | Control circuit voltage | A | B |
|---|---|---|---|
| 380 V, 400 V, 415 V, 440 V | 220 V, 230 V, 240 V | L3 | Neutral |
| | 380 V, 400 V, 415 V, 440 V | L3 | L1 |
| | Other voltages | For customer assembly | |
| Other voltages | All voltages (440 V max) | For customer assembly | |

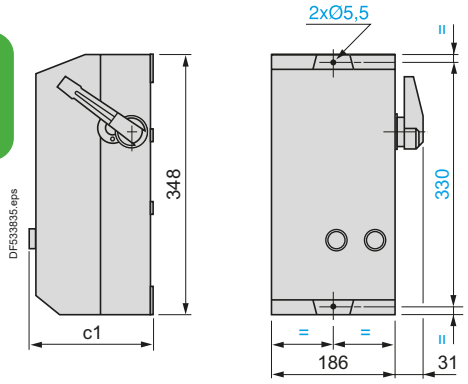
References:
page A1/7

# Dimensions, schemes



## Dimensions

### LE6D09…D18




| | c1 |
|---|---|
| Standard version | 175.5 |
| Variant A04 | 167 |
| Variant A05 | 175.5 |

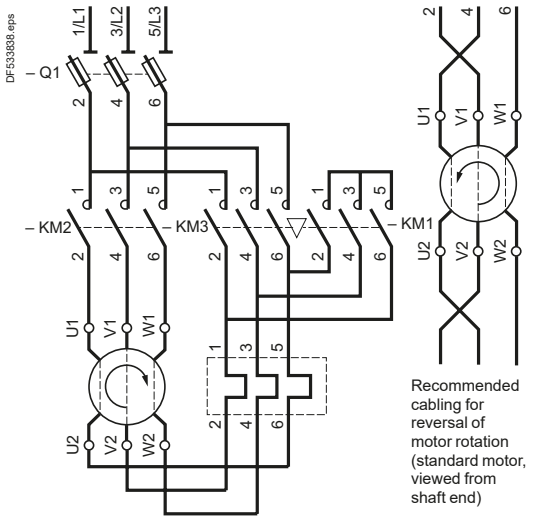
### Knock-outs or blanking plugs for cable glands

| Type of enclosure | At top | | At bottom | |
|---|---|---|---|---|
| | PG | ISO | PG | ISO |
| **LE6D09…D18** | – | 2 x 20 or 2 x 25 or 2 x 32 or 2 x 40 | – | 2 x 20 or 2 x 25 or 2 x 32 or 2 x 40 |

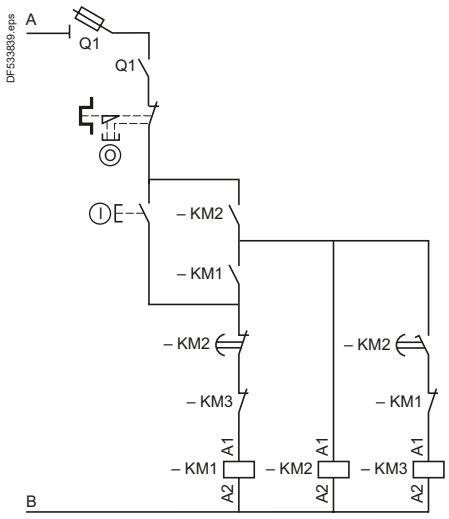
Ref.

## Schemes

### LE6D09…D18




Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end)




### Connections

| Power voltage | Control circuit voltage | A | B |
|---|---|---|---|
| 380 V, 400 V, 415 V, 440 V | 220 V, 230 V, 240 V | L3 | Neutral terminal |
| | 380 V, 400 V, 415 V, 440 V | L3 | L1 |
| | Other voltages | Terminal 1 | Terminal 2 |
| Other voltages | All voltages (600 V max) | For customer assembly | |

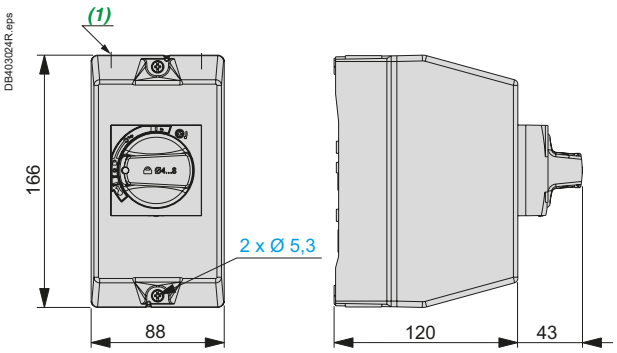
References:
page A1/16

# Dimensions, schemes



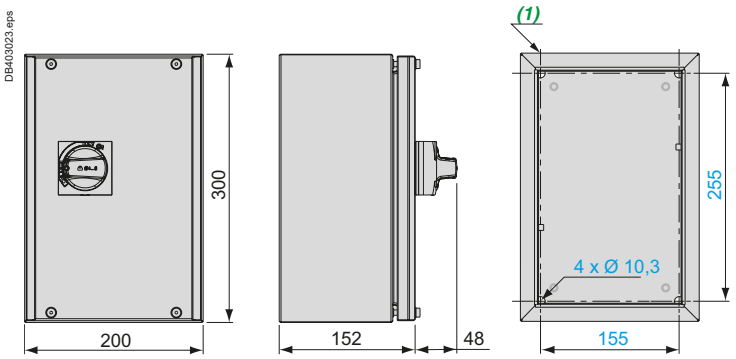
## Dimensions

### GV2PC●●




*(1) Top face: 2 knock-outs for ISO20 cable glands.*
*Bottom face: 2 knock-outs for ISO20 cable glands.*

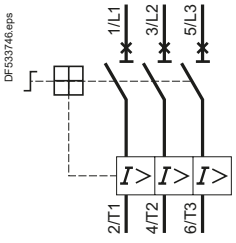
### GV3PC●●



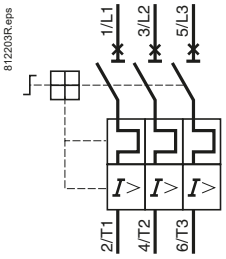

*(1) Top face: 1 blanking plug for ISO32 cable gland.*
*Bottom face: 2 blanking plugs for ISO32 cable gland + 1 blanking plug for ISO20 cable gland.*

## Schemes

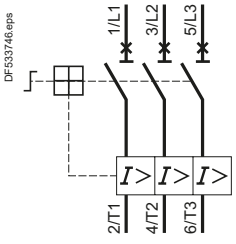
### GV2L



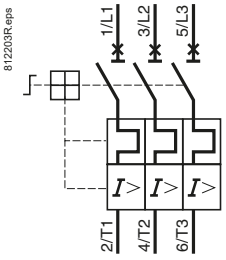

### GV2P




### GV3L




### GV3P




References:
pages A1/9 to A1/10

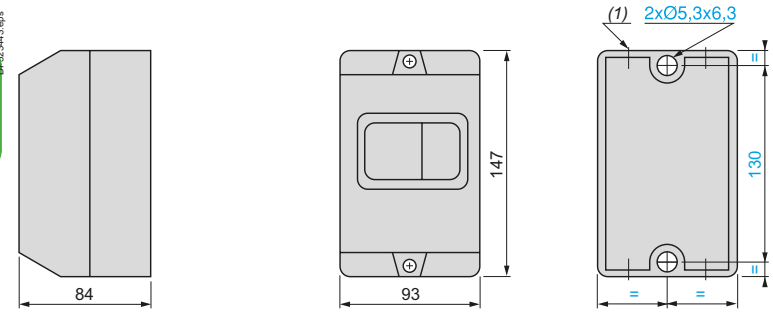
# Dimensions, mounting



## Dimensions

### Surface mounting enclosure GV2MC0●

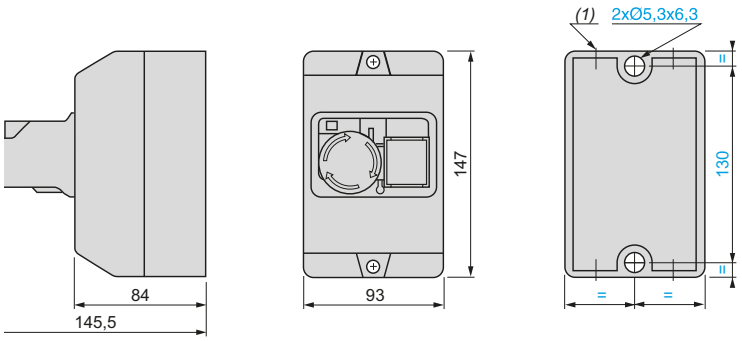
DF523443.eps




*(1) Top face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.*
*Bottom face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.*

### Surface mounting enclosure GV2MCK04

DF523444.eps



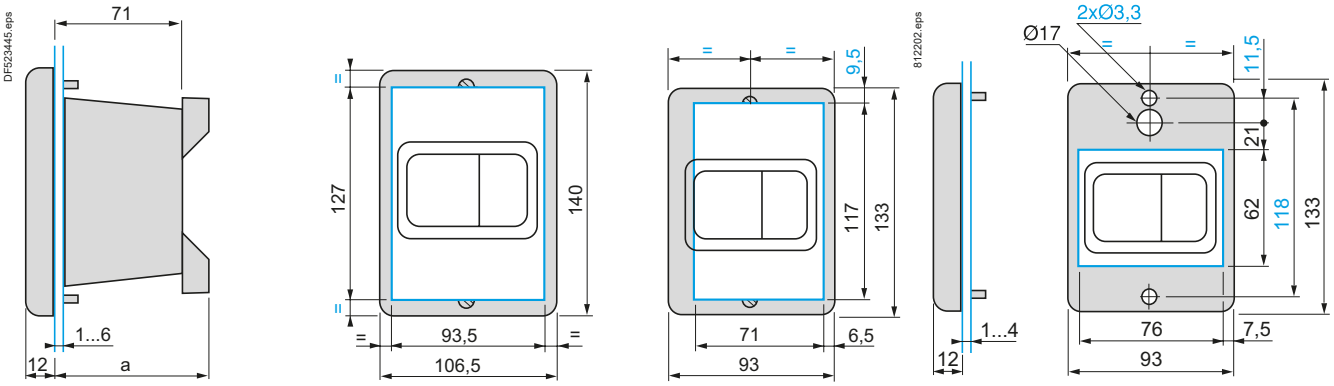

*(1) Top face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.*
*Bottom face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.*

## Mounting

### Flush mounting enclosures GV2MP0● (panel cut-out)

**GV2MP0●** | **GV2MP01, MP02** | **GV2MP03, MP04** | **Front plate GV2CP21**

DF523445.eps




| GV2 | a |
|---|---|
| MP01, MP02 | – |
| MP03, MP04 | 86 |

References:
pages A1/11 and A1/23

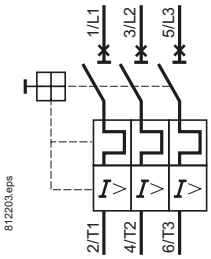
Schemes:
page A1/45



Life Is On Schneider Electric

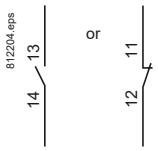
## Schemes

### GV2ME●●

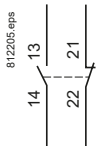



### Instantaneous auxiliary contacts

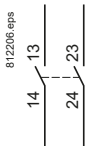
**GVAE1**




**GVAE11**

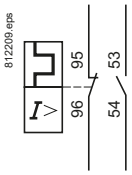



**GVAE20**

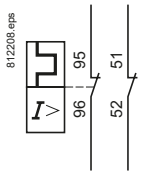



### Instantaneous auxiliary contacts and fault signalling contacts

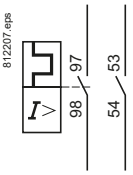
**GVAD0110**



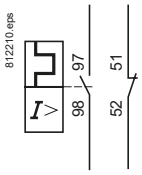

**GVAD0101**




**GVAD1010**

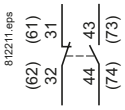



**GVAD1001**

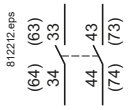



### Instantaneous auxiliary contacts

**GVAN11**

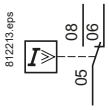



**GVAN20**



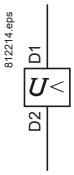

### Short-circuit signalling contacts

**GVAM11**

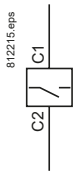



### Undervoltage trips

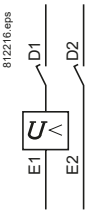
**GVAU●●●**



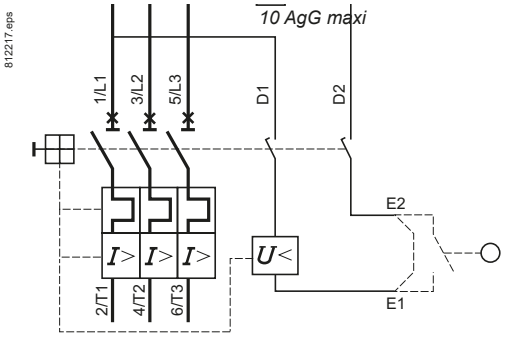

**GVAS●●●**




**GVAX●●●**




### Wiring diagram for undervoltage trip used on potentially dangerous machines, conforming to INRS




References:
pages A1/11 and A1/23

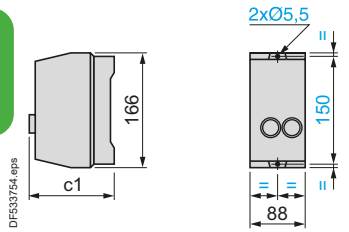
Dimensions:
page A1/44

# Dimensions



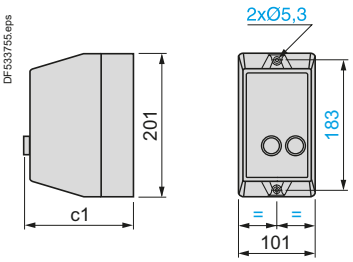
## Dimensions

### LE1D09 and D12



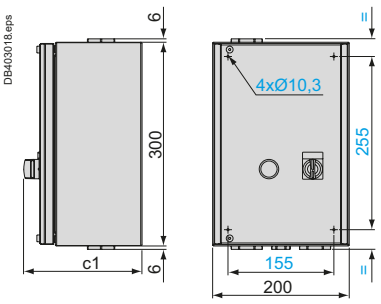

| | c1 |
|---|---|
| Standard version | 128.5 |
| Variant A04 | 120 |
| Variant A05 | 128.5 |
| Variant A09 | 120 |
| Variant A13 | 120 |

### LE1D09●●T
### LE1D18…D35 and LE2D09…D35



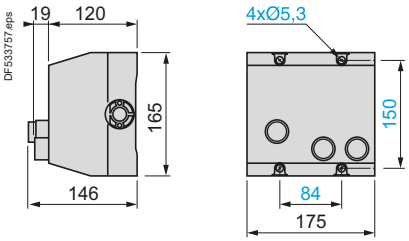

| | c1 | |
|---|---|---|
| | LE1D | LE2D |
| Standard version | 153.5 | 160 |
| Variant A04 | 145 | 145 |
| Variant A05 | 153.5 | 153.5 |
| Variant A09 | 160 | – |
| Variant A13 | 160 | – |

### LE1D40A…D65A
### LE2D40A…D65A




| | c1 | |
|---|---|---|
| | LE1D | LE2D |
| Standard version | 158.5 | 174 |
| Variant A04 | 150 | 150 |
| Variant A05 | 158.5 | 158.5 |

### LE2K06 and K09



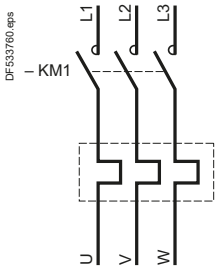

### Knock-outs or blanking plugs for cable glands

| Type of enclosure | At top | | At bottom | |
|---|---|---|---|---|
| | PG | ISO | PG | ISO |
| LE1D09 and D12 | – | 2 x 20 | – | 2 x 20 |
| LE1D18…D35 and LE2D09…D35 | – | 2 x 20 or 2 x 25 | – | 2 x 20 or 2 x 25 |
| LE1 and LE2D40A…D65A | – | 1 x 32 | – | 1 x 20 and 2 x 32 |
| LE2K06 and K09 | 2 x 13 and 2 x 16 | 4 x 20 | 2 x 13 and 2 x 16 | 4 x 20 |

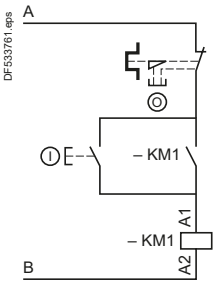
References:
pages A1/8, A1/13 and A1/28
Schemes:
page A1/47

## Schemes

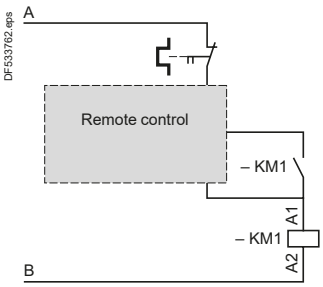
### LE1D09…D65A



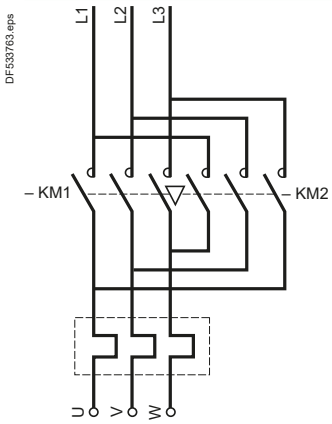

### LE1D09…D65A



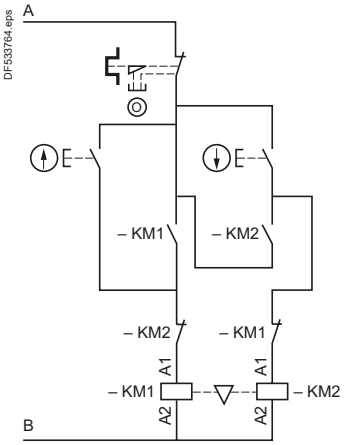

### LE1D09…D65A with variant A04 or A05



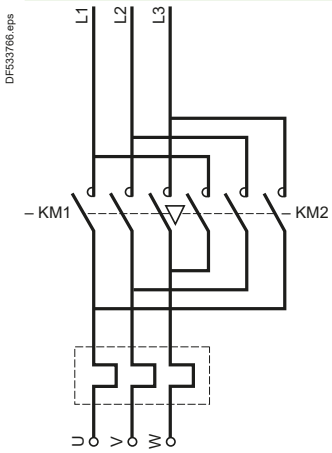

### LE2K06, K09



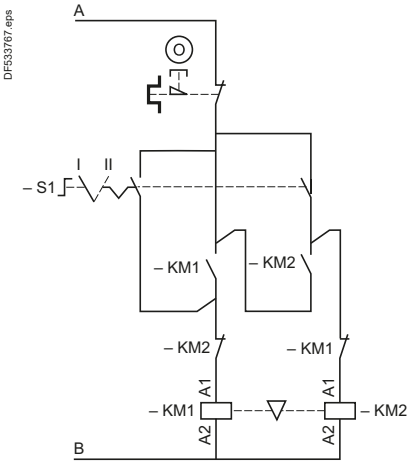

### LE2K06, K09



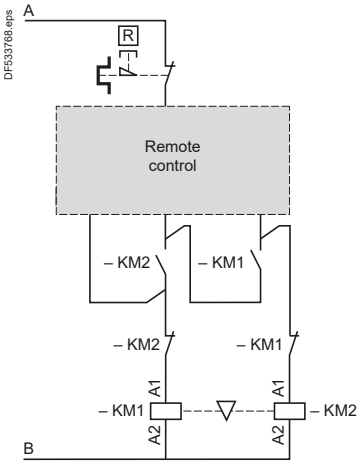

### LE2D09…D65A




### LE2D09…D65A




### LE2D40A…D65A with variants A04 or A05




**LE1D09…D65A, LE2D09…D65A Connections**

| Power voltage | Control circuit voltage | A | B |
|---|---|---|---|
| 380 V, 400 V, 415 V, 440 V | 220 V, 230 V, 240 V | L3 | Neutral terminal |
| | 380 V, 400 V, 415 V, 440 V | L3 | L1 |
| | Other voltages | Terminal 1 | Terminal 2 |
| Other voltages | Other voltages (600 V max) | For customer assembly | |

**LE2K06, K09 Connections**

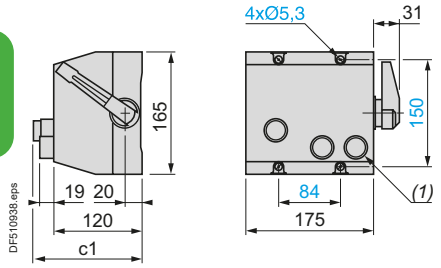
| Power voltage | Control circuit voltage | A | B |
|---|---|---|---|
| 380 V, 400 V, 415 V | 220 V, 230 V, 240 V | L3 | Neutral |
| | 380 V, 400 V, 415 V | L3 | L1 |
| Other voltages | Other voltages (440 V max) | For customer assembly | |

References:
pages A1/8 and A1/13

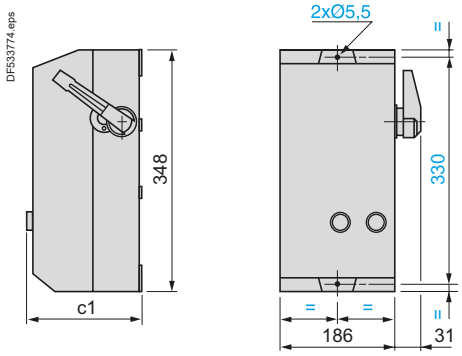
Dimensions:
page A1/46

## Dimensions

### LE4K06 and K09, LE8K06 and K09




### LE4D09…D35, LE8D09…D35




| | c1 | |
|---|---|---|
| | LE4K | LE8K |
| Standard version | 146 | 146 |
| Variant A05 | – | 139 |

*(1) For LE8 only.*

| | c1 | |
|---|---|---|
| | LE4D | LE8D |
| Standard version | 175.5 | 182 |
| Variant A04 | 167 | 167 |
| Variant A05 | 175.5 | 175.5 |

### Knock-outs or blanking plugs for cable glands

| Type of enclosure | At top | | At bottom | |
|---|---|---|---|---|
| | PG | ISO | PG | ISO |
| LE4 and LE8D09…D35 | – | 2 x 20 or 2 x 25 or 2 x 32 or 2 x 40 | – | 2 x 20 or 2 x 25 or 2 x 32 or 2 x 40 |
| LE4 and LE8K06 and K09 | 2 x 13 and 2 x 16 | 4 x 20 | 2 x 13 and 2 x 16 | 4 x 20 |

Ref.

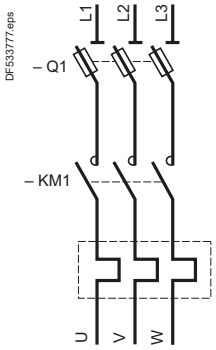
References:
pages A1/12 and A1/14

Schemes:
page A1/49

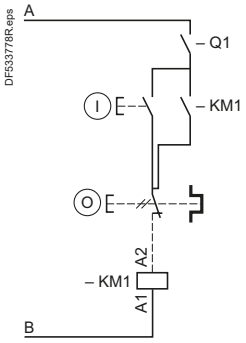
# Schemes

## Schemes

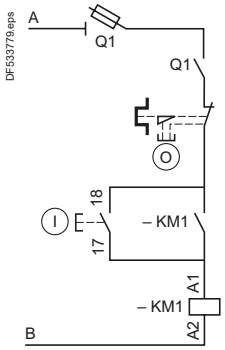
### LE4K06, K09 LE4D09…D35



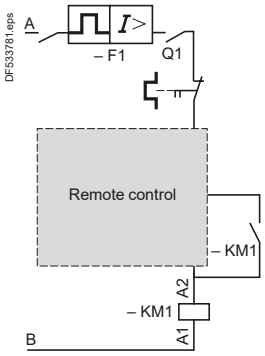

### LE4K06, K09



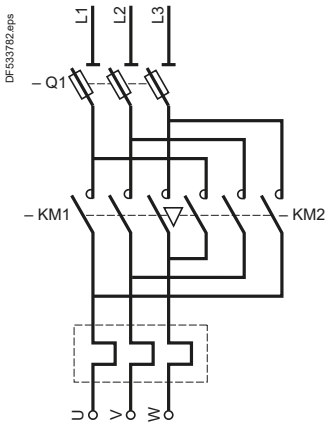

### LE4D09…D35



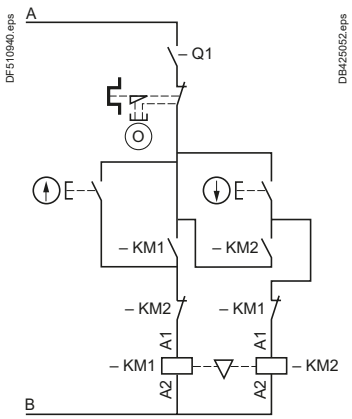

### LE4D09…D35 with variant A04 or A05



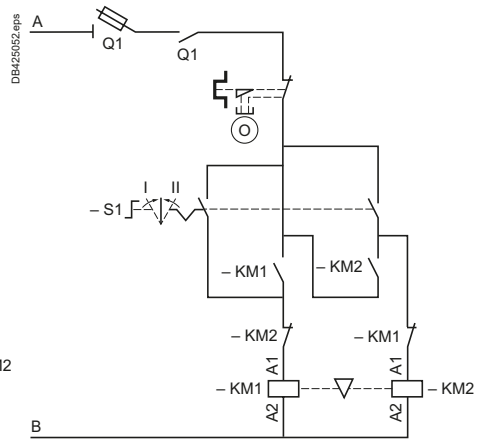

### LE8K06, K09 LE8D09…D35




### LE8K06, K09




### LE8D09...D35




| LE4D09 and D12, LE8D09 and D12 Connections | | | |
|---|---|---|---|
| **Power voltage** | **Control circuit voltage** | **A** | **B** |
| 380 V, 400 V, 415 V, 440 V | 220 V, 230 V, 240 V | L3 | Neutral |
| | 380 V, 400 V, 415 V, 440 V | L3 | L1 |
| | Other voltages | Terminal 1 | Terminal 2 |
| Other voltages | Other voltages (600 V max) | For customer assembly | |

| LE4D18…D35, LE8D18…D35 Connections | | | |
|---|---|---|---|
| **Power voltage** | **Control circuit voltage** | **A** | **B** |
| 380 V, 400 V, 415 V, 440 V | 220 V, 230 V, 240 V | L3 | Neutral terminal |
| | 380 V, 400 V, 415 V, 440 V | L3 | L1 |
| | Other voltages | Terminal 1 | Terminal 2 |
| Other voltages | Other voltages (600 V max) | For customer assembly | |

| LE4K06, K09, LE8K06, K09 Connections | | | |
|---|---|---|---|
| **Power voltage** | **Control circuit voltage** | **A** | **B** |
| 380 V, 400 V, 415 V | 220 V, 230 V, 240 V | L3 | Neutral |
| | 380 V, 400 V, 415 V | L3 | L1 |
| Other voltages | Other voltages (440 V max) | For customer assembly | |

References:
pages A1/12 and A1/14

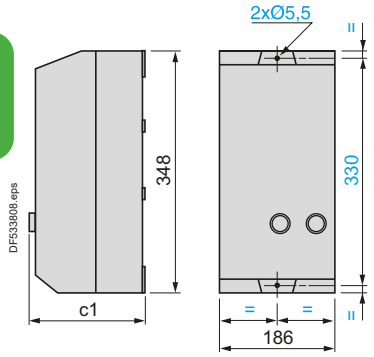
Dimensions:
page A1/48

# Dimensions, schemes



## Dimensions

### LE3D09…D35




| | c1 |
|---|---|
| Standard version | 175.5 |
| Variant A04 | 167 |
| Variant A05 | 175.5 |

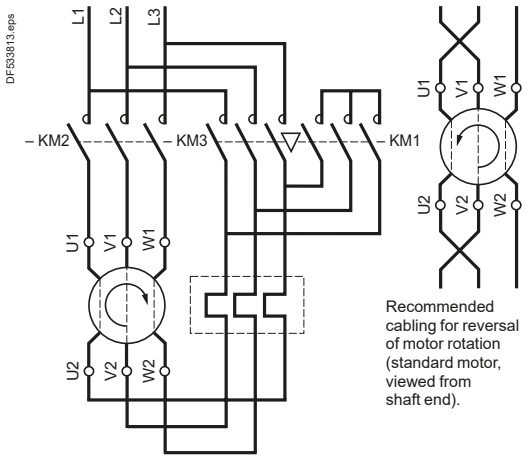
**Knock-outs or blanking plugs for cable glands**

| Type of enclosure | At top | | At bottom | |
|---|---|---|---|---|
| | PG | ISO | PG | ISO |
| LE3D09…D35 | – | 2 x 20 or 2 x 25 or 2 x 32 or 2 x 40 | – | 2 x 20 or 2 x 25 or 2 x 32 or 2 x 40 |

Ref.

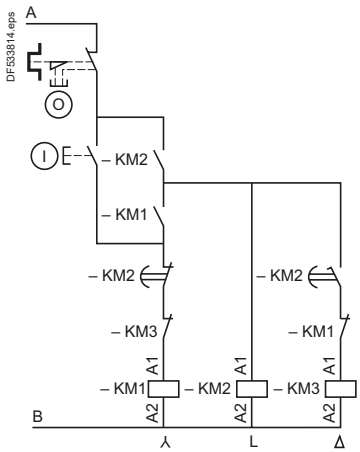
## Schemes

### LE3D09…D35




Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

### LE3D09…D35




*Note: in accordance with current installation regulations, short-circuit protection must be provided by fuses or a circuit breaker.*

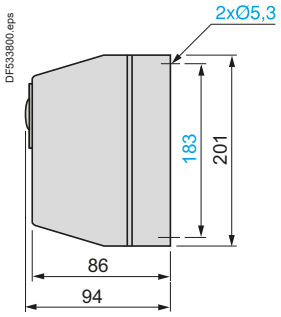
**Connections**

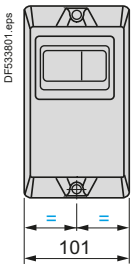
| Power voltage | Control circuit voltage | A | B |
|---|---|---|---|
| 380 V, 400 V, 415 V, 440 V | 220 V, 230 V, 240 V | L3 | Neutral terminal |
| | 380 V, 400 V, 415 V, 440 V | L3 | L1 |
| | Other voltages | Terminal 1 | Terminal 2 |
| Other voltages | All voltages (600 V max) | For customer assembly | |

References:
page A1/15

## Dimensions

### LE1GVMEK

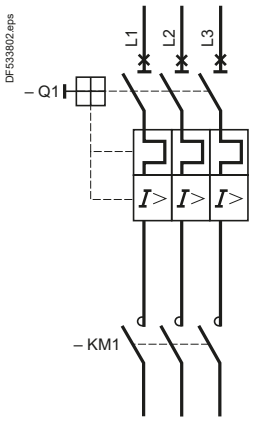


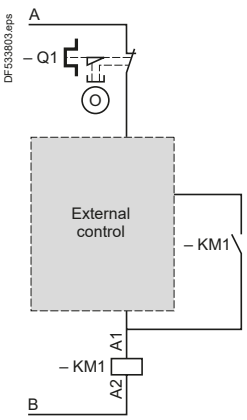




| Knock-outs or blanking plugs for cable glands | | |
|---|---|---|
| **Enclosure type** | **At top** | **At bottom** |
| | **ISO** | **ISO** |
| LE1GV | 2 x 20 or 2 x 25 | 2 x 20 or 2 x 25 |

## Schemes

### LE1GVMEK




| Connections | | | |
|---|---|---|---|
| **Power voltage** | **Control circuit voltage** | **A** | **B** |
| 380 V, 400 V, 415 V, 440 V | 220 V, 230 V, 240 V | L3 | Neutral |
| | 380 V, 400 V, 415 V, 440 V | L3 | L1 |
| | Other voltages | For customer assembly | |
| Other voltages | All voltages (440 V max) | For customer assembly | |

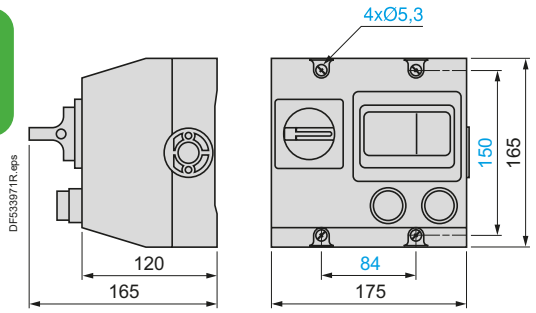
References:
page A1/27

# Dimensions

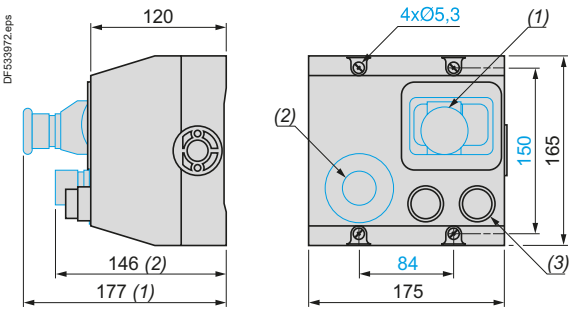


## Dimensions

### LG1K06, K09
### LG1D12, D18




### LG7K06, K09, LG7D12, D18
### LG8K06, K09, K12




*(1) Emergency Stop for starters LG●K06.*
*(2) Emergency Stop for starters LG●K09, K12, D12 et D18.*
*(3) Only for LG7.*

### Knock-outs or blanking plugs for cable glands

| Type of enclosure | At top | At bottom |
|---|---|---|
| **LG1K and LG1D** | 2 x 13 P and 2 x 16 P | 2 x 13 P and 2 x 16 P |
| **LG7K and LG7D** | 2 x 13 P and 2 x 16 P | 2 x 13 P and 2 x 16 P |
| **LG8K** | 2 x 13 P and 2 x 16 P | 2 x 13 P and 2 x 16 P |

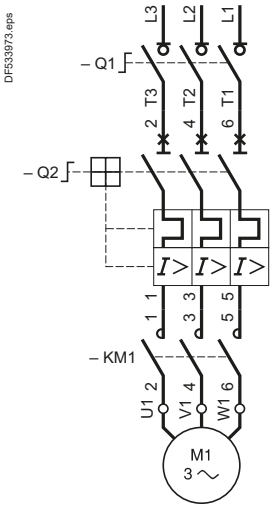
Ref.

References:
pages A1/18, A1/19 and A1/21

Schemes:
page A1/53

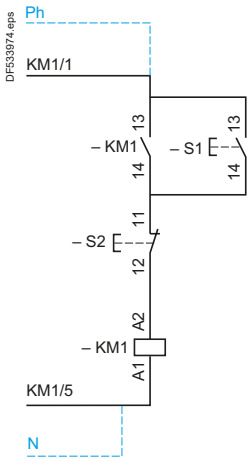
## Schemes

### LG1K06, K09, D12, D18

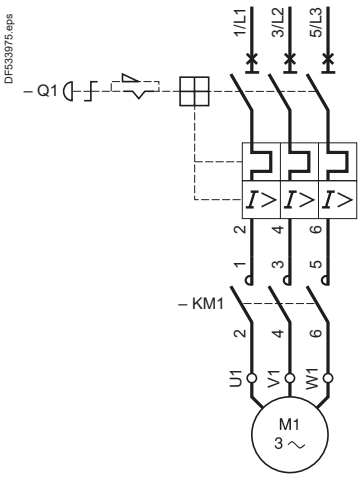



### LG1K06, K09, D12, D18

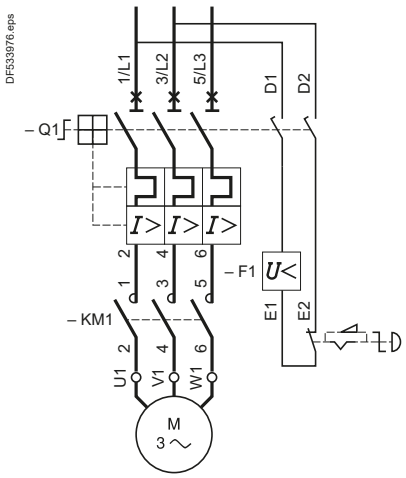
**380/400 V, code Q7 or 400/415 V, code N7**
**220/230 V, code M7**




### LG7K06

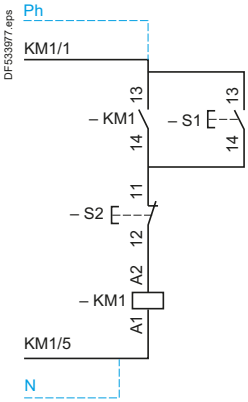



### LG7K09, D12, D18

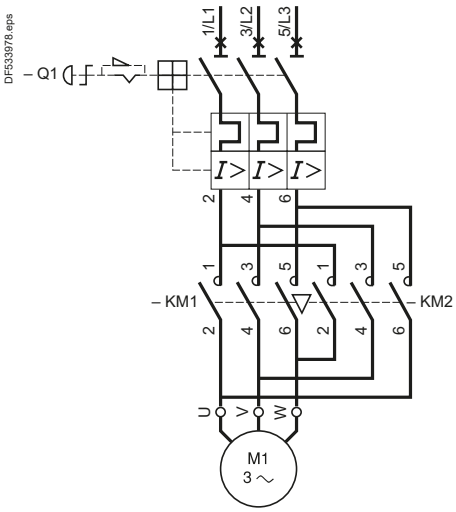



### LG7K06, K09, D12, D18

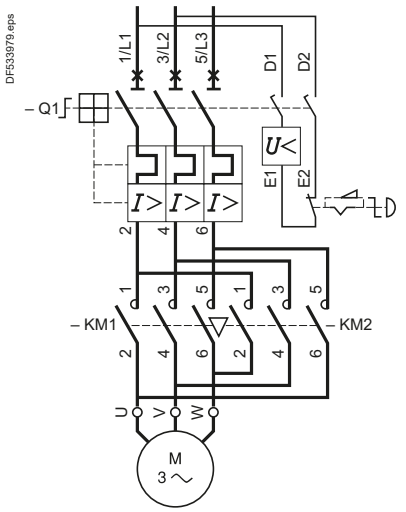
**380/400 V, code Q7 or 400/415 V, code N7**
**220/230 V, code M7**




### LG8K06

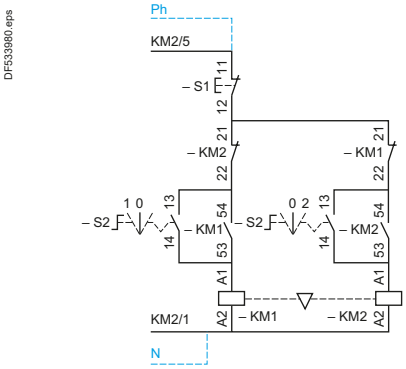



### LG8K09, K12




### LG8K06, K09, K12

**380/400 V, code Q7 or 400/415 V, code N7**
**220/230 V, code M7**

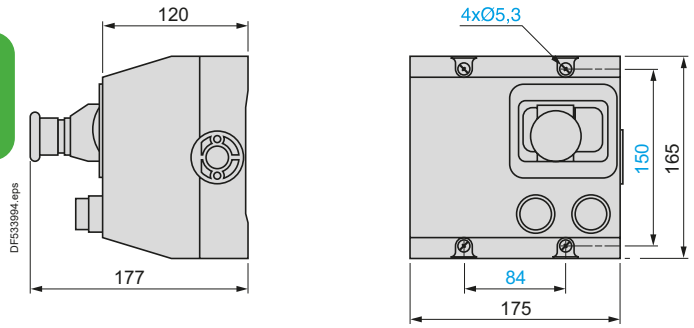



References:
pages A1/18, A1/19 and A1/21

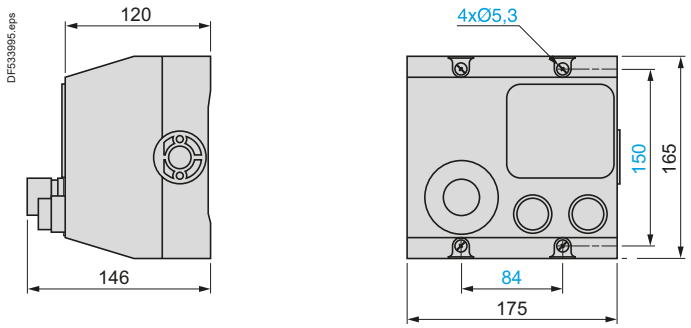
Dimensions:
page A1/52

## Dimensions

### LJ7K06, LJ8K06




### LJ7K09, LJ8K09





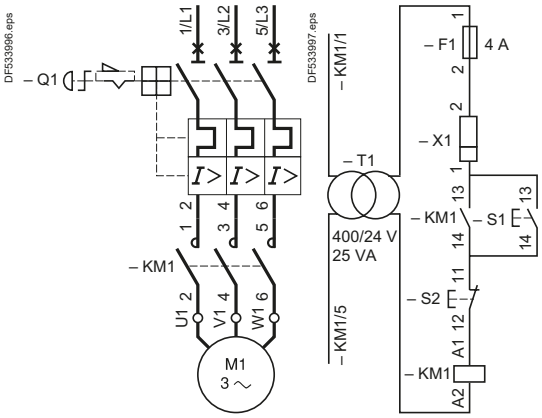

Cut-outs or blanking plugs for cable glands at the top and at the bottom 2 x 13 P and 2 x 16 P.

References:
pages A1/20 and A1/22

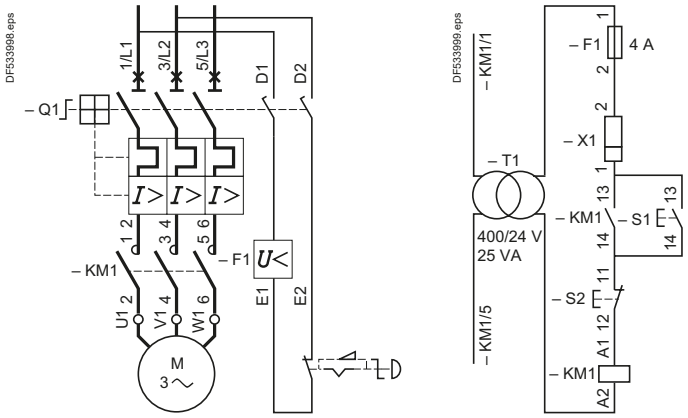
Schemes:
page A1/55

## Schemes

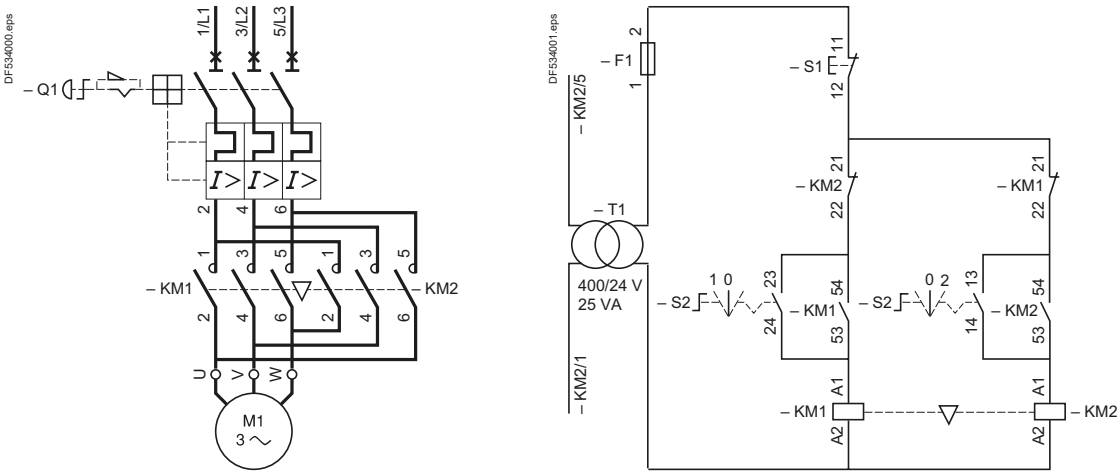
### LJ7K06



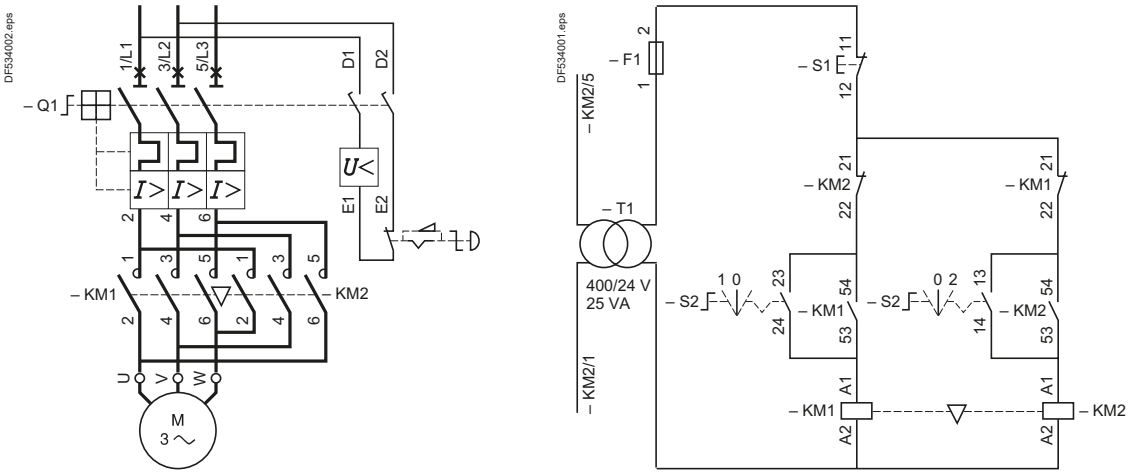

### LJ7K09




### LJ8K06




### LJ8K09




References:
pages A1/20 and A1/22

Dimensions:
page A1/54

# TeSys Control
# Open, pre-cabled motor starters





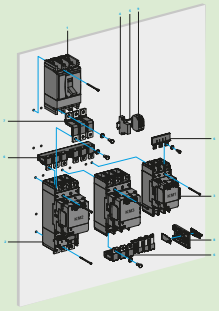
## Direct-on-line and reversing starters


| Composition | Range | | Page |
|---|---|---|---|
| Motor circuit breaker + contactor (direct-on-line)<br>Coordination type 1 | Up to 4 kW | | A2/2 |
| Motor circuit breaker + 2 contactors (reversing)<br>Coordination type 1 | Up to 5.5 kW | | A2/3 |
| Motor circuit breaker + contactor (direct-on-line)<br>Coordination type 1 | Up to 15 kW | | A2/4 |
| Motor circuit breaker + 2 contactors (reversing)<br>Coordination type 1 | Up to 15 kW | | A2/5 |
| Motor circuit breaker + contactor (direct-on-line)<br>Coordination type 2 to be assembled by customer | Up to 30 kW | | A2/6 |
| Motor circuit breaker + 2 contactors (reversing)<br>Coordination type 2 to be assembled by customer | Up to 30 kW | | A2/7 |


## Star-delta starters


| | | | |
|---|---|---|---|
| 3 contactors + 1 time delay aux. block | Up to 132 kW | | A2/8 |


## Star-delta starters for customer assembly


| | | | |
|---|---|---|---|
| Separated components and mounting kits<br>for suggested motor starter components combinations - on plate or mounting rail | Up to 132 kW | | A2/10 |
| Separated components for suggested motor starter combinations - on chassis | Up to 315 kW |  | A2/14 |

# Product references

## D.O.L. starters, non-reversing, from 0.37 to 4 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:
- 1 motor circuit breaker GV2ME,
- 1 3-pole contactor LC1K,
- 1 combination block GV2AF01.



## Characteristics

| Starter type | | GV2 | | ME06K1 | ME07K1 | ME08K1 | ME10K1 | ME14K1 |
|---|---|---|---|---|---|---|---|---|
| **Breaking capacity** (Iq) (1) | Conforming to IEC 60947-4-1 | 400/415 V | **kA** | 50 | 50 | 50 | 50 | 50 |
| | | 440 V | **kA** | 50 | 50 | 50 | 50 | 15 |
| | | 500 V | **kA** | 50 | 50 | 50 | 50 | 10 (4 kW)<br>6 (5.5 kW) |

## References

PB123801.tif

*GV2ME08K1●●*

### D.O.L. starters, non-reversing

| Standard power ratings of 3-phase motors 50/60 Hz in AC-3 | | | Setting range of thermal trips | Fixed magnetic tripping current 13 Irth | For customer assembly | | Pre-assembled | Weight |
|---|---|---|---|---|---|---|---|---|
| 400/ 415 V | 440 V | 500 V | | | Motor circuit-breaker Reference | Contactor Reference to be completed (2) | Basic reference, to be completed by adding the voltage code (3) | |
| kW | kW | kW | A | A | | | | kg |
| 0.37<br>0.55<br>– | 0.37<br>0.55<br>– | 0.37<br>0.55<br>0.75 | 1…1.6 | 22.5 | GV2ME06 | LC1K06 | **GV2ME06K1●●** | 0.460 |
| 0.75<br>– | 0.75<br>1.1 | –<br>1.1 | 1.6…2.5 | 33.5 | GV2ME07 | LC1K06 | **GV2ME07K1●●** | 0.460 |
| 1.1<br>1.5 | –<br>1.5 | 1.5<br>2.2 | 2.5…4 | 51 | GV2ME08 | LC1K06 | **GV2ME08K1●●** | 0.460 |
| 2.2<br>– | 2.2<br>3 | –<br>3 | 4…6.3 | 78 | GV2ME10 | LC1K06 | **GV2ME10K1●●** | 0.460 |
| 3<br>4 | –<br>4 | 4<br>5.5 | 6…10 | 138 | GV2ME14 | LC1K09 | **GV2ME14K1●●** | 0.460 |

### Add-on blocks

| Description | Sold in lots of | Unit reference |
|---|---|---|
| **Combination block between circuit breaker and contactor** | 10 | **GV2AF01** |

*(1) The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/21.*

*(2) Please consult your Regional Sales Office.*

***(3) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.***

| Volts | 24 | 110 | 220/230 | 230 | 230/240 | 380/400 |
|---|---|---|---|---|---|---|
| ∿ **50/60 Hz** | B7 | F7 | M7 | P7 | U7 | Q7 |
| ⎓ (4) | BW3 | – | – | – | – | – |

*(4) Coil: low consumption (1.5 W), wide range (0.7…1.3 Uc) with integral suppression device as standard.*

Dimensions: page A2/18
Schemes: page A2/20

# Product references

## D.O.L. starters, reversing, from 0.37 to 4 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:
- 1 motor circuit breaker GV2ME,
- 1 3-pole reversing contactor LC2K,
- 1 combination block GV2AF01.



## Characteristics

| Starter type | | GV2 | | ME06K2 | ME07K2 | ME08K2 | ME10K2 | ME14K2 |
|---|---|---|---|---|---|---|---|---|
| **Breaking capacity** (Iq) (1) | Conforming to IEC 60947-4-1 | 400/415 V | **kA** | 50 | 50 | 50 | 50 | 50 |
| | | 440 V | **kA** | 50 | 50 | 50 | 50 | 15 |
| | | 500 V | **kA** | 50 | 50 | 50 | 50 | 10 (4 kW)<br>6 (5.5 kW) |

## References

PB123802.tif

*GV2ME06K2●●*

### D.O.L. starters, reversing

| Standard power ratings of 3-phase motors 50/60 Hz in AC-3 | | | Setting range of thermal trips | Fixed magnetic tripping current 13 Irth | For customer assembly | | Pre-assembled | Weight |
|---|---|---|---|---|---|---|---|---|
| 400/415 V | 440 V | 500 V | | | Motor circuit-breaker Reference | Contactor Reference to be completed (2) | Basic reference, to be completed by adding the voltage code (3) | |
| kW | kW | kW | A | A | | | | kg |
| 0.37<br>0.55<br>– | 0.37<br>0.55<br>– | 0.37<br>0.55<br>0.75 | 1…1.6 | 22.5 | GV2ME06 | LC2K06 | **GV2ME06K2●●** | 0.460 |
| 0.75<br>– | 0.75<br>1.1 | –<br>1.1 | 1.6…2.5 | 33.5 | GV2ME07 | LC2K06 | **GV2ME07K2●●** | 0.460 |
| 1.1<br>1.5 | –<br>1.5 | 1.5<br>2.2 | 2.5…4 | 51 | GV2ME08 | LC2K06 | **GV2ME08K2●●** | 0.460 |
| 2.2<br>– | 2.2<br>3 | –<br>3 | 4…6.3 | 78 | GV2ME10 | LC2K06 | **GV2ME10K2●●** | 0.460 |
| 3<br>4 | –<br>4 | 4<br>5.5 | 6…10 | 138 | GV2ME14 | LC2K09 | **GV2ME14K2●●** | 0.460 |

### Add-on blocks

| Description | Sold in lots of | Unit reference |
|---|---|---|
| **Combination block between circuit breaker and contactor** | 10 | **GV2AF01** |

*(1) The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/21.*

*(2) Please consult your Regional Sales Office.*

***(3) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.***

| Volts | 24 | 110 | 220/230 | 230 | 230/240 | 380/400 |
|---|---|---|---|---|---|---|
| ∿ **50/60 Hz** | B7 | F7 | M7 | P7 | U7 | Q7 |
| ⎓ (4) | BW3 | – | – | – | – | – |

*(4) Coil: low consumption (1.5 W), wide range (0.7…1.3 Uc) with integral suppression device as standard.*

***Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).*

Dimensions:
page A2/18

Schemes:
page A2/20

## D.O.L. starters, non-reversing, from 0.06 to 15 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:
- 1 motor circuit breaker GV2ME,
- 1 3-pole contactor LC1D,
- 1 combination block GV2AF3.

## Characteristics

| Starter type | | GV2 | | DM102 to DM110 | DM114 | DM116 | DM132 |
|---|---|---|---|---|---|---|---|
| **Breaking capacity** (Iq) (1) | Conforming to IEC 60947-4-1 | 400/415 V | **kA** | 50 | 50 | 15 | 10 |
| | | 440 V | **kA** | 50 | 15 | 8 | 6 |
| | | 500 V | **kA** | 50 | 6 | 6 | 4 |

## References

PB121676.eps

*GV2DM102●●*

### D.O.L. starters, non-reversing

| Standard power ratings of 3-phase motors 50/60 Hz in AC-3 | | | Setting range of thermal trips | Fixed magnetic tripping current 13 Irth | For customer assembly | | Pre-assembled | Weight |
|---|---|---|---|---|---|---|---|---|
| 400/415 V | 440 V | 500 V | | | Motor circuit-breaker Reference | Contactor Reference to be completed (2) | Basic reference, to be completed by adding the voltage code (2) (3) | |
| kW | kW | kW | A | A | | | | kg |
| 0.06 | 0.06 | – | 0.16…0.25 | 2.4 | GV2ME02 | LC1D09●● | **GV2DM102●●** (4) | 0.596 |
| 0.75 | 0.75 | – | 1.6…2.5 | 33.5 | GV2ME07 | LC1D09●● | **GV2DM107●●** (4) | 0.596 |
| – | 1.1 | 1.1 | | | | | | |
| 1.1 | – | 1.5 | 2.5…4 | 51 | GV2ME08 | LC1D09●● | **GV2DM108●●** (4) | 0.596 |
| 1.5 | 1.5 | 2.2 | | | | | | |
| 2.2 | 2.2 | – | 4…6.3 | 78 | GV2ME10 | LC1D09●● | **GV2DM110●●** (4) | 0.596 |
| – | 3 | 3 | | | | | | |
| 3 | – | 4 | 6…10 | 138 | GV2ME14 | LC1D09●● | **GV2DM114●●** (4) | 0.596 |
| 4 | 4 | 5.5 | | | | | | |
| 5.5 | 5.5 | 7.5 | 9…14 | 170 | GV2ME16 | LC1D12●● | **GV2DM116●●** | 0.601 |
| 15 | 15 | 18.5 | 24…32 | 416 | GV2ME32 | LC1D32●● | **GV2DM132●●** | 0.651 |

### Add-on blocks

| Description | Mounting of GV2 | Sold in lots of | Unit reference |
|---|---|---|---|
| Combination block between circuit breaker and contactor | ⊔ rail | 10 | **GV2AF3** |
| | Mounting plate LAD311 | 10 | **GV2AF4** |

*(1) The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/21.*

*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 24 | 220 | 230 |
|---|---|---|---|
| ∿ 50/60 Hz | B7 | M7 | P7 |
| ⎓ (5) | BD | – | – |

***(3) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.***

*(4) Type 2 coordination also possible, see page A5/11.*

*(5) Only available for **GV2DM**. Coil with integral suppression device as standard.*

***Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).*

Dimensions: page A2/18
Schemes: page A2/20

## D.O.L. starters, reversing, from 0.12 to 15 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:
- 1 motor circuit breaker GV2 ME,
- 1 3-pole reversing contactor LC2 D,
- 1 combination block GV2AF3.

## Characteristics

| Starter type | | GV2 | | DM202 to DM210 | DM214 | DM216 | DM220 | DM221 | DM222 | DM232 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Breaking capacity** (Iq) (1) | Conforming to IEC 60947-4-1 | 400/415 V | **kA** | 50 | 50 | 15 | 15 | 15 | 15 | 10 |
| | | 440 V | **kA** | 50 | 15 | 8 | 8 | 6 | 6 | 6 |
| | | 500 V | **kA** | 50 | 10 | 6 | 6 | 4 | 4 | 4 |

## References

PB121683.eps

*GV2DM202●●*

### D.O.L. starters, reversing (2)

| Standard power ratings of 3-phase motors 50/60 Hz in AC-3 | | | Setting range of thermal trips | Fixed magnetic tripping current 13 Irth | For customer assembly | | Pre-assembled | Weight |
|---|---|---|---|---|---|---|---|---|
| 400/415V | 440 V | 500 V | | | Motor circuit-breaker Reference | Contactor Reference to be completed (3) | Basic reference, to be completed by adding the voltage code (4) (5) | |
| kW | kW | kW | A | A | | | | kg |
| 0.12<br>0.18 | –<br>0.18 | –<br>– | 0.40…0.63 | 8 | GV2ME04 | LC2D09●● | **GV2DM204●●** | 0.963 |
| 0.25<br>0.37 | 0.25<br>0.37 | –<br>– | 0.63…1 | 13 | GV2ME05 | LC2D09●● | **GV2DM205●●** | 0.963 |
| –<br>0.55<br>– | –<br>0.55<br>– | 0.37<br>0.55<br>0.75 | 1…1.6 | 22.5 | GV2ME06 | LC2D09●● | **GV2DM206●●** | 0.963 |
| 1.1<br>1.5 | –<br>1.5 | 1.5<br>2.2 | 2.5…4 | 51 | GV2ME08 | LC2D09●● | **GV2DM208●●** | 0.963 |
| 9 | 11 | 11 | 17…23 | 327 | GV2ME21 | LC2D25●● | **GV2DM221●●** | 1.063 |
| 15 | 15 | 18.5 | 24…32 | 416 | GV2ME32 | LC2D32●● | **GV2DM232●●** | 1.073 |

### Add-on blocks

| Description | Mounting of GV2 | Sold in lots of | Unit reference |
|---|---|---|---|
| **Combination block between circuit breaker and contactor** | ⊔ rail | 10 | **GV2AF3** |
| | Mounting plate LAD311 | 10 | **GV2AF4** |

*(1) The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/21.*
*(2) Type 2 coordination also possible, see page B6/21.*
*(3) See page B8/23.*
*(4) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 24 | 220 | 230 |
|---|---|---|---|
| ∼ 50/60 Hz | B7 | M7 | P7 |
| ⎓ (6) | BD | – | – |

***(5) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.***
*(6) Coil with integral suppression device as standard.*

***Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).*

Dimensions:
page A2/18

Schemes:
page A2/20

## D.O.L. starters, non-reversing, from 0.06 to 30 kW at 400/415 V, type 2 coordination

To be assembled by customer, using:
- 1 motor circuit breaker GV2P,
- 1 3-pole contactor LC1D,
- 1 combination block GV2AF3.

## Characteristics

| Starter type | | GV2 | | P02 to P110 | P14 | P16 | P20 | P21 | P22 | P32 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Breaking capacity** (Iq) (1) | Conforming to IEC 60947-4-1 | 400/415 V | **kA** | 130 | 130 | 130 | 50 | 50 | 50 | 50 |
| | | 440 V | **kA** | 130 | 130 | 50 | 20 | 20 | 20 | 20 |
| | | 500 V | **kA** | 130 | 50 | 42 | 10 | 10 | 10 | 10 |

## References

PB121702.tif

*GV2P●● + LC1D09 + GV2AF3*

PB121675.eps

PB121684.eps

*GV3P651 + LC1D65A●●*

### D.O.L. starters, non-reversing

| Standard power ratings of 3-phase motors 50/60 Hz in AC-3 | | | Setting range of thermal trips | Fixed magnetic tripping current 13 Irth | For customer assembly | | Weight |
|---|---|---|---|---|---|---|---|
| 400/ 415 V | 440 V | 500 V | | | Motor circuit-breaker Reference | Contactor Reference to be completed (2) | |
| kW | kW | kW | A | A | | | kg |
| 0.06 | 0.06 | – | 0.16…0.25 | 2.4 | GV2P02 | LC1D09●● | 0.686 |
| – 0.09 | 0.09 0.12 | – | 0.25…0.40 | 5 | GV2P03 | LC1D09●● | 0.686 |
| 0.12 0.18 | – 0.18 | – – | 0.40…0.63 | 8 | GV2P04 | LC1D09●● | 0.686 |
| 0.25 0.37 | 0.25 0.37 | – – | 0.63…1 | 13 | GV2P05 | LC1D09●● | 0.686 |
| – 0.55 – | – 0.55 – | 0.37 0.55 0.75 | 1…1.6 | 22.5 | GV2P06 | LC1D09●● | 0.686 |
| 0.75 – | 0.75 1.1 | – 1.1 | 1.6…2.5 | 33.5 | GV2P07 | LC1D09●● | 0.686 |
| 1.1 1.5 | – 1.5 | 1.5 2.2 | 2.5…4 | 51 | GV2P08 | LC1D09●● | 0.696 |
| 2.2 – | 2.2 3 | – 3 | 4…6.3 | 78 | GV2P10 | LC1D09●● | 0.736 |
| 3 4 | – 4 | 4 5.5 | 6…10 | 138 | GV2P14 | LC1D09●● | 0.736 |
| 5.5 – | 5.5 7.5 | 7.5 9 | 9…14 | 170 | GV2P16 | LC1D25●● | 0.741 |
| 7.5 | 9 | – | 13…18 | 223 | GV2P20 | LC1D25●● | 0.736 |
| 9 | 11 | 11 | 17…23 | 327 | GV2P21 | LC1D25●● | 0.741 |
| 11 | – | 15 | 20…25 | 327 | GV2P22 | LC1D25●● | 0.741 |
| 15 | 15 | 18.5 | 24…32 | 416 | GV2P32 | LC1D32●● | 0.741 |
| 18.5 | – | – | 30…40 | 560 | GV3P401 (5) | LC1D50A●● | 1.725 |
| – | 18.5 | 22 | 30…40 | 560 | GV3P401 (5) | LC1D65A●● | 1.730 |
| 22 | – | – | 37…50 | 700 | GV3P501 (5) | LC1D50A●● | 1.725 |
| – | 22 | 30 | 37…50 | 700 | GV3P501 (5) | LC1D65A●● | 1.730 |
| 30 | 37 | – | 48…65 | 910 | GV3P651 (5) | LC1D65A●● | 1.730 |

### Add-on blocks

| Description | Mounting of GV2 | Sold in lots of | Unit reference |
|---|---|---|---|
| Combination block between circuit breaker and contactor | ⊔ rail | 10 | **GV2AF3** |

*(1) The breaking performance of circuit breakers **GV2P** can be increased by adding a current limiter **GV1L3**, see page B6/11.*
*(2) See page B8/23.*
*(3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 24 | 220 | 230 |
|---|---|---|---|
| ∿ **50/60 Hz** | B7 | M7 | P7 |
| ⎓ (6) | BD | – | – |

***(4) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.***
*(5) Circuit breaker supplied without downstream **Ever**Link® power terminal block, which is required for vertical mounting. For side by side mounting, use a **GV3P** circuit breaker with terminal blocks and the **GV3S** set of S-shape busbars (see page B8/43).*
*(6) Coil with integral suppression device as standard.*

***Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).*

Dimensions: pages A2/18 and A2/19
Schemes: page A2/21

# Product references

## D.O.L. starters, reversing, from 0.06 to 30 kW at 400/415 V, type 2 coordination

To be assembled by customer, using:
- 1 motor circuit breaker GV2P,
- 1 3-pole reversing contactor LC2D,
- 1 combination block GV2AF3.

## Characteristics

| Starter type | | GV2 | | P02 to P10 | P14 | P16 | P20 | P21 | P22 | P32 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Breaking capacity** (Iq) (1) | Conforming to IEC 60947-4-1 | 400/415 V | kA | 130 | 130 | 130 | 50 | 50 | 50 | 50 |
| | | 440 V | kA | 130 | 130 | 50 | 20 | 20 | 20 | 20 |
| | | 500 V | kA | 130 | 50 | 42 | 10 | 10 | 10 | 10 |

## References

### D.O.L. starters, reversing

PB121701.eps

*GV2P●● + LC1D09 + GV2AF3*

PB121675.eps

PB121885.eps

*GV3P651 + LC2D65A●●*

| Standard power ratings of 3-phase motors 50/60 Hz in AC-3 400/ 415 V | 440 V | 500 V | Setting range of thermal trips | Fixed magnetic tripping current 13 Irth | For customer assembly: Motor circuit-breaker Reference | Contactor Reference to be completed (2) | Weight |
|---|---|---|---|---|---|---|---|
| kW | kW | kW | A | A | | | kg |
| 0.06 | 0.06 | – | 0.16…0.25 | 2.4 | GV2P02 | LC2D09●● | 1.053 |
| – 0.09 | 0.09 0.12 | – | 0.25…0.40 | 5 | GV2P03 | LC2D09●● | 1.053 |
| 0.12 0.18 | – 0.18 | – – | 0.40…0.63 | 8 | GV2P04 | LC2D09●● | 1.053 |
| 0.25 0.37 | 0.25 0.37 | – – | 0.63…1 | 13 | GV2P05 | LC2D09●● | 1.053 |
| – 0.55 – | – 0.55 – | 0.37 0.55 0.75 | 1…1.6 | 22.5 | GV2P06 | LC2D09●● | 1.053 |
| 0.75 – | 0.75 1.1 | – 1.1 | 1.6…2.5 | 33.5 | GV2P07 | LC2D09●● | 1.053 |
| 1.1 1.5 | – 1.5 | 1.5 2.2 | 2.5…4 | 51 | GV2P08 | LC2D09●● | 1.073 |
| 2.2 – | 2.2 3 | – 3 | 4…6.3 | 78 | GV2P10 | LC2D09●● | 1.153 |
| 3 4 | – 4 | 4 5.5 | 6…10 | 138 | GV2P14 | LC2D09●● | 1.153 |
| 5.5 – | 5.5 7.5 | 7.5 9 | 9…14 | 170 | GV2P16 | LC2D25●● | 1.163 |
| 7.5 | 9 | – | 13…18 | 223 | GV2P20 | LC2D25●● | 1.153 |
| 9 | 11 | 11 | 17…23 | 327 | GV2P21 | LC2D25●● | 1.163 |
| 11 | – | 15 | 20…25 | 327 | GV2P22 | LC2D25●● | 1.163 |
| 15 | 15 | 18.5 | 24…32 | 416 | GV2P32 | LC2D32●● | 1.163 |
| 18.5 | – | – | 30…40 | 560 | GV3P401 (5) | LC2D50A●● | 2.750 |
| – | 18.5 | 22 | 30…40 | 560 | GV3P401 (5) | LC2D65A●● | 2.760 |
| 22 | – | – | 37…50 | 700 | GV3P501 (5) | LC2D50A●● | 2.750 |
| – | 22 | 30 | 37…50 | 700 | GV3P501 (5) | LC2D65A●● | 2.760 |
| 30 | 37 | – | 48…65 | 910 | GV3P651 (5) | LC2D65A●● | 2.760 |

### Add-on blocks

| Description | Mounting of GV2 | Sold in lots of | Unit reference |
|---|---|---|---|
| Combination block between circuit breaker and contactor | ⊔ rail | 10 | GV2AF3 |

*(1) The breaking performance of circuit breakers **GV2P** can be increased by adding a current limiter **GV1L3**, see page B6/11.*

*(2) See page B8/23.*

*(3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 24 | 220 | 230 |
|---|---|---|---|
| ∼ 50/60 Hz | B7 | M7 | P7 |
| ⎓ (6) | BD | – | – |

***(4) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.***

*(5) Circuit breaker supplied without downstream **Ever**Link® power terminal block, which is required for vertical mounting. For side by side mounting, use a **GV3P** circuit breaker with terminal blocks and the **GV3S** set of S-shape busbars (see page B8/43)*

*(6) Coil with integral suppression device as standard.*

***Note:** The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).*

Dimensions: pages A2/18 and A2/19
Schemes: page A2/21

PB123808.eps

*LC3D32A●●*

## Plate mounted starters without isolating device

**Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.**

| Standard power ratings of squirrel cage motors Mains voltage - delta connection | | | | Auxiliary contacts available on each contactor | | | | | | Star delta mechanical interlock | Basic reference, to be completed by adding the voltage code (2) (3) | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | line | | delta | | star | | | | |
| 220/ 230 V | 380/ 400 V | 415 V | 440 V | KM2 | | KM3 | | KM1 | | | | |
| kW | kW | kW | kW | | | | | | | | | kg |
| 4 | 7.5 | 7.5 | 7.5 | – | – | – | – (4) | – | 1 | With | **LC3D09A●●** | 1.530 |
| 5.5 | 11 | 11 | 11 | – | – | – | – (4) | – | 1 | With | **LC3D12A●●** | 1.530 |
| 11 | 18.5 | 22 | 22 | – | – | – | – (4) | – | 1 | With | **LC3D18A●●** | 1.730 |
| 15 | 25 | 30 | 30 | – | – | – | – (4) | – | 1 | With | **LC3D32A●●** | 2.030 |
| 37 | 75 | 75 | 75 | – | 1 | 1 | – (4) | – | – (4) | Without | **LC3D80●●** | 5.200 |
| | | | | | | | | | | With | **LC3D80●●A64** | 5.400 |
| 63 | 110 | 110 | 110 | – | 1 | 1 | – (4) | – | – (4) | Without | **LC3D115●●** (5) | 11.800 |
| | | | | | | | | | | With | **LC3D115●●A64** (5) | 12.100 |
| 75 | 132 | 132 | 147 | – | 1 | 1 | – (4) | – | 1 (4) | Without | **LC3D150●●** (5) | 12.100 |
| | | | | | | | | | | With | **LC3D150●●A64** (5) | 12.100 |

## Rail mounted starters (35 mm ⎓ rail) without isolating device

| Standard power ratings of squirrel cage motors Mains voltage - delta connection | | | | Auxiliary contacts available on each contactor | | | | | | Star delta mechanical interlock | Basic reference, to be completed by adding the voltage code (2) (3) | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | line | | delta | | star | | | | |
| 220/ 230 V | 380/ 400 V | 415 V | 440 V | KM2 | | KM3 | | KM1 | | | | |
| kW | kW | kW | kW | | | | | | | | | kg |
| **Maximum operating rate: 12 starts/hour. Maximum starting time: 30 seconds.** | | | | | | | | | | | | |
| 4 | 7.5 | 7.5 | 7.5 | – | – | – | – | – | 1 | With | **LC3K09●●** | 0.740 |
| **Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds** | | | | | | | | | | | | |
| 4 | 7.5 | 7.5 | 7.5 | – | – | – | – (4) | – | 1 | With | **LC3D090A●●** | 1.530 |
| 5.5 | 11 | 11 | 11 | – | – | – | – (4) | – | 1 | With | **LC3D120A●●** | 1.530 |
| 11 | 18.5 | 22 | 22 | – | – | – | – (4) | – | 1 | With | **LC3D180A●●** | 1.730 |
| 15 | 25 | 30 | 30 | – | – | – | – (4) | – | 1 | With | **LC3D320A●●** | 2.030 |

*(1) Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current (see pages B11/4 and B11/5).*

*(2) Standard control circuit voltages:*

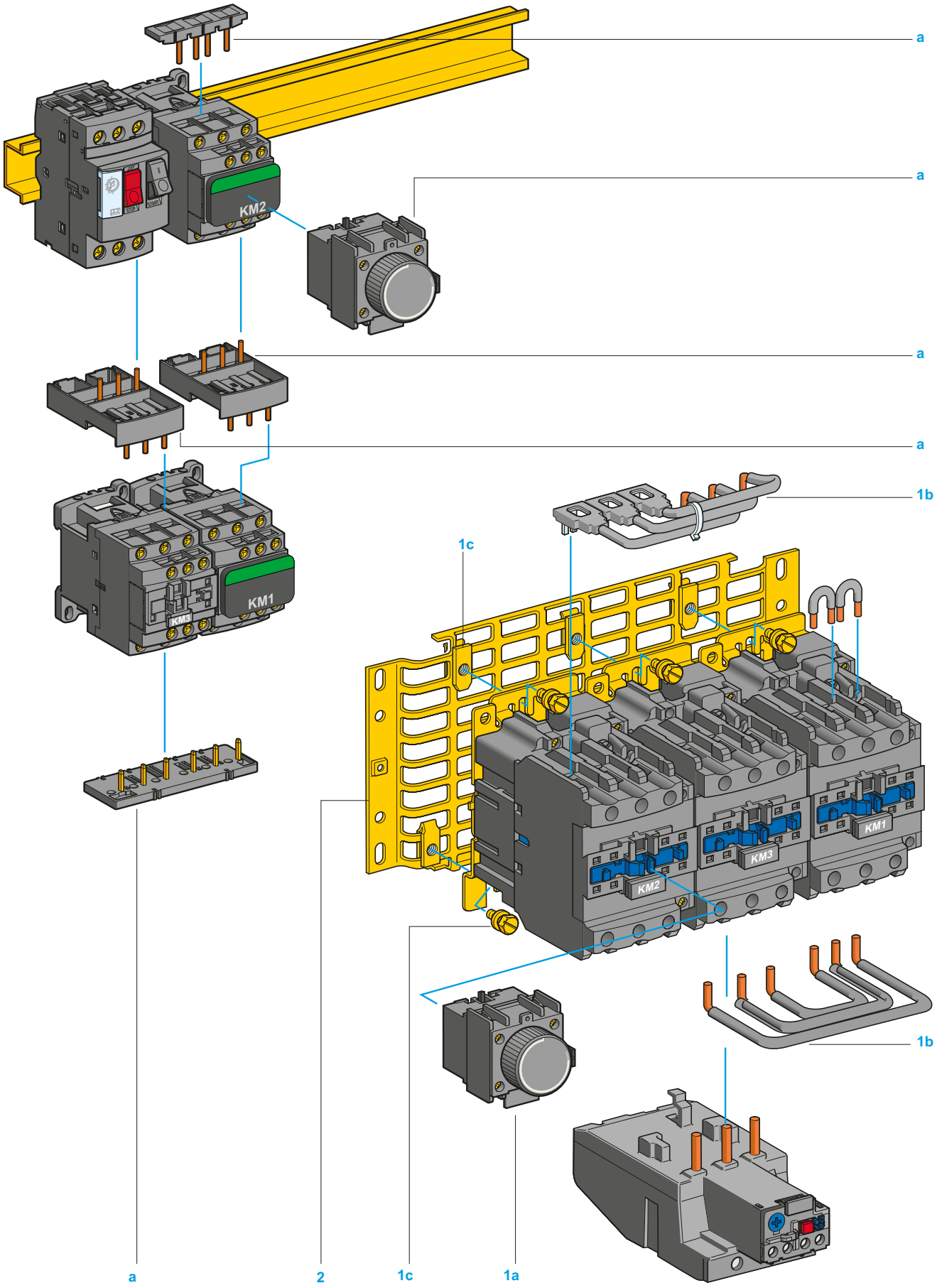
| Volts ∿ 50/60 Hz | 24 | 36 | 42 | 48 | 110 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Star-delta starters LC3K09** | | | | | | | | | | | | |
| Code | B7 | C7 | D7 | E7 | F7 | M7 | P7 | U7 | – | – | – | – |
| **Star-delta starters LC3D09A...D150, LC3D090A...D320A** | | | | | | | | | | | | |
| Code | B7 | – | D7 | E7 | F7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |

For other voltages, please consult your Regional Sales Office.

***(3) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.***

*(4) One auxiliary contact block type **LADN** can also be fitted, see page B8/37.*

*(5) These starters consist of contactors **LC1D115** or **D150** without connectors.*


a
a
a
a
1b
1c
KM2
KM1
KM3
KM1
KM3
KM2
1b
a
2
1c
1a

## Star-delta starters without mechanical interlock, for customer assembly on plate or on mounting rail (2)

### Starters for direct combination with a circuit breaker

**Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds**

| Standard power ratings of squirrel cage motors (3) Mains voltage-delta connection | | Thermal-magnetic motor circuit breaker *References in italics are available in CEE zone only* | Contactors (basic references, to be completed by adding the voltage code) (4) | | |
|---|---|---|---|---|---|
| 400/ 415 V | 440 V | | line | delta | star |
| kW | kW | | KM2 | KM3 | KM1 |
| 7.5 | 7.5 | **GV2ME20** or *GV2ME20AP* | **LC1D09●●** | **LC1D09●●** | **LC1D09●●** |
| – | 9 | **GV2ME20** or *GV2ME20AP* | **LC1D12●●** | **LC1D12●●** | **LC1D09●●** |
| 9 | 11 | **GV2ME21** or *GV2ME21AP* | **LC1D12●●** | **LC1D12●●** | **LC1D09●●** |
| 11 | – | **GV2ME22** or *GV2ME22AP* | **LC1D12●●** | **LC1D12●●** | **LC1D09●●** |
| 15 | 15 | **GV2ME32** or *GV2ME32AP* | **LC1D18●●** | **LC1D18●●** | **LC1D09●●** |

#### Separate component

| Description | Illustration item no. | Reference |
|---|---|---|
| **Mounting kit** comprising: power circuit connections and 1 time delay contact block LADS2 | a | **LAD912GV** |

### Starters for mounting separately from upstream protection

**Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.**

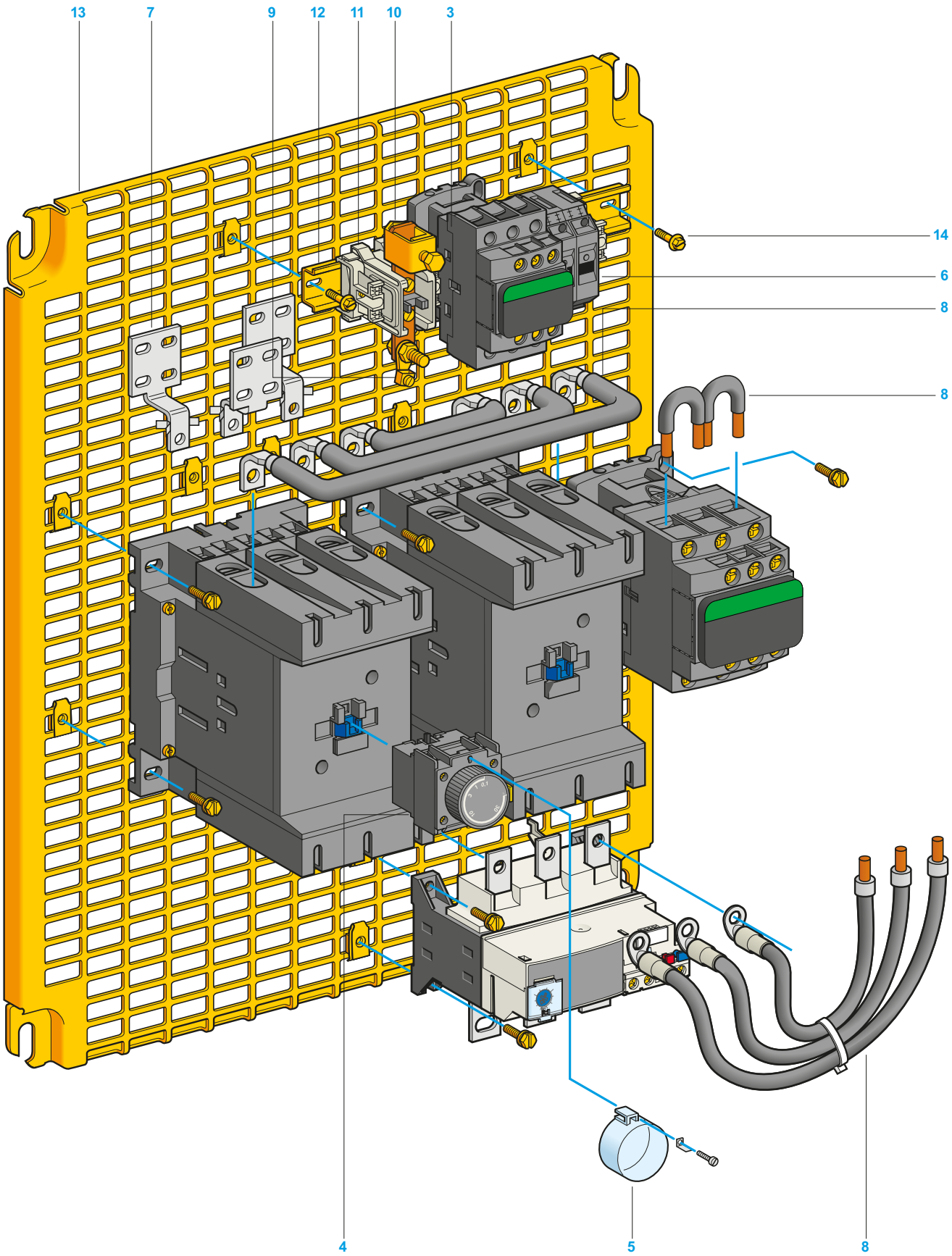
| Standard power ratings of squirrel cage motors (3) Mains voltage - delta connection | | | | Contactors (basic references, to be completed by adding the voltage code) (4) | | | Separate components (see below) |
|---|---|---|---|---|---|---|---|
| 220/ 230 V | 380/ 400 V | 415 V | 440 V | line | delta | star | |
| kW | kW | kW | kW | KM2 | KM3 | KM1 | Component types |
| 4 | 7.5 | 7.5 | 7.5 | **LC1D09●●** | **LC1D09●●** | **LC1D09●●** | D09 |
| 5.5 | 11 | 11 | 11 | **LC1D18●●** (6) | **LC1D12●●** | **LC1D09●●** | D12 |
| 11 | 18.5 | 22 | 22 | **LC1D25●●** (7) | **LC1D25●●** (7) | **LC1D09●●** | D18 |
| 15 | 25 | 30 | 30 | **LC1D32●●** | **LC1D32●●** | **LC1D18●●** | D32 |
| 18.5 | 37 | 37 | 37 | **LC1D40A●●** | **LC1D40A●●** | **LC1D40A●●** | D40 |
| 30 | 55 | 59 | 59 | **LC1D50A●●** | **LC1D50A●●** | **LC1D40A●●** | D50 |
| 37 | 75 | 75 | 75 | **LC1D80●●** | **LC1D80●●** | **LC1D50A●●** | D80 |
| 63 | 110 | 110 | 110 | **LC1D115●●** | **LC1D115●●** | **LC1D80●●** | D115 (5) |
| 75 | 132 | 132 | 147 | **LC1D150●●** | **LC1D150●●** | **LC1D115●●** | D150 (5) |

#### Separate components

| Description | Illustration item no. | For components type (5) | Reference | Without timer LADS2 |
|---|---|---|---|---|
| Mounting kit comprising:<br>- 1 time delay contact block LADS2 (D09…D80) (3),<br>- power circuit connections (D09…D80),<br>- screws and clamps for fixing contactors to the plate (D40…D80). | 1 a | LC1D09 to D38 (8) | **LAD91217** | **LAD91218** |
| | | LC1D09 to D38 (9) | **LAD93217** | **LAD93218** |
| | 1 b | D40 and D50 | **LA9D5017** | – |
| | 1 c | D80 | **LA9D8017** | – |
| Equipment mounting plates | 2 | LC1D09 to D38 | **LA9D12974** | |
| | | D80 | **LA9D80973** | |

*(1) Protection must be provided by the addition of a thermal overload relay, to be ordered separately.*
*Select appropriate overload relay for setting at 0.58 of the full load rated motor current, see pages B11/4 and B11/5.*
*(2) For mounting, assembly and cabling: please refer to installation instructions supplied with the equipment.*
*(3) See comments on page A2/22.*
*(4) See page B8/23.*
*(5) For D115 and D150 components, see illustration and separate parts on pages A2/12 and A2/13.*
*(6) A D12 component is adequate for the application, but use of a D18 is recommended.*
*(connection capacity, correct use of power connection kit and connections).*
*(7) A D18 component is adequate for the application, but use of a D25 is recommended.*
*(connection capacity, correct use of power connection kit and connections).*
*(8) For assembly of 3 contactors of the same physical size (depth).*
*(9) For assembly of 3 contactors with star contactor physically smaller (depth).*

Introduction: page A2/22
Dimensions: pages A2/23 and A2/24
Schemes: page A2/24


13
7
9
12
11
10
3
14
6
8
8
4
5
8

## Product references

### Starters for mounting separately from upstream protection

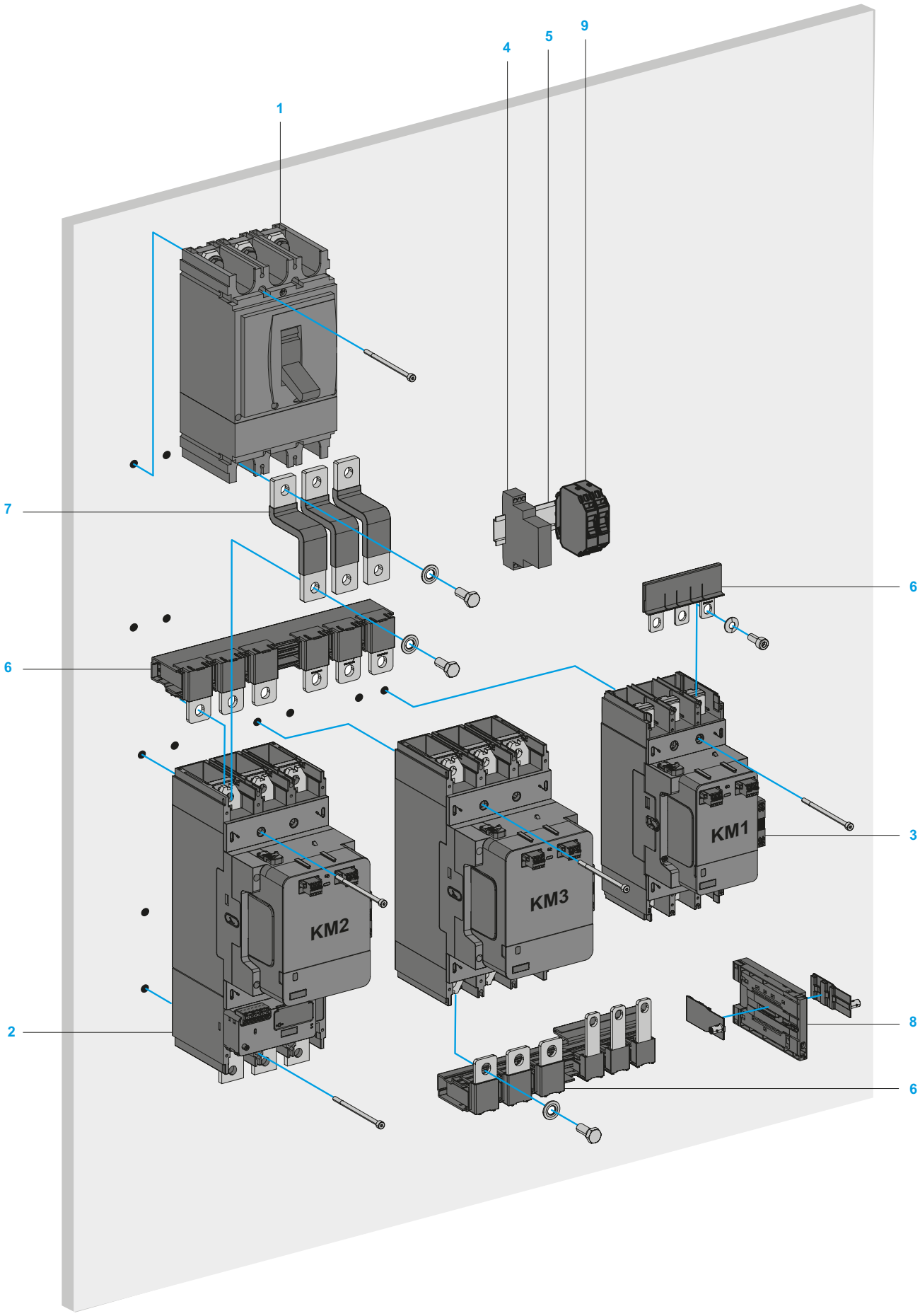
**Separate components (continued)**

| Description | Illustration item no. | For use on | No. | Sold in lots of | Unit reference | Weight kg |
|---|---|---|---|---|---|---|
| Instantaneous auxiliary contact blocks 1 N/O | 1 | D115 (star) | 1 | 1 | **LADN10** | 0.020 |
| Control relay | 3 | D115, D150 | 1 | 1 | **CAD32** | 0.320 |
| Time delay auxiliary contact blocks | 4 | D115, D150 | 1 | 1 | **LADT2** | 0.060 |
| Lead sealing kit for time delay auxiliary contact blocks | 5 | D115, D150 | 1 | 1 | **LA9D901** | 0.005 |
| Thermal magnetic circuit breaker for control circuit (200…415 V) | 6 | D115, D150 | 2 | 6 | **GB2CB05** | 0.060 |
| Set of 3 connectors for wider terminations (optional) | 7 | D115, D150 | 1 | 1 | **LA9FG980** | 0.200 |
| Set of power connections with fixing accessories | 8 | D115 | 1 | 1 | **LA9D11517** | 0.800 |
| | | D150 | 1 | 1 | **LA9D15017** | 1.050 |
| Spare volt free terminals | 9 | D115, D150 | 1 | 10 | **DZ3HA3** | 0.007 |
| | | | 2 | 10 | **DZ3GA3** | 0.006 |
| Lug-connector terminal block | 10 | D115, D150 | 1 | 10 | **AB1BC9535** | 0.236 |
| End stop | 11 | D115, D150 | 3 | 100 | **AB1AB8M35** | 0.005 |
| Mounting rail ⊔ 35 mm | 12 | D115, D150 | 1 | 10 | **NSYDPR25** | 0.210 |
| Pre-slotted mounting plate | 13 | D115, D150 | 1 | 1 | **AM3PA65** | 1.950 |
| Screw with captive washer | 14 | D115, D150 | 12 | 100 | **AF1VA618** | 0.006 |
| | | | 2 | 100 | **AF1VA410** | 0.002 |

*(1) Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current, see pages B11/4 and B11/5.*

Open motor starters

Introduction: page A2/22
Dimensions: pages A2/23 and A2/24
Schemes: page A2/24


1
4
5
9
7
6
6
KM1
3
KM2
KM3
2
8
6

## Star-delta starters with mechanical interlock for customer assembly on back-panel

Maximum operating rate: 30 starts/hour.
Maximum starting time: 30 seconds.
For selection of TeSys Giga Contactors (2), overload relay (3) and circuit breaker (3) at different operating voltages, please refer to coordination tables pages page A5/29, page A5/38 and page A5/39.
For Star-delta 'Power' and 'Control' circuit diagrams, please refer to page A2/26.

### Separate components (4)

| Description | Illustration item no. | For use on | No. | Sold in lots of | Unit reference |
|---|---|---|---|---|---|
| Circuit breakers | 1 | G115...G500 | 1 | 1 | **GV5P220…GV6P500** |
| | | | 1 | 1 | **NSX250...NSX630** |
| | | | 1 | 1 | **NS800…NS1000** |
| Electronic thermal overload relays | 2 | G115...G500 | 1 | 1 | **LR9G115… LR9G500** (4) |
| Auxiliary contact blocks 1NO + 1NC | 3 | G115...G500 | 3 | - | **LAG8N113P** (Supplied with the contactor) |
| Timer | 4 | G115...G500 | 1 | 1 | **RE17RMMWS** |
| Mounting Rail | 5 | G115...G500 | 1 | 10 | **NSYSDR200** |
| Sets of power connections | 6 | G115...G500 (LDY) (5) | 1 | 1 | **LA9GQQ330** |
| | | G115...G500 (LDY) (5) | 1 | 1 | **LA9GSS330** |
| | | G115...G500 (LDY) (5) | 1 | 1 | **LA9GTT330** |
| | | LD: G265…G500 (5)<br>Y: G115…G225 (5) | 1 | 1 | **LA9GSQ331** |
| Flexible terminal extensions for MCCB | 7 | G115…G225 | 1 | 1 | **LA9G3111** |
| | | G265…G500 | 1 | 1 | **LA9G3112** |
| Mechanical interlock kit | 8 | G115…G500 | 1 | 1 | **LA9G970** |
| | | G265…G500 # G115…G225 | 1 | 1 | **LA9G971** |
| Thermal magnetic circuit breaker for 5 A control circuit | 9 | G115…G500 | 2 | 6 | **GB2CB10** |

*(1) Protection shall be provided by a thermal-magnetic circuit breaker or by a magnetic circuit breaker and an overload relay combination.*
*(2) The contactors are supplied with wide band AC/DC coils with 1 NO + 1 NC auxiliary contact block. Please refer to pages B9/10 to B9/13 for the complete references of the contactors.*
*(3) The protection device settings should be adjusted according to motor characteristics and conditions of use.*
*(4) Please refer to pages B11/11 to B11/14 for details on **LR9G** electronic overload relays.*
*(5) L- Line contactor/ D- Delta contactor/ Y- Star contactor.*

# Product references



| | | |
|---|---|---|
| AB1AB8M35 | GV2ME07K2BW3 | LC3D115P7 |
| AB1BC9535 | GV2ME08K1BW3 | LC3D115P7A64 |
| ACMGV973 | GV2ME08K1P7 | LC3D120AP7 |
| AE3FX122 | GV2ME10K1BW3 | LC3D12AB7 |
| AF1CD061 | GV2ME14K1B7 | LC3D12AP7 |
| AF1CD081 | GV2MP01 | LC3D150M7A64 |
| AF1VA410 | GV2MP02 | LC3D150P7 |
| AF1VA618 | GV2MP03 | LC3D150P7A64 |
| AF1VC820 | GV2MP04 | LC3D180AB7 |
| AM3PA65 | LA9D11517 | LC3D180AP7 |
| CAD32 | LA9D115604 | LC3D18AB7 |
| GB2CB05 | LA9D115692 | LC3D18AF7 |
| GB2CB10 | LA9D11570 | LC3D18AP7 |
| GK2AX50 | LA9D115704 | LC3D18AU7 |
| GV2AF01 | LA9D12974 | LC3D320AG7 |
| GV2AF3 | LA9D15017 | LC3D320AP7 |
| GV2AF4 | LA9D5017 | LC3D32AB7 |
| GV2DM102BD | LA9D730 | LC3D32AF7 |
| GV2DM107BD | LA9D80973 | LC3D32AP7 |
| GV2DM107P7 | LA9D901 | LC3D80B7 |
| GV2DM108B7 | LA9GQQ330 | LC3D80B7A64 |
| GV2DM108BD | LA9GSS330 | LC3D80E7A64 |
| GV2DM108P7 | LA9GTT330 | LC3D80F7 |
| GV2DM110BD | LA9GSQ331 | LC3D80F7A64 |
| GV2DM114B7 | LA9G3111 | LC3D80M7 |
| GV2DM114BD | LA9G3112 | LC3D80P7 |
| GV2DM116BD | LA9G970 | LC3D80P7A64 |
| GV2DM132B7 | LA9G971 | LC3D80U7A64 |
| GV2DM204B7 | LAD31 | LC3K09P7 |
| GV2DM205BD | LAD91217 | LC4D12AP7 |
| GV2DM206BD | LAD91218 | LC4D12AV7 |
| GV2DM208BD | LAD93217 | LC4D25AB7 |
| GV2DM221M7 | LAD93219 | LC4D25AP7 |
| GV2DM221P7 | LADN10 | NSYDPR25 |
| GV2DM232P7 | LADN22 | NSYSNM6 |
| GV2MC01 | LADT2 | NSYSNM8 |
| GV2MC02 | LAG8N113P | NSYSDR200 |
| GV2MC03 | LC3D090AB7 | RE17RMMWS |
| GV2MCK04 | LC3D090AP7 | |
| GV2ME06K1BW3 | LC3D09AB7 | |
| GV2ME06K2BW3 | LC3D09AP7 | |
| GV2ME06K2M7 | LC3D115F7A64 | |
| GV2ME07K1BW3 | LC3D115M7A64 | |

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

Open pre-cabled motor starters



# Technical Data for Designers

Contents

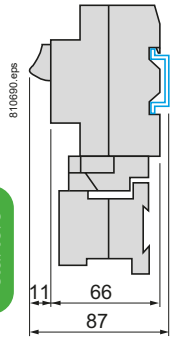
Non-reversing / Reversing starters ..... A2/18 to A2/21
Star-delta starters ..... A2/22 to A2/26

# Dimensions, mounting

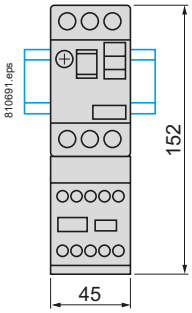


## GV2ME●●K●●●

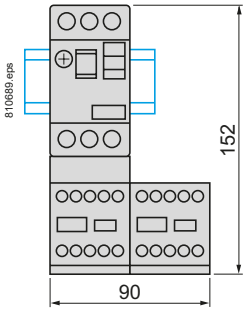
**On mounting rail NSYSDR200**




**GV2ME●●K1●●**

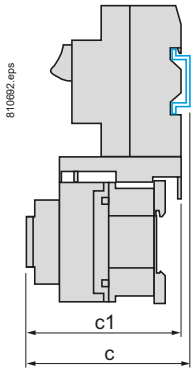



**GV2ME●●K2●●**

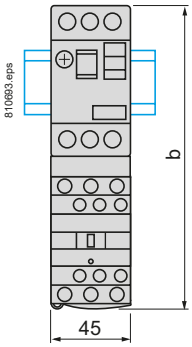



## GV2DM●●●●●

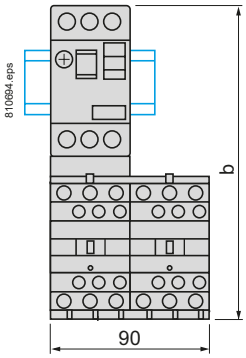
**On mounting rail NSYSDR200**




**GV2DM1●●●●**



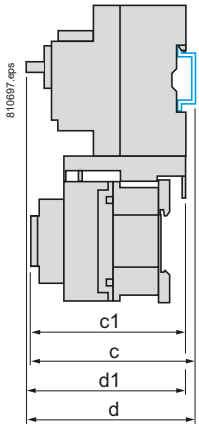

**GV2DM2●●●●**



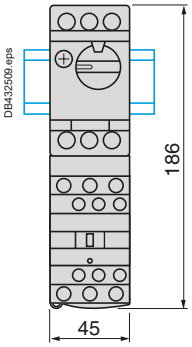

| GV2DM●●●●● contactor with AC or DC coil on mounting rail NSYSDR200 | | |
|---|---|---|
| **GV2** | **DM●02●● to DM●20●●** | **DM●21●● to DM●32●●** |
| b | 177 | 187 |
| c | 106 | 113 |
| c1 | 96 | 103 |

## GV2P●● + LC●D09 + GV2AF3

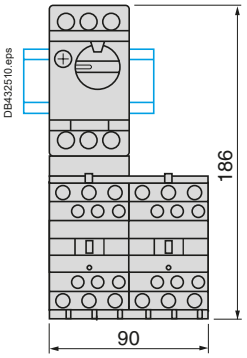
**On mounting rail NSYSDR200**




**GV2P●● + LC1D●● + GV2AF3**




**GV2P●● + LC2D●●●● + GV2AF3**




| LC1D, LC2D contactor with AC or DC coil on mounting rail | | |
|---|---|---|
| **GV2** | **P02 to P08** | **P10 to P32** |
| c | 111 | 118 |
| c1 | 101 | 108 |
| d | 107 | 107 |
| d1 | 97 | 97 |

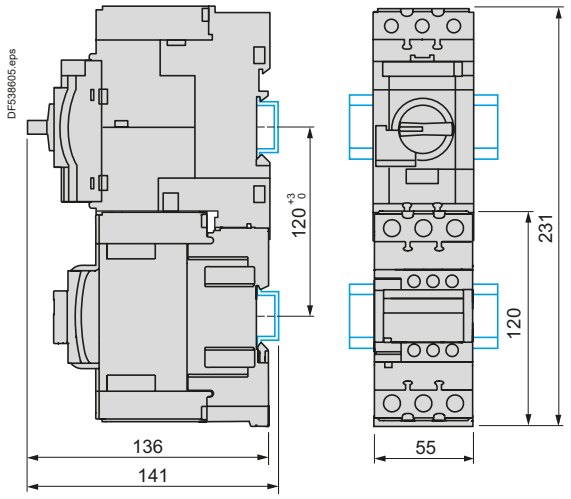
References:
pages A2/2 to A2/7

Schemes:
pages A2/20 and A2/21

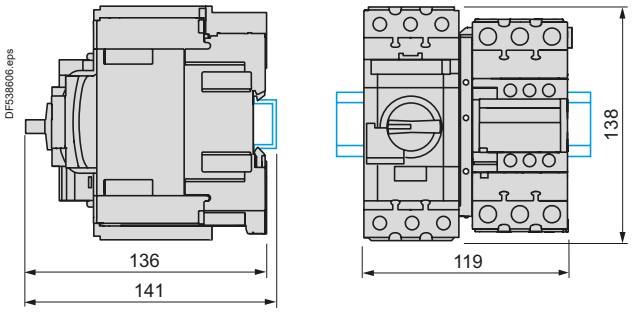
# Dimensions, mounting

## GV3P●●1 + LC1D40A…D65A (for customer assembly)

**Vertical mounting** (1)

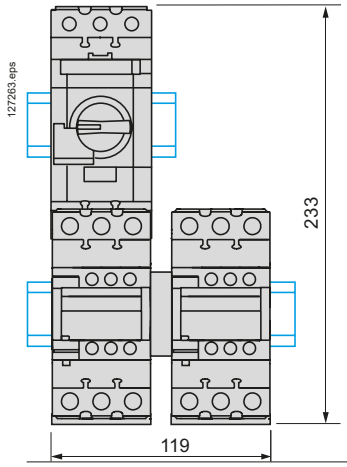



**Side by side mounting with S-shape busbar system GV3 S** (2)

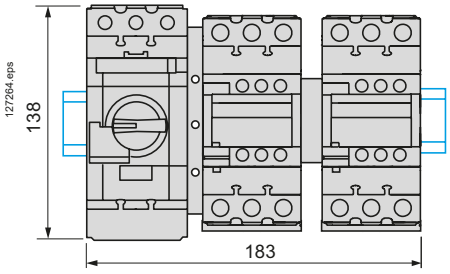



## GV3P●●1 + LC2D40A…D65A (for customer assembly)

**Vertical mounting** (1)




**Side by side mounting with S-shape busbar system GV3 S** (2)




*(1) For several side-by-side motor starters, the maximum current allowed is equal to the nominal current under 400 V.*
*Example: 55 A for a 30 kW motor under 400 V, for a GV3 P65 circuit breaker and a LC1 D65A contactor association.*
*(2) The maximum current allowed is equal to 90 % of maximum current. Example: 45 A for a LC1 D50A contactor.*

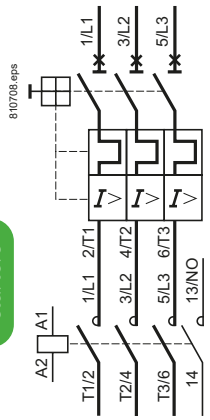
References:
pages A2/6 and A2/7

Schemes:
page A2/21

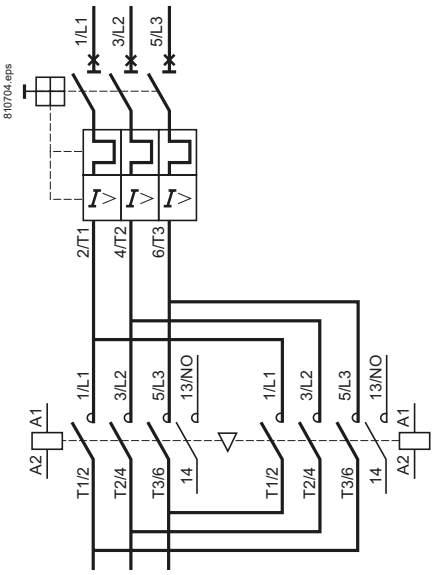
## Schemes



### GV2ME●●K1●●

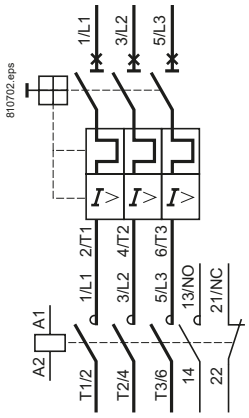



### GV2ME●●K2●●

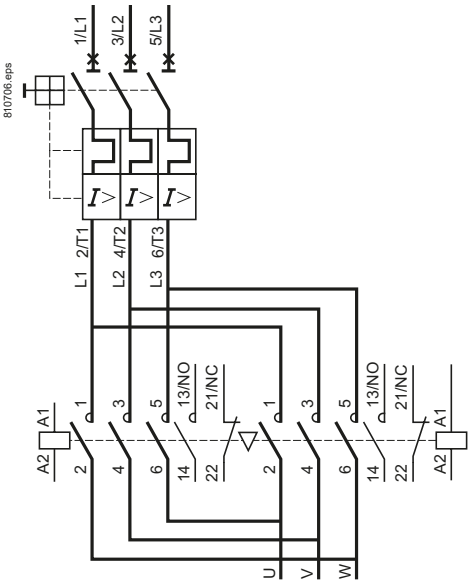





### GV2DM1●●●●




### GV2DM2●●●●

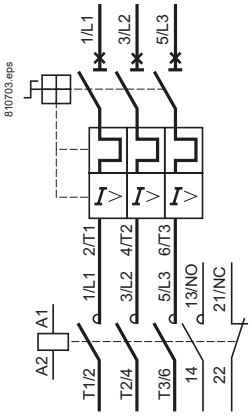



References:
pages A2/2 to A2/5

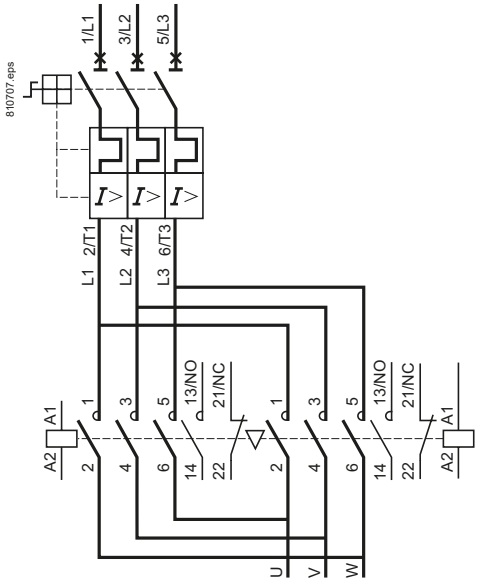
Dimensions:
page A2/18

## Schemes

### GV2P●● + LC1D●●●●

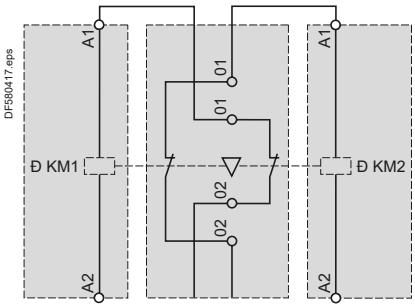


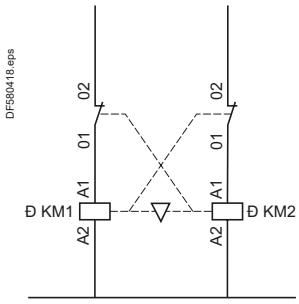

### GV2P●● + LC2D●●●●



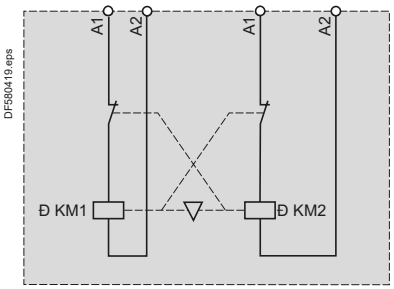

### Mechanical interlock with integral electrical contacts

**Control circuit ∿**



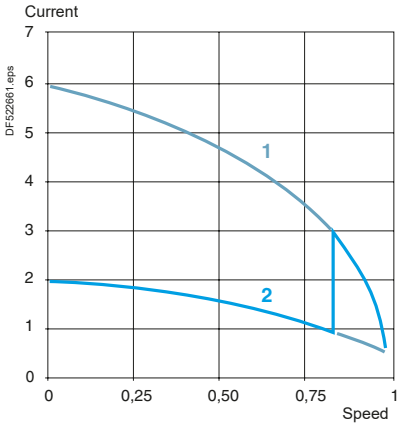

**Control circuit ⎓**



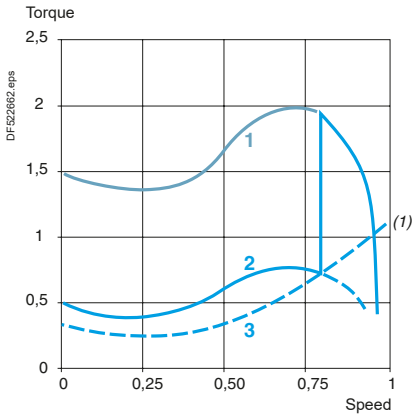

References:
pages A2/6 and A2/7

Dimensions:
pages A2/18 and A2/19

## Star-delta starting




1 Starting in direct delta connection
2 Starting in star connection




1 Starting in direct delta connection
2 Starting in star connection
3 Resistive torque of the machine

This method of starting is applicable to motors on which all 6 stator terminals are accessible and whose delta connection voltage corresponds to the mains voltage.

Star-delta starting should be used for motors starting on no-load or having a low load torque and gradual build-up:
- the starting torque in star connection is reduced to one third of the direct starting torque, i.e. about 50 % of the rated torque.
- the starting current in star connection is about 1.8 to 2.6 times the rated current.

The transition from star to delta connection must occur when the machine has run up to speed. A too rapid build-up in load torque would cause the stabilised run-up speed to be too low and would therefore eliminate any advantage in this method of starting: this is the case with certain machines whose load torque depends on the machine speed (a characteristic of centrifugal machines, for example).

All star-delta starters are supplied with a special LADS2 or LA2KT2● time delay relay which imposes a delay on the delta contactor during the transition period in order to allow the star contactor sufficient breaking time.

For ratings D115 and D150, this function is performed by a time delay auxiliary contact block LADT2 and a control relay.

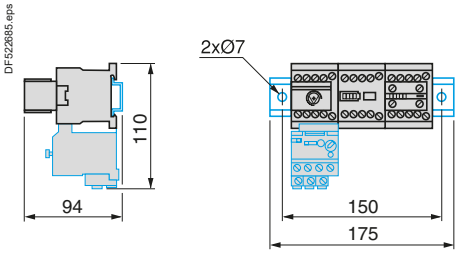
*(1) Motor manufacturers generally specify machine load torques.*
*Example: maximum resistive torque on completion of star-delta start (expressed as a proportion of the rated torque).*

References:
pages A2/8 to A2/15
Dimensions:
pages A2/23 to A2/25
Schemes:
pages A2/24 and A2/26

# Dimensions, mounting

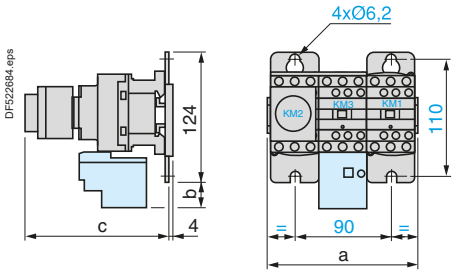
## Dimensions

### LC3K plate mounted, pre-assembled



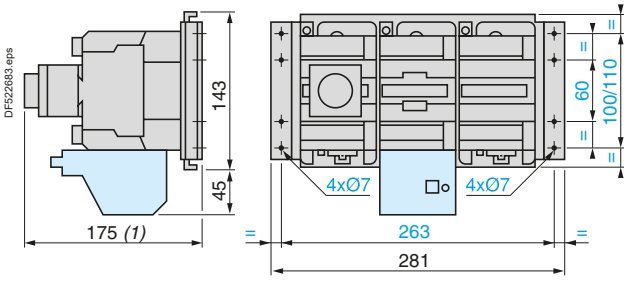

On starters LC3D09A to D18A, a connection block is mounted on the upper part of contactor KM2, increasing the overall height of the product by 6.5 mm.

### LC3D09A…D32A pre-assembled or 3 x LC1D09A...D32A (customer assembly) + components



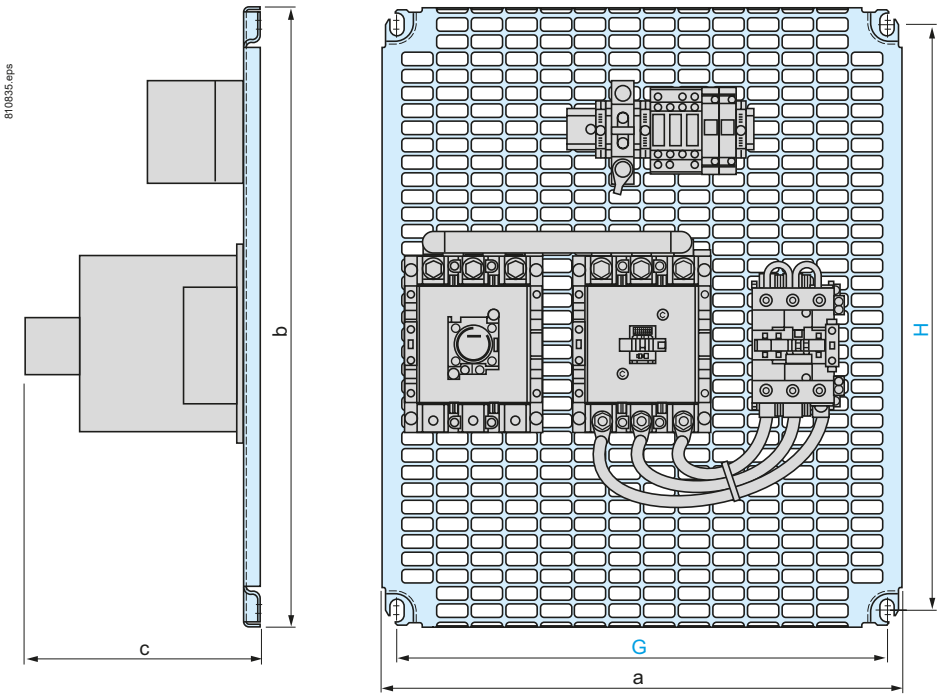

| LC3 | | D09A | D12A | D18A | D32A |
|---|---|---|---|---|---|
| **a** | | 143 | 143 | 144 | 165 |
| **b** | | 26.5 | 26.5 | 26.5 | 32.5 |
| **c** | with LADS | 139 | 139 | 139 | 145 |
| | with LADS and sealing cover | 143 | 143 | 143 | 149 |

### LC3D80 pre-assembled or 3 x LC1D80 (customer assembly) + components




*(1) +4 mm with sealing cover*

### LC3D115, D150 pre-assembled or 3 x LC1D115...D150 (customer assembly) + components




| | | a | b | c | G | H |
|---|---|---|---|---|---|---|
| **LC3D115 or 3 x LC1D** with components | D115 | 450 | 555 | 205 | 425 | 525 |
| **LC3D150** or 3 x LC1D with components | D150 | 450 | 555 | 205 | 425 | 525 |

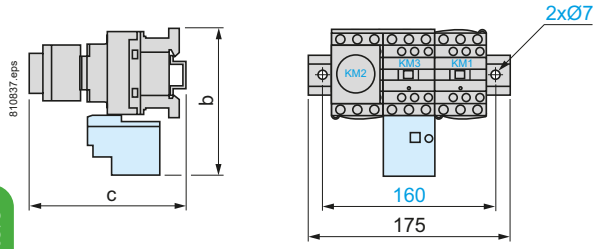
References:
pages A2/8 to A2/13

Introduction:
page A2/22

Schemes:
page A2/24

## Dimensions

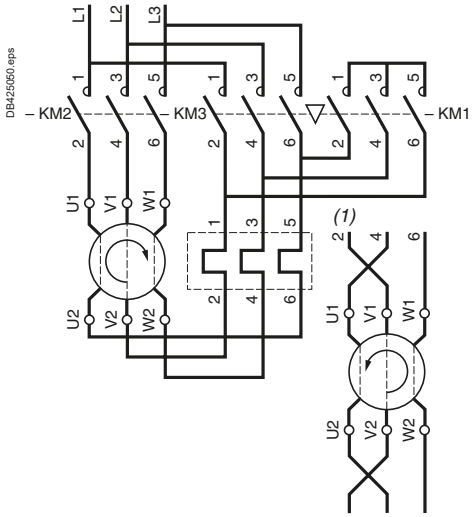
### LC3D090A à D320A on NSYSDR mounting rail, pre-assembled



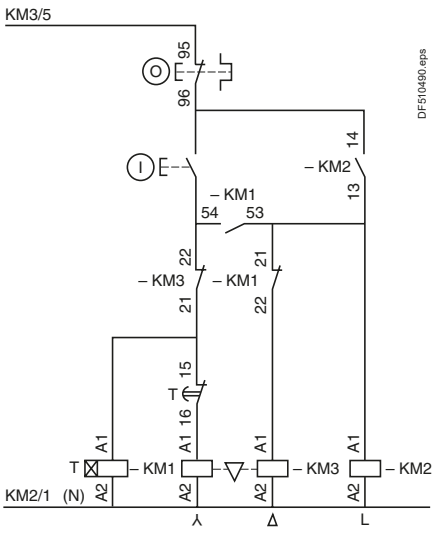

| LC3 | | D090A à D180A | D320A |
|---|---|---|---|
| b | | 153 | 137 |
| c | with LADS | 139 | 145 |
| | with LADS and sealing cover | 143 | 149 |

## Schemes

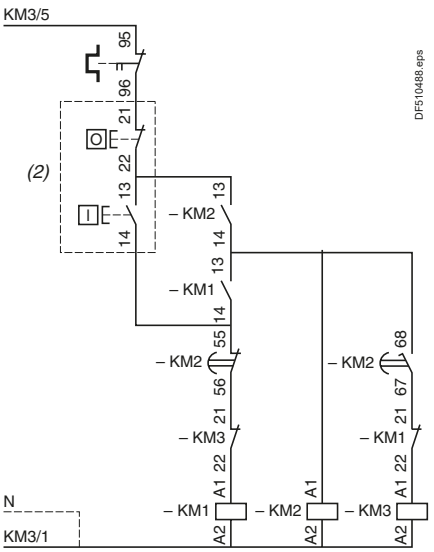
### LC3K, LC3D09A to D80 LC3D090A to D320A




### LC3K

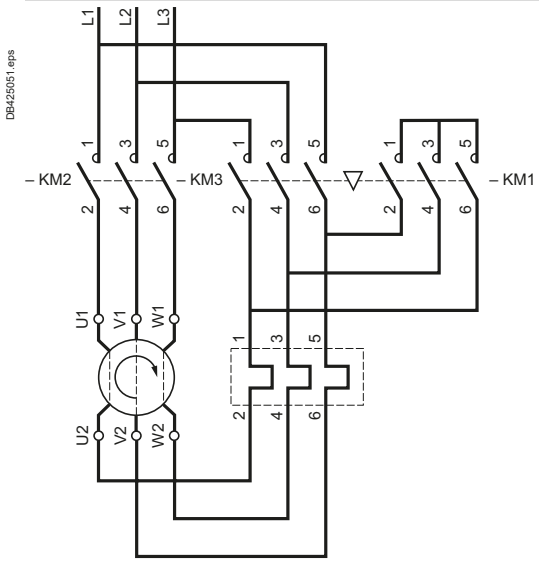


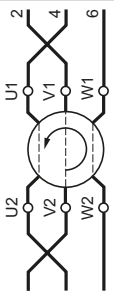

### LC3D



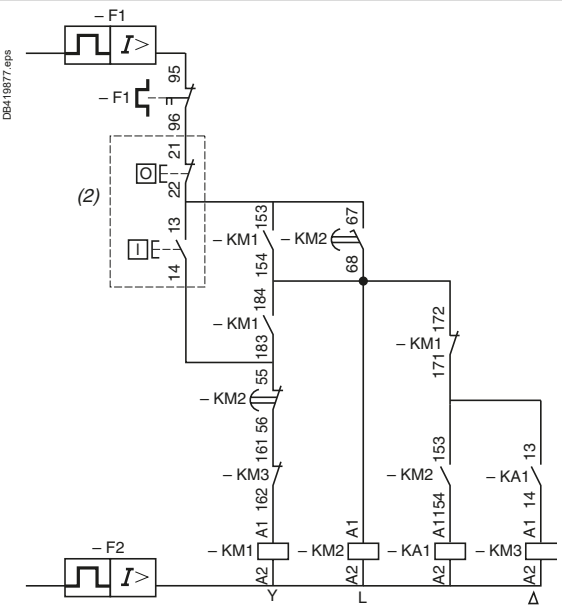

*Note: LC3D09A to D18A: Mechanical interlock between KM3 and KM1.*

### LC3D115 and D150




Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).




*(1) Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).*
*(2) Remote control.*

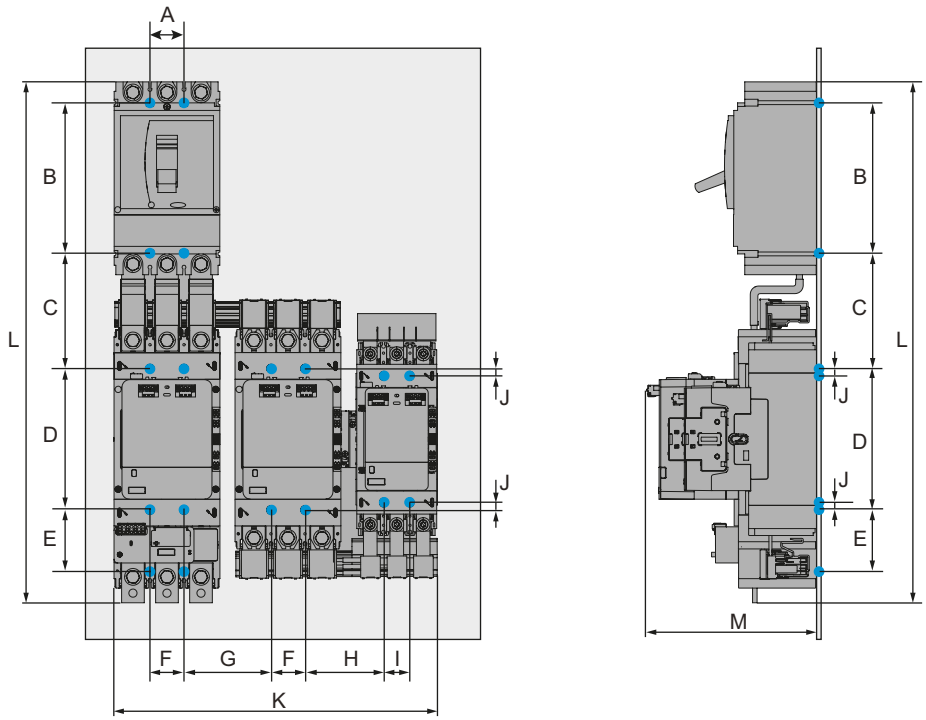
References:
pages A2/8 to A2/13

Dimensions:
page A2/23

## Dimensions

**TeSys Giga star-delta starters with mechanical interlock for customer assembly on back-panel**

DB439476.eps




| Circuit Breaker | Line & Delta Contactor | Star Contactor | Overload relay | A | B | C | D | E | F | G | H | I | J | Overall width K | Overall height L | Overall depth M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSX250 | LC1G115 …225 | LC1G115 …225 | LR9G115/ LR9G225 | 35 | 125 | 87 | 166 | 79.15 | 35 | 92.7 | 92.7 | 35 | 0 | 364 | 523 | 193 |
| NSX400/ NSX630 | LC1G115 …225 | LC1G115 …225 | LR9G115/ LR9G225 | 45 | 200 | 118 | 166 | 79.15 | 35 | 92.7 | 92.7 | 35 | 0 | 364 | 565.5 | 193 |
| NSX400/ NSX630 | LC1G265 …500 | LC1G115 …225 | LR9G500 | 45 | 200 | 118 | 187 | 81.85 | 45 | 115 | 103.85 | 35 | 10.5 | 428 | 670 | 225 |
| NSX400/ NSX630 | LC1G265 …500 | LC1G265 …500 | LR9G500 | 45 | 200 | 118 | 187 | 81.85 | 45 | 115 | 115 | 45 | 0 | 463 | 670 | 225 |
| NS800 | LC1G265 …500 | LC1G115 …225 | LR9G500 | 199 | 200 | 217 | 187 | 81.85 | 45 | 115 | 103.85 | 35 | 10.5 | 428 | 804.6 | 225 |
| NS800 | LC1G265 …500 | LC1G265 …500 | LR9G500 | 199 | 200 | 217 | 187 | 81.85 | 45 | 115 | 115 | 45 | 0 | 463 | 804.6 | 225 |

***Note:*** *All dimensions are in mm.*

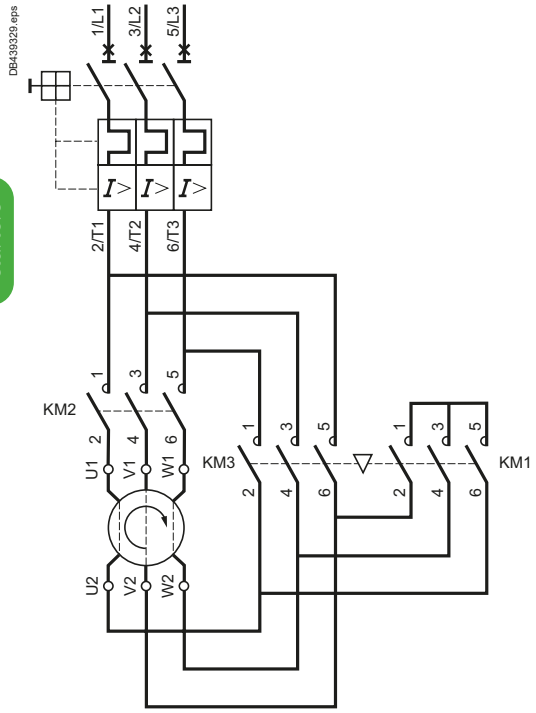
References:
pages A2/14 and A2/15

Introduction:
page A2/22

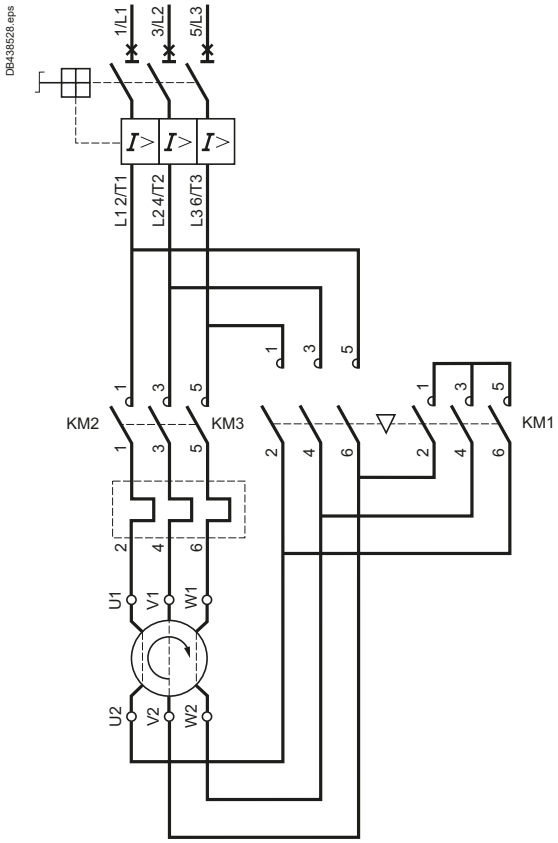
Schemes:
page A2/26

## TeSys Giga star-delta motor 'Power' circuit diagram

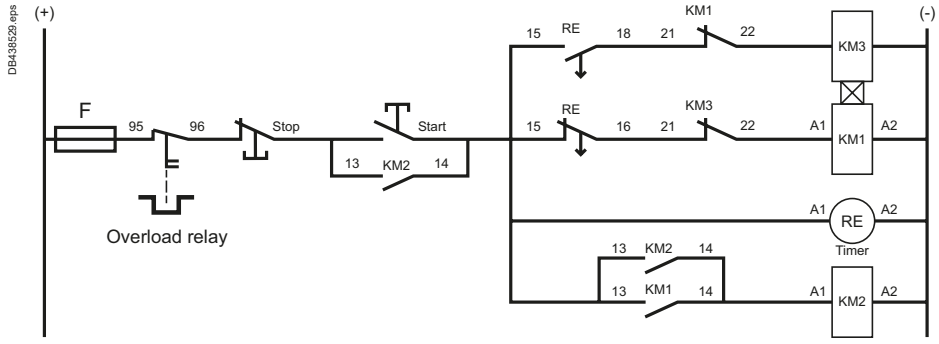
**Thermal magnetic circuit breaker + contactors**




**Magnetic circuit breaker + contactors + overload relay**




## TeSys Giga star-delta motor 'Control' circuit diagram




Recommended timing relay (RE): Zelio Timer ref. **RE17RMMWS** (12...240 V AC/DC 50/60 Hz – 8 A AC/DC contacts)

References:
pages A2/14 and A2/15

Introduction:
page A2/22

Dimensions:
page A2/25



Life Is On Schneider Electric

# TeSys Control
# Hybrid motor starters




**Introduction** A3/2

**TeSys** Hybrid motor starters

| Type of product | Range | | Page |
|---|---|---|---|
| Ultra-compact starters IEC ratings<br>Standard starters, screw or spring terminals, direct-on-line or reverse<br><br>Safety starters, screw or spring terminals, direct-on-line or reverse | Up to **3 kW** AC53a<br>Up to **9 A** AC51 | | A3/6 |
| Ultra-compact starters UL ratings<br>Standard starters, screw or spring terminals, direct-on-line or reverse<br><br>Safety starters, screw or spring terminals, direct-on-line or reverse | Up to **3 hp** AC53a<br>Up to **9 A** AC51 | | A3/7 |
| **TeSys** Deca Circuit breakers for a group of starters<br>Selection of magnetic motor circuit breakers<br>**TeSys** GV2L – rotary knob<br>**TeSys** GV2LE – rocker lever | Up to **32 A** | | A3/8 |

Technical Data for Designers A3/11

# The most compact 3 KW / 400 V starter in the world

## Up to 75 % of space reduction

- Ultra-compact 22.5 mm starter
- Reversing starter in the same width
- Maximum space savings for group starter architecture

## Long electrical durability

- Suitable for high demanding application
- 30 000 000 of AC53a electrical cycles

> With printed QR code, referring directly to the product data sheet.

## Easy Design

- Wide range setting motor protection
- Automatic, manual or remote reset after thermal trip
- Wide range of control voltage

## Easy to integrate

- Direct mounting installation on DIN rail
- Control terminals on the upper side
- Power terminal on the lower side

# Introduction

## Standard version

- 2 ratings:
  - 2.4 A 400 V AC53a
  - 6.5 A 400 V AC53a
- 2 control voltages:
  - 24 V DC
  - 110 V / 230 V AC
- 2 terminal types:
  - Screw clamps
  - Spring
- Can provide up to 3 functions:
  - Forward running
  - Reverse running
  - Overload protection

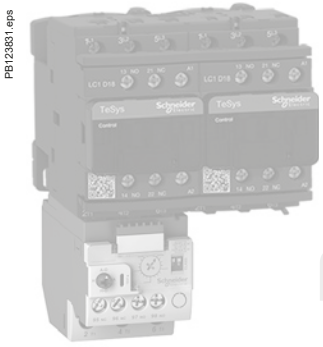
## Safety version

- Safe Torque Off embedded:
  - SIL3 according to IEC61508-1
  - Ple according to ISO13849-1
- ATEX:
  - As associated devices for motor protection

> Hybrid motor starters are a solution dedicated to low footprint applications, in industries as food and beverage, logistics, and durable goods.

## Conventional ..... OR ..... Hybrid Standard starter

Direct-on-line




Reverse

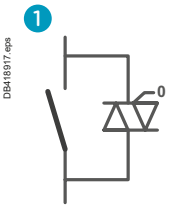
## > How does the hybrid technology work ?

**Hybrid technology:**

Each contact is coupled with a power semiconductor for switching

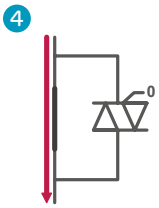
> Higher number of on/off switches, extended durability.

### > Closing



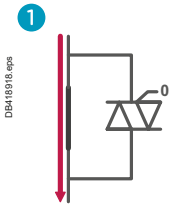
**Start:** conduction through the semiconductor.

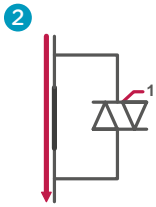
Contact closure under zero voltage. No electrical arc: the contact is preserved.



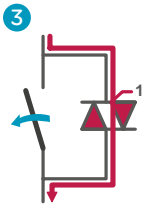

The semiconductor is non-conducting.

### > Opening

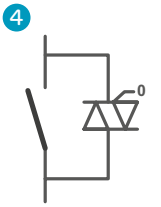



Before the opening of the contact the semiconductor is triggered.

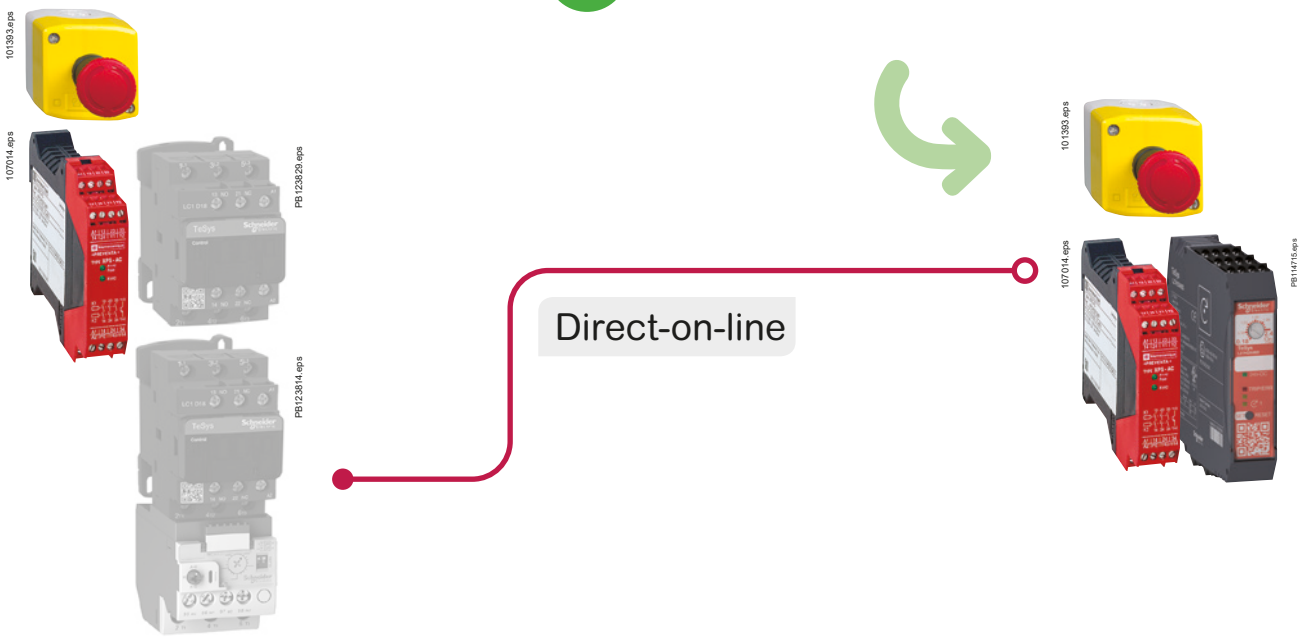


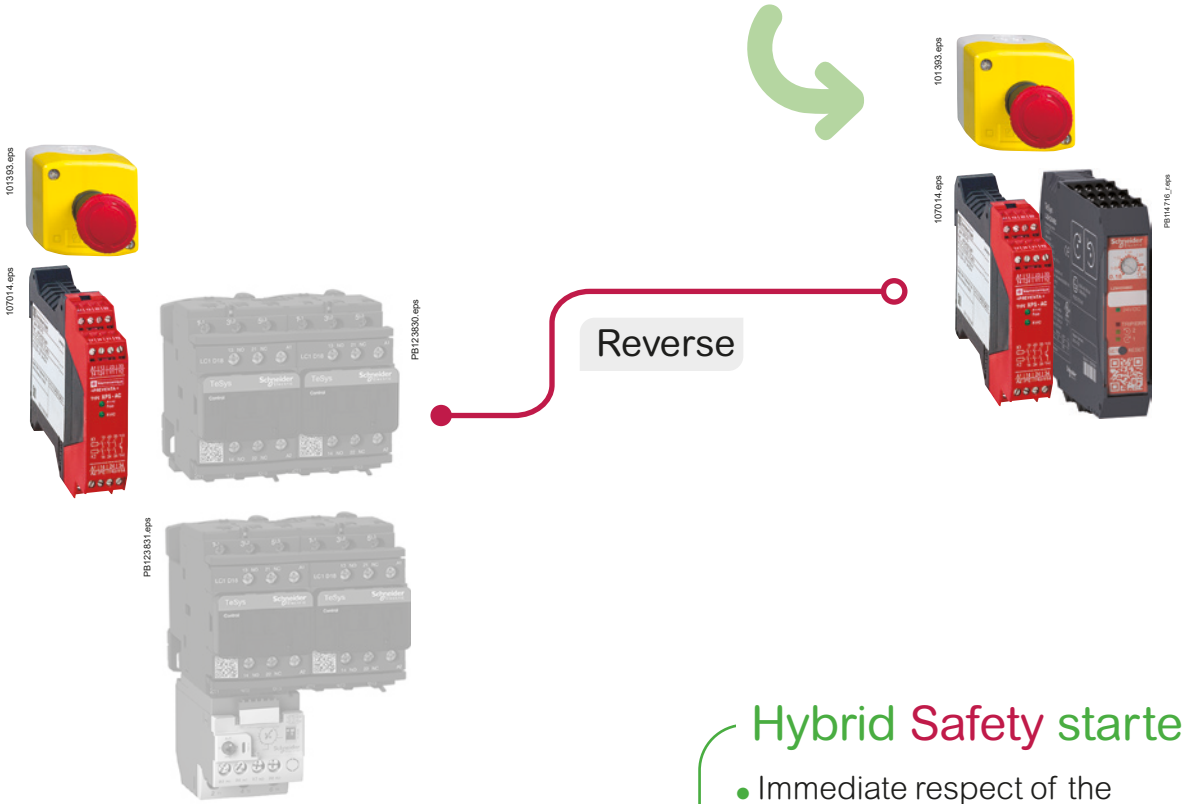

Contact opening:
- no arc: the contact is preserved.




**Stop:** the semiconductor becomes non-conducting.

## Conventional ..... OR ..... Hybrid Safety starter




### Hybrid Safety starter

- Immediate respect of the **highest safety standards**
- Simplified design of your **safety electrical architecture**
- **Quicker** panel implementation

PB114711.eps

*LZ1H2X4BD*

## Starters for asynchronous motors - AC53a utilization category:

### Standard starters hybrid per IEC ratings

| Starters | 3- phases motor: max power (KW) for various voltage | | | | | | | Current range | Commercial references (1) |
|---|---|---|---|---|---|---|---|---|---|
| | 220 V | 230 V | 380 V | 400 V | 415 V | 440 V | 500 V | A | |
| **Direct-on-line** | | | | | | | | | |
| Screw terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ1H2X4●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ1H6X5●●** |
| Spring terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ1H2X43●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ1H6X53●●** |
| **Reverse** | | | | | | | | | |
| Screw terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ2H2X4●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ2H6X5●●** |
| Spring terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ2H2X43●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ2H6X53●●** |

*(1) Replace the "●●" in the reference by the coil code: BD (24 V DC) or FU (110-230 V AC).*

PB114715.eps

*LZ7H2X4BD*

### Safety starters hybrid per IEC ratings

| Starters | 3- phases motor: max power (KW) for different tensions | | | | | | | Current range | Commercial references (1) |
|---|---|---|---|---|---|---|---|---|---|
| | 220 V | 230 V | 380 V | 400 V | 415 V | 440 V | 500 V | A | |
| **Direct-on-line** | | | | | | | | | |
| Screw terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ7H2X4●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ7H6X5●●** |
| Spring terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ7H2X43●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ7H6X53●●** |
| **Reverse** | | | | | | | | | |
| Screw terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ8H2X4●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ8H6X5●●** |
| Spring terminals | 0.37 | 0.37 | 0.75 | 0.75 | 0.75 | 0.75 | 1.1 | 0.18...2.4 | **LZ8H2X43●●** |
| | 1.5 | 1.5 | 2.2 | 3 | 3 | 3 | 3 | 1.5...6.5 | **LZ8H6X53●●** |

*(1) Replace the "●●" in the reference by the coil code: BD (24 V DC) or FU (110-230 V AC).*

## Starters for resistive load AC51 utilization category:

| Starters | Resistive load current | Application | Commercial references (1) |
|---|---|---|---|
| | A | | |
| Screw terminals | 2.4 | Standard | **LZ1H2X4●●** |
| | | Safety | **LZ7H2X4●●** |
| | 9 | Standard | **LZ1H6X5●●** |
| | | Safety | **LZ7H6X5●●** |
| Spring terminals | 2.4 | Standard | **LZ1H2X43●●** |
| | | Safety | **LZ7H2X43●●** |
| | 9 | Standard | **LZ1H6X53●●** |
| | | Safety | **LZ7H6X53●●** |

*(1) Replace the "●●" in the reference by the coil code: BD (24 V DC) or FU (110-230 V AC).*

PB114713.eps

*LZ1H2X43BD*

## Starters for asynchronous motors - AC53a utilization category:

### Standard starters hybrid per UL ratings

| Starters | 3- phases motor in HP | | | Current range | Commercial references (1) |
|---|---|---|---|---|---|
| | 208 V | 220 V - 240 V | 440 V - 480 V | A | |
| **Direct-on-line** | | | | | |
| Screw terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ1H2X4●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ1H6X5●●** |
| Spring terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ1H2X43●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ1H6X53●●** |
| **Reverse** | | | | | |
| Screw terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ2H2X4●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ2H6X5●●** |
| Spring terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ2H2X43●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ2H6X53●●** |

*(1) Replace the "●●" in the reference by the coil code: BD (24 V DC) or FU (110-230 V AC).*

PB114716.eps

*LZ8H6X5BD*

### Safety starters hybrid per UL ratings

| Starters | 3- phases motor in HP | | | Current range | Commercial references (1) |
|---|---|---|---|---|---|
| | 208 V | 220 V - 240 V | 440 V - 480 V | A | |
| **Direct-on-line** | | | | | |
| Screw terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ7H2X4●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ7H6X5●●** |
| Spring terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ7H2X43●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ7H6X53●●** |
| **Reverse** | | | | | |
| Screw terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ8H2X4●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ8H6X5●●** |
| Spring terminals | 1/2 | 1/2 | 1 | 0.18...2.4 | **LZ8H2X43●●** |
| | 1 | 1.5 | 3 | 1.5...6.5 | **LZ8H6X53●●** |

*(1) Replace the "●●" in the reference by the coil code: BD (24 V DC) or FU (110-230 V AC).*

## Starters for resistive load AC51 utilization category:

| Starters | Resistive load current | Application | Commercial references (1) |
|---|---|---|---|
| | A | | |
| Screw terminals | 2.4 | Standard | **LZ1H2X4●●** |
| | | Safety | **LZ7H2X4●●** |
| | 9 | Standard | **LZ1H6X5●●** |
| | | Safety | **LZ7H6X5●●** |
| Spring terminals | 2.4 | Standard | **LZ1H2X43●●** |
| | | Safety | **LZ7H2X43●●** |
| | 9 | Standard | **LZ1H6X53●●** |
| | | Safety | **LZ7H6X53●●** |

*(1) Replace the "●●" in the reference by the coil code: BD (24 V DC) or FU (110-230 V AC).*

## Selection table



PB121671_Reps

PB114721_reps

*GV2L + LZ2H2X4BD*

Magnetic motor circuit breakers:
- GV2L: rotary knob type - Ue = 500 V
- GV2LE: rocker lever type - Ue = 415 V.

**Selection of the circuit breaker**
**Type 1 coordination according to IEC/EN 60947-4-2**

| Max | Iq | Number of H | | Reference Circuit breaker | |
|---|---|---|---|---|---|
| | | 2.4 A | 6.5 A | Rotary | Rocker |
| A | kA | | | | |
| 0.4 | 50.0 | 1 | – | **GV2L03** | **GV2LE03** |
| 0.63 | 50.0 | 1 | – | **GV2L04** | **GV2LE04** |
| 1 | 50.0 | 1 | 1 | **GV2L05** | **GV2LE05** |
| 1.6 | 50.0 | 1 | 1 | **GV2L06** | **GV2LE06** |
| 2.5 | 35.0 | 1 | 1 | **GV2L07** | **GV2LE07** |
| 4 | 12.5 | 1 | 1 | **GV2L08** | **GV2LE08** |
| 6.3 | 8.0 | 2 | 1 | **GV2L10** | **GV2LE10** |
| 10 | 7.0 | 4 | 1 | **GV2L14** | **GV2LE14** |
| 14 | 5.0 | 5 | 2 | **GV2L16** | **GV2LE16** |
| 18 | 4.0 | 7 | 2 | **GV2L20** | **GV2LE20** |
| 25 | 4.0 | 10 | 3 | **GV2L22** | **GV2LE22** |
| 32 | 3.0 | 13 | 4 | **GV2L32** | **GV2LE32** |

# Product references

| | |
|---|---|
| **LZ1H2X43BD** | **LZ7H2X43BD** |
| **LZ1H2X43FU** | **LZ7H2X43FU** |
| **LZ1H2X4BD** | **LZ7H2X4BD** |
| **LZ1H2X4FU** | **LZ7H2X4FU** |
| **LZ1H6X53BD** | **LZ7H6X53BD** |
| **LZ1H6X53FU** | **LZ7H6X53FU** |
| **LZ1H6X5BD** | **LZ7H6X5BD** |
| **LZ1H6X5FU** | **LZ7H6X5FU** |
| **LZ2H2X43BD** | **LZ8H2X43BD** |
| **LZ2H2X43FU** | **LZ8H2X43FU** |
| **LZ2H2X4BD** | **LZ8H2X4BD** |
| **LZ2H2X4FU** | **LZ8H2X4FU** |
| **LZ2H6X53BD** | **LZ8H6X53BD** |
| **LZ2H6X53FU** | **LZ8H6X53FU** |
| **LZ2H6X5BD** | **LZ8H6X5BD** |
| **LZ2H6X5FU** | **LZ8H6X5FU** |



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

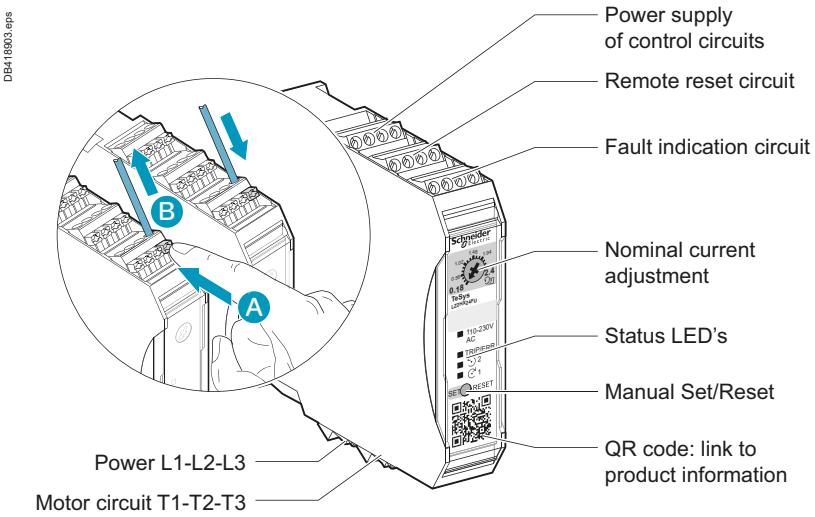


Contents

Description ..... A3/12 to A3/13
Characteristics..... A3/14 to A3/15
Curves ..... A3/16 to A3/17
Dimensions and schemes .....A3/18

## Identification of terminals / Indicators / Setting means and procedure

### Setting procedure




| STEP | ACTION |
|---|---|
| 1 | Lift the cover on the front of the Hybrid motor starter to access the SET/RESET button. |
| 2 | Press and hold down the SET/RESET button for at least 6 seconds. After 6 seconds the 110-230 V AC or 24 V DC LED flashes once. |
| 3 | After the LED has flashed once, release the SET/RESET button. |
| 4 | Turn the potentiometer to select a nominal current, and then fine-tune the position until the LEDs indicate the exact nominal current. |
| 5 | Press the SET/RESET button to save the selected nominal current. The 110-230 V AC or 24 V DC LED comes on and the other LEDs go off. |
| 6 | Drop the cover back over the front of the Hybrid motor starter. |

## Protection functions

### The protection of three - phase motors is ensured against potential faults

- Thermal overload: the motor currents exceed the set value.
- Phase unbalanced: the motor currents differ from each other by more than 33 %
- Phase loss: power missing on one or several phases
- Stall and jam: motor current exceeding 45 A for more that 2 s during starting or running phase - No motor is connected - Motor current is lower that the minimum configurable current for more than 2 seconds, on at least two phases.

For all this detected situations, the Hybrid motor starter will switch off, activate its TRP/ERR LED and fault signaling contact.

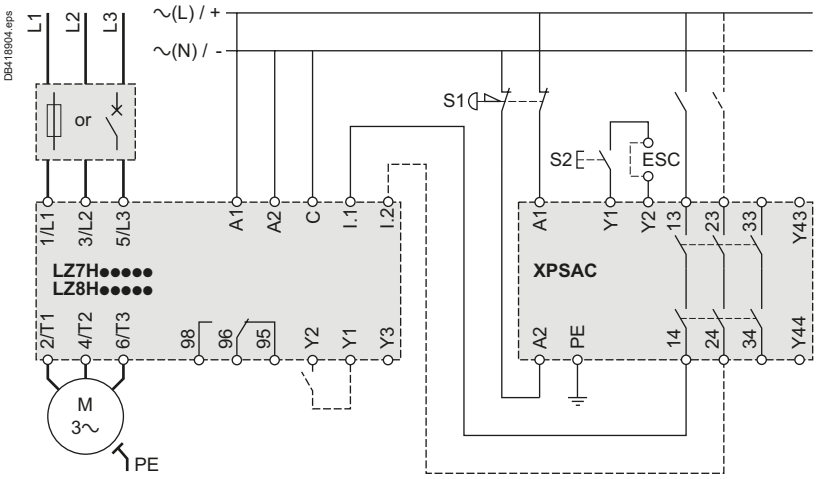
Please refer to the “Instruction sheet and User Guide” for more information.

## Electrical diagrams for Safety chain applications

### Preferred

**Electrical life time: 30000000 AC53a electrical cycles**

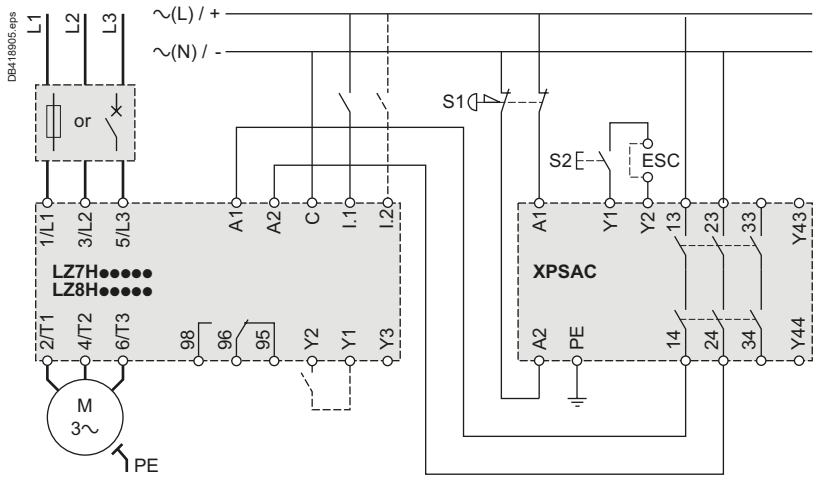
Safety Chain Application for Monitoring Emergency STOP Circuits with Two Channel Inputs and Two Channel Outputs with Preventa XPSAF Safety Processing Device.




### Possible but non- recommended

**Electrical life time: 10000 AC53 a electrical cycles**

Safety Chain Application for Monitoring Emergency Stop Circuits with Two Channel Inputs and Two Channel Outputs with Preventa XPSAC Safety Processing Device.




Hybrid motor starters
Ref.

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 2 | **V** | 500 |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC/EN 60947-4-2 | **kV** | 6 (24 V DC control voltage); 4 (110 V - 230 V AC control voltage) |
| Conforming to standards | | | IEC / EN 60947-4-2 |
| Product certifications | | | CE, CUL, ATEX ( for failsafe product), CCC, UKCA |
| Degree of protection | Conforming to IEC / EN 60947-1 | | IP20 |
| Environment category | Conforming to IEC / EN 60947-1 | | E |
| Climatic withstand | | | Conforming to IEC/EN 60068-2-30 |
| Ambient air temperature around the device | Storage | **°C** | -40…+80 |
| | Operation (see derating curves) | **°C** | -25…+70 |
| Maximum operating altitude | without derating | **m** | 2000 |
| | with derating | **m** | No |
| Operating positions (see derating curves) | Vertical axis (horizontal DIN rail) | | Yes |
| | Horizontal axis (vertical DIN rail) | | Not authorised |
| Shock resistance 1/2 sine wave = 18 ms | Conforming to IEC/EN 60068-2-27 | **gn** | 30 Starter OFF |
| | | **gn** | 30 Starter ON |
| Vibration resistance 10…150 Hz | Conforming to IEC/EN 60068-2-6 | **gn** | 5 Starter OFF |
| | | **gn** | 5 Starter ON |
| Resistance to electrostatic discharge | Conforming to IEC/EN 61000-4-2 | **kV** | Air discharge: 8 kV |
| | | **kV** | Contact discharge: 6 kV |
| Immunity to radiated high-frequency disturbance | Conforming to IEC/EN 61000-4-3 | | |
| | 80 - 1 GHz | **V/m** | 20 |
| | 1.0 - 6 GHz | **V/m** | 10 |
| Immunity to fast transient currents | Conforming to IEC/EN 61000-4-4 | **kV** | 3 |
| Immunity to conducted high frequency disturbances | Conforming to IEC/EN 61000-4-6 | **V** | 10 |
| Radiated emission and conducted | Conforming to CISPR 11 and EN 55011 | | Class A |
| Surge | Conforming to IEC/EN 61000-4-5 | **kV** | 1 symmetrical |
| | | **kV** | 2 asymmetrical |

## Control circuit characteristics

| | | | |
|---|---|---|---|
| Rated voltage | ∼ 50/60 Hz | **V** | 110 - 230 |
| | ⎓ | **V** | 24 |
| Voltage limits | ∼ 50/60 Hz | **V** | 85…253 |
| | ⎓ | **V** | 19.2…30 |
| Voltage dips | | **ms** | 3 |
| Short time interruptions | | **ms** | 3 |

## Power circuit characteristics

| | | | LZ●2X4●● | LZ●6X5●● |
|---|---|---|---|---|
| Power dissipation for corresponding Rated Operating Current (see derating curve) | | **W** | 0.88 … 4.1 | 0.88 … 7 |
| Rated Operating Current | AC51 conforming to IEC/EN 60947-4-3 | **A** | 0.18 - 2.4 | 1.5 - 9 |
| | AC53a conforming to IEC/EN 60947-4-2 | **A** | 0.18 - 2.4 | 1.5 - 6.5 |
| Electrical life | AC51 | **Op** | 30 000 000 (1) | |
| | | **Op** | 10 000 (2) | |
| | AC53A | **Op** | 30 000 000 (1) | |
| | | **Op** | 10 000 (2) | |
| Maximum Operating rate | AC51 | **Op/h** | 7200 | |
| | AC53A | | See curves | |
| Time to restart after overload trip | Manual or remote mode | **mn** | 2 | |
| | Automatic | **mn** | 20 | |

## Power and control terminal Characteristics

| | Terminal type | | Screw M3 | Push in |
|---|---|---|---|---|
| Flexible cable without cable end | 1 conductor | **mm²** | 0.25…2.5 | 0.25…2.5 |
| | 2 conductors | **mm²** | 0.25…0.75 | |
| Flexible cable with cable end | 1 conductor | **mm²** | 0.25…2.5 | 0.25…2.5 |
| | 2 conductors | **mm²** | 0.25…1.5 | 0.25…1.5 |
| Solid cable without cable end | 1 conductor | **mm²** | 0.25…2.5 | 0.25…2.5 |
| | 2 conductors | **mm²** | 0.25…0.75 | |
| Screwdriver | | **mm** | flat screwdriver: 3 mm | |
| Tightening torque | | **N.m** | 0.5..0.6 | |

*(1) With ON/OFF control through control inputs ($I_1$, $I_2$ terminals)* *(2) With ON/OFF control through power supply ($A_1$, $A_2$ terminals).*

References: pages A3/6 and A3/7
Description: pages A3/12 and A3/13
Curves: pages A3/16 and A3/17
Dimensions, schemes: page A3/18

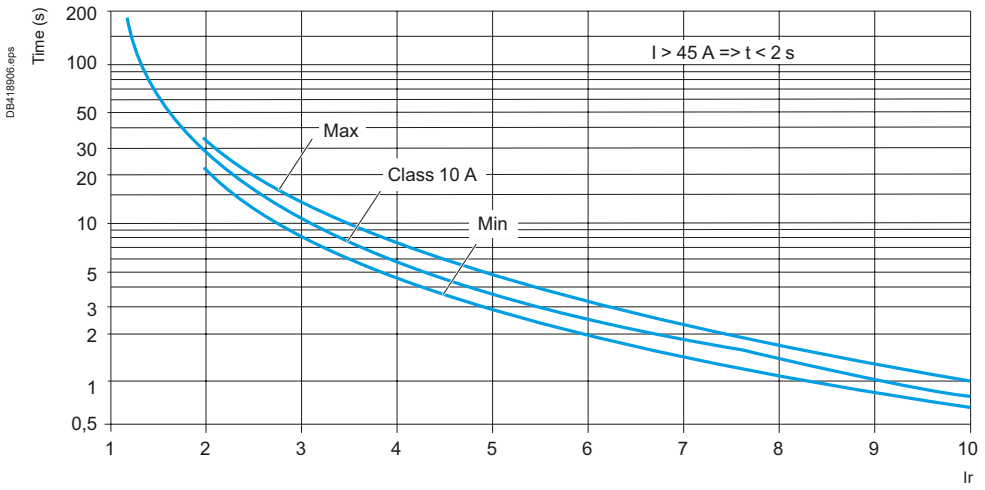
# Characteristics

| System conditions | | |
|---|---|---|
| Database for failure rates | | SN 29500 |
| System type | | Type B |
| Standard used | | IEC 61508 |
| Beta factor | | 1 % |
| Mean time to failure (MTTF) at an ambient temperature 40 °C | | 39.3 (LZ7H or LZ8H 24 V DC)<br>39.1 (LZ7H or LZ8H 110/230 V AC) |

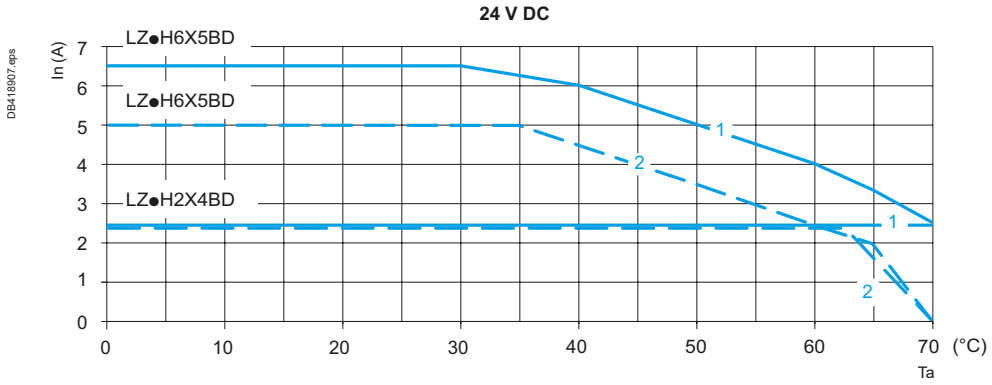
| Safe torque-off | | | |
|---|---|---|---|
| | | **LZ7H or LZ8H 24 V DC** | **LZ7H or LZ8H 110/230 V AC** |
| Ambient temperature | **°C** | 40 | 40 |
| Mean time to failure (MTTF) | | 517 | 289 |
| Switch-off time | | 80 | 100 |
| λsd [FIT] safe, detectable | | 664 | 638 |
| λsu [FIT] safe, undetectable | | 968 | 935 |
| λdd [FIT] dangerous, detectable | | 218 | 388 |
| λdu [FIT] dangerous, undetectable | | 2.67 | 6.82 |
| SFF [%] Safe failure fraction | | 99 | 99 |
| DCS [%] Diagnostic coverage safe | | 40.7 | 40.6 |
| DC [%] Diagnostic coverage | | 98 | 98 |
| PFH Probability of dangerous failure per hour | | $2.67 \times 10^{-9}$ | $6.82 \times 10^{-9}$ |
| Safety level | | IEC/CEI 61508-1: SIL 3<br>ISO 13849-1: Category 3 PL e<br>EN 60954-1: Category 3 | |

| Motor overload protection | | | |
|---|---|---|---|
| | | **LZ7H or LZ8H 24 V DC** | **LZ7H or LZ8H 110/230 V AC** |
| Ambient temperature | **°C** | 40 | 40 |
| Mean time to failure (MTTF) | | 447 | 273 |
| Time to trip | | As for Class 10 A, IEC/CEI 60947-4-2 | |
| λsd [FIT] safe, detectable | | 637 | 636 |
| λsu [FIT] safe, undetectable | | 870 | 841 |
| λdd [FIT] dangerous, detectable | | 239 | 402 |
| λdu [FIT] dangerous, undetectable | | 17 | 17 |
| SFF [%] Safe failure fraction | | 99 | 99 |
| DCS [%] Diagnostic coverage safe | | 42.3 | 43.1 |
| DC [%] Diagnostic coverage | | 93 | 95 |
| Safety level | | IEC/CEI 61508-1: SIL 2 | |

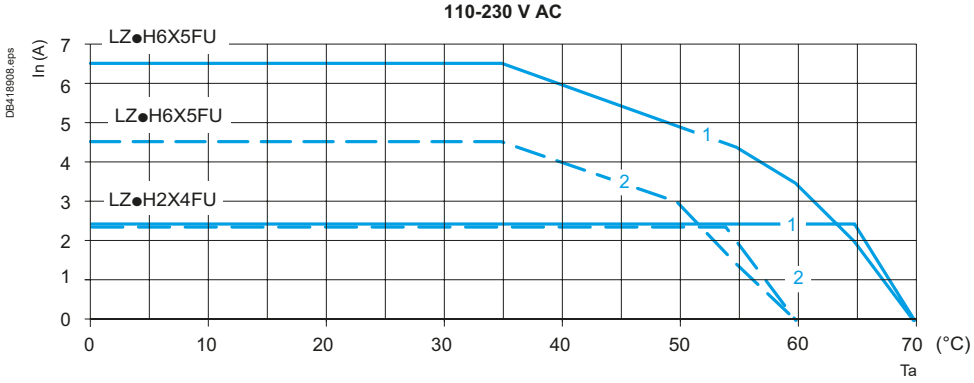
## Overload protection tripping curve at 20 °C




## Derating curves: maximum load current (In)



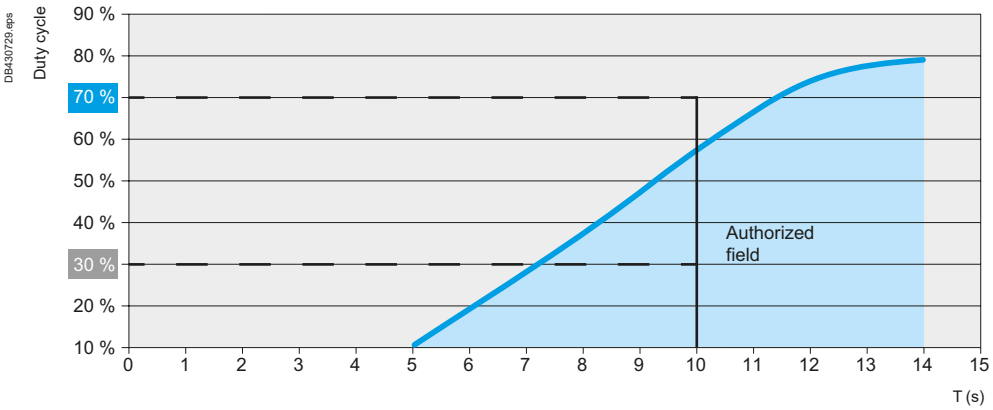

**Derating according:**
- motor starter control power supply
- ambient temperature (Ta)
- distance between devices **1**: 20 mm, with spacing
  **2**: without spacing.



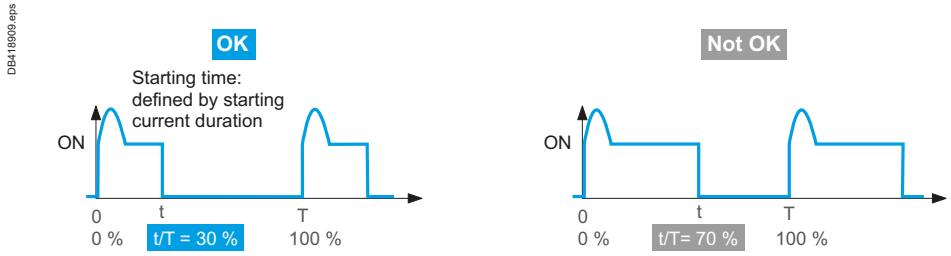
## Minimum duty cycle t/T (%) versus cycle duration T (s)

Due to the effect of the peak current on the H monitoring circuit during the starting time, a stop/start sequence should not occur before a certain amount of time. The diagrams below show the minimum duty cycle according the total period for 2 typical starting time values.

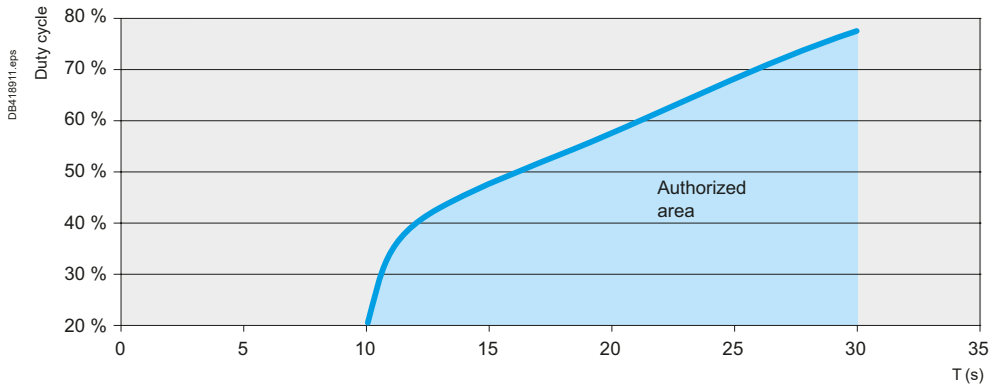
### With a starting time = 100 ms




### Example for starting time of 100 ms with period T = 10 s.




### With a starting time = 150 ms

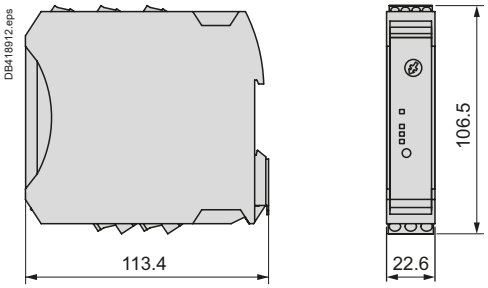



Hybrid motor starters
Ref.

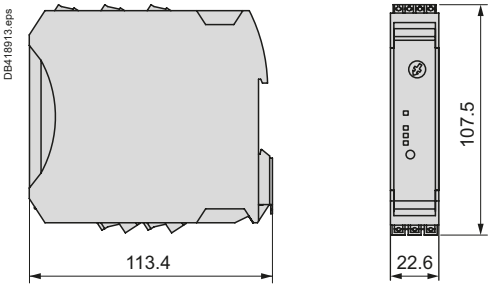
# Dimensions, schemes

## Dimensions mm

### LZ●H●●●●●

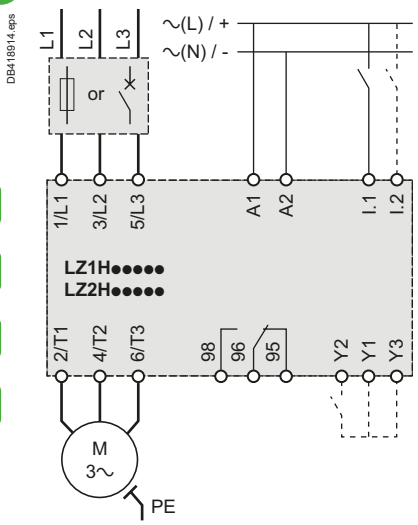



### LZ●H●●●3●●

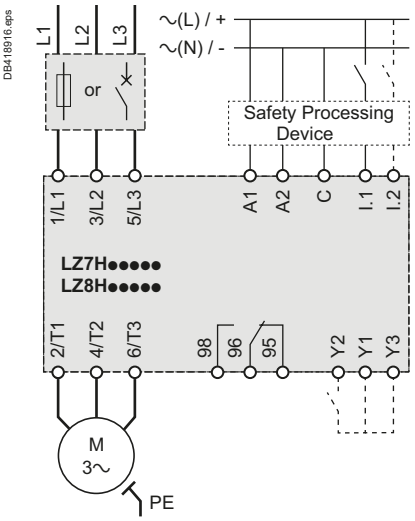



## Wiring diagrams

### Motor control by standard starter




### Motor control by safety starter




**Power terminals**

| | |
|---|---|
| *T1, T2, T3* | *Motor connection* |
| *L1, L2, L3* | *Power inputs* |

**Control terminals**

| | |
|---|---|
| *A1, A2* | *Auxiliary power unit* |
| *I.1* | *Control input, direction 1* |
| *I.2* | *Control input, direction 2 (LZ2H and LZ8H only)* |
| *C* | *Control inputs common point (LZ7H and LZ8H only)* |
| *Y1* | *Reset mode, common point* |
| *Y2* | *Reset mode, remote, manual* |
| *Y3* | *Reset mode, automatic* |
| *98, 96, 95* | *Trip or error signaling contact* |

Hybrid motor starters
Ref.

# TeSys Control
# Ultra motor starters

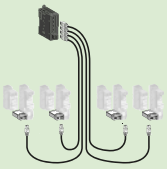
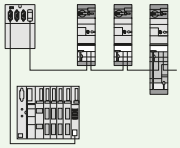
Chapter A4


## Introduction A4/2

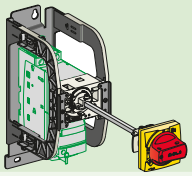
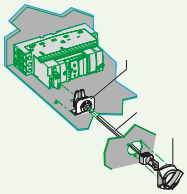
## TeSys Ultra - Power bases, control modules, connectors

| Type of product | Range | | Page |
|---|---|---|---|
| Standard power base, basic control functionalities Direct and reversing | Up to 18.5 kW | | A4/10 |

## TeSys Ultra - Communication components

| | | |
|---|---|---|
| Parallel type cabling system Principle and components |  | A4/16 |
| Bus type cabling systems Principle, panorama and components |  | A4/21 |
| TeSys LUFP communication gateway | | A4/30 |

## TeSys Ultra - Accessories

| | | |
|---|---|---|
| Short circuit current limiter | | A4/31 |
| Handles and accessories for rotary control |  | A4/32 |
| Handles and accessories for integration into a MCC drawer |  | A4/33 |
| TeSys Ultra with Altistart U01 Soft starters and Variable speed controllers | | A4/34 |

Technical Data for Designers A4/43

# From traditional solution to ...



Motor circuit breaker: GV2L

Magnetic protection
> short-circuit protection

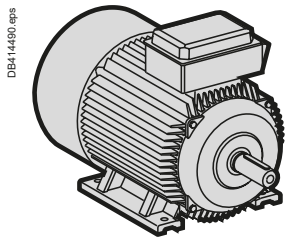
Contactor: D

Control
> Start /Stop

Status monitoring
> signaling
> alarm monitoring

Protection relay: LRD

Thermal protection
> overload



# ...Ultra motor starter

Ultra motor starter

> All basic or advanced protection and control functions in one block

and more...

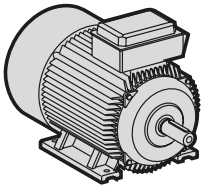
> Overload indication and alarm

> Status report, remote control via communication bus

**Ultra motor starters**
can be used in
**80 %**
of motor protection and control applications.

PB123877_R.tif

DB414490.eps



## 1 All in one

- Optimising space in enclosures.
- Total coordination (No contact welding on short circuit).
- Reduces installation times.

## 2 Simplicity of choice

- Controlled power.
- Protection functions ensured.
- Signaling functions, communication with PLC ensured.

## 3 Universal mounting

- On DIN rail or grid.

## 4 Conventional project design

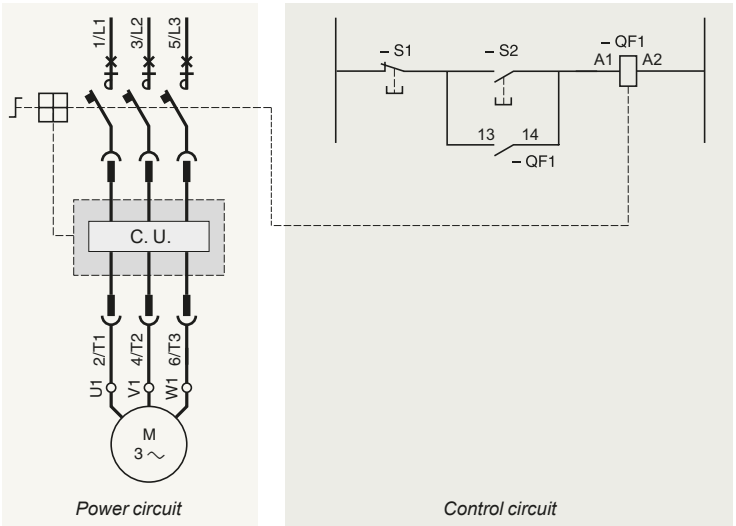
- Conventional control scheme with start , stop push buttons.

## 5 Electrically simple

### Basic scheme of a Ultra starter-controller

- Protection and power control functions acting on a single set of contact (QF1).
- The control unit (CU) monitors the voltage and current. In case of fault, it releases the coil, causing tripping.
- The coil is controlled by manual orders from an operator. Automatic control from a PLC is achieved with other diagrams.

DB414491R.eps



Motor up to
- 7.5 kW / 1-phase 230 V / 50-60 Hz.
- 18.5 kW / 3-phase 400-440 V / 50-60 Hz.
- 18.5 kW / 3-phase 500 V / 50-60 Hz.
- 22 kW / 3-phase 690 V / 50-60 Hz.
- Non-reversing or reversing.

# Common characteristics

## Short-circuit protection

■ Isc:
□ 50 kA at ≤ 400 V
□ 10 kA at 500 V
□ 4 kA at 690 V.
■ Up to 690 V AC.

## Overload protection

■ From 0.15 to 38 A, 6 setting ranges (tripping 14.2 x I setting).
■ Test button.
■ Adjustment lock.
■ Coil choice: 24 V, 48…72 V, 110...240 V DC/AC.

## 3 power contacts

■ For non-reversing (reversing with reverser block).
■ Imax, for 12 A power base (direct - reversing):
□ 12 A at up to 500 V / 50 Hz
□ 9 A > 500 V, up to 690 V.
■ Imax, for 38 A power base (direct - reversing):
□ 38 A at up to 500 V / 50 Hz
□ 21 A > 500 V, up to 690 V.

## 1 NO contact
## 1 NC contact

■ 5 A / max. 690 V AC or 250 V CC.

## Other monitoring contacts

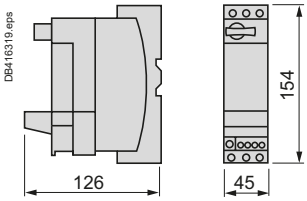
■ 5 A / max. 690 V AC or 250 V DC.

## Communication modules

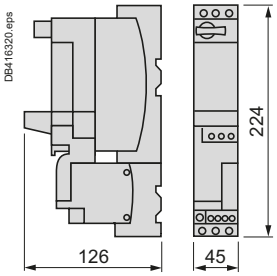
■ Modbus,
■ Ethernet,
■ CANopen,
■ DeviceNet,
■ Advantys stb,
■ PROFIBUS DP,
■ AS-interface.

## Dimensions

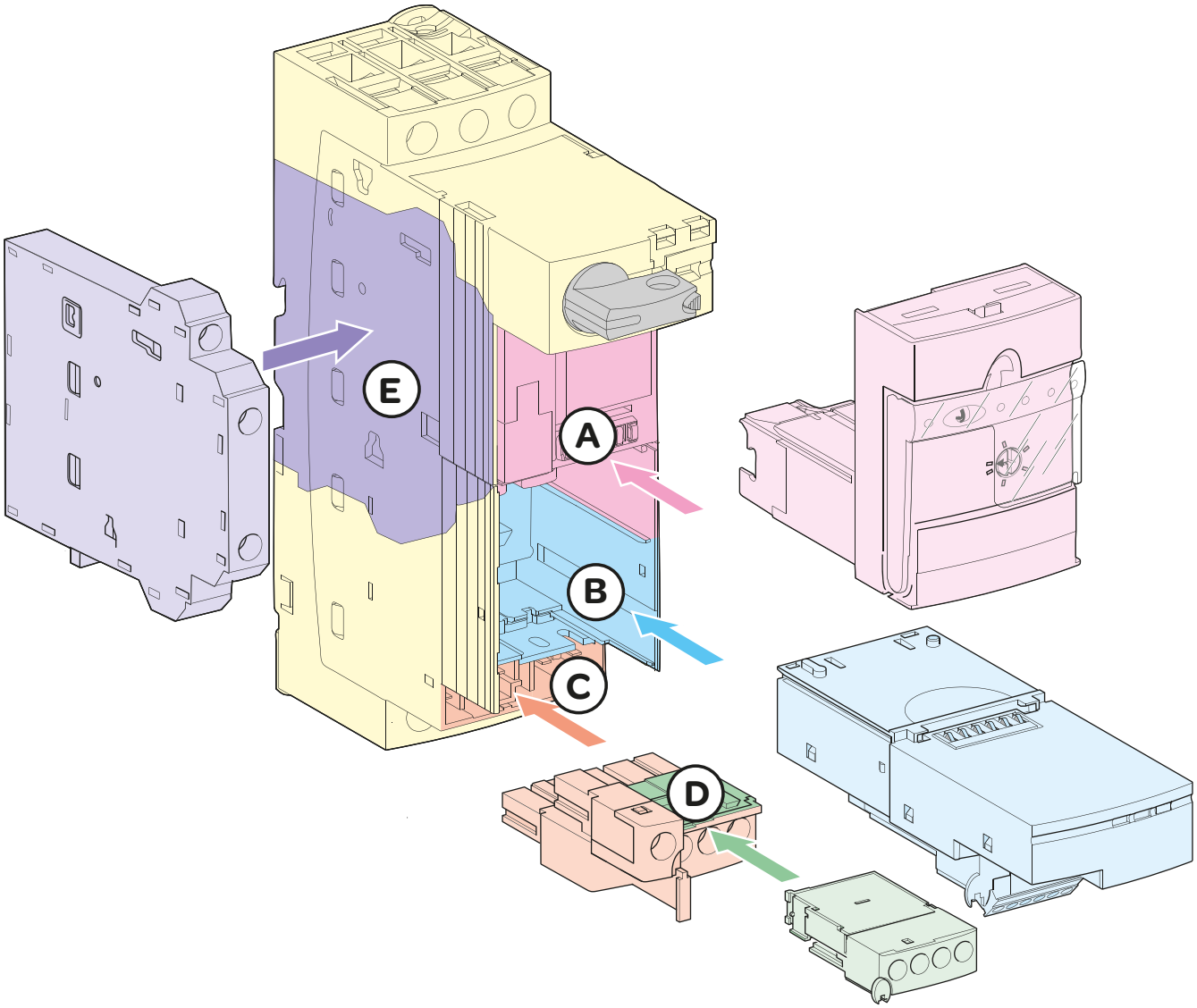
■ Base:




■ Base + reverser block:



DB414493.eps




## The modularity principle

- Power base
- (A) Cavity for control unit
- (B) Cavity for auxiliary module
- (C) Cavity for control terminal block
- (D) Cavity for additional contact block or shutter
- (E) Space for additional block fastening

### Power Base

This is the basic constituent of the motor starter, it is composed of the power contacts, the control coil, the opening / closing mechanism of the protection device and the control pad.

### Additional lateral block

Composed of the protection device signaling contacts.

### Control unit

Composed of the power base management processor and setting knobs.

### Auxiliary module

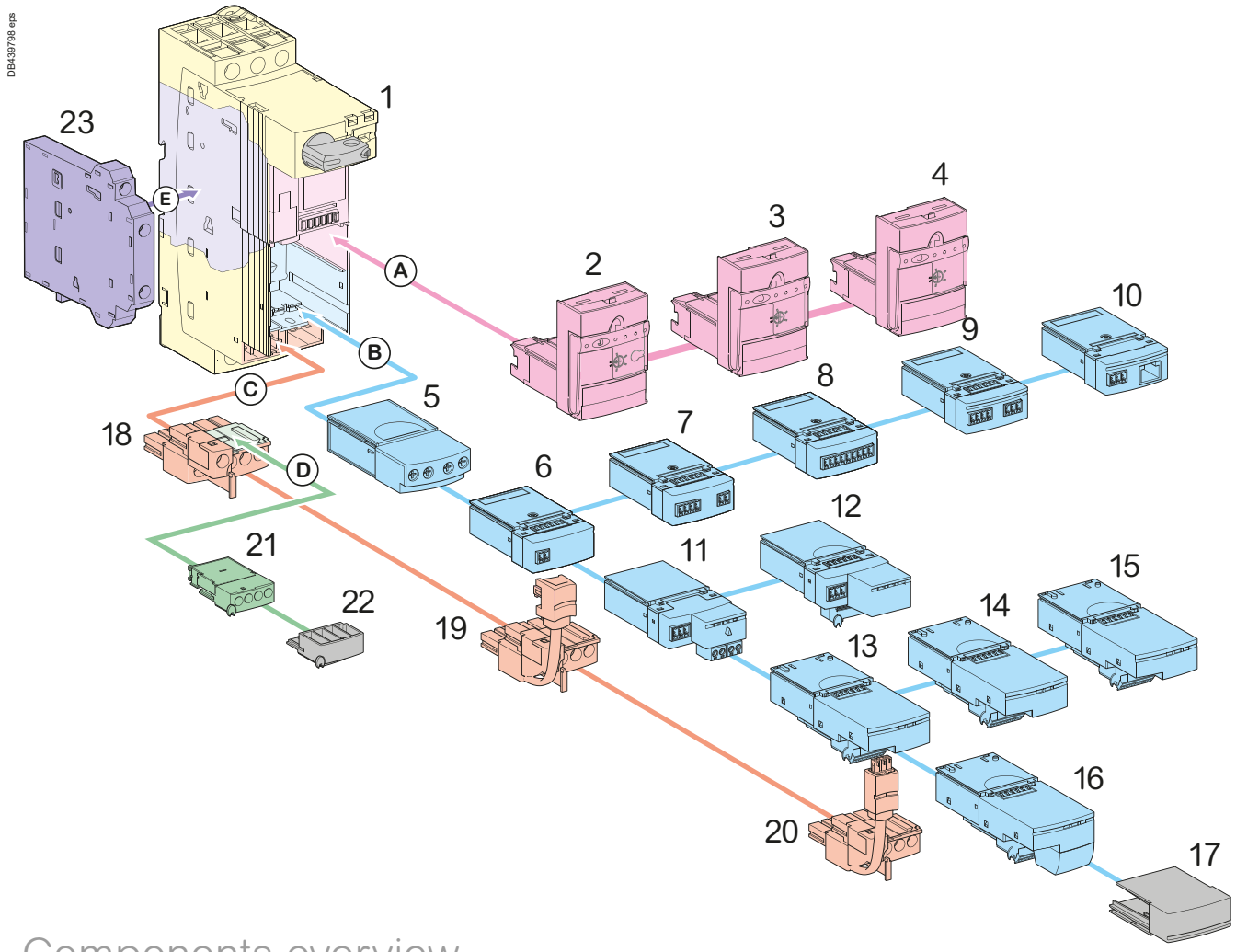
Depending on its type, it integrates load status contacts or a communication processor or an alarm processor.

### Control terminal block

It is composed of two terminals "coil control", 1 NO auxiliary contact, 1 NC auxiliary contact. It can be eventually connected to an auxiliary communication module via a dedicated cable.

### Additional block

It includes protection device additional signaling contacts. By default, this is a simple shutter.




## Components overview

### Power base

1- LUB
Non reversing power base - 1 rotation direction

### Control units

2- LUCB/LUCC/LUCD
Advanced control units

3- LUCA
Standard control unit

4- LUCL
Magnetic protection control unit

### Auxiliary module

5- LUFN
Auxiliary contacts module

### Load monitoring auxiliary modules

6- LUFW10
Overload alarm module

7- LUFDH11
Overload alarm module with manual reset

8- LUFDA01/LUFAD10
Overload alarm module with automatic reset/remote reset

9- LUFV2
Motor load indication module

### Communication auxiliary modules

10- LUFC00
Telefast parallel liaison module, with RJ45 connector

11- ASILUFC5/ASILUFC51
AS-Interface c. m.

12- LULC033
Modbus c. m

13- LULC07 PROFIBUS DP c. m

14- LULC08 CANopen c. m.

15- LULC09 DeviceNET c. m.

16- LULC15 Advantys STB c. m.

### Shutters

17- LU9C1
Shutter for module cavity

22- Shutter for contacts additional block cavity

### Control terminal blocks

18- LU9BN11
Terminal block for embedded auxiliary contacts

19- LU9BN11C
Coil terminal block with its connecting cable

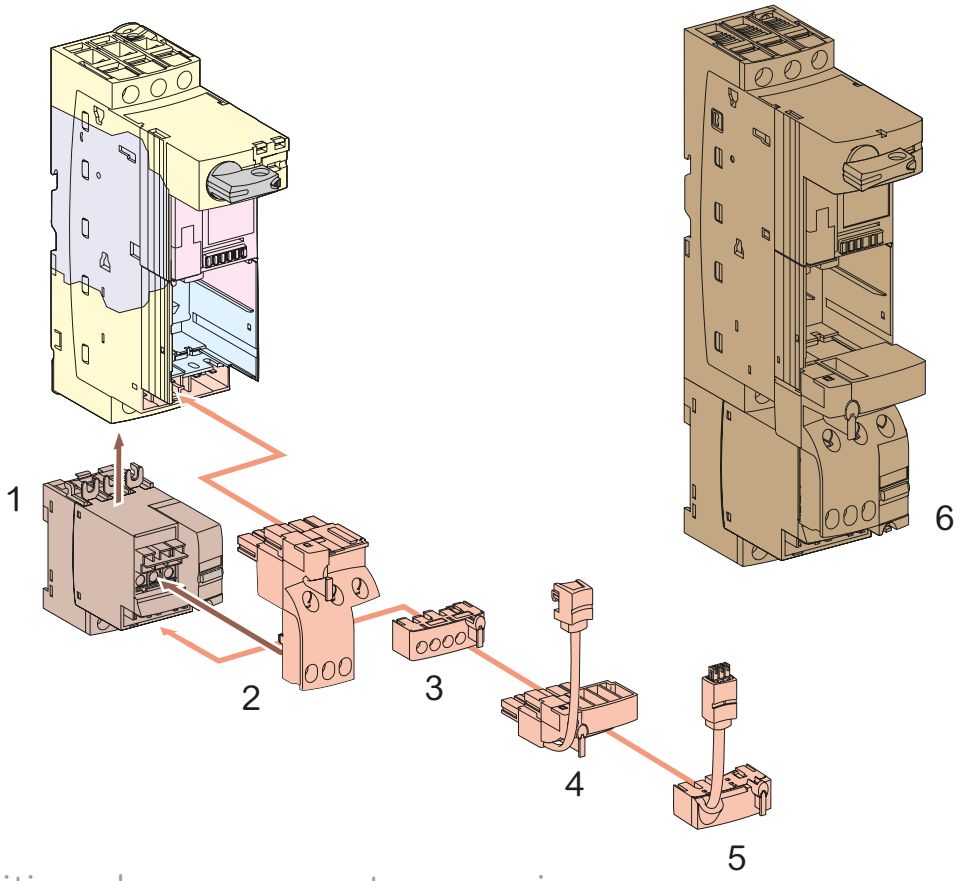
20- LU9BN11L
Coil terminal block with its connecting cable

### Additional contacts blocks

21- LUA1
Additional contacts

23- LUA8
side-mounting additional contacts

DB414495R.eps




## Additional components overview

### Reverser block

1- LU2MB0●●
vertical-mounting reverser block

### Evoluting reversing power base

6- Pre-assembled reversing power base **LU2B12**

### Control terminal blocks

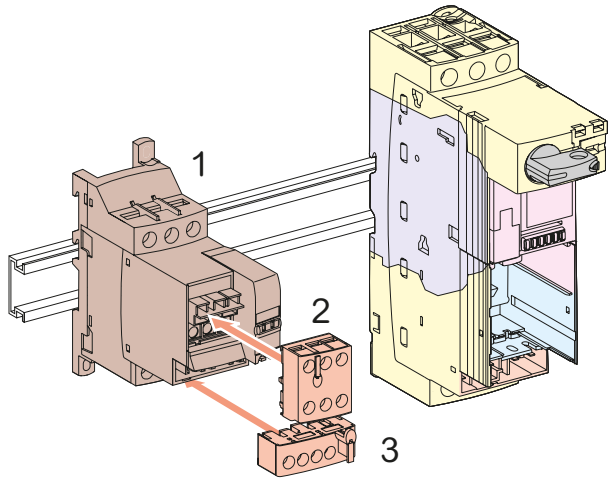
2- LU9MR1C
Base/block assembling connector, with terminal block for embedded auxiliary contacts

3- LU9M1
Coil terminal block for wired control

4- LU9MRC
Coil terminal block with its connecting cable for communicating control (only compatible with a selection of com. modules).

5-LU9MRL
Coil terminal block with its connecting cable for communicating control (only compatible with a selection of com. modules).

DB414497.eps






# Additional components overview

## Reverser block

1- LU6MB0●●
Side-mounting reverser block

## Terminal blocks for electrical remote control

2- LU9MR1
Terminal block for 2 direction control (pulse or maintained control)

3- LU9M1
Terminal block for power base coil interlocking. With direction of rotation monitoring contacts

# Product references

*1 direction:*
*LUB12, LUB32, LUB38*

*1 direction:*
*LUB120, LUB320, LUB380*
** LU9BN11: Terminal block for embedded auxiliary contacts to be ordered separately.*

*2 direction:*
*LU2B12●●, LU2B32●●, LU2B38●●*

*LU9MR1C*

*LU2MB0●●*

*LU9M1*

*LU6MB0●●*

*LU9MR1*

## Power bases

Ultra starters are composed with separate elements: power component + control units + auxiliary components.
The power base includes the electro mechanical parts. It is selected according to:
- Motor power to be handled
- Number of direction of rotation to be controlled: 1 or 2
- Type of control to be achieved: Basic or Advanced.

**Basic control**
1- direction rotation control
2 - direction rotation control
Overload + Short circuit protection
Main power monitoring
Status signaling contacts

**Advanced control**
Functions of basic control
+ Digital display of electrical values
+ Overload alarms
+ Network/bus communication

| Function | Max motor standard power (400 V) | Lip_in (400 V) | References | |
|---|---|---|---|---|
| | kW | A | Basic ctrl | Advanced ctrl |
| | 5.5 | 12 | **LUB12** | **LUB120** |
| 1-direction rotation | 15 | 32 | **LUB32** | **LUB320** |
| | 18.5 | 38 | **LUB38** | **LUB380** |
| | 5.5 | 12 | **LU2B12●●** (1) | **LUB120 + reverser block ass.** |
| 2-direction rotation | 15 | 32 | **LU2B32●●** (1) | **LUB320 + reverser block ass.** |
| | 18.5 | 38 | **LU2B38●●** (1) (2) | **LUB380 + reverser block ass.** |

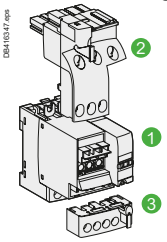
*(1) Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.*
*(2) With BL or FU code only.*

| Coil voltage (V) | 24 ⎓ | 24 ∿ | 48...72 ⎓ or ∿ | 110...220 ⎓ and 110...240 ∿ |
|---|---|---|---|---|
| Code | **BL** | **B** | **ES** | **FU** |

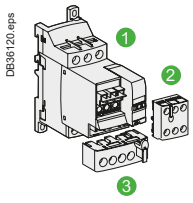
***Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.***

## Reverser blocks - assemblies

A reverser block assembly has to be added to the power base (LUB120 to 380) to build an 'Advanced control' with '2-direction of rotation' Ultra starter.
Reverser blocks with 2 mounting possibilities:
- vertical mounting– mounted aspect: refer to LU2B12, 32, 38
- side mounting, on a Din rail.




**Vertical mounting**




**Side mounting**

| Blocks | References | |
|---|---|---|
| | Vertical mounting | Side mounting |
| 1 Reverser block | **LU2MB0●●** (1) | **LU6MB0●●** (1) |
| 2 Aux. contacts connector | **LU9MR1C** | **LU9MR1** |
| 3 Coil supply connector | **LU9M1** | **LU9M1** |

*(1) Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.*

| Coil voltage (V) | 24 ⎓ | 24 ∿ | 48...72 ⎓ or ∿ | 110...220 ⎓ and 110...240 ∿ |
|---|---|---|---|---|
| Code | **BL** | **B** | **ES** | **FU** |

## Main technical characteristics

**Power bases**
1-direction power base overall dimensions (HxWxD) : 154 x 45 x 126 mm
2-direction power base (assembly with vertical mounting reverser block) overall dimensions (HxWxD): 224 x 45 x 126 mm
Power bases are delivered with protective blanking plates.

3 power poles, for connections of a 1-phase or 3-phase motor
Screw clamp power terminals, for up to 2 x 6 mm² conductors
Screw clamp control terminals, for up to 2 x 1.5 mm² conductors

LUB12,32,38 embedded terminals:
- coil supply,
- NO (13-14) contact (for control push button)
- NC (21-22) contact (for control push button).

Additional signaling contact modules provide more possibilities.

**Reversing assemblies**
LU2MB0, LU6MB0:
3 power poles, for connections of a 1-phase or 3-phase motor, screw clamp power terminals, for up to 2 x 6 mm² conductors
LU9 connectors: screw clamp control terminals, for up to 2 x 1.5 mm² conductors

LU2MB0●●, LU6MB0●● provide terminals for power circuits.
LU9MR1C, LU9MR1 provide signalling contact terminals (82-81-84) that indicate the direction of rotation.
LU9M1 provides coil supply terminals (A2-A1-A3) and 2 NO contact terminals (A1-B1, A3-B3) for direction control.

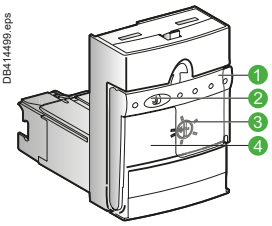
Characteristics: pages A4/44 to A4/46, A4/54
Curves: pages A4/56 to A4/59
Dimensions: pages A4/60 and A4/61
Schemes: pages A4/62 to A4/74

# Product references

PB123879.eps

*LUCA, LUCB, LUCC, LUCD, LUCL series.*
*Ex.: LUCA05BL*

DB414499.eps




*LUCA●●●●*

1. Extraction and locking handle.
2. Sealing of locking handle.
3. Ir adjustment dial.
4. Locking of settings by sealing the transparent cover.

Ultra starters are composed with separate elements: power component + control units + auxiliary modules.The control unit includes electronic components and the current adjustment dial. The control unit is selected according to:
- Motor power to be handled.

Type of protection: thermal+magnetic or magnetic only.

## Control units for power bases with basic control

### LUCA - thermal + magnetic (standard) units

- Protection against overload: 14.2 x Ir (setting current).
- Protection against short circuit: 13 x Ir max (max setting current).
- Protection against missing or unbalanced phases.
- Protection against insulation fault (protection of equipment only).
- Class 10 tripping.
- Frequency 50...60 Hz.

### LUCL - magnetic units

- Protection against short circuits.
- To be used when a standard power base is connected to a motor drive or a soft starter, as they provide the overload protection.

*Note: both **LUCA** and **LUCL** units can be used in the advanced power bases **LUB120** and **LUB320**.*

| Maximum standardized power ratings of 3 phases motors 50/60 Hz | | | | Lip_in mounting on the power base - Rating | DB414499.eps Control unit product reference (1) | |
|---|---|---|---|---|---|---|
| 400/440 V | 500 V | 690 V | Setting range | | | |
| kW | kW | kW | A | A | Thermal + magnetic | Magnetic |
| | | | | | LUCA | LUCL |
| 0.09 | - | - | 0.15...0,6 | 12 and 32 | **LUCAX6●●** | **LUCLX6●●** |
| 0.25 | - | - | 0.35...1,4 | 12 and 32 | **LUCA1X●●** | **LUCL1X●●** |
| 1.5 | 2.2 | 3 | 1.25...5 | 12 and 32 | **LUCA05●●** | **LUCL05●●** |
| 5.5 | 5.5 | 9 | 3...12 | 12 and 32 | **LUCA12●●** | **LUCL12●●** |
| 7.5 | 9 | 15 | 4.5...18 | 32 | **LUCA18●●** | **LUCL18●●** |
| 15 | 15 | 18.5 | 8...32 | 32 | **LUCA32●●** | **LUCL32●●** |
| 18.5 | 18.5 | 22 | 9.5...38 | 38 | **LUCA38●●** (2) | **LUCL38●●** (2) |

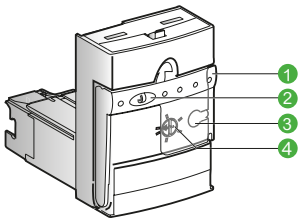
*(1) Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.*
*(2) With **BL** or **FU** code only.*

| Coil voltage (V) | 24⎓ | 24∿ | 48...72 ⎓ or ∿ | 110...220 ⎓ and 110...240∿ |
|---|---|---|---|---|
| Code | **BL** | **B** | **ES** | **FU** |

***Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.***

Characteristics: pages A4/47 to A4/49, A4/55
Curves: pages A4/56 to A4/58
Schemes: page A4/60

# Product references




*LUCB●●●●, LUCC●●●●, LUCD●●●● control units*

1. Extraction and locking.
2. Handle sealing of locking.
3. Handle
4. Ir adjustment dial test push button.

## Control units for power bases with advanced control

**LUCB, LUCC, LUCD control and diagnostic units**

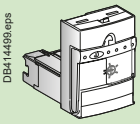
Motor protection, fault diagnostic.
Protection against
- overload: 14.2 x Ir (setting current).

Simulation of an overload by depressing the test push button.
- short circuit: 13 x Ir max (max setting current).
- missing or unbalanced phases.

Overload alarm management:
- locally: with one of the LUF family module
- Remotely: with LULC031, LULC033, LULC07, LULC08, LULC09 or LULC15 (thermal alarm only) communication module.

Reset:
- manual
- automatic, with a communication module

*LUCB32BL*

| Maximum standardized power ratings of 3 phases motors 50/60 Hz | | | | Setting range | Lip_in mounting on the power base - Rating |  Protection type: - overload - short-circuit - Main power fault - alarm | | |
|---|---|---|---|---|---|---|---|---|
| 400/440 V | | 500 V | 600 V | | | | | |
| kW | | kW | kW | A | A | Class 10 | Class 10 | Class 20 |
| 1P | 3P | 3P | 3P | | | 3P | 1P | 3P |
| - | 0.09 | - | - | 0.15...0.6 | 12 and 32 | LUCBX6●● | LUCCX6●● | LUCDX6●● |
| 0.09 | 0.25 | - | - | 0.35...1.4 | 12 and 32 | LUCB1X●● | LUCC1X●● | LUCD1X●● |
| 0.55 | 1.5 | 2.2 | 3 | 1.25...5 | 12 and 32 | LUCB05●● | LUCC05●● | LUCD05●● |
| 2.2 | 5.5 | 5.5 | 9 | 3...12 | 12 and 32 | LUCB12●● | LUCC12●● | LUCD12●● |
| 4 | 7.5 | 9 | 15 | 4.5...18 | 32 | LUCB18●● | LUCC18●● | LUCD18●● |
| 7.5 | 15 | 15 | 18.5 | 8...32 | 32 | LUCB32●● | LUCC32●● | LUCD32●● |
| 18.5 | 18.5 | 22 | 9.5...38 | 38 | | LUCB38●● (1) | | LUCD38●● (1) |

Cial. ref. of the control unit: replace dots by the coil code.

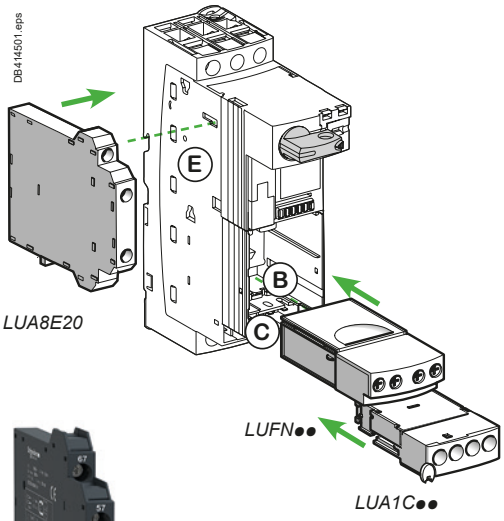
***Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.***

| Coil voltage (V) | 24 ⎓ | 24 ∿ | 48...72 ⎓ and 48 ∿ | 110...220 ⎓ and 110...240 ∿ |
|---|---|---|---|---|
| Coil code | BL | B | ES | FU |

*(1) With BL or FU code only.*

Characteristics: page A4/47
Curves: pages A4/56 to A4/58
Schemes: page A4/63

# Product references




*LUA8E20*

*LUA8E20*

*LUFN02*

*LUA1C20*

## Signaling module and blocks

They provide dry contacts of Normally Open (NO) or Normally Closed (NC) type for signaling purpose. The monitored status can be either the motor running status or the protection device status, depending on the commercial reference of the module or block.

### Common electrical characteristics

Standard operating voltage: 24…250 V AC/DC.
Maximum current: 5 A.

### Compatibility - Positioning

The signaling module and blocks can be use in any power base
LUA8E20 is clipped on the E side of the power base
LUFN11, LUFN02, LUFN02 inserted into B cavity
LUA1C20, LUA1C11 inserted into C cavity
***Note**: B and C cavities may be already used for reverser-starter, communication.*

| Signaling module and blocks | Output | References |
|---|---|---|
| Module<br>*Motor running status: ON / OFF* | 1 NO + 1 NC | **LUFN11** |
| | 2 NC | **LUFN02** |
| | 2 NO | **LUFN20** |
| Block<br>*Protection status: OPEN / CLOSED (OF) STANDBY / TRIPPED (SD)* | 2 NO | **LUA1C20** |
| | 1 NO + 1 NC | **LUA1C11** |
| Side block<br>*Protection status: OPEN / CLOSED (OF)* | 2 NO | **LUA8E20** |

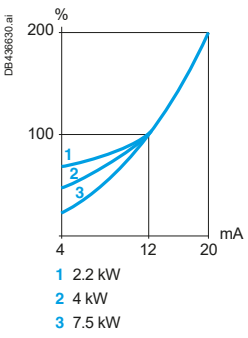
*LUFV2*

*LUFW10*

*LUFDH11*

*LUFDA01*

*LUFDA10*




*LUFV2 typical response curve*

## Function modules

They provide analog output or dry contacts of Normally Open (NO) or Normally Closed (NC) type for measurement or signaling purpose.

### Common electrical characteristics

Standard operating voltage: 24…250 V AC/DC.
Maximum current: 5 A.

### Compatibility - Positioning

The function modules can only be used in a LUB120, LUB320 or LUB380 power base, in cavity B.

| Function modules | Output type | References |
|---|---|---|
| Electrical value: average current in each phase. The signal is the image of the pourcentage of In. External 24 V DC power supply needed | Analog: 4-20 mA | **LUFV2** |
| Contact closes if average current in the phases = 105 % of In | 1 NO | **LUFW10** |
| Contacts change state if tripping is caused by overload | 1 NO + 1 NC | **LUFDH11** |
| Contact opens if overload tripping is reset with control pad or remotely | 1 NC | **LUFDA01** |
| Contact closes if overload tripping is reset with control pad or remotely | 1 NO | **LUFDA10** |

Characteristics:
pages A4/50 to A4/54

Schemes:
pages A4/62 to A4/64

PB121260.eps

*LUFC00*

## Auxiliary parallel wiring module (1)

**Auxiliary parallel wiring module for Modicon Telefast system**

**Inputs**

They collect the FWD, REV controls from an automation process.
An RJ45 parallel port is used, for connection to the 24 V DC outputs of a PLC.

**Outputs**

They give the position of the control pad and the state of the poles,
They provide 24 V DC controls to the LUB120, 320 or 380 power base coil via the LU9BN11C adapter (A2, A1) or to the LU2B12, 32, 38 power base coil with a LU9MRC adapter (A2, A1, A3).

**Compatibility - Positioning**

The parallel wiring module can only be used in any Ultra power base,
**with LUC●●● control unit with coil voltage**
Compatible with:
- Modicon TM3 (map I/O controllers for RJ45 M221, M241, M25)
- Modicon STB modules (I/O for automation island)
- Modicon Telefast (interfaces RJ45/HE10).

The parallel wiring module is inserted in cavity B.

*Note: the parallel wiring module must be connected to a **LU9G02** or **LU9G03** Telefast distribution*
*Note: more details on parallel wiring page A4/16.*

| Designation | References |
|---|---|
| Ultra power base parallel wiring module | **LUFC00** |

PB121261.eps

*LULC033*

PB121262.eps

*ASILUFC51*

PB121261.eps

*LULC07*

PB121290.eps

*LULC15*

PB121264.eps

*LU9BN11C*

PB121264.eps

*LU9BN11L*

## Communication modules

**Communication modules**

These modules send the control pad position and pole state to a communicating system (PLC, monitoring system,…)
They collects the Forward, Reverse motor controls from an automation process.
The status and controls are coded according to an industrial communication protocol, depending on the communication module.
Bus cable connection, external power supply by crew clamp terminals.
Connector for coil control (to A1-A3-A2) via a prewired connection (LU9BN● for 1-direction control, LU9MR● for 2-direction control)

**Compatibility - Positioning**

The communication modules can only be used in a LUB120, LUB320 or LUB380 power base, in cavity B.

| Designation | References |
|---|---|
| Ultra Modbus communication module | **LULC033** |
| Ultra AS-Interface communication module | **ASILUFC51** |
| Ultra PROFIBUS DP communication module | **LULC07** |
| Ultra CANopen communication module | **LULC08** |
| Ultra DeviceNet communication module | **LULC09** |
| Ultra Advantys STB communication module | **LULC15** |

*Note: Ethernet communication can be achieved with **LULC033** + ConneXium Port (ref. **TCSEQM113M13M**)*
*Note: more details on bus-type communication page A4/21.*

PB121266.eps

*LU9MRC*

PB121267.eps

*LU9MRL*

## Prewired connectors

They provide the necessary electrical link between a parallel or communication module and the coil supply connector, on the power base or reverser block. Thus, ON-OFF (1 direction) or FORWARD-REVERSE (2 direction) controls can be achieved.

| Prewired connection | | | References | Compatibility with modules |
|---|---|---|---|---|
| 1 direction | Short cable | Side connection | **LU9BN11C** | **LUFC00, LULC033, ASILUFC51** |
| | | Bottom connection | **LU9BN11L** | **LULC07, 08, 09, 15** |
| 2 direction | Long cable | Side connection | **LU9MRC** | **LUFC00, LULC033, ASILUFC51** |
| | | Bottom connection | **LU9MRL** | **LULC07, 08, 09, 15** |

Introduction:
pages A4/16 to A4/19, A4/21 to A4/23
Characteristics:
pages A4/24 to A4/29, A4/51 to A4/55
Schemes:
pages A4/64 to A4/67

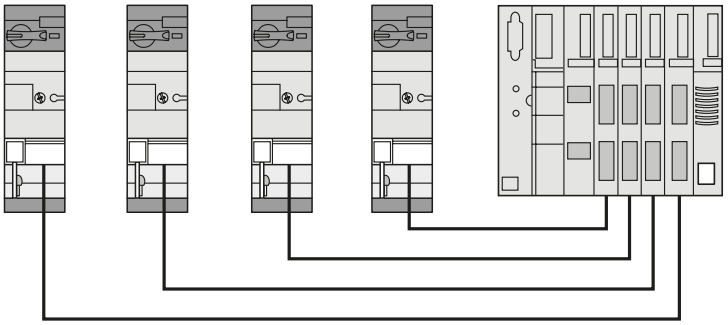
# Introduction



PB105089.eps

## Point-to-point wiring

DB416375.eps



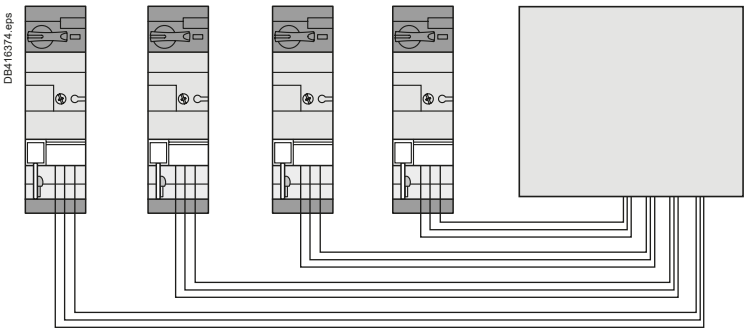
■ The control inputs and signaling outputs of the starter are grouped in a single socket, usually RJ45.
They are individually connected to PLC outputs and inputs.
■ The wires run in parallel in a multicore cable equipped with a multipin connectors, RJ45 in the case of Telefast type system.
■ 3 parallel wiring systems are available:
□ Modicon TM3, based on a RJ45 I/O module for M221, M241, M25 PLC
□ Modicon STB, based on I/O modules for automation island
□ Modicon Telefast: RJ45 / HE10 interfaces.
■ Simple way of proximity wiring. Quick cabling.
It is suitable for machine control panels when a large number of Ultra starter-controller are installed.

## informations

■ The control and signaling terminals of the starters are connected to the output and input terminals of a PLC. No specific connectors or cables are required.
■ Conventional wiring mode, without optimization of the cabling time.
May be suitable when a very small number of starters is used, with a very small number of links.

### Parallel cabling systems

DB416374.eps



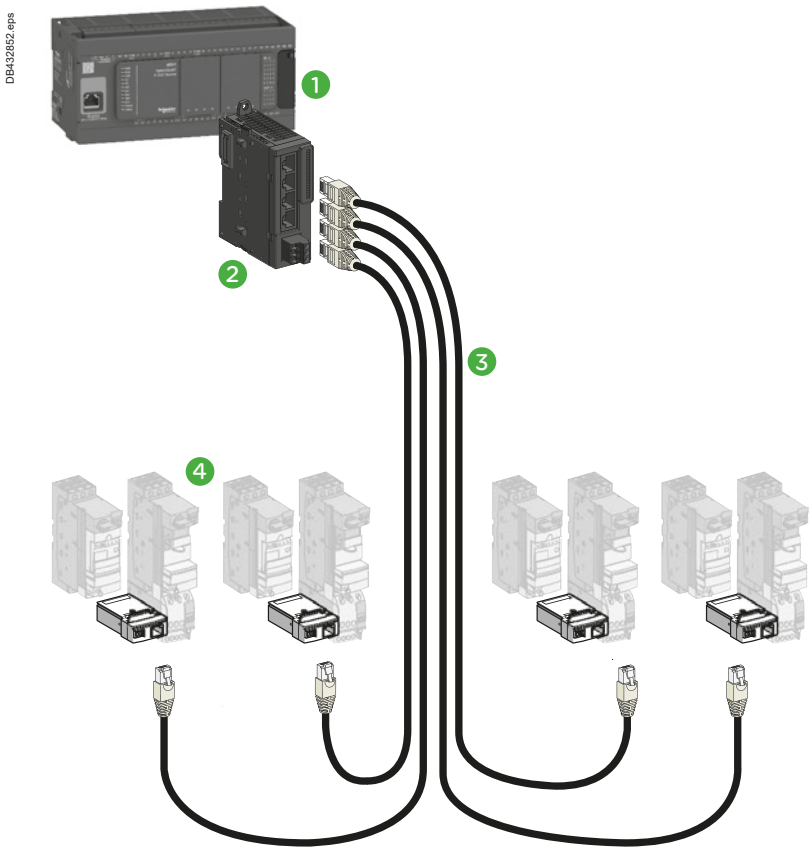


Life Is On Schneider Electric

### Integration in the Modicon TM3 wiring system

The Ultra starter-controller are directly connected to a I/O module equipped with RJ45 connectors.

1. Modicon M221, M241, M251 PLC's
2. TM3XTY I/O module for 4 starters
3. LU9R●● cables with RJ45 connectors,
4. LUFC00 module for TeSys Control parallel connection (1 or 2 direction of rotation).



## Integration in the Modicon Advantys STB system

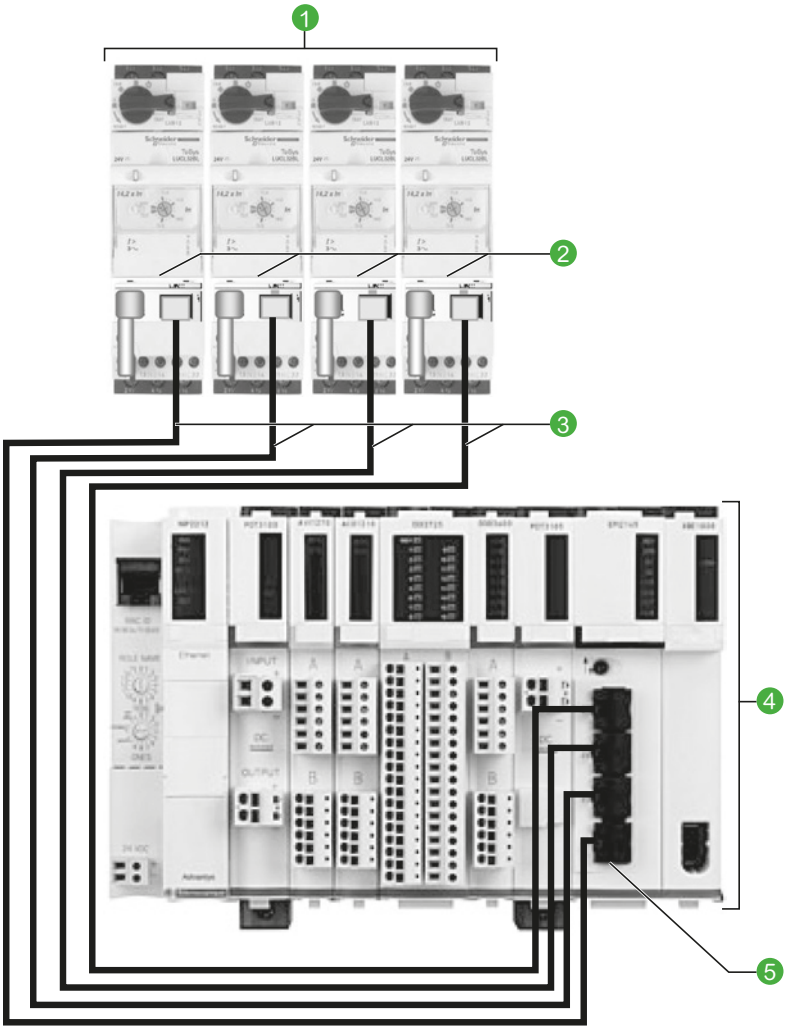
Advantys STB is a solution for remote I/O modules.

These communicate with the Modicon PLCs range thanks to a serial liaison, using the Advantys STB protocol.

In this example an Advantys I/O module is used to facilitate wiring.

Each of its four terminals receives a pre-assembled RJ45 cable connected to a Ultra starter-controller.

1. Ultra LUB120, 320 or 380 power base (equipped with 24 V DC LUC●●●●BL control modules)
2. TeSys Control module for parallel RJ45 wiring: LUFC00 + LU9BN11C (one direction) or LU9MRC (2 directions for LU2B12, 32 or 38 power base)
3. RJ45 cables (2 connectors):
   ⩽ 3 m: LU9R●●
   > 3 m: 490 NTW000●● (5, 12, 40 or 80 m)
4. PLC: Modicon range
5. I/O Modicon Advantys module: STBEPI2145K



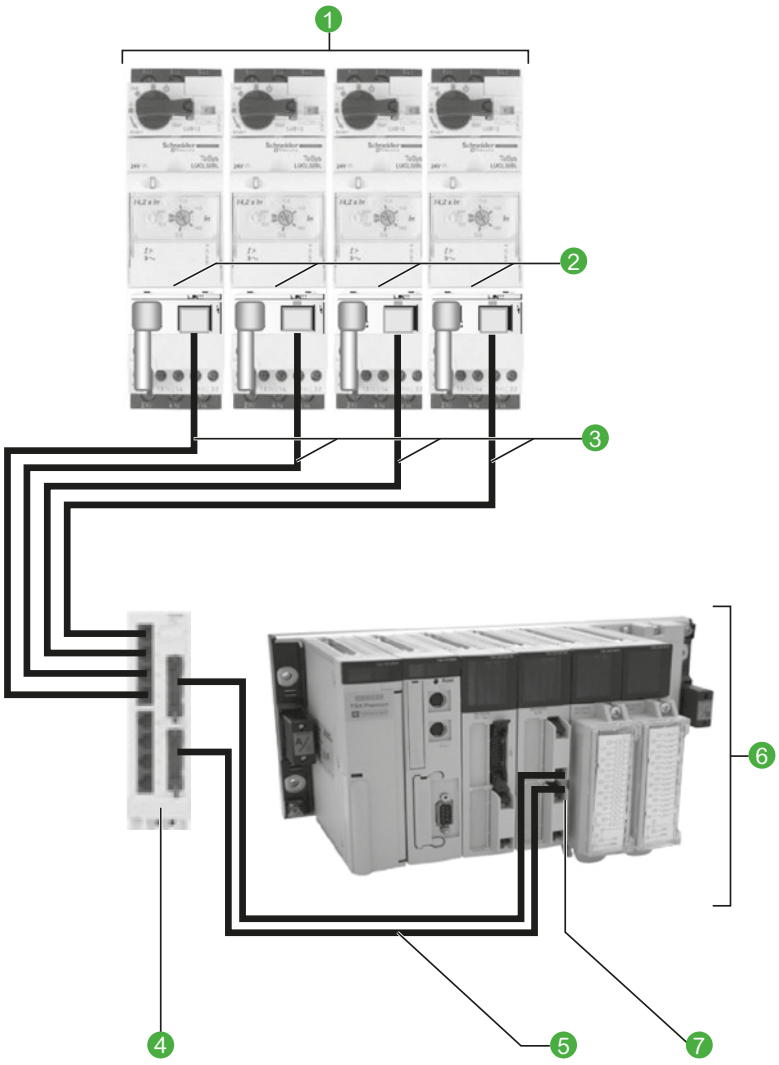


Life Is On Schneider Electric

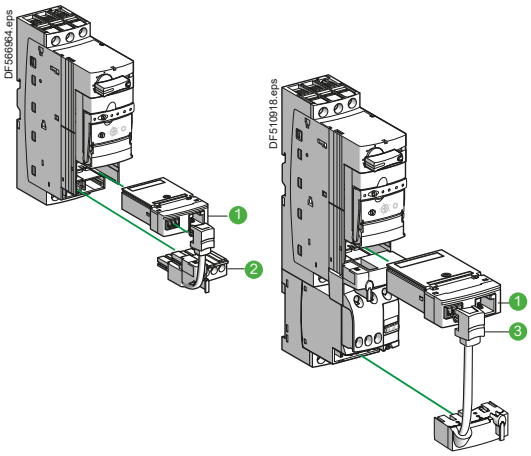
### Integration in the Modicon Telefast system

The wiring hubb **LU9G0●** facilitates the connection to Modicon Premium PLCs.
It adapts RJ45 connectors to HE10 available on the Telefast I/O modules.
Connection: up to 8 Ultra per hub.

1. Ultra LUB120, 320 or 380 power base (equipped with 24 V DC LUC●●●●BL control units)
2. TeSys Control module for parallel wiring RJ45: LUFC00 + LU9BN11C (one direction) or LU9MRC (2 directions for LU2B12, 32 or 38 power base)
3. RJ45 cables (2 connectors):
⩽ 3 m: LU9R●●
> 3 m: 490 NTW000●● (5, 12, 40 or 80 m)
4. Telefast RJ45 / HE10 splitter box: LU9G02 or LU9G03 (different Ultra connection capacities)
5. HE10 cables (2 connectors): TSXCDP●●●
6. PLC: Modicon Premium range
7. I/O module: TSXDMY28FK



# Product references



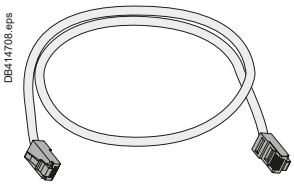

| Components for connection of a starter - 1 direction of rotation | |
|---|---|
| **Designation** | **Reference** |
| 1 Parallel connection module, RJ45 output 2 coil control inputs, 3 signal outputs | **LUFC00** |
| 2 Pre wired connector, one direction of rotation, for LUB120, 320 or 380 power base coil connection and one contact for emergency stop | **LU9BN11C** |

| Components for connection of a starter - 2 directions of rotation | |
|---|---|
| **Designation** | **Reference** |
| 1 Parallel connection module, RJ45 output | **LUFC00** |
| 3 Pre wired connector, 2 directions of rotation, for LU2B12, 32 or 38 power base coil connection and one contact for emergency stop | **LU9MRC** |

*LU9G02*

*LU9G03*

| Telefast RJ45/ HE10 splitter box | |
|---|---|
| **Designation** | **Reference** |
| Splitter box<br>Connection to U:<br>4 RJ45 connectors: for 1 to 4 U, 1 or 2 directions<br>4 RJ45 connectors: for 1 to 4 U, 1 direction<br>Connection to PLC:<br>1 x HE10 connector - 20 channels, for pole status, alarms<br>1 x HE10 connector - 20 channels, for control.<br>24 V DC auxiliary power supply required | **LU9G02** |
| Splitter box<br>Connection to U:<br>8 RJ45 connectors: for 1 to 8 U, 1 or 2 directions<br>Connection to PLC:<br>1 x HE10 connector - 20 channels, for pole status, alarms<br>1 x HE10 connector - 20 channels, for control.<br>24 V DC auxiliary power supply required. | **LU9G03** |




*RJ45 cables.*

| RJ45 connection cables, with 2 RJ45 connectors | |
|---|---|
| 0.3 m | **LU9R03** |
| 1 m | **LU9R10** |
| 3 m | **LU9R30** |

| HE10 connection cables, with 2 HE10/20 way connectors | |
|---|---|
| **Section: AWG 22 / 0.324 mm²** | |
| 0.5 m | **TSXCDP053** |
| 1 m | **TSXCDP103** |
| 2 m | **TSXCDP203** |
| 3 m | **TSXCDP303** |
| 5 m | **TSXCDP503** |
| **Section: AWG 28 / 0.080 mm² (flat cable)** | |
| 1 m | **ABFH20H100** |
| 2 m | **ABFH20H200** |
| 3 m | **ABFH20H300** |

| Cable with stripped wires (PLC side)<br>1 x HE10/20 ways connector (Splitter box side) | |
|---|---|
| **Section: AWG 22 / 0.324 mm²** | |
| 3 m | **TSXCDP301** |
| 5 m | **TSXCDP501** |

Characteristics:
page A4/53

Schemes:
pages A4/67 and A4/68



Life Is On Schneider Electric

PB105092.eps

## Application functionality, topology

### 1 Geographically expanded process

Many motors are scattered on the site, the process control requires individual control to ensure safety and proper operation.
Ultra is a suitable communicating actuator. The integration of a bus communication module in the starter-controller saves space in the control board and simplifies wiring, compared to solutions based on conventional components (circuit breaker + contactor).

### 2 Application: automatic motor control / monitoring

Thanks to a communication bus, starter-controllers are part of an automation system controlled by a PLC and (or) various communicating controllers.
These equipment can then share the status and alarm information related to each motor control and perform specific treatments.

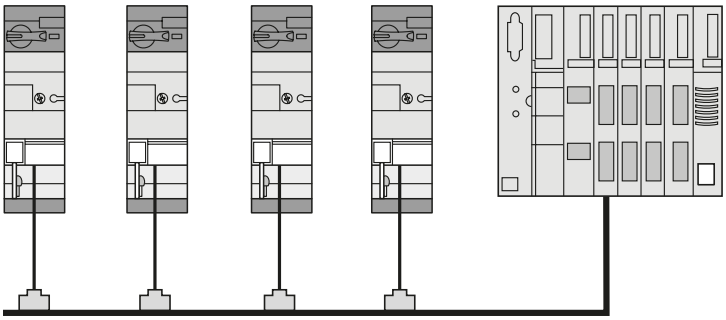
### 3 Bus- type connection

This type of connection allows different topologies (star, ring ...) and supports various protocols dialogue. It is therefore recommended for geographically expanded process, in order to to simplify wiring and ensure multiple-controller management.



- The bus wiring interconnects Ultra starters controllers and components of the installation via a single the cable.
- Commands and status are coded according to the selected protocol and transmitted on the communication bus.
- This wiring is simple, usually a shielded (or not) pair of wires, suitable for monitored automation, regardless of the number of Ultra and their locations.

DB416376.eps

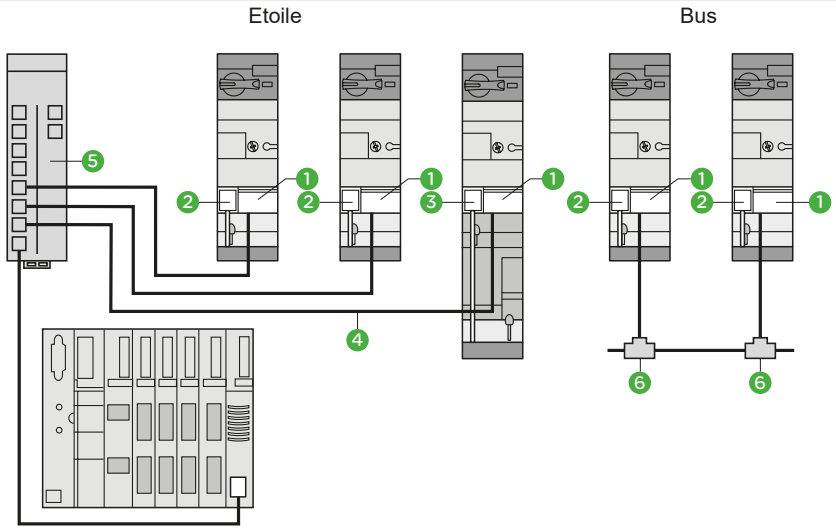
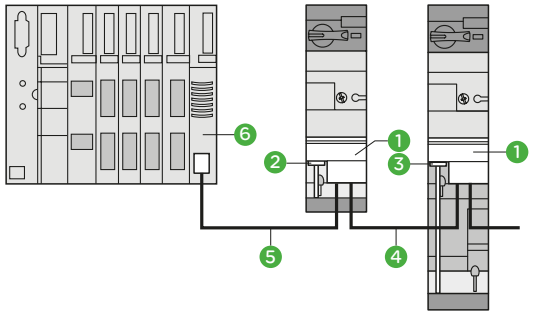


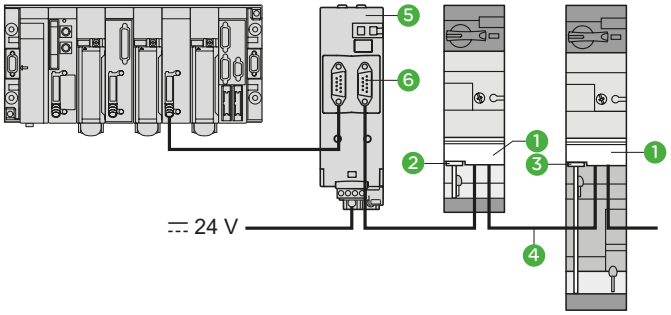
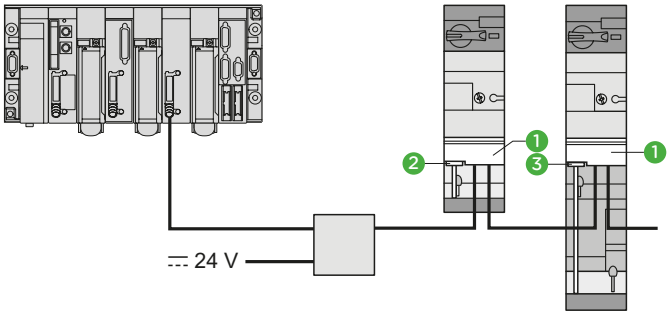
### Available Ultra status and controls via a communication module

| Control unit | LUCA | LUCB LUCC LUCD | LUCM |
|---|---|---|---|
| Starter status (ready, running, fault) | ■ | ■ | ■ |
| Start and Stop commands | ■ | ■ | ■ |
| Thermal overload alarm | | ■ | ■ |
| Remote reset via the bus | | ■ | ■ |
| Indication of motor load | | ■ | ■ |
| Fault signalling and differentiation | | ■ | ■ |
| Remote programming and monitoring of all functions | | | ■ |
| “Log” function | | | ■ |
| “Monitoring” function | | | ■ |
| Alarms (overcurrent, ...) | | | ■ |

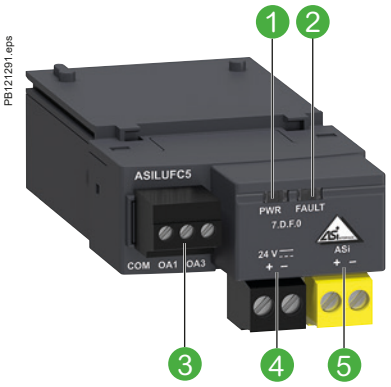
# Introduction



| Network | Architecture | Component references |
|---|---|---|
| **Modbus** |  | 1 LULC033<br>2 LU9BN11C<br>3 LU9MRC<br>4 VW3A8306R●●●<br>5 LU9GC3<br>6 VW3A8306TF |
| Details page **A4/26** | | |
| **Advantys STB** | | |
| Starter-controllers communicate using ADVANTYS STB protocol to fit into a remote I/O architecture. |  | 1 LULC15<br>2 LU9BN11L<br>3 LU9MRL<br>4 LU9RDD●●●<br>5 LU9RCD<br>6 STBXBE1100 |
| Details page **A4/27** | | |

| Network | Architecture | Component references |
|---|---|---|
| **PROFIBUS DP (Decentralized Peripherals)** | | |
| is used for connecting actuators and sensors to a central controller for applications in industrial production. The standard bus provides a number of diagnostic means<br><br>Details page<br>**A4/28** |  | 1 LULC07<br>2 LU9BN11L<br>3 LU9MRL<br>4 LU9RPB010<br>LU9RPB100<br>LU9RPB400<br>5 LU9AD7<br>6 LU9GC7 |
| **DeviceNet** | | |
| Details page<br>**A4/29** |  | 1 LULC09<br>2 LU9BN11L<br>3 LU9MRL |

## Product references




1. Green LED: AS-Interface voltage present
2. Red LED: AS-Interface or module fault
3. Outputs for starter commands
4. Black connector for connection to ⎓ 24 V auxiliary power supply
5. Yellow connector for connection to the AS-Interface system

The ASILUFC5 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via DeviceNet bus.
The LULC09 communication module is slave type.

### Module Specifications

**I/O terminal block**

- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors
  - 1 x 24 V DC output - 0.5 A local auxiliary command.

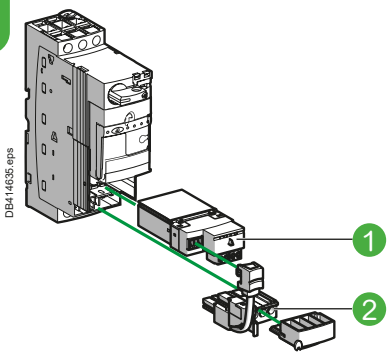
**Connectors**

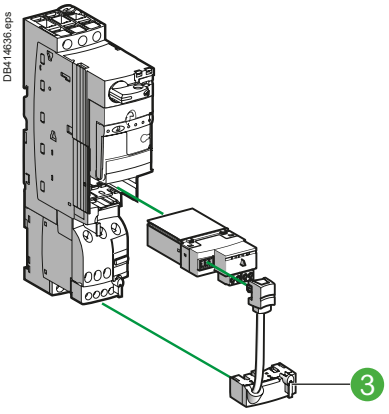
- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For AS-Interface bus.

**Signaling**

- Module Status - Error - 24 V, by LED.





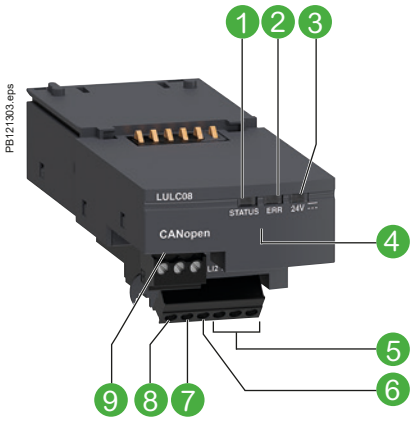

**Tesys** Control components

| Description | Mark | Max number of slaves | References |
|---|---|---|---|
| AS-Interface communication module | 1 | 31 | **ASILUFC5** |
| | | 62 | **ASILUFC51** |
| Pre-wired connector: coil - LUB power base | 2 | - | **LU9BN11C** |
| Pre-wired connector: coil - LU2B power base | 3 | - | **LU9MRC** |

Characteristics:
pages A4/51, A4/53, A4/55

Schemes:
pages A4/64, A4/70, A4/72

# Product references




1 LED indicating module status
2 Fault signalling LED
3 LED indicating ⎓ 24 V supply ON for outputs OA1, OA3 and LO1
4 SUB-D connector for bus link
5 ⎓ 24 V supply connection
6 Discrete input
7 Discrete input
8 Discrete output
9 Outputs for starter commands

The LULC08 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via CANopen bus.
The LULC08 communication module is slave type.

## Module Specifications

### I/O terminal block

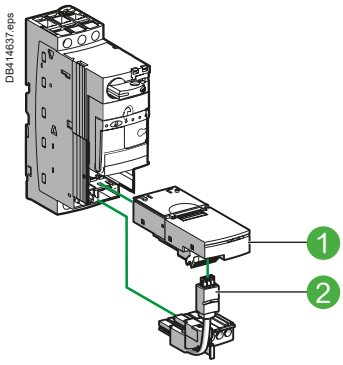
- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors
  - 1 x 24 V DC output - 0.5 A local auxiliary command.

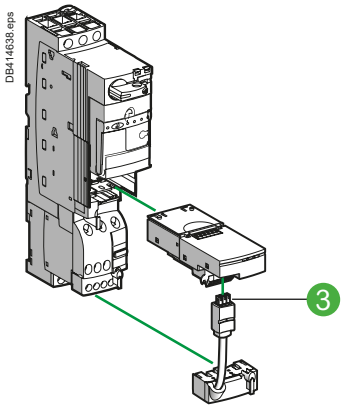
### Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For CANopen bus.

### Signaling

- Module Status - Error - 24 V, by LED.




| **Tesys** Control components | | |
|---|---|---|
| **Description** | **Item** | **References** |
| CANopen communication module | 1 | **LULC08** |
| Pre-wired connector: coil - LUB power base | 2 | **LU9BN11L** |
| Pre-wired connector: coil - LU2B power base | 3 | **LU9MRL** |

| **Compatibility of CANopen communication module with control units** | |
|---|---|
| LUCA ●●BL / B ●●BL / C ●●BL / D ●●BL | All versions marketed after **2T0481** (1) |
| LUCM●●BL | All versions ≥ V3.2 |
| LUCMT1BL | All versions ≥ V3.2 |

*(1) This "date code" is made up as follows:*
***2T*** *or* ***2C****: factory code.*
***04****,* ***05****,* ***06*** *and so on: year of manufacture.*
***08****: week.*
***1****: 1st day of the week.*

## How to get information on the design of a CANopen architecture and the choice of network accessories

Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.

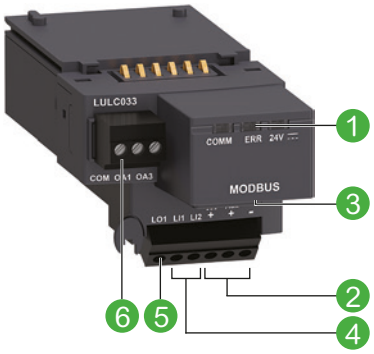
Characteristics:
pages A4/52, A4/53, A4/55

Schemes:
page A4/66

# Product references

**LULC033**

PB121552.eps




1 Module status signalling LED
2 24 V supply connection
3 RJ45 connector for RS485 Modbus link
4 2 discrete inputs
5 1 discrete output
6 Outputs for starter commands

LULC033 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via Modbus.

## Module Specifications

### I/O terminal block

■ Powered by external 24 V DC (power supply not included):
□ 2 x configurable inputs for binary sensors (on LULC033 only)
□ 1 x 24 V DC output - 0.5 A local auxiliary command.

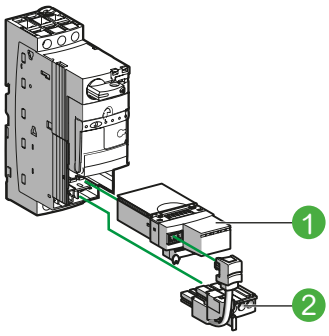
### Connectors

For Ultra 24 V DC coil (common, direction 1, direction 2).
■ RJ45, For Modbus line.

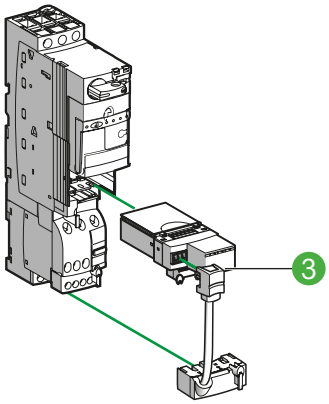
### Signaling

■ Module Status - Error - 24 V, by LED.

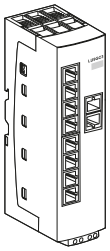
DB414639.eps




DB414640.eps




DB414709.eps



| **Tesys** Control components | | | |
|---|---|---|---|
| **Description** | **Item** | **Bin. input** | **References** |
| Modbus communication module | 1 | 2 | **LULC033** |
| Pre-wired connector: coil - LUB power base | 2 | - | **LU9BN11C** |
| Pre-wired connector: coil - LU2B power base | 3 | - | **LU9MRC** |

| **Modbus hub** | | |
|---|---|---|
| **Description** | **Length (m)** | **References** |
| Modbus communication distributor | - | **LU9GC3** |
| Cables fitted with 2 x RJ45 connectors | 0.3 | **VW3A8306R03** |
| | 1 | **VW3A8306R10** |
| | 3 | **VW3A8306R30** |
| Tees derivations | 0.3 | **VW3A8306TF03** |
| | 1 | **VW3A8306TF10** |
| **Description** | | **References** |
| RS 485 line terminator | | **VW3A8306R** |

| **Compatibility of Modbus communication modules** | | | |
|---|---|---|---|
| **Communication modules (software version)** | | **LULC033 from V2.1** | **LULC033 from V2.2** |
| Power base | LUB●● / LU2B●2 | ■ | ■ |
| | LUTM●●BL | ■ | ■ |
| Control unit | LUCA●●BL | | ■ |
| | LUCB●●BL<br>LUCC●●BL<br>LUCD●●BL | | ■ |
| | LUCM●●BL | | ■ (1) |
| | LUCBT●●BL<br>LUCDT●●BL | ■ | |
| | LUCMT●●BL | ■ | |

*(1) Except **LUCM ●●BL** V1.04 and V1.06.*

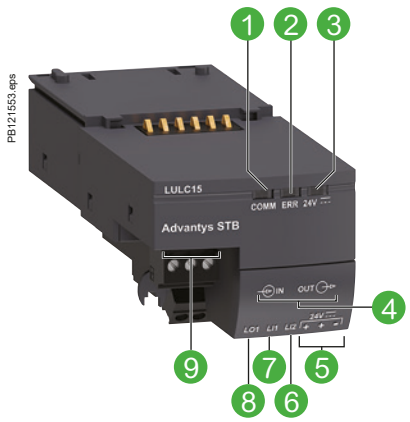
## How to get information on the design of a Modbus architecture and the choice of network accessories

Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.

Characteristics:
pages A4/51, A4/53, A4/55

Schemes:
pages A4/65 and A4/73

# Product references




1 Two-colour LED indicating module status
2 Fault signalling LED
3 LED indicating that ⎓ 24 V supply is ON
4 Bus connectors
5 ⎓ 24 V supply connection
6 Discrete input
7 Discrete input
8 Discrete output
9 Outputs for starter commands

Communication module LULC15 allows direct connection of Ultra starter-controllers and controllers on an Advantys STB island, between two segments or at the end of a segment. The starter-controller will then be able to make use of the services provided by Advantys STB: self-addressing, autobaud, fallback positions.

## Module Specifications

### I/O terminal block

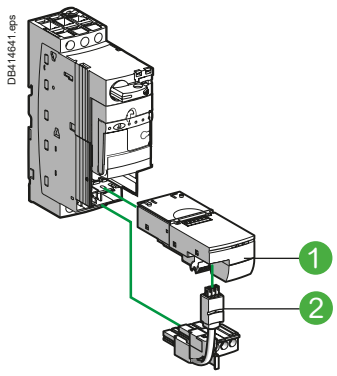
- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors (on LULC033 only)
  - 1 x 24 V DC output - 0.5 A local auxiliary command.

### Connectors

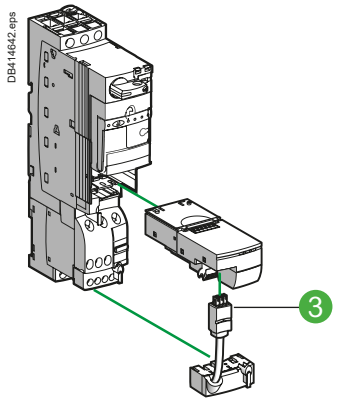
- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For Advantys STB bus.

### Signaling

- Com - Error - 24 V, by LED.




*LUB + LULC15 + LU9BN11L*




*LU2B + LULC15 + LU9MRL*

## Tesys Control components

| Description | Item | References |
|---|---|---|
| Advantys STB communication module | 1 | **LULC15** |
| Pre-wired connector: coil - LUB power base | 2 | **LU9BN11L** |
| Pre-wired connector: coil - LU2B power base | 3 | **LU9MRL** |

## Cables

| Description | Length (m) | References |
|---|---|---|
| Cables fitted with connectors, one straight and one elbowed | 0.3 | **LU9RCD03** |
| | 1 | **LU9RCD10** |
| | 5 | **LU9RCD50** |
| Cables fitted with two straight connectors | 0.3 | **LU9RDD03** |
| | 3 | **LU9RDD30** |

## Compatibility of Advantys STB communication module with control units

| | |
|---|---|
| LUCA●●BL / B●●BL / C●●BL / D●●BL | All versions marketed after **2T0481** (1) |
| LUCM●●BL | All versions ≥ V3.2 |
| LUCMT1BL | All versions ≥ V3.2 |

*(1) This "date code" is made up as follows:*
***2T*** *or* ***2C****: factory code.*
***04****,* ***05****,* ***06*** *and so on: year of manufacture.*
***08****: week.*
***1****: 1st day of the week.*

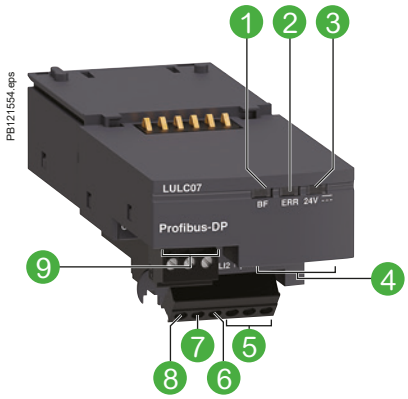
## How to get information on the design of a Advantys STB architecture and the choice of network accessories

Consult the library of downloadable documents on our se.com website, by searching by the name of the transmission protocol.

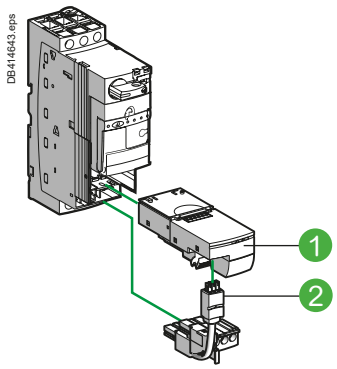
Characteristics:
pages A4/52, A4/53, A4/55

Schemes:
page A4/67

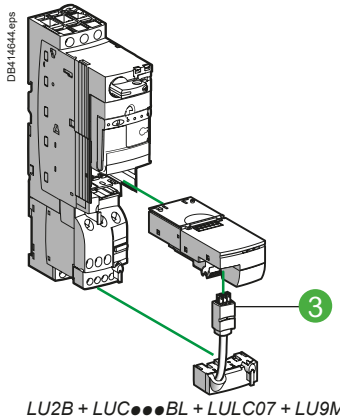
# Product references




1 Two-colour LED indicating module status
2 Fault signalling LED
3 LED indicating ⎓ 24 V supply ON for outputs OA1, OA3 and LO1
4 SUB-D connector for bus link
5 ⎓ 24 V supply connection
6 Discrete input
7 Discrete input
8 Discrete output
9 Outputs for starter-controller commands (non-reversing and reversing)




*LUB + LUC●●●BL + LULC07 + LU9BN11L*




*LU2B + LUC●●●BL + LULC07 + LU9MRL*

When used in conjunction with the power base and control unit, communication module LULC07 allows Ultra starter-controllers to be controlled via PROFIBUS DP (Deported Periphery) bus.
Communication module LULC07 is of the slave type.

## Module Specifications

### I/O terminal block

- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors
  - 1 x 24 V DC output - 0.5 A local auxiliary command.

### Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For PROFIBUS DP bus.

### Signaling

- Com - Error - 24 V, by LED.

## **Tesys** Control components

| Description | Item | References |
|---|---|---|
| PROFIBUS DP communication module | 1 | **LULC07** |
| Pre-wired connector: coil - LUB powerbase | 2 | **LU9BN11L** |
| Pre-wired connector: coil - LU2B powerbase | 3 | **LU9MRL** |

## Components for connection to the bus and to the installation

The 24 V DC -Aux supply to PROFIBUS DP modules LULC07 must pass through power supply module LU9GC7.
LULC07 modules must be connected to the LU9GC7 splitter box in order to be powered.
The number of Ultra starter-controllers that can be powered by an LU9GC7 module is limited by the maximum current (1.5 A) which it can deliver.
The ⎓ 24 V supply for the inputs/outputs must be provided separately.

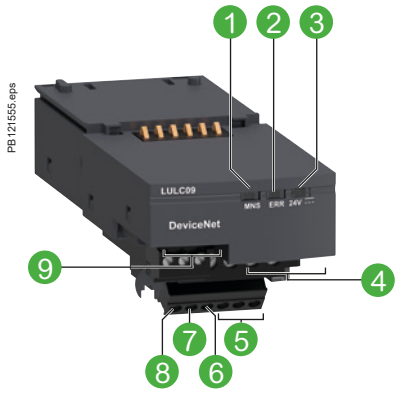
| Description | Length (m) | References |
|---|---|---|
| PROFIBUS DP power supply module | - | **LU9GC7** |
| PROFIBUS DP connector | - | **LU9AD7** |
| PROFIBUS DP cables 2-wire | 100 | **TSXPBSCA100** |
| | 400 | **TSXPBSCA400** |
| PROFIBUS DP cables 4-wire | 10 | **LU9RPB010** |
| | 100 | **LU9RPB100** |
| | 400 | **LU9RPB400** |

## How to get information on the design of a PROFIBUS DP architecture and the choice of network accessories

Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.

Characteristics: pages A4/52 and A4/55
Schemes: page A4/66, A4/67

# Product references




1 LED indicating module status
2 Fault signalling LED
3 LED indicating ⎓ 24 V supply ON for outputs OA1, OA3 and LO1 and 24 V bus
4 DeviceNet connector for bus link
5 ⎓ 24 V supply connection
6 Discrete input
7 Discrete input
8 Discrete output
9 Outputs for starter-controller commands (non-reversing and reversing)

When used in conjunction with the power base and control unit, communication module LULC09 allows Ultra starter-controllers to be controlled via DeviceNet bus. Communication module LULC09 is of the slave type.

## Module Specifications

### I/O terminal block

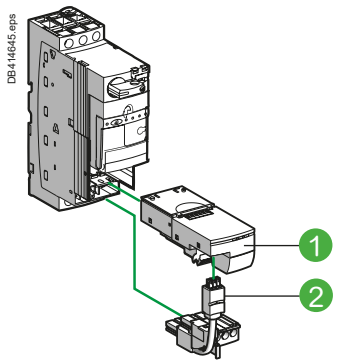
- Powered by external 24 V DC (power supply not included):
  - 2 x configurable inputs for binary sensors
  - 1 x 24 V DC output - 0.5 A local auxiliary command.

### Connectors

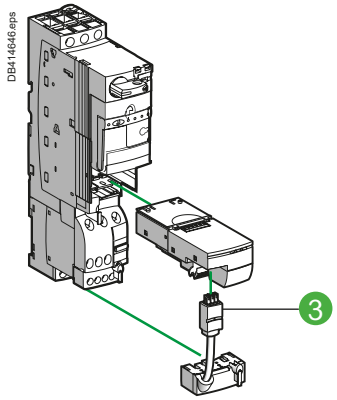
- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For DeviceNet bus.

### Signaling

- Com - Error - 24 V , by LED.




*LUB + LUC●●●BL + LULC07 + LU9BN11L*




*LU2B + LUC●●●BL + LULC07 + LU9MRL*

| **Tesys** Control components | | |
|---|---|---|
| **Description** | **Item** | **References** |
| DeviceNet communication module | 1 | **LULC09** |
| Pre-wired connector: coil - LUB powerbase | 2 | **LU9BN11L** |
| Pre-wired connector: coil - LU2B powerbase | 3 | **LU9MRL** |

## How to get information on the design of a DeviceNet architecture and the choice of network accessories

Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.

Characteristics:
pages A4/52, A4/53, A4/55

Schemes:
page A4/66

PB121557.eps

*LUFP9*

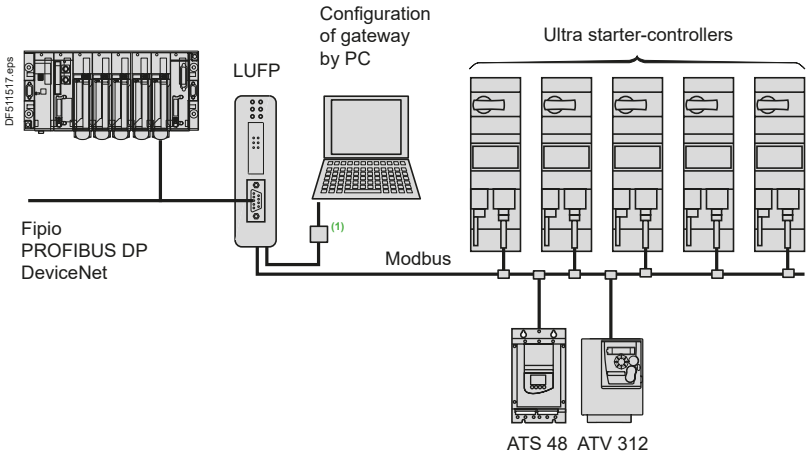
## Introduction

LUFP communication gateways allow connection between the Modbus serial link and Fipio, PROFIBUS DP or DeviceNet field buses.

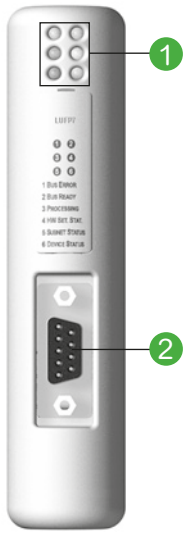
After configuration, these gateways manage information which can be accessed by the Modbus serial link and make this information available for read/write functions (command, monitoring, configuration and adjustment) on the field buses.

An LUFP communication gateway consists of a box which can be clipped onto a 35 mm omega rail, allowing connection of up to 8 Slaves connected on the Modbus serial link.

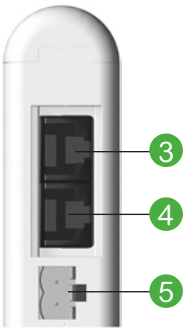
**Example of architecture**




DF526109-17-M.eps




561512.eps




| Communication gateway LUFP | |
|---|---|
| **Description** | **Reference** |
| Fipio / Modbus gateway | **LUFP1** |
| PROFIBUS DP / Modbus gateway | **LUFP7** |
| DeviceNet / Modbus gateway | **LUFP9** |

## Description

**Front panel of the product**

1 LED indicating :
- communication status of the Modbus serial links,
- gateway status,
- communication status of the Fipio, PROFIBUS DP or DeviceNet bus.

2 Connectors for connection to Fipio, PROFIBUS DP or DeviceNet buses.

**Underside of product**

3 RJ45 connector for connection of the Modbus serial link
4 RJ45 connector for link to a PC
5 ⎓ 24 V power supply

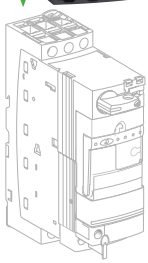
## Software set-up

For the Fipio bus, software set-up of the gateway is performed using either PL7 Micro/Junior/Pro software or ABC Configurator software.
For the PROFIBUS DP and DeviceNet buses, software set-up is performed using ABC Configurator.
This software is included in the Ultra user's manual.

*(1) Connection kit for PowerSuite software workshop.*

Schemes:
page A4/68

# Product references



*LUALB1*

*LUALF1*

*LA9LB920*

## Short-circuit current limiter block

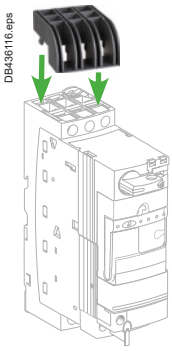
To be connected in series and upstream of a Ultra starter-controller. It increases its ability to withstand the short circuit current from 50 kA to 100 or 130 kA under 400 V.

Principle: under the action of a short-circuit, the opening of two contacts of each phase of the limiter creates a resistive arc. The current then decreases to a value tolerable by a Ultra power base.

**Limiter blocks and accessories**

| Description | Breaking capacity Iq (kA) | | Ie (A) | Ith (A) | Mounting | Unit reference |
|---|---|---|---|---|---|---|
| | ≤ 440 V | 690 V | | | | |
| Limiter-disconnector (1 x LUAFL1 cartridge supplied) | 130 | 70 | - | 32 | Direct on power base up to 15 kW/32 A | **LUALB1** (1) |
| Limiter | 100 | 35 | 32 | 63 | Separate | **LA9LB920** (2) |
| limiter cartridge for LUALB1 | 130 | 70 | - | - | Limiter-disconnector | **LUALF1** |

*(1) Must be connected to one power base only.*
*(2) Can be connected to multiple Ultra power bases in parallel with limitation :*
- *Total Ith max 63 A*
- *Total nominal current (Ie) 32 A from motor with simultaneous start (**LA9LB920** could not withstand higher inrush peak current)*




*LU9SP0*

## Phase barrier

Ensures a complementary electrical insulation between phases.
690 V AC network: compulsory.
440 V AC network: compulsory when assembling a UL508 type E compliant motor starter (Self Protected Starter).

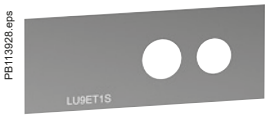
| Description | Use | Mounting | Reference |
|---|---|---|---|
| Phase separator | LUB or LU2B 12 or 120<br>LUB or LU2B 32 or 320<br>LUALB1 | Live terminals<br>L1, L2, L3 | **LU9SP0** |

## Clip-in labels

Can be clipped on any Ultra power base, on LU6MB0●● inverser block, and Linergy HK busbar system.

**Marking accessory**

| Description | Sold by lot of | Reference per unit |
|---|---|---|
| Clip-in label 8 x 18 mm | 100 | **LAD90** |




*LU9ET1S*

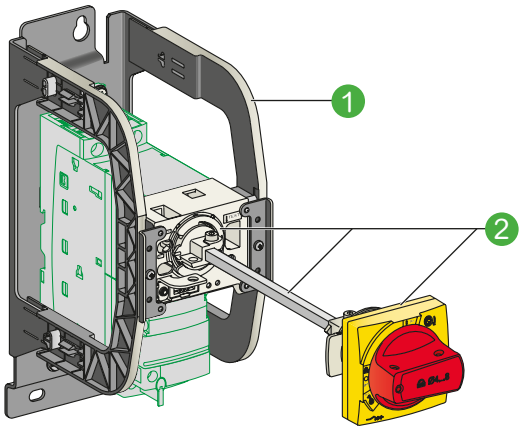
## Safety-chain identification - Red label

The red sticker is dedicated to Ultra LUCA, LUCB, LUCC, LUCD and LUCL control units.

| Description | Reference per unit |
|---|---|
| Retrofit safety-chain identification sticker | **LU9ET1S** |

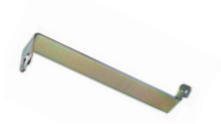
Characteristics: page A4/50
Dimensions: page A4/61

# Product references




*LU9APN21 mounting kit*

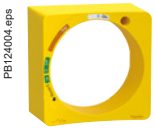
*GVAPA1 long shaft*




*GVAPK12 shaft support plate for deep enclosure*

*GVAPP1 spacer base (retrofit accessory)*

*GVAPR54 red handle, IP 54*




*GVAPYPHP external handle protection frame*

*GVAPL01 "Laser square" plotting tool*

## Extended rotary handle

Allows a circuit breaker or a Ultra starter-controller installed in back of an enclosure to be operated from the front panel.
The rotary handle can be black or red/yellow, IP54 or IP65. It includes a function for locking the circuit breaker or the starter in the O (OFF) or | (ON) position (depending on the type of rotary handle) by means of up to 3 padlocks with a shank diameter of 4 to 8 mm.
The extension shaft must be adjusted to the depth of the enclosure.
The IP54 rotary handle is fixed with a nut (Ø22) to make it easier to assemble.

### Mounting kit

1 Ultra power base bracket; its horseshoe shaped sides hold the rotary mechanism facing the original handle.
2 Mechanism, shaft and handle; the shaft enters the handle attached to the door during closing.

### Long shaft

■ to be cut to the required length. Equipped with a connection endpiece.

### Shaft support plate for deep enclosure

■ Provides horizontal guiding of the shaft, when the door is open.

### Spacer base (retrofit accessory)

■ Fixed on a side of the box, for heightening an GVAP●●● handle.

### Handle

■ Delivered as a single unit, to be fitted on a side of the enclosure.
*Note: references below are suitable for Ultra power bases after 2004.*

### "Laser Square" Tool

■ On the principle of an angle extended with a laser beam, the "Laser Square" facilitates tracing the piercing marks on the door or the sides of an enclosure.

### "Safety" stickers

■ Marking: Electrical hazard, etc.

| Description | | Tripping indication | Reference |
|---|---|---|---|
| Mounting kit | Black handle, with error status, IP54 | ● | **LU9APN21** |
| | Red handle, with error status, IP54 | ● | **LU9APN22** |
| | Red handle, without error status, IP65 | - | **LU9APN24** |
| Separate elements | Long shaft = 315 mm | - | **GVAPA1** |
| | Shaft (≥ 300 mm) support plate for deep enclosure | - | **GVAPK12** |
| | Spacer base | - | **GVAPP1** |
| | Black handle, IP54 | ● | **GVAPB54** |
| | Red handle, IP54 | ● | **GVAPR54** |
| | Red handle, IP65 | | **GVAPR65** |
| Tool | "Laser square" plotting tool | | **GVAPL01** |
| "Safety" stickers | German (x10) | | **GVAPSDE** |
| | Chinese (x10) | | **GVAPSCN** |
| | Portuguese (x10) | | **GVAPSPT** |
| | Italian (x10) | | **GVAPSIT** |
| External handle protection frame for U | Yellow frame | | **GVAPYPHP** |
| | Black frame | | **GVAPBPHP** |

Dimensions:
page A4/61

## Product references

PB111807_104.eps

### MCC drawers (Motor Control Center)

The drawers are composed of:

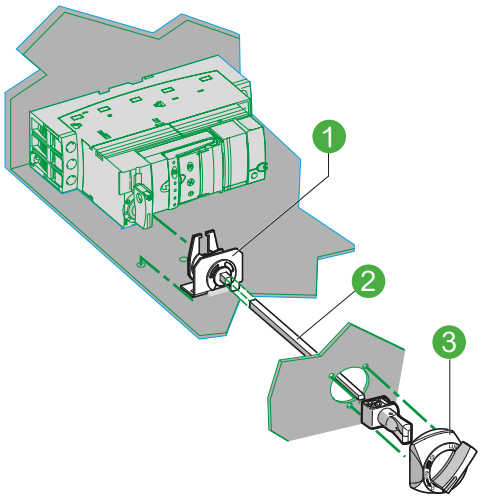
- a fixed part, in the frame of the panel,
- a fully withdrawable part, integrating the protection, control and automation components.

With a height of 3/4/6/8/12/18/24/36 modules, they allow the assembling of motor protection/control feeders:

- Direct, one direction of rotation
- Direct, 2 directions of rotation
- Star-delta
- Dahlander (2 speeds)
- 2-speed, separate winding
- Motor drives from 0 to 500 kW
- Soft starters of 0 to 75 kW.



DB123404.eps

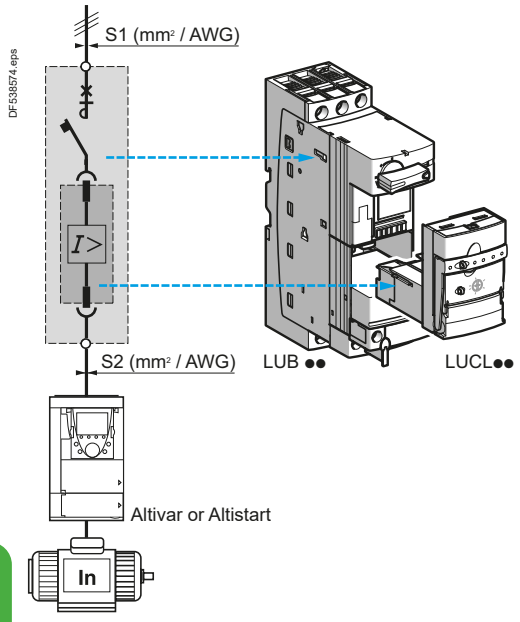



### Mounting kit and handle for MCC drawer

Together, this provides manual control of a Ultra starter-controller from the front face of the drawer.
As the clamping part on top of Ultra control pad is open, the kit may be used on Ultra power bases before 2005.

| Mounting kit + small handle | | |
|---|---|---|
| **Description** | **Item** | **Reference** |
| Handle with mounting kit for MCC drawer | 1 + 2 + 3 | **LU9AP20** |

PB121243.eps




## Introduction

When installed upstream of a variable speed controller or soft start unit, control unit LUCL●●, used in conjunction with an LUB12 or LUB32 power base, provides:
- isolation,
- short-circuit protection of the motor starter.

(variable speed controller-based or soft start unit-based motor starters).

***Note:*** *control unit LUCL, when used in conjunction with power base LUB12 or LUB32, conforms to standard IEC 60947-6-2.*

### Installation regulations

When the length of the cable between the Ultra starter and the variable speed controller is more than 1.5 m, the c.s.a. of the cable between the variable speed controller and the Ultra starter (S2) must be equal to the c.s.a. of the cable upstream of Ultra (S1).

## Description of LUCL magnetic control unit

1. Extraction and locking handle
2. Sealing of locking handle
3. Dial for magnetic adjustment of motor In
4. Locking of settings by sealing the transparent cover

## References

| Description | Line current of the variable speed controller or soft start unit | Reference (1) |
|---|---|---|
| | A | |
| **Magnetic control unit** | 0.15…0.6 | **LUCLX6●●** |
| | 0.35…1.4 | **LUCL1X●●** |
| | 1.25…5 | **LUCL05●●** |
| | 3…12 | **LUCL12●●** |
| | 4.5…18 | **LUCL18●●** |
| | 8…32 | **LUCL32●●** |

*(1) Standard control circuit voltage:*

| Volts | 24 | 48…72 | 110…240 |
|---|---|---|---|
| ⎓ | BL (2) (3) | – | – |
| ∿ | B | – | – |
| ⎓ or ∿ | – | ES (4) | FU (5) |

***Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.***

*(2) Voltage code to be used for a starter-controller with communication module.*
*(3) d.c. voltage with maximum ripple of ±10 %.*
*(4) ⎓: 48…72 V, ∿: 48 V.*
*(5) ⎓: 110…220 V, ∿: 110…240 V.*

Characteristics:
pages A4/48 and A4/49

# Product references

## Control unit and associated power base selection

| Functions provided | Maximum motor power ratings 50/60 Hz | | | Power base reference | Control unit reference | Line current |
|---|---|---|---|---|---|---|
| | < 400/415 V | 500 V | 690 V | | | |
| | KW | KW | KW | | | A |
| ■ Short-circuit protection<br>■ Manual reset | 0.09 | – | – | **LUB12 or LUB32** | **LUCLX6●●** | 0.15…0.6 |
| | 0.25 | – | – | **LUB12 or LUB32** | **LUCL1X●●** | 0.35…1.4 |
| | 1.5 | 2.2 | 3 | **LUB12 or LUB32** | **LUCL05●●** | 1.25…5 |
| | 5.5 | 5.5 | 9 | **LUB12 or LUB32** | **LUCL12●●** | 3…12 |
| | 7.5 | 9 | 15 | **LUB32** | **LUCL18●●** | 4.5…18 |
| | 15 | 15 | 18.5 | **LUB32** | **LUCL32●●** | 8…32 |

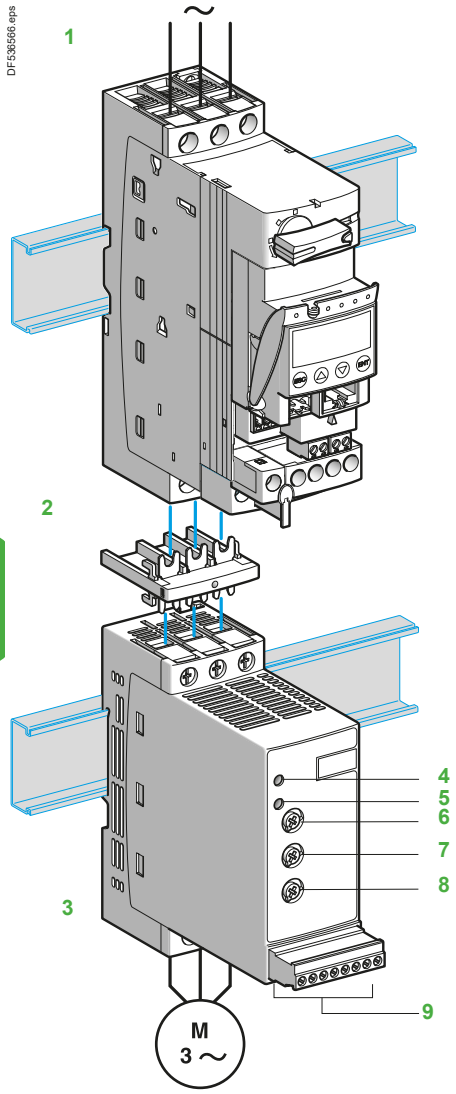
## Operating characteristics

| Control units | | Standard | Advanced | | | |
|---|---|---|---|---|---|---|
| | | LUCA | LUCB | LUCC | LUCD | LUCL |
| Thermal overload protection | | | | | | |
| Over current protection | | 14.2 x the setting current | | | | |
| Short-circuit protection | | 13 x Ir max (max current setting) | | | | |
| Protection against phase loss | | | | | | |
| Protection against phase imbalance | | | | | | |
| Earth fault protection (equipment protection only) | | | | | | |
| Tripping class | | 10 | | 10 | 20 | |
| Motor type | | 3-phase | | Single-phase | 3-phase | Single-phase and 3-phase |
| Thermal overload test function | | | | | | |
| Overtorque | | | | | | |
| No-load running | | | | | | |
| Long starting time | | | | | | |
| Reset method | Manual | | | | | |
| | Automatic or remote | | With function module, or parameters can be set via the bus with a communication module (see page 24614/2). | | | |

*Integrated function* *Non integrated function* *Function provided with accessory*

## Compatibility

| Compatibility of control unit LUCL●● with | | References | Functions |
|---|---|---|---|
| The controller | No | LUTM | Controller (without thermal overload protection) |
| Add-on contact blocks with fault signalling and auxiliary contacts | Yes | LUA1C11 | Add-on contact blocks with fault signalling (1 N/O + 1 N/C) |
| | | LUA1C20 | Add-on contact blocks with fault signalling (2 N/O) |
| | | LUFN20 | Auxiliary contacts (2 N/O) |
| | | LUFN11 | Auxiliary contacts (1 N/O + 1 N/C) |
| | | LUFN02 | Auxiliary contacts (2 N/C) |
| Communication modules | Yes | ASILUFC5 and ASILUFC51 | AS-Interface communication modules |
| | | LUFC00 | Parallel wiring module |
| | | LULC07 | PROFIBUS DP communication module (1 output/2 inputs) |
| | | LULC08 | CANopen communication module (1 output/2 inputs) |
| | | LULC09 | DeviceNet communication module (1 output/2 inputs) |
| | | LULC15 | Advantys STB communication module (1 output/2 inputs) |
| | | LULC033 | Modbus communication module (1 output/2 inputs) |
| Function modules | No | LUFW10 | Alarm function module |
| | | LUFDH11 | Thermal overload signalling module with manual reset |
| | | LUFDA01 | Thermal overload signalling module with automatic or remote reset (1 N/C) |
| | | LUFDA10 | Thermal overload signalling module with automatic or remote reset (1 N/O) |
| | | LUFV2 | Motor load indication module |




## Introduction

The Altistart U01 is a soft start/soft stop unit for asynchronous motors. It is designed primarily for combinations with Ultra controller-starters.

When combined with a Ultra **1** controller by means of a connector **2**, the Altistart U01 **3** is a power option which provides the “Soft start/soft stop” function. The result is a unique, innovative motor starter.

Using the Altistart U01 starter enhances the starting performance of asynchronous motors by allowing them to start gradually, smoothly and in a controlled manner. It prevents mechanical shocks, which lead to wear and tear, and limits the amount of maintenance work and production downtime.
The Altistart U01 limits the starting torque and current peaks on starting, on machines which do not require a high starting torque.

The Altistart U01 is designed for the following simple applications:
- Conveyors
- Conveyor belts
- Pumps
- Fans
- Compressors
- Automatic doors and gates
- Small cranes
- Belt-driven machines, etc.

The Altistart U01 is compact and easy to install. It complies with standards IEC/EN 60947-4-2, carries UL, CSA, C-Tick, CCC certifications and CE marking.

- **ATSU01N2●●LT soft start/soft stop units**
  - Control two phases of the motor power supply to limit the starting current and for deceleration
  - Internal bypass relay
  - Motor power ratings ranging from 0.75 kW to 15 kW
  - Motor supply voltages ranging from 200 V to 480 V, 50/60 Hz.

An external power supply is required for controlling the starter.

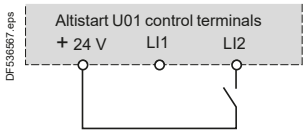
## Description

- Altistart U01 soft start/soft stop units are equipped with:
  - A potentiometer for setting the starting time **6**
  - A potentiometer for setting the deceleration time **8**
  - A potentiometer for adjusting the start voltage threshold according to the motor load **7**
  - 1 green LED **4** to indicate that the unit is switched on
  - 1 yellow LED **5** **to indicate that the motor is powered at nominal voltage, if it is connected to the starter**
  - A connector **9**:
    - 2 logic inputs for Run/Stop commands
    - 1 logic input for the BOOST function
    - 1 logic output to indicate the end of starting
    - 1 relay output to indicate the starter has a power supply fault or the motor has reached a standstill at the end of the deceleration stage

Characteristics: pages A4/75 and A4/76
References: page A4/38
Dimensions: page A4/77
Schemes: pages A4/78 to A4/81

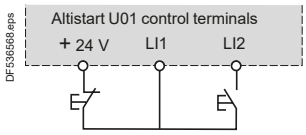
## ATSU01N2●●●LT soft start unit functions

■ 2-wire control
The run and stop commands are controlled by a single logic input. State 1 of logic input LI2 controls starting and state 0 controls stopping.




**Wiring diagram for 2-wire control**

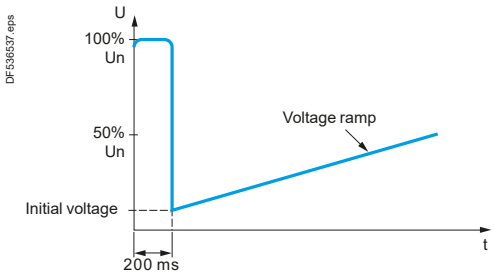
■ 3-wire control
The run and stop commands are controlled by 2 different logic inputs.
Stopping is achieved when logic input LI1 opens (state 0).
The pulse on input LI2 is stored until input LI1 opens.




**Wiring diagram for 3-wire control**

■ Starting time
Controlling the starting time means that the time of the voltage ramp applied to the motor can be adjusted to obtain a gradual starting time, dependent on the motor load.

■ Voltage boost function via logic input
Activating the BOOST logic input enables the function for supplying a starting overtorque capable of overcoming any mechanical friction.
When the input is at state 1, the function is active (input connected to the + 24 V) and the starter applies a fixed voltage to the motor for a limited time before starting.




**Application of a voltage boost equal to 100% of the nominal motor voltage**

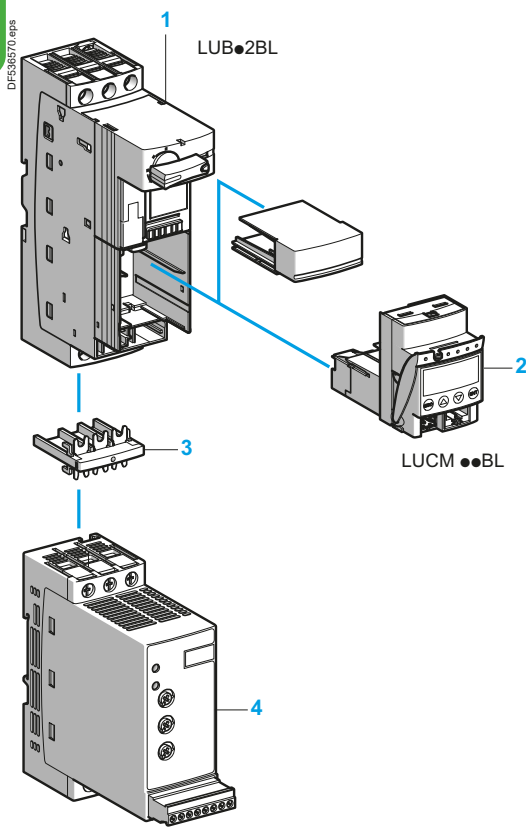
■ End of starting
○ application function for logic output LO1
ATSU01N2●●LT soft start/soft stop units are equipped with an open collector logic output LO, which indicates the end of starting when the motor has reached nominal speed.

Ultra motor starters
Ref.

*ATSU01N222LT*

## Soft start/soft stop units for 0.75 to 15 kW motors (can be combined with the Ultra starter)

| Motor power [1] | | | | Starter | |
|---|---|---|---|---|---|
| 230 V | 230 V | 400 V | 460 V | Nominal current | Reference |
| kW | *HP* | kW | *HP* | A | |
| **3-phase supply voltage: 200…480 V 50/60 Hz** | | | | | |
| 0.75<br>1.1 | *1*<br>*1.5* | 1.5<br>2.2<br>3 | *2*<br>*3* | 6 | **ATSU01N206LT** |
| 1.5<br>– | *2*<br>– | –<br>4 | *5*<br>– | 9 | **ATSU01N209LT** |
| 2.2<br>3 | *3*<br>– | 5.5<br>– | *7.5*<br>– | 12 | **ATSU01N212LT** |
| 4<br>5.5 | *5*<br>*7.5* | 7.5<br>11 | *10*<br>*15* | 22 | **ATSU01N222LT** |
| 7.5 | *10* | 15 | *20* | 32 | **ATSU01N232LT** |




ATSU 01N2●●LT

## Accessories

| Description | Used for starter | Reference |
|---|---|---|
| Power connector between ATSU01N2●●LT and U | ATSU01N2●●LT | **VW3G4104** |

## Ultra starter and soft start unit combinations

Numerous possibilities for combinations and options are offered.
Please consult the "Ultra Starters-open version" specialist catalogue.

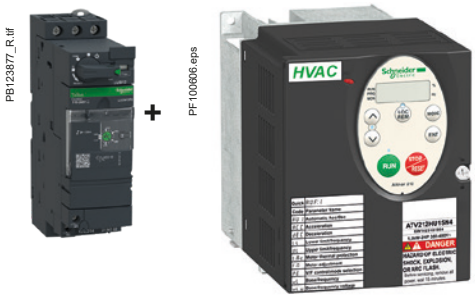
| Motor power Voltage | | | Soft starter | U | |
|---|---|---|---|---|---|
| | | | | Power base | Control unit [2] |
| 230 V kW/*HP* | 400 V kW | 460 V *HP* | | | |
| 0.75/*1* | 1.5 | *2* | ATSU01N206LT | LUB12 | LUC●05BL |
| 1.1/*1.5* | 2.2/3 | *3* | ATSU01N206LT | LUB12 | LUC●12BL |
| 1.5/*2* | – | – | ATSU01N209LT | LUB12 | LUC●12BL |
| – | 4 | *5* | ATSU01N209LT | LUB12 | LUC●12BL |
| 2.2/*3* | – | – | ATSU01N212LT | LUB12 | LUC●12BL |
| 3/– | 5.5 | *7.5* | ATSU01N212LT | LUB32 | LUC●18BL |
| 4/*5* | 7.5 | *10* | ATSU01N222LT | LUB32 | LUC●18BL |
| 5.5/*7.5* | 11 | *15* | ATSU01N222LT | LUB32 | LUC●32BL |
| 7.5/*10* | 15 | *20* | ATSU01N232LT | LUB32 | LUC●32BL |

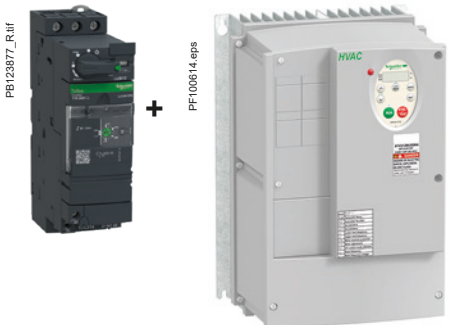
Example of a starter-motor combination with:
1 non-reversing power base for DOL starting (LUB●2BL)
2 control unit (LUCM●●BL)
3 power connector (VW3G4104)
4 Altistart U01soft start/soft stop unit (ATSU01N2●●LT)

*(1) Standard motor power ratings, HP power ratings indicated according to standard UL508.*
*(2) Depending on the configuration of the chosen Ultra starter, replace the ● with A for standard, B for expandable, and M for multifunction.*

Introduction: pages A4/36 and A4/37
Characteristics: pages A4/75 and A4/76
Dimensions: page A4/77
Schemes: pages A4/78 to A4/81

## Product references




### Variable speed controller/Ultra starter controller combination with magnetic protection

#### Ultra / Altivar 212 UL Type 1/IP 20

| Power 400 V (kW) | Ultra references (protection + power switching) | Variable speed controller reference |
|---|---|---|
| 0.75 | LUB12 + LUCL05 | **ATV212H075N4** |
| | | **ATV212HU15N4** |
| 2.2 | LUB12 + LUCL12 | **ATV212HU22N4** |
| 3 | LUB12 + LUCL12 | **ATV212HU30N4** |
| 4 | LUB12 + LUCL12 | **ATV212HU40N4** |
| 5.5 | LUB32 + LUCL32 or LUCL18 | **ATV212HU55N4** |
| 7.5 | LUB32 + LUCL32 or LUCL18 | **ATV212HU75N4** |
| 11 | LUB32 + LUCL32 | **ATV212HD11N4** |
| 15 | LUB32 + LUCL32 | **ATV212HD15N4** |

#### Ultra / Altivar 212 IP 54

| Power 400 V (kW) | Ultra references (protection + power switching) | Variable speed controller reference |
|---|---|---|
| 0.75 | LUB12 + LUCL05 | **ATV212W075N4** |
| 1.5 | LUB12 + LUCL12 or LUCL05 | **ATV212WU15N4** |
| 2.2 | LUB12 + LUCL12 | **ATV212WU22N4** |
| 3 | LUB12 + LUCL12 | **ATV212WU30N4** |
| 4 | LUB12 + LUCL12 | **ATV212WU40N4** |
| 5.5 | LUB32 + LUCL32 or LUCL18 | **ATV212WU55N4** |
| 7.5 | LUB32 + LUCL32 or LUCL18 | **ATV212WU75N4** |
| 11 | LUB32 + LUCL32 | **ATV212WD11N4** |
| 15 | LUB32 + LUCL32 | **ATV212WD15N4** |

## Products references

### Variable speed controller/Ultra starter controller combination with magnetic protection (continued)

#### Ultra / Altivar 320

| Power 400 V (kW) | Ultra references (protection + power switching) | Variable speed controller reference |
|---|---|---|
| 0.37 | LUB12 + LUCL05 | **ATV320U04N4C** |
| 0.55 | LUB12 + LUCL05 | **ATV320U06N4C** |
| 0.75 | LUB12 + LUCL05 | **ATV320U07N4C** |
| 1.1 | LUB12 + LUCL12 | **ATV320U11N4C** |
| 1.5 | LUB12 + LUCL12 | **ATV320U15N4C** |
| 2.2 | LUB12 + LUCL12 | **ATV320U22N4C** |
| 3 | LUB32 + LUCL18 | **ATV320U30N4C** |
| 4 | LUB32 + LUCL18 | **ATV320U40N4C** |
| 5.5 | LUB32 + LUCL32 | **ATV320U55N4C** |
| 7.5 | LUB32 + LUCL32 | **ATV320U75N4C** |

#### Ultra / Altivar 630

| Power 400V (kW) | Ultra references (protection + power switching) | Variable speed controller reference |
|---|---|---|
| 0.75 | LUB12 + LUCL05 | **ATV630U07N4** |
| 1.5 | LUB12 + LUCL12 | **ATV630U15N4** |
| 2.2 | LUB12 + LUCL12 | **ATV630U22N4** |
| 3 | LUB32 + LUCL18 | **ATV630U30N4** |
| 4 | LUB32 + LUCL18 | **ATV630U40N4** |
| 5.5 | LUB32 + LUCL32 | **ATV630U55N4** |
| 7.5 | LUB32 + LUCL32 | **ATV630U75N4** |

# Product references



ASILUFC5
ASILUFC51
GV1G10
GVAPA1
GVAPA2
GVAPB54S
GVAPK12
GVAPL01
GVAPP1
GVAPR65S
LA9LB920
LU2B12B
LU2B12BL
LU2B12ES
LU2B12FU
LU2B32B
LU2B32BL
LU2B32ES
LU2B32FU
LU2B38BL
LU2B38FU
LU2BA0BL
LU2BA0ES
LU2BB0BL
LU2MB0B
LU2MB0BL
LU2MB0ES
LU2MB0FU
LU6MB0B
LU6MB0BL
LU6MB0ES
LU6MB0FU
LU9AD7
LU9AP00
LU9AP11
LU9AP20
LU9APN21
LU9APN22
LU9APN24
LU9BN11
LU9BN11C
LU9BN11L
LU9C1
LU9C2
LU9ET1S
LU9G02
LU9G03
LU9GC3
LU9GC7
LU9M1
LU9MR1
LU9MR1C
LU9MRC
LU9MRL
LU9R03
LU9R10
LU9R30
LU9RCD03
LU9RCD10
LU9RCD50
LU9RDD03
LU9RDD30
LU9RFL15
LU9RPB010
LU9RPB100
LU9RPB400
LU9SP0
LUA1C11
LUA1C20
LUA8E20
LUALB1
LUALF1
LUB12
LUB120
LUB32
LUB320
LUB32NR
LUB38
LUB380
LUCA05B
LUCA05BL
LUCA05ES
LUCA05FU
LUCA12B
LUCA12BL
LUCA12ES
LUCA12FU
LUCA18B
LUCA18BL
LUCA18ES
LUCA18FU
LUCA1XB
LUCA1XBL
LUCA1XES
LUCA1XFU
LUCA32B
LUCA32BL
LUCA32ES
LUCA32FU
LUCA38BL
LUCA38FU
LUCAX6B
LUCAX6BL
LUCAX6ES
LUCAX6FU
LUCB05B
LUCB05BL
LUCB05ES
LUCB05FU
LUCB12B
LUCB12BL
LUCB12ES
LUCB12FU
LUCB18B
LUCB18BL
LUCB18ES
LUCB18FU
LUCB1XB
LUCB1XBL
LUCB1XES
LUCB1XFU
LUCB32B
LUCB32BL
LUCB32ES
LUCB32FU
LUCB38BL
LUCB38FU
LUCBT1BL
LUCBX6B
LUCBX6BL
LUCBX6FU
LUCC05B
LUCC05BL
LUCC05ES
LUCC05FU
LUCC12B
LUCC12BL
LUCC12ES
LUCC12FU
LUCC18BL
LUCC18FU
LUCC1XB
LUCC1XBL
LUCC1XES
LUCC1XFU
LUCC32B
LUCC32BL
LUCC32FU
LUCCX6B
LUCCX6BL
LUCCX6FU
LUCD05B
LUCD05BL
LUCD05ES
LUCD05FU
LUCD12B
LUCD12BL
LUCD12ES
LUCD12FU
LUCD18BL
LUCD18FU
LUCD1XB
LUCD1XBL
LUCD1XES
LUCD1XFU
LUCD32B
LUCD32BL
LUCD32ES
LUCD32FU
LUCD38BL
LUCD38FU
LUCDT1BL
LUCDX6BL
LUCDX6FU
LUCL05B
LUCL05BL
LUCL05ES
LUCL05FU
LUCL12B
LUCL12BL
LUCL12ES
LUCL12FU
LUCL18B
LUCL18BL
LUCL18ES
LUCL18FU
LUCL1XB
LUCL1XBL
LUCL1XFU
LUCL32B
LUCL32BL
LUCL32FU
LUCL38BL
LUCL38FU
LUCLX6BL
LUFC00
LUFDA01
LUFDA10
LUFDH11
LUFN02
LUFN11
LUFN20
LUFP1
LUFP7
LUFP9
LUFV2
LUFW10
LULC031
LULC033
LULC07
LULC08
LULC09
LULC15

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

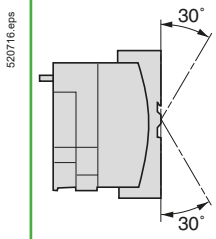
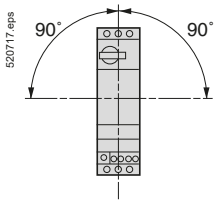


Contents

Characteristics ..... A4/44 to A4/55
Curves ..... A4/56 to A4/59
Dimensions ..... A4/60 to A4/61
Schemes ..... A4/62 to A4/74
Altistart U01 Soft starter ..... A4/75 to A4/81

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Product certifications | | | UL, CSA, CCC, GOST, ASEFA, UKCA. |
| | | | ABS, BV, DNV, GL, LROS.<br>ATEX. |
| Conforming to standards | | | IEC/EN 60947-6-2, CSA-22.2 N° 60947-4-1-14<br>UL 60947-4-1: with phase barrier LU9 SP0 |
| Rated insulation voltage (Ui) | Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3 | **V** | 690 |
| | Conforming to UL508, CSA C22-2 n°14 | **V** | 600 |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC/EN 60947-6-2 | **kV** | 6 |
| Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact) | Front panel outside connection zone | | IP 40 |
| | Front panel and wired terminals | | IP 20 |
| | Other faces | | IP 20 |
| Protective treatment | Conforming to IEC/EN 60068 | | "TH" |
| | Conforming to IEC/EN 60068-2-30 | **Cycles** | 12 |
| | Conforming to IEC/EN 60068-2-11 | **h** | 48 |
| Ambient air temperature around the device | Storage | **°C** | -40…+85 |
| | Operation | **°C** | Power bases ≤ 32 A (15 kW) associated with LUCA, LUCL, LUCB, LUCC, LUCD Control Units: -25 °…+70 °C.<br>(At temperatures above 60° and up to 70 °C, for Starter Controllers LUB32, LU2B32 leave a minimum gap of 9 mm between products). |
| | | | Power bases = 38 A (18,5 kW) associated with LUCA, LUCL, LUCB, LUCC, LUCD Control Units: -25 °…+60 °C.<br>(At temperatures above 45 °C , leave a minimum gap of 9 mm between products.<br>At temperatures above 55 °C and up to 60 °C, leave a gap of 20 mm between products). |
| | | | Power bases ≤ 32 A (15 kW) and Multifunctions Control units: -25 °…+60 °C.<br>(At temperatures above 45 °C , leave a minimum gap of 9 mm between products.<br>At temperatures above 55 °C and up to 60 °C, leave a gap of 20 mm between products). |
| Maximum operating altitude | | **m** | 2000 |
| Operating positions | In relation to normal vertical mounting plane | |   |
| Flame resistance | Conforming to UL 94 | | V2 |
| | Conforming to IEC/EN 60695-2-12 | **°C** | 960 (parts supporting live components) |
| | | **°C** | 650 |
| Environmental restrictions | | | Cadmium and silicone-free, recyclable |
| Shock resistance 1/2 sine wave = 11 ms | Conforming to IEC/EN 60068-2-27 (1) | | Power poles open: 10 gn |
| | | | Power poles closed: 15 gn |
| Vibration resistance 5…300 Hz | Conforming to IEC/EN 60068-2-6 (1) | | Power poles open: 2 gn |
| | | | Power poles closed: 4 gn (2) |
| Resistance to electrostatic discharge | Conforming to IEC/EN 61000-4-2 | **kV** | In open air: 8 - Level 3 |
| | | **kV** | On contact: 8 - Level 4 |
| Immunity to radiated high-frequency disturbance | Conforming to IEC/EN 61000-4-3 | **V/m** | 10 - Level 3 |
| Immunity to fast transient currents | Conforming to IEC/EN 61000-4-4 | **kV** | All circuits except for serial link: 4 - Level 4 |
| | | **kV** | Serial link: 2 - Level 3 |
| Immunity to dissipated shock waves | Conforming to IEC/EN 60947-6-2 | | Common mode / Serial mode |
| | Uc ∿ 24…240 V, Uc ⎓ 48…220 V | **kV** | 2 / 1 |
| | Uc = 24 V ⎓ | | Not applicable |
| Immunity to conducted high-frequency disturbance | Conforming to IEC/EN 61000-4-6 | **V** | 10 |
| Radiated emission and conducted | Conforming to CISPR 11 and EN 55011 | | Class A |

*(1) Without modifying the contact states, in the most unfavourable direction.*
*(2) 2 gn with Advantys STB or CANopen communication modules.*

References: pages A4/10 to A4/14
Curves: pages A4/56 to A4/59
Dimensions: pages A4/60 and A4/61
Schemes: pages A4/62 to A4/74

# Characteristics

## Power circuit connection characteristics

### Connection to Ø4 mm screw clamp terminals

| Power base, control unit or reverser block type | | | LUB12 + LUCA or LUCB or LUCC or LUCD | LUB32/LUB38 + LUCA or LUCB or LUCC or LUCD | LU2B LU2M LU6M |
|---|---|---|---|---|---|
| Flexible cable without cable end | 1 conductor | mm² | 2.5…10 | 2.5…10 | 2.5…10 |
| | 2 conductors | mm² | 1.5…6 | 1.5…6 | 1.5…6 |
| Flexible cable with cable end | 1 conductor | mm² | 1…6 | 1…6 | 1…6 |
| | 2 conductors | mm² | 1…6 | 1…6 | 1…6 |
| Solid cable without cable end | 1 conductor | mm² | 1…10 | 1…10 | 1…10 |
| | 2 conductors | mm² | 1…6 | 1…6 | 1…6 |
| Screwdriver | | | Philips n° 2 or flat screwdriver: Ø6 mm | | |
| Tightening torque | | N.m | 1.9…2.5 | 1.9…2.5 | 1.9…2.5 |

## Control circuit connection characteristics

### Connection to Ø3 mm screw clamp terminals

| | | | | | |
|---|---|---|---|---|---|
| Flexible cable without cable end | 1 conductor | mm² | 0.75…1.5 | 0.75…1.5 | 0.75…1.5 |
| | 2 conductors | mm² | 0.75…1.5 | 0.75…1.5 | 0.75…1.5 |
| Flexible cable with cable end | 1 conductor | mm² | 0.34…1.5 | 0.34…1.5 | 0.34…1.5 |
| | 2 conductors | mm² | 0.34…1.5 | 0.34…1.5 | 0.34…1.5 |
| Solid cable without cable end | 1 conductor | mm² | 0.75…1.5 | 0.75…1.5 | 0.75…1.5 |
| | 2 conductors | mm² | 0.75…1.5 | 0.75…1.5 | 0.75…1.5 |
| Screwdriver | | | Philips n° 1 or flat screwdriver: Ø5 mm | | |
| Tightening torque | | N.m | 0.8…1.2 | 0.8…1.2 | 0.8…1.2 |

## Control circuit characteristics

| | | | | | |
|---|---|---|---|---|---|
| Rated voltage of control circuit | ∿ 50/60 Hz | V | 24…240 | 24…240 | – |
| | ⎓ | V | 24…220 | 24…220 | – |
| Voltage limits | ⎓ 24 V (1) | V | 20…27 | 20…27 | – |
| Operation | ∿ 24 V | V | 20…26.5 | 20…26.5 | – |
| | ∿ or ⎓ 48…72 V | V | ∿ 38.5…72. ⎓ 38.5…93 | | – |
| | ∿ 110…240 V | V | ∿ 88…264 | ∿ 88…264 | – |
| | ⎓ 110…220 V | V | ⎓ 88…242 | ⎓ 88…242 | – |
| Drop-out | ⎓ 24 V | V | 14.5 | 14.5 | – |
| | ∿ 24 V | V | 14.5 | 14.5 | – |
| | ∿ or ⎓ 48…72 V | V | 29 | 29 | – |
| | ∿ 110…240 V, ⎓ 110…220 V | V | 55 | 55 | – |
| Typical consumption | ⎓ 24 V | mA | 130 | 220 | 120 |
| I max while closing | ∿ 24 V | mA | 140 | 220 | 2360 |
| | ∿ or ⎓ 48…72 V | mA | 280 | 280 | 2300 |
| | ∿ 110…240 V, ⎓ 110…220 V | mA | 280 | 280 | 1000 |
| I rms sealed | ⎓ 24 V | mA | 60 | 80 | 120 |
| | ∿ 24 V | mA | 70 | 90 | (2) |
| | ∿ or ⎓ 48…72 V | mA | 35 | 45 | (2) |
| | ∿ 110…240 V, ⎓ 110…220 V | mA | 35 | 25 | (2) |
| Heat dissipation | | W | 2 | 3 | – |
| Operating time | Closing | ms | 24 V: 70; 48 V: 60; ⩾ 72 V: 50 | | – |
| | Opening | ms | 35 | 35 | – |
| Resistance to micro-breaks | | ms | 3 | 3 | – |
| Resistance to voltage dips | IEC/EN 61000-4-11 | | At least 70 % of Uc for 500 ms | | – |
| Mechanical durability | In millions of operating cycles | | 15 | 15 | – |
| Maximum operating rate | In operating cycles per hour | | 3600 | 3600 | – |

## Main pole characteristics

| | | | | | |
|---|---|---|---|---|---|
| Number of poles | | | 3 | 3 | – |
| Isolation conforming to IEC/EN 60947-1 | Possible | | Yes | Yes | – |
| | Padlocking | | 1 padlock with Ø6.9 mm shank | | – |
| Rated thermal current | | A | 12 | 32/38 | – |
| Rated operational current (Ue ⩽ 440V) | To IEC/EN 60947-6-2 Category AC-41 | | θ ⩽ 70°C: 12 A | θ ⩽ 70°C: 32/38 A | – |
| | Category AC-43 | | θ ⩽ 70°C: 12 A | θ ⩽ 70°C: 28.5/35 A | – |
| Rated operational voltage | | V | 690 (3) | 690 (3) | – |
| Frequency limits | Of the operating current | Hz | 40…60 | 40…60 | – |
| Power dissipated in the power circuits | Operational current | A | 3 6 9 12 | 18 25 32 38 | – |
| | Power dissipated in all three poles | W | 0.1 0.3 0.6 1.1 | 2.4 4.6 7.5 10.6 | – |
| Rated breaking capacity on short-circuit | | V | 230 440 | 500 690 | – |
| | | kA | 50 50 (25 for LUB38) | 10 4 | – |
| Total breaking time | | ms | 2 2 | 2 | – |
| Thermal limit | With Isc max on 440 V | kA²s | 90 | 120 | – |

*(1) Voltage with maximum ripple of ±10 %.*

*(2) No consumption sealed.*

*(3) For 690 V, use phase barrier **LU9SP0**.*

References: pages A4/10 to A4/14
Curves: pages A4/56 to A4/59
Dimensions: pages A4/60 and A4/61
Schemes: pages A4/62 to A4/74

# Characteristics

## Specific characteristics of power bases LU2B and reverser blocks LU2M or LU6M

| | | | | |
|---|---|---|---|---|
| Duration of inrush phase | | ∼ 50/60 Hz | **ms** | 25 |
| | | ⎓ | **ms** | 15 |
| Maximum operating time | Without change of direction | | **ms** | 75 |
| | With change of direction | | **ms** | 150 |

## General characteristics of auxiliary contacts

| | | | | |
|---|---|---|---|---|
| Conventional thermal current (Ith) | For ambient temperature θ < 70 °C | | **A** | 5 |
| Frequency of the operational current | | | **Hz** | Up to 400 |
| Minimum switching capacity λ = $10^{-8}$ | | U min | **V** | 17 |
| | | I min | **mA** | 5 |
| Short-circuit protection | Conforming to IEC/EN 60947-5-1 | | **A** | gG fuse: 4 |
| Short-time rating | Permissible for | 1 s | **A** | 30 |
| | | 500 ms | **A** | 40 |
| | | 100 ms | **A** | 50 |
| Insulation resistance | | | **mΩ** | 10 |
| Non-overlap time | Guaranteed between N/C and N/O contacts | | **ms** | 2 (on energisation and on de-energisation) |

## Specific characteristics of auxiliary contacts built-into the power base

| | | | |
|---|---|---|---|
| Linked contacts | Conforming to IEC/EN 60947-4-1 | | Each power base has 1 N/O contact and 1 N/C contact which are mechanically linked |
| Mirror contact | Conforming to IEC/EN 60947-1 | | The N/C contact fitted in each power base reliably represents the state of the power contacts (safety scheme) |
| Rated operational voltage (Ue) | | **V** | Up to ∼ 690; ⎓ 250 |
| Rated insulation voltage (Ui) | Conforming to IEC/EN 60947-5-1 | **V** | 690 |
| | Conforming to UL, CSA | **V** | 600 |

## Specific characteristics of auxiliary contacts in modules LUFN, of auxiliary contacts LUA1 and of reverser blocks LU2M and LU6M

| | | | |
|---|---|---|---|
| Rated operational voltage (Ue) | | **V** | Up to ∼ 250; ⎓ 250 |
| Rated insulation voltage (Ui) | Conforming to IEC/EN 60947-5-1 | **V** | 250 |
| | Conforming to UL, CSA | **V** | 250 |

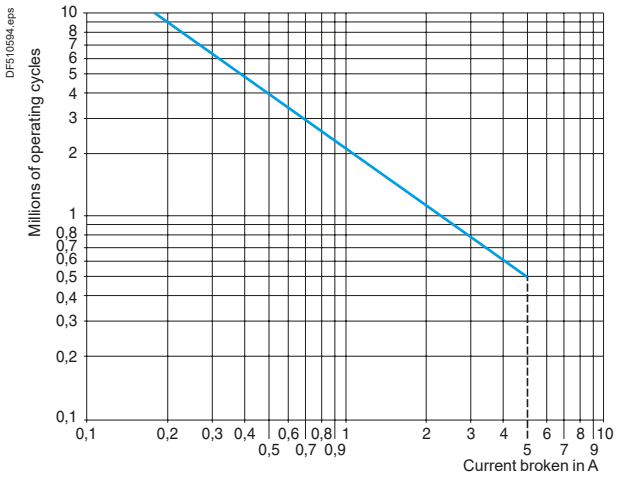
**Rated operational power of contacts**
Conforming to IEC/EN 60947-5-1

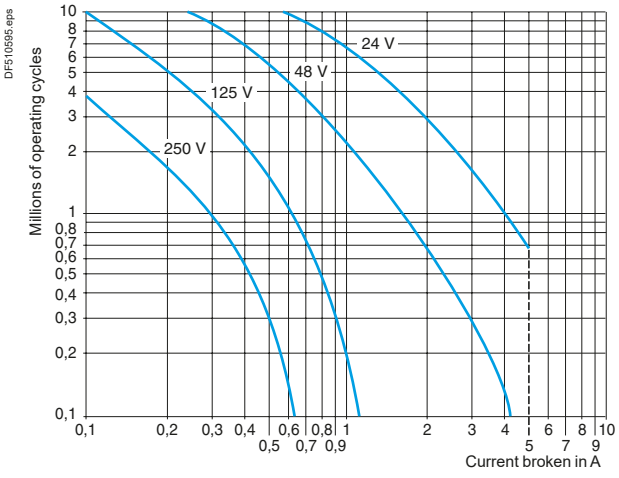
**a.c. supply, categories AC-14 and AC-15**
Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos ϕ 0.7) = 10 times the power broken (cos ϕ = 0.4)

| | V | 24 | 48 | 115 | 230 | 400 | 440 | 690 |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million operating cycles | VA | 16 | 32 | 80 | 160 | 280 | 300 | 420 |
| 10 million operating cycles | VA | 4 | 8 | 20 | 40 | 70 | 80 | 100 |

**d.c. supply, category DC-13**
Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| V | 24 | 48 | 125 | 250 |
|---|---|---|---|---|
| W | 120 | 90 | 75 | 68 |
| W | 70 | 50 | 38 | 33 |
| W | 25 | 18 | 14 | 12 |




References:
pages A4/10 to A4/14

Curves:
pages A4/56 to A4/59

Dimensions:
pages A4/60 and A4/61

Schemes:
pages A4/62 to A4/74



Life Is On Schneider Electric

# Characteristics

## Characteristics of standard control units LUCA

| | | | |
|---|---|---|---|
| Protection | Motor type | | 3-phase |
| | Conforming to standard | | IEC/EN 60947-6-2, UL 60947-4-1, CSA C22-2 n°14 |
| Overload protection | Tripping class conforming to UL 508, IEC/EN 60947-6-2 | | 10 |
| | Frequency limits of the operational current | **Hz** | 40…60 |
| | Temperature compensation | **°C** | - 25…+ 70 |
| | Protection against phase imbalance | | Yes |
| Short-circuit protection | Tripping threshold | | 13 x Ir max (max current setting) |
| | Tripping tolerance | | ± 20 % |

## Characteristics of advanced control units LUCB, LUCC and LUCD

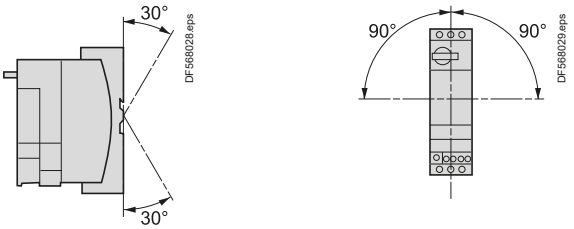
| **Control unit type** | | | **LUCB** | **LUCC** | **LUCD** |
|---|---|---|---|---|---|
| Protection | Motor type | | 3-phase | Single-phase | 3-phase |
| | Conforming to standard | | IEC/EN 60947-6-2, CSA C22-2 n°14 | IEC/EN 60947-6-2, CSA C22-2 n°14 | IEC/EN 60947-6-2, CSA C22-2 n°14 |
| Overload protection | Tripping class conforming to UL 508, IEC/EN 60947-6-2 | | 10 | 10 | 20 |
| | Frequency limits of the operational current | **Hz** | 40…60 | 40…60 | 40…60 |
| | Temperature compensation | **°C** | -25…+70 | -25…+55 | -25…+70 |
| | Protection against phase imbalance | | Yes | – | Yes |
| Short-circuit protection | Tripping threshold | | 13 x Ir max. | 13 x Ir max. | 13 x Ir max. |
| | Tripping tolerance | | ±20 % | ±20 % | ±20 % |



References:
pages A4/10 to A4/14
Curves:
pages A4/56 to A4/59
Dimensions:
pages A4/60 and A4/61
Schemes:
pages A4/62 to A4/74

# Characteristics

## Characteristics of magnetic control unit LUCL

| | | | |
|---|---|---|---|
| Protection | Motor type | | 3-phase |
| | Conforming to standard | | When used in conjunction with an LUB12, LUB32 or LUB38 power base, magnetic control unit LUCL conforms to standard IEC 60947-6-2. |
| Short-circuit protection | Tripping threshold | | 14.2 x In (max. setting current) |
| | Tripping tolerance | | ±20 % |
| **Environment** | | | |
| Product certifications | | | CE |
| Conforming to standards | | | When used in conjunction an LUB power base, control unit LUCL conforms to standard 60947-6-2. |
| Rated insulation voltage (Ui) | Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3 | **V** | 690 |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC/EN 60947-6-2 | **kV** | 6 |
| Safety separation of circuits SELV | Conforming to IEC/EN 60947-1 appendix N | **V** | Between the control or auxiliary circuit and the main circuit: 400 |
| | | | Between the control and auxiliary circuits: 40 |
| Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact) | Front panel outside connection zone | | IP 40 |
| | Front panel and wired terminals | | IP 20 |
| | Other faces | | IP 20 |
| Protective treatment | Conforming to IEC/EN 60068 | | "TH" |
| | Conforming to/EN 60068-2-30 | **Cycles** | 12 |
| | Conforming to IEC/EN 60068-2-11 | **h** | 48 |
| Ambient air temperature around the device | Storage | **°C** | - 40…+ 85 |
| | Operation | **°C** | Power bases and standard and advanced control units: - 25… + 70.<br>(At temperatures above 60°C and up to 70°C, for Ie = 32 A, leave a minimum gap of 9 mm between products). |
| | | | Power bases and multifunction control units: - 25…+ 60.<br>(At temperatures above 45 °C, leave a minimum gap of 9 mm between products.<br>At temperatures above 55 °C up to 60 °C, leave a gap of 20 mm between products.) |
| Maximum operating altitude | | **m** | 2000 |
| Operating positions | In relation to normal vertical mounting plane | |  |
| Flame resistance | Conforming to UL 94 | | V2 |
| | Conforming to IEC/EN 60695-2-12 | **°C** | 960 (parts supporting live components) |
| | | **°C** | 650 |
| Environmental restrictions | | | Cadmium and silicone-free, recyclable |
| Shock resistance 1/2 sine wave = 11 ms | Conforming to IEC/EN60068-2-27 (1) | | Power poles open: 10 gn |
| | | | Power poles closed: 15 gn |
| Vibration resistance 5…300 Hz | Conforming to IEC/EN 60068-2-6 (1) | | Power poles open: 2 gn |
| | | | Power poles closed: 4 gn (2) |
| Resistance to electrostatic discharge | Conforming to IEC/EN 61000-4-2 | **kV** | In open air: 8 - Level 3 |
| | | **kV** | On contact: 8 - Level 4 |
| Immunity to radiated high-frequency disturbance | Conforming to IEC/EN 61000-4-3 | **V/m** | 10 - Level 3 |
| Immunity to fast transient currents | Conforming to IEC/EN 61000-4-4 | **kV** | All circuits except for serial link: 4 - Level 4 |
| | | **kV** | Serial link: 2 - Level 3 |
| Immunity to dissipated shock waves | Conforming to IEC/EN 60947-6-2 | | **Common mode** / **Serial mode** |
| | Uc ∿ 24…240 V, Uc ⎓ 48…220 V | **kV** | 2 / 1 |
| | Uc = 24 V ⎓ | | Not applicable |
| Immunity to conducted high-frequency disturbance | Conforming to IEC/EN 61000-4-6 | **V** | 10 |

*(1) Without modifying the contact states, in the most unfavourable direction.*
*(2) 2 gn with Advantys STB or CANopen communication modules.*

References: page A4/34
Schemes: pages A4/63

# Characteristics

## Power circuit connection characteristics of LUCL

| Power base and control unit type | | | LUB12 + LUCL | LUB32 + LUCL | LUB38 + LUCL |
|---|---|---|---|---|---|
| **Connection to Ø4 mm screw clamp terminals** | | | | | |
| Flexible cable without cable end | 1 conductor | mm² | 2.5…10 | 2.5…10 | |
| | 2 conductors | mm² | 1.5…6 | 1.5…6 | |
| Flexible cable with cable end | 1 conductor | mm² | 1…6 | 1…6 | |
| | 2 conductors | mm² | 1…6 | 1…6 | |
| Flexible cable without cable end | 1 conductor | mm² | 1…10 | 1…10 | |
| | 2 conductors | mm² | 1…6 | 1…6 | |
| Screwdriver | | | Philips n° 2 or flat screwdriver: Ø6 mm | | |
| Tightening torque | | N.m | 1.9…2.5 | 1.9…2.5 | |

## Control circuit connection characteristics of LUCL

| | | | | | |
|---|---|---|---|---|---|
| **Connection to Ø3 mm screw clamp terminals** | | | | | |
| Flexible cable without cable end | 1 conductor | mm² | 0.75…1.5 | 0.75…1.5 | |
| | 2 conductors | mm² | 0.75…1.5 | 0.75…1.5 | |
| Flexible cable with cable end | 1 conductor | mm² | 0.34…1.5 | 0.34…1.5 | |
| | 2 conductors | mm² | 0.34…1.5 | 0.34…1.5 | |
| Flexible cable without cable end | 1 conductor | mm² | 0.75…1.5 | 0.75…1.5 | |
| | 2 conductors | mm² | 0.75…1.5 | 0.75…1.5 | |
| Screwdriver | | | Philips n° 2 or flat screwdriver: Ø5 mm | | |
| Tightening torque | | N.m | 0.8…1.2 | 0.8…1.2 | |

## Control circuit characteristics of LUCL

| | | | | | |
|---|---|---|---|---|---|
| Rated control circuit voltage | ∿ 50/60 Hz | V | 24…240 | 24…240 | |
| | ⎓ | V | 24…220 | 24…220 | |
| Voltage limits | ⎓ 24 V (1) | V | 20…27 | 20…27 | |
| Operation | ∿ 24 V | V | 20…26.5 | 20…26.5 | |
| | ∿ or ⎓ 48…72 V | V | ∿ 38.5…72. ⎓ 38.5…93 | ∿ 38.5…72. ⎓ 38.5…93 | |
| | ∿ 110…240 V | V | ∿ 88…264 | ∿ 88…264 | |
| | ⎓ 110…240 V | V | ⎓ 88…242 | ⎓ 88…242 | |
| Drop-out | ⎓ 24 V | V | 14.5 | 14.5 | |
| | ∿ 24 V | V | 14.5 | 14.5 | |
| | ∿ or ⎓ 48…72 V | V | 29 | 29 | |
| | ∿ 110…240 V, ⎓ 110…220 V | V | 55 | 55 | |
| Typical consumption | ⎓ 24 V | mA | 130 | 220 | |
| I max while closing | ∿ 24 V | mA | 140 | 220 | |
| | ∿ or ⎓ 48…72 V | mA | 280 | 280 | |
| | ∿ 110…240 V, ⎓ 110…220 V | mA | 280 | 280 | |
| I rms sealed | ⎓ 24 V | mA | 60 | 80 | |
| | ∿ 24 V | mA | 70 | 90 | |
| | ∿ or ⎓ 48…72 V | mA | 35 | 45 | |
| | ∿ 110…240 V, ⎓ 110…220 V | mA | 35 | 25 | |
| Heat dissipation | | W | 2 | 3 | |
| Operating time | Closing | ms | 24 V: 70; 48 V: 60; ≥ 72 V: 50 | 24 V: 70; 48 V: 60; ≥ 72 V: 50 | |
| | Opening | ms | 35 | 35 | |
| Resistance to micro-breaks | | ms | 3 | 3 | |
| Resistance to voltage dips | IEC/EN 61000-4-11 | | At least 70 % of Uc for 500 ms | | |
| Mechanical durability | In millions of operating cycles | | 15 | 15 | |
| Maximum operating rate | In operating cycles per hour | | 3600 | 3600 | |

## Main pole characteristics of LUCL

| | | | | | |
|---|---|---|---|---|---|
| Number of poles | | | 3 | 3 | |
| Isolation conforming to IEC/EN 60947-1 | Possible | | Yes | Yes | |
| | Padlocking | | 1 padlock with Ø6.9 mm shank | 1 padlock with Ø6.9 mm shank | |
| Rated thermal current | | A | 12 | 32 | (38 A for LUB38) |
| Rated operational current (Ue ≤ 440 V) | Conforming to IEC/EN 60947-6-2 | Category AC-41 | θ ≤ 70 °C: 12 A | θ ≤ 70 °C: 32 A | (38 A for LUB38) |
| | | Category AC-43 | θ ≤ 70 °C: 12 A | θ ≤ 70 °C: 32 A | 38 |
| Rated operational voltage | | V | 690 (3) | 690 (3) | 690 |
| Frequency limits | Of the operating current | Hz | 40…60 | 40…60 | 40...60 |
| Power dissipated in the power circuits | Operational current | A | 3 6 9 12 18 25 32 38 | | |
| | Power dissipated in all three poles | W | 0.1 0.3 0.6 1.1 2.4 4.6 7.5 10.5 | | |
| Rated breaking capacity on short-circuit | | V | 230 440 500 690 | | |
| | | kA | 50 50 10 4 | | |
| Total breaking time | | ms | 2 2 2 | | |
| Thermal limit | With Isc max on 440 V | kA²s | 90 | 120 | |

*(1) d.c. voltage with maximum ripple of ± 10 %.* *(2) No consumption sealed.* *(3) For 690 V, use phase barrier **LU9SP0**.*

References: page A4/34
Schemes: page A4/63

# Characteristics

## Characteristics of limiter-disconnector LUALB1

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1 | | **V** | 690 |
| Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1 | | **A** | 32 |
| Operating threshold | I rms | **kA** | 50 |
| Breaking capacity | | **V** | 440 690 |
| | | **kA** | 130 70 |
| Mounting | | | Directly on the upstream terminals of the starter-controller |
| Cabling | | | |
| Solid cable | 1 conductor | **mm²** | 1.5…10 |
| | 2 conductors | **mm²** | 1.5...6 |
| Flexible cable without cable end | 1 conductor | **mm²** | 1…10 |
| | 2 conductors | **mm²** | 1…6 |
| Flexible cable with cable end | 1 conductor | **mm²** | 1...6 |
| | 2 conductors | **mm²** | 1...6 |
| Screwdriver | | | Phillips n°2 or flat screwdriver Ø6 mm |
| Tightening torque | | **N.m** | 1.9…2.5 |

## Characteristics of current limiter LA9LB920

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1 | | **V** | 690 |
| Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1 | | **A** | 63 |
| Operating threshold | I rms | **A** | 1000 |
| Breaking capacity | | **V** | 440 690 |
| | | **kA** | 100 35 |
| Mounting | | | Separate |
| Cabling | | | |
| Solid cable | 1 conductor | **mm²** | 1.5…25 |
| | 2 conductors | **mm²** | 1.5...10 |
| Flexible cable without cable end | 1 conductor | **mm²** | 1.5…25 |
| | 2 conductors | **mm²** | 2.5…10 |
| Flexible cable with cable end | 1 conductor | **mm²** | 1.5…16 |
| | 2 conductors | **mm²** | 1.5…4 |
| Screwdriver | | | Phillips n°2 or flat screwdriver Ø6 mm |
| Tightening torque | | **N.m** | 2.2 |

## Characteristics of thermal overload alarm function modules LUFW10

| | | | |
|---|---|---|---|
| Activation threshold | | | Fixed at 88 % of the thermal tripping state |
| Hysteresis between activation and switching off | | | 5 % |
| Display | | | By LED on front panel |
| Supply | | | Powered by the control unit |
| Discrete output characteristics | Type | | N/O contact |
| | AC-15 | | 230 V max; 400 VA 100 000 operating cycles |
| | DC-13 | | 24 V; 50 W 100 000 operating cycles |
| Conventional thermal current (Ith) | For ambient temperature $\theta$ < 70 °C | **A** | 2 |
| Short-circuit protection | Conforming to IEC/EN 60947-5-1 | **A** | gG fuse: 2 |

## Characteristics of thermal overload fault signalling and reset modules

| **Module type** | | | **LUFDH11** | **LUFDA01** | **LUFDA10** |
|---|---|---|---|---|---|
| Fault signalling | | | By LED on front panel | | |
| External power supply | | **V** | ∿/⎓ 24… 240 | | |
| Module consumption | | **mA** | 7 at ⎓ 24<br>1.1 at ∿ 240 | | |
| Discrete outputs | Type | | 1 N/C+ 1 N/O | 1 N/C | 1 N/O |
| | AC-15 | | 230 V max; 400 VA 100 000 operating cycles | | |
| | DC-13 | | 24 V; 50 W 100 000 operating cycles | | |
| Conventional thermal current (Ith) | For ambient temperature $\theta$ < 70 °C | **A** | 2 | | |
| Short-circuit protection | Conforming to IEC/EN 60947-5-1 | **A** | gG fuse: 2 | | |
| Reset input | Conductor c.s.a. | **mm²** | 0.2 min | | |
| | Length | **m** | 500 (R = 50 Ω , L = 52.8 mH, Cp = 93 pF) | | |

References:
pages A4/13, A4/14

Dimensions:
page A4/61



Life Is On Schneider Electric

# Characteristics

## Characteristics of motor load indication function module LUFV2

| | | | |
|---|---|---|---|
| Analogue output | | | 4 - 20 mA |
| Signal delivered | | | Value of I average/Ir ratio within the range of 0 to 2 for LUCB and LUCD |
| | | | Value of I average/Ir ratio within the range of 0 to 3 for LUCC |
| Load impedance | Minimum | kΩ | – |
| | Maximum | Ω | 500 |
| | Typical | Ω | 100 |
| Signal characteristics with advanced control unit | Precision | | ±6 % |
| Signal characteristics with multifunction control unit | Precision | | ±10 % |
| | Resolution | | 1 % of Ir |
| Supply | | | External ⎓ 24 V |

## Characteristics of AS-Interface communication modules ASILUFC5 and ASILUFC51

| **Module type** | | | **ASILUF C5** | **ASILUF C51** |
|---|---|---|---|---|
| Product certification | | | AS-Interface V2.1 n° 52901 | AS-Interface V2.1 n° 52303 |
| AS-Interface profile | | | 7.D.F.0 | 7.A.7.E |
| Ambient air temperature | | **°C** | Operation -25…+70 | |
| Cycle time | | **ms** | 5 | 10 |
| Addressing | | | 31 slaves | 62 slaves |
| AS-Interface supply | | **V** | 29.5...31.5 | |
| Current consumption | On the AS-Interface bus | **mA** | Normal operation: 25 | |
| | | **mA** | Fault condition: 30 | |
| | On 24 V supply for the outputs | **mA** | 200 | |
| Auxiliary supply | | **V** | ⎓ 24 ±30 % | |
| Number of outputs | | | 2 dedicated to starter-controller coil operation | |
| Switching capacity of the solid state outputs | | | 0.5 A/24 V (outputs protected against short-circuits) | |
| Indication/diagnostics | | | By 2 LEDs on front panel | |

## Characteristics of Modbus communication module LULC033

| | | | | |
|---|---|---|---|---|
| Physical interface | | | | RS 485 multi-drop |
| Connections | | | | RJ45 on front panel |
| Protocol | | | | Modbus RTU |
| Maximum transmission speed | | | **bit/s** | 19 200 (self-configuration up to this value) |
| Maximum return time | | | **ms** | 30 |
| Addressing | | | | By switches: from 0...31 |
| Ambient air temperature | | | **°C** | Operation -25…+55 |
| Discrete inputs | | Number | | 2 (to be assigned according to the configuration) |
| | | Supply | **V** | ⎓ 24 |
| | | Input current | **mA** | 7 |
| | Nominal input values | Voltage | **V** | ⎓ 24 (positive logic) |
| | | Current | **mA** | 7 |
| | Response time | Change to state 1 | **ms** | 10 (±30 %) |
| | | Change to state 0 | **ms** | 10 (±30 %) |
| | Input type | | | Resistive |
| Solid state outputs | | Number | | 3, of which 2 dedicated to starter-controller coil operation |
| | | Supply | **V** | ⎓ 24 |
| | | Max. current | **mA** | 500 |
| | Protection | gI fuse | **A** | 1 |
| | Switching capacity | | | 0.5 A/24 V |
| Indication/diagnostics | | | | By 3 LEDs on front panel |

References:
pages A4/13, A4/24, A4/26

Schemes:
pages A4/64, A4/72, A4/73

# Characteristics

## Characteristics of CANopen, PROFIBUS DP and DeviceNet communication modules

| Communication module | | | | PROFIBUS DP LULC07 | CANopen LULC08 | DeviceNet LULC09 |
|---|---|---|---|---|---|---|
| Services | Conformity class | | | NA | S 20 (Schneider Electric) | NA |
| | Standard | | | PROFIBUS DP | CIADS-301 V4.02 DR 303-2 | IEC 62026-1, overvoltage category III, degree of pollution: 3 |
| | Profile | | | LVSG V1.0 MS (Motor Starter) and MMS (Motor Management Starter) | – | ODVA (Open DeviceNet Vendor Association) MS (Motor Starter) |
| | Protocol | | | PROFIBUS DP | CAN 2.0A (2B passive) | CAN 2.0A (2B passive) |
| | Address | | | 1…125 | 0…127 (by switches) | 0…63 |
| Structure | Physical interface | | | 9-way SUB-D male | 9-way SUB-D female | "Open Style" connector |
| | Binary rate | | | 9600 Kbits/s…12 Mbits/s | 10, 20, 50, 125, 250, 500 and 1000 Kbits/s (by switches) | 125…500 kbaud |
| | Cables | | | 2 shielded twisted pairs | | |
| Supply for the discrete outputs and control | ⎓ 24 V | | **V** | 20…28 | | |
| | Current consumption | | **A** | 1.5 (max) | | |
| | Protection by gI fuse | | **A** | 2 | | |
| Ambient air temperature | | | **°C** | Operation -25…+55 | | |
| Logic inputs | Number | | | 2 (to be assigned according to the configuration) | | |
| | Supply | | **V** | ⎓ 24 | | |
| | Input current | | **mA** | 7 | | |
| | Nominal input values | Voltage | **V** | ⎓ 24 (positive logic) | | |
| | | Current | **mA** | 7 | | |
| | Response time | Change to state 1 | **ms** | 10 (±30 %) | | |
| | | Change to state 0 | **ms** | 10 (±30 %) | | |
| | Input type | | | Resistive | | |
| Discrete outputs | Number | | | 3, of which 2 dedicated to starter-controller coil operation | | |
| | Max. current | | **mA** | 500 | | |
| | Short-circuit protection | | | Yes | | |
| | Switching capacity | | | 0.5 A / ⎓ 24 V | | |
| Indication/diagnostics | | | | By 3 LEDs on front panel | | |

## Characteristics of Advantys STB communication module LULC15

| | | | | |
|---|---|---|---|---|
| Physical interface | | | | CAN |
| Connections | | | | Fire Wire |
| Protocol | | | | CAN 2.0 and CAN 2.B (passive mode) |
| Transmission speed | | | **kbit/s** | 800 |
| Addressing | | | | Self-addressing |
| Supply for the discrete outputs and control | ⎓ 24 V | | **V** | 20…28 |
| | Current consumption | | **A** | 1.5 (max) |
| | Protection by gI fuse | | **A** | 2 |
| Ambient air temperature | | | **°C** | Operation -25…+55 |
| Discrete inputs | Number | | | 2 ( to be assigned according to configuration) |
| | Supply | | **V** | ⎓ 24 |
| | Input current | | **mA** | 7 |
| | Nominal input values | Voltage | **V** | ⎓ 24 (positive logic) |
| | | Current | **mA** | 7 |
| | Response time | Change to state 1 | **ms** | 10 (± 30 %) |
| | | Change to state 0 | **ms** | 10 (± 30 %) |
| | Input type | | | Resistive |
| Discrete outputs | Number | | | 3, of which 2 dedicated to starter-controller coil operation |
| | Max. current | | **mA** | 500 |
| | Short-circuit protection | | | Yes |
| | Switching capacity | | | 0.5 A / ⎓ 24 V |
| Indication/diagnostics | | | | By 3 LEDs on front panel |

References:
pages A4/25, A4/27, A4/28, A4/29
Schemes:
pages A4/66 and A4/67

# Characteristics

## Connection characteristics

| Module type | | | | LUFW10, LUFDH11, LUFDA01 and LUFDA10 | LUFV2 | ASILUFC5 and ASILUFC51 | |
|---|---|---|---|---|---|---|---|
| | | | | | | Inputs and 24 V auxiliary supply | Outputs |
| Connectors | | Pitch | | 5.08 | 3.81 | 5.08 | 3.81 |
| Flexible cable without cable end | | 1 conductor | mm² | 0.2…1.5 | 0.14…1 | 0.2…1.5 | 0.14…1 |
| | | 2 identical conductors | mm² | 0.2…1 | 0.14…0.75 | 0.2…1 | 0.14…0.75 |
| Flexible cable with cable end | Without insulated ferrule | 1 conductor | mm² | 0.25…1.5 | 0.25…1 | 0.25…1.5 | 0.25…1 |
| | | 2 identical conductors | mm² | 0.25…1 | 0.25…0.34 | 0.25…1 | 0.25…0.34 |
| | With insulated ferrule | 1 conductor | mm² | 0.25…1.5 | 0.25…0.5 | 0.25…1.5 | 0.25…0.5 |
| | | 2 identical conductors (Use a double cable end) | mm² | 0.5…1 | 0.5 | 0.5…1 | 0.5 |
| Solid cable without cable end | | 1 conductor | mm² | 0.2…1.5 | 0.14…1 | 0.2…1.5 | 0.14…1 |
| | | 2 identical conductors | mm² | 0.2…1 | 0.14…0.5 | 0.2…1 | 0.14…0.5 |
| Conductor size | | 1 conductor | | AWG24… AWG16 | AWG26… AWG16 | AWG24… AWG16 | AWG26… AWG16 |
| Tightening torque | | | N.m | 0.5…0.6 | 0.20…0.25 | 0.5…0.6 | 0.20…0.25 |
| Flat screwdriver | | | mm | 3.5 | 2.5 | 3.5 | 2.5 |

| Module type | | | | LULC033, LULC08 and LULC15 | LUFC00 | LULC09 | |
|---|---|---|---|---|---|---|---|
| | | | | | | Inputs and 24 V auxiliary supply | Connection on the bus |
| Connectors | | Pitch | | 3.81 | 3.81 | 3.81 | 5 (Open Style) DeviceNet |
| Flexible cable without cable end | | 1 conductor | mm² | 0.14…1 | 0.14…1 | 0.14…1 | 0.2…2.5 |
| | | 2 identical conductors | mm² | 0.14…0.75 | 0.14…0.75 | 0.14…0.75 | 0.5…1.5 |
| Flexible cable with cable end | Without insulated ferrule | 1 conductor | mm² | 0.25…1 | 0.25…1 | 0.25…1 | 0.25…2.5 |
| | | 2 identical conductors | mm² | 0.25…0.34 | 0.25…0.34 | 0.25…0.34 | 0.25…1 |
| | With insulated ferrule | 1 conductor | mm² | 0.25…0.5 | 0.25…0.5 | 0.25…0.5 | 0.25…2.5 |
| | | 2 identical conductors (Use a double cable end) | mm² | 0.5 | 0.5 | 0.75 | 0.5…1.5 |
| Solid cable without cable end | | 1 conductor | mm² | 0.14…1 | 0.14…1 | 0.14…1 | 0.2…2.5 |
| | | 2 identical conductors | mm² | 0.14…0.5 | 0.14…0.5 | 0.14…0.5 | 0.14…0.5 |
| Conductor size | | 1 conductor | | AWG26… AWG16 | AWG26… AWG16 | AWG26… AWG16 | AWG24… AWG16 |
| Tightening torque | | | N.m | 0.20…0.25 | 0.20…0.25 | 0.20…0.25 | 0.5…0.6 |
| Flat screwdriver | | | mm | 2.5 | 2.5 | 2.5 | 3.5 |

References:
pages A4/13, A4/24, A4/29

Schemes:
pages A4/64, A4/66 to A4/73

## Characteristics

### Knob positions - Poles and Signaling contact states

| Ultra operating status | | Position of rotary knob | Indication on front panel | N/O pole contact | N/C pole contact | N/O contact any fault | N/C contact any fault | ⏻ N/O contact product ready | N/C contact Rotary knob on OFF position |
|---|---|---|---|---|---|---|---|---|---|
| **References of add-on contact blocks and auxiliary contact modules** Terminal referencing | | – | – | – | **LUFN11** 31-32 | **LUA1C20** 97-98 | **LUA1C11** 95-96 | **LUA1C20** 17-18 | – |
| | **or** | – | – | – | **LUFN02** 31-32 41-42 | – | – | – | **LUA8E20** 57/58 67/68 |
| | **or** | – | – | **LUFN20** 33-34 43-44 | **LU9BN11** 21-22 | – | – | **LUA1C11** 17-18 | – |
| | **or** | – | – | **LUFN11** 43-44 | – | – | – | – | – |
| | **or** | – | – | **LU9BN11** 13-14 | – | – | – | – | – |
| Off | | OFF | **0** | | | | | | |
| Ready to operate | | | **0** | | | | | | |
| Start | | | **1** | | | | | | |
| Tripped on short-circuit | | TRIP | **I>>** | | | | | | |
| Tripped on thermal overload | Manual reset mode | TRIP | **0** | | | | | | |
| | Automatic reset on thermal overload fault mode | | **0** | | | | | | |
| | Remote reset mode | | **0** | | | | | | |

*N/O contact*  *in closed position.*

*N/C contact*  *in open position.*

Ultra motor starters
Ref.

References:
pages A4/10 and A4/13

Schemes:
pages A4/71 and A4/74

## Characteristics

| **Data profile under AS-Interface** | | | | | |
|---|---|---|---|---|---|
| **Control unit present in the product** | | | | Standard LUCA | Advanced LUCB, CC, CD |
| **Status** | | D0 | Ready (available) | | |
| | | D1 | Poles closed (running) | | |
| **Commands** | | D0 | Start - forward running | | |
| | | D1 | Start - reverse running | | |

| **Main registers accessible with Modbus, CANopen, Advantys STB, PROFIBUS DP and DeviceNet communication modules.** | | | | | |
|---|---|---|---|---|---|
| For other registers and for further information, please consult the User's Manual *Communication variables* on the website www.schneider-electric.com | | | | | |
| **Control unit present in the product** | | | | Standard | Advanced |
| **Marking** | Register 0…Register 99 | Words…Bits | Commercial reference, serial number, software version | | |
| **Log** | Register 100…Register 450 | Words…Bits | Fault log, Operating log, Log of last 5 trips | | |
| **Status** | Register 451…Register 464 | Words…Bits | Alarm signalling (bits), Fault signalling (bits) | | |
| **Values** | Register 465…Register 473 | Words | Irms phase 1, phase 2, phase 3. Motor load, thermal status Earth leakage current. Phase imbalance and phase failure | | |
| | Register 474…Register 599 | Words…Bits | Reserved | | |
| **Configuration** | Register 600…Register 699 | Words…Bits | Protection and alarm thresholds, fallback mode and reset mode | | |
| **Commands** | Register 700…Register 714 | Words…Bits | Commands | | |

| | | | | | |
|---|---|---|---|---|---|
| **Status and values** | Register 452 | Bit 0 | Short-circuit fault | | |
| | | Bit 1 | Overcurrent fault | | |
| | | Bit 2 | Thermal overload fault | | |
| | Register 455 | Bit 0 | Ready (available) | | |
| | | Bit 1 | Poles closed | | |
| | | Bit 2 | Fault | | |
| | | Bit 3 | Alarms | | |
| | | Bit 4 | Tripped ("TRIP" position) | | |
| | | Bit 5 | Fault acknowledgement allowed | | |
| | | Bit 6 | Reserved | | |
| | | Bit 7 | Motor running | | |
| | | Bit 8 | Motor current % (bit 0) | | |
| | | Bit 9 | Motor current % (bit 1) | | |
| | | Bit 10 | Motor current % (bit 2) | | |
| | | Bit 11 | Motor current % (bit 3) | | |
| | | Bit 12 | Motor current % (bit 4) | | |
| | | Bit 13 | Motor current % (bit 5) | | |
| | | Bit 14 | Reserved | | |
| | | Bit 15 | Motor starting | | |
| | Register 461 | Bit 3 | Thermal overload alarm | | |
| | Register 465 | Word | Thermal status value | | |
| | Register 466 | Word | Motor load value (Im/Ir) | | |

| | | | | | |
|---|---|---|---|---|---|
| **Configuration** | Register 602 | Bit 0 | Manual reset on thermal overload fault | | |
| | | Bit 1 | Remote reset on thermal overload fault | | |
| | | Bit 2 | Automatic reset on thermal overload fault | | |
| | Register 682 | Value 0 | Fallback mode validation | | |
| | | Value 1 | Outputs OA1 and OA3 unchanged | | |
| | | Value 2 | Outputs OA1 and OA3 forced to 0 | | |
| | | Value 3 | Outputs OA1 and OA3 unchanged, signalling existence of communication failure | | |
| | | Value 4 | Outputs OA1 forced to 1 and OA3 unchanged | | |
| | | Value 5 | Outputs OA3 forced to 1 and OA1 unchanged | | |

| | | | | | |
|---|---|---|---|---|---|
| **Commands** | Register 700 | Bit 0 | LO1 output command | | |
| | Register 704 | Bit 0 | OA1 output command | | |
| | | Bit 1 | OA3 output command | | |
| | | Bit 2 | Reserved | | |
| | | Bit 3 | Fault acknowledgement | | |
| | | Bit 4 | Reserved | | |
| | | Bit 5 | Trip test | | |
| | | Bit 6…15 | Reserved | | |

*Data accessible*

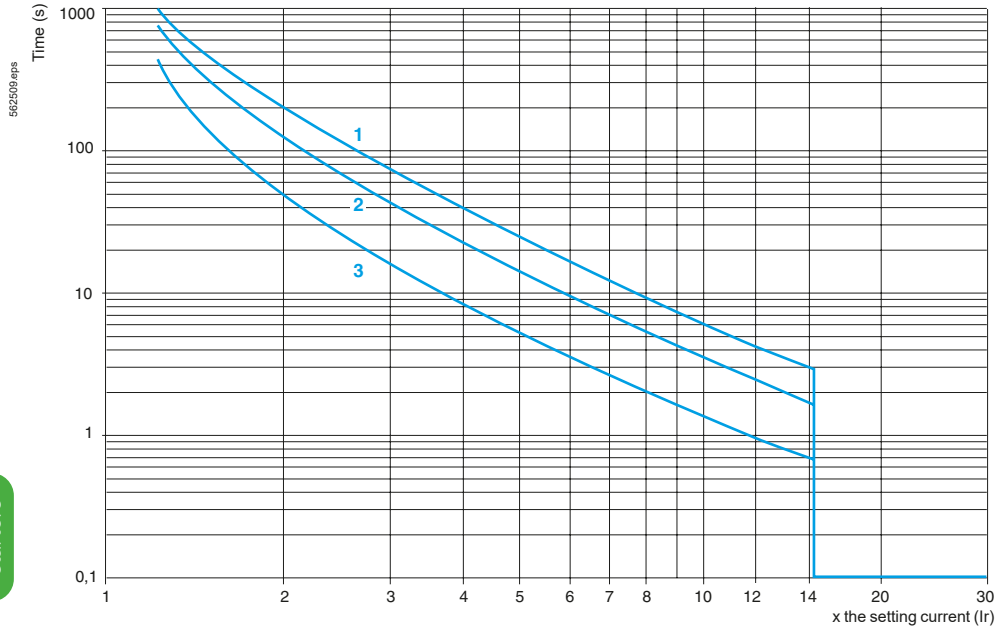
References:
pages A4/24 to A4/29

Schemes:
pages A4/64 and A4/65

# Curves

## Tripping curves for control units LUCA, LUCB, LUCD

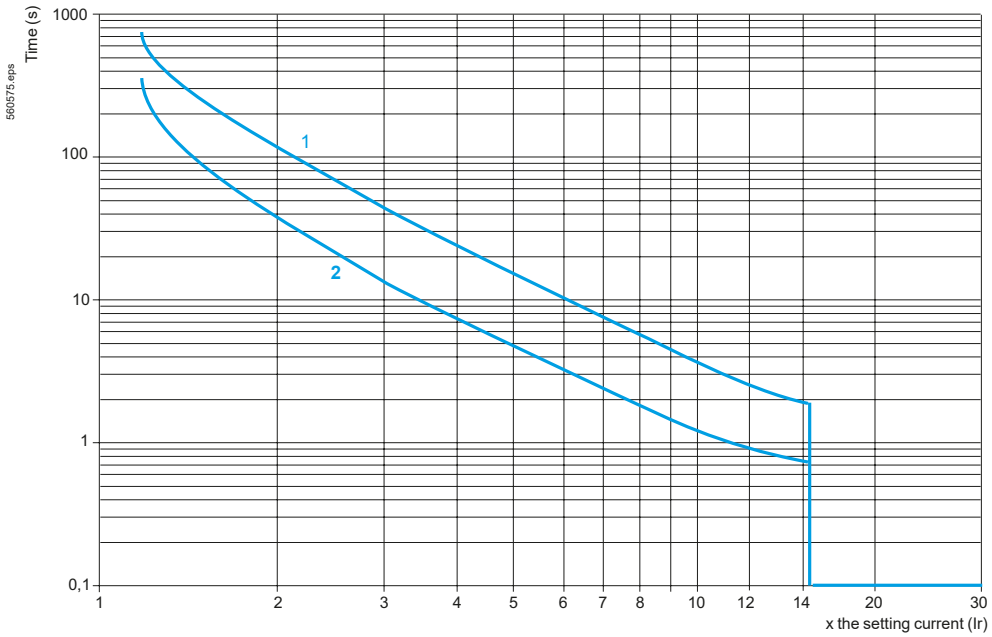
**Average operating times at 20 °C according to multiples of the setting current, tolerance : ± 20 %.**




1 LUCD, 3 poles from cold state, class 20.
2 LUCA, LUCB, 3 poles from cold state, class 10.
3 LUCA, LUCB, LUCD, 3 poles from hot state.

## Tripping curves for control units LUCC

**Average operating times at 20 °C according to multiples of the setting current, tolerance : ± 20 %.**




1 LUCC, single-phase, cold state.
2 LUCC, single-phase, hot state.

References:
pages A4/11 and A4/12
Characteristics:
page A4/47
Schemes:
page A4/63

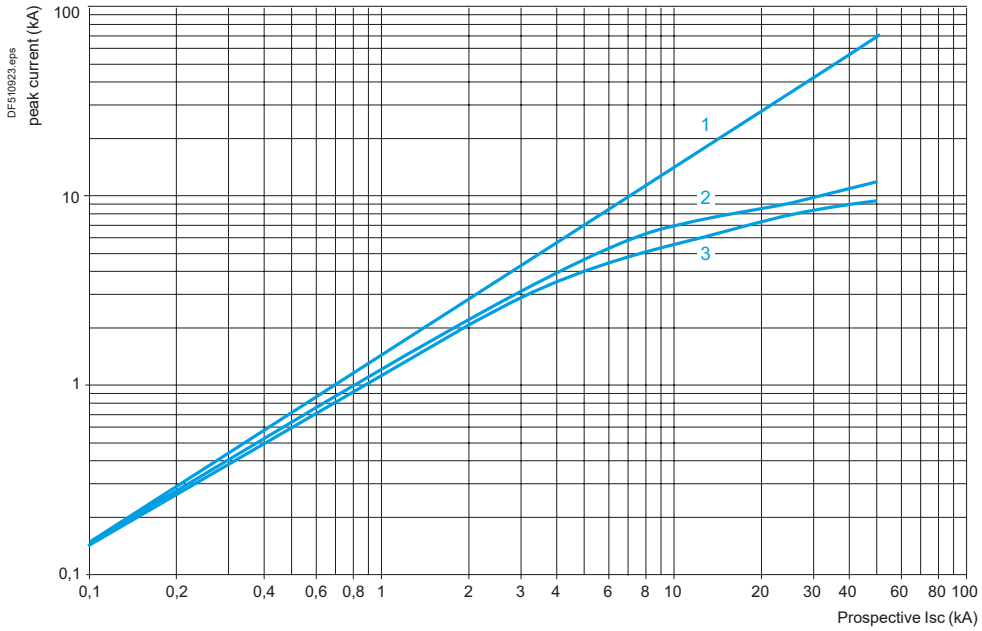


Life Is On Schneider Electric

# Curves

## Current limitation on short-circuit

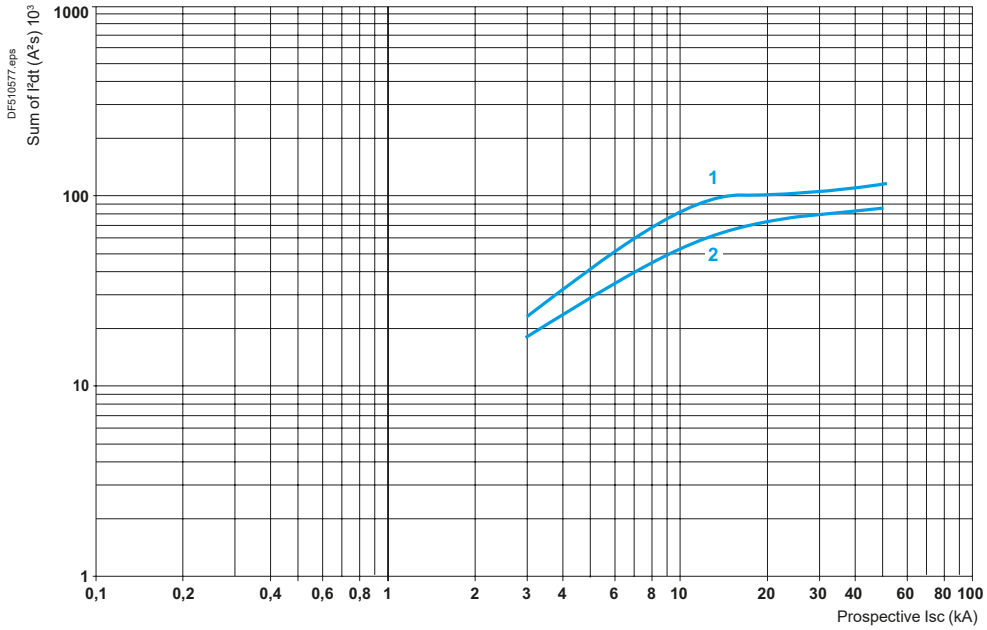
**$U_e$ = 460 V**




1 Maximum peak current
2 32 A, 38 A power base
3 12 A power base

## Thermal limit on short-circuit

**$U_e$ = 460 V**




1 32 A, 38 A power base
2 12 A power base

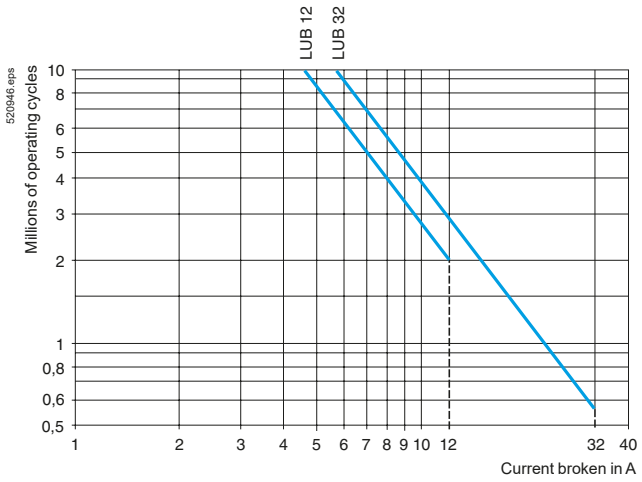
References:
page A4/10

Characteristics:
pages A4/44, A4/46 to A4/54

Schemes:
pages A4/62 to A4/74

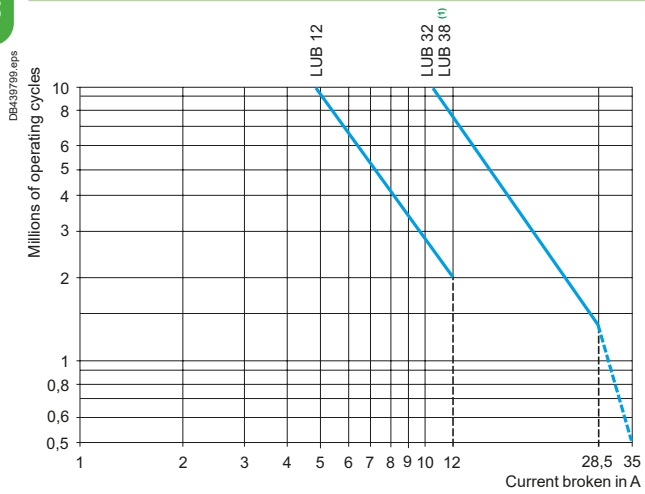
# Curves

## Use in category AC-41

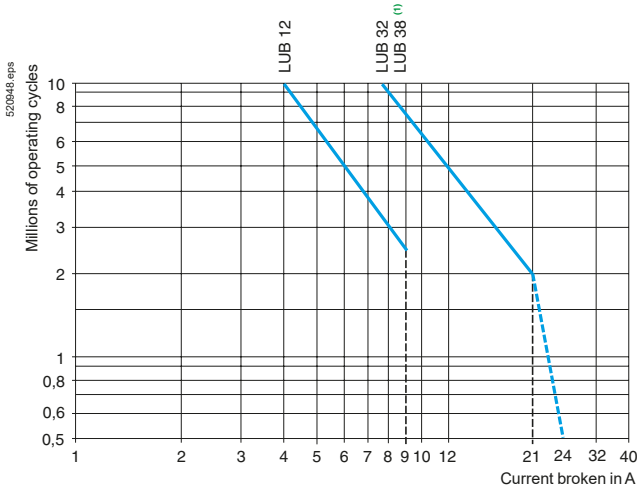



## Use in category AC-43

### Ue ⩽ 440 V




### Ue = 690 V



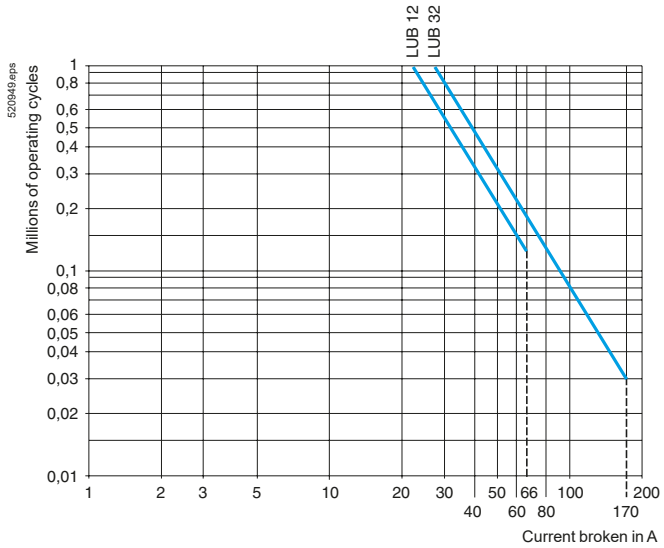

*(1)* Plain curve: **LUB32** + **LUB38**, doted curve: **LUB38** only.

References: page A4/10
Characteristics: pages A4/44, A4/46 to A4/54
Dimensions: pages A4/60 and A4/61
Schemes: pages A4/62 to A4/74

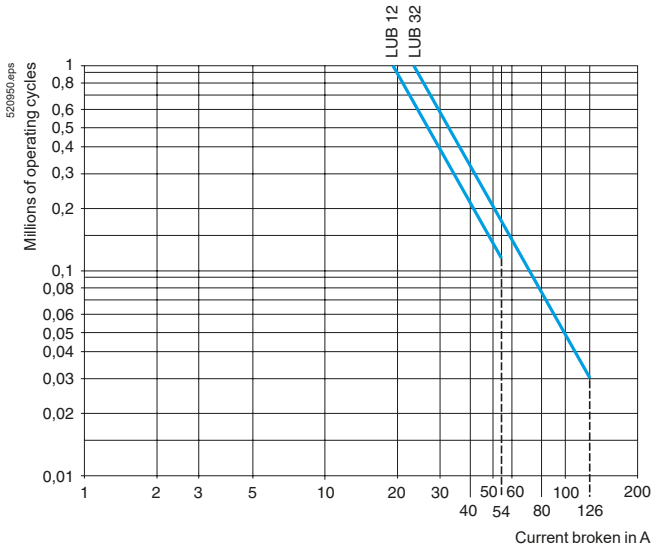
# Curves

## Use in category AC-44

### Ue ≤ 440 V




### Ue = 690 V

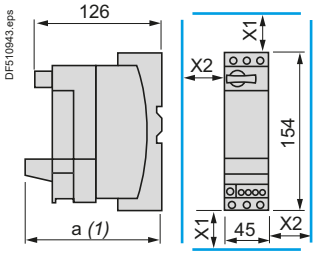


# Dimensions

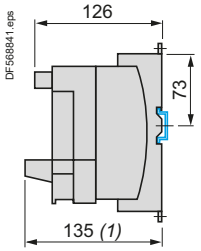
## Dimensions

### Starter-controllers

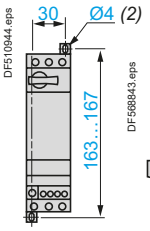
#### LUB: non-reversing




Rail mounting



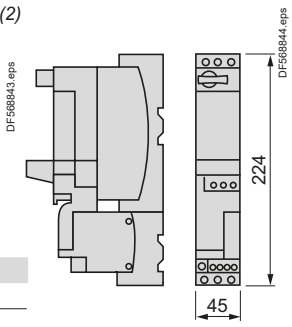

Screw fixing



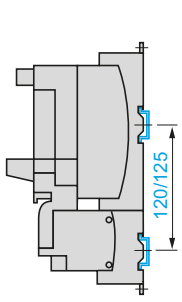

| | a |
|---|---|
| **With Modbus module** | 135 |
| **With Advantys STB, CANopen, PROFIBUS DP or DeviceNet modules** | 147 |

Minimum electrical clearance:
X1 = 50 mm for Ue = 440 V and 70 mm for Ue = 500 and 690 V, X2 = 0

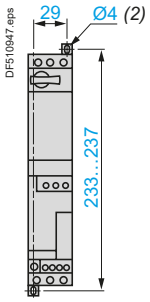
#### LU2B: reversing



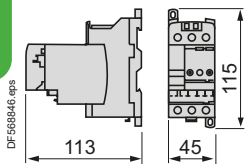

Rail mounting



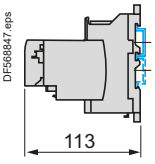

Screw fixing



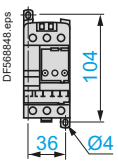

### Reverser block for mounting separately from power base




Rail mounting

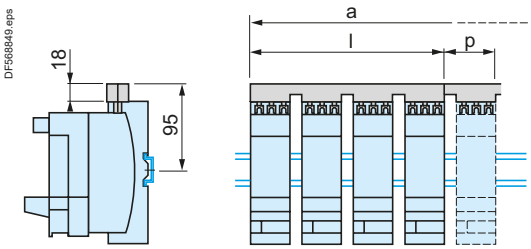



Screw fixing




### Sets of busbars and plug-in power sockets

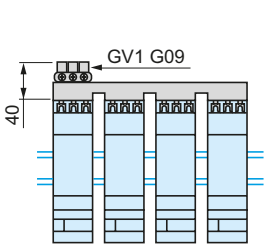
#### GV2G445 and GV2G454



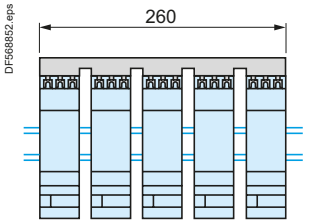

| | l | P |
|---|---|---|
| **GV2G445** (2 x 45) | 179 | 45 |
| **GV2G454** (2 x 54) | 206 | 54 |

| | a | | | |
|---|---|---|---|---|
| **Number of tap-offs** | 5 | 6 | 7 | 8 |
| **GV2G445** (2 x 45) | 224 | 269 | 314 | 359 |
| **GV2G454** (2 x 54) | 260 | 314 | 368 | 422 |

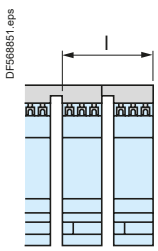
#### GV2G●●● with terminal block GV1G09




#### GV2G554

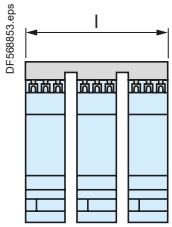



#### GV2G245 and G254



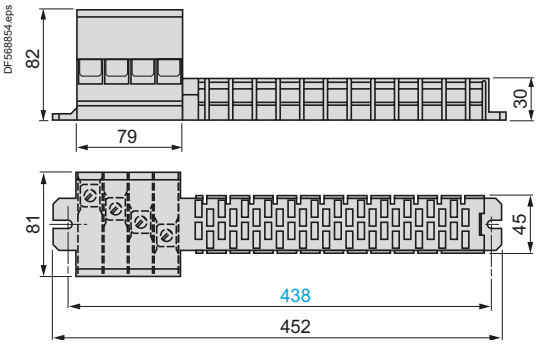

| | l |
|---|---|
| **GV2G245** (2 x 45) | 89 |
| **GV2G254** (2 x 54) | 98 |

#### GV2G345 et G354

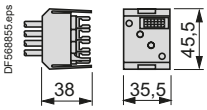



| | l |
|---|---|
| **GV2G345** (2 x 45) | **134** |
| **GV2G354** (2 x 54) | **152** |

#### AK5JB144




#### AK5PC13, PC33, PC33L

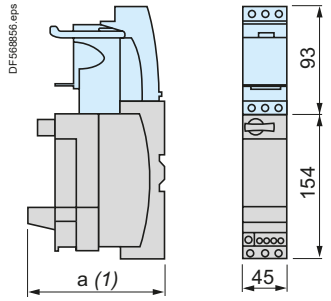



*(1) Depth with communication module.*
*(2) Retractable fixing lugs.*

References:
pages A4/10 and A4/11
Characteristics:
page A4/44
Curves:
pages A4/56 to A4/59
Schemes:
pages A4/61 to A4/74

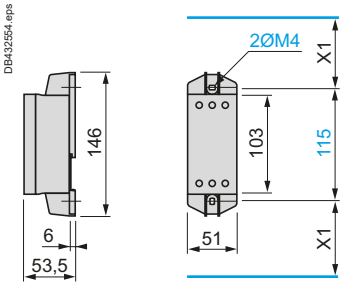
## Dimensions, mounting

### Limiter-disconnector LUALB1
### Disconnector LUALB10




| | a |
|---|---|
| **With Modbus module** | 135 |
| **With Advantys STB, CANopen, PROFIBUS DP or DeviceNet modules** | 147 |

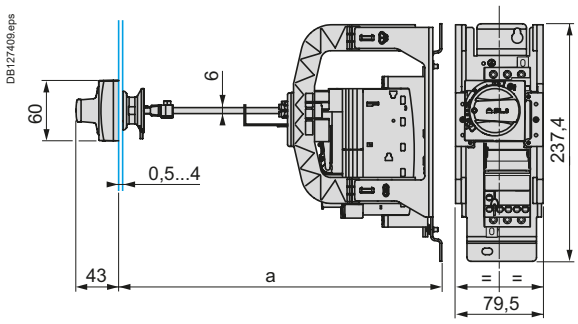
### Current limiter LA9LB920



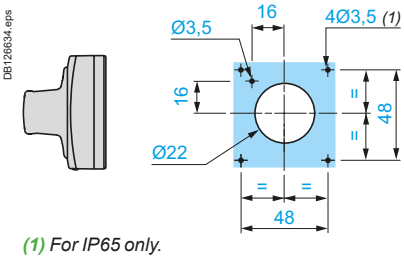

*X1: Electrical clearance = 30 mm for Ue ≤ 690 V*

## Door interlock mechanisms

### LU9APN21, LU9APN22, LU9APN24




### Door cut-out

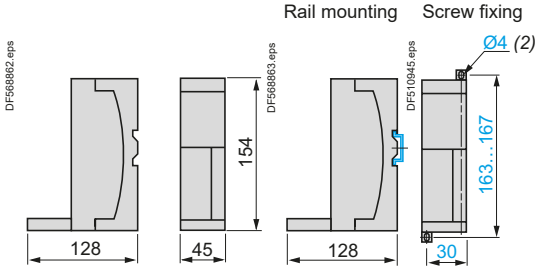



*(1) For IP65 only.*

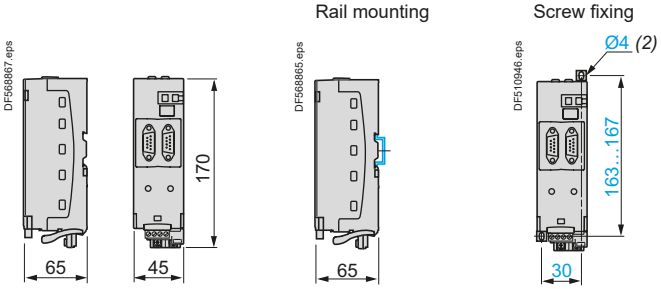
| | a | |
|---|---|---|
| | **Mini** | **Maxi** |
| **LU9APN●●** | 191 | 300 |
| **LU9APN●● + GVAPK12** | 300 | 483 |

## Splitter boxes

### LU9GC3 (Modbus) LU9G02 and LU9G03




### LU9GC7 (PROFIBUS DP)




*(1) Depth with communication module.*
*(2) Retractable fixing lugs.*

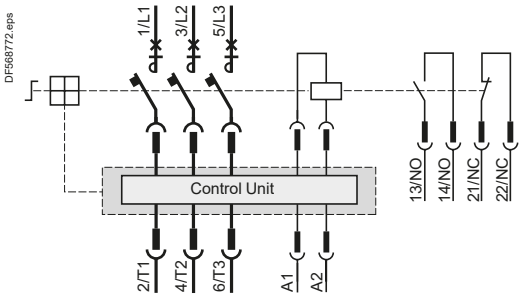
References:
pages A4/20, A4/31, A4/32

# Schemes

## 12, 32, 38 A power bases with standard, advanced or multifunction control unit

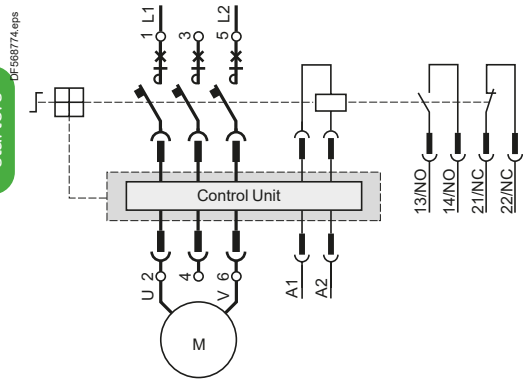
### LUB

**Non-reversing**



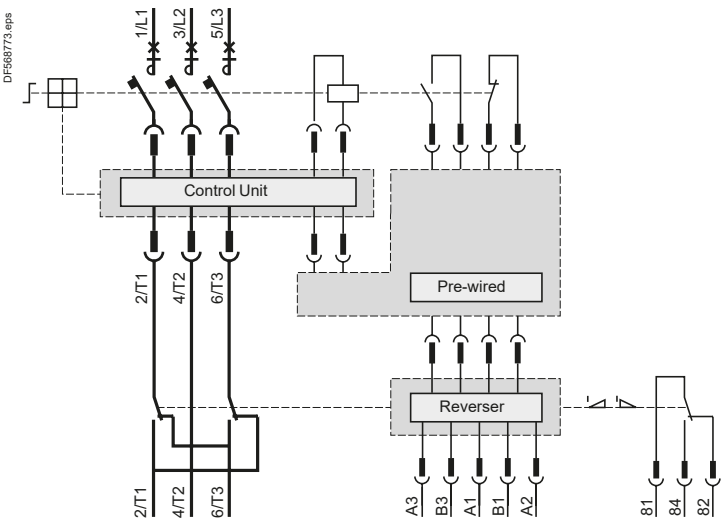

**With control unit LUCC or LUCM**

**Connection of a single-phase motor**

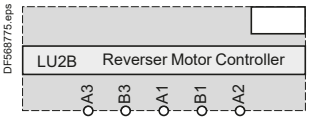



### LU2B

**Reversing**

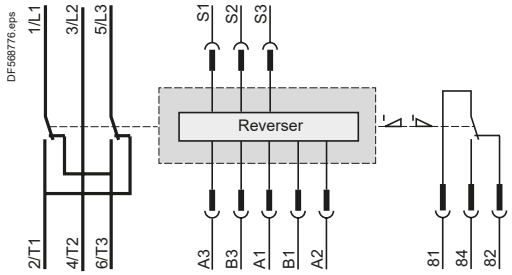



**Control terminal block**

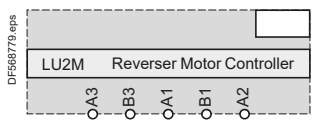



## Reverser blocks

### LU2M

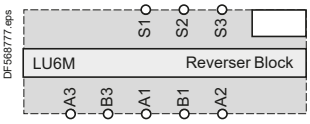



**Control terminal block**

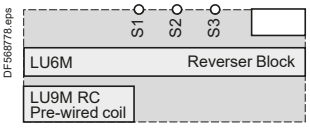



### LU6M

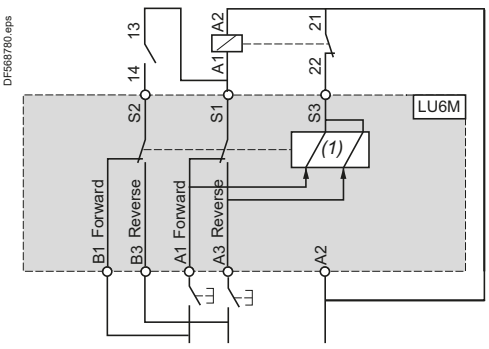
**Control terminal blocks**




With pre-wired connector LU9MRC



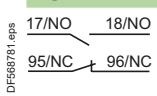

Basic scheme



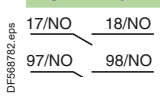

S1 *Start next stage*
S2 *Electrical interlocking*
S3 *Maintaining contact*
B1 *Maintain forward running*
B3 *Maintain reverse running*
A1 *Pulse forward running*
A2 *Common*
A3 *Pulse reverse running*
*(1) Electronically operated bistable electromagnet.*

## Add-on contact blocks

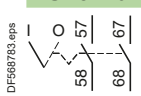
### LUA1C11




### LUA1C20

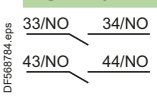



### LUA8E20

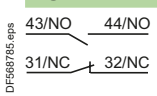



## Add-on contact modules

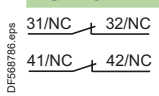
### LUFN20




### LUFN11




### LUFN02




References:
pages A4/10 and A4/11

Characteristics:
pages A4/44 and A4/45

Curves:
pages A4/56 to A4/59

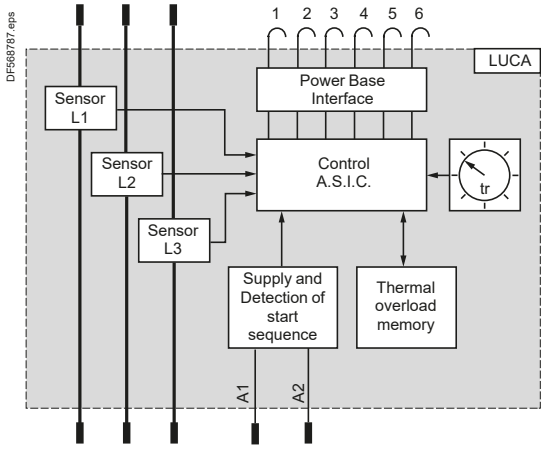


Life Is On Schneider Electric

## Control units

### Standard control units LUCA

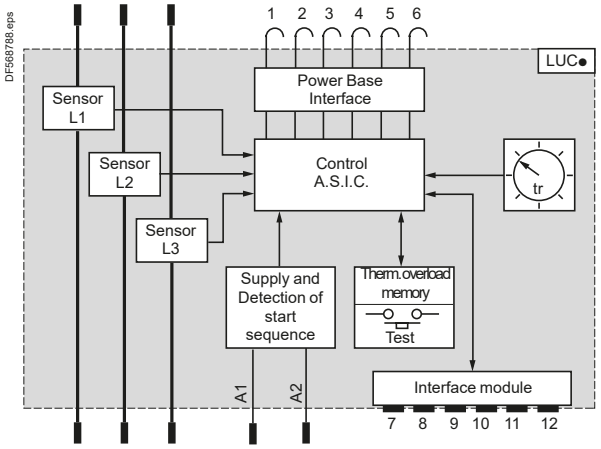
Basic scheme




1 and 2 Trips
3 and 4 Electromagnet
5 Power base rating
6 N/C

### Advanced control units LUCB, LUCC, LUCD

Basic scheme



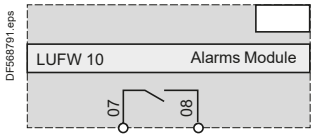

1 and 2 Trips
3 and 4 Electromagnet
5 Power base rating
6 N/C
7 Earth
8 Thermal status/Set
9 Reset mode/Reset
10 (Im/Ir)
11 Vc2
12 Vc1

References:
pages A4/11 and A4/12
Characteristics:
pages A4/47 to A4/49
Curves:
pages A4/56 to A4/58

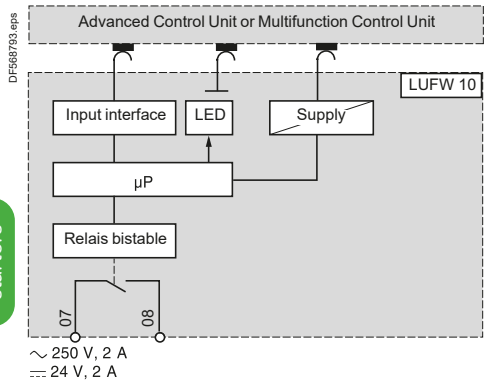
# Schemes

## Function modules

### Alarm
### LUFW10



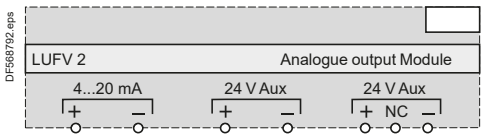

Basic scheme



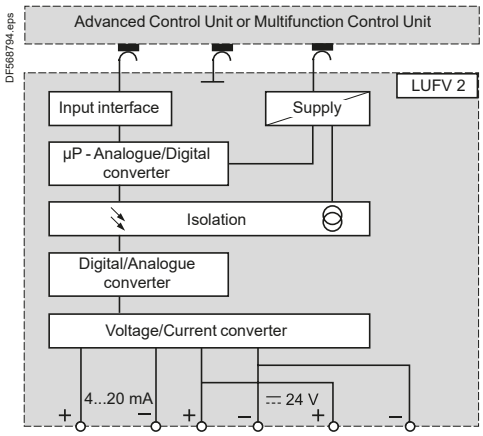

~ 250 V, 2 A
⎓ 24 V, 2 A

### Indication of motor load
### LUFV2

**4-20 mA output**




Basic scheme

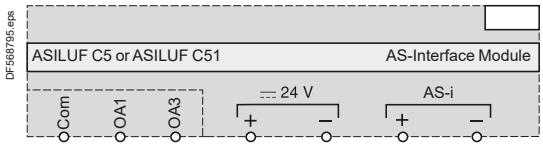



100 Ω < load < 500 Ω ⎓ 30 V max and 40 mA min

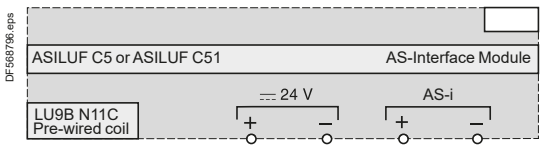
## Communication modules

### Communication modules ASILUFC5 and ASILUFC51

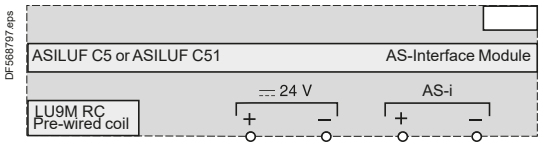
**Without pre-wired coil connection**



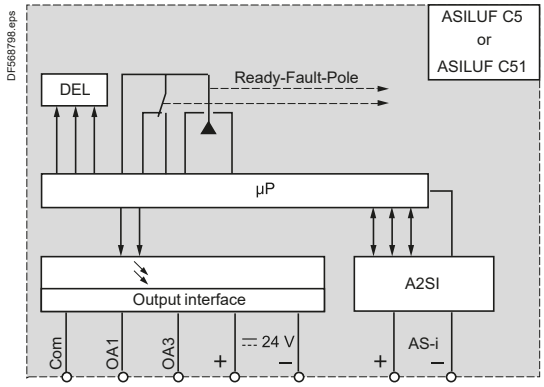

**With pre-wired coil connection LU9BN11C**




**With pre-wired coil connection LU9MRC**




Basic scheme




References:
pages A4/13, A4/24

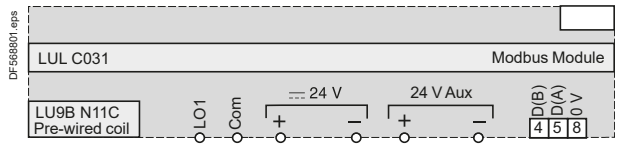
Characteristics:
pages A4/50 to A4/55



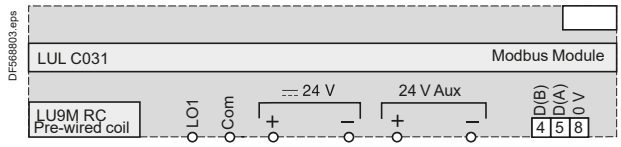
Life Is On Schneider Electric

## Communication modules (continued)

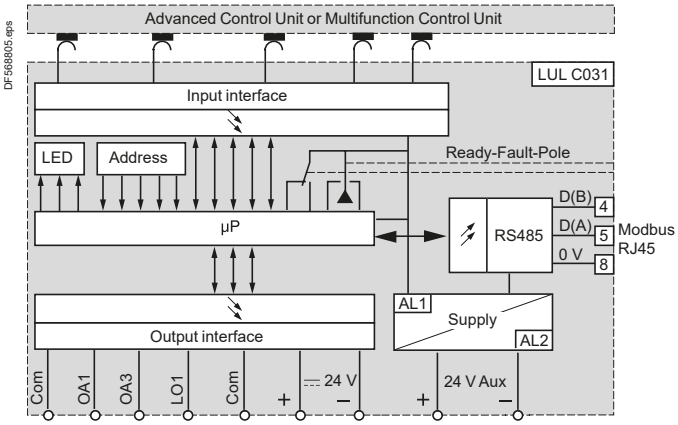
### With pre-wired coil connection LU9BN11C




### With pre-wired coil connection LU9MRC

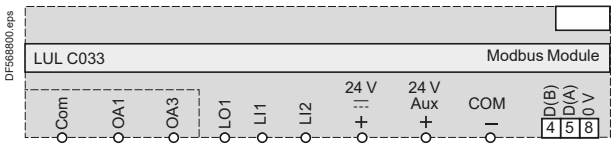



Basic scheme

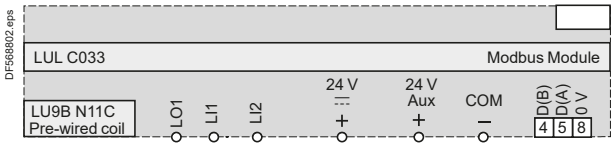



## Modbus communication module LULC033

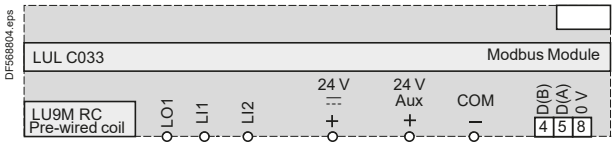
### Without pre-wired coil connection



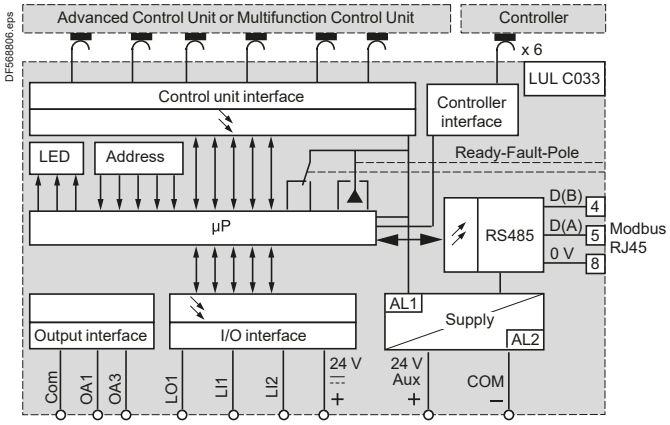

### With pre-wired coil connection LU9BN11C




### With pre-wired coil connection LU9MRC




Basic scheme



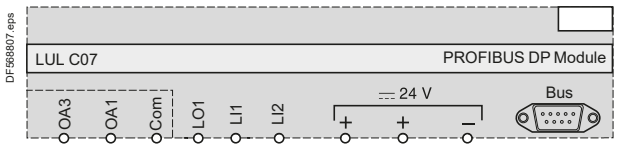

Ultra motor starters
Ref.

References:
page A4/26
Characteristics:
pages A4/51 to A4/55

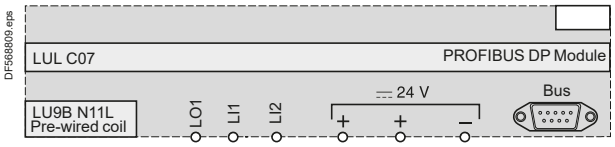
## Communication modules (continued)

### PROFIBUS DP communication module LULC07

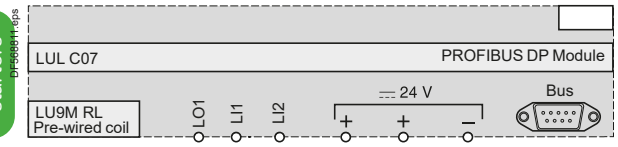
**Without pre-wired coil connection**



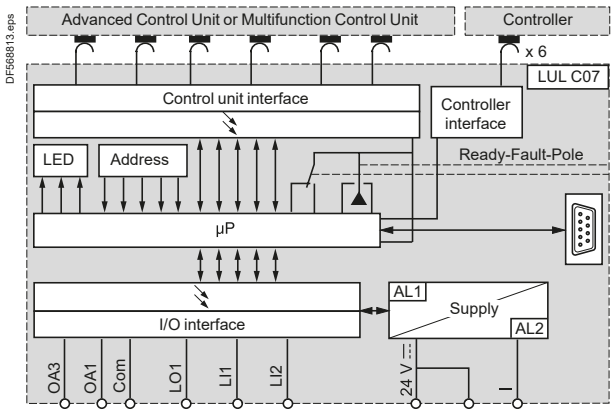

**With pre-wired coil connection LU9BN11LC**




**With pre-wired coil connection LU9MRC**

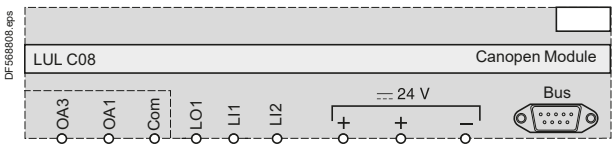



Basic scheme

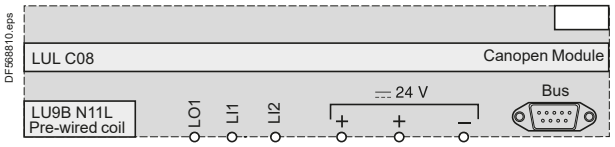



### CANopen communication module LULC08

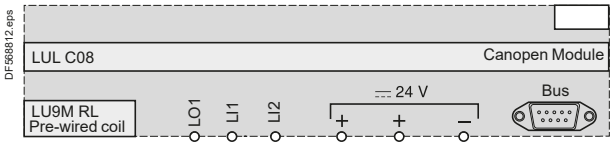
**Without pre-wired coil connection**



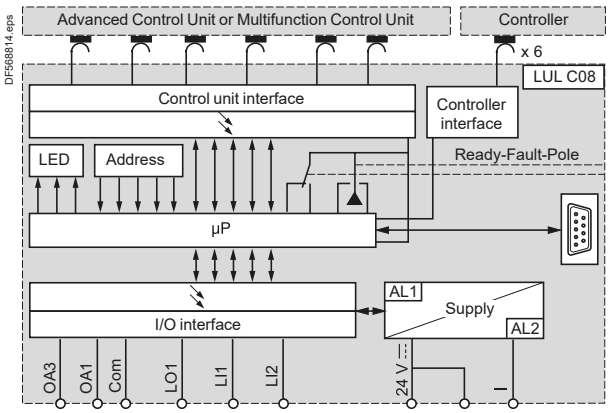

**With pre-wired coil connection LU9BN11LC**




**With pre-wired coil connection LU9MRC**

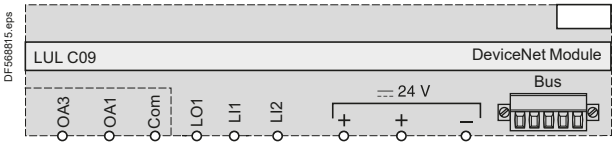



Basic scheme

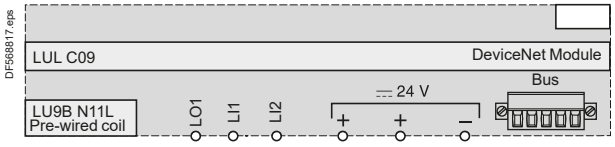



### DeviceNet communication module LULC09

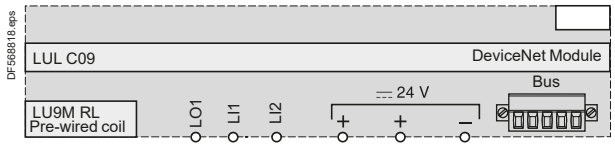
**Without pre-wired coil connection**



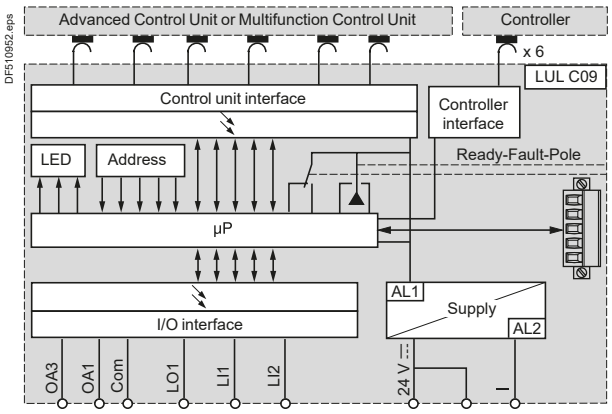

**With pre-wired coil connection LU9BN11LC**




**With pre-wired coil connection LU9M RL**




Basic scheme




References:
pages A4/25, A4/28, A4/29

Characteristics:
pages A4/51 to A4/55

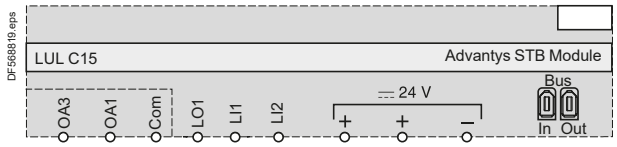


Life Is On Schneider Electric

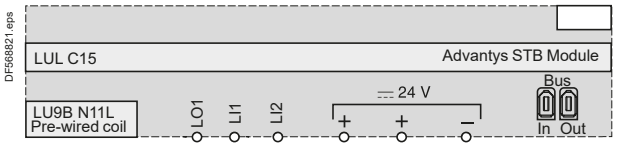
## Communication modules (continued)

### Advantys STB communication module LULC15

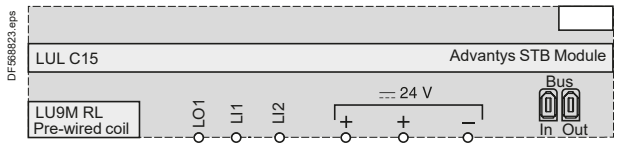
**Without pre-wired coil connection**



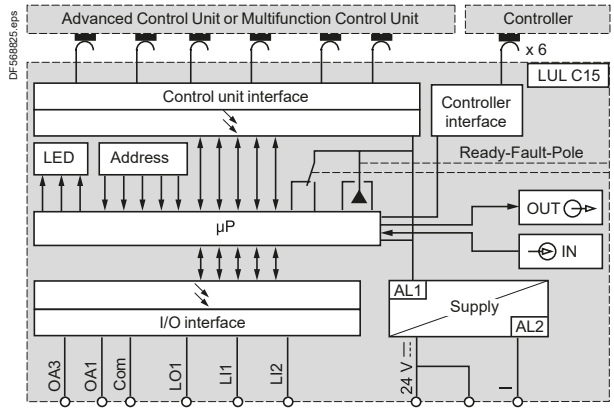

**With pre-wired coil connection LU9BN11LC**




**With pre-wired coil connection LU9MRC**

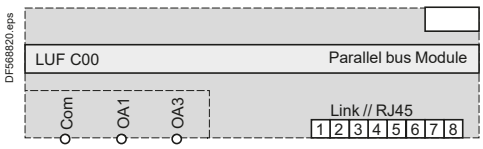



Basic scheme

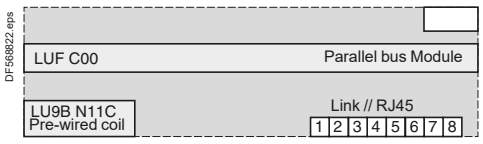



### Parallel wiring modules

**Without pre-wired coil connection**

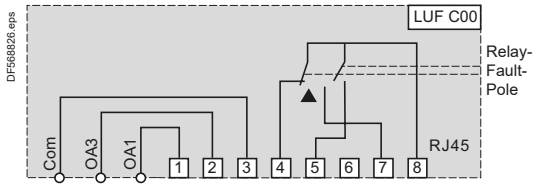



**With pre-wired coil connection LU9BN11LC**



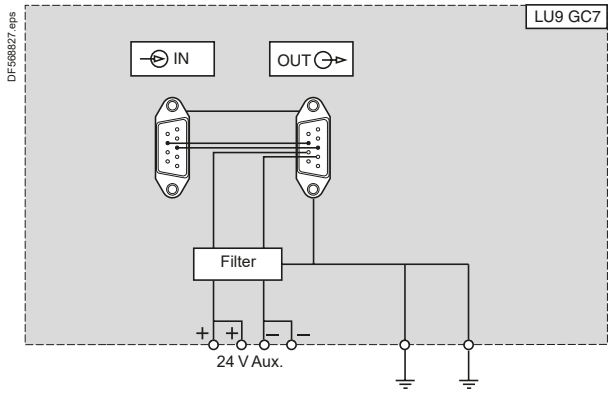

**With pre-wired coil connection LU9MRC**

Basic scheme




1 Forward running
2 Reverse running
3 Output common
4 Selector in position
5 Pole state
6 Reserved
7 Fault
8 Input common

### PROFIBUS DP power supply module LU9GC7



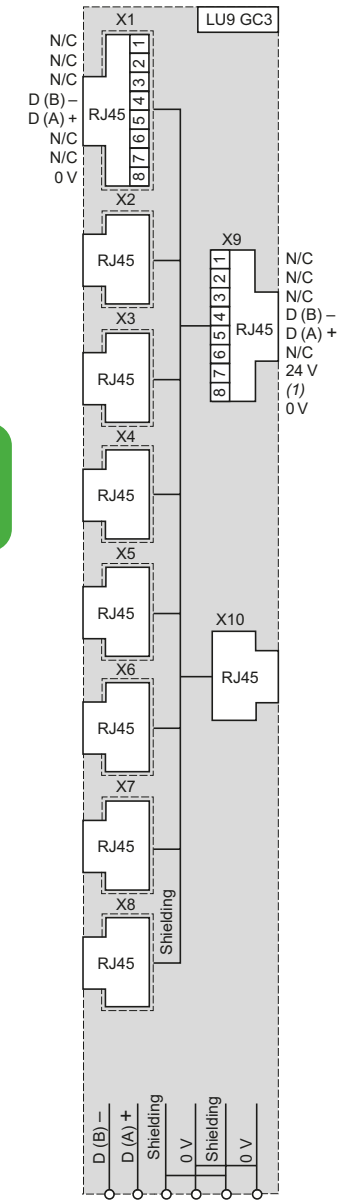

References:
pages A4/20, A4/27, A4/28

Characteristics:
pages A4/51 to A4/55

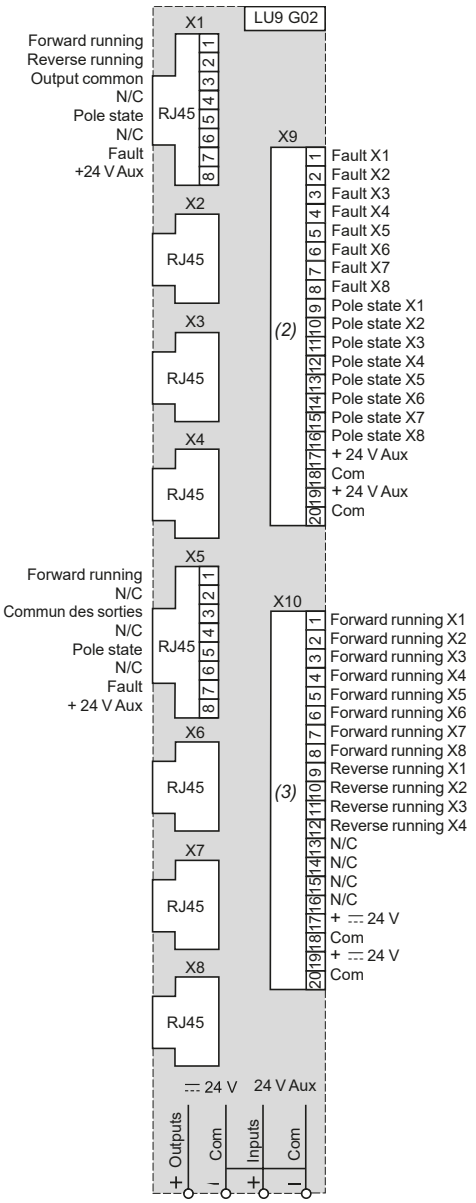
## Communication modules (continued)

### Wiring hub and splitter boxes

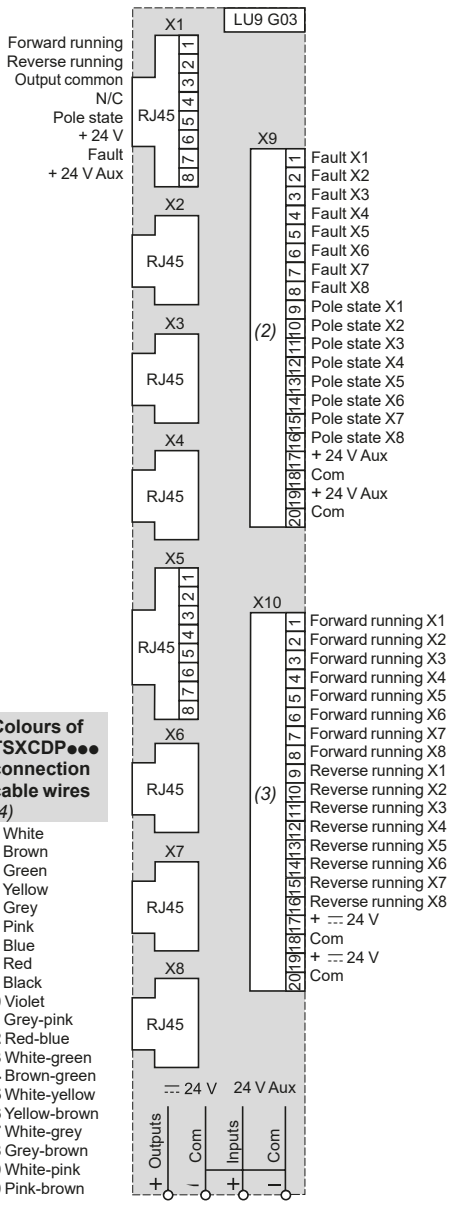
#### Modbus hub LU9GC3




#### Parallel wiring splitter box LU9G02




#### Parallel wiring splitter box LU9G03



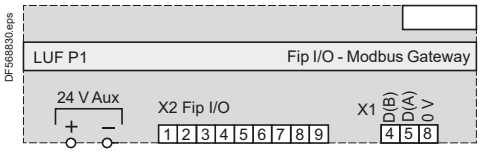

**Colours of TSXCDP●●● connection cable wires** *(4)*

| | |
|---|---|
| **1** | White |
| **2** | Brown |
| **3** | Green |
| **4** | Yellow |
| **5** | Grey |
| **6** | Pink |
| **7** | Blue |
| **8** | Red |
| **9** | Black |
| **10** | Violet |
| **11** | Grey-pink |
| **12** | Red-blue |
| **13** | White-green |
| **14** | Brown-green |
| **15** | White-yellow |
| **16** | Yellow-brown |
| **17** | White-grey |
| **18** | Grey-brown |
| **19** | White-pink |
| **20** | Pink-brown |

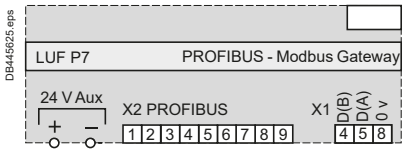
*(1) Not connected on connectors X1 to X8. Only present on RJ45 IN and OUT connectors.*
*(2) 20-way HE10 input connector.*
*(3) 20-way HE10 output connector.*
*(4) Wire colours and corresponding HE10 connector pin numbers.*

## Gateways

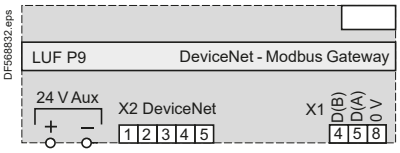
### LUFP1




### LUFP7



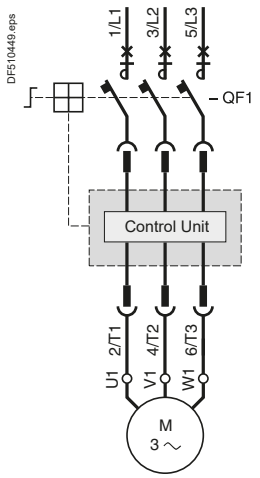

### LUFP9



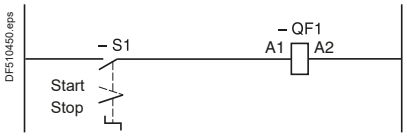

References:
pages A4/20 and A4/30
Dimensions:
pages A4/61 and A4/68

# Schemes

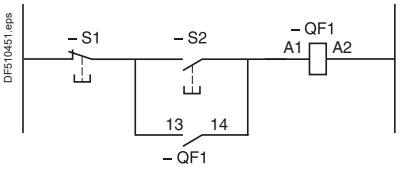
## Non-reversing starter-controllers LUB



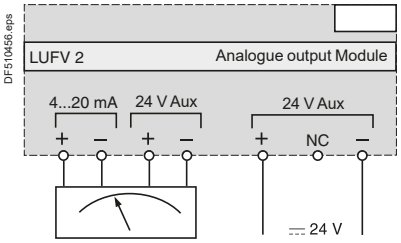

### 2-wire control via 2-position switch




### 3-wire control, pulsed start with maintaining contact

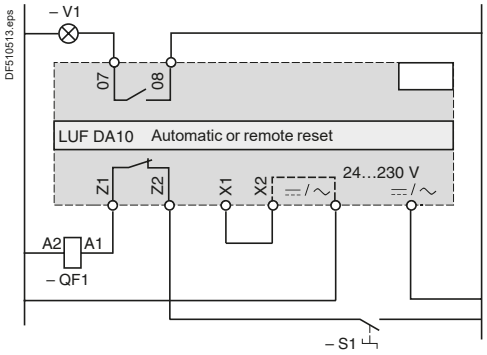



### Connection of a motor load indicator module LUFV2

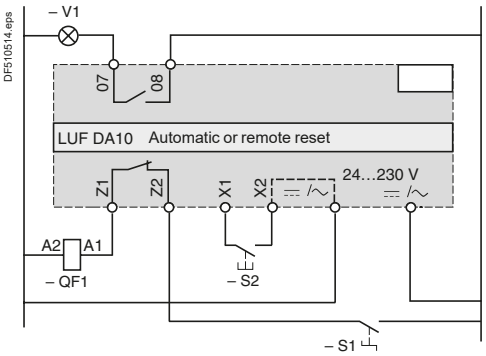



### Connection of thermal overload fault signalling modules LUFDA10

#### Automatic reset

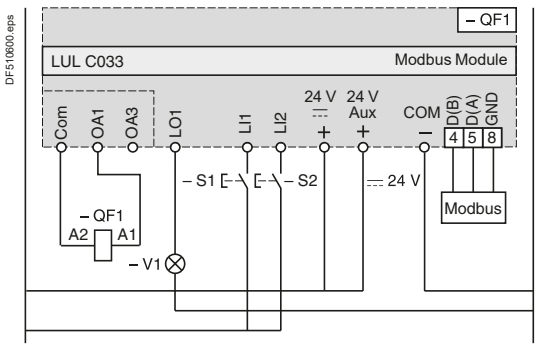



#### Remote reset




### Control via Modbus communication module LULC033

#### Without pre-wired coil connection

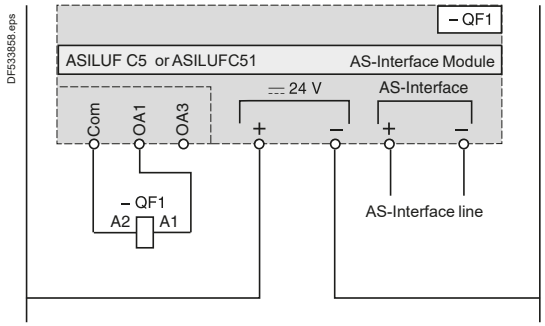



References:
pages A4/10 to A4/14

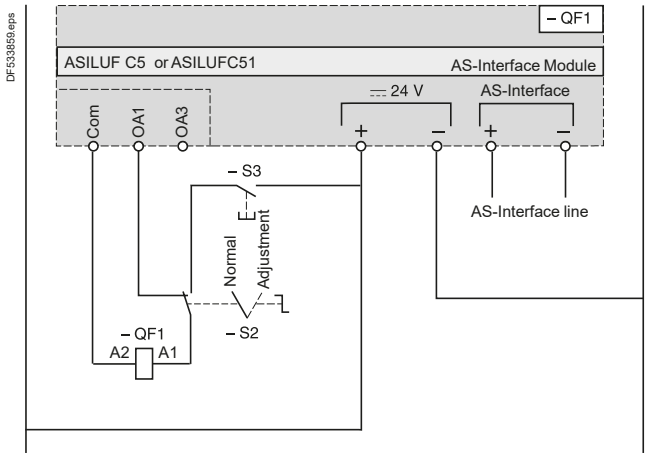
## Non-reversing starter controllers LUB (continued)

### Control by communication modules ASILUFC5 and ASILUFC51

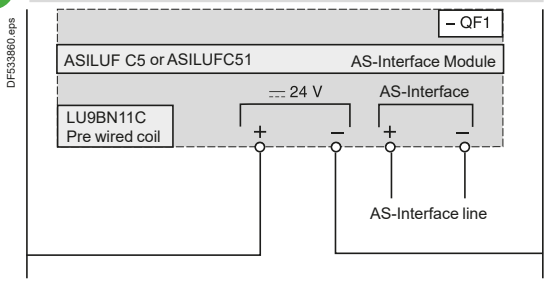
**Without pre-wired coil connection**



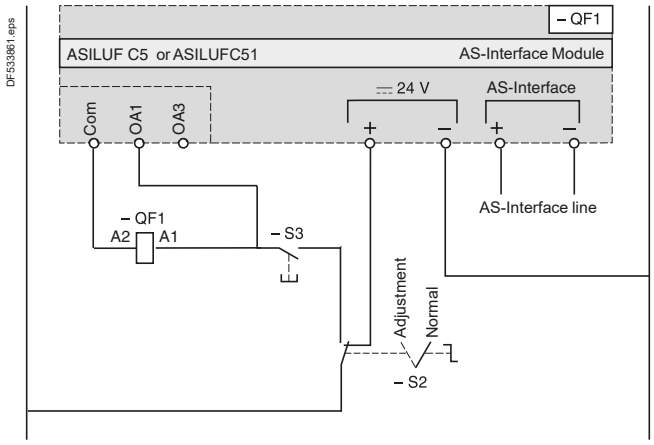

**Without pre-wired coil connection**
**With local control**



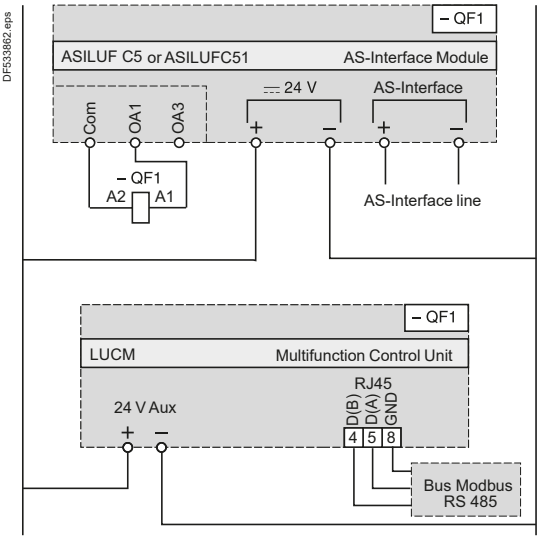

**With pre-wired coil connection LU9BN11C**




**Without pre-wired coil connection**
**With local control**




**Without pre-wired coil connection**
**With multifunction control unit LUCM**




Ultra motor starters
Ref.

References:
page A4/14

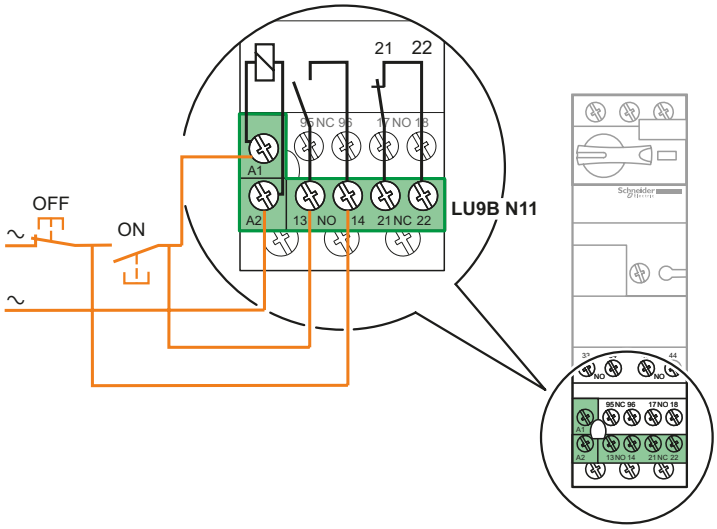
# Schemes

## Standard or advanced power base

### ON/OFF control (1 direction of rotation)

**Push buttons wiring**

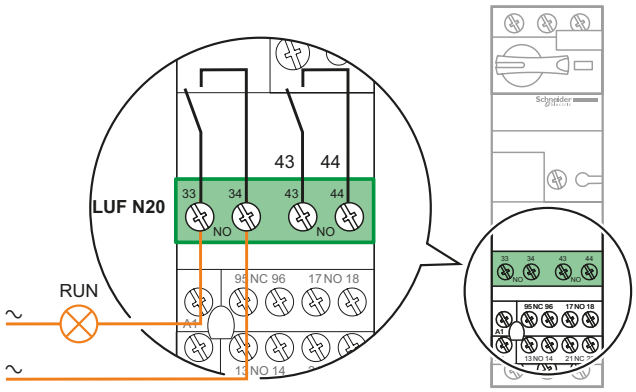
DB414426_b.eps




### ON indication

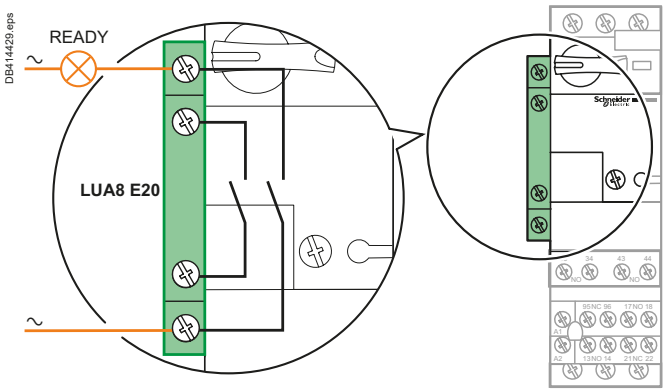
**"Motor RUN" indicator wiring**

DB414428.eps




**"Motor starter READY" indicator wiring**

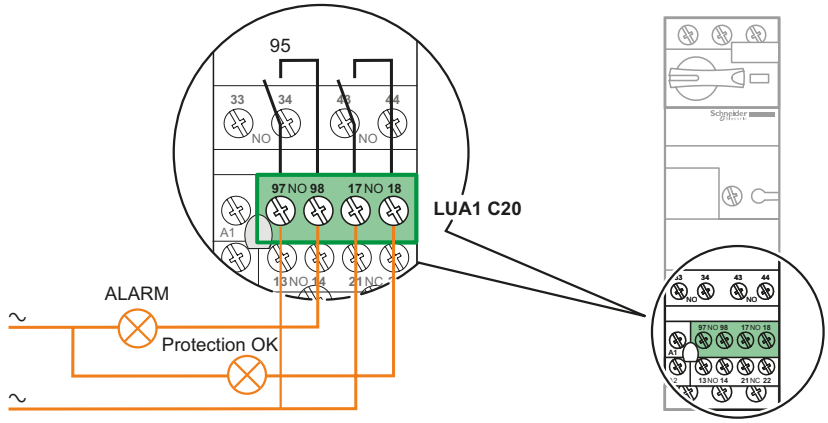
DB414429.eps




### ALARM indication

**Protection device status indicator wiring**

DB432552.eps

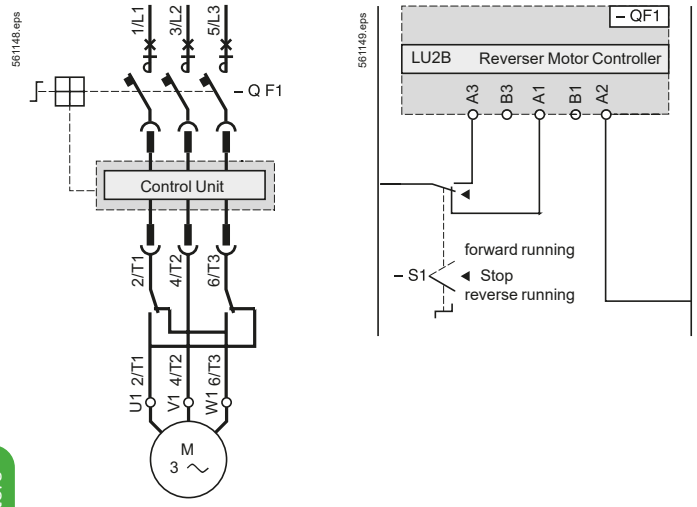



References:
pages A4/10 to A4/13

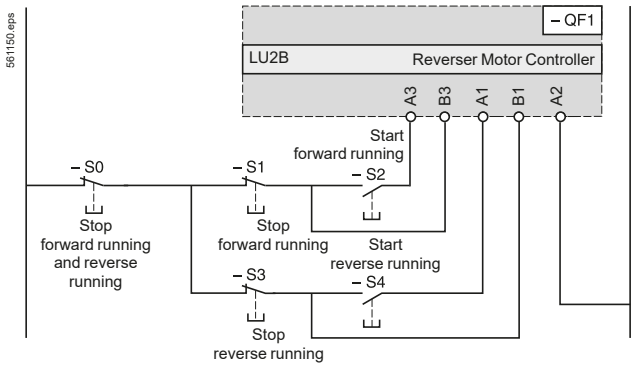
## Schemes

### Reversing starter-controllers LUB

#### 2-wire control via 3-position switch

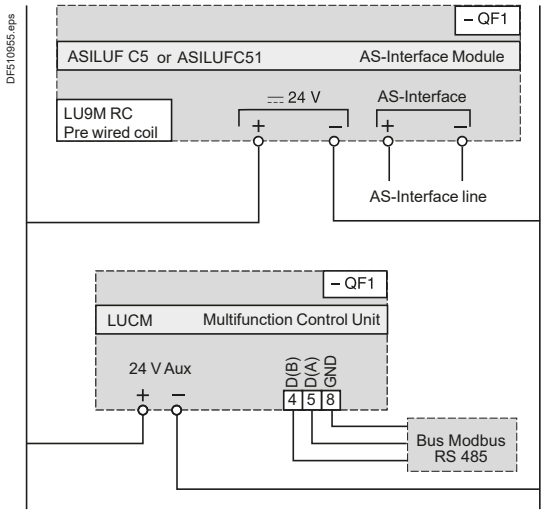



#### 3-wire control, pulsed start with maintaining contact

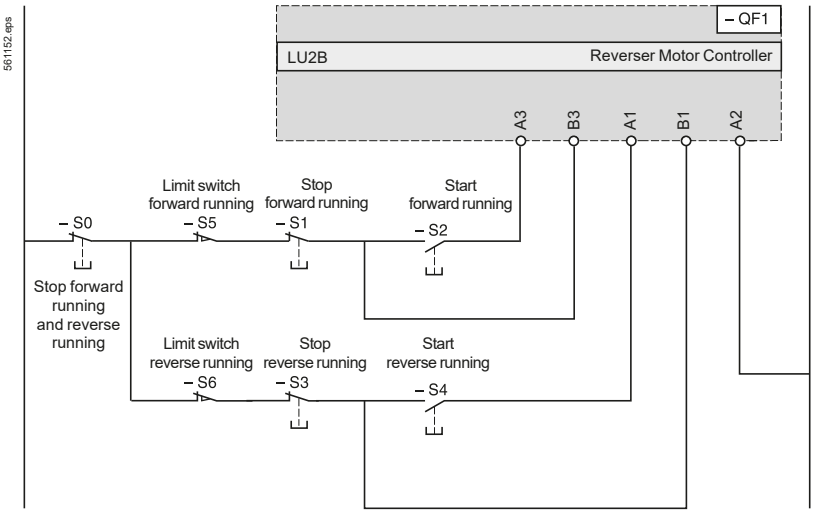



#### Control by communication modules ASILUFC5 and ASILUFC51

**With pre-wired coil connection LU9MRC**
**With multifunction control unit LUCM**

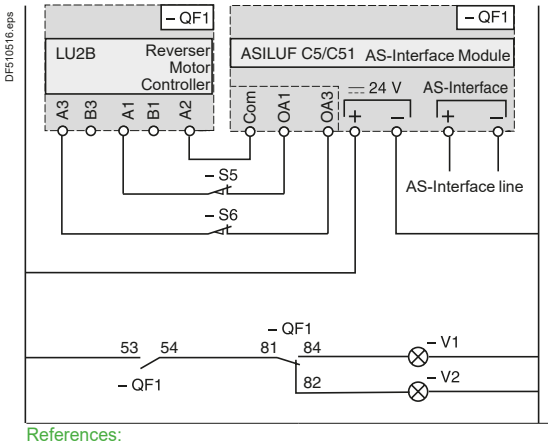



#### 3-wire control, pulsed start with maintaining contact and limit switches




#### Control by communication modules ASILUFC5 and ASILUFC51

**Without pre-wired coil connection**
**With running direction pilot lights and limit switches**



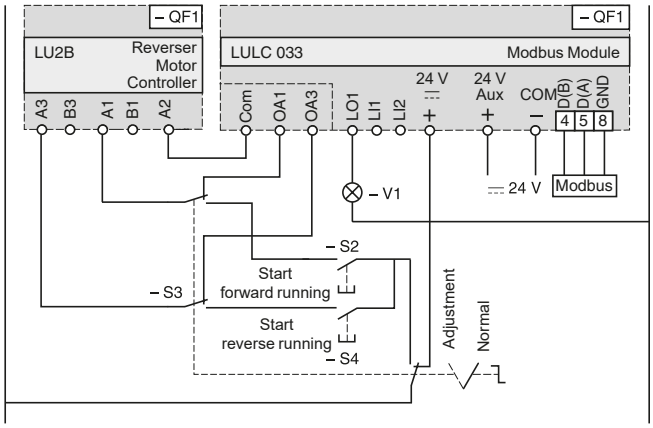

References:
pages A4/10 and A4/24

## Reversing starter controllers LU2B (continued)

### Control via Modbus communication module LULC033

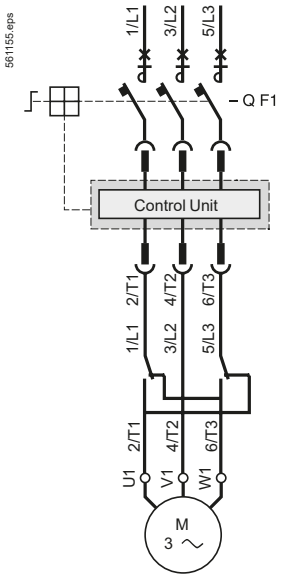
**Without pre-wired coil connection. With local control**

DF510601.eps



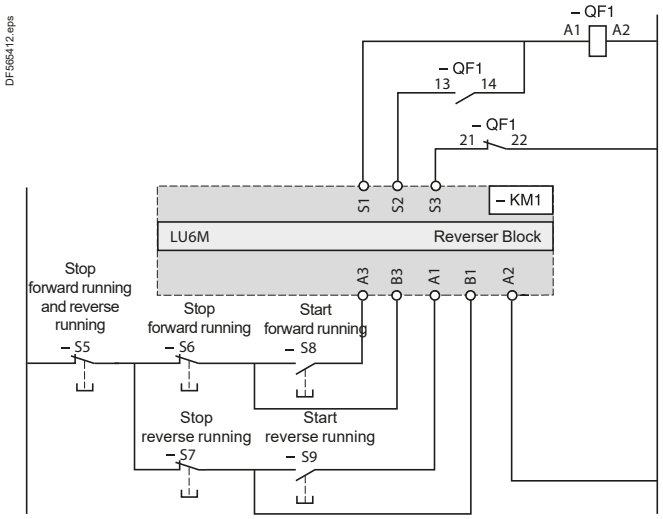

## Reversing starter-controllers LUB + LU6M

561155.eps



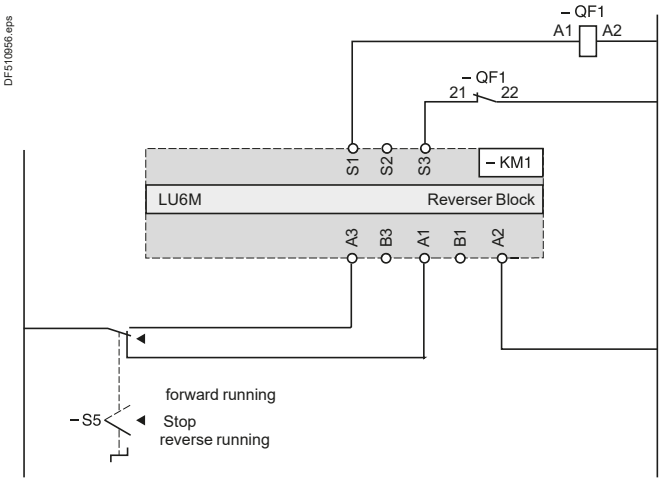

### 3-wire control, pulsed start with maintaining contact

DF565412.eps




### 2-wire control via 3-position switch

DF510956.eps



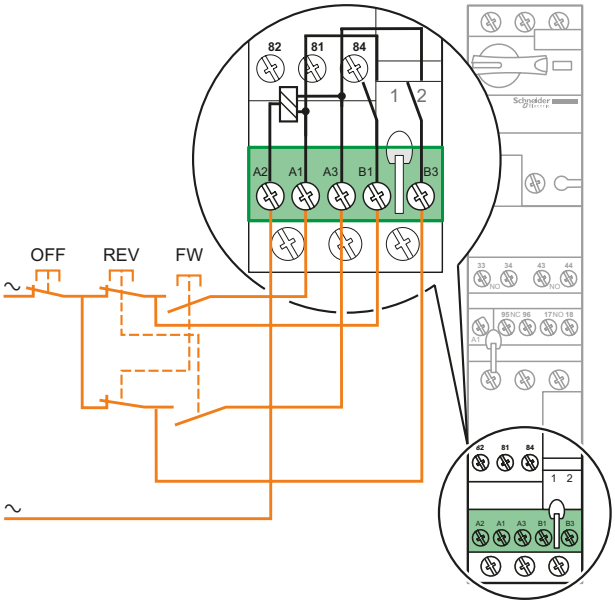

References:
page A4/10

## Power base with vertical mounting reverser block

### FW/REV/OFF control (2 directions of rotation)

**Push buttons wiring**

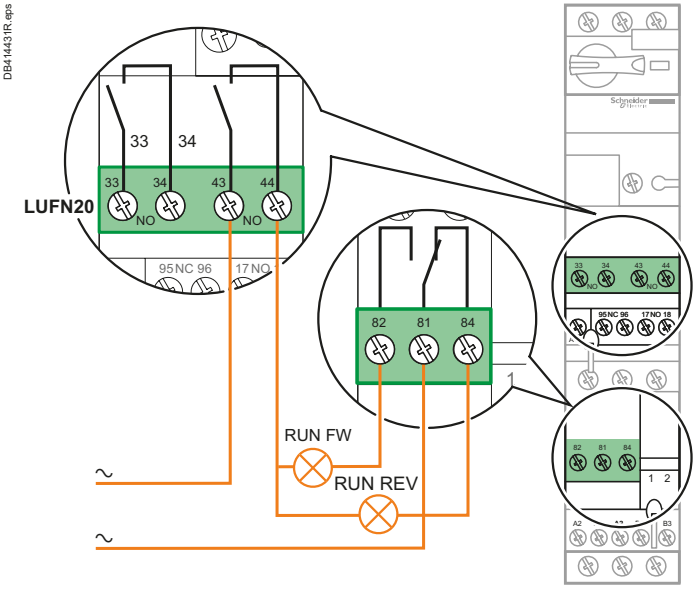
DB414430R.eps




### FW/REV control

**FW, REV indicators wiring**

DB414431R.eps

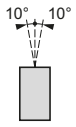



Ultra motor starters
Ref.

References:
pages A4/10 and A4/13

# Characteristics

## Environmental characteristics

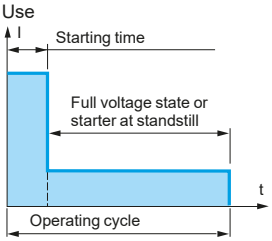
| Type of starter | | | ATSU01N2●●LT |
|---|---|---|---|
| Conformity to standards | | | Altistart U01 electronic starters have been developed to conform to the strictest international standards and the recommendations relating to electrical industrial control devices (IEC, EN), in particular standard IEC/EN 60947-4-2. |
| Electromagnetic compatibility EMC | | | |
| | Conducted and radiated emissions | | CISPR 11 level B, IEC 60947-4-2, level B |
| | Harmonics | | IEC 1000-3-2, IEC 1000-3-4 |
| | EMC immunity | | EN 50082-2, EN 50082-1 |
| | Electrostatic discharge | | IEC 61000-4-2 level 3 |
| | Immunity to radiated radio-electrical interference | | IEC 61000-4-3 level 3 |
| | Immunity to electrical transients | | IEC 61000-4-4 level 4 |
| | Voltage/current impulse | | IEC 61000-4-5 level 3 |
| | Conducted and radiated emissions | | IEC 61000-4-6 level 3 |
| | Immunity to conducted interference caused by radio-electrical fields | | IEC 61000-4-11 |
| | Damped oscillating waves | | IEC 61000-4-12 level 3 |
| CE marking | | | The starters carry CE marking in accordance with the European low voltage directives IEC/EN 60947-4-2. |
| Product certifications | | | UL, CSA, C-Tick and CCC |
| Degree of protection | | | IP 20 |
| Degree of pollution | | | 2 conforming to IEC/EN 60947-4-2 |
| Vibration resistance | | | 1.5 mm peak to peak from 3 to 13 Hz, 1 gn from 13 to 150 Hz, conforming to IEC/EN 60068-2-6 |
| Shock resistance | | | 15 gn for 11 ms conforming to IEC/EN 60068-2-27 |
| Relative humidity | | | 5…95 % without condensation or dripping water conforming to IEC 60068-2-3 |
| Ambient temperature around the unit | Storage | °C | -25…+70 conforming to IEC/EN 60947-4-2 |
| | Operation | °C | -10…+40 without derating, up to 50°C with current derating of 2 % per °C above 40°C |
| Maximum operating altitude | | m | 1000 without derating (above this, derate the current by 2.2 % per additional 100 m) |
| Operating position<br>Maximum permanent angle in relation to the normal vertical mounting position | | |  |

## Electrical characteristics

| Type of starter | | | ATSU01N2●●LT |
|---|---|---|---|
| Category of use | Conforming to IEC 60947-4-2 | | Ac-53b |
| Rated operating voltage | 3-phase ∼ voltage | V | 200 - 10 % to 480 + 10 % |
| Frequency | | Hz | 50 - 5 % to 60 + 5 % |
| Output voltage | | | Maximum 3-phase voltage equal to line supply voltage |
| Control supply voltage | | | 24 V ⎓, 100 mA ±10 % |
| Rated operating current | | A | 6...32 |
| Adjustable starting time | | s | 1...10 |
| Adjustable deceleration time | | s | 1...10 |
| Starting torque | | % | 30.... 80 % of DOL motor starting torque |

| Type of starter | ATSU | | 01N206LT | 01N209LT | 01N212LT | 01N222LT | 01N232LT |
|---|---|---|---|---|---|---|---|
| Control power supply consumption | | | 24 V ⎓, 65 mA | | | 24 V ⎓, 100 mA | |
| Power dissipated | At full load at end of starting | W | 1.5 | 1.5 | 1.5 | 2.5 | 2.5 |
| | In transient state at 5 times the rated operating current | W | 61.5 | 91.5 | 121.5 | 222.5 | 322.5 |

| Type of starter | | | ATSU01N206LT to ATSU01N222LT | | | ATSU01N232LT | | |
|---|---|---|---|---|---|---|---|---|
| Use | | | | | | | | |
| | Starting time | s | 1 | 5 | 10 | 1 | 5 | 10 |
| | Maximum number of cycles per hour | | 100 | 20 | 10 | 50 | 10 | 5 |




References: page A4/38
Dimensions: page A4/77
Schemes: pages A4/78 to A4/81

# Characteristics

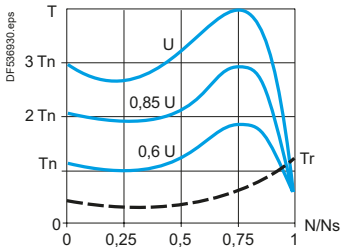
## Electrical characteristics (continued)

| | | | |
|---|---|---|---|
| Logic input power supply<br>(electrically isolated between power and control)<br>+ 24 V, COM | | | 24 V ±10 %<br>Isolated<br>Max. current 100 mA |
| Logic inputs LI1, LI2, BOOST<br>Stop, run and boost on start-up functions | | | Logic inputs with impedance 27 kΩ; 24 V power supply (U max 40 V)<br>Max. current 8 mA<br>State 0 if U < 5 V and I < 0.2 mA<br>State 1 if U > 13 V and I > 0.5 mA |
| Logic output LO1<br>End of starting signal | | | Open collector logic output:<br>External 24 V power supply (minimum 6 V, maximum 30 V)<br>Max. current 200 mA |
| Relay output<br>R1A R1C | | | Normally open (N/O) contact<br>Minimum switching capacity: 10 mA for 6 V ⎓<br>Maximum switching capacity on inductive load (cos φ = 0.5 and L/R = 20 ms): 2 A for 250 V ∿ or 30 V ⎓ (AC-15)<br>Maximum operating voltage 440 V |
| LED signalling | Green LED | | Starter powered up |
| | Yellow LED | | Nominal voltage reached |

## Connections (maximum connection capacity and tightening torque)

| **Power circuit** | | | **Connection to Ø4 mm screw clamps** |
|---|---|---|---|
| Flexible wire without cable end | 1 conductor | **mm²** | 1.5…10 8 AWG |
| | 2 conductors | **mm²** | 1.5…6 10 AWG |
| Flexible wire with cable end | 1 conductor | **mm²** | 1…6 10 AWG |
| | 2 conductors | **mm²** | 1…6 10 AWG |
| Rigid wire | 1 conductor | **mm²** | 1…10 8 AWG |
| | 2 conductors | **mm²** | 1…6 10 AWG |
| Tightening torque | | **N.m** | 1.9…2.5 |
| **Control circuit** | | | **Screw connector** |
| Flexible wire without cable end | 1 conductor | **mm²** | 0.5…2.5 14 AWG |
| | 2 conductors | **mm²** | 0.5…1.5 16 AWG |
| Flexible wire with cable end | 1 conductor | **mm²** | 0.5…1.5 16 AWG |
| | 2 conductors | **mm²** | 0.5…1.5 16 AWG |
| Rigid wire | 1 conductor | **mm²** | 0.5…2.5 14 AWG |
| | 2 conductors | **mm²** | 0.5…1 17 AWG |
| Tightening torque | | **N.m** | 0.5 |

## Torque characteristics (typical curves)




The diagram opposite shows the torque/speed characteristic of a cage motor in relation to the supply voltage.
The torque varies in line with the square of the voltage at a fixed frequency. The gradual increase in the voltage prevents the instantaneous current peak on power-up.

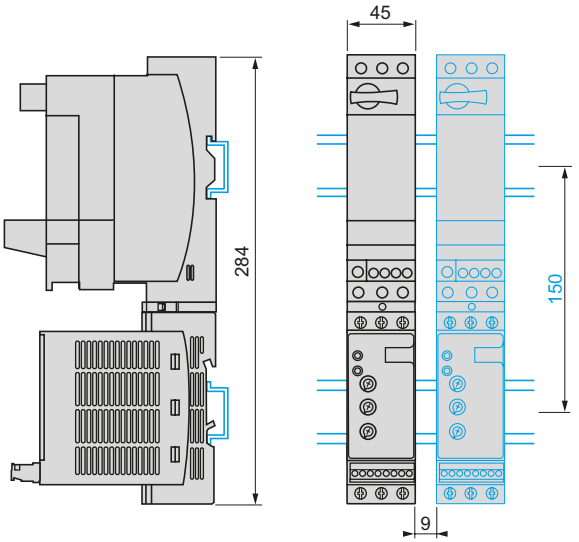
References:
page A4/38
Dimensions:
page A4/77
Schemes:
pages A4/78 to A4/81

# Dimensions

## Ultra combination (non-reversing power base) and ATSU01N206LT to ATSU01N212LT

**Mounting on ⊥ (35 mm) rail with VW3G4104 connector**

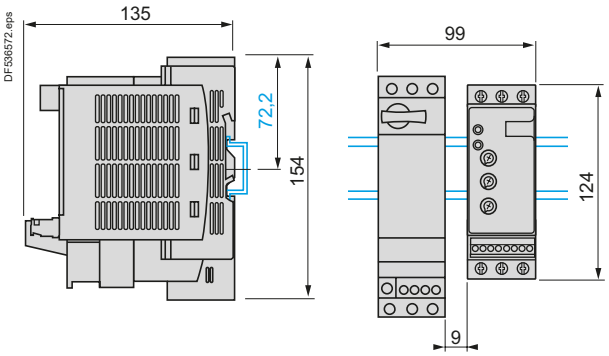
DF536571.eps




## Ultra combination (non-reversing or reversing power base) and ATSU01N206LT to ATSU01N212LT

**Side by side mounting**

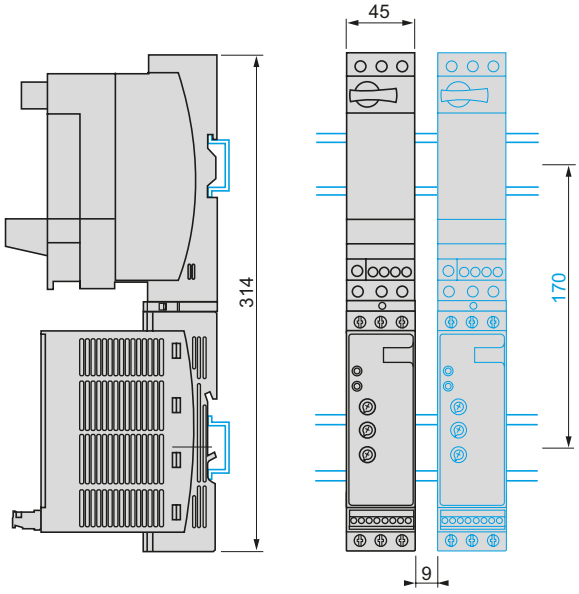
DF536572.eps




## Ultra combination (non-reversing power base) and ATSU01N222LT to ATSU01N232LT

**Mounting on ⊥ (35 mm) rail with VW3G4104 connector**

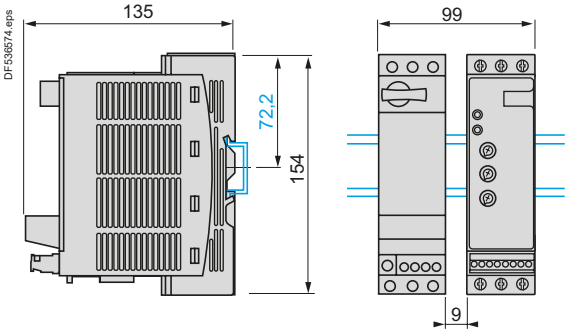
DF536573.eps




## Ultra combination (non-reversing or reversing power base) and ATSU01N222LT to ATSU01N232LT

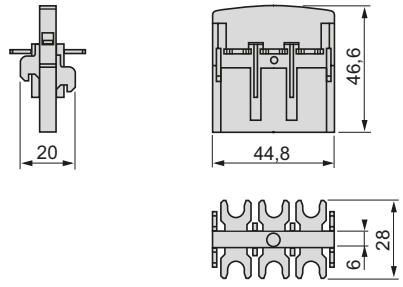
**Side by side mounting**

DF536574.eps




## VW3G4104 connector

DF536575.eps




References:
page A4/38

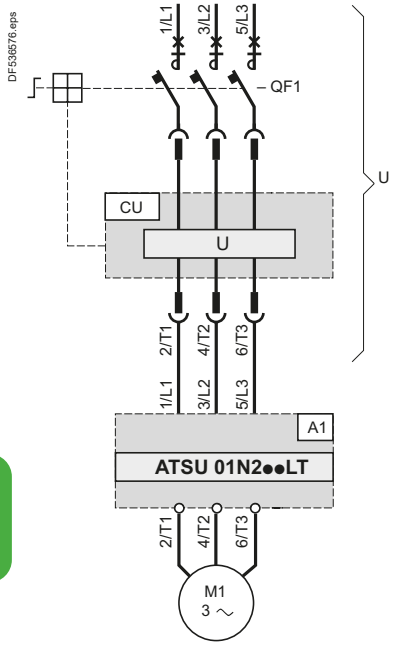
Characteristics:
pages A4/75 and A4/76

Schemes:
pages A4/78 to A4/81

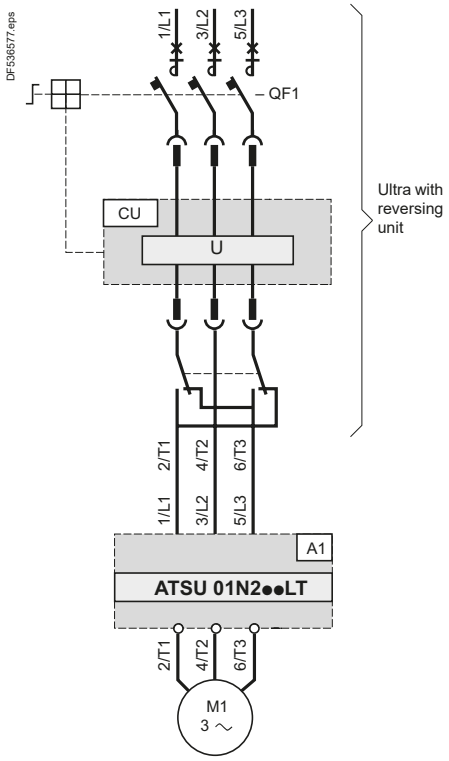
# Schemes

## ATSU01N2●●LT soft start/soft stop units

### Power wiring




### Power wiring with reversing unit



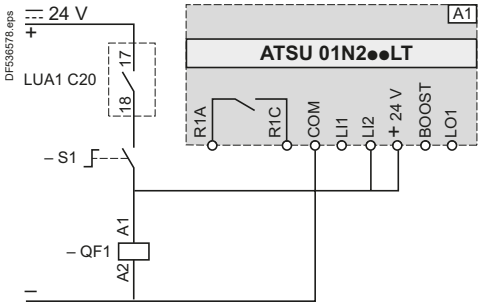

| Compatible components | |
|---|---|
| **Code** | **Description** |
| **A1** | Soft start/soft stop unit |
| **QF1** | Ultra controller-starter |
| **CU** | Ultra control unit |

Ultra motor starters
Ref.

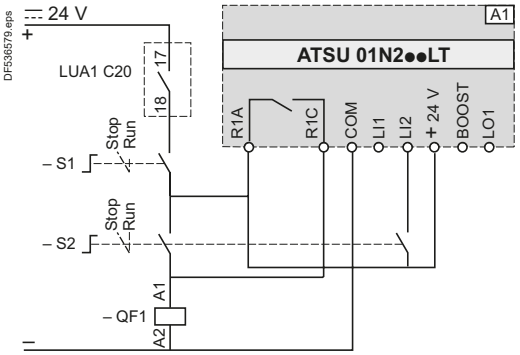
## ATSU01N2●●LT soft start/soft stop units *(continued)*

### Automatic 2-wire control

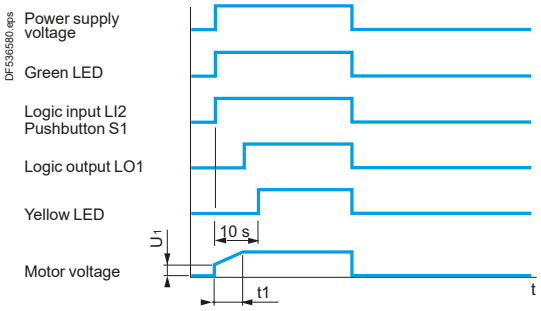
#### Without deceleration

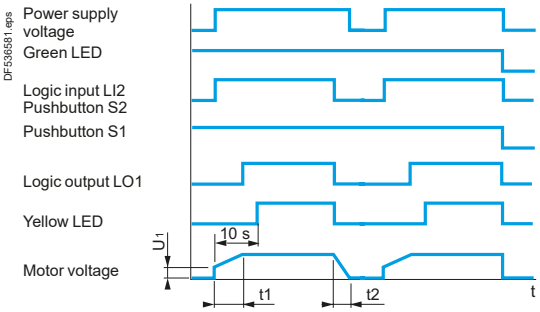



#### With and without deceleration



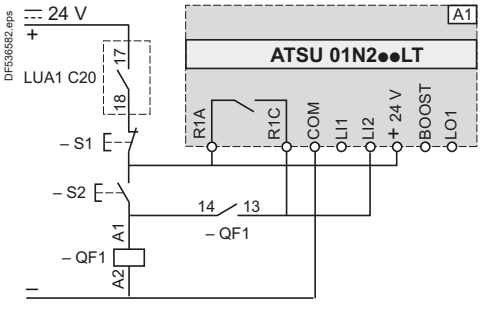

#### Functional diagrams



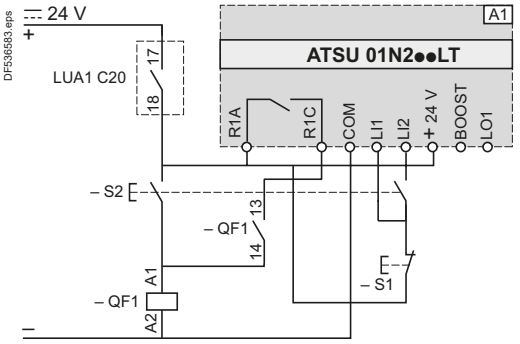




### Automatic 3-wire control

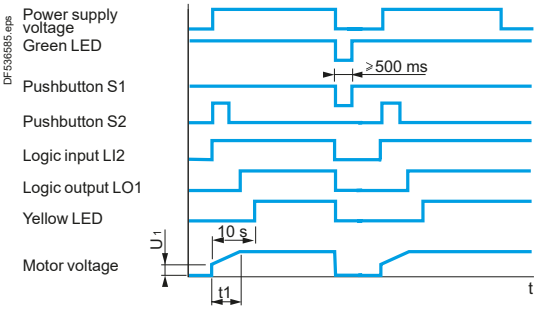
#### Without deceleration

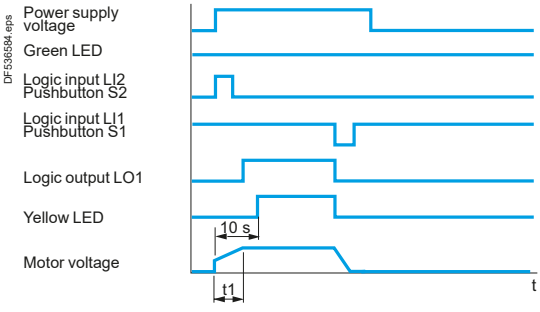



#### With deceleration




#### Functional diagrams




*A1: Soft start/soft stop unit*
*S1, S2: XB4B or XB5B pushbuttons*
*QF1: Ultra controller-starter*
*t1: Acceleration time can be controlled by a potentiometer*
*t2: Deceleration time can be controlled by a potentiometer*
*$U_1$: Starting time can be controlled by a potentiometer*

References:
page A4/38

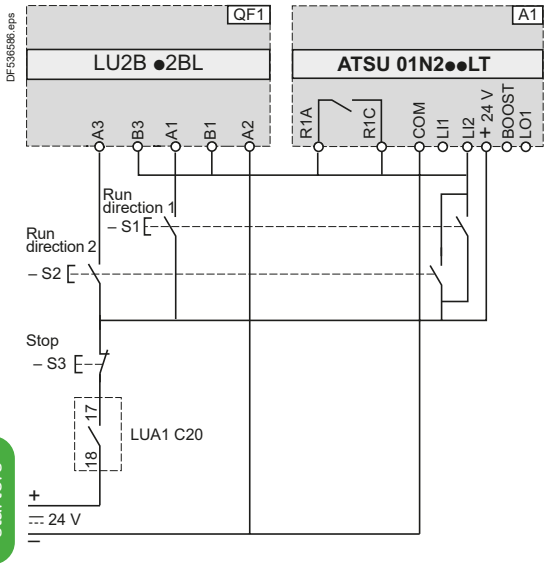
Characteristics:
pages A4/75 and A4/76

Dimensions:
page A4/77

## ATSU01N2●●LT soft start/soft stop units *(continued)*

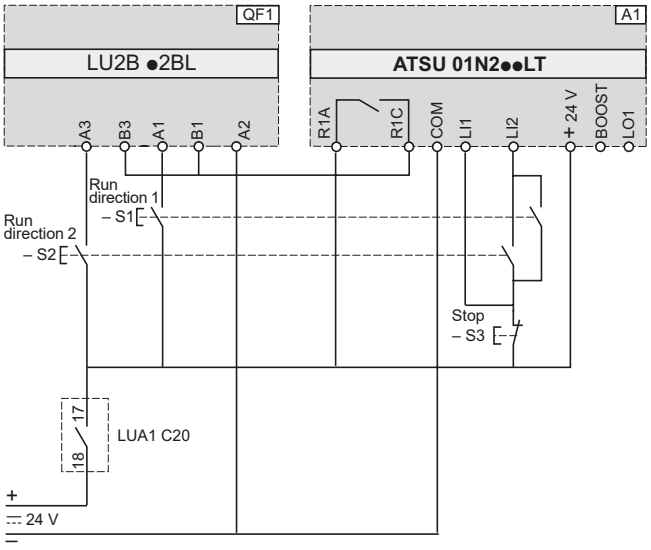
### Automatic 3-wire control, with reversing unit

#### Without deceleration



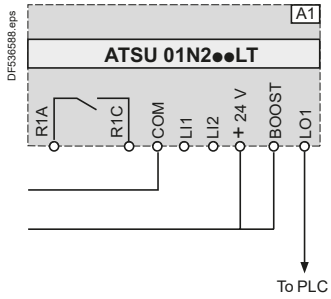

*QF1: Ultra controller-starter with reversing unit*
*A1: Soft start/soft stop unit*
*S1, S2, S3: XB4B or XB5B pushbuttons*
*S3: minimum depression time 500 ms*

#### With deceleration




*QF1: Ultra controller-starter with reversing unit*
*A1: Soft start/soft stop unit*
*S1, S2, S3: XB4B or XB5B pushbuttons*

### Boost on starting and end of starting signal



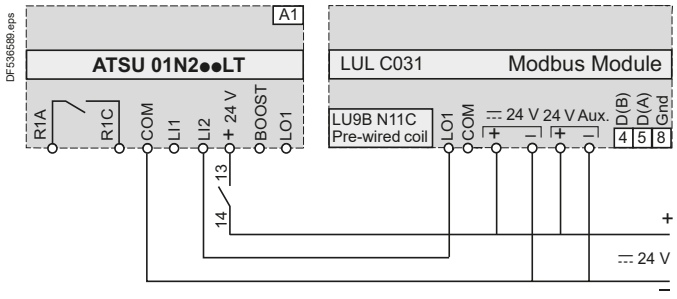

*A1: Soft start/soft stop unit*

Ultra motor starters
Ref.

## ATSU01N2●●LT soft start/soft stop units *(continued)*

### Automatic control with Modbus communication module, with and without deceleration

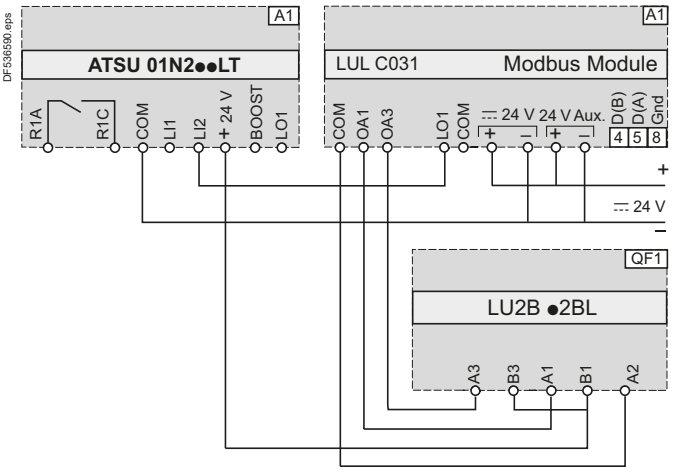
**Without reversing unit**




| Function | Register | Bit | Value |
|---|---|---|---|
| **Powering down U and ATSU** | | | |
| – | 704 | 0 | 0 |
| **Automatic control without deceleration** | | | |
| Run | 700 | 0 | 1 |
| Stop | 704 | 0 | 0 |
| **Automatic control with deceleration** | | | |
| Run | 700 | 0 | 1 |
| Soft stop | 700 | 0 | 0 |

*A1: Soft start/soft stop unit*

**With reversing unit**

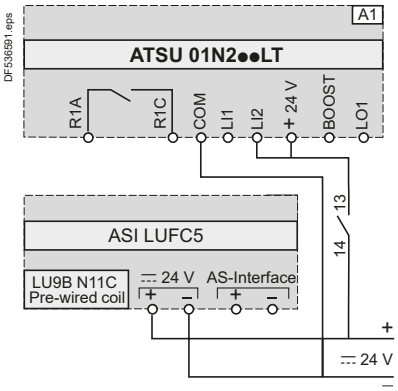



| Function | Register | Bit | Value |
|---|---|---|---|
| **Powering up U and ATSU** | | | |
| Forward | 704 | 0 | 1 |
| Reverse | 704 | 1 | 1 |
| **Powering down U and ATSU** | | | |
| Forward | 704 | 0 | 0 |
| Reverse | 704 | 1 | 0 |
| **Automatic control without deceleration** | | | |
| Run | 700 | 0 | 1 |
| Stop forward | 704 | 0 | 0 |
| Stop reverse | 704 | 1 | 0 |
| **Automatic control with deceleration (forward or reverse)** | | | |
| Run | 700 | 0 | 1 |
| Soft stop | 700 | 0 | 0 |

*A1: Soft start/soft stop unit*
*QF1: Ultra controller-starter with reversing unit*

### Automatic control with AS-Interface communication module, without deceleration

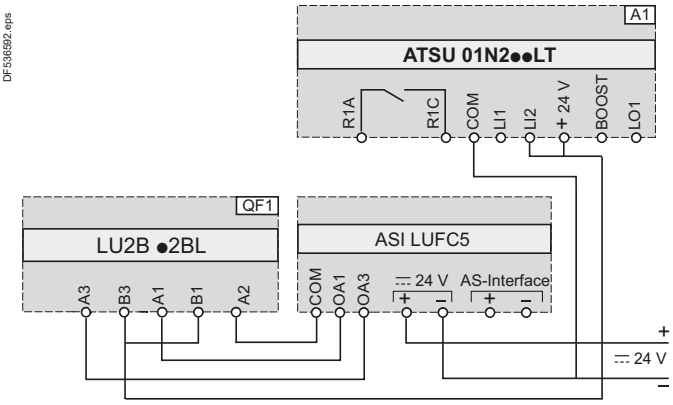
**Without reversing unit**




| Function | Bit | Value |
|---|---|---|
| **Power-up and automatic control without deceleration** | | |
| Run | D0 | 1 |
| Stop | D0 | 0 |

*A1: Soft start/soft stop unit*

**With reversing unit**




| Function | Bit | Value |
|---|---|---|
| **Power-up and automatic control without deceleration** | | |
| Run forward | D0 | 1 |
| Stop | D0 | 0 |
| Run reverse | D1 | 1 |
| Stop | D1 | 0 |

*A1: Soft start/soft stop unit*
*QF1: Ultra controller-starter with reversing unit*

References:
page A4/38
Characteristics:
pages A4/75 and A4/76
Dimensions:
page A4/77

## Coordination between protection and control components


| Type of information | Page |
|---|---|
| Types of coordination, according to the standard currents in the circuit to be considered | A5/2 |
| Selection of the coordination type | A5/3 |


## Suggested coordinated Direct-On-Line motor starter combinations


| | |
|---|---|
| Fuses + Contactor + Overload relay | A5/4 |
| Circuit breaker (with built in overload protection) + Contactor | A5/11 |
| Circuit breaker + Contactor + Overload relay | A5/18 |


## Suggested coordinated Star-delta motor starter combinations


| | |
|---|---|
| Fuses + Contactors + Overload relay | A5/27 |
| Circuit breaker (with built in overload protection) + Contactors | A5/31 |
| Circuit breaker + Contactors + Overload relay | A5/36 |


## Suggested coordinated TeSys island motor starter combinations


| | |
|---|---|
| Protection Components / Starters - Coordination - IEC | A5/43 |
| Protection Components / Starters - SCCR Ratings - UL | A5/50 |


## Contactors: Utilisation categories – Standard characteristics – Selection tables per category

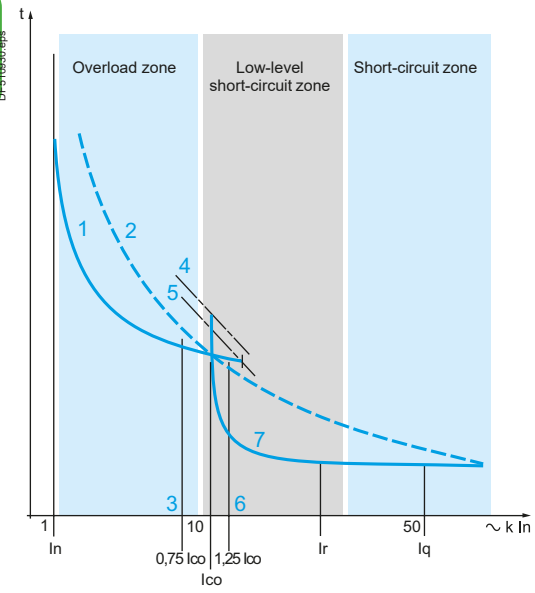

| | |
|---|---|
| Definition: utilisation categories : AC-1, AC-2, AC-3, etc... | A5/51 |
| Definition: contactor standard characteristics | A5/52 |
| Contactor selection tables per utilisation category | A5/54 |


## Contactors for specific application – Design information


| | |
|---|---|
| Selection of contactors for lighting circuits | A5/68 |
| Selection of contactors for heating circuits | A5/74 |
| Selection of contactors for switching primaries of 3P LV/LV transformers | A5/76 |
| Selection of contactors for switching 3P capacitor banks (factor correction) | A5/77 |
| Selection of contactors auto-transformer starting | A5/78 |
| Contactors for rotor circuits of slip-ring motors | A5/80 |
| Design of long distance remote control for contactors | A5/82 |
| Current of asynchronous squirrel cage motors at nominal load | A5/86 |


## Standards – Protection against contact – Protective treatments


| | |
|---|---|
| International standards and certifications | A5/87 |
| Protection against accidental direct contacts / IP codes | A5/89 |




1 Thermal overload relay curve.
2 Fuse.
3 Tripping of thermal overload relay only.
4 Thermal limit of the circuit breaker.
5 Thermal overload relay limit.
6 Current broken by the SCPD (1).
7 Circuit breaker magnetic trip.

## Type 1 and type 2 coordination according to the standard

The standard defines tests at different levels of current; the purpose of these tests is to place the equipment in extreme conditions.
The standard defines 2 types of coordination, according to the condition of the components after testing:
**type 1,**
**type 2.**
To determine the type of coordination, the standard requires that the behaviour of the equipment be tested under overload and short-circuit conditions for 3 fault current values, covering overload and short-circuit conditions.

### Type 1 coordination

Type 1 coordination requires that in a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must not be able to resume operation without repair or the replacement of parts.

### Type 2 coordination

Type 2 coordination requires that In a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must subsequently be able to resume operation. The risk of contact welding is permissible; in this case, the manufacturer must indicate measures to be taken regarding maintenance of the equipment.

Type 2 coordination increases reliability of operation.

## Current values

### Current “Ico” (overload I < 10 In)

The thermal overload relay associated with the contactor provides protection against this type of fault, up to a value Ico (see curve) defined by the manufacturer.

Standard IEC 60947-4-1 specifies the 2 current values to be used for checking coordination between the thermal overload relay and the short-circuit protection device:
- at 0.75 Ico only the thermal overload relay must trip,
- at 1.25 Ico the short-circuit protection device must operate.

### Current “r” (low level short-circuit 10 < I < 50 In)

The main cause of this type of fault is the deterioration of insulating materials. Standard IEC 60947-4-1 defines an intermediate short-circuit current “r”. This test current makes it possible to check whether the protection device is providing protection against low-level short-circuits.

| **Operational current Ie** (AC-3) (A) | **Current “r”** (kA) |
|---|---|
| Ie ⩽ 16 | 1 |
| 16 < Ie ⩽ 63 | 3 |
| 63 < Ie ⩽ 125 | 5 |
| 125 < Ie ⩽ 315 | 10 |
| 315 < Ie ⩽ 630 | 18 |
| 630 < Ie ⩽ 1000 | 30 |

### Current “Iq” (short-circuit > current “r”)

This type of fault corresponds to a dead short and is relatively rare. It can be caused by a connection error during maintenance work. Short-circuit protection is provided by fast operating devices.

Standard IEC 60947-4-1 defines a current “Iq”. The coordination tables supplied by Schneider Electric are based on a current “Iq” that is generally ⩾ 50 kA.

*(1) SCPD: short-circuit protection device.*

## Selection

### No coordination

**Considerable risks to both persons and equipment.**

Not authorised by standards:
□ NF C 15-100 and IEC 60364-1, article 133-1
(installation regulations),
□ EN/IEC 60204-1, article 7
(electrical equipment in machines),
□ IEC 60947-4-1, article 8.2.5. (starters)

### Type 1 coordination

**The most frequently used solution.**

■ Equipment costs are lower.
■ Reliability of operation is not a requirement.
■ Before restarting, it may be necessary to repair the motor starter.

Consequences:
□ significant amount of machine downtime,
□ skilled maintenance personnel required to repair, check, obtain supplies.

Example: air conditioning in commercial premises.

### Type 2 coordination

**This solution ensures reliability of operation.**

Consequences:
□ reduced machine downtime,
□ reduced maintenance after a short-circuit.

Example: escalators.

### Total coordination

**With this solution, no damage or mis-adjustment is permissible and reliability of operation is guaranteed.**

Consequences:
□ immediate return to service,
□ no special precautions required.

Examples: smoke extraction, fire-fighting pumps.

# Coordination: Fuses (NFC, DIN type aM) + Contactor + Overload relay

## 0.06 to 55 kW at 400/415 V: type 1 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Fuse carrier (1) (basic block) | aM fuses | | Contactor | Thermal overload relay class 10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | 440 V | | 500 V | | Reference | Size | Rating | Reference (2) | Reference | Setting range |
| P | Ie | P | Ie | P | Ie | | | | | | |
| kW | A | kW | A | kW | A | | | A | | | A |
| **0.06** | 0.2 | **0.06** | 0.19 | **–** | – | **LS1D32** | 10 x 38 | 2 | **LC1K06** | **LR2K0302** | 0.16…0.23 |
| **–** | – | **0.09** | 0.28 | **–** | – | **LS1D32** | 10 x 38 | 2 | **LC1K06** | **LR2K0303** | 0.23…0.36 |
| **0.09**<br>**0.12** | 0.3<br>0.44 | **–**<br>**0.12** | –<br>0.37 | **–**<br>**–** | –<br>– | **LS1D32** | 10 x 38 | 2 | **LC1K06** | **LR2K0304** | 0.36…0.54 |
| **0.18**<br>**–** | 0.6<br>– | **0.18**<br>**0.25** | 0.55<br>0.76 | **–**<br>**–** | –<br>– | **LS1D32** | 10 x 38 | 2 | **LC1K06** | **LR2K0305** | 0.54…0.8 |
| **0.25**<br>**0.37** | 0.85<br>1.1 | **–**<br>**0.37** | –<br>1 | **–**<br>**0.37** | –<br>0.88 | **LS1D32** | 10 x 38 | 2 | **LC1K06** | **LR2K0306** | 0.8…1.2 |
| **0.55**<br>**–** | 1.5<br>– | **0.55**<br>**0.75** | 1.36<br>1.68 | **0.55**<br>**0.75** | 1.2<br>1.5 | **LS1D32** | 10 x 38 | 2 | **LC1K06** | **LR2K0307** | 1.2…1.8 |
| **0.75**<br>**1.1** | 1.9<br>2.7 | **–**<br>**1.1** | –<br>2.37 | **1.1**<br>**1.5** | 2.2<br>2.9 | **LS1D32** | 10 x 38 | 4 | **LC1K06** | **LR2K0308** | 1.8…2.6 |
| **1.5** | 3.6 | **1.5** | 3.06 | **–** | – | **LS1D32** | 10 x 38 | 4 | **LC1K06** | **LR2K0310** | 2.6…3.7 |
| **2.2**<br>**–** | 4.9<br>– | **–**<br>**–** | –<br>– | **2.2**<br>**3** | 3.9<br>5.2 | **LS1D32** | 10 x 38 | 6 | **LC1K06** | **LR2K0312** | 3.7…5.5 |
| **–** | – | **2.2** | 4.42 | **–** | – | **LS1D32** | 10 x 38 | 8 | **LC1K06** | **LR2K0312** | 3.7…5.5 |
| **3** | 6.5 | **3** | 5.77 | **4** | 6.8 | **LS1D32** | 10 x 38 | 8 | **LC1K09** | **LR2K0314** | 5.5…8 |
| **4** | 8.5 | **4** | 7.9 | **5.5** | 9.2 | **LS1D32** | 10 x 38 | 12 | **LC1K09** | **LR2K0316** | 8…11.5 |

*(1) For breaking under load, add a rotary switch-disconnector.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*

# Coordination: Fuses (NFC, DIN type aM) + Contactor + Overload relay

## 0.06 to 55 kW at 400/415 V: type 1 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Fuse carrier [1] (basic block) | aM fuses | | Contactor | Thermal overload relay class 10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | 440 V | | 500 V | | Reference | Size | Rating | Reference [2] | Reference | Setting range |
| P | Ie | P | Ie | P | Ie | | | | | | |
| kW | A | kW | A | kW | A | | | A | | | A |
| **5.5** | 11.5 | **5.5** | 10.4 | **7.5** | 12.4 | **LS1D32** | 10 x 38 | 16 | **LC1K12** | **LR2K0321** | 10…14 |
| **7.5** | 15.5 | **7.5** | 13.7 | **9** | 13.9 | **LS1D32** | 10 x 38 | 16 | **LC1D18** | **LRD21** | 12…18 |
| **–** | – | **9** | 16.9 | **–** | – | **LS1D32** | 10 x 38 | 20 | **LC1D25** | **LRD21** | 12…18 |
| **22** | 41 | **22** | 39 | **30** | 44 | **GS●J** | 22 x 58 | 50 | **LC1D50A** | **LRD350** | 37…50 |
| **–** | – | **30** | 51.5 | **–** | – | **GS●J** | 22 x 58 | 80 | **LC1D50A** | **LRD365** | 48…65 |
| **–** | – | **–** | – | **37** | 53 | **GS●J** | 22 x 58 | 80 | **LC1D65A** | **LRD365** | 48…65 |
| **30** | 55 | **37** | 64 | **–** | – | **GS●J** | 22 x 58 | 80 | **LC1D65A** | **LRD365** | 48…65 |
| **–** | – | **–** | – | **45** | 64 | **GS●J** | 22 x 58 | 80 | **LC1D80** | **LRD3361** | 55…70 |
| **37** [3] | 66 | **45** | 76 | **–** | – | **GS●J** | 22 x 58 | 100 | **LC1D80** | **LRD3363** | 63…80 |
| **45** | 80 | **–** | – | **55** | 78 | **GS●J** | 22 x 58 | 100 | **LC1D95** | **LRD3365** | 80…104 |
| **–** | – | **55** | 90 | **–** | – | **GS●J** | 22 x 58 | 125 | **LC1D115** | **LRD4365** | 80…104 |
| **55** | 97 | **–** | – | **75** | 106 | **GS●J** | 22 x 58 | 125 | **LC1D115** | **LRD4367** | 95…120 |

*(1) For breaking under load, add a rotary switch-disconnector.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*
*(3) 400 V maximum.*

# Coordination: Fuses (NFC, DIN type aM) + Contactor + Overload relay

## 0.06 to 315 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Switch-disconnector | aM fuses | | Contactor | Thermal overload relay class 10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | 440 V | | 500 V | | Reference (1) | Size | Rating | Reference (2) | Reference | Setting range |
| P | Ie | P | Ie | P | Ie | | | | | | |
| kW | A | kW | A | kW | A | | | A | | | A |
| **0.06** | 0.2 | **0.06** | 0.19 | **–** | – | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LRD02** | 0.16…0.25 |
| **–** | – | **0.09** | 0.28 | **–** | – | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LRD03** | 0.25…0.4 |
| **0.09**<br>**0.12** | 0.3<br>0.44 | **–**<br>**0.12** | –<br>0.37 | **–**<br>**–** | –<br>– | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LRD04** | 0.4…0.63 |
| **0.18**<br>**–** | 0.6<br>– | **0.18**<br>**0.25** | 0.55<br>0.76 | **–**<br>**–** | –<br>– | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LRD05** | 0.63…1 |
| **0.25**<br>**0.37**<br>**0.55** | 0.85<br>1.1<br>1.5 | **–**<br>**0.37**<br>**0.55** | –<br>1<br>1.36 | **0.37**<br>**0.55**<br>**0.75** | 0.88<br>1.2<br>1.5 | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LRD06** | 1…1.7 |
| **0.75**<br>**–** | 1.9<br>– | **0.75**<br>**1.1** | 1.68<br>2.37 | **–**<br>**1.1** | –<br>2.2 | **GS1DD** | 10 x 38 | 4 | **LC1D09** | **LRD07** | 1.6…2.5 |
| **1.1**<br>**1.5** | 2.7<br>3.6 | **–**<br>**1.5** | –<br>3.06 | **1.5**<br>**2.2** | 2.9<br>3.9 | **GS1DD** | 10 x 38 | 4 | **LC1D09** | **LRD08** | 2.5…4 |
| **2.2** | 4.9 | **2.2** | 4.42 | **3** | 5.2 | **GS1DD** | 10 x 38 | 6 | **LC1D09** | **LRD10** | 4…6 |
| **3** | 6.5 | **3** | 5.77 | **4** | 6.8 | **GS1DD** | 10 x 38 | 8 | **LC1D09** | **LRD12** | 5.5…8 |
| **4** | 8.5 | **4** | 7.9 | **5.5** | 9.2 | **GS1DD** | 10 x 38 | 10 | **LC1D09** | **LRD14** | 7…10 |
| **5.5** | 11.5 | **5.5** | 10.4 | **7.5** | 12.4 | **GS1DD** | 10 x 38 | 16 | **LC1D12** | **LRD16** | 9…13 |
| **7.5** | 15.5 | **7.5** | 13.7 | **9** | 13.9 | **GS1DD** | 10 x 38 | 16 | **LC1D18** | **LRD21** | 12…18 |
| **–** | – | **9** | 16.9 | **–** | – | **GS●F** | 14 x 51 | 20 | **LC1D25** | **LRD21** | 12…18 |
| **9**<br>**11** | 18.1<br>22 | **11**<br>**–** | 20.1<br>– | **11**<br>**15** | 17.6<br>23 | **GS●F** | 14 x 51 | 25 | **LC1D25** | **LRD22** | 16…24 |
| **15** | 29 | **15** | 26.5 | **18.5** | 28 | **GS●F** | 14 x 51 | 32 | **LC1D32** | **LRD32** | 23…32 |
| **18.5** | 35 | **18.5** | 32.8 | **22** | 33 | **GS●F** | 14 x 51 | 40 | **LC1D40A** | **LRD340** | 30…40 |
| **22** | 41 | **22** | 39 | **30** | 44 | **GS●J** | 22 x 58 | 50 | **LC1D50A** | **LRD350** | 37…50 |
| **–** | – | **30** | 51.5 | **–** | – | **GS●J** | 22 x 58 | 80 | **LC1D65A** | **LRD365** | 48…65 |
| **–** | – | **–** | – | **37** | 53 | **GS●J** | 22 x 58 | 80 | **LC1D65A** | **LRD365** | 48…65 |
| **30** | 55 | **37** | 64 | **–** | – | **GS●J** | 22 x 58 | 80 | **LC1D65A** | **LRD365** | 48…65 |
| **–** | – | **–** | – | **45** | 64 | **GS●J** | 22 x 58 | 80 | **LC1D95** | **LRD3361** | 55…70 |
| **37** | 66 | **45** | 76 | **–** | – | **GS●J** | 22 x 58 | 100 | **LC1D80** | **LRD3363** | 63…80 |
| **–** | – | **–** | – | **55** | 78 | **GS●J** | 22 x 58 | 100 | **LC1D115** | **LR9D5367** | 60…100 |
| **45** | 80 | **–** | – | **–** | – | **GS●J** | 22 x 58 | 100 | **LC1D95** | **LRD3365** | 80…104 |
| **55** | 97 | **55** | 90 | **75** | 106 | **GS●L** | T0 | 125 | **LC1D150** | **LR9D5369** | 90…150 |
| **75** | 132 | **75** | 125 | **90** | 128 | **GS●L** | T0 | 160 | **LC1D150** | **LR9D5369** | 90…150 |

*(1) GS●: GS1 for direct operator or GS2 for external operator.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*

# Coordination: Fuses (NFC, DIN type aM) + Contactor + Overload relay

## 55 to 335 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Switch-disconnector | aM fuses | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | Product type | Size | Rating | Product type | Product type | Ir setting (1) |
| P | Ie | Iq (max) | | | | | | |
| kW | A | kA | | | A | | | A |
| 55 | 97 | 80 | GS●L | 0 | 125 | LC1G115 | LR9G115 | 97 |
| 75 | 132 | 80 | GS●L | 0 | 160 | LC1G150 | LR9G225 | 132 |
| 90 | 160 | 80 | GS●N | 1 | 200 | LC1G185 | LR9G225 | 160 |
| 110 | 195 | 80 | GS●N | 1 | 250 | LC1G225 | LR9G225 | 195 |
| 132 | 230 | 80 | GS●QQ | 2 | 315 | LC1G265 | LR9G500 | 230 |
| 160 | 280 | 80 | GS●QQ | 2 | 400 | LC1G330 | LR9G500 | 280 |
| 200 | 350 | 80 | GS2S | 3 | 500 | LC1G400 | LR9G500 | 350 |
| 220 | 380 | 80 | GS2S | 3 | 500 | LC1G500 | LR9G500 | 380 |
| 250 | 430 | 80 | GS2S | 3 | 500 | LC1G500 | LR9G500 | 430 |
| 315 | 540 | 80 | GS2S | 3 | 630 | LC1G630 | LR9G630 | 540 |
| 335 | 575 | 80 | GS2V | 4 | 800 | LC1G630 | LR9G630 | 575 |

## 75 to 400 kW at 440 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Switch-disconnector | aM fuses | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|
| 440 V | | | Product type | Size | Rating | Product type | Product type | Ir setting (1) |
| P | Ie | Iq (max) | | | | | | |
| kW | A | kA | | | A | | | A |
| 75 | 115 | 80 | GS●L | 0 | 125 | LC1G115 | LR9G115 | 115 |
| 90 | 145 | 80 | GS●L | 0 | 160 | LC1G150 | LR9G225 | 145 |
| 110 | 177 | 80 | GS●N | 1 | 200 | LC1G185 | LR9G225 | 177 |
| 132 | 209 | 80 | GS●N | 1 | 250 | LC1G225 | LR9G225 | 209 |
| 160 | 255 | 80 | GS●QQ | 2 | 315 | LC1G265 | LR9G500 | 255 |
| 200 | 318 | 80 | GS●QQ | 2 | 400 | LC1G330 | LR9G500 | 318 |
| 220 | 343 | 80 | GS2S | 3 | 500 | LC1G400 | LR9G500 | 343 |
| 250 | 390 | 80 | GS2S | 3 | 500 | LC1G500 | LR9G500 | 390 |
| 315 | 490 | 80 | GS2S | 3 | 500 | LC1G500 | LR9G500 | 490 |
| 355 | 554 | 80 | GS2S | 3 | 630 | LC1G630 | LR9G630 | 554 |
| 400 | 627 | 80 | GS2V | 4 | 800 | LC1G630 | LR9G630 | 627 |

## 65 to 375 kW at 500 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Switch-disconnector | aM fuses | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|
| 500 V | | | Product type | Size | Rating | Product type | Product type | Ir setting (1) |
| P | Ie | Iq (max) | | | | | | |
| kW | A | kA | | | A | | | A |
| 65 | 92 | 80 | GS●L | 0 | 125 | LC1G115 | LR9G115 | 92 |
| 90 | 128 | 80 | GS●L | 0 | 160 | LC1G150 | LR9G225 | 128 |
| 110 | 156 | 80 | GS●N | 1 | 200 | LC1G185 | LR9G225 | 156 |
| 132 | 184 | 80 | GS●N | 1 | 250 | LC1G225 | LR9G225 | 184 |
| 160 | 224 | 80 | GS●QQ | 2 | 315 | LC1G265 | LR9G500 | 224 |
| 200 | 280 | 80 | GS●QQ | 2 | 400 | LC1G330 | LR9G500 | 280 |
| 250 | 344 | 80 | GS2S | 3 | 500 | LC1G400 | LR9G500 | 344 |
| 295 | 405 | 80 | GS2S | 3 | 500 | LC1G500 | LR9G500 | 405 |
| 375 | 516 | 80 | GS2S | 3 | 630 | LC1G630 | LR9G630 | 516 |

*(1) This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.*

# Coordination: Fuses (NFC, DIN type aM) + Contactor + Overload relay

## 0.75 to 400 kW at 690 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | Switch-disconnector | aM fuses | | Contactor | Thermal overload relay class 10 | |
|---|---|---|---|---|---|---|---|
| P | Ie | Reference (1) | Size | Rating | Reference (2) | Reference | Setting range |
| kW | A | | | A | | | A |
| 0.75 | 1.1 | GS●F | 14 x 51 | 2 | LC1D09 | LRD06 | 1…1.6 |
| 1.1 | 1.6 | GS●F | 14 x 51 | 2 | LC1D09 | LRD06 | 1…1.6 |
| 1.5 | 2.1 | GS●F | 14 x 51 | 4 | LC1D09 | LRD07 | 1.6…2.5 |
| 2.2 | 2.8 | GS●F | 14 x 51 | 4 | LC1D09 | LRD08 | 2.5…4 |
| 3 | 3.8 | GS●F | 14 x 51 | 6 | LC1D09 | LRD08 | 2.5…4 |
| 4 | 4.9 | GS●F | 14 x 51 | 6 | LC1D09 | LRD10 | 4…6 |
| 5.5 | 6.7 | GS●F | 14 x 51 | 8 | LC1D09 | LRD12 | 5.5…8 |
| 7.5 | 8.9 | GS●F | 14 x 51 | 10 | LC1D25 | LRD16 | 9…13 |
| 11 | 12.8 | GS●F | 14 x 51 | 16 | LC1D25 | LRD16 | 9…13 |
| 15 | 17 | GS●F | 14 x 51 | 20 | LC1D25 | LRD22 | 16…24 |
| 18.5 | 21 | GS●F | 14 x 51 | 25 | LC1D32 | LRD22 | 16…24 |
| 22 | 24 | GS●J | 22 x 58 | 32 | LC1D40A | LRD332 | 23…32 |
| 30 | 32 | GS●J | 22 x 58 | 40 | LC1D40A | LRD340 | 30…40 |
| 37 | 39 | GS●J | 22 x 58 | 50 | LC1D65A | LRD350 | 37…50 |
| 45 | 47 | GS●J | 22 x 58 | 63 | LC1D80 | LRD3357 | 37…50 |
| 55 | 57 | GS●J | 22 x 58 | 80 | LC1D115 | LRD3359 | 48…65 |
| 75 | 77 | GS●KK | T00 | 100 | LC1D115 | LRD3363 | 63…80 |
| 90 | 93 | GS●KK | T00 | 125 | LC1D150 | LR9D5369 | 90…150 |

## 55 to 500 kW at 690 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Switch-disconnector | aM fuses | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|
| 690 V | | | Product type | Size | Rating | Product type | Product type | Ir setting (3) |
| P | Ie | Iq (max) | | | | | | |
| kW | A | kA | | | A | | | A |
| 55 | 57 | 80 | GS●J | 22 x 58 | 80 | LC1G115 | LR9G225 | 57 |
| 75 | 77 | 80 | GS●KK | 00 | 100 | LC1G115 | LR9G225 | 77 |
| 90 | 93 | 80 | GS●KK | 00 | 125 | LC1G150 | LR9G225 | 93 |
| 110 | 113 | 80 | GS●KK | 00 | 160 | LC1G185 | LR9G225 | 113 |
| 132 | 134 | 80 | GS●L | 0 | 160 | LC1G225 | LR9G225 | 134 |
| 160 | 162 | 80 | GS●N | 1 | 200 | LC1G225 | LR9G225 | 162 |
| 200 | 203 | 80 | GS●N | 1 | 250 | LC1G265 | LR9G500 | 203 |
| 220 | 223 | 80 | GS●QQ | 2 | 250 | LC1G330 | LR9G500 | 223 |
| 250 | 250 | 80 | GS●QQ | 2 | 315 | LC1G330 | LR9G500 | 250 |
| 315 | 313 | 80 | GS●QQ | 2 | 400 | LC1G400 | LR9G500 | 313 |
| 355 | 354 | 80 | GS●QQ | 3 | 500 | LC1G500 | LR9G500 | 354 |
| 500 | 493 | 80 | GS●S | 3 | 630 | LC1G630 | LR9G630 | 493 |

*(1) GS●: GS1 for direct operator or GS2 for external operator.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*
*(3) This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.*

# Coordination: Fuses (NFC, DIN type aM) + Contactor + Electronic overload relay

## 0.18 to 55 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Switch-disconnector | aM fuses | | Contactor | Electronic thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 690 V | | | Reference | Size | Rating | Reference | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | | | A | | | A |
| **0.18** | 0.6 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **0.25** | 0.85 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **0.37** | 1.1 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **0.55** | 1.5 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 2 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **0.75** | 1.9 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 4 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **1.1** | 2.7 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 4 | **LC1D18** | **LR9D08** | 1.6…8.0 |
| **1.5** | 3.6 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 4 | **LC1D18** | **LR9D08** | 1.6…8.0 |
| **2.2** | 4.9 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 6 | **LC1D18** | **LR9D08** | 1.6…8.0 |
| **3** | 6.5 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 8 | **LC1D18** | **LR9D32** | 6.4…32 |
| **4** | 8.5 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 10 | **LC1D18** | **LR9D32** | 6.4…32 |
| **5.5** | 11.5 | 100 | **–** | – | – | **GS1DD** | 10 x 38 | 16 | **LC1D25** | **LR9D32** | 6.4…32 |
| **7.5** | 15.5 | 50 | **–** | – | – | **GS1DD** | 10 x 38 | 16 | **LC1D25** | **LR9D32** | 6.4…32 |
| **11** | 22 | 50 | **–** | – | – | **GS●F** | 14 x 51 | 25 | **LC1D25** | **LR9D32** | 6.4…32 |
| **15** | 29 | 50 | **–** | – | – | **GS●J** | 22 x 58 | 32 | **LC1D65A** | **LR9D110S** | 22…110 |
| **18.5** | 35 | 50 | **–** | – | – | **GS●J** | 22 x 58 | 40 | **LC1D65A** | **LR9D110S** | 22…110 |
| **22** | 41 | 50 | **–** | – | – | **GS●J** | 22 x 58 | 50 | **LC1D65A** | **LR9D110S** | 22…110 |
| **45** (1) | 80 | 100 | **–** | – | – | **GS●N** | T 1 | 100 | **LC1D150** | **LR9D110S** | 22…110 |
| **55** (1) | 97 | 100 | **–** | – | – | **GS●N** | T 1 | 125 | **LC1D150** | **LR9D110S** | 22…110 |
| **–** | – | – | **0.37** | 0.64 | 100 | **GS●F** | 14 x 51 | 2 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **–** | – | – | **0.55** | 0.87 | 100 | **GS●F** | 14 x 51 | 2 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **–** | – | – | **0.75** | 1.1 | 100 | **GS●F** | 14 x 51 | 2 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **–** | – | – | **1.1** | 1.6 | 100 | **GS●F** | 14 x 51 | 2 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **1.5** | 2.1 | 100 | **GS●F** | 14 x 51 | 4 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **2.2** | 2.8 | 100 | **GS●F** | 14 x 51 | 4 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **3** | 4 | 100 | **GS●F** | 14 x 51 | 6 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **4** | 5 | 100 | **GS●F** | 14 x 51 | 6 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **5.5** | 7 | 50 | **GS●F** | 14 x 51 | 8 | **LC1D25** | **LR9D32** | 6.4…32 |
| **–** | – | – | **7.5** | 8.9 | 50 | **GS●F** | 14 x 51 | 10 | **LC1D25** | **LR9D32** | 6.4…32 |
| **–** | – | – | **11** | 13 | 50 | **GS●F** | 14 x 51 | 16 | **LC1D32** | **LR9D32** | 6.4…32 |
| **–** | – | – | **15** | 16.5 | 50 | **GS●F** | 14 x 51 | 20 | **LC1D32** | **LR9D32** | 6.4…32 |
| **–** | – | – | **18.5** | 21 | 100 | **GS●F** | 14 x 51 | 25 | **LC1D95** | **LR9D32** | 6.4…32 |
| **–** | – | – | **18.5** | 21 | 50 | **GS●F** | 14 x 51 | 25 | **LC1D65A** | **LR9D32** | 6.4…32 |
| **–** | – | – | **22** | 25 | 50 | **GS●F** | 14 x 51 | 32 | **LC1D65A** | **LR9D32** | 6.4…32 |
| **–** | – | – | **30** | 33 | 100 | **GS●F** | 14 x 51 | 40 | **LC1D95** | **LR9D110** | 22…110 |
| **–** | – | – | **37** | 40 | 100 | **GS●F** | 14 x 51 | 50 | **LC1D95** | **LR9D110** | 22…110 |
| **–** | – | – | **45** | 49 | 100 | **GS●J** | 22 x 58 | 63 | **LC1D95** | **LR9D110** | 22…110 |

*(1) Ratings valid up to 400 V AC only.*

# Coordination: Fuses (BS) + Contactor + Overload relay

## 0.06 to 375 kW at 415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Switch-disconnector-fuse | BS fuses | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 415 V | | 440 V | | 500 V | | Reference | Size | Rating | Reference (1) | Reference | Setting range |
| P | Ie | P | Ie | P | Ie | | | | | | |
| kW | A | kW | A | kW | kA | | | A | | | A |
| **0.06** | 0.22 | **0.06** | 0.19 | **–** | – | **GS1DDB** | A1 | NIT 2 | **LC1D09** | **LRD02** | 0.16…0.25 |
| **–** | – | **0.09** | 0.28 | **–** | – | **GS1DDB** | A1 | NIT 2 | **LC1D09** | **LRD03** | 0.25…0.4 |
| **0.09** | 0.36 | **–** | – | **–** | – | | | | | | |
| **0.12** | 0.42 | **0.12** | 0.37 | **–** | – | **GS1DDB** | A1 | NIT 2 | **LC1D09** | **LRD04** | 0.4…0.63 |
| **0.18** | 0.6 | **0.18** | 0.55 | **–** | – | **GS1DDB** | A1 | NIT 2 | **LC1D09** | **LRD05** | 0.63…1 |
| **–** | – | **0.25** | 0.76 | **–** | – | **GS1DDB** | A1 | NIT 4 | **LC1D09** | **LRD05** | 0.63…1 |
| **0.25** | 0.88 | **0.37** | 1 | **0.37** | 1 | | | | | | |
| **0.37** | 1 | **0.55** | 1.36 | **0.55** | 1.2 | | | | | | |
| **0.55** | 1.5 | **0.75** | 1.68 | **0.75** | 1.5 | **GS1DDB** | A1 | NIT 6 | **LC1D09** | **LRD06** | 1…1.7 |
| **0.75** | 2 | **–** | – | **–** | – | **GS1DDB** | A1 | NIT 10 | **LC1D09** | **LRD07** | 1.6…2.5 |
| **–** | – | **–** | – | **1.5** | 2.6 | **GS1DDB** | A1 | NIT 10 | **LC1D09** | **LRD08** | 2.5…4 |
| **1.5** | 3.5 | **1.5** | 3.06 | **2.2** | 3.8 | **GS1DDB** | A1 | NIT 16 | **LC1D09** | **LRD08** | 2.5…4 |
| **2.2** | 5 | **2.2** | 4.42 | **3** | 5 | **GS1DDB** | A1 | NIT 16 | **LC1D09** | **LRD10** | 4…6 |
| **3** | 6.5 | **3** | 5.77 | **4** | 6.5 | **GS1DDB** | A1 | NIT 20 | **LC1D09** | **LRD12** | 5.5…8 |
| **4** | 8.4 | **4** | 7.9 | **5.5** | 9 | **GS1DDB** | A1 | NIT 20 | **LC1D09** | **LRD14** | 7…10 |
| **5.5** | 11 | **5.5** | 10.4 | **7.5** | 12 | **GS1DDB** | A1 | NIT 20M25 | **LC1D12** | **LRD16** | 9…13 |
| **7.5** | 14 | **7.5** | 13.7 | **9** | 13.9 | **GS1DDB** | A1 | NIT 20M32 | **LC1D18** | **LRD21** | 12…18 |
| **9** | 18.1 | **9** | 16.9 | **–** | – | **GS2GB** | A2 | TIA 32M35 | **LC1D18** | **LRD21** | 12…18 |
| **11** | 21 | **11** | 20 | **11** | 18.4 | | | | | | |
| **–** | – | **–** | – | **15** | 23 | **GS2GB** | A2 | TIA 32M50 | **LC1D25** | **LRD22** | 16…24 |
| **15** | 28.5 | **15** | 26.5 | **–** | – | **GS2GB** | A2 | TIA 32M63 | **LC1D32** | **LRD32** | 23…32 |
| **18.5** | 35 | **18.5** | 32.8 | **–** | – | **GS2GB** | A3 | TIS 63M80 | **LC1D40A** | **LRD340** | 25…40 |
| **22** | 41 | **22** | 39 | **–** | – | **GS2GB** | A3 | TIS 63M80 | **LC1D50A** | **LRD350** | 37…50 |
| **30** | 55 | **30** | 51.5 | **–** | – | **GS2GB** | A3 | TIS 63M100 | **LC1D65A** | **LRD365** | 48…65 |
| **–** | – | **37** | 64 | **–** | – | **GS2GB** | A3 | TIS 63M100 | **LC1D65A** | **LRD365** | 48…65 |
| **–** | – | **45** | 76 | **45** | 65 | **GS2LLB** | A4 | TCP 100M125 | **LC1D80** | **LRD3363** | 63…80 |
| **45** | 81 | **–** | – | **55** | 80 | **GS2LLB** | A4 | TCP 100M125 | **LC1D95** | **LRD3365** | 80…104 |
| **55** | 100 | **–** | – | **–** | – | **GS2LLB** | A4 | TCP 100M160 | **LC1D115** | **LR9D5369** | 90…150 |
| **–** | – | **55** | 90 | **–** | – | **GS2LLB** | A4 | TCP 100M160 | **LC1D115** | **LR9D5367** | 60…100 |
| **–** | – | **–** | – | **80** | 116 | **GS2LB** | B2 | TF 200 | **LC1D150** | **LR9D5369** | 90…150 |
| **80** | 138 | **80** | 132 | **–** | – | **GS2LB** | B2 | TF 200M250 | **LC1D150** | **LR9D5369** | 90…150 |

*(1) For reversing operation, replace the prefix LC1 with LC2.*





Life Is On Schneider Electric

# Coordination: Thermal magnetic circuit breaker + Contactor

## 0.06 to 250 kW at 400/415 V: type 1 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Circuit breaker | | Contactor |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | Reference *References in italics are available in CEE zone only* | Setting range of thermal trips | Reference [2] |
| P | Ie | Iq [1] | P | Ie | Iq [1] | P | Ie | Iq [1] | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | A | |
| **0.06** | 0.2 | 50 | **0.06** | 0.19 | 50 | – | – | – | **GV2ME02**<br>*GV2ME02AP* | 0.16…0.25 | **LC1K06** or **LC1D09** |
| **0.09** | 0.3 | 50 | **0.09**<br>**0.12** | 0.28<br>0.37 | 50<br>50 | – | – | – | **GV2ME03**<br>*GV2ME03AP* | 0.25…0.40 | **LC1K06** or **LC1D09** |
| **0.12**<br>**0.18** | 0.44<br>0.6 | 50<br>50 | –<br>**0.18** | –<br>0.55 | –<br>50 | –<br>– | –<br>– | –<br>– | **GV2ME04**<br>*GV2ME04AP* | 0.40…0.63 | **LC1K06** or **LC1D09** |
| **0.25**<br>**0.37** | 0.85<br>1.1 | 50<br>50 | **0.25**<br>**0.37** | 0.76<br>0.99 | 50<br>50 | | | | **GV2ME05**<br>*GV2ME05AP* | 0.63…1 | **LC1K06** or **LC1D09** |
| –<br>**0.55** | –<br>1.5 | –<br>50 | –<br>**0.55** | –<br>1.36 | –<br>50 | **0.37**<br>**0.55** | 0.88<br>1.2 | 50<br>50 | **GV2ME06**<br>*GV2ME06AP* | 1…1.6 | **LC1K06** or **LC1D09** |
| – | – | – | – | – | – | **0.75** | 1.5 | 50 | **GV2ME06**<br>*GV2ME06AP* | 1…1.6 | **LC1K06** or **LC1D09** |
| **0.75**<br>– | 1.9<br>– | 50<br>– | **0.75**<br>**1.1** | 1.68<br>2.37 | 50<br>50 | –<br>**1.1** | –<br>2.2 | –<br>50 | **GV2ME07**<br>*GV2ME07AP* | 1.6….2.5 | **LC1K06** or **LC1D09** |
| **1.1**<br>**1.5** | 2.7<br>3.6 | 50<br>50 | –<br>**1.5** | –<br>3.06 | –<br>50 | **1.5**<br>**2.2** | 2.9<br>3.9 | 50<br>50 | **GV2ME08**<br>*GV2ME08AP* | 2.5…4 | **LC1K06** or **LC1D09** |
| **2.2**<br>– | 4.9<br>– | 50<br>– | **2.2**<br>**3** | 4.42<br>5.77 | 50<br>50 | –<br>**3** | –<br>5.2 | –<br>50 | **GV2ME10**<br>*GV2ME10AP* | 4…6.3 | **LC1K06** or **LC1D09** |
| **3**<br>**4** | 6.5<br>8.5 | 50<br>50 | –<br>**4** | –<br>7.9 | –<br>15 | **4**<br>**5.5** | 6.8<br>9.2 | 10<br>10 | **GV2ME14**<br>*GV2ME14AP* | 6…10 | **LC1K09** or **LC1D09** |
| **5.5** | 11.5 | 15 | **5.5** | 10.4 | 8 | **7.5** | 12.4 | 6 | **GV2ME16**<br>*GV2ME16AP* | 9…14 | **LC1K12** or **LC1D12** |
| **7.5**<br>– | 15.5<br>– | 15<br>– | **7.5**<br>**9** | 13.7<br>16.9 | 8<br>8 | **9**<br>– | 13.9<br>– | 6<br>– | **GV2ME20**<br>*GV2ME20AP* | 13…18 | **LC1D18** |
| **9** | 18.1 | 15 | **11** | 20.1 | 6 | **11** | 17.6 | 4 | **GV2ME21**<br>*GV2ME21AP* | 17…23 | **LC1D25** |
| **11** | 22 | 15 | – | – | – | **15** | 23 | 4 | **GV2ME22**<br>*GV2ME22AP* | 20…25 | **LC1D25** |
| **15** | 29 | 10 | **15** | 26.5 | 6 | **18.5** | 28 | 4 | **GV2ME32**<br>*GV2ME32AP* | 24…32 | **LC1D32** |
| **18.5** | 35 | 50 | **18.5** | 32.8 | 50 | **22** | 33 | 10 | **GV3P40** | 30…40 | **LC1D40A** |
| **22** | 41 | 50 | **22** | 39 | 50 | **30** | 44 | 10 | **GV3P50** | 37…50 | **LC1D50A** |
| **30** | 55 | 50 | **30** | 51.5 | 50 | **37** | 53 | 10 | **GV3P65** | 48…65 | **LC1D65A** |
| **37** | 66 | 50 | – | – | – | – | – | – | **GV3P73** | 62...73 | **LC1D80A** |
| – | – | – | **37** | 64 | 70 | **45** | 64 | 30 | **GV4P80** | 40…80 | **LC1D65A** |
| **37** | 66 | 100 | **45** | 76 | 70 | **55** | 78 | 30 | **GV4P80** | 40…80 | **LC1D80** |
| **45** | 80 | 100 | – | – | – | – | – | – | **GV4P115** | 65...115 | **LC1D95** |
| **55** | 97 | 100 | **55** | 90 | 70 | **75** | 106 | 30 | **GV4P115** | 65...115 | **LC1D115** |
| **75** [3] | 132 | 36 | **75** [3] | 125 | 35 | **90** [3] | 128 | 30 | **GV5P150F** | 70...150 | **LC1D150** |

*(1) The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*
*(3) Please refer to Type 2 coordination tables for higher ratings.*

# Coordination: Thermal magnetic circuit breaker + Contactor

## 0.06 to 250 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Circuit breaker | | Contactor |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | Reference *References in italics are available in CEE zone only* | Setting range of thermal trips | Reference (2) |
| P | Ie | Iq (1) | P | Ie | Iq (1) | P | Ie | Iq (1) | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | A | |
| **0.06** | 0.2 | 130 | **0.06** | 0.19 | 130 | – | – | – | **GV2P02** or **GV2ME02** or *GV2ME02AP* | 0.16…0.25 | **LC1D09** |
| – | – | – | **0.09** | 0.28 | 130 | – | – | – | **GV2P03** or **GV2ME03** or *GV2ME03AP* | 0.25…0.4 | **LC1D09** |
| **0.09** | 0.3 | 130 | **0.12** | 0.37 | 130 | – | – | – | | | |
| **0.12** | 0.44 | 130 | – | – | – | – | – | – | **GV2P04** or **GV2ME04** or *GV2ME04AP* | 0.4…0.63 | **LC1D09** |
| **0.18** | 0.6 | 130 | **0.18** | 0.55 | 130 | – | – | – | | | |
| **0.25** | 0.85 | 130 | **0.25** | 0.76 | 130 | – | – | – | **GV2P05** or **GV2ME05** or *GV2ME05AP* | 0.63…1 | **LC1D09** |
| **0.37** | 1.1 | 130 | **0.37** | 0.99 | 130 | – | – | – | | | |
| – | – | – | – | – | – | **0.37** | 0.88 | 130 | **GV2P06** or **GV2ME06** or *GV2ME06AP* | 1…1.6 | **LC1D09** |
| **0.55** | 1.5 | 130 | **0.55** | 1.36 | 130 | **0.55** | 1.2 | 130 | | | |
| – | – | – | – | – | – | **0.75** | 1.5 | 130 | **GV2P06** or **GV2ME06** or *GV2ME06AP* | 1…1.6 | **LC1D09** |
| **0.75** | 1.9 | 130 | **0.75** | 1.68 | 130 | – | – | – | **GV2P07** or **GV2ME07** or *GV2ME07AP* | 1.6…2.5 | **LC1D09** |
| – | – | – | **1.1** | 2.37 | 130 | **1.1** | 2.2 | 130 | | | |
| **1.1** | 2.7 | 130 | – | – | – | **1.5** | 2.9 | 130 | **GV2P08** or **GV2ME08** or *GV2ME08AP* | 2.5…4 | **LC1D09** |
| **1.5** | 3.6 | 130 | **1.5** | 3.06 | 130 | **2.2** | 3.9 | 130 | | | |
| – | – | – | – | – | – | – | – | – | **GV2P10** or **GV2ME10** or *GV2ME10AP* | 4…6.3 | **LC1D09** |
| **2.2** | 4.9 | 130 | – | – | – | – | – | – | | | |
| – | – | – | **2.2** | 4.42 | 50 | – | – | – | **GV2ME10** or *GV2ME10AP* | 4…6.3 | **LC1D09** |
| – | – | – | **3** | 5.77 | 50 | **3** | 5.2 | 50 | | | |
| – | – | – | **2.2** | 4.42 | 130 | – | – | – | **GV2P10** | 4…6.3 | **LC1D09** |
| – | – | – | **3** | 5.77 | 130 | **3** | 5.2 | 130 | | | |
| **3** | 6.5 | 130 | – | – | – | – | – | – | **GV2P14** or **GV2ME14** or *GV2ME14AP* | 6…10 | **LC1D09** |
| **4** | 8.5 | 130 | – | – | – | – | – | – | | | |
| – | – | – | **4** | 7.9 | 15 | **4** | 6.8 | 10 | **GV2ME14** or *GV2ME14AP* | 6…10 | **LC1D09** |
| – | – | – | – | – | – | **5.5** | 9.2 | 10 | | | |
| – | – | – | – | – | – | **4** | 6.8 | 50 | **GV2P14** | 6…10 | **LC1D12** |
| – | – | – | **4** | 7.9 | 130 | **5.5** | 9.2 | 50 | | | |
| **5.5** | 11.5 | 130 | **5.5** | 10.4 | 50 or 8 | **7.5** | 12.4 | 42 or 6 | **GV2P16** or **GV2ME16** or *GV2ME16AP* | 9…14 | **LC1D25** |
| – | – | – | **7.5** | 13.7 | 50 or 8 | **9** | 13.9 | 42 or 6 | | | |
| **7.5** | 15.5 | 50 or 15 | **9** | 16.9 | 20 or 8 | – | – | – | **GV2P20** or **GV2ME20** or *GV2ME20AP* | 13…18 | **LC1D25** |
| **9** | 18.1 | 50 or 15 | **11** | 20.1 | 20 or 8 | **11** | 17.6 | 10 or 6 | **GV2P21** or **GV2ME21** or *GV2ME21AP* | 17…23 | **LC1D25** |
| **11** | 22 | 50 or 15 | – | – | – | – | – | – | **GV2P22** or **GV2ME22** or *GV2ME22AP* | 20…25 | **LC1D25** |
| – | – | – | – | – | – | **15** | 23 | 10 or 6 | **GV2P22** | 20…25 | **LC1D32** |
| **15** | 29 | 50 or 10 | **15** | 26.5 | 20 or 6 | **18.5** | 28 | 10 or 4 | **GV2P32** or **GV2ME32** or *GV2ME32AP* | 24…32 | **LC1D32** |
| **18.5** | 35 | 50 | – | – | – | – | – | – | **GV3P40** | 30…40 | **LC1D50A** |
| – | – | – | **18.5** | 32.8 | 50 | **22** | 33 | 10 | **GV3P40** | 30…40 | **LC1D65A** |
| **22** | 41 | 50 | – | – | – | – | – | – | **GV3P50** | 37…50 | **LC1D50A** |
| – | – | – | **22** | 39 | 50 | **30** | 44 | 10 | **GV3P50** | 37…50 | **LC1D65A** |
| **30** | 55 | 50 | **30** | 51.5 | 50 | – | – | – | **GV3P65** | 48…65 | **LC1D65A** |
| – | – | – | – | – | – | **37** | 53 | 10 | **GV3P65** | 48…65 | **LC1D65A** |
| **37** | 66 | 50 | – | – | – | – | – | – | **GV3P73** | 62...73 | **LC1D80A** |
| – | – | – | **37** | 64 | 70 | – | – | – | **GV4P80** | 40…80 | **LC1D65A** |
| **37** | 66 | 100 | **45** | 76 | 70 | (3) | (3) | (3) | **GV4P80** | 40…80 | **LC1D80** |
| **45** | 80 | 100 | **55** | 90 | 70 | (3) | (3) | (3) | **GV4P115** | 65 …115 | **LC1D115** |
| **55** | 97 | 100 | – | – | – | (3) | (3) | (3) | | | |
| **75** | 132 | 70 | **75** | 125 | 65 | – | – | – | **GV5P150H** | 70...150 | **LC1D150** |
| | | | **90** | 146 | 65 | – | – | – | | | |

*(1) The breaking performance of circuit breakers **GV2P** can be increased by adding a current limiter **GV1L3**.*
*(2) Combinations with circuit breaker **GV2ME** are type 2 coordinated only at 400/415 V and 440 V.*
*(3) Please consult your regional sales office.*

## 45 to 250 kW at 400/415 V: type 2 coordination (with TeSys GV4 / GV5 / GV6 circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|
| 400/415 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type |
| P | Ie | Iq (max) | | | | |
| kW | A | kA | | A | A | |
| 45 | 80 | 100 | GV4P/GV4PE/GV4PEM115● | 86 | 774 | LC1G115 |
| 55 | 97 | 100 | GV4P/GV4PE/GV4PEM115● | 100 | 900 | LC1G115 |
| 55 | 97 | 70 | GV5P150● | 100 | 1300 | LC1G115 |
| 75 | 132 | 70 | GV5P150● | 140 | 1820 | LC1G150 |
| 90 | 160 | 70 | GV5P220● | 170 | 2210 | LC1G185 |
| 110 | 195 | 70 | GV5P220● | 200 | 2600 | LC1G225 |
| 110 | 195 | 70 | GV6P320● | 200 | 2600 | LC1G265 |
| 132 | 230 | 70 | GV6P320● | 240 | 3120 | LC1G265 |
| 160 | 280 | 70 | GV6P320● | 300 | 3900 | LC1G330 |
| 200 | 350 | 70 | GV6P500● | 380 | 4940 | LC1G400 |
| 220 | 380 | 70 | GV6P500● | 400 | 5200 | LC1G500 |
| 250 | 430 | 70 | GV6P500● | 440 | 5720 | LC1G500 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV4P/GV4PE/GV4PEM115● | | | GV5P150●/ 220● GV6P320●/ 500● | |
|---|---|---|---|---|---|
| Breaking performance code | B | N | S | F | H |
| 400/415 V | 25 | 50 | 100 | 36 | 70 |

## 45 to 450 kW at 400/415 V: type 2 coordination (with ComPact NSX / NS circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|
| 400/415 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type |
| P | Ie | Iq (max) | | | | |
| kW | A | kA | | A | A | |
| 45 | 80 | 130 | NSX100● + MicroLogic 2.2 M | 85 | 1105 | LC1G115 |
| 55 | 97 | 130 | NSX160● + MicroLogic 2.2 M [3] | 100 | 1300 | LC1G115 |
| 75 | 132 | 130 | NSX160● + MicroLogic 2.2 M [3] | 140 | 1820 | LC1G150 |
| 90 | 160 | 130 | NSX250● + MicroLogic 2.2 M [3] | 170 | 2210 | LC1G185 |
| 110 | 195 | 130 | NSX250● + MicroLogic 2.2 M [3] | 200 | 2600 | LC1G225 |
| 110 | 195 | 130 | NSX400● + MicroLogic 2.3 M [3] | 200 | 2600 | LC1G265 |
| 132 | 230 | 130 | NSX400● + MicroLogic 2.3 M [3] | 240 | 3120 | LC1G265 |
| 160 | 280 | 130 | NSX400● + MicroLogic 2.3 M [3] | 300 | 3900 | LC1G330 |
| 200 | 350 | 130 | NSX630● + MicroLogic 2.3 M [3] | 380 | 4940 | LC1G400 |
| 220 | 380 | 130 | NSX630● + MicroLogic 2.3 M [3] | 400 | 5200 | LC1G500 |
| 250 | 430 | 130 | NSX630● + MicroLogic 2.3 M [3] | 440 | 5720 | LC1G500 |
| 300 | 500 | 130 | NS800● + MicroLogic 5.0 | 560 | 5040 | LC1G630 |
| 335 | 575 | 130 | NS800● + MicroLogic 5.0 | 640 | 5760 | LC1G630 |
| 355 | 610 | 130 | NS800● + MicroLogic 5.0 | 640 | 5760 | LC1G800 |
| 400 | 690 | 130 | NS800● + MicroLogic 5.0 | 720 | 6480 | LC1G800 |
| 450 | 770 | 130 | NS1000● + MicroLogic 5.0 | 784 | 7840 | LC1G800 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX100●/ NSX160● / NSX250●/ NSX400●/ NSX630● | | | | | NS800●/ NS1000● |
|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | L |
| 400/415 V | 36 | 50 | 70 | 100 | 130 | 150 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Applicable also with MicroLogic 6.2 E-M and 6.3 E-M trip units.*

# Coordination: Thermal magnetic circuit breaker + Contactor

## 55 to 300 kW at 440 V: type 2 coordination (with TeSys GV4 / GV5 / GV6 circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|
| 440 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type |
| P | Ie | Iq (max) | | | | |
| kW | A | kA | | A | A | |
| 55 | 88 | 70 | GV4P/GV4PE/GV4PEM115● | 93 | 837 | LC1G115 |
| 55 | 88 | 65 | GV5P150● | 90 | 1170 | LC1G115 |
| 75 | 120 | 65 | GV5P150● | 130 | 1690 | LC1G150 |
| 90 | 145 | 65 | GV5P150● | 150 | 1950 | LC1G150 |
| 110 | 177 | 65 | GV5P220● | 185 | 2405 | LC1G185 |
| 132 | 209 | 65 | GV5P220● | 210 | 2730 | LC1G225 |
| 160 | 255 | 65 | GV6P320● | 260 | 3380 | LC1G265 |
| 200 | 318 | 65 | GV6P320● | 320 | 4160 | LC1G330 |
| 220 | 343 | 65 | GV6P500● | 350 | 4550 | LC1G400 |
| 250 | 390 | 65 | GV6P500● | 400 | 5200 | LC1G400 |
| 300 | 466 | 65 | GV6P500● | 470 | 6110 | LC1G500 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV4P/GV4PE/GV4PEM115● | | | GV5P150●/ 220● | | GV6P320●/ 500● | |
|---|---|---|---|---|---|---|---|
| Breaking performance code | B | N | S | F | H | F | H |
| 440 V | 20 | 50 | 70 | 35 | 65 | 30 | 65 |

## 55 to 450 kW at 440 V: type 2 coordination (with ComPact NSX / NS circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|
| 440 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type |
| P | Ie | Iq (max) | | | | |
| kW | A | kA | | A | A | |
| 55 | 88 | 130 | NSX100● + MicroLogic 2.2 M | 90 | 1170 | LC1G115 |
| 75 | 120 | 130 | NSX160● + MicroLogic 2.2 M [3] | 130 | 1690 | LC1G150 |
| 90 | 145 | 130 | NSX160● + MicroLogic 2.2 M [3] | 150 | 1950 | LC1G150 |
| 110 | 177 | 130 | NSX250● + MicroLogic 2.2 M [3] | 185 | 2405 | LC1G185 |
| 132 | 209 | 130 | NSX250● + MicroLogic 2.2 M [3] | 210 | 2730 | LC1G225 |
| 160 | 255 | 130 | NSX400● + MicroLogic 2.3 M [3] | 260 | 3380 | LC1G265 |
| 200 | 318 | 130 | NSX400● + MicroLogic 2.3 M [3] | 320 | 4160 | LC1G330 |
| 220 | 343 | 130 | NSX630● + MicroLogic 2.3 M [3] | 350 | 4550 | LC1G400 |
| 250 | 390 | 130 | NSX630● + MicroLogic 2.3 M [3] | 400 | 5200 | LC1G400 |
| 300 | 466 | 130 | NSX630● + MicroLogic 2.3 M [3] | 470 | 6110 | LC1G500 |
| 335 | 521 | 130 | NS800● + MicroLogic 5.0 | 560 | 5040 | LC1G630 |
| 355 | 554 | 130 | NS800● + MicroLogic 5.0 | 560 | 5040 | LC1G630 |
| 400 | 627 | 130 | NS800● + MicroLogic 5.0 | 640 | 5760 | LC1G800 |
| 450 | 695 | 130 | NS800● + MicroLogic 5.0 | 720 | 6480 | LC1G800 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX100●/ NSX160●/ NSX250● | | | | | NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | F | N | H | S | L | L |
| 440 V | 35 | 50 | 65 | 90 | 130 | 30 | 42 | 65 | 90 | 130 | 130 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Applicable also with MicroLogic 6.2 M and 6.3 M trip units.*

## 65 to 295 kW at 500 V: type 2 coordination (with TeSys GV4 / GV5 / GV6 circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|
| 500 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type |
| P | Ie | Iq (max) | | | | |
| kW | A | kA | | A | A | |
| 65 | 92 | 30 | GV4P/GV4PE/GV4PEM115● | 93 | 837 | LC1G115 |
| 65 | 92 | 50 | GV5P150● | 100 | 1300 | LC1G115 |
| 90 | 128 | 50 | GV5P150● | 130 | 1690 | LC1G150 |
| 110 | 156 | 50 | GV5P220● | 170 | 2210 | LC1G185 |
| 132 | 184 | 50 | GV5P220● | 185 | 2405 | LC1G225 |
| 160 | 224 | 50 | GV6P320● | 240 | 3120 | LC1G265 |
| 200 | 280 | 50 | GV6P320● | 300 | 3900 | LC1G330 |
| 250 | 344 | 50 | GV6P500● | 350 | 4550 | LC1G400 |
| 295 | 405 | 50 | GV6P500● | 440 | 5720 | LC1G500 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV4P/GV4PE/GV4PEM115● | | | GV5P150●/ 220● | | GV6P320●/ 500● | |
|---|---|---|---|---|---|---|---|
| Breaking performance code | B | N | S | F | H | F | H |
| 500 V | 10 | 25 | 30 | 30 | 50 | 25 | 50 |

## 65 to 425 kW at 500 V: type 2 coordination (with ComPacT NSX / NS circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|
| 500 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type |
| P | Ie | Iq (max) | | | | |
| kW | A | kA | | A | A | |
| 65 | 92 | 70 | NSX100● + MicroLogic 2.2 M | 95 | 1235 | LC1G115 |
| 65 | 92 | 70 | NSX160● + MicroLogic 2.2 M [3] | 95 | 1235 | LC1G115 |
| 90 | 128 | 70 | NSX160● + MicroLogic 2.2 M [3] | 130 | 1690 | LC1G150 |
| 110 | 156 | 70 | NSX250● + MicroLogic 2.2 M [3] | 170 | 2210 | LC1G185 |
| 132 | 184 | 70 | NSX250● + MicroLogic 2.2 M [3] | 185 | 2405 | LC1G225 |
| 160 | 224 | 70 | NSX400● + MicroLogic 2.3 M [3] | 240 | 3120 | LC1G265 |
| 200 | 280 | 70 | NSX400● + MicroLogic 2.3 M [3] | 300 | 3900 | LC1G330 |
| 250 | 344 | 70 | NSX630● + MicroLogic 2.3 M [3] | 350 | 4550 | LC1G400 |
| 295 | 405 | 70 | NSX630● + MicroLogic 2.3 M [3] | 440 | 5720 | LC1G500 |
| 375 | 516 | 70 | NS800● + MicroLogic 5.0 | 560 | 5040 | LC1G630 |
| 425 | 584 | 70 | NS800● + MicroLogic 5.0 | 640 | 5760 | LC1G800 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX100● | | | | | NSX160●/ NSX250● | | | | | NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | F | N | H | S | L | F | N | H | S | L | L |
| 500 V | 25 | 36 | 50 | 65 | 70 | 30 | 36 | 50 | 65 | 70 | 25 | 30 | 50 | 65 | 70 | 100 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Applicable also with MicroLogic 6.2 M and 6.3 M trip units.*

# Coordination: Thermal magnetic circuit breaker + Contactor

## 0.06 to 22 kW at 690 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Limiter block | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|---|
| 690 V | | | Product type | Product type | Ir Setting (1) | Irm (1) | Product type |
| P | Ie | Iq | | | | | |
| kW | A | kA | | | A | A | |
| 0.06 | 0.12 | 100 | | GV2P01 | 0.16 | 1.5 | LC1D09 |
| 0.09 | 0.17 | 100 | | GV2P02 | 0.25 | 2.4 | LC1D09 |
| 0.12 | 0.23 | 100 | | GV2P02 | 0.25 | 2.4 | LC1D09 |
| 0.18 | 0.35 | 100 | | GV2P03 | 0.4 | 5 | LC1D09 |
| 0.25 | 0.49 | 100 | | GV2P04 | 0.63 | 8 | LC1D09 |
| 0.37 | 0.64 | 100 | | GV2P05 | 1 | 13 | LC1D09 |
| 0.55 | 0.87 | 100 | | GV2P05 | 1 | 13 | LC1D09 |
| 0.75 | 1.1 | 100 | | GV2P06 | 1.6 | 22.5 | LC1D09 |
| 1.1 | 1.6 | 65 | LA9LB920 | GV2P07 | 1.6 | 22.5 | LC1D25 |
| 1.5 | 2.1 | 65 | LA9LB920 | GV2P07 | 2.5 | 33.5 | LC1D25 |
| 2.2 | 2.8 | 65 | LA9LB920 | GV2P08 | 4 | 51 | LC1D25 |
| 3 | 3.8 | 65 | LA9LB920 | GV2P08 | 4 | 51 | LC1D25 |
| 4 | 4.9 | 65 | LA9LB920 | GV2P10 | 6.3 | 78 | LC1D25 |
| 5.5 | 6.7 | 65 | LA9LB920 | GV2P14 | 10 | 138 | LC1D25 |
| 7.5 | 8.9 | 65 | LA9LB920 | GV2P14 | 10 | 138 | LC1D25 |
| 9 | 12.8 | 65 | LA9LB920 | GV2P16 | 14 | 170 | LC1D25 |
| 11 | 12.8 | 65 | LA9LB920 | GV2P16 | 14 | 170 | LC1D25 |
| 15 | 17 | 65 | LA9LB920 | GV2P20 | 18 | 223 | LC1D25 |
| 18.5 | 21 | 65 | LA9LB920 | GV2P21 | 23 | 327 | LC1D32 |
| 22 | 24 | 65 | LA9LB920 | GV2P32 | 32 | 416 | LC1D40A |

*(1) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*

## 30 to 560 kW at 690 V: type 2 coordination (with ComPacT NSX / NS circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | | Contactor |
|---|---|---|---|---|---|---|
| 690 V | | | Product type (1) | Ir Setting (2) | Irm (2) | Product type |
| P | Ie | Iq (max) | | | | |
| kW | A | kA | | A | A | |
| 30 | 32 | 100 | NSX100● + MicroLogic 2.2 M | 36 | 468 | LC1G115 |
| 37 | 39 | 100 | NSX100● + MicroLogic 2.2 M | 40 | 520 | LC1G115 |
| 45 | 47 | 100 | NSX100● + MicroLogic 2.2 M | 50 | 650 | LC1G115 |
| 55 | 57 | 100 | NSX100● + MicroLogic 2.2 M | 60 | 780 | LC1G115 |
| 75 | 77 | 100 | NSX100● + MicroLogic 2.2 M | 80 | 1040 | LC1G115 |
| 90 | 93 | 100 | NSX250● + MicroLogic 2.2 M (3) | 95 | 1235 | LC1G150 |
| 110 | 113 | 100 | NSX250● + MicroLogic 2.2 M (3) | 115 | 1495 | LC1G185 |
| 132 | 134 | 100 | NSX250● + MicroLogic 2.2 M (3) | 140 | 1820 | LC1G225 |
| 160 | 162 | 100 | NSX250● + MicroLogic 2.2 M (3) | 170 | 2210 | LC1G225 |
| 200 | 203 | 100 | NSX250● + MicroLogic 2.2 M (3) | 210 | 2730 | LC1G265 |
| 220 | 223 | 100 | NSX400● + MicroLogic 2.3 M (3) | 240 | 3120 | LC1G330 |
| 250 | 250 | 100 | NSX400● + MicroLogic 2.3 M (3) | 260 | 3380 | LC1G400 |
| 315 | 313 | 100 | NSX630● + MicroLogic 2.3 M (3) | 320 | 4160 | LC1G400 |
| 335 | 335 | 100 | NSX630● + MicroLogic 2.3 M (3) | 350 | 4550 | LC1G500 |
| 355 | 354 | 100 | NSX630● + MicroLogic 2.3 M (3) | 380 | 4940 | LC1G500 |
| 375 | 374 | 100 | NSX630● + MicroLogic 2.3 M (3) | 380 | 4940 | LC1G630 |
| 400 | 400 | 100 | NSX630● + MicroLogic 2.3 M (3) | 440 | 5720 | LC1G630 |
| 450 | 455 | 100 | NSX630● + MicroLogic 2.3 M (3) | 470 | 6110 | LC1G630 |
| 475 | 475 | 100 | NSX630● + MicroLogic 2.3 M (3) | 500 | 6500 | LC1G630 |
| 500 | 493 | 100 | NSX630● + MicroLogic 2.3 M (3) | 500 | 6500 | LC1G630 |
| 560 | 551 | 75 | NS800● + MicroLogic 5.0 | 560 | 7280 | LC1G800 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX100●/ NSX250●/ NSX400●/ NSX630● | | NS800● |
|---|---|---|---|
| Breaking performance code | HB1 | HB2 | LB |
| 690 V | 75 | 100 | 75 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Applicable also with MicroLogic 6.2 E-M and 6.3 E-M trip units.*

# Coordination (UL): Thermal magnetic circuit breaker + Contactor

## ½ to 80 hp at 460 V - 3P

GV2P + contactor: compact, high SCCR solution.
GV3P + contactor: medium power, Everlink (long lasting power connection).
**GV4PB + contactor: high power, advanced protection settings, Everlink (long lasting power connection), 18 (GV4PB●●●B), 35 (GV4PB●●●N) or 65 (GV4PB●●●S) kA SCCR.**

| Standard power ratings | | | | | | Circuit breaker | | Contactor | | Circuit breaker | | Contactor | | Circuit breaker | | Contactor | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 200 V 3P | | 230 V 3P | | 460 V 3P | | Product reference (2) | Dial range | Product reference (3) | Comb. SCCR 480Y | Product reference (4) | Dial range | Product reference (3) | Comb. SCCR 480Y | Product reference | Dial range | Product reference (3) | SCCR 480Y As applied |
| HP | FLA (1) | HP | FLA (1) | HP | FLA (1) | | A | | kA | | A | | kA | | A | | kA |
| | | | | ½ | 1.1 | **GV2P06** | 1 to 1.6 | **LC1D09** | 100 | | | | | **GV4PB02S** | 0.8 to 2 | **LC1D09** | 65 |
| | | | | ¾ | 1.6 | **GV2P06** | 1 to 1.6 | **LC1D09** | 100 | | | | | **GV4PB02S** | 0.8 to 2 | **LC1D09** | 65 |
| ½ | 2.5 | ½ | 2.2 | 1 | 2.1 | **GV2P07** | 1.6 to 2.5 | **LC1D09** | 100 | | | | | **GV4PB03S** | 1.4 to 3.5 | **LC1D09** | 65 |
| | | | | 1½ | 3 | **GV2P08** | 2.5 to 4 | **LC1D09** | 100 | | | | | **GV4PB03S** | 1.4 to 3.5 | **LC1D09** | 65 |
| ¾ | 3.7 | ¾ | 3.2 | 2 | 3.4 | **GV2P08** | 2.5 to 4 | **LC1D09** | 100 | | | | | **GV4PB07S** | 2.9 to 7 | **LC1D09** | 65 |
| 1 | 4.6 | 1 | 4.2 | 3 | 4.8 | **GV2P10** | 4 to 6.3 | **LC1D09** | 100 | | | | | **GV4PB07S** | 2.9 to 7 | **LC1D09** | 65 |
| | | 1½ | 6 | | | **GV2P10** | 4 to 6.3 | **LC1D09** | 100 | | | | | **GV4PB12S** | 5 to 12.5 | **LC1D12** | 65 |
| 1½ | 6.9 | 2 | 6.8 | | | **GV2P14** | 6 to 10 | **LC1D12** | 100 | | | | | **GV4PB12S** | 5 to 12.5 | **LC1D12** | 65 |
| 2 | 7.8 | | | 5 | 7.6 | **GV2P14** | 6 to 10 | **LC1D12** | 100 | | | | | **GV4PB12S** | 5 to 12.5 | **LC1D12** | 65 |
| | | 3 | 9.6 | | | **GV2P14** | 6 to 10 | **LC1D12** | 100 | **GV3P13** | 9 to 13 | **LC1D18** | 65 | **GV4PB12S** | 5 to 12.5 | **LC1D12** | 65 |
| 3 | 11 | | | 7½ | 11 | **GV2P16** | 9 to 14 | **LC1D18** | 50 (5) | **GV3P13** | 9 to 13 | **LC1D18** | 65 | **GV4PB25S** | 10 to 25 | **LC1D25** | 65 |
| | | | | 10 | 14 | **GV2P16** | 9 to 14 | **LC1D18** | 50 (5) | **GV3P18** | 12 to 18 | **LC1D18** | 65 | **GV4PB25S** | 10 to 25 | **LC1D25** | 65 |
| 5 | 17.5 | 5 | 15.2 | | | **GV2P20** | 13 to 18 | **LC1D18** | 50 (5) | **GV3P18** | 12 to 18 | **LC1D18** | 65 | **GV4PB25S** | 10 to 25 | **LC1D25** | 65 |
| | | 7½ | 22 | 15 | 21 | **GV2P21** | 17 to 23 | **LC1D25** | 50 (5) | **GV3P25** | 17 to 25 | **LC1D25** | 65 | **GV4PB25S** | 10 to 25 | **LC1D25** | 65 |
| 7½ | 25.3 | | | | | **GV2P22** | 20 to 25 | **LC1D25** | 50 (5) | **GV3P32** | 23 to 32 | **LC1D32** | 65 | **GV4PB50S** | 20 to 50 | **LC1D50A** | 65 |
| | | 10 | 28 | 20 | 27 | | | | | **GV3P32** | 23 to 32 | **LC1D32** | 65 | **GV4PB50S** | 20 to 50 | **LC1D50A** | 65 |
| 10 | 32.2 | | | 25 | 34 | | | | | **GV3P40** | 30 to 40 | **LC1D40A** | 65 | **GV4PB50S** | 20 to 50 | **LC1D50A** | 65 |
| | | 15 | 42 | 30 | 40 | | | | | **GV3P50** | 37 to 50 | **LC1D50A** | 65 | **GV4PB50S** | 20 to 50 | **LC1D50A** | 65 |
| 15 | 48 | | | | | | | | | **GV3P65** | 48 to 65 | **LC1D65A** | 65 | **GV4PB50S** | 20 to 50 | **LC1D50A** | 65 |
| | | 20 | 54 | 40 | 52 | | | | | **GV3P65** | 48 to 65 | **LC1D65A** | 65 | **GV4PB80S** | 40 to 80 | **LC1D80** | 65 |
| 20 | 62.1 | | | | | | | | | | | | | **GV4PB115S** | 40 to 80 | **LC1D80** | 65 |
| 25 | 78.2 | 25 | 68 | 50 | 65 | | | | | | | | | **GV4PB115S** | 40 to 80 | **LC1D80** | 65 |
| 30 | 92 | 30 | 80 | 60 | 77 | | | | | | | | | **GV4PB115S** | 65 to 115 | **LC1D115** | 65 |

*(1) Motor Full Load Amp Sizes are based on NEC Table 430.250.*
*(2) Requires use of GV1G09 or GV2GH7 line spacer for Type F rating.*
*(3) Add coil suffix to complete reference part number. For example, an LC1D09G7 includes a 120 V AC coil.*
*(4) Requires use of GV3G66 line spacer and GVAM11 short-circuit signaling contact for Type F rating.*
*(5) SCCR is 42 kA at 480Y when using GV2G busbar links.*

# Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 0.06 to 250 kW at 400/415 V: type 1 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Circuit breaker | | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | Reference | Rating | Irm (1) | Reference (2) | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | A | A | | | A |
| 0.06 | 0.2 | 50 | 0.06 | 0.19 | 50 | – | – | – | **GV2LE03** | 0.4 | 5 | **LC1K06** | **LR2K0302** | 0.16…0.23 |
| – | – | – | 0.09 | 0.28 | 50 | – | – | – | **GV2LE03** | 0.4 | 5 | **LC1K06** | **LR2K0303** | 0.23…0.36 |
| 0.09 | 0.3 | 50 | 0.12 | 0.37 | 50 | – | – | – | **GV2LE03** | 0.4 | 5 | **LC1K06** | **LR2K0304** | 0.36…0.54 |
| 0.12 | 0.44 | 50 | | | | – | – | – | **GV2LE04** | 0.63 | 8 | **LC1K06** | **LR2K0304** | 0.36…0.54 |
| 0.18 | 0.6 | 50 | 0.18 | 0.55 | 50 | – | – | – | **GV2LE04** | 0.63 | 8 | **LC1K06** | **LR2K0305** | 0.54…0.8 |
| – | – | – | 0.25 | 0.76 | 50 | – | – | – | **GV2LE05** | 1 | 13 | **LC1K06** | **LR2K0305** | 0.54…0.8 |
| 0.25<br>0.37 | 0.85<br>1.1 | 50<br>50 | –<br>0.37 | –<br>1 | –<br>50 | –<br>0.37 | –<br>0.88 | –<br>50 | **GV2LE05** | 1 | 13 | **LC1K06** | **LR2K0306** | 0.8…1.2 |
| 0.55<br>– | 1.5<br>– | 50<br>– | 0.55<br>– | 1.36<br>– | 50<br>– | 0.55<br>0.75 | 1.2<br>1.5 | 50<br>50 | **GV2LE06** | 1.6 | 22.5 | **LC1K06** | **LR2K0307** | 1.2…1.8 |
| – | – | – | 0.75 | 1.68 | 50 | – | – | – | **GV2LE07** | 2.5 | 33.5 | **LC1K06** | **LR2K0307** | 1.2…1.8 |
| 0.75<br>1.1 | 1.9<br>2.7 | 50<br>50 | –<br>1.1 | –<br>2.37 | –<br>50 | –<br>1.1 | –<br>2.2 | –<br>50 | **GV2LE07** | 2.5 | 33.5 | **LC1K06** | **LR2K0308** | 1.8…2.6 |
| 1. 5 | 3.6 | 50 | 1.5 | 3.06 | 50 | 1.5 | 2.9 | 50 | **GV2LE08** | 4 | 51 | **LC1K06** | **LR2K0310** | 2.6…3.7 |
| – | – | – | – | – | – | 2.2 | 3.9 | 50 | **GV2LE08** | 4 | 51 | **LC1K06** | **LR2K0312** | 3.7…5.5 |
| 2.2 | 4.9 | 50 | 2.2 | 4.4 | 50 | 3 | 5.2 | 50 | **GV2LE10** | 6.3 | 78 | **LC1K06** | **LR2K0312** | 3.7…5.5 |
| – | – | – | 3 | 5.77 | 50 | – | – | – | **GV2LE10** | 6.3 | 78 | **LC1K06** | **LR2K0314** | 5.5…8 |
| – | – | – | 4 | 7.9 | 15 | – | – | – | **GV2LE14** | 10 | 138 | **LC1K09** | **LR2K0314** | 5.5…8 |
| 3 | 6.5 | 50 | – | – | – | 4 | 6.8 | 10 | **GV2LE14** | 10 | 138 | **LC1K09** | **LR2K0314** | 5.5…8 |
| 4 | 8.5 | 50 | – | – | – | – | – | – | **GV2LE14** | 10 | 138 | **LC1K09** | **LR2K0316** | 8…11.5 |
| 5.5 | 11.5 | 15 | 5.5 | 10.4 | 8 | 7.5 | 12.4 | 6 | **GV2LE16** | 14 | 170 | **LC1K12** | **LR2K0321** | 10…14 |
| – | – | – | 7.5 | 13.7 | 8 | 9 | 13.9 | 6 | **GV2LE16** | 14 | 170 | **LC1D18** | **LRD21** | 12…18 |
| 7.5 | 15.5 | 15 | 9 | 16.9 | 8 | – | – | – | **GV2LE20** | 18 | 223 | **LC1D18** | **LRD21** | 12…18 |
| 9 | 18.1 | 15 | – | – | – | 11 | 17.6 | 4 | **GV2LE22** | 25 | 327 | **LC1D25** | **LRD22** | 16…24 |
| 11 | 22 | 15 | 11 | 20.1 | 6 | 15 | 23 | 4 | **GV2LE22** | 25 | 327 | **LC1D25** | **LRD22** | 16…24 |
| 15 | 29 | 10 | 15 | 26.5 | 6 | 18.5 | 28 | 4 | **GV2LE32** | 32 | 416 | **LC1D32** | **LRD32** | 23…32 |
| 18.5 | 35 | 50 | 18.5 | 32.5 | 50 | 22 | 33 | 10 | **GV3L40** | 40 | 560 | **LC1D40A** | **LRD340** | 30…40 |
| 22 | 41 | 50 | 22 | 39 | 50 | 30 | 44 | 10 | **GV3L50** | 50 | 700 | **LC1D50A** | **LRD350** | 37…50 |

*(1) Irm: setting current of the magnetic trip.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*

# Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 0.06 to 250 kW at 400/415 V: type 1 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Circuit breaker | | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | Reference | Rating | Irm (1) | Reference (2) | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | A | A | | | A |
| **30** | 55 | 50 | **30** | 51.5 | 50 | **37** | 53 | 10 | **GV3L65** | 65 | 910 | **LC1D65A** | **LRD365** | 48…65 |
| – | – | – | **37** | 64 | 50 | **37** | 53 | 10 | **GV3L65** | 65 | 910 | **LC1D65A** | **LRD365** | 48…65 |
| – | – | – | – | – | – | **45** | 64 | 50 | **GV3L65** | 65 | 910 | **LC1D80** | **LRD3361** | 55...70 |
| **37** | 66 | 50 | – | – | – | – | – | – | **GV3L73** | 73 | 1120 | **LC1D80A** | **LRD380** | 62...80 |
| – | – | – | **37** | 64 | 70 | – | – | – | **GV4L80** | 80 | 880 | **LC1D65A** | **LRD365** | 48…65 |
| – | – | – | – | – | – | **45** | 64 | 30 | **GV4L80** | 80 | 880 | **LC1D80** | **LRD3361** | 55...70 |
| **37** | 66 | 100 | – | – | – | – | – | – | **GV4L80** | 80 | 1040 | **LC1D80** | **LRD3361** | 55...70 |
| – | – | – | **45** | 76 | 70 | **55** | 78 | 30 | **GV4L80** | 80 | 1040 | **LC1D80** | **LRD3363** | 63…80 |
| **45** | 80 | 100 | – | – | – | – | – | – | **GV4L115** | 115 | 1380 | **LC1D95** | **LRD3365** | 80…104 |
| – | – | – | – | – | – | **75** | 106 | 30 | **GV4L115** | 115 | 1380 | **LC1D115** | **LRD4367** | 95…120 |
| – | – | – | **55** | 90 | 70 | – | – | – | **GV4L115** | 115 | 1380 | **LC1D115** | **LRD4365** | 80…104 |
| **55** | 97 | 100 | – | – | – | – | – | – | **GV4L115** | 115 | 1495 | **LC1D115** | **LRD4367** | 95…120 |
| – | – | – | – | – | – | **50** | 90 | (3) | **NSX100●MA** (3) | 100 | 1200 | **LC1D115** | **LRD4365** | 80…104 |
| – | – | – | – | – | – | **75** | 106 | (3) | **NSX160●MA** (3) | 150 | 1500 | **LC1D115** | **LRD4367** | 95…120 |
| **55** | 97 | (3) | – | – | – | – | – | – | **NSX160●MA** (3) | 150 | 1350 | **LC1D115** | **LRD4367** | 95…120 |
| **75** (4) | 132 | (3) | **75** (4) | 125 | (3) | **90** (4) | 128 | (3) | **NSX160●MA** (3) | 150 | 1800 | **LC1D150** | **LRD4369** | 110…140 |

*(1) Irm: setting current of the magnetic trip.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*
*(3) Reference to be completed by replacing the ● with the breaking performance code:*

| Breaking performance Iq (kA) | NSX100●MA | | NSX160●MA and NSX250●MA | | NSX400● and NSX630● | |
|---|---|---|---|---|---|---|
| **400/415 V** | 36 | 70 | 36 | 70 | 70 | 150 |
| **440 V** | 35 | 65 | 35 | 65 | 65 | 130 |
| **500 V** | 25 | 50 | 25 | 50 | 50 | 70 |
| **660/690 V** | 8 | 10 | 8 | 10 | 20 | 20 |
| **Code** | **F** | **H** | **F** | **H** | **H** | **L** |

*(4) Please refer to Type 2 coordination tables for higher ratings.*

# Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 0.06 to 250 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Circuit breaker | | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | Reference | Rating | Irm (1) | Reference (2) | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | A | A | | | A |
| **0.06** | 0.2 | 130 | **0.06** | 0.19 | 130 | **–** | – | – | **GV2L03** or **LE03** | 0.4 | 5 | **LC1D09** | **LRD02** | 0.16…0.25 |
| **0.09** | 0.3 | 130 | **0.09** | 0.28 | 130 | **–** | – | – | **GV2L03** or **LE03** | 0.4 | 5 | **LC1D09** | **LRD03** | 0.25…0.40 |
| **–** | – | – | **0.12** | 0.37 | 130 | **–** | – | – | | | | | | |
| **0.12** | 0.44 | 130 | **–** | – | – | **–** | – | – | **GV2L04** or **LE04** | 0.63 | 8 | **LC1D09** | **LRD04** | 0.4…0.63 |
| **0.18** | 0.6 | 130 | **0.18** | 0.55 | 130 | **–** | – | – | | | | | | |
| **0.25** | 0.85 | 130 | **0.25** | 0.76 | 130 | **–** | – | – | **GV2L05** or **LE05** | 1 | 13 | **LC1D09** | **LRD05** | 0.63…1 |
| **0.37** | 1.1 | 130 | **0.37** | 0.99 | 130 | **–** | – | – | | | | | | |
| **–** | – | – | **–** | – | – | **0.37** | 0.88 | 130 | **GV2L05** or **LE05** | 1 | 13 | **LC1D09** | **LRD06** | 1…1.7 |
| **0.55** | 1.5 | 130 | **–** | – | – | **0.55** | 1.2 | 130 | **GV2L06** or **LE06** | 1.6 | 22.5 | **LC1D09** | **LRD06** | 1…1.7 |
| **–** | – | – | **0.55** | 1.36 | 130 | **0.75** | 1.5 | 130 | | | | | | |
| **0.75** | 1.9 | 130 | **0.75** | 1.68 | 130 | **1.1** | 2.2 | 130 | **GV2L07** or **LE07** | 2.5 | 33.5 | **LC1D09** | **LRD07** | 1.6…2.5 |
| **1.1** | 2.7 | 130 | **1.1** | 2.37 | 130 | **1.5** | 2.9 | 130 | **GV2L08** or **LE08** | 4 | 51 | **LC1D09** | **LRD08** | 2.5…4 |
| **1.5** | 3.6 | 130 | **–** | – | – | **2.2** | 3.9 | 130 | | | | | | |
| **–** | – | – | **1.5** | 3.06 | 130 | **–** | – | – | **GV2L08** or **LE08** | 4 | 51 | **LC1D09** | **LRD10** | 4…6 |
| **2.2** | 4.9 | 130 | **–** | – | – | **–** | – | – | **GV2L10** or **LE10** | 6.3 | 78 | **LC1D09** | **LRD10** | 4…6 |
| **–** | – | – | **–** | – | – | **3** | 5.2 | 13 | | | | | | |
| **–** | – | – | **2.2** | 4.42 | 50 | **–** | – | – | **GV2LE10** | 6.3 | 78 | **LC1D09** | **LRD10** | 4…6 |
| **–** | – | – | **3** | 5.77 | 50 | **3** | 5.2 | 50 | | | | | | |
| **–** | – | – | **2.2** | 4.42 | 130 | **–** | – | – | **GV2L10** | 6.3 | 78 | **LC1D09** | **LRD10** | 4…6 |
| **–** | – | – | **3** | 5.77 | 130 | **3** | 5.2 | 130 | | | | | | |
| **3** | 6.5 | 130 | **–** | – | – | **–** | – | – | **GV2L14** or **LE14** | 10 | 10 | **LC1D09** | **LRD12** | 5.5…8 |
| **–** | – | – | **–** | – | – | **4** | 6.8 | 10 | **GV2LE14** | 10 | 138 | **LC1D12** | **LRD12** | 5.5…8 |
| **–** | – | – | **–** | – | – | **4** | 6.8 | 50 | **GV2L14** | 10 | 138 | **LC1D12** | **LRD12** | 5.5…8 |
| **4** | 8.5 | 130 | **–** | – | – | **–** | – | – | **GV2L14** or **LE14** | 10 | 138 | **LC1D09** | **LRD14** | 7…10 |
| **–** | – | – | **4** | 7.9 | 15 | **–** | – | – | **GV2LE14** | 10 | 138 | **LC1D09** | **LRD14** | 7…10 |
| **–** | – | – | **4** | 7.9 | 130 | **–** | – | – | **GV2L14** | 10 | 138 | **LC1D09** | **LRD14** | 7…10 |
| **–** | – | – | **–** | – | – | **5.5** | 9.2 | 10 | **GV2LE14** | 10 | 138 | **LC1D09** | **LRD14** | 7…10 |
| **–** | – | – | **–** | – | – | **5.5** | 9.2 | 50 | **GV2L14** | 10 | 138 | **LC1D09** | **LRD14** | 7…10 |
| **5.5** | 11.5 | 130 | **5.5** | 10.4 | 50 | **7.5** | 12.4 | 42 | **GV2L16** | 14 | 170 | **LC1D25** | **LRD16** | 9…13 |
| **–** | – | – | **7.5** | 13.7 | 50 | **–** | – | – | **GV2L16** | 14 | 170 | **LC1D25** | **LRD21** | 12…18 |
| **7.5** | 15.5 | 50 | **9** | 16.9 | 20 | **9** | 13.9 | 10 | **GV2L20** | 18 | 223 | **LC1D25** | **LRD21** | 12…18 |
| **9** | 18.1 | 50 | **–** | – | – | **–** | – | – | **GV2L22** | 25 | 327 | **LC1D25** | **LRD22** | 16…24 |
| **11** | 22 | 50 | **11** | 20.1 | 20 | **–** | – | – | | | | | | |
| **–** | – | – | **–** | – | – | **11** | 17.6 | 10 | **GV2L22** | 25 | 327 | **LC1D32** | **LRD22** | 16…24 |
| **–** | – | – | **–** | – | – | **15** | 23 | 10 | | | | | | |
| **15** | 29 | 50 | **15** | 26.5 | 50 | **–** | – | – | **GV3L32** | 32 | 448 | **LC1D40A** | **LRD332** | 23…32 |
| **–** | – | – | **–** | – | – | **18.5** | 28 | 10 | **GV3L32** | 32 | 448 | **LC1D65A** | **LRD332** | 23…32 |

*(1) Irm: setting current of the magnetic trip.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*

# Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 0.18 to 22 kW at 690 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Limiter block | Circuit breaker | | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|
| 690 V | | | Product type | Product type | Ir setting (1) | Irm (1) | Product type | Product type | Setting range |
| P | Ie | Iq | | | | | | | |
| kW | A | kA | | | A | A | | | A |
| **0.18** | 0.35 | 100 | – | **GV2L03** | 0.4 | 5 | **LC1D09** | **LRD03** | 0.25...0.4 |
| **0.25** | 0.49 | 100 | – | **GV2L04** | 0.63 | 8 | **LC1D09** | **LRD04** | 0.4…0.63 |
| **0.37** | 0.64 | 100 | – | **GV2L05** | 1 | 13 | **LC1D09** | **LRD05** | 0.63…1 |
| **0.55** | 0.87 | 100 | – | **GV2L05** | 1 | 13 | **LC1D09** | **LRD05** | 0.63…1 |
| **0.75** | 1.1 | 100 | – | **GV2L06** | 1.6 | 22.5 | **LC1D09** | **LRD06** | 1…1.6 |
| **1.1** | 1.6 | 100 | – | **GV2L06** | 1.6 | 22.5 | **LC1D09** | **LRD06** | 1…1.6 |
| **1.5** | 2.1 | 65 | **LA9LB920** (2) | **GV2L07** | 2.5 | 33.5 | **LC1D25** | **LRD07** | 1.6…2.5 |
| **2.2** | 2.8 | 65 | **LA9LB920** (2) | **GV2L08** | 4 | 51 | **LC1D25** | **LRD08** | 2.5…4 |
| **3** | 3.8 | 65 | **LA9LB920** (2) | **GV2L08** | 4 | 51 | **LC1D25** | **LRD08** | 2.5…4 |
| **4** | 4.9 | 65 | **LA9LB920** (2) | **GV2L10** | 6.3 | 78 | **LC1D25** | **LRD10** | 4…6 |
| **5.5** | 6.7 | 65 | **LA9LB920** (2) | **GV2L14** | 10 | 138 | **LC1D32** | **LRD12** | 5.5…8 |
| **7.5** | 8.9 | 65 | **LA9LB920** (2) | **GV2L14** | 10 | 138 | **LC1D32** | **LRD14** | 7…10 |
| **9** | 10.6 | 65 | **LA9LB920** (2) | **GV2L16** | 14 | 170 | **LC1D32** | **LRD16** | 9…13 |
| **11** | 12.8 | 65 | **LA9LB920** (2) | **GV2L16** | 14 | 170 | **LC1D32** | **LRD16** | 9…13 |
| **15** | 17 | 65 | **LA9LB920** (2) | **GV2L20** | 18 | 223 | **LC1D32** | **LRD21** | 12…18 |
| **18.5** | 21 | 65 | **LA9LB920** (2) | **GV2L22** | 25 | 327 | **LC1D32** | **LRD22** | 16…24 |
| **22** | 24 | 65 | **LA9LB920** (2) | **GV2L22** | 25 | 327 | **LC1D32** | **LRD32** | 23…32 |
| **22** | 24 | 65 | **LA9LB920** (2) | **GV2L32** | 32 | 416 | **LC1D40A** | **LRD332** | 23…32 |

*(1) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(2) For more information about the current limiter **LA9LB920,** see pages A4/31 and A4/61.*

# Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 0.06 to 250 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Circuit breaker | | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | Reference | Rating | Irm (1) | Reference (2) | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | A | A | | | A |
| **18.5** | 35 | 50 | – | – | – | – | – | – | **GV3L40** | 40 | 560 | **LC1D50A** | **LRD340** | 30…40 |
| – | – | – | **18.5** | 32.5 | 50 | – | – | – | **GV3L40** | 40 | 560 | **LC1D65A** | **LRD340** | 30…40 |
| **22** | 41 | 50 | – | – | – | – | – | – | **GV3L50** | 50 | 700 | **LC1D50A** | **LRD350** | 37…50 |
| – | – | – | **22** | 39 | 50 | **30** | 44 | 10 | **GV3L50** | 50 | 700 | **LC1D65A** | **LRD350** | 37…50 |
| **30** | 55 | 50 | **30** | 51.5 | 50 | **37** | 53 | 10 | **GV3L65** | 65 | 910 | **LC1D65A** | **LRD365** | 48…65 |
| **37** | 66 | 50 | – | – | – | – | – | – | **GV3L73** | 73 | 1120 | **LC1D80A** | **LRD380** | 62...80 |
| **45** | 60 | 50 | – | – | – | – | – | – | **GV3L80** | 80 | 1120 | **LC1D95** | **LRD3363** | 63...80 |
| – | – | – | **37** | 64 | 70 | – | – | – | **GV4L80** | 80 | 880 | **LC1D65A** | **LRD365** | 48…65 |
| **37** | 66 | 100 | **45** | 76 | 70 | (4) | (4) | (4) | **GV4L80** | 80 | 1040 | **LC1D80** | **LRD3363** | 63…80 |
| **45** | 80 | 100 | **55** | 90 | 70 | (4) | (4) | (4) | **GV4L115** | 115 | 1380 | **LC1D115** | **LR9D5367** | 60…100 |
| **55** | 97 | 100 | – | – | – | (4) | (4) | (4) | **GV4L115** | 115 | 1495 | **LC1D115** | **LR9D5369** | 90…150 |
| – | – | – | – | – | – | **55** | 78 | (3) | **NSX100●MA** (3) | 100 | 1040 | **LC1D80** | **LRD3363** | 63…80 |
| **45** | 80 | (3) | **55** | 90 | (3) | – | – | – | **NSX100●MA** (3) | 100 | 1300 | **LC1D115** | **LR9D5367** | 60…100 |
| **55** | 97 | (3) | – | – | – | – | – | – | **NSX160●MA** (3) | 150 | 1500 | **LC1D115** | **LR9D5369** | 90…150 |
| – | – | – | – | – | – | **75** | 106 | (3) | **NSX160●MA** (3) | 150 | 1950 | **LC1D115** | **LR9D5369** | 90…150 |
| **75** | 132 | (3) | **75** | 125 | (3) | – | – | – | **NSX160●MA** (3) | 150 | 1950 | **LC1D150** | **LR9D5369** | 90…150 |
| – | – | – | **90** | 146 | (3) | – | – | – | **NSX160●MA** (3) | 150 | 1950 | **LC1D150** | **LR9D5369** | 90…150 |
| – | – | – | – | – | – | **90** | 128 | (3) | **NSX160●MA** (3) | 150 | 1200 | **LC1D150** | **LR9D5369** | 90…150 |

*(1) Irm: setting current of the magnetic trip.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*
*(3) Reference to be completed by replacing the ● with the breaking performance code:*

| Breaking performance Iq (kA) | NSX100●MA | | NSX160●MA and NSX250●MA | | NSX400● and NSX630● | |
|---|---|---|---|---|---|---|
| **400/415 V** | 36 | 70 | 36 | 70 | 70 | 150 |
| **440 V** | 35 | 65 | 35 | 65 | 65 | 130 |
| **500 V** | 25 | 50 | 25 | 50 | 50 | 70 |
| **660/690 V** | 8 | 10 | 8 | 10 | 20 | 20 |
| **Code** | **F** | **H** | **F** | **H** | **H** | **L** |

*(4) Please consult your regional sales office.*

## 45 to 335 kW at 400/415 V: type 2 coordination (with TeSys GV4 or ComPacT NSX circuit breakers and LR9G overload relays)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|
| 400/415 V | | | Product type (1) | Irm (2) | Product type | Product type | Ir setting (2) |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | | | A |
| 45 | 80 | 100 | GV4L/GV4LE115● | 1265 | LC1G115 | LR9G115 | 80 |
| 45 | 80 | 100 | NSX100● + MA | 1100 | LC1G115 | LR9G115 | 80 |
| 55 | 97 | 130 | GV4L/GV4LE115● | 1265 | LC1G115 | LR9G225 | 97 |
| 55 | 97 | 130 | NSX160● + MA | 1500 | LC1G115 | LR9G225 | 97 |
| 75 | 132 | 130 | NSX160● + MA | 1800 | LC1G150 | LR9G225 | 132 |
| 90 | 160 | 130 | NSX250● + MA | 2640 | LC1G185 | LR9G225 | 160 |
| 110 | 195 | 130 | NSX250● + MA | 2640 | LC1G225 | LR9G225 | 195 |
| 110 | 195 | 130 | NSX400● + MicroLogic 1.3 M | 3520 | LC1G265 | LR9G500 | 195 |
| 132 | 230 | 130 | NSX400● + MicroLogic 1.3 M | 3520 | LC1G265 | LR9G500 | 230 |
| 160 | 280 | 130 | NSX400● + MicroLogic 1.3 M | 3840 | LC1G330 | LR9G500 | 280 |
| 200 | 350 | 130 | NSX630● + MicroLogic 1.3 M | 5500 | LC1G400 | LR9G500 | 350 |
| 220 | 380 | 130 | NSX630● + MicroLogic 1.3 M | 5500 | LC1G500 | LR9G500 | 380 |
| 250 | 430 | 130 | NSX630● + MicroLogic 1.3 M | 6000 | LC1G500 | LR9G500 | 430 |
| 300 | 500 | 130 | NS800● + MicroLogic 5.0 LR OFF | 6400 | LC1G630 | LR9G630 | 500 |
| 335 | 575 | 130 | NS800● + MicroLogic 5.0 LR OFF | 7200 | LC1G630 | LR9G630 | 575 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV4L115●/ GV4LE115● | | | NSX100●/ NSX160●/ NSX250●/ NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | B | N | S | F | N | H | S | L | L |
| 400/415 V | 25 | 50 | 100 | 36 | 50 | 70 | 100 | 130 | 150 |

## 55 to 355 kW at 440 V: type 2 coordination (with TeSys GV4 or ComPacT NSX / NS circuit breakers and LR9G overload relays)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|
| 440 V | | | Product type (1) | Irm (2) | Product type | Product type | Ir setting (2) |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | | | A |
| 55 | 88 | 70 | GV4L/GV4LE115● | 1265 | LC1G115 | LR9G115 | 88 |
| 55 | 88 | 130 | NSX100● + MA | 1500 | LC1G115 | LR9G115 | 88 |
| 75 | 120 | 130 | NSX160● + MA | 1800 | LC1G150 | LR9G225 | 120 |
| 90 | 145 | 130 | NSX160● + MA | 2640 | LC1G150 | LR9G225 | 145 |
| 110 | 177 | 130 | NSX250● + MA | 2640 | LC1G185 | LR9G225 | 177 |
| 132 | 209 | 130 | NSX250● + MA | 2860 | LC1G225 | LR9G225 | 209 |
| 160 | 255 | 130 | NSX400● + MicroLogic 1.3 M | 3520 | LC1G265 | LR9G500 | 255 |
| 200 | 318 | 130 | NSX400● + MicroLogic 1.3 M | 4160 | LC1G330 | LR9G500 | 318 |
| 220 | 343 | 130 | NSX630● + MicroLogic 1.3 M | 5500 | LC1G400 | LR9G500 | 343 |
| 250 | 390 | 130 | NSX630● + MicroLogic 1.3 M | 5500 | LC1G400 | LR9G500 | 390 |
| 300 | 466 | 130 | NSX630● + MicroLogic 1.3 M | 6500 | LC1G500 | LR9G500 | 466 |
| 335 | 521 | 130 | NS800● + MicroLogic 5.0 LR OFF | 6400 | LC1G630 | LR9G630 | 521 |
| 355 | 554 | 130 | NS800● + MicroLogic 5.0 LR OFF | 7200 | LC1G630 | LR9G630 | 554 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV4L115●/ GV4LE115● | | | NSX100●/ NSX160●/ NSX250● | | | | | NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | B | N | S | F | N | H | S | L | F | N | H | S | L | L |
| 440 V | 20 | 50 | 70 | 35 | 50 | 65 | 100 | 130 | 30 | 42 | 65 | 100 | 130 | 150 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*

# Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 65 to 425 kW at 500 V: type 2 coordination (with TeSys GV4 or ComPacT NSX / NS circuit breakers and LR9G overload relays)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|
| 500 V | | | Product type (1) | Irm (2) | Product type | Product type | Ir setting (2) |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | | | A |
| 65 | 92 | 30 | GV4L/GV4LE115● | 1265 | LC1G115 | LR9G115 | 92 |
| 65 | 92 | 70 | NSX100● + MA100 | 1300 | LC1G115 | LR9G115 | 92 |
| 90 | 128 | 70 | NSX160● + MA150 | 1950 | LC1G150 | LR9G225 | 128 |
| 110 | 156 | 70 | NSX250● + MA220 | 2200 | LC1G185 | LR9G225 | 156 |
| 132 | 184 | 70 | NSX400● + MicroLogic 1.3 M | 2560 | LC1G225 | LR9G225 | 184 |
| 160 | 224 | 70 | NSX400● + MicroLogic 1.3 M | 3200 | LC1G265 | LR9G500 | 224 |
| 200 | 280 | 70 | NSX400● + MicroLogic 1.3 M | 3840 | LC1G330 | LR9G500 | 280 |
| 250 | 344 | 70 | NSX630● + MicroLogic 1.3 M | 5500 | LC1G400 | LR9G500 | 344 |
| 295 | 405 | 70 | NSX630● + MicroLogic 1.3 M | 6500 | LC1G500 | LR9G500 | 405 |
| 375 | 516 | 70 | NS800● + MicroLogic 5.0 LR OFF | 6400 | LC1G630 | LR9G630 | 516 |
| 425 | 584 | 70 | NS800● + MicroLogic 5.0 LR OFF | 7200 | LC1G800 | LR9G630 | 584 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV4L115●/ GV4LE115● | | | NSX100● | | | | | NSX160●/ NSX250● | | | | | NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | B | N | S | F | N | H | S | L | F | N | H | S | L | F | N | H | S | L | L |
| 500 V | 10 | 25 | 30 | 25 | 36 | 50 | 65 | 70 | 30 | 36 | 50 | 65 | 70 | 25 | 30 | 50 | 65 | 70 | 100 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*

# Coordination: Magnetic circuit breaker + Contactor + Overload relay

## 0.06 to 30 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Circuit breaker | | | Contactor | Electronic thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 690 V | | | Reference | Rating | Irm | Reference | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | | A | A | | | A |
| **0.06** | 0.2 | 100 | **–** | – | – | **GV2L03** | 0.4 | 5 | **LC1D09** | **LR9D01** | 0.1…0.5 |
| **0.09** | 0.3 | 100 | **–** | – | – | **GV2L03** | 0.4 | 5 | **LC1D09** | **LR9D01** | 0.1…0.5 |
| **0.12** | 0.44 | 100 | **–** | – | – | **GV2L04** | 0.63 | 8 | **LC1D18** | **LR9D02** | 0.4…2.0 |
| **0.18** | 0.6 | 100 | **–** | – | – | **GV2L04** | 0.63 | 8 | **LC1D18** | **LR9D02** | 0.4…2.0 |
| **0.25** | 0.85 | 100 | **–** | – | – | **GV2L05** | 1 | 13 | **LC1D18** | **LR9D02** | 0.4…2.0 |
| **0.37** | 1.1 | 100 | **–** | – | – | **GV2L05** | 1 | 13 | **LC1D18** | **LR9D02** | 0.4…2.0 |
| **0.55** | 1.5 | 100 | **–** | – | – | **GV2L06** | 1.6 | 22.5 | **LC1D18** | **LR9D02** | 0.4…2.0 |
| **0.75** | 1.9 | 100 | **–** | – | – | **GV2L07** | 2.5 | 33.5 | **LC1D18** | **LR9D08** | 1.6…8.0 |
| **1.1** | 2.7 | 100 | **–** | – | – | **GV2L08** | 4 | 51 | **LC1D18** | **LR9D08** | 1.6…8.0 |
| **1.5** | 3.6 | 100 | **–** | – | – | **GV2L08** | 4 | 51 | **LC1D18** | **LR9D08** | 1.6…8.0 |
| **2.2** | 4.9 | 100 | **–** | – | – | **GV2L10** | 6.3 | 78 | **LC1D18** | **LR9D08** | 1.6…8.0 |
| **3** | 6.5 | 100 | **–** | – | – | **GV2L14** | 10 | 138 | **LC1D25** | **LR9D32** | 6.4…32 |
| **4** | 8.5 | 100 | **–** | – | – | **GV2L14** | 10 | 138 | **LC1D25** | **LR9D32** | 6.4…32 |
| **5.5** | 11.5 | 100 | **–** | – | – | **GV2L16** | 14 | 170 | **LC1D25** | **LR9D32** | 6.4…32 |
| **7.5** | 15.5 | 50 | **–** | – | – | **GV2L20** | 18 | 223 | **LC1D25** | **LR9D32** | 6.4…32 |
| **11** | 22 | 50 | **–** | – | – | **GV2L22** | 25 | 327 | **LC1D25** | **LR9D32** | 6.4…32 |
| **15** | 29 | 50 | **–** | – | – | **GV3L32** | 40 | 448 | **LC1D65A** | **LR9D110S** | 22…110 |
| **18.5** | 35 | 50 | **–** | – | – | **GV3L40** | 40 | 560 | **LC1D65A** | **LR9D110S** | 22…110 |
| **22** | 41 | 50 | **–** | – | – | **GV3L50** | 50 | 700 | **LC1D65A** | **LR9D110S** | 22…110 |
| **30** | 55 | 50 | **–** | – | – | **GV3L65** | 65 | 910 | **LC1D65A** | **LR9D110S** | 22…110 |
| **–** | – | – | **0.37** | 0.64 | 50 | **GV2L05** | 1 | 13 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **–** | – | – | **0.55** | 0.87 | 50 | **GV2L05** | 1 | 13 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **–** | – | – | **0.75** | 1.1 | 50 | **GV2L06** | 1.6 | 22.5 | **LC1D09** | **LR9D02** | 0.4…2.0 |
| **–** | – | – | **1.1** | 1.6 | 50 | **GV2L07 + LA9LB920** (1) | 2.5 | 33.5 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **1.5** | 2.1 | 50 | **GV2L07 + LA9LB920** (1) | 2.5 | 33.5 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **2.2** | 2.8 | 50 | **GV2L08 + LA9LB920** (1) | 4 | 51 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **3** | 4 | 50 | **GV2L08 + LA9LB920** (1) | 4 | 51 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **4** | 5 | 50 | **GV2L10 + LA9LB920** (1) | 6.3 | 78 | **LC1D25** | **LR9D08** | 1.6…8.0 |
| **–** | – | – | **5.5** | 7 | 50 | **GV2L14 + LA9LB920** (1) | 10 | 138 | **LC1D25** | **LR9D32** | 6.4…32 |
| **–** | – | – | **7.5** | 8.9 | 50 | **GV2L14 + LA9LB920** (1) | 10 | 138 | **LC1D25** | **LR9D32** | 6.4…32 |
| **–** | – | – | **11** | 13 | 3 | **GV2L16 + LA9LB920** (1) | 14 | 252 | **LC1D32** | **LR9D32** | 6.4…32 |
| **–** | – | – | **15** | 16.5 | 3 | **GV2L22 + LA9LB920** (1) | 18 | 327 | **LC1D32** | **LR9D32** | 6.4…32 |
| **–** | – | – | **18.5** | 21 | 3 | **GV3L25 + LA9LB920** (1) | 25 | 350 | **LC1D65A** | **LR9D32** | 6.4…32 |
| **–** | **–** | **–** | **22** | 25 | 3 | **GV2L32 + LA9LB920** (1) | 32 | 416 | **LC1D65A** | **LR9D32** | 6.4…32 |

*(1) For more information about the current limiter **LA9LB920**, see pages A4/31 and A4/61.*

## 30 to 500 kW at 690 V: type 2 coordination (with ComPacT NSX / NS circuit breakers and LR9G overload relays)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | Contactor | Thermal overload relay | |
|---|---|---|---|---|---|---|---|
| 690 V | | | Product type (1) | Irm (2) | Product type | Product type | Ir setting (2) |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | | | A |
| **30** | 32 | 100 | **NSX100● + MA** | 550 | **LC1G115** | **LR9G115** | 32 |
| **37** | 39 | 100 | **NSX100● + MA** | 550 | **LC1G115** | **LR9G115** | 39 |
| **45** | 47 | 100 | **NSX100● + MA** | 650 | **LC1G115** | **LR9G115** | 47 |
| **55** | 57 | 100 | **NSX100● + MA** | 1100 | **LC1G115** | **LR9G115** | 57 |
| **75** | 77 | 100 | **NSX100● + MA** | 1100 | **LC1G115** | **LR9G225** | 77 |
| **90** | 93 | 100 | **NSX250● + MA** | 1650 | **LC1G150** | **LR9G225** | 93 |
| **110** | 113 | 100 | **NSX250● + MA** | 1650 | **LC1G185** | **LR9G225** | 113 |
| **132** | 134 | 100 | **NSX250● + MA** | 1800 | **LC1G225** | **LR9G225** | 134 |
| **160** | 162 | 100 | **NSX250● + MA** | 2420 | **LC1G225** | **LR9G225** | 162 |
| **200** | 203 | 100 | **NSX250● + MA** | 2640 | **LC1G265** | **LR9G500** | 203 |
| **220** | 223 | 100 | **NSX400● + MicroLogic 1.3 M** | 3520 | **LC1G330** | **LR9G500** | 223 |
| **250** | 250 | 100 | **NSX400● + MicroLogic 1.3 M** | 3520 | **LC1G400** | **LR9G500** | 250 |
| **315** | 313 | 100 | **NSX630● + MicroLogic 1.3 M** | 5500 | **LC1G400** | **LR9G500** | 313 |
| **335** | 335 | 100 | **NSX630● + MicroLogic 1.3 M** | 5500 | **LC1G500** | **LR9G500** | 335 |
| **355** | 354 | 100 | **NSX630● + MicroLogic 1.3 M** | 5500 | **LC1G500** | **LR9G500** | 354 |
| **375** | 374 | 100 | **NSX630● + MicroLogic 1.3 M** | 5500 | **LC1G630** | **LR9G630** | 374 |
| **400** | 400 | 100 | **NSX630● + MicroLogic 1.3 M** | 5500 | **LC1G630** | **LR9G630** | 400 |
| **450** | 455 | 100 | **NSX630● + MicroLogic 1.3 M** | 6000 | **LC1G630** | **LR9G630** | 455 |
| **475** | 475 | 100 | **NSX630● + MicroLogic 1.3 M** | 6500 | **LC1G630** | **LR9G630** | 475 |
| **500** | 493 | 100 | **NSX630● + MicroLogic 1.3 M** | 6500 | **LC1G630** | **LR9G630** | 493 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX100●/ NSX250●/ NSX400●/ NSX630● | |
|---|---|---|
| Breaking performance code | HB1 | HB2 |
| 690 V | 75 | 100 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*

## 1.5 to 315 kW at 400/415 V: type 1 coordination

**Maximum operating rate:** LC3K: 12 starts/hour; LC3D: 30 starts/hour.
**Maximum starting time:** LC3K and LC3D: 30 seconds.

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | Fuse carrier (basic block) | aM fuses | | Star-delta contactors | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | | 440 V | | | | Reference | Size | Rating | Reference | Reference | Setting range |
| P | Ie | IrD (1) | Iq | P | Ie | IrD (1) | Iq | | | | | | |
| kW | A | A | kA | kW | A | A | kA | | | A | | | A |
| 1.5 | 3.5 | 2 | 50 | 1.5 | 3.06 | 2 | 50 | LS1D32 | 10 x 38 | 4 | LC3K06 | LR2K0308 | 1.8…2.6 |
| 2.2 | 5 | 3 | 50 | – | – | – | – | LS1D32 | 10 x 38 | 6 | LC3K06 | LR2K0310 | 2.6…3.7 |
| – | – | – | – | 2.2 | 4.42 | 3 | 50 | | | | | | |
| – | – | – | – | 3 | 5.77 | 3 | 50 | LS1D32 | 10 x 38 | 8 | LC3K06 | LR2K0310 | 2.6…3.7 |
| 3 | 6.5 | 4 | 50 | – | – | – | – | LS1D32 | 10 x 38 | 8 | LC3K06 | LR2K0312 | 3.7…5.5 |
| 4 | 8.4 | 5 | 50 | 4 | 7.9 | 5 | 50 | LS1D32 | 10 x 38 | 12 | LC3K06 | LR2K0312 | 3.7…5.5 |
| 5.5 | 11 | 6 | 50 | 5.5 | 10.4 | 6 | 50 | LS1D32 | 10 x 38 | 16 | LC3K06 | LR2K0314 | 5.5…8 |
| 7.5 | 14.8 | 9 | 50 | 7.5 | 13.7 | 8 | 50 | LS1D32 | 10 x 38 | 16 | LC3K09 | LR2K0316 | 8…11.5 |
| 9 | 18.1 | 10 | 100 | 9 | 16.9 | 10 | 50 | LS1D32 | 10 x 38 | 20 | LC3D12A | LRD16 | 9…13 |
| 11 | 21 | 12 | 100 | 11 | 20.1 | 12 | 100 | GK1EK | 14 x 51 | 25 | LC3D12A | LRD16 | 9…13 |
| 15 | 28.5 | 16 | 100 | 15 | 26.5 | 15 | 100 | GK1EK | 14 x 51 | 32 | LC3D18A | LRD21 | 12…18 |
| 18.5 | 35 | 20 | 100 | 18.5 | 32.8 | 19 | 100 | GK1EK | 14 x 51 | 40 | LC3D18A | LRD22 | 16…24 |
| – | – | – | – | 22 | 39 | 23 | 100 | GS●J | 22 x 58 | 50 | LC3D18A | LRD22 | 16…24 |
| 22 | 42 | 24 | 100 | – | – | – | – | GS●J | 22 x 58 | 50 | LC3D32A | LRD32 | 23…32 |
| – | – | – | – | 30 | 51.5 | 30 | 100 | GS●J | 22 x 58 | 63 | LC3D32A | LRD32 | 23…32 |
| 30 | 57 | 33 | 100 | 37 | 64 | 37 | 100 | GS●J | 22 x 58 | 80 | 3 x LC1D40A | LRD340 | 30…40 |
| 37 | 69 | 40 | 100 | – | – | – | – | GS●J | 22 x 58 | 80 | 3 x LC1D40A | LRD350 | 37…50 |
| – | – | – | – | 45 | 76 | 44 | 100 | GS●J | 22 x 58 | 80 | 3 x LC1D50A | LRD350 | 37…50 |
| 45 | 81 | 47 | 100 | – | – | – | – | GS●J | 22 x 58 | 100 | 3 x LC1D50A | LRD350 | 37…50 |
| – | – | – | – | 55 | 90 | 52 | 100 | GS●K | 22 x 58 | 100 | 3 x LC1D50A | LRD365 | 48…65 |
| 55 | 100 | 58 | 100 | – | – | – | – | GS●K | 22 x 58 | 125 | 3 x LC1D65A | LRD365 | 48…65 |
| 75 | 135 | 78 | 100 | 75 | 125 | 72 | 100 | GS●L | T0 | 160 | LC3D80 | LRD3363 | 63…80 |
| – | – | – | – | 90 | 146 | 84 | 100 | GS●L | T0 | 160 | LC3D115 | LRD4365 | 80…104 |
| 90 | 165 | 95 | 100 | – | – | – | – | GS●N | T1 | 200 | LC3D115 | LRD4367 | 95…120 |
| 110 | 200 | 115 | 100 | 110 | 178 | 103 | 100 | GS●N | T1 | 200 | LC3D115 | LRD4367 | 95…120 |
| 132 (2) | 240 | 139 | 100 | 132 (2) | 215 | 124 | 100 | GS●QQ | T2 | 250 | LC3D150 | LRD4369 | 110…140 |

*(1) IrD: current in the motor windings in delta connection.*
*(2) Please refer to Type 2 coordination tables for higher ratings.*

## 1.5 to 355 kW at 400/415 V: type 2 coordination

**Maximum operating rate:** LC1D: 30 starts/hour; LC1F: 12 starts/hour.
**Maximum starting time:** LC1D: 30 seconds; LC1F: 20 seconds.

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Switch-disconnector-fuse | aM fuses | | Star-delta contactors | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | Reference | Size | Rating | Reference | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | | | A | | | A |
| **1.5** | 3.5 | 50 | **1.5** | 3.06 | 50 | **GS1DD** | 10 x 38 | 4 | 3 x **LC1D09** | **LRD08** | 2.5…4 |
| **2.2** | 5 | 50 | **2.2** | 4.42 | 50 | **GS1DD** | 10 x 38 | 6 | 3 x **LC1D09** | **LRD10** | 4…6 |
| **3** | 6.5 | 50 | **3** | 5.77 | 50 | **GS1DD** | 10 x 38 | 8 | 3 x **LC1D09** | **LRD12** | 5.5…8 |
| **4** | 8.4 | 50 | **4** | 7.9 | 50 | **GS1DD** | 10 x 38 | 10 | 3 x **LC1D09** | **LRD14** | 7…10 |
| **5.5** | 11 | 50 | **5.5** | 10.4 | 50 | **GS1DD** | 10 x 38 | 16 | 3 x **LC1D12** | **LRD16** | 9…13 |
| **7.5** | 14.8 | 50 | **7.5** | 13.7 | 50 | **GS1DD** | 10 x 38 | 16 | 3 x **LC1D18** | **LRD21** | 12…18 |
| **9**<br>**11** | 18.1<br>21 | 100<br>100 | **9**<br>**11** | 16.9<br>20.1 | 100<br>100 | **GS●F** | 14 x 51 | 25 | 3 x **LC1D25** | **LRD22** | 16…24 |
| **15** | 28.5 | 100 | **15** | 26.5 | 100 | **GS●F** | 14 x 51 | 32 | 3 x **LC1D32** | **LRD32** | 23…32 |
| **18.5** | 35 | 100 | **18.5** | 32.8 | 100 | **GS●F** | 14 x 51 | 40 | 3 x **LC1D40A** | **LRD340** | 30…40 |
| **22** | 42 | 100 | **22** | 39 | 100 | **GS●J** | 22 x 58 | 50 | 3 x **LC1D50A** | **LRD350** | 37…50 |
| **30** | 57 | 100 | **30** | 51.5 | 100 | **GS●J** | 22 x 58 | 80 | 3 x **LC1D65A** | **LRD365** | 48…65 |
| **37** | 69 | 100 | **37** | 64 | 100 | **GS●J** | 22 x 58 | 80 | 3 x **LC1D80** | **LRD3363** | 63…80 |
| – | – | – | **45** | 76 | 100 | **GS●J** | 22 x 58 | 80 | 3 x **LC1D80** | **LRD3365** | 80…104 |
| **45** | 81 | 100 | – | – | – | **GS●J** | 22 x 58 | 100 | 3 x **LC1D115** | **LR9D5367** | 60…100 |
| – | – | – | **55** | 90 | 100 | **GS●L** | T0 | 125 | 3 x **LC1D115** | **LR9D5369** | 90…150 |
| **55** | 100 | 100 | – | – | – | **GS●L** | T0 | 125 | 3 x **LC1D150** | **LR9D5369** | 90…150 |
| – | – | – | **75** | 125 | 100 | **GS●L** | T0 | 160 | 3 x **LC1D150** | **LR9D5369** | 90…150 |
| **355** | 605 | 100 | – | – | – | **GS2V** | T4 | 800 | 3 x **LC1F780** | **LR9F7381** | 380…630 |

# Coordination: Star-delta with Fuses (DIN type aM) + Contactors + Overload relay

Contactor: **Maximum operating rate**: 30 starts/hour - **Maximum starting time**: 30 seconds.
The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact your technical support.
**RE17RMMWS** timer to be used for Star-Delta starter application.

## 90 to 335 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Switch-disconnector | aM fuses | | Contactor Line (KM2) / Delta (KM3) (1) | Contactor Star (KM1) (1) | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | Product type | Size | Rating | Product type | | Product type | Ir setting (2) |
| P | Ie | Iq (max) | | | | | | | |
| kW | A | kA | | | A | | | | A |
| 90 | 160 | 80 | GS●N | 1 | 200 | LC1G115 | LC1D65 | LR9G115 | 92 |
| 110 | 195 | 80 | GS●N | 1 | 250 | LC1G150 | LC1D80 | LR9G225 | 113 |
| 132 | 230 | 80 | GS●QQ | 2 | 315 | LC1G185 | LC1G115 | LR9G225 | 133 |
| 160 | 280 | 80 | GS●QQ | 2 | 400 | LC1G225 | LC1G115 | LR9G225 | 162 |
| 200 | 350 | 80 | GS2●S | 3 | 500 | LC1G265 | LC1G115 | LR9G225 | 202 |
| 220 | 380 | 80 | GS2●S | 3 | 500 | LC1G330 | LC1G150 | LR9G500 | 219 |
| 250 | 430 | 80 | GS2●S | 3 | 500 | LC1G400 | LC1G150 | LR9G500 | 248 |
| 315 | 540 | 80 | GS2●S | 3 | 630 | LC1G500 | LC1G225 | LR9G500 | 312 |
| 335 | 575 | 80 | GS2●V | 4 | 800 | LC1G500 | LC1G225 | LR9G500 | 332 |

## 110 to 400 kW at 440 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Switch-disconnector | aM fuses | | Contactor Line (KM2) / Delta (KM3) (1) | Contactor Star (KM1) (1) | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|
| 440 V | | | Product type | Size | Rating | Product type | | Product type | Ir setting (2) |
| P | Ie | Iq max | | | | | | | |
| kW | A | kA | | | A | | | | A |
| 110 | 177 | 80 | GS●N | 1 | 200 | LC1G115 | LC1D65 | LR9G115 | 102 |
| 132 | 209 | 80 | GS●N | 1 | 250 | LC1G150 | LC1D80 | LR9G225 | 121 |
| 160 | 255 | 80 | GS●QQ | 2 | 315 | LC1G150 | LC1G115 | LR9G225 | 147 |
| 200 | 318 | 80 | GS●QQ | 2 | 400 | LC1G185 | LC1G115 | LR9G225 | 184 |
| 220 | 343 | 80 | GS2●S | 3 | 500 | LC1G225 | LC1G115 | LR9G225 | 198 |
| 250 | 390 | 80 | GS2●S | 3 | 500 | LC1G265 | LC1G150 | LR9G500 | 225 |
| 315 | 490 | 80 | GS2●S | 3 | 500 | LC1G330 | LC1G185 | LR9G500 | 283 |
| 355 | 554 | 80 | GS2●S | 3 | 630 | LC1G330 | LC1G225 | LR9G500 | 320 |
| 400 | 627 | 80 | GS2●V | 4 | 800 | LC1G400 | LC1G225 | LR9G500 | 362 |

## 90 to 315 kW at 500 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Switch-disconnector | aM fuses | | Contactor Line (KM2) / Delta (KM3) (1) | Contactor Star (KM1) (1) | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|
| 500 V | | | Product type | Size | Rating | Product type | | Product type | Ir setting (2) |
| P | Ie | Iq max | | | | | | | |
| kW | A | kA | | | A | | | | A |
| 90 | 128 | 80 | GS●N | 1 | 200 | LC1G115 | LC1D65 | LR9G115 | 74 |
| 110 | 156 | 80 | GS●N | 1 | 250 | LC1G115 | LC1D65 | LR9G115 | 90 |
| 132 | 184 | 80 | GS●QQ | 2 | 315 | LC1G115 | LC1D65 | LR9G225 | 106 |
| 160 | 224 | 80 | GS●QQ | 2 | 400 | LC1G150 | LC1D80 | LR9G225 | 129 |
| 200 | 280 | 80 | GS2●S | 3 | 500 | LC1G185 | LC1G115 | LR9G225 | 162 |
| 220 | 308 | 80 | GS2●S | 3 | 500 | LC1G185 | LC1G115 | LR9G500 | 178 |
| 250 | 344 | 80 | GS2●S | 3 | 500 | LC1G225 | LC1G150 | LR9G500 | 199 |
| 315 | 432 | 80 | GS2●S | 3 | 630 | LC1G265 | LC1G185 | LR9G630 | 249 |

*(1) Refer to diagram page A5/40.*
*(2) This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.*

# Coordination: Star-delta with BS fuses + Contactors + Overload relay

## 1.5 to 375 kW at 415 V: type 2 coordination

**Maximum operating rate:** LC1D: 30 starts/hour.
**Maximum starting time:** LC1D: 30 seconds.

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Switch-disconnector-fuse | BS fuses | | Star-delta contactors | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 415 V | | | 440 V | | | Reference | Size | Rating | Reference | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | | | A | | | A |
| **1.5** | 3.5 | 50 | **1.5** | 3.06 | 50 | **GS1DDB** | A1 | NIT 16 | 3 x **LC1D09** | **LRD08** | 2.5…4 |
| **2.2** | 5 | 50 | **2.2** | 4.42 | 50 | **GS1DDB** | A1 | NIT 16 | 3 x **LC1D09** | **LRD10** | 4…6 |
| **3** | 6.5 | 50 | **3** | 5.77 | 50 | **GS1DDB** | A1 | NIT 20 | 3 x **LC1D09** | **LRD12** | 5.5…8 |
| **4** | 8.4 | 50 | **4** | 7.9 | 50 | **GS1DDB** | A1 | NIT 20 | 3 x **LC1D09** | **LRD14** | 7…10 |
| **5.5** | 11 | 50 | **5.5** | 10.4 | 50 | **GS1DDB** | A1 | NIT 20M25 | 3 x **LC1D12** | **LRD16** | 9…13 |
| **7.5** | 14.8 | 50 | **7.5** | 13.7 | 50 | **GS1DDB** | A1 | NIT 20M32 | 3 x **LC1D18** | **LRD21** | 12…18 |
| **9** | 18.1 | 50 | **9** | 16.9 | 50 | **GS2GB** | A2 | TIA 32M35 | 3 x **LC1D18** | **LRD21** | 12…18 |
| **11** | 21 | 50 | **11** | 20.1 | 50 | **GS2GB** | A2 | TIA 32M50 | 3 x **LC1D25** | **LRD22** | 16…24 |
| **15** | 28.5 | 50 | **15** | 26.5 | 50 | **GS2GB** | A2 | TIA 32M63 | 3 x **LC1D32** | **LRD32** | 23…32 |
| **22** | 42 | 50 | **22** | 39 | 50 | **GS2GB** | A3 | TIS 63M80 | 3 x **LC1D50A** | **LRD350** | 37…50 |
| **–** | – | – | **30** | 51.5 | 50 | **GS2GB** | A3 | TIS 63M100 | 3 x **LC1D65A** | **LRD365** | 48…65 |
| **30** | 57 | 50 | **–** | – | – | **GS2GB** | A3 | TIS 63M100 | 3 x **LC1D65A** | **LRD365** | 48…65 |
| **45** | 81 | 50 | **45** | 76 | 50 | **GS2LLB** | A4 | TCP 100M125 | 3 x **LC1D80** | **LRD3363** | 63…80 |
| **55** | 100 | 80 | **55** | 90 | 80 | **GS2LLB** | A4 | TCP 100M160 | 3 x **LC1D115** | **LR9D5369** | 90…150 |
| **80** | 138 | 80 | **80** | 132 | 80 | **GS2LB** | B2 | TF 200M250 | 3 x **LC1D150** | **LR9D5369** | 90…150 |

## 1.5 to 250 kW at 400/415 V and 440 V: type 1 coordination

**Maximum operating rate:** LC3K: 12 starts/hour; LC3D: 30 starts/hour.
**Maximum starting time:** 30 seconds.

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | | Circuit breaker | | Star-delta contactors |
|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | | 440 V | | | | Reference *References in italics are available in CEE zone only* | Setting range of thermal trips | Reference |
| P | Ie | IrD (1) | Iq (2) | P | Ie | IrD (1) | Iq (2) | | | |
| kW | A | A | kA | kW | A | A | kA | | A | |
| **1.5** | 3.6 | 2 | 50 | **1.5** | 3.06 | 1.8 | 50 | **GV2ME08**<br>*GV2ME08AP* | 2.5…4 | **LC3K06** |
| **2.2**<br>– | 4.9<br>– | 2.9<br>– | 50<br>– | **2.2**<br>**3** | 4.42<br>5.77 | 2.6<br>3.3 | 50<br>50 | **GV2ME10**<br>*GV2ME10AP* | 4…6.3 | **LC3K06** |
| **3**<br>**4** | 6.5<br>8.5 | 3.8<br>4.9 | 50<br>50 | –<br>**4** | –<br>7.9 | –<br>4.6 | –<br>15 | **GV2ME14**<br>*GV2ME14AP* | 6…10 | **LC3K06** |
| **5.5** | 11.5 | 6.4 | 15 | **5.5** | 10.4 | 6 | 8 | **GV2ME16**<br>*GV2ME16AP* | 9…14 | **LC3K06** |
| **7.5** | 15.5 | 8.6 | 15 | **7.5** | 13.7 | 7.9 | 8 | **GV2ME20**<br>*GV2ME20AP* | 13…18 | **LC3K09** |
| – | – | – | – | **9** | 16.9 | 9.8 | 8 | **GV2ME20**<br>*GV2ME20AP* | 13…18 | **LC3D12A** |
| **9** | 18.1 | 10 | 15 | **11** | 20.1 | 12 | 6 | **GV2ME21**<br>*GV2ME21AP* | 17…23 | **LC3D12A** |
| **11** | 22 | 12 | 15 | – | – | – | – | **GV2ME22**<br>*GV2ME22AP* | 20…25 | **LC3D12A** |
| **15** | 29 | 17 | 10 | **15** | 26.5 | 15 | 6 | **GV2ME32**<br>*GV2ME32AP* | 24…32 | **LC3D18A** |
| **18.5** | 35 | 20 | 50 | **18.5** | 32.8 | 19 | 50 | **GV3P40** | 30…40 | **LC3D18A** |
| – | – | – | – | **22** | 39 | 23 | 50 | **GV3P50** | 37…50 | **LC3D32A** |
| **22** | 41 | 24 | 50 | **30** | 51.5 | 30 | 50 | **GV3P50** | 37…50 | **LC3D32A** |
| **30** | 55 | 33 | 50 | **30** | 51.5 | 30 | 50 | **GV3P65** | 48…65 | **LC3D32A** |
| **37** | 66 | 40 | 50 | **37** | 64 | 37 | 50 | **GV3P65** | 48…65 | 3 x **LC1D40A** (3) |
| **37** | 66 | 40 | 100 | **37** | 64 | 37 | 70 | **GV4P80** | 40…80 | 3 x **LC1D40A** (3) |
| – | – | – | – | **45** | 76 | 44 | 70 | **GV4P80** | 40…80 | 2 x **LC1D50A**<br>**+1 x LC1D40A** (3) |
| **45** | 80 | 47 | 100 | – | – | – | – | **GV4P115** | 65…115 | 2 x **LC1D50A**<br>**+1 x LC1D40A** (3) |
| **55** | 97 | 58 | 100 | **55** | 90 | 52 | 70 | **GV4P115** | 65…115 | 2 x **LC1D65A**<br>**+1 x LC1D40A** (3) |
| **75** | 132 | 78 | 35 | **75** | 125 | 72 | 35 | **GV5P150F** | 70…150 | **LC3D80** |
| – | – | – | – | **90** | 146 | 84 | 35 | **GV5P150F** | 0…150 | **LC3D115** |
| **90**<br>**110** | 160<br>195 | 95<br>115 | 35<br>35 | **110** | 178 | 103 | 35 | **GV5P220F** | 100…220 | **LC3D115** |
| – | – | – | – | **132** (4) | 215 | 124 | 35 | **GV5P220F** | 100…220 | **LC3D150** |
| **132** (4) | 230 | 135 | 36 | – | – | – | – | **GV6P320F** | 160...320 | **LC3D150** |

*(1) IrD: current in the motor windings in delta connection.*
*(2) The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/23.*
*(3) For mounting 3 contactors **LC1D●●A**, star-delta starter kit **LAD9SD3** must be ordered separately, see page B8/43.*
*(4) Please refer to Type 2 coordination tables for higher ratings.*

## 1.5 to 90 kW at 400/415 V and 440 V: type 2 coordination

**Maximum operating rate:** LC1D: 30 starts/hour.
**Maximum starting time:** LC1D: 30 seconds.

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | | Circuit breaker | | Star-delta contactors |
|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | | 440 V | | | | Reference | Setting range of thermal trips | Reference |
| P | Ie | IrD (7) | Iq | P | Ie | IrD (7) | Iq (1) | | | |
| kW | A | A | kA | kW | A | A | kA | | A | |
| **1.5** | 3.6 | – | 130 | **1.5** | 3.06 | – | 130 | **GV2P08** | 2.5…4 | 3 x **LC1D09** (2) |
| **2.2** | 4.9 | – | 130 | **2.2** | 4.42 | – | 130 | **GV2P10** | 4…6.3 | 3 x **LC1D18** (3) |
| – | – | – | – | **3** | 5.77 | – | 130 | **GV2P10** | 4...6.3 | 3 x **LC1D18** (3) |
| **3** | 6.5 | – | 130 | – | – | – | – | **GV2P14** | 6…10 | 3 x **LC1D18** (3) |
| **4** | 8.5 | – | 130 | **4** | 7.9 | – | 130 | **GV2P14** | 6…10 | 3 x **LC1D18** (3) |
| **5.5** | 11.5 | – | 130 | **5.5** | 10.4 | – | 50 | **GV2P16** | 9…14 | 3 x **LC1D25** (3) |
| – | – | – | – | **7.5** | 13.7 | – | 50 | **GV2P16** | 9…14 | 3 x **LC1D25** (3) |
| **7.5** | 15.5 | – | 50 | **9** | 16.9 | – | 20 | **GV2P20** | 13…18 | 3 x **LC1D25** (3) |
| **9** | 18.1 | – | 50 | **11** | 20.1 | – | 20 | **GV2P21** | 17…23 | 3 x **LC1D25** (3) |
| **11** | 22 | – | 50 | – | – | – | – | **GV2P22** | 20…25 | 3 x **LC1D25** (3) |
| **15** | 29 | – | 50 | **15** | 26.5 | – | 50 | **GV3P32** | 23…32 | 3 x **LC1D40A** (4) |
| **18.5** | 35 | – | 50 | – | – | – | – | **GV3P40** | 30…40 | 2 x **LC1D50A** **+1 x LC1D40A** (3) |
| – | – | – | – | **18.5** | 32.8 | – | 50 | **GV3P40** | 30…40 | 2 x **LC1D65A** **+1 x LC1D40A** (4) |
| **22** | 41 | – | 50 | – | – | – | – | **GV3P50** | 37…50 | 2 x **LC1D50A** **+1 x LC1D40A** (3) |
| – | – | – | – | **22** | 39 | – | 50 | **GV3P50** | 37…50 | 2 x **LC1D65A** **+1 x LC1D40A** (4) |
| **30** | 55 | – | 50 | **30** | 51.5 | – | 50 | **GV3P65** | 48…65 | 2 x **LC1D65A** **+1 x LC1D40A** (4) |
| **37** | 66 | – | 100 | **45** | 76 | – | 70 | **GV4P80** | 40…80 | 3 x **LC1D80** (5) |
| – | – | – | – | **37** | 64 | – | 70 | **GV4P80** | 40…80 | 3 x **LC1D65A** (4) |
| **45** | 80 | – | 100 | – | – | – | – | **GV4P115** | 65…115 | 3 x **LC1D115** (6) |
| **55** | 97 | – | 100 | **55** | 90 | – | 70 | **GV4P115** | 65…115 | 3 x **LC1D115** (6) |
| **75** | 132 | 78 | 70 | **75** | 125 | 74 | 65 | **GV5P150H** | 70…150 | 3 x **LC1D150** (6) |
| – | – | – | – | **90** | 146 | 86 | 65 | **GV5P150H** | 70…150 | 3 x **LC1D150** (6) |

*(1) The breaking performance of circuit breakers **GV2P** can be increased by adding a current limiter **GV1L3**, see page B6/54.*
*(2) For mounting 3 contactors **LC1D09**, star-delta starter kit **LAD91217** must be ordered separately, see page B8/43.*
*(3) For mounting 3 contactors **LC1D18** or **LC1D25**, star-delta starter kit **LAD93217** must be ordered separately, see page B8/43.*
*(4) For mounting 3 contactors **LC1D●●A**, star-delta starter kit **LAD9SD3** must be ordered separately, see page B8/43.*
*(5) For mounting 3 contactors **LC1D80**, star-delta starter kit **LA9D8017** must be ordered separately, see page B8/43.*
*(6) For mounting 3 contactors **LC1D115** or **LC1D150**, see page A2/13.*
*(7) IrD: current in the motor windings in delta connection.*

# Coordination: Star-delta with Thermal magnetic circuit breaker + Contactors

Contactor: **Maximum operating rate**: 30 starts/hour - **Maximum starting time**: 30 seconds.
The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact your technical support.
**RE17RMMWS** timer to be used for Star-Delta starter application.

## 90 to 250 kW at 400/415 V: type 2 coordination (with TeSys GV5 / GV6 circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | | Contactor Line (KM2) / Delta (KM3) [3] | Contactor Star (KM1) [3] |
|---|---|---|---|---|---|---|---|
| 400/415 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type | |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | A | | |
| **90** | 160 | 70 | **GV5P220●** | 170 | 1360 | **LC1G115** | **LC1D65** |
| **110** | 195 | 70 | **GV5P220●** | 200 | 1600 | **LC1G150** | **LC1D80** |
| **110** | 195 | 70 | **GV6P320●** | 200 | 1600 | **LC1G150** | **LC1D80** |
| **132** | 230 | 70 | **GV6P320●** | 240 | 1920 | **LC1G150** | **LC1D95** |
| **160** | 280 | 70 | **GV6P320●** | 300 | 2400 | **LC1G185** | **LC1G115** |
| **200** | 350 | 70 | **GV6P500●** | 380 | 3040 | **LC1G225** | **LC1G115** |
| **220** | 380 | 70 | **GV6P500●** | 400 | 3200 | **LC1G265** | **LC1G150** |
| **250** | 430 | 70 | **GV6P500●** | 440 | 3520 | **LC1G265** | **LC1G150** |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV5P220● GV6P320●/GV6P500● | |
|---|---|---|
| **Breaking performance code** | **F** | **H** |
| **400/415 V** | 36 | 70 |

## 90 to 450 kW at 400/415 V: type 2 coordination (with ComPact NSX / NS circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | | Contactor Line (KM2) / Delta (KM3) [3] | Contactor Star (KM1) [3] |
|---|---|---|---|---|---|---|---|
| 400/415 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type | |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | A | | |
| **90** | 160 | 130 | **NSX250● + MicroLogic 2.2 M** | 170 | 1360 | **LC1G115** | **LC1D65** |
| **110** | 195 | 130 | **NSX250● + MicroLogic 2.2 M** | 200 | 1600 | **LC1G150** | **LC1D80** |
| **110** | 195 | 130 | **NSX400● + MicroLogic 2.3 M** | 200 | 1600 | **LC1G150** | **LC1D80** |
| **132** | 230 | 130 | **NSX400● + MicroLogic 2.3 M** | 240 | 1920 | **LC1G150** | **LC1D95** |
| **160** | 280 | 130 | **NSX400● + MicroLogic 2.3 M** | 300 | 2400 | **LC1G185** | **LC1G115** |
| **200** | 350 | 130 | **NSX630● + MicroLogic 2.3 M** | 380 | 3040 | **LC1G225** | **LC1G115** |
| **220** | 380 | 130 | **NSX630● + MicroLogic 2.3 M** | 400 | 3200 | **LC1G265** | **LC1G150** |
| **250** | 430 | 130 | **NSX630● + MicroLogic 2.3 M** | 440 | 3520 | **LC1G265** | **LC1G150** |
| **300** | 500 | 130 | **NS800● + MicroLogic 5.0** | 480 | 4480 | **LC1G330** | **LC1G185** |
| **335** | 575 | 130 | **NS800● + MicroLogic 5.0** | 640 | 5120 | **LC1G400** | **LC1G225** |
| **355** | 610 | 130 | **NS800● + MicroLogic 5.0** | 640 | 5120 | **LC1G400** | **LC1G225** |
| **400** | 690 | 130 | **NS800● + MicroLogic 5.0** | 720 | 5760 | **LC1G500** | **LC1G265** |
| **450** | 770 | 130 | **NS1000● + MicroLogic 5.0** | 784 | 6272 | **LC1G500** | **LC1G330** |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX250●/ NSX400●/ NSX630● | | | | | NS800●/ NS1000● |
|---|---|---|---|---|---|---|
| **Breaking performance code** | **F** | **N** | **H** | **S** | **L** | **L** |
| **400/415 V** | 36 | 50 | 70 | 100 | 150 | 150 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Refer to diagram page A5/40.*

# Coordination: Star-delta with Thermal magnetic circuit breaker + Contactors

Contactor: **Maximum operating rate**: 30 starts/hour - **Maximum starting time**: 30 seconds.
The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact your technical support.
**RE17RMMWS** timer to be used for Star-Delta starter application.

## 110 to 300 kW at 440 V: type 2 coordination (with TeSys GV5 / GV6 circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | | Contactor Line (KM2) / Delta (KM3) (3) | Contactor Star (KM1) (3) |
|---|---|---|---|---|---|---|---|
| 440 V | | | Product type (1) | Ir setting (2) | Irm (2) | Product type | |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | A | | |
| 110 | 177 | 65 | GV5P220● | 185 | 1480 | LC1G115 | LC1D65 |
| 132 | 209 | 65 | GV5P220● | 210 | 1680 | LC1G150 | LC1D80 |
| 160 | 255 | 65 | GV6P320● | 260 | 2080 | LC1G185 | LC1G115 |
| 200 | 318 | 65 | GV6P320● | 320 | 2560 | LC1G225 | LC1G115 |
| 220 | 343 | 65 | GV6P500● | 350 | 2800 | LC1G225 | LC1G150 |
| 250 | 390 | 65 | GV6P500● | 400 | 3200 | LC1G265 | LC1G150 |
| 300 | 466 | 65 | GV6P500● | 470 | 3760 | LC1G330 | LC1G185 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV5P220● | | GV6P320●/GV6P500● | |
|---|---|---|---|---|
| Breaking performance code | F | H | F | H |
| 440 V | 35 | 65 | 30 | 65 |

## 110 to 450 kW at 440 V: type 2 coordination (with ComPacT NSX / NS circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | | Contactor Line (KM2) / Delta (KM3) (3) | Contactor Star (KM1) (3) |
|---|---|---|---|---|---|---|---|
| 440 V | | | Product type (1) | Ir setting (2) | Irm (2) | Product type | |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | A | | |
| 110 | 177 | 130 | NSX250● + MicroLogic 2.2 M | 185 | 1480 | LC1G115 | LC1D65 |
| 132 | 209 | 130 | NSX250● + MicroLogic 2.2 M | 210 | 1680 | LC1G150 | LC1D80 |
| 160 | 255 | 130 | NSX400● + MicroLogic 2.3 M | 260 | 2080 | LC1G185 | LC1G115 |
| 200 | 318 | 130 | NSX400● + MicroLogic 2.3 M | 320 | 2560 | LC1G225 | LC1G115 |
| 220 | 343 | 130 | NSX630● + MicroLogic 2.3 M | 350 | 2800 | LC1G225 | LC1G150 |
| 250 | 390 | 130 | NSX630● + MicroLogic 2.3 M | 400 | 3200 | LC1G265 | LC1G150 |
| 300 | 466 | 130 | NSX630● + MicroLogic 2.3 M | 470 | 3760 | LC1G330 | LC1G185 |
| 335 | 521 | 130 | NS800● + MicroLogic 5.0 | 560 | 4480 | LC1G330 | LC1G185 |
| 355 | 554 | 130 | NS800● + MicroLogic 5.0 | 560 | 4480 | LC1G400 | LC1G225 |
| 400 | 627 | 130 | NS800● + MicroLogic 5.0 | 640 | 5120 | LC1G400 | LC1G225 |
| 450 | 695 | 130 | NS800● + MicroLogic 5.0 | 720 | 5760 | LC1G500 | LC1G265 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX250● | | | | | NSX400● / NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | F | N | H | S | L | L |
| 440 V | 35 | 50 | 65 | 100 | 130 | 30 | 42 | 65 | 100 | 130 | 130 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Refer to diagram page A5/40.*

# Coordination: Star-delta with Thermal magnetic circuit breaker + Contactors

Contactor: **Maximum operating rate**: 30 starts/hour - **Maximum starting time**: 30 seconds.
The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact your technical support.
**RE17RMMWS** timer to be used for Star-Delta starter application.

## 132 to 295 kW at 500 V: type 2 coordination (with TeSys GV5 / GV6 circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | | Contactor Line (KM2) / Delta (KM3) [3] | Contactor Star (KM1) [3] |
|---|---|---|---|---|---|---|---|
| 500 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type | |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | A | | |
| 132 | 184 | 50 | GV5P220● | 185 | 1480 | LC1G115 | LC1D65 |
| 160 | 224 | 50 | GV6P320● | 240 | 1920 | LC1G150 | LC1D80 |
| 200 | 280 | 50 | GV6P320● | 300 | 2400 | LC1G185 | LC1G115 |
| 250 | 344 | 50 | GV6P500● | 350 | 2800 | LC1G225 | LC1G115 |
| 295 | 405 | 50 | GV6P500● | 440 | 3520 | LC1G265 | LC1G150 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | GV5P220● | | GV6P320●/ 500● | |
|---|---|---|---|---|
| Breaking performance code | F | H | F | H |
| 500 V | 30 | 50 | 25 | 50 |

## 132 to 425 kW at 500 V: type 2 coordination (with ComPact NSX / NS circuit breakers)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | | Contactor Line (KM2) / Delta (KM3) [3] | Contactor Star (KM1) [3] |
|---|---|---|---|---|---|---|---|
| 500 V | | | Product type [1] | Ir setting [2] | Irm [2] | Product type | |
| P | Ie | Iq (max) | | | | | |
| kW | A | kA | | A | A | | |
| 132 | 184 | 70 | NSX250● + MicroLogic 2.2 M [4] | 185 | 1480 | LC1G115 | LC1D65 |
| 160 | 224 | 70 | NSX400● + MicroLogic 2.3 M [4] | 240 | 1920 | LC1G150 | LC1D80 |
| 200 | 280 | 70 | NSX400● + MicroLogic 2.3 M [4] | 300 | 2400 | LC1G185 | LC1G115 |
| 250 | 344 | 70 | NSX630● + MicroLogic 2.3 M [4] | 350 | 2800 | LC1G225 | LC1G115 |
| 295 | 405 | 70 | NSX630● + MicroLogic 2.3 M [4] | 440 | 3520 | LC1G265 | LC1G150 |
| 375 | 516 | 70 | NS800● + MicroLogic 5.0 | 560 | 4480 | LC1G330 | LC1G185 |
| 425 | 584 | 70 | NS800● + MicroLogic 5.0 | 640 | 5120 | LC1G400 | LC1G225 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX250● | | | | | NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | F | N | H | S | L | L |
| 500 V | 30 | 36 | 50 | 65 | 70 | 25 | 30 | 50 | 65 | 70 | 100 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Refer to diagram page A5/40.*
*(4) Applicable also with MicroLogic 6.2 M and 6.3 M trip units.*

# Coordination: Star-delta with Magnetic circuit breaker + Contactors + Thermal overload relay

## 1.5 to 315 kW at 400/415 V: type 1 coordination

**Maximum operating rate:** LC3K: 12 starts/hour; LC3D: 30 starts/hour.
**Maximum starting time:** LC3K and LC3D: 30 seconds.

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | Circuit breaker | | | Star-delta contactors | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | | 440 V | | | | Reference | Rating | Irm (2) | Reference | Reference | Setting range |
| P | Ie | IrD (1) | Iq | P | Ie | IrD (1) | Iq | | | | | | |
| kW | A | A | kA | kW | A | A | kA | | A | A | | | A |
| – | – | – | – | **1.5** | 3.06 | 1.8 | 50 | **GV2LE08** | 4 | 51 | **LC3K06** | **LR2K0308** | 1.8…2.6 |
| **1.5** | 3.6 | 2 | 50 | **2.2** | 4.42 | 3 | 50 | | | | | | |
| **2.2** | 4.9 | 3 | 50 | **3** | 5.77 | 3 | 50 | **GV2LE10** | 6.3 | 78 | **LC3K06** | **LR2K0310** | 2.6…3.7 |
| **3** | 6.5 | 4 | 50 | – | – | – | – | **GV2LE14** | 10 | 138 | **LC3K06** | **LR2K0312** | 3.7…5.5 |
| – | – | – | – | **4** | 7.9 | 5 | 50 | **GV2LE10** | 6.3 | 78 | **LC3K06** | **LR2K0312** | 3.7…5.5 |
| **4** | 8.5 | 5 | 50 | – | – | – | – | **GV2LE14** | 10 | 138 | **LC3K06** | **LR2K0312** | 3.7…5.5 |
| – | – | – | – | **5.5** | 10.4 | 6 | 15 | **GV2LE14** | 10 | 138 | **LC3K06** | **LR2K0314** | 5.5…8 |
| **5.5** | 11.5 | 6 | 15 | – | – | – | – | **GV2LE16** | 14 | 170 | **LC3K06** | **LR2K0314** | 5.5…8 |
| – | – | – | – | **7.5** | 13.7 | 8 | 8 | **GV2LE16** | 14 | 170 | **LC3K09** | **LR2K0316** | 8…11.5 |
| **7.5** | 15.5 | 9 | 15 | – | – | – | – | **GV2LE20** | 18 | 223 | **LC3K09** | **LR2K0316** | 8…11.5 |
| – | – | – | – | **9** | 16.9 | 1 | 8 | **GV2LE16** | 14 | 170 | **LC3D12A** | **LRD16** | 9…13 |
| **9** | 18.1 | 10 | 15 | – | – | – | – | **GV2LE22** | 25 | 327 | **LC3K12** | **LR2K0316** | 8…11.5 |
| – | – | – | – | **11** | 20.1 | 12 | 8 | **GV2LE20** | 18 | 223 | **LC3K12** | **LR2K0321** | 10…14 |
| **11** | 22 | 12 | 15 | – | – | – | – | **GV2LE22** | 25 | 327 | **LC3K12** | **LR2K0321** | 10…14 |
| – | – | – | – | **15** | 26.5 | 15 | 6 | **GV2LE22** | 25 | 327 | **LC3D18A** | **LRD21** | 12…18 |
| **15** | 29 | 16 | 10 | – | – | – | – | **GV2LE32** | 32 | 384 | **LC3D18A** | **LRD21** | 12…18 |
| **18.5** | 35 | 20 | 50 | **18.5** | 32.8 | 19 | 50 | **GV3L40** | 40 | 560 | **LC3D18A** | **LRD22** | 16…24 |
| **22** | 41 | 24 | 50 | **22** | 39 | 23 | 50 | **GV3L50** | 50 | 700 | **LC3D32A** | **LRD32** | 23…32 |
| – | – | – | – | **30** | 51.5 | 30 | 50 | **GV3L65** | 65 | 910 | **LC3D32A** | **LRD32** | 23…32 |
| **30** | 55 | 33 | 50 | – | – | – | – | **GV3L65** | 65 | 910 | **LC3D32A** | **LRD35** | 30…38 |
| – | – | – | – | **37** | 64 | 37 | 50 | **GV3L65** | 65 | 910 | 3 x **LC1D40A** (4) | **LRD340** | 30…40 |
| **37** | 66 | 40 | 100 | – | – | – | – | **GV4L80** | 80 | 640 | 3 x **LC1D40A** (4) | **LRD350** | 37…50 |
| – | – | – | – | **37** | 64 | 37 | 70 | **GV4L80** | 80 | 640 | 3 x **LC1D40A** (4) | **LRD340** | 30…40 |
| – | – | – | – | **45** | 76 | 44 | 70 | **GV4L80** | 80 | 800 | 2 x **LC1D50A** +1 x **LC1D40A** (4) | **LRD350** | 37…50 |
| **45** | 80 | 47 | 100 | – | – | – | – | **GV4L115** | 115 | 805 | 2 x **LC1D50A** +1 x **LC1D40A** (4) | **LRD350** | 37…50 |
| **55** | 97 | 58 | 100 | **55** | 90 | 52 | 70 | **GV4L115** | 115 | 805 | 2 x **LC1D50A** +1 x **LC1D40A** (4) | **LRD365** | 48…65 |
| – | – | – | – | **75** | 125 | 72 | (3) | **NSX160●MA** (3) | 150 | 1200 | **LC3D80** | **LRD3363** | 63…80 |
| **75** | 132 | 78 | (3) | – | – | – | – | **NSX160●MA** (3) | 150 | 1200 | **LC3D80** | **LRD3363** | 63…80 |
| – | – | – | – | **90** | 146 | 85 | (3) | **NSX160●MA** (3) | 150 | 1200 | **LC3D115** | **LRD4365** | 80…104 |
| **90** | 160 | 96 | (3) | **110** | 178 | 103 | (3) | **NSX250●MA** (3) | 220 | 1760 | **LC3D115** | **LRD4365** | 80…104 |
| – | – | – | – | **132** | 215 | 125 | (3) | **NSX250●MA** (3) | 220 | 1760 | **LC3D150** | **LRD4369** | 110…140 |
| **110** (5) | 195 | 116 | (3) | – | – | – | – | **NSX250●MA** (3) | 220 | 1760 | **LC3D115** | **LRD4367** | 95…120 |
| – | – | – | – | **160** (5) | 256 | 148 | (3) | **NSX400●** + **Micrologic 1.3M** (3) | 320 | 2240 | **LC3D150** | **LR9D5369** | 90…150 |

*(1) IrD: current in the motor windings in delta connection.*
*(2) Irm: setting current of the magnetic trip.*
*(3) Reference to be completed by replacing the ● with the breaking performance code:*

| Breaking performance Iq (kA) | NSX100●MA | | NSX160●MA, NSX250●MA | | NSX400●, NSX630● | | NS800● | |
|---|---|---|---|---|---|---|---|---|
| **400/415 V** | 36 | 70 | 36 | 70 | 70 | 150 | 70 | 150 |
| **440 V** | 35 | 65 | 35 | 65 | 65 | 130 | 65 | 130 |
| **Code** | **F** | **H** | **F** | **H** | **H** | **L** | **H** | **L** |

*(4) For mounting 3 contactors **LC1D●●A**, star-delta starter kit **LAD9SD3** must be ordered separately, see page B8/43.*
*(5) Please refer to Type 2 coordination tables for higher ratings.*

# Coordination: Star-delta with Magnetic circuit breaker + Contactors + Thermal overload relay

## 1.5 to 250 kW at 400/415 V: type 2 coordination

**Maximum operating rate:** LC3D: 30 starts/hour.
**Maximum starting time:** LC3D: 30 seconds.

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Circuit breaker | | | Star-delta contactors | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | Reference | Rating | Irm (1) | Reference | Reference | Setting range |
| P | Ie | Iq | P | Ie | Iq | | | | | | |
| kW | A | kA | kW | A | kA | | A | A | | | A |
| **1.5** | 3.6 | 130 | **1.5** | 3.06 | 130 | **GV2L08** | 4 | 51 | 3 x **LC1D09** | **LRD08** | 2.5…4 |
| **2.2**<br>**3** | 4.9<br>6.5 | 130<br>130 | **2.2**<br>**3** | 4.42<br>5.77 | 130<br>130 | **GV2L10** | 6.3 | 78 | 3 x **LC1D09** | **LRD10** | 4…6 |
| – | – | – | **4** | 7.9 | 20 | **GV2L14** | 10 | 138 | 3 x **LC1D18** | **LRD14** | 7…10 |
| **4** | 8.5 | 130 | – | – | – | **GV2L14** | 10 | 138 | 3 x **LC1D18** | **LRD16** | 9…13 |
| **5.5** | 11.5 | 50 | **5.5** | 10.4 | 20 | **GV2L16** | 14 | 170 | 3 x **LC1D25** | **LRD16** | 9…13 |
| **7.5** | 15.5 | 50 | **7.5** | 13.7 | 20 | **GV2L20** | 18 | 223 | 3 x **LC1D25** | **LRD21** | 12…18 |
| – | – | – | **9** | 16.9 | 20 | **GV2L22** | 25 | 327 | 3 x **LC1D25** | **LRD21** | 12…18 |
| **9**<br>**11** | 18.1<br>22 | 50<br>50 | –<br>**11** | –<br>20.1 | –<br>20 | **GV2L22** | 25 | 327 | 3 x **LC1D25** | **LRD22** | 16…24 |
| **15** | 29 | 50 | **15** | 26.5 | 50 | **GV3L32** | 32 | 448 | 3 x **LC1D40A** (2) | **LRD332** | 23…32 |
| **18.5** | 35 | 50 | – | – | – | **GV3L40** | 40 | 560 | 2 x **LC1D50A** +1 x **LC1D40A** (2) | **LRD340** | 30…40 |
| – | – | – | **18.5** | 32.8 | 50 | **GV3L40** | 40 | 560 | 2 x **LC1D65A** +1 x **LC1D40A** (2) | **LRD340** | 30…40 |
| **22** | 41 | 50 | – | – | – | **GV3L50** | 50 | 700 | 2 x **LC1D50A** +1 x **LC1D40A** (2) | **LRD350** | 37…50 |
| – | – | – | **22** | 39 | 50 | **GV3L50** | 50 | 700 | 2 x **LC1D65A** +1 x **LC1D40A** (2) | **LRD350** | 37…50 |
| **30** | 55 | 50 | **30** | 51.5 | 50 | **GV3L65** | 65 | 910 | 2 x **LC1D65A** +1 x **LC1D40A** (2) | **LRD365** | 48…65 |
| – | – | – | **37** | 64 | 50 | **GV3L65** | 65 | 910 | 3 x **LC1D80** | **LRD3359** | 48…65 |
| **37** | 66 | 100 | – | – | – | **GV4L80** | 80 | 640 | 3 x **LC1D80** | **LRD3363** | 63…80 |
| – | – | – | **45** | 76 | 70 | **GV4L80** | 80 | 800 | 3 x **LC1D80** | **LRD3363** | 63…80 |
| **45** | 80 | 100 | – | – | – | **GV4L115** | 115 | 805 | 3 x **LC1D115** | **LR9D5367** | 60…100 |
| – | – | – | **55** | 90 | 70 | **GV4L115** | 115 | 920 | 3 x **LC1D115** | **LR9D5367** | 60…100 |
| **55** | 97 | 100 | – | – | – | **GV4L115** | 115 | 920 | 3 x **LC1D115** | **LR9D5369** | 90…150 |
| **55** | 97 | (3) | – | – | – | **NSX160●MA** (3) | 150 | 1200 | 3 x **LC1D115** | **LR9D5369** | 90…150 |
| – | – | – | **75** | 125 | (3) | **NSX160●MA** (3) | 150 | 1200 | 3 x **LC1D150** | **LR9D5369** | 90…150 |
| **75** | 132 | (3) | **90** | 146 | (3) | **NSX160●MA** (3) | 150 | 1200 | 3 x **LC1D150** | **LR9D5369** | 90…150 |

*(1) Irm: setting current of the magnetic trip.*
*(2) For mounting 3 contactors **LC1D●●A**, star-delta starter kit **LAD9SD3** must be ordered separately, see page B8/43.*
*(3) Reference to be completed by replacing the ● with the breaking performance code:*

| Breaking performance Iq (kA) | NSX100●MA | | NSX160●MA, NSX250●MA | | NSX400●, NSX630● | |
|---|---|---|---|---|---|---|
| **400/415 V** | 36 | 70 | 36 | 70 | 70 | 150 |
| **440 V** | 35 | 65 | 35 | 65 | 65 | 130 |
| **Code** | **F** | **H** | **F** | **H** | **H** | **L** |

# Coordination: Star-delta with Magnetic circuit breaker + Contactors + Overload relay

Contactor: **Maximum operating rate**: 30 starts/hour - **Maximum starting time**: 30 seconds.
The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact your technical support.
**RE17RMMWS** timer to be used for Star-Delta starter application.

## 90 to 450 kW at 400 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | Contactor Line (KM2) / Delta (KM3) [3] | Contactor Star (KM1) [3] | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | Product type [1] | Irm [2] | Product type | | Product type | Ir setting [2] |
| P | Ie | Iq (max) | | | | | | |
| kW | A | kA | | A | | | | A |
| 90 | 160 | 130 | NSX250● + MA | 1980 | LC1G115 | LC1D65 | LR9G115 | 92 |
| 110 | 195 | 130 | NSX250● + MA | 1980 | LC1G150 | LC1D80 | LR9G225 | 113 |
| 110 | 195 | 130 | NSX400● + MicroLogic 1.3 M | 1920 | LC1G150 | LC1D80 | LR9G225 | 113 |
| 132 | 230 | 130 | NSX400● + MicroLogic 1.3 M | 1920 | LC1G150 | LC1D80 | LR9G225 | 133 |
| 160 | 280 | 130 | NSX400● + MicroLogic 1.3 M | 2560 | LC1G185 | LC1G115 | LR9G225 | 162 |
| 200 | 350 | 130 | NSX630● + MicroLogic 1.3 M | 3000 | LC1G225 | LC1G150 | LR9G225 | 202 |
| 220 | 380 | 130 | NSX630● + MicroLogic 1.3 M | 3500 | LC1G265 | LC1G150 | LR9G500 | 219 |
| 250 | 430 | 130 | NSX630● + MicroLogic 1.3 M | 3500 | LC1G265 | LC1G150 | LR9G500 | 248 |
| 300 | 500 | 130 | NS800● + MicroLogic 5.0 LR OFF | 4800 | LC1G330 | LC1G185 | LR9G500 | 266 |
| 335 | 575 | 130 | NS800● + MicroLogic 5.0 LR OFF | 4800 | LC1G400 | LC1G225 | LR9G500 | 332 |
| 355 | 610 | 130 | NS800● + MicroLogic 5.0 LR OFF | 5600 | LC1G400 | LC1G225 | LR9G500 | 352 |
| 400 | 690 | 130 | NS800● + MicroLogic 5.0 LR OFF | 5600 | LC1G500 | LC1G265 | LR9G500 | 362 |
| 450 | 695 | 130 | NS800● + MicroLogic 5.0 LR OFF | 6400 | LC1G500 | LC1G265 | LR9G500 | 401 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX250●/ NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | L |
| 400/415 V | 36 | 50 | 70 | 100 | 130 | 150 |

## 110 to 355 kW at 440 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | Contactor Line (KM2) / Delta (KM3) [3] | Contactor Star (KM1) [3] | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|
| 440 V | | | Product type [1] | Irm [2] | Product type | | Product type | Ir setting [2] |
| P | Ie | Iq (max) | | | | | | |
| kW | A | kA | | A | | | | A |
| 110 | 177 | 130 | NSX250● + MA | 1980 | LC1G115 | LC1D65 | LR9G115 | 102 |
| 132 | 209 | 130 | NSX250● + MA | 1980 | LC1G150 | LC1D80 | LR9G225 | 121 |
| 160 | 255 | 130 | NSX400● + MicroLogic 1.3 M | 2240 | LC1G185 | LC1D95 | LR9G225 | 147 |
| 200 | 318 | 130 | NSX400● + MicroLogic 1.3 M | 2560 | LC1G225 | LC1G115 | LR9G225 | 184 |
| 220 | 343 | 130 | NSX630● + MicroLogic 1.3 M | 3000 | LC1G225 | LC1G150 | LR9G225 | 198 |
| 250 | 390 | 130 | NSX630● + MicroLogic 1.3 M | 3500 | LC1G265 | LC1G150 | LR9G500 | 225 |
| 300 | 466 | 130 | NSX630● + MicroLogic 1.3 M | 4000 | LC1G330 | LC1G185 | LR9G500 | 269 |
| 335 | 521 | 130 | NS800● + MicroLogic 5.0 LR OFF | 4800 | LC1G330 | LC1G185 | LR9G500 | 301 |
| 355 | 554 | 130 | NS800● + MicroLogic 5.0 LR OFF | 4800 | LC1G400 | LC1G225 | LR9G500 | 320 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX250● | | | | | NSX400●/ NSX630● | | | | NS800● |
|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | F | N | S | L | L |
| 440 V | 35 | 50 | 65 | 100 | 130 | 30 | 42 | 100 | 130 | 130 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Refer to diagram page A5/40.*

# Coordination: Star-delta with Magnetic circuit breaker + Contactors + Overload relay

Contactor: **Maximum operating rate**: 30 starts/hour - **Maximum starting time**: 30 seconds.
The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact your technical support.
**RE17RMMWS** timer to be used for Star-Delta starter application.

## 132 to 425 kW at 500 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Circuit breaker | | Contactor Line (KM2) / Delta (KM3) (3) | Contactor Star (KM1) (3) | Thermal overload relay | |
|---|---|---|---|---|---|---|---|---|
| 500 V | | | Product type (1) | Irm (2) | Product type | | Product type | Ir setting (2) |
| P | Ie | Iq (max) | | | | | | |
| kW | A | kA | | A | | | | A |
| 132 | 184 | 70 | NSX400● + MicroLogic 1.3 M | 1600 | LC1G115 | LC1D65 | LR9G225 | 106 |
| 160 | 224 | 70 | NSX400● + MicroLogic 1.3 M | 1920 | LC1G150 | LC1D80 | LR9G225 | 129 |
| 200 | 280 | 70 | NSX400● + MicroLogic 1.3 M | 2560 | LC1G185 | LC1G115 | LR9G225 | 162 |
| 250 | 344 | 70 | NSX630● + MicroLogic 1.3 M | 3000 | LC1G225 | LC1G150 | LR9G225 | 199 |
| 295 | 405 | 70 | NSX630● + MicroLogic 1.3 M | 3500 | LC1G265 | LC1G150 | LR9G500 | 234 |
| 375 | 516 | 70 | NS800● + MicroLogic 5.0 | 4800 | LC1G330 | LC1G185 | LR9G500 | 298 |
| 425 | 584 | 70 | NS800● + MicroLogic 5.0 | 4800 | LC1G400 | LC1G185 | LR9G500 | 337 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

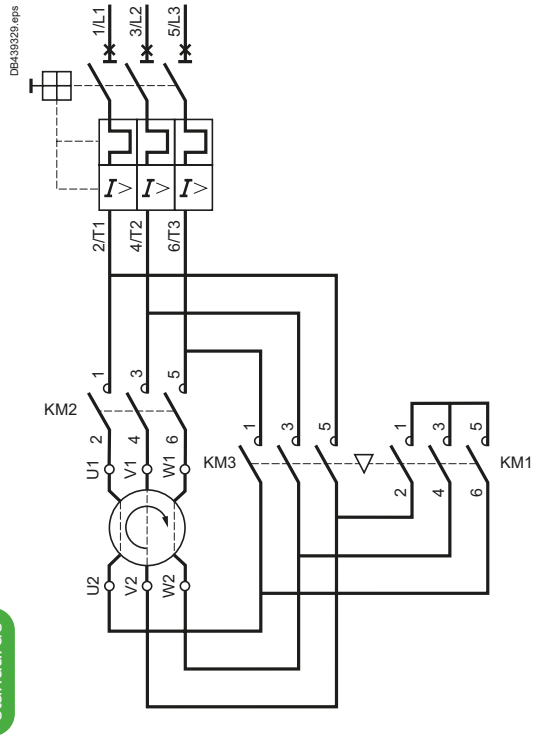
| Rated conditional short-circuit (kA) | NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | L |
| 500 V | 25 | 30 | 50 | 65 | 70 | 100 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Refer to diagram page A5/40.*

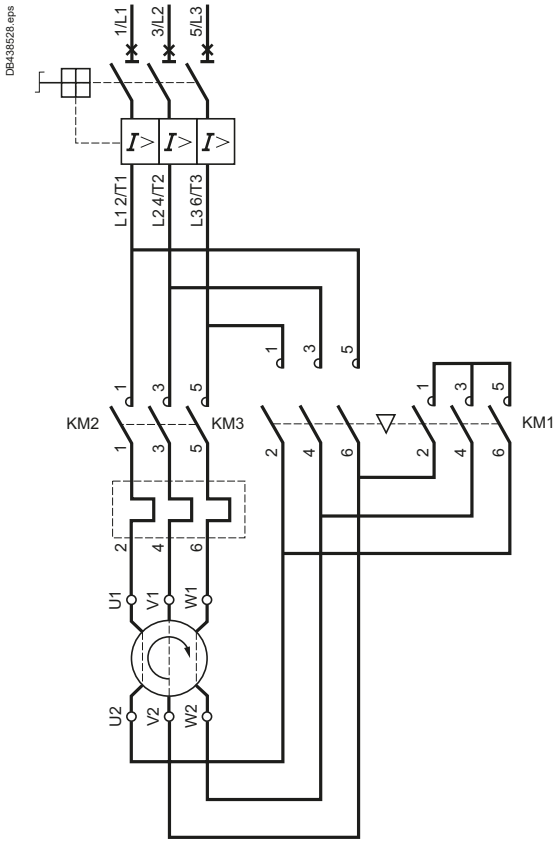
# Coordination: Star-Delta motor starter - Common circuit diagrams

## TeSys Giga star-delta motor 'Power' circuit diagram

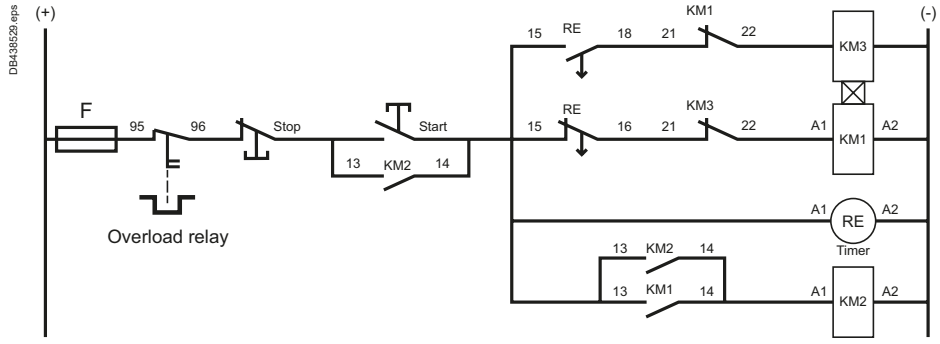
**Thermal magnetic circuit breaker + contactors**




**Magnetic circuit breaker + contactors + overload relay**




## TeSys Giga star-delta Motor 'Control' circuit diagram




Recommended timing relay (RE): Zelio Timer ref. **RE17RMMWS** (12...240 V AC/DC 50/60 Hz – 8 A AC/DC contacts)

## 275 to 1000 A up to 690 V: type 2 coordination (with LC1G and ComPacT NSX or NS circuit breakers)

| Current ratings of 3-phase loads 50/60 Hz in category AC-1 | | Circuit breaker | | Contactor |
|---|---|---|---|---|
| Up to 690 V, temperature ≤ 40 °C | | Product type (1) | In | Product type |
| Ie | Iq (max) | | | |
| A | kA | | A | |
| 275 | 100 | NSX400● + MicroLogic 2.3 | 400 | LC1G150 |
| 305 | 100 | NSX400● + MicroLogic 2.3 | 400 | LC1G185 |
| 330 | 100 | NSX400● + MicroLogic 2.3 | 400 | LC1G225 |
| 385 | 100 | NSX400● + MicroLogic 2.3 | 400 | LC1G265 |
| 440 | 100 | NSX630● + MicroLogic 2.3 | 630 | LC1G330 |
| 550 | 100 | NSX630● + MicroLogic 2.3 | 630 | LC1G400 |
| 700 | 75 | NS800● + MicroLogic 5.0 | 800 | LC1G500 |
| 1000 | 100 (2) | NS1000● + MicroLogic 5.0 | 1000 | LC1G630 |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX400●/ NSX630● | | | | | | | | NS800●/NS1000● | |
|---|---|---|---|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | R | HB1 | HB2 | L | LB |
| 400 V | 36 | 50 | 70 | 100 | 150 | 200 | - | - | 150 | 200 |
| 440 V | 30 | 42 | 65 | 90 | 130 | 200 | - | - | 130 | 200 |
| 500 V | 25 | 30 | 50 | 65 | 70 | 80 | 85 | 100 | 100 | 100 |
| 690 V | 10 | 10 | 20 | 25 | 35 | 45 | 75 | 100 | - | 75 |

*(2) Up to 500 V AC.*

# Resistive load protection and control
# Coordination: Fuses (NFC, DIN type gG) + Contactors

## 275 to 1050 A up to 690 V: type 2 coordination (with NFC, DIN, type gG fuses)

| Current ratings of 3-phase loads 50/60 Hz in category AC-1 | | Switch-disconnector | gG fuse | | Contactor |
|---|---|---|---|---|---|
| Up to 690 V, temperature ≤ 40 °C | | Product type | Size | Rating | Product type |
| Ie | Iq (max) | | | | |
| A | kA | | | A | |
| 250 | 80 | **GS●QQ** | 2 | 315 | **LC1G115** |
| 275 | 80 | **GS●QQ** | 2 | 315 | **LC1G150** |
| 305 | 80 | **GS●QQ** | 2 | 315 | **LC1G185** |
| 330 | 80 | **GS●QQ** | 2 | 400 | **LC1G225** |
| 385 | 80 | **GS●QQ** | 2 | 400 | **LC1G265** |
| 440 | 80 | **GS●S** | 3 | 500 | **LC1G330** |
| 550 | 80 | **GS●S** | 3 | 630 | **LC1G400** |
| 700 | 80 | **GS●V** | 4 | 800 | **LC1G500** |
| 1000 | 80 | **GS●V** | 4 | 1000 | **LC1G630** |
| 1050 | 80 | **GS●V** | 4 | 1250 | **LC1G800** |

## IEC - Type 1 or 2 coordination with fuses - 690 V

| 690 V - Type 1 or 2 coordination with fuses | | | |
|---|---|---|---|
| **Applications with 3-phase motors 50-60 Hz in category AC-3** | **aM fuses** | **Standard Starters SIL Starters Power Interface Modules** | |
| **690 V** | **Rating** | **References** | **Setting range** |
| **Iq** | | | |
| **kA** | **A** | | **A** |
| 80 | ≤10 | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| | ≤25 | **TPRST025 TPRSS025 -** | 0.5-25 |
| | ≤40 | **TPRST038 TPRSS038 TPRPM038** | 0.76-38 |
| | ≤80 | **TPRST065 TPRSS065 -** | 3.25-65 |
| | ≤80 | **TPRST080 TPRSS080 TPRPM080** | 4-80 |

## 0.06 to 22 kW at 230 V: Type 1 coordination

| Applications power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Circuit breaker (Trip class 5 to 15) | Standard Starters SIL Starters Power Interface Modules | |
|---|---|---|---|---|---|
| 230 V | | | References | References | Setting range |
| P | Ie | Iq | | | |
| kW | A | kA | | | A |
| 0.06 | 0.35 | 100 | **GV2L03** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.09 | 0.52 | 100 | **GV2L04** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.12 | 0.7 | 100 | **GV2L05** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.18 | 1 | 100 | **GV2L06** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.25 | 1.5 | 100 | **GV2L06** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.37 | 1.9 | 100 | **GV2L07** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.55 | 2.6 | 100 | **GV2L08** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.75 | 3.3 | 100 | **GV2L08** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 1.1 | 4.7 | 100 | **GV2L10** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 1.5 | 6.3 | 100 | **GV2L14** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 2.2 | 8.5 | 100 | **GV2L14** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 3 | 11.3 | 100 | **GV2L16** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 4 | 15 | 100 | **GV2L20** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 5.5 | 20 | 50 | **GV2L22** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 7.5 | 27 | 50 | **GV2L32** | **TPRST038 TPRSS038 TPRPM038** | 0.76-38 |
| 9 | 32 | 100 | **GV3L40** | **TPRST038 TPRSS038 TPRPM038** | 0.76-38 |
| 11 | 38 | 100 | **GV3L40** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| 15 | 51 | 100 | **GV3L65** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| 18.5 | 61 | 100 | **GV3L65** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| 22 | 72 | 100 | **GV3L73** | **TPRPM080** | 4-80 |

# IEC - Type 2 coordination with circuit breakers - 230 V

## 0.06 to 22 kW at 230 V: Type 2 coordination

| Applications power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Circuit breaker (Trip class 5 to 15) | Standard Starters SIL Starters | |
|---|---|---|---|---|---|
| 230 V | | | References | References | Setting range |
| P | Ie | Iq | | | |
| kW | A | kA | | | A |
| 0.06 | 0.35 | 100 | **GV2L03** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.09 | 0.52 | 100 | **GV2L04** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.12 | 0.7 | 100 | **GV2L05** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.18 | 1 | 100 | **GV2L06** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.25 | 1.5 | 100 | **GV2L06** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.37 | 1.9 | 100 | **GV2L07** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.55 | 2.6 | 100 | **GV2L08** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.75 | 3.3 | 100 | **GV2L08** | **TPRST025 TPRSS025** | 0.5-25 |
| 1.1 | 4.7 | 100 | **GV2L10** | **TPRST025 TPRSS025** | 0.5-25 |
| 1.5 | 6.3 | 100 | **GV2L14** | **TPRST025 TPRSS025** | 0.5-25 |
| 2.2 | 8.5 | 100 | **GV2L14** | **TPRST025 TPRSS025** | 0.5-25 |
| 3 | 11.3 | 100 | **GV2L16** | **TPRST025 TPRSS025** | 0.5-25 |
| 4 | 15 | 100 | **GV2L20** | **TPRST025 TPRSS025** | 0.5-25 |
| 5.5 | 20 | 50 | **GV2L22** | **TPRST025 TPRSS025** | 0.5-25 |
| 7.5 | 27 | 50 | **GV2L32** | **TPRST038 TPRSS038** | 0.76-38 |
| 9 | 32 | 100 | **GV3L40** | **TPRST038 TPRSS038** | 0.76-38 |
| 11 | 38 | 100 | **GV3L40** | **TPRST065 TPRSS065** | 3.25-65 |
| 15 | 51 | 100 | **GV3L65** | **TPRST065 TPRSS065** | 3.25-65 |
| 18.5 | 61 | 100 | **GV3L65** | **TPRST065 TPRSS065** | 3.25-65 |

## 0.06 to 37 kW at 400/415 - 440 - 500 V: Type 1 coordination

| Applications power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | | | Circuit breaker (Trip class 5 to 15) | Standard Starters SIL Starters Power Interface Modules | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | References | References | Setting range |
| P | Ie | Iq | P | Ie | Iq | P | Ie | Iq | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | | A |
| 0.06 | 0.2 | 100 | 0.06 | 0.18 | 100 | - | - | - | **GV2L03** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.09 | 0.3 | 100 | 0.09 | 0.27 | 100 | - | - | - | | | |
| 0.12 | 0.44 | 100 | 0.12 | 0.4 | 100 | - | - | - | **GV2L04** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.18 | 0.6 | 100 | 0.18 | 0.55 | 100 | - | - | - | | | |
| 0.25 | 0.85 | 100 | 0.25 | 0.77 | 100 | - | - | - | **GV2L05** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.37 | 1.1 | 100 | - | - | - | 0.37 | 0.88 | 100 | | | |
| - | - | - | 0.37 | 1 | 100 | - | - | - | **GV2L06** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.55 | 1.5 | 100 | 0.55 | 1.4 | 100 | 0.55 | 1.2 | 100 | | | |
| - | - | - | - | - | - | 0.75 | 1.5 | 100 | **GV2L07** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.75 | 1.9 | 100 | 0.75 | 1.7 | 100 | - | - | - | | | |
| 1.1 | 2.7 | 100 | - | - | - | 1.1 | 2.2 | 100 | | | |
| - | - | - | 1.1 | 2.4 | 100 | - | - | - | **GV2L08** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 1.5 | 3.6 | 100 | 1.5 | 3.3 | 100 | 1.5 | 2.9 | 100 | | | |
| 2.2 | 4.9 | 100 | 2.2 | 4.5 | 100 | 2.2 | 3.9 | 100 | **GV2L10** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| - | - | - | 3 | 5.9 | 100 | 3 | 5.2 | 100 | | | |
| 3 | 6.5 | 100 | - | - | - | - | - | - | **GV2L14** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 4 | 8.5 | 100 | 4 | 7.7 | 20 | 4 | 6.8 | 10 | | | |
| - | - | - | - | - | - | 5.5 | 9.2 | 10 | | | |
| 5.5 | 11.5 | 50 | 5.5 | 10.5 | 20 | - | - | - | **GV2L16** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| - | - | - | - | - | - | 7.5 | 12.4 | 10 | | | |
| 7.5 | 15.5 | 50 | 7.5 | 14.1 | 20 | - | - | - | **GV2L20** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| - | - | - | 9 | 16.5 | 20 | 9 | 13.9 | 10 | | | |
| 9 | 18.1 | 50 | - | - | - | - | - | - | **GV2L22** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 11 | 22 | 50 | 11 | 20 | 20 | 11 | 17.6 | 10 | | | |
| - | - | - | - | - | - | 15 | 23 | 10 | | | |
| 15 | 29 | 50 | 15 | 26.4 | 20 | - | - | - | **GV2L32** | **TPRST038 TPRSS038 TPRPM038** | 0.76-38 |
| - | - | - | - | - | - | 18.5 | 28 | 10 | | | |
| 18.5 | 35 | 50 | 18.5 | 31.8 | 50 | - | - | - | **GV3L40** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| - | - | - | - | - | - | 22 | 33 | 12 | | | |
| 22 | 41 | 50 | 22 | 37.3 | 50 | - | - | - | **GV3L50** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| - | - | - | - | - | - | 30 | 44 | 12 | | | |
| 30 | 55 | 50 | 30 | 50 | 50 | - | - | - | **GV3L65** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| - | - | - | 37 | 60 | 50 | 37 | 53 | 12 | | | |
| 37 | 66 | 50 | - | - | - | - | - | - | **GV3L73** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |

# IEC - Type 2 coordination with circuit breakers - 400/415 - 440 - 500 V

## 0.06 to 37 kW at 400/415 - 440 - 500 V: Type 2 coordination

| Applications power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | | | Circuit breaker (Trip class 5 to 15) | Standard Starters SIL Starters | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 440 V | | | 500 V | | | References | References | Setting range |
| P | Ie | Iq | P | Ie | Iq | P | Ie | Iq | | | |
| kW | A | kA | kW | A | kA | kW | A | kA | | | A |
| 0.06 | 0.2 | 100 | 0.06 | 0.18 | 100 | - | - | - | **GV2L03** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.09 | 0.3 | 100 | 0.09 | 0.27 | 100 | - | - | - | | | |
| 0.12 | 0.44 | 100 | 0.12 | 0.4 | 100 | - | - | - | **GV2L04** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.18 | 0.6 | 100 | 0.18 | 0.55 | 100 | - | - | - | | | |
| 0.25 | 0.85 | 100 | 0.25 | 0.77 | 100 | - | - | - | **GV2L05** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.37 | 1.1 | 100 | - | - | - | 0.37 | 0.88 | 100 | | | |
| - | - | - | 0.37 | 1 | 100 | - | - | - | **GV2L06** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.55 | 1.5 | 100 | 0.55 | 1.4 | 100 | 0.55 | 1.2 | 100 | | | |
| - | - | - | - | - | - | 0.75 | 1.5 | 100 | **GV2L07** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.75 | 1.9 | 100 | 0.75 | 1.7 | 100 | - | - | - | | | |
| | | | | | | 1.1 | 2.2 | 100 | | | |
| 1.1 | 2.7 | 100 | - | - | - | - | - | - | **GV2L07** | **TPRST025 TPRSS025** | 0.5-25 |
| - | - | - | 1.1 | 2.4 | 100 | - | - | - | **GV2L08** | **TPRST009 TPRSS009** | 0.18-9 |
| - | - | - | - | - | - | 1.5 | 2.9 | 100 | | | |
| 1.5 | 3.6 | 100 | 1.5 | 3.3 | 100 | - | - | - | **GV2L08** | **TPRST025 TPRSS025** | 0.5-25 |
| 2.2 | 4.9 | 100 | 2.2 | 4.5 | 100 | 2.2 | 3.9 | 100 | **GV2L10** | **TPRST025 TPRSS025** | 0.5-25 |
| - | - | - | 3 | 5.9 | 100 | 3 | 5.2 | 100 | | | |
| 3 | 6.5 | 100 | - | - | - | - | - | - | **GV2L14** | **TPRST025 TPRSS025** | 0.5-25 |
| 4 | 8.5 | 100 | 4 | 7.7 | 20 | 4 | 6.8 | 10 | | | |
| - | - | - | - | - | - | 5.5 | 9.2 | 10 | | | |
| 5.5 | 11.5 | 50 | 5.5 | 10.5 | 20 | - | - | - | **GV2L16** | **TPRST025 TPRSS025** | 0.5-25 |
| - | - | - | - | - | - | 7.5 | 12.4 | 10 | | | |
| 7.5 | 15.5 | 50 | 7.5 | 14.1 | 20 | - | - | - | **GV2L20** | **TPRST025 TPRSS025** | 0.5-25 |
| - | - | - | 9 | 16.5 | 20 | 9 | 13.9 | 10 | | | |
| 9 | 18.1 | 50 | - | - | - | - | - | - | **GV2L22** | **TPRST025 TPRSS025** | 0.5-25 |
| 11 | 22 | 50 | 11 | 20 | 20 | 11 | 17.6 | 10 | | | |
| - | - | - | - | - | - | 15 | 23 | 10 | | | |
| 15 | 29 | 50 | 15 | 26.4 | 20 | - | - | - | **GV2L32** | **TPRST038 TPRSS038** | 0.76-38 |
| - | - | - | - | - | - | 18.5 | 28 | 10 | | | |
| 18.5 | 35 | 50 | 18.5 | 31.8 | 50 | - | - | - | **GV3L40** | **TPRST065 TPRSS065** | 3.25-65 |
| - | - | - | - | - | - | 22 | 33 | 12 | | | |
| 22 | 41 | 50 | 22 | 37.3 | 50 | - | - | - | **GV3L50** | **TPRST065 TPRSS065** | 3.25-65 |
| - | - | - | - | - | - | 30 | 44 | 12 | | | |
| 30 | 55 | 50 | 30 | 50 | 50 | - | - | - | **GV3L65** | **TPRST065 TPRSS065** | 3.25-65 |
| - | - | - | 37 | 60 | 50 | 37 | 53 | 12 | | | |
| 37 | 66 | 50 | - | - | - | - | - | - | **GV3L73** | **TPRST065 TPRSS065** | 3.25-65 |

## 0.06 to 37 kW at 690 V: Type 1 coordination

| Applications power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Circuit breaker (Trip class 5 to 15) | Standard Starters SIL Starters Power Interface Modules | |
|---|---|---|---|---|---|
| 690 V | | | References | References | Setting range |
| P | Ie | Iq | | | |
| kW | A | kA | | | A |
| 0.37 | 0.64 | 100 | **GV2L05** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.55 | 0.87 | 4 | **GV2L05** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 0.75 | 1.1 | 4 | **GV2L06** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 1.1 | 1.6 | 4 | **GV2L07** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 1.5 | 2.1 | 4 | **GV2L07** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 2.2 | 2.8 | 4 | **GV2L08** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 3 | 3.8 | 4 | **GV2L08** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 4 | 4.9 | 4 | **GV2L10** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 5.5 | 6.7 | 4 | **GV2L14** | **TPRST009 TPRSS009 TPRPM009** | 0.18-9 |
| 7.5 | 8.9 | 4 | **GV2L14** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 9 | 10.5 | 4 | **GV2L16** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 11 | 12.8 | 4 | **GV2L16** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 15 | 17 | 4 | **GV2L20** | **TPRST025 TPRSS025 TPRPM038** | 0.5-25 / 0.76-38 |
| 18.5 | 21 | 4 | **GV2L22** | **TPRST038 TPRSS038 TPRPM038** | 0.76-38 |
| 22 | 24 | 4 | **GV2L22** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| 30 | 32 | 6 | **GV3L40** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |
| 37 | 39 | 6 | **GV3L50** | **TPRST065 TPRSS065 TPRPM080** | 3.25-65 / 4-80 |

# IEC - Type 2 coordination with circuit breakers - 690 V

## 0.06 to 37 kW at 690 V: Type 2 coordination

| Applications power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | Circuit breaker (Trip class 5 to 15) | Standard Starters SIL Starters | |
|---|---|---|---|---|---|
| 690 V | | | References | References | Setting range |
| P | Ie | Iq | | | |
| kW | A | kA | | | A |
| 0.37 | 0.64 | 100 | **GV2L05** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.55 | 0.87 | 4 | **GV2L05** | **TPRST009 TPRSS009** | 0.18-9 |
| 0.75 | 1.1 | 4 | **GV2L06** | **TPRST009 TPRSS009** | 0.18-9 |
| 1.1 | 1.6 | 4 | **GV2L07** | **TPRST009 TPRSS009** | 0.18-9 |
| 1.1 | 1.6 | 50 | **GV2L07 + LA9LB920** | **TPRST025 TPRSS025** | 0.5-25 |
| 1.5 | 2.1 | 4 | **GV2L07** | **TPRST009 TPRSS009** | 0.18-9 |
| 1.5 | 2.1 | 50 | **GV2L07 + LA9LB920** | **TPRST025 TPRSS025** | 0.5-25 |
| 2.2 | 2.8 | 4 | **GV2L08** | **TPRST025 TPRSS025** | 0.5-25 |
| 2.2 | 2.8 | 50 | **GV2L08 + LA9LB920** | **TPRST025 TPRSS025** | 0.5-25 |
| 3 | 3.8 | 4 | **GV2L08** | **TPRST025 TPRSS025** | 0.5-25 |
| 3 | 3.8 | 50 | **GV2L08 + LA9LB920** | **TPRST025 TPRSS025** | 0.5-25 |
| 4 | 4.9 | 4 | **GV2L10** | **TPRST025 TPRSS025** | 0.5-25 |
| 4 | 4.9 | 50 | **GV2L10 + LA9LB920** | **TPRST025 TPRSS025** | 0.5-25 |
| 5.5 | 6.7 | 4 | **GV2L14** | **TPRST025 TPRSS025** | 0.5-25 |
| 5.5 | 6.7 | 50 | **GV2L14 + LA9LB920** | **TPRST025 TPRSS025** | 0.5-25 |
| 7.5 | 8.9 | 4 | **GV2L14** | **TPRST025 TPRSS025** | 0.5-25 |
| 7.5 | 8.9 | 50 | **GV2L14 + LA9LB920** | **TPRST025 TPRSS025** | 0.5-25 |
| 9 | 10.5 | 4 | **GV2L16** | **TPRST025 TPRSS025** | 0.5-25 |
| 11 | 12.8 | 4 | **GV2L16** | **TPRST025 TPRSS025** | 0.5-25 |
| 11 | 12.8 | 3 | **GV2L16 + LA9LB920** | **TPRST038 TPRSS038** | 0.76-38 |
| 15 | 17 | 4 | **GV2L20** | **TPRST025 TPRSS025** | 0.5-25 |
| 15 | 17 | 3 | **GV2L22 + LA9LB920** | **TPRST038 TPRSS038** | 0.76-38 |
| 18.5 | 21 | 4 | **GV2L22** | **TPRST038 TPRSS038** | 0.76-38 |
| 18.5 | 21 | 3 | **GV3L25 + LA9LB920** | **TPRST065 TPRSS065** | 3.25-65 |
| 22 | 24 | 4 | **GV2L22** | **TPRST065 TPRSS065** | 3.25-65 |
| 22 | 24 | 3 | **GV2L32 + LA9LB920** | **TPRST065 TPRSS065** | 3.25-65 |
| 30 | 32 | 6 | **GV3L40** | **TPRST065 TPRSS065** | 3.25-65 |
| 37 | 39 | 6 | **GV3L50** | **TPRST065 TPRSS065** | 3.25-65 |

# UL - SCCR Ratings

## Short Circuit Current Ratings (SCCR)

**UL File E39281 and File E48539**
**Suitable for use on a circuit delivering not more than:**

| High SCCR | | | | | | Standard SCCR | | Standard Starters<br>SIL Starters<br>Power Interface Modules | |
|---|---|---|---|---|---|---|---|---|---|
| Max Voltage 600 V<br>Class J Fuse [1] | | Max Voltage 480 V<br>Circuit Breaker | | Max Voltage 600 V<br>Circuit Breaker | | Max Voltage 600 V<br>Circuit Breaker or Fuse | | References | Setting range |
| SCCR | Maximum Amperage | SCCR | Maximum Amperage | SCCR | Maximum Amperage | SCCR | Maximum Amperage | | |
| kA | A | kA | A | kA | A | kA | A | | A |
| 100 | 25 | 85 | 35 | 50 | 35 | 5 | 35 | **TPRST009**<br>**TPRSS009**<br>**TPRPM009** | 0.18-9 |
| 100 | 60 | 85 | 60 | 50 | 60 | 5 | 100 | **TPRST025**<br>**TPRSS025** | 0.5-25 |
| 100 | 100 | 85 | 60 | 50 | 60 | 5 | 125 | **TPRST038**<br>**TPRSS038**<br>**TPRPM038** | 0.76-38 |
| 100 | 125 | 85 | 110 | 50 | 110 | 5 | 250 | **TPRST065**<br>**TPRSS065** | 3.25-65 |
| 100 | 125 | 85 | 110 | 50 | 110 | 5 | 250 | **TPRST080**<br>**TPRSS080**<br>**TPRPM080** | 4-80 |

*(1) When protected by any Class J or CC time-delay fuse (Class CC applicable up to 30 A only).*



## Group Motor Rating

**Suitable for group installation on a circuit delivering not more than:**

| Max voltage 600 V - Class J Fuse [1] | | Max voltage 480 V - Circuit Breaker | | Standard Starters<br>SIL Starters | |
|---|---|---|---|---|---|
| SCCR | Maximum Amperage | SCCR | Maximum Amperage | References | Setting range |
| kA | A | kA | A | | A |
| 5 | 90 | 5 | 90 | **TPRST009**<br>**TPRSS009** | 0.18-9 |
| 5 | 175 | 5 | 175 | **TPRST025**<br>**TPRSS025** | 0.5-25 |
| 5 | 175 | 5 | 175 | **TPRST038**<br>**TPRSS038** | 0.76-38 |
| 5 | 600 | 5 | 600 | **TPRST065**<br>**TPRSS065** | 3.25-65 |
| 5 | 600 | 5 | 600 | **TPRST080**<br>**TPRSS080** | 4-80 |

*(1) When protected by any Class J or CC time-delay fuse.*

## Contactor utilisation categories conforming to IEC 60947-1

The standard utilisation categories define the current values which the contactor must be able to make or break.

These values depend on:
- the type of load being switched: squirrel cage or slip ring motor, resistors,
- the conditions under which making or breaking takes place: motor stalled, starting or running, reversing, plugging.

| | |
|---|---|
| **a.c. applications** | |
| **Category AC-1** | This category applies to all types of a.c. load with a power factor equal to or greater than 0.95 ($\cos \varphi \geq 0.95$).<br><br>Application examples: heating, distribution. |
| **Category AC-2** | This category applies to starting, plugging and inching of slip ring motors.<br>■ On closing, the contactor makes the starting current, which is about 2.5 times the rated current of the motor.<br>■ On opening, it must break the starting current, at a voltage less than or equal to the mains supply voltage. |
| **Category AC-3** | This category applies to squirrel cage motors with breaking during normal running of the motor.<br>■ On closing, the contactor makes the starting current, which is about 5 to 7 times the rated current of the motor.<br>■ On opening, it breaks the rated current drawn by the motor.<br>Application examples: all standard squirrel cage motors: lifts, escalators, conveyor belts, bucket elevators, compressors, pumps, mixers, air conditioning units, etc... . |
| **Category AC-3e** | This category applies to high-efficiency IE3/ IE4 squirrel cage motors with breaking during normal running of the motor.<br>■ On closing, the contactor makes the starting current, which is about 5 to 9 times the rated current of the motor.<br>■ On opening, it breaks the rated current drawn by the motor.<br>Application examples: all high-efficiency IE3/ IE4 squirrel cage motors typically used for elevators and escalators, machine tools, conveyor belts, compressors, pumps, mixers, air conditioning units, etc. |
| **Category AC-4** | This category covers applications with plugging and inching of squirrel cage and slip ring motors. The contactor closes at a current peak which may be as high as 5 or 7 times the rated motor current. On opening it breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains voltage. Breaking is severe.<br>Application examples: printing machines, wire drawing machines, cranes and hoists, metallurgy industry. |
| **d.c. applications** | |
| **Category DC-1** | This category applies to all types of d.c. load with a time constant (L/R) of less than or equal to 1 ms. |
| **Category DC-3** | This category applies to starting, counter-current braking and inching of shunt motors. Time constant ≤ 2 ms.<br>■ On closing, the contactor makes the starting current, which is about 2.5 times the rated motor current.<br>■ On opening, the contactor must be able to break 2.5 times the starting current at a voltage which is less than or equal to the mains voltage. The slower the motor speed, and therefore the lower its back e.m.f., the higher this voltage. Breaking is difficult. |
| **Category DC-5** | This category applies to starting, counter-current braking and inching of series wound motors. Time constant ≤ 7.5 ms.<br>On closing, the contactor makes a starting current peak which may be as high as 2.5 times the rated motor current. On opening, the contactor breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains voltage. Breaking is severe. |

## Utilisation categories for auxiliary contacts & control relays conforming to IEC 60947-1

| | |
|---|---|
| **a.c. applications** | |
| **Category AC-14** (1) | This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is less than 72 VA.<br><br>Application example: switching the operating coil of contactors and relays. |
| **Category AC-15** (1) | This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is more than 72 VA.<br><br>Application example: switching the operating coil of contactors. |
| **d.c. applications** | |
| **Category DC-13** (2) | This category applies to the switching of electromagnetic loads for which the time taken to reach 95 % of the steady state current (T = 0.95) is equal to 6 times the power P drawn by the load (with P ≤ 50 W).<br><br>Application example: switching the operating coil of contactors without economy resistor. |

*(1) Replaces category AC-11.*
*(2) Replaces category DC-11.*

## Definitions

**Altitude**

The rarefied atmosphere at high altitude reduces the dielectric strength of the air and hence the rated operational voltage of the contactor. It also reduces the cooling effect of the air and hence the rated operational current of the contactor (unless the temperature drops at the same time).

No derating is necessary up to 3000 m.

Derating factors to be applied above this altitude for main pole operational voltage and current (a.c. supply) are as follows.

| Altitude | 3500 m | 4000 m | 4500 m | 5000 m |
|---|---|---|---|---|
| Rated operational voltage | 0.90 | 0.80 | 0.70 | 0.60 |
| Rated operational current | 0.92 | 0.90 | 0.88 | 0.86 |

**Ambient air temperature**

The temperature of the air surrounding the device, measured near to the device.
The operating characteristics are given:
- with no restriction for temperatures between -5 and +55 °C,
- with restrictions, if necessary, for temperatures between -50 and +70 °C.

**Rated operational current** (Ie)

This is defined taking into account the rated operational voltage, operating rate and duty, utilisation category and ambient temperature around the device.

**Rated conventional thermal current** (Ith) (1)

The current which a closed contactor can sustain for a minimum of 8 hours without its temperature rise exceeding the limits given in the standards.

**Permissible short time rating**

The current which a closed contactor can sustain for a short time after a period of no load, without dangerous overheating.

**Rated operational voltage** (Ue)

This is the voltage value which, in conjunction with the rated operational current, determines the use of the contactor or starter, and on which the corresponding tests and the utilisation category are based. For 3-phase circuits it is expressed as the voltage between phases.
Apart from exceptional cases such as rotor short-circuiting, the rated operational voltage Ue is less than or equal to the rated insulation voltage Ui.

**Rated control circuit voltage** (Uc)

The rated value of the control circuit voltage, on which the operating characteristics are based. For a.c. applications, the values are given for a near sinusoidal wave form (less than 5 % total harmonic distortion).

**Rated insulation voltage** (Ui)

This is the voltage value used to define the insulation characteristics of a device and referred to in dielectric tests determining leakage paths and creepage distances. As the specifications are not identical for all standards, the rated value given for each of them is not necessarily the same.

**Rated impulse withstand voltage** (Uimp)

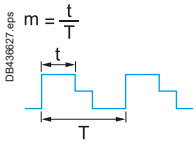
The peak value of a voltage surge which the device is able to withstand without breaking down.

**Rated operational power** (expressed in kW)

The rated power of the standard motor which can be switched by the contactor, at the stated operational voltage.

*(1) Conventional thermal current, in free air, conforming to IEC standards.*
***Note:** these definitions are extracted from standard IEC 60947-1.*

## Definitions

| | |
|---|---|
| **Rated breaking capacity** (1) | This is the current value which the contactor can break in accordance with the breaking conditions specified in the IEC standard. |
| **Rated making capacity** (1) | This is the current value which the contactor can make in accordance with the making conditions specified in the IEC standard. |
| **On-load factor** (m) |  This is the ratio between the time the current flows (t) and the duration of the cycle (T).<br>Cycle duration: duration of current flow + time at zero current. |
| **Pole impedance** | The impedance of one pole is the sum of the impedance of all the circuit components between the input terminal and the output terminal.<br>The impedance comprises a resistive component (R) and an inductive component (X = Lω).<br>The total impedance therefore depends on the frequency and is normally given for 50 Hz.<br>This average value is given for the pole at its rated operational current. |
| **Electrical durability** | This is the average number of on-load operating cycles which the main pole contacts can perform without maintenance. The electrical durability depends on the utilisation category, the rated operational current and the rated operational voltage. |
| **Mechanical durability** | This is the average number of no-load operating cycles (i.e. with zero current flow through the main poles) which the contactor can perform without mechanical failure. |

*(1) For a.c. applications, the breaking and making capacities are expressed by the rms value of the symmetrical component of the short-circuit current. Taking into account the maximum asymmetry which may exist in the circuit, the contacts therefore have to withstand a peak asymmetrical current which may be twice the rms symmetrical component.*

***Note:** these definitions are extracted from standard IEC 60947-1.*

## Operational current and power conforming to IEC (θ ≤ 60 °C) - AC-3

| Contactor size | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1 K12 | LC1 K16 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum operational current in AC-3 | ≤ 440 V | **A** | 6 | 9 | 12 | 16 | 9 | 12 | 18 | 25 | 32 | 38 | 40 |
| Rated operational power P (standard motor power ratings) | 220/240 V (1) | **kW** | 1.5 | 2.2 | 3 | 3 | 2.2 | 3 | 4 | 5.5 | 7.5 | 9 | 11 |
| | 380/400 V (2) | **kW** | 2.2 | 4 | 5.5 | 7.5 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 18.5 |
| | 415 V | **kW** | 2.2 | 4 | 5.5 | 7.5 | 4 | 5.5 | 9 | 11 | 15 | 18.5 | 22 |
| | 440 V | **kW** | 3 | 4 | 5.5 | 7.5 | 4 | 5.5 | 9 | 11 | 15 | 18.5 | 22 |
| | 500 V | **kW** | – | – | – | – | 5.5 | 7.5 | 10 | 15 | 18.5 | 18.5 | 22 |
| | 660/690 V (3) | **kW** | 3 | 4 | 4 | 4 | 5.5 | 7.5 | 10 | 15 | 18.5 | 18.5 | 30 |
| | 1000 V | **kW** | – | – | – | – | – | – | – | – | – | – | – |

## Operational current and power conforming to IEC (θ ≤ 60 °C) - AC-3e

| Contactor size | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1 K12 | LC1 K16 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum operational current in AC-3e | ≤ 440 V | **A** | 6 | 9 | 12 | 16 | 9 | 12 | 18 | 25 | 32 | 38 | 40 |
| Rated operational power P (standard motor power ratings) | 220/240 V (1) | **kW** | 1.5 | 2.2 | 3 | 3 | 2.2 | 3 | 4 | 5.5 | 7.5 | 9 | 11 |
| | 380/400 V (2) | **kW** | 2.2 | 4 | 5.5 | 7.5 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 18.5 |
| | 415 V | **kW** | 2.2 | 4 | 5.5 | 7.5 | 4 | 5.5 | 9 | 11 | 15 | 18.5 | 22 |
| | 440 V | **kW** | 3 | 4 | 5.5 | 7.5 | 4 | 5.5 | 9 | 11 | 15 | 18.5 | 22 |
| | 500 V | **kW** | – | – | – | – | 5.5 | 7.5 | 10 | 15 | 18.5 | 18.5 | 22 |
| | 660/690 V (3) | **kW** | 3 | 4 | 4 | 4 | 5.5 | 7.5 | 10 | 15 | 18.5 | 18.5 | 30 |
| | 1000 V | **kW** | – | – | – | – | – | – | – | – | – | – | – |

### Maximum operating rate in operating cycles/hour (4)

| On-load factor | Operational power | | | | | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 85 % | P | – | – | – | – | 1200 | 1200 | 1200 | 1200 | 1000 | 1000 | 1000 |
| | 0.5 P | – | – | – | – | 3000 | 3000 | 2500 | 2500 | 2500 | 2500 | 2500 |
| ≤ 25 % | P | – | – | – | – | 1800 | 1800 | 1800 | 1800 | 1200 | 1200 | 1200 |

## Operational current and power conforming to UL, CSA (θ ≤ 60 °C)

| Contactor size | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1/ LP1 K12 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum operational current in AC-3 | ≤ 440 V | **A** | 6 | 9 | 12 | 9 | 12 | 18 | 25 | 32 | – | 40 |
| Rated operational power P (standard motor power ratings 60 Hz) | 200/208 V | **HP** | 1.5 | 2 | 3 | 2 | 3 | 5 | 7.5 | 10 | – | 10 |
| | 230/240 V | **HP** | 1.5 | 3 | 3 | 2 | 3 | 5 | 7.5 | 10 | – | 10 |
| | 460/480 V | **HP** | 3 | 5 | 7.5 | 5 | 7.5 | 10 | 15 | 20 | – | 30 |
| | 575/600 V | **HP** | 3 | 5 | 10 | 7.5 | 10 | 15 | 20 | 25 | – | 30 |

*(1) 230 V for LC1G115 to LC1G800 contactors.*
*(2) 400 V for LC1G115 to LC1G800 contactors.*
*(3) 690 V for LC1K/LP1K and LC1G115 to LC1G800 contactors.*
*(4) Depending on the operational power and the on-load factor (θ ≤ 60 °C).*

| LC1 D50A | LC1 D65A | LC1 D80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 | LC1 F780 | LC1 F1000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 65 | 66 | 80 | 95 | 115 | 150 | 115 | 150 | 185 | 225 | 265 | 330 | 400 | 500 | 630 | 800 | 780 | 1000 |
| 15 | 18.5 | 22 | 22 | 25 | 30 | 40 | 30 | 37 | 55 | 55 | 75 | 90 | 110 | 160 | 200 | 250 | 220 | 315 |
| 22 | 30 | 37 | 37 | 45 | 55 | 75 | 55 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 335 | 450 | 400 | 560 |
| 25 | 37 | 37 | 45 | 45 | 59 | 80 | 55 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 375 | 450 | 425 | 630 |
| 30 | 37 | 37 | 45 | 45 | 59 | 80 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 315 | 400 | 450 | 425 | 670 |
| 30 | 37 | 37 | 55 | 55 | 75 | 90 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 355 | 400 | 500 | 450 | – |
| 33 | 37 | 37 | 45 | 45 | 80 | 100 | 75 | 90 | 110 | 160 | 200 | 220 | 315 | 355 | 500 | 560 | 475 | – |
| – | – | – | – | – | 65 | 75 | – | 75 | 75 | 132 | 160 | 185 | 220 | 335 | 450 | 450 | 450 | – |

| LC1 D50A | LC1 D65A | LC1 D80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 65 | 66 | 80 | 95 | 115 | 150 | 115 | 145 | 177 | 209 | 255 | 294 | 391 | 437 | 555 | 587 |
| 15 | 18.5 | 22 | 22 | 25 | 30 | 40 | 30 | 37 | 55 | 55 | 75 | 90 | 110 | 147 | 180 | 200 |
| 22 | 30 | 37 | 37 | 45 | 55 | 75 | 55 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 315 | 335 |
| 25 | 37 | 37 | 45 | 45 | 59 | 80 | 55 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 335 | 355 |
| 30 | 37 | 37 | 45 | 45 | 59 | 80 | 75 | 90 | 110 | 132 | 160 | 185 | 250 | 280 | 355 | 375 |
| 30 | 37 | 37 | 55 | 55 | 75 | 90 | 75 | 90 | 110 | 132 | 160 | 200 | 250 | 315 | 375 | 425 |
| 33 | 37 | 37 | 45 | 45 | 80 | 100 | 75 | 90 | 110 | 160 | 200 | 220 | 315 | 355 | 500 | 560 |
| – | – | – | – | – | 65 | 75 | – | 75 | 75 | 132 | 160 | 185 | 220 | 335 | 450 | 450 |

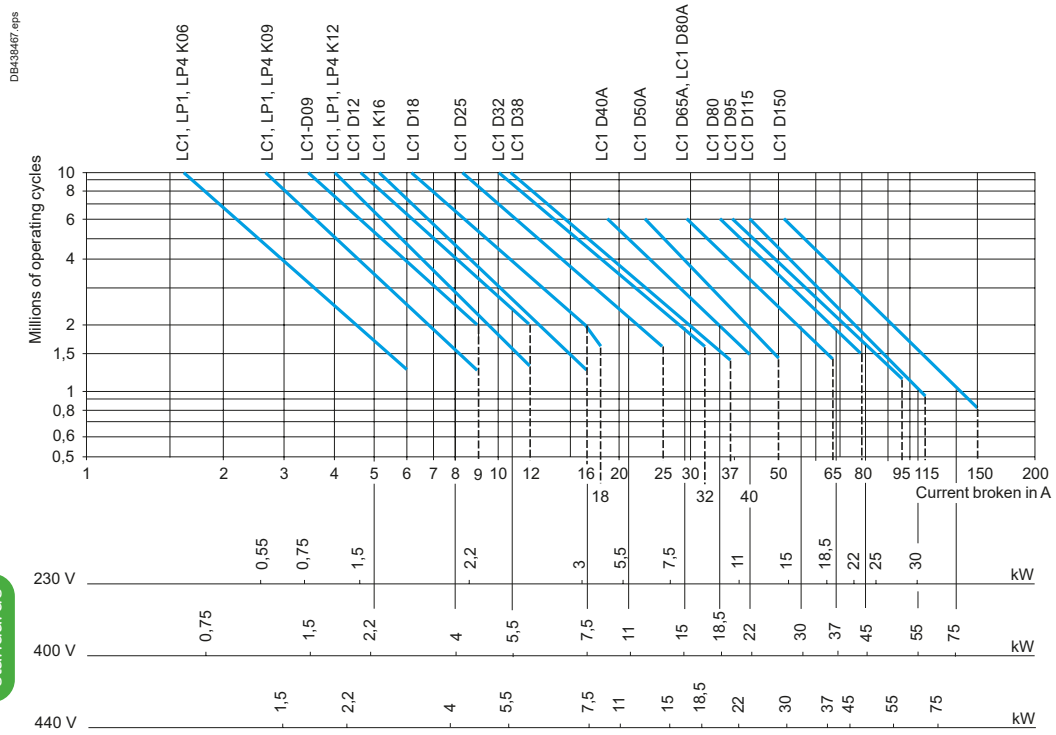
| LC1 D50A | LC1 D65A | LC1 D80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 | LC1 F780 | LC1 F1000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 1000 | 1000 | 750 | 750 | 750 | 750 | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | 500 | (5) |
| 2500 | 2500 | 2500 | 2000 | 2000 | 2000 | 1200 | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | 1200 | (5) |
| 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | 600 | (5) |

| LC1 D50A | LC1 D65A | LC1 D80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 | LC1 F780 | LC1 F1000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 65 | 65 | 80 | 95 | 115 | 150 | 115 | 150 | 185 | 225 | 265 | 330 | 400 | 500 | 630 | 800 | 780 | 1000 |
| 15 | 20 | 20 | 30 | 30 | 30 | 40 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 250 | 300 | – | 350 |
| 15 | 20 | 20 | 30 | 30 | 40 | 50 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 200 | 300 | 350 | 450 | 400 |
| 40 | 40 | 40 | 60 | 60 | 75 | 100 | 75 | 100 | 125 | 150 | 200 | 250 | 300 | 400 | 600 | 700 | 900 | 900 |
| 40 | 50 | 50 | 60 | 60 | 100 | 125 | 100 | 125 | 150 | 150 | 200 | 300 | 400 | 450 | 700 | 800 | 900 | – |

*(5) Other values: please contact your regional sales office.*

## Selection according to required electrical durability, in category AC-3, AC-3e (Ue ≤ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.



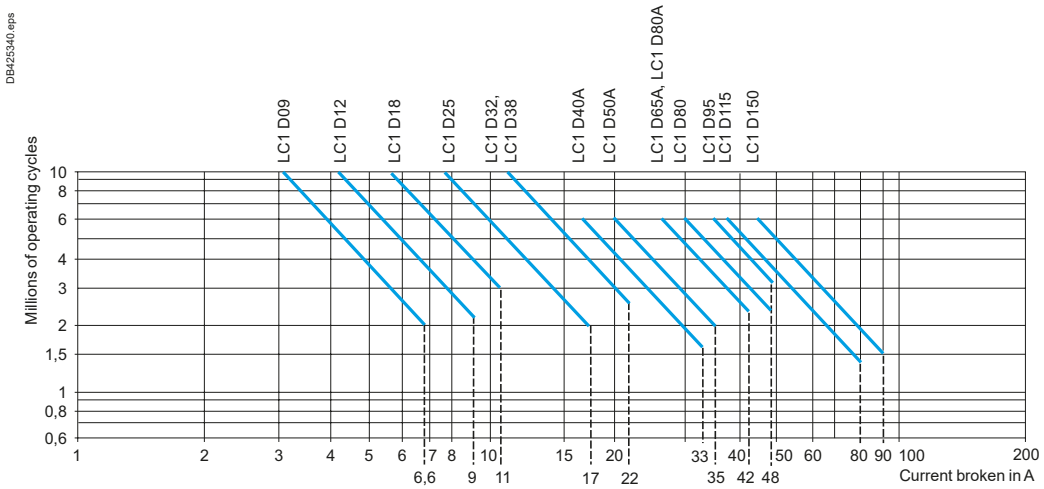

Operational power in kW-50 Hz.

**Example:**

Asynchronous motor with P = 5.5 kW - Ue = 400 V - Ie = 11 A - Ic = Ie = 11 A
or asynchronous motor with P = 5.5 kW - Ue = 415 V - Ie = 11 A - Ic = Ie = 11 A
3 million operating cycles required.
The above selection curves show the contactor rating needed: LC1D18.

## Selection according to required electrical durability, in category AC-3, AC-3e (Ue = 660/690 V) (1)

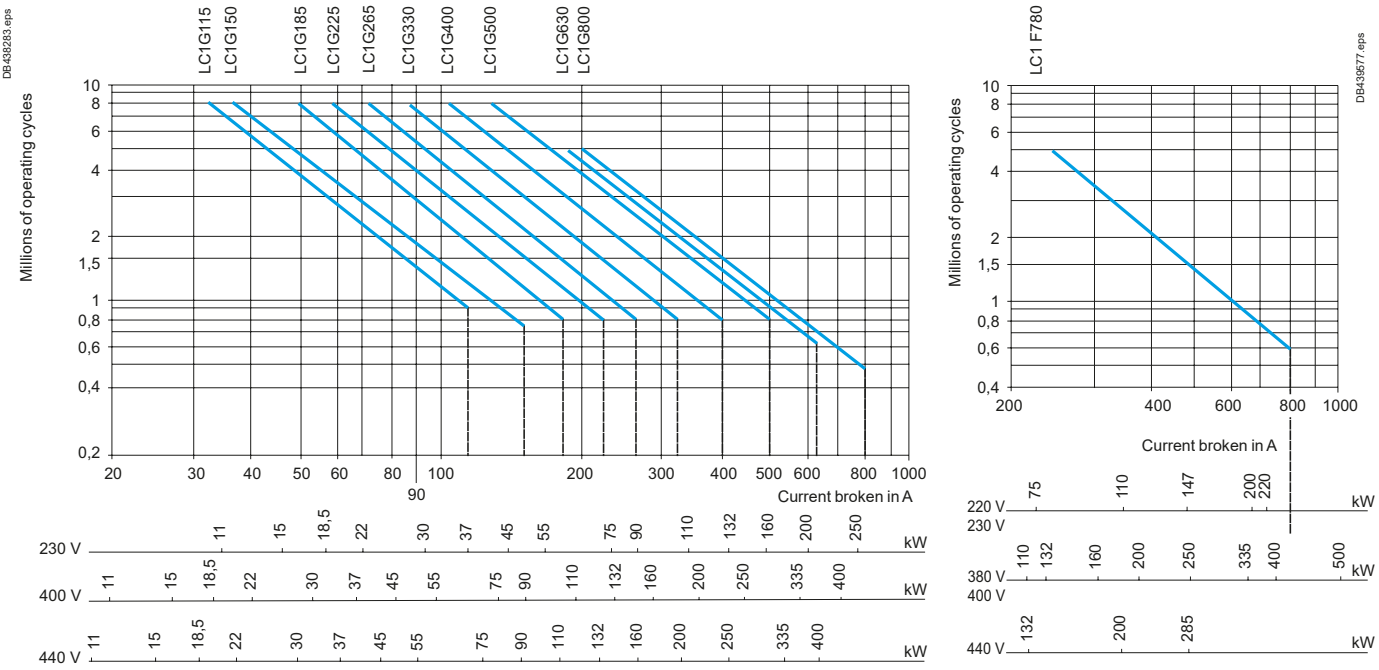
Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.




*(1) For Ue = 1000 V, use the 660/690 V curves, but do not exceed the operational current at the operational power indicated for 1000 V.*

## Selection according to required electrical durability, in category AC-3 (Ue ≤ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running. The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.



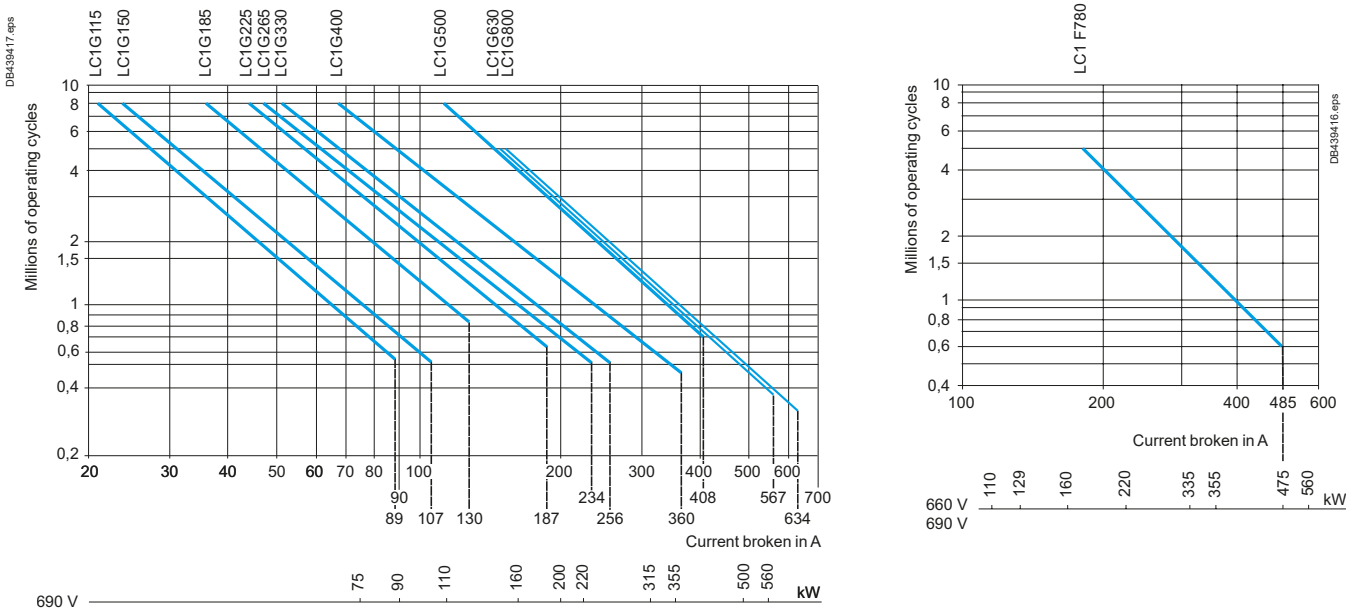

Operational power in kW-50 Hz.

**Example:**

Asynchronous motor with P = 132 kW - Ue = 400 V - Ie = 230 A - Ic = Ie = 230 A
1.8 million operating cycles required.
The above selection curves show the contactor rating needed: LC1G400.

## Selection according to required electrical durability, in category AC-3 (Ue = 660/690 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.




**Example:**

Asynchronous motor with P = 200 kW - Ue = 690 V - Ie = 203 A - Ic = Ie = 203 A
1 million operating cycles required.
The above selection curves show the contactor rating needed: LC1G400.

## Maximum operational current (open-mounted device)

| Contactor size | | | LC1/ LP1 K09 | LC1/ LP1 K12 | LC1 D09 | LC1 DT20 | LC1 D12 DT25 | LC1 D18 DT32 | LC1 D25 DT40 | LC1 D32 | LC1 D38 | LC1 D40A DT60A | LC1 D50A | LC1 D65A D80A DT80A | LC1/ LP1 D80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum operating rate in operating cycles/hour | | | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| Connection conforming to IEC 60947-1 | Cable c.s.a. | mm² | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 10 | 10 | 35 | 35 | 35 | 50 |
| | Bar c.s.a. | mm | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Operational current in AC-1 in A, according to the ambient temperature conforming to IEC 60947-1 | ≤ 40 °C | A | 20 | 20 | 25 | 20 | 25 | 32 | 40 | 50 | 50 | 60 | 80 | 80 | 125 |
| | ≤ 60 °C | A (4) | 20 | 20 | 25 | 20 | 25 | 32 | 40 | 50 | 50 | 60 | 80 | 80 | 125 |
| | ≤ 70 °C | A (4) | (1) | (1) | 17 | (1) | 17 | 22 | 28 | 35 | 35 | 42 | 56 | 56 | 80 |
| Maximum operational power ≤ 60 °C | 220/230 V | kW | 8 | 8 | 9 | 8 | 9 | 11 | 14 | 18 | 18 | 21 | 29 | 29 | 45 |
| | 240 V | kW | 8 | 8 | 9 | 8 | 9 | 12 | 15 | 19 | 19 | 23 | 31 | 31 | 49 |
| | 380/400 V | kW | 14 | 14 | 15 | 14 | 15 | 20 | 25 | 31 | 31 | 37 | 50 | 50 | 78 |
| | 415 V | kW | 14 | 14 | 17 | 14 | 17 | 21 | 27 | 34 | 34 | 41 | 54 | 54 | 85 |
| | 440 V | kW | 15 | 15 | 18 | 15 | 18 | 23 | 29 | 36 | 36 | 43 | 58 | 58 | 90 |
| | 500 V | kW | 17 | 17 | 20 | 17 | 20 | 23 | 33 | 41 | 41 | 49 | 65 | 65 | 102 |
| | 660/690 V | kW | 22 | 22 | 27 | 22 | 27 | 34 | 43 | 54 | 54 | 65 | 80 | 80 | 135 |
| | 1000 V | kW | – | – | – | – | – | – | – | – | – | – | – | – | 120 |

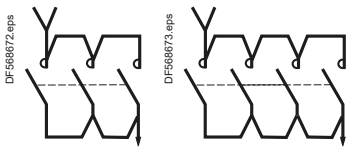
*(1) Please consult your Regional Sales Office.*
*(2) With set of right-angled connectors **LA9F2100.***
*(3) With set of right-angled connectors **LA9F2600**.*
*(4) **LC1F780** to **LC1F2600**, **LC1G115** to **LC1G800**: the maximum control voltage must not exceed rated Uc for a temperature θ, 60 °C ≤ θ ≤ 70 °C.*



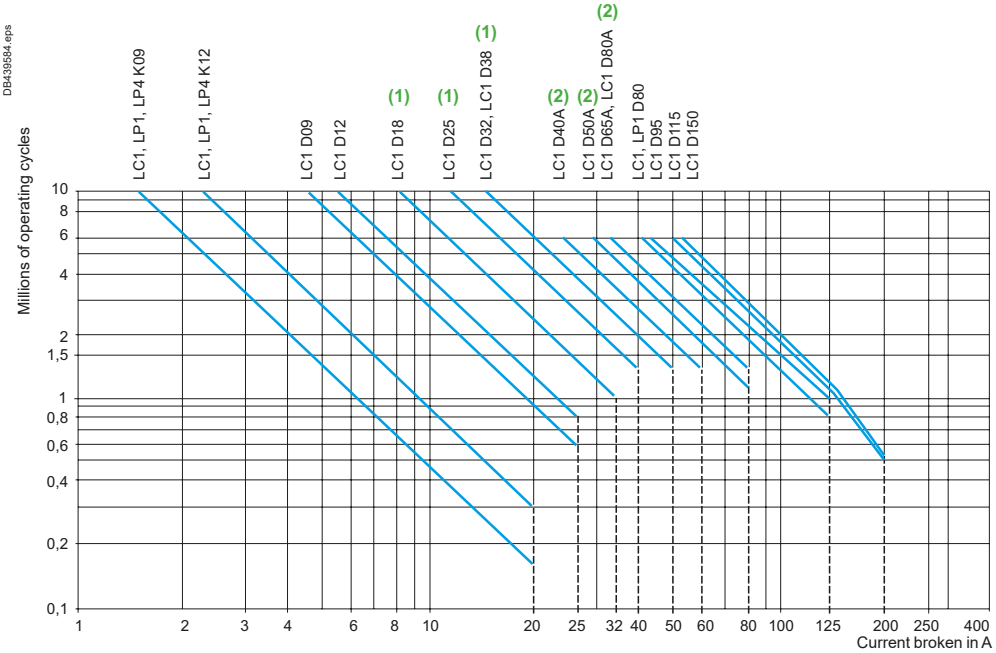
### Increase in operational current by parallel connection of poles

Apply the following coefficients to the currents or power values given above; these coefficients take into account an often unbalanced current distribution between the poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8




## Selection according to required electrical durability, in category AC-1 (Ue ≤ 690 V)




*(1) For Deca Green, consult online data sheets for values.*
*(2) For Deca Green or DC coil, consult online data sheets for values.*

Control of resistive circuits (cos ϕ ≥ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

**Example:**

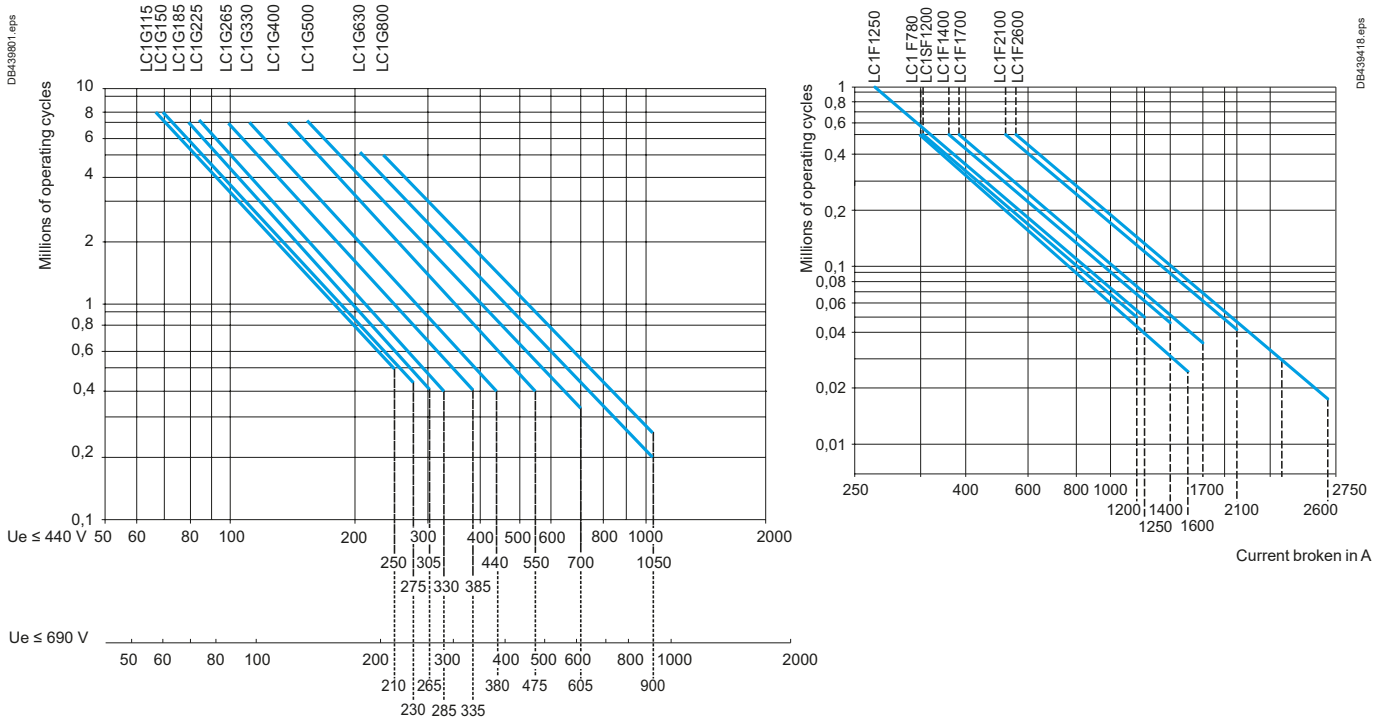
- Ue = 220 V - Ie = 50 A θ ≤ 40 °C - Ic = Ie = 50 A
- 2 million operating cycles required
- the above selection curves show the contactor rating needed: LC1D50A.

| LC1 D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 | LC1 F780 | LC1 F1000 | LC1S F1200 | LC1 F1250 | LC1 F1400 | LC1 F1700 | LC1 F2100 | LC1 F2600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 600 | 600 | 600 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 600 | 600 | 300 | 300 | 200 | 200 | 200 | 200 |
| 50 | 120 | 120 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – | – | 2 100x5 | 3 100x5 | 2 50x8 | 2 100x5 | 2 100x5 | 3 100x5 | 4 100x5 | 3 100x10 |
| 125 | 200 | 200 | 250 | 275 | 305 | 330 | 385 | 440 | 550 | 700 | 1050 | 1050 | 1600 | 1250 | 1200 | 1260 | 1400 | 1700 | 2100(2) | 2600 |
| 125 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 800 | 800 | 1350 | (1) | 1110 | 1060 | 1190 | 1450 | 1750(2) | 2600(3) |
| 80 | 160 | 160 | 210 | 235 | 255 | 280 | 330 | 380 | 470 | 540 | 640 | 640 | 1100 | (1) | 1020 | 900 | 1080 | 1300 | 1500(2) | 2150(3) |
| 45 | 80 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 200 | 240 | 320 | 320 | 550 | (1) | 400 | 420 | 474 | 570 | 700 | 840 |
| 49 | 83 | 83 | 90 | 100 | 110 | 120 | 150 | 170 | 210 | 250 | 330 | 330 | 570 | (1) | 410 | 440 | 490 | 600 | 780 | 920 |
| 78 | 135 | 135 | 160 | 170 | 190 | 210 | 240 | 280 | 350 | 420 | 550 | 550 | 950 | (1) | 700 | 730 | 820 | 1000 | 1200 | 1450 |
| 85 | 140 | 140 | 160 | 180 | 200 | 220 | 250 | 290 | 360 | 430 | 580 | 580 | 1000 | (1) | 720 | 760 | 850 | 1050 | 1300 | 1580 |
| 90 | 150 | 150 | 170 | 190 | 210 | 230 | 270 | 300 | 380 | 460 | 610 | 610 | 1050 | (1) | 750 | 810 | 910 | 1100 | 1350 | 1680 |
| 102 | 170 | 170 | 190 | 220 | 240 | 260 | 300 | 350 | 430 | 520 | 690 | 690 | 1200 | – | 850 | 920 | 1000 | 1250 | 1550 | 1910 |
| 135 | 235 | 235 | 270 | 300 | 330 | 360 | 420 | 480 | 600 | 720 | 960 | 960 | 1650 | – | 1200 | 1260 | 1400 | 1700 | 2100 | 2520 |
| 120 | 345 | 345 | 390 | 430 | 480 | 520 | 610 | 690 | 870 | 1040 | 1390 | 1390 | 2400 | – | – | – | 2100 | 2500 | 3100(2) | 3820 |

*(1) Please consult your Regional Sales Office.*
*(2) With set of right-angled connectors **LA9F2100.***
*(3) With set of right-angled connectors **LA9F2600**.*
*(4) **LC1F780** to **LC1F2600**, **LC1G115** to **LC1G800**: the maximum control voltage must not exceed rated Uc for a temperature θ, 60 °C ⩽ θ ⩽ 70 °C.*



## Selection according to required electrical durability, in category AC-1 (Ue ⩽ 690 V, θ ⩽ 40 °C)




**Example:**

- Ue = 440 V - Ie = 500 A - θ ⩽ 40 °C - Ic = Ie = 500 A
- 0.8 million operating cycles required
- the above selection curves show the contactor rating needed: LC1G630.

## Maximum breaking current

Category AC-2: slip ring motors - breaking the starting current.
Category AC-4: squirrel cage motors - breaking the starting current.

| Contactor size | | | LC1/ LP1 K06 | LC1/ LP1 K09 | LC1/ LP1 K12 | LC1 D09 | LC1 D12 | LC1 D18 | LC1 D25 | LC1 D32 | LC1 D38 | LC1 D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **In category AC-4** (Ie max) | Ue ≤ 440 V<br>Ie max broken = 6 x I motor | **A** | 36 | 54 | 54 | 54 | 72 | 108 | 150 | 192 | 192 | 240 |
| | 440 V < Ue ≤ 690 V<br>Ie max broken = 6 x I motor | **A** | 26 | 40 | 40 | 40 | 50 | 70 | 90 | 105 | 105 | 150 |
| **Depending on the maximum operating rate** (1) **and the on-load factor,** θ ≤ 60 °C (2) | | | | | | | | | | | | |
| From 150 and 15 % to 300 and 10 % | | **A** | 20 | 30 | 30 | 30 | 40 | 45 | 75 | 80 | 80 | 110 |
| From 150 and 20 % to 600 and 10 % | | **A** | 18 | 27 | 27 | 27 | 36 | 40 | 67 | 70 | 70 | 96 |
| From 150 and 30 % to 1200 and 10 % | | **A** | 16 | 24 | 24 | 24 | 30 | 35 | 56 | 60 | 60 | 80 |
| From 150 and 55 % to 2400 and 10 % | | **A** | 13 | 19 | 19 | 19 | 24 | 30 | 45 | 50 | 50 | 62 |
| From 150 and 85 % to 3600 and 10 % | | **A** | 10 | 16 | 16 | 16 | 21 | 25 | 40 | 45 | 45 | 53 |

| Contactor size | | | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **In category AC-4** (Ie max) | Ue ≤ 440 V<br>Ie max broken = 6 x I motor | **A** | 690 | 900 | 1110 | 1350 | 1590 | 1980 | 2400 | 3000 | 3780 | 4050 |
| | 440 V < Ue ≤ 690 V<br>Ie max broken = 6 x I motor | **A** | 530 | 640 | 780 | 1120 | 1400 | 1530 | 2160 | 2450 | 3400 | 3800 |
| **Depending on the maximum operating rate** (1) **and the on-load factor,** θ ≤ 60 °C (2) | | | | | | | | | | | | |
| **Duty Cycle [Cycle/h]** | **Load Factor [%]** | | | | | | | | | | | |
| 150 | 15 | **A** | 319 | 400 | 478 | 562 | 641 | 758 | 869 | 1001 | 1124 | 1204 |
| 300 | 10 | **A** | 250 | 314 | 375 | 441 | 502 | 593 | 679 | 779 | 870 | 923 |
| 150 | 20 | **A** | 304 | 383 | 457 | 538 | 613 | 726 | 834 | 962 | 1083 | 1165 |
| 600 | 10 | **A** | 183 | 230 | 275 | 324 | 369 | 437 | 502 | 579 | 653 | 703 |
| 150 | 30 | **A** | 280 | 352 | 421 | 495 | 565 | 668 | 766 | 883 | 993 | 1065 |
| 1200 (3) | 10 | **A** | 131 | 164 | 196 | 230 | 262 | 309 | 353 | 404 | 449 | 473 |
| 150 | 55 | **A** | 239 | 300 | 358 | 421 | 480 | 568 | 652 | 750 | 842 | 902 |
| 2400 (3) | 10 | **A** | 120 | 151 | 181 | 212 | 242 | 287 | 329 | 379 | 426 | 457 |
| 150 | 85 | **A** | 208 | 261 | 312 | 368 | 420 | 498 | 572 | 661 | 748 | 809 |
| 3600 (3) | 10 | **A** | 120 | 151 | 181 | 212 | 242 | 287 | 329 | 379 | 426 | 457 |

*(1) Do not exceed the maximum number of operating cycles.*
*(2) For temperatures higher than 60 °C, use a maximum operating rate value equal to 80 % of the actual value when selecting from the tables.*
*(3) Control Module can operate with higher duty cycle during limited time followed by proposed cooling time.*

| Operating cycles/hour | Cool time |
|---|---|
| 1200 | **10 min** |
| 2400 | **30 min** |
| 3600 | **60 min** |

## Counter current braking (plugging)

The current varies from the maximum plug-braking current to the rated motor current.
The making current must be compatible with the rated making and breaking capacities of the contactor.

As breaking normally takes place at a current value at or near the locked rotor current, the contactor can be selected using the criteria for categories AC-2 and AC-4.

## Permissible AC-4 power rating for 200 000 operating cycles

| Operational voltage | | LC●/ LP● K06 | LC●/ LP● K09 | LC● LP● K12 | LC● D09 | LC● D12 | LC● D18 | LC● D25 | LC● D32 | LC● D38 | LC● D40A |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220/230 V (4) | **kW** | 0.75 | 1.1 | 1.1 | 1.5 | 1.5 | 2.2 | 3 | 4 | 4 | 4 |
| 380/400 V (5) | **kW** | 1.5 | 2.2 | 2.2 | 2.2 | 3.7 | 4 | 5.5 | 7.5 | 7.5 | 9 |
| 415 V | **kW** | 1.5 | 2.2 | 2.2 | 2.2 | 3 | 3.7 | 5.5 | 7.5 | 7.5 | 9 |
| 440 V | **kW** | 1.5 | 2.2 | 2.2 | 2.2 | 3 | 3.7 | 5.5 | 7.5 | 7.5 | 11 |
| 500 V | **kW** | 2.2 | 3 | 3 | 3 | 4 | 5.5 | 7.5 | 9 | 9 | 11 |
| 660/690 V (6) | **kW** | 3 | 4 | 4 | 4 | 5.5 | 7.5 | 10 | 11 | 11 | 15 |

*(4) 230 V for LC1G115 to LC1G800 contactors.*
*(5) 400 V for LC1G115 to LC1G800 contactors.*
*(6) 690 V for LC1G115 to LC1G800 contactors.*

| LC1 D50A | LC1 D65A | LC1 D80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 F780 |
|---|---|---|---|---|---|---|---|
| 300 | 390 | 390 | 480 | 570 | 630 | 830 | 4260 |
| 170 | 210 | 210 | 250 | 250 | 540 | 640 | 2910 |
| | | | | | | | |
| 140 | 160 | 160 | 200 | 200 | 280 | 310 | 1600 |
| 120 | 148 | 148 | 170 | 170 | 250 | 280 | 1400 |
| 100 | 132 | 132 | 145 | 145 | 215 | 240 | 1100 |
| 80 | 110 | 110 | 120 | 120 | 150 | 170 | 820 |
| 70 | 90 | 90 | 100 | 100 | 125 | 145 | 710 |

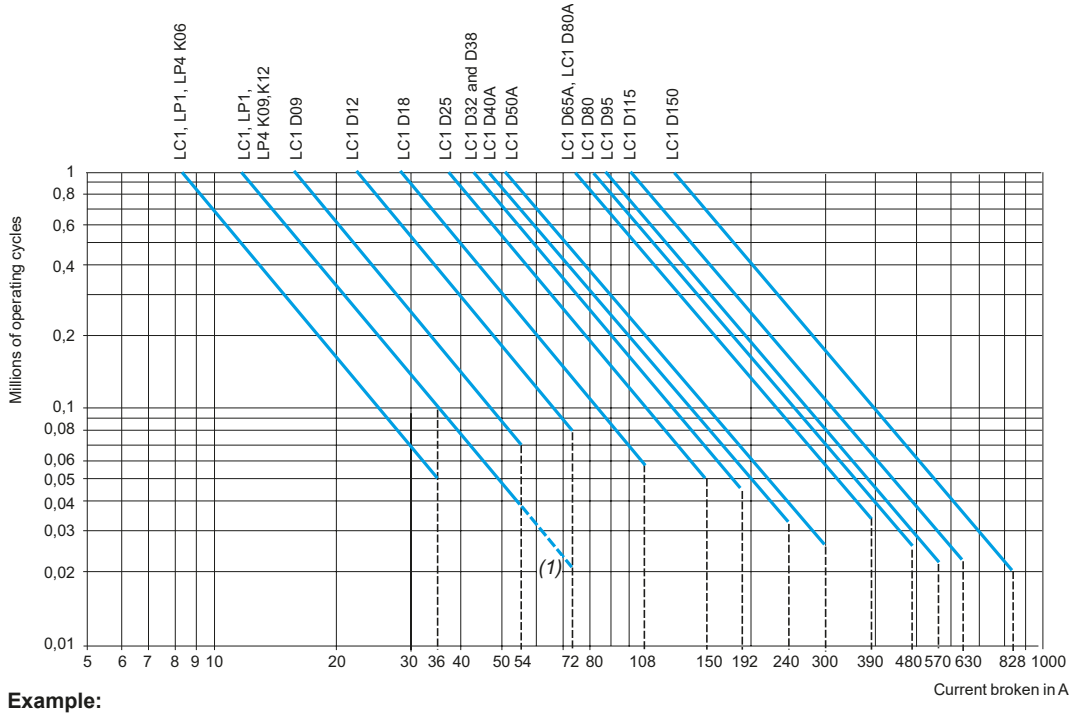


| LC● D50A | LC● D65A | LC1 D80A | LC● D80 | LC● D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 | LC1 F780 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.5 | 7.5 | 7.5 | 7.5 | 9 | 9 | 11 | 11 | 11 | 15 | 18.5 | 22 | 22 | 30 | 37 | 37 | 37 | 63 |
| 11 | 11 | 11 | 15 | 15 | 18.5 | 22 | 22 | 22 | 30 | 30 | 37 | 45 | 55 | 55 | 55 | 75 | 110 |
| 11 | 11 | 11 | 15 | 15 | 18.5 | 22 | 22 | 22 | 30 | 30 | 37 | 45 | 55 | 55 | 55 | 75 | 110 |
| 11 | 15 | 15 | 15 | 15 | 18.5 | 22 | 22 | 22 | 30 | 37 | 45 | 55 | 55 | 55 | 75 | 75 | 132 |
| 15 | 15 | 15 | 22 | 22 | 30 | 37 | 11 | 11 | 18.5 | 22 | 22 | 30 | 45 | 45 | 55 | 55 | 150 |
| 15 | 18.5 | 18.5 | 25 | 25 | 30 | 45 | 18.5 | 22 | 22 | 30 | 37 | 45 | 55 | 55 | 75 | 90 | 185 |

## Selection according to required electrical durability, in categories AC-2 or AC-4 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.
The current broken (Ic) in AC-2 is equal to 2.5 x Ie.
The current broken (Ic) in AC-4 is equal to 6 x Ie (Ie = rated operational current of the motor).

DB425342.eps




**Example:**

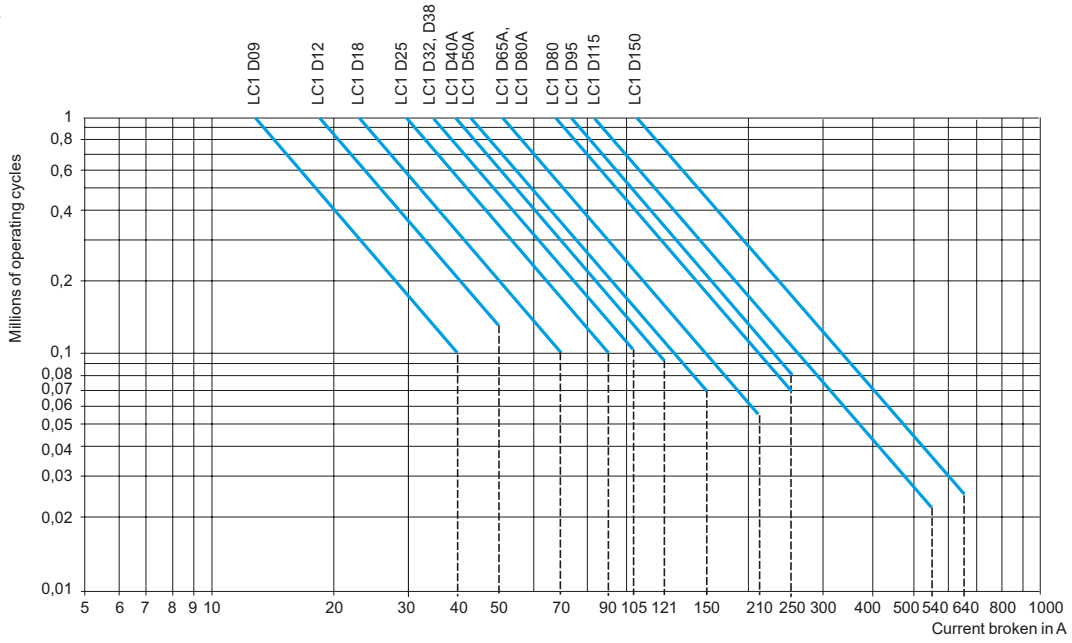
- asynchronous motor with P = 5.5 kW - Ue = 400 V - Ie = 11 A. Ic = 6 x Ie = 66 A
- or asynchronous motor with P = 5.5 kW - Ue = 415 V - Ie = 11 A. Ic = 6 x Ie = 66 A
- 200 000 operating cycles required
- the above selection curves show the contactor rating needed: LC1D25.

*(1) The dotted lines are only applicable to LC1, LP1K12 contactors.*

## Selection according to required electrical durability, use in category AC-4 (440 V < Ue ⩽ 690 V)

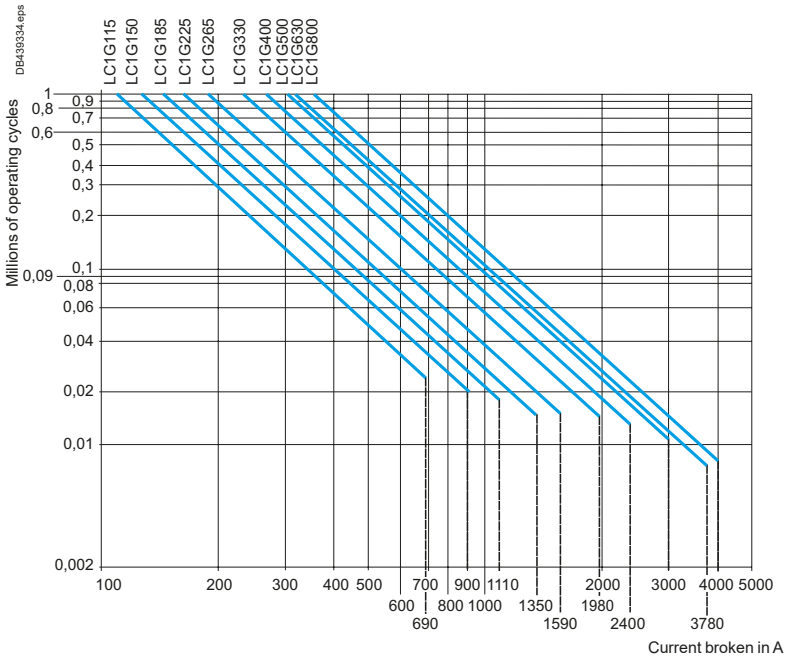
Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled.
The current broken (Ic) in AC-2 is equal to 2.5 x Ie.
The current broken (Ic) in AC-4 is equal to 6 x Ie (Ie = rated operational current of the motor).

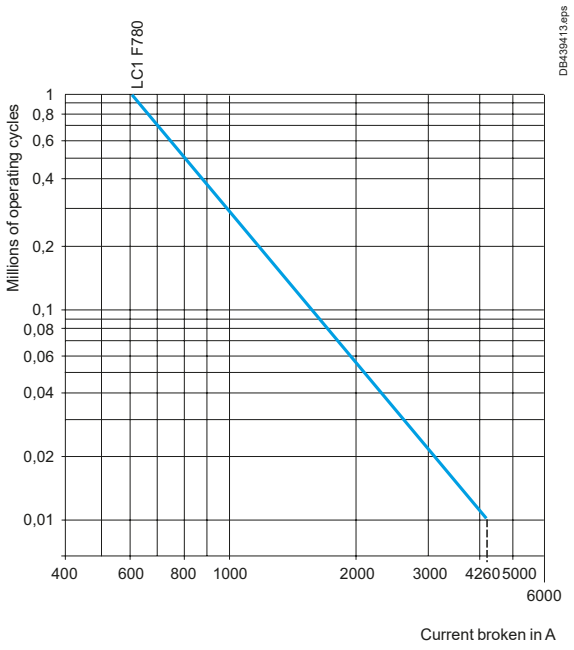
DB425343.eps



## Selection according to required electrical durability, in categories AC-2 or AC-4 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.
The current broken (Ic) in AC-4 is equal to 6 x Ie.
(Ie = rated operational current of the motor).



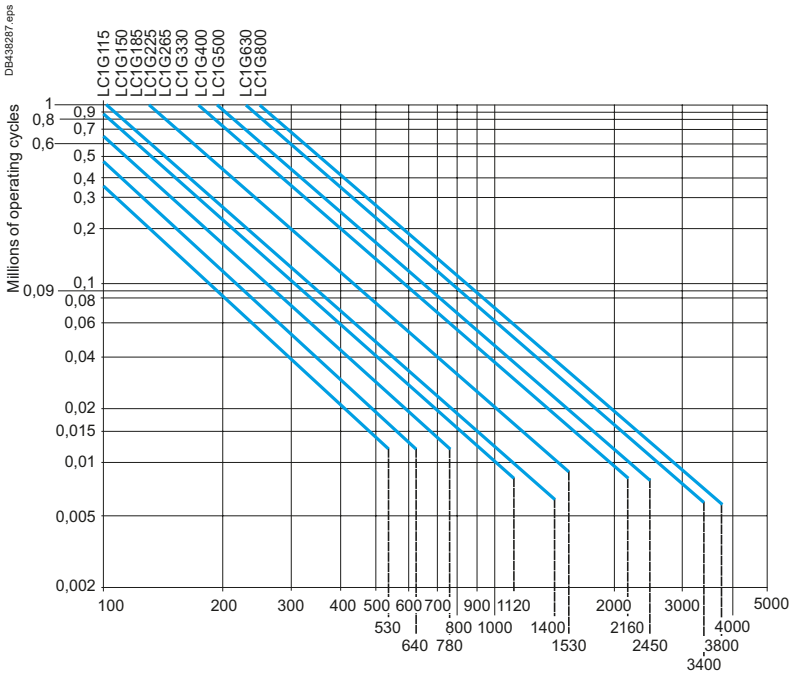



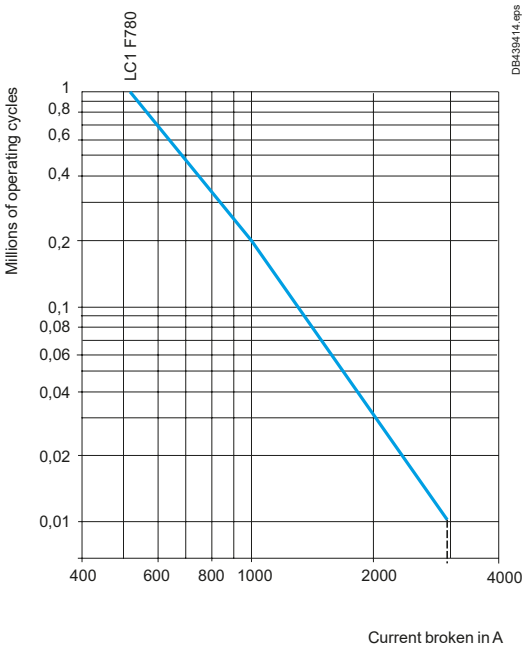

**Example:**

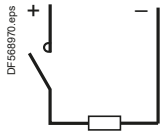
- asynchronous motor with P = 132 kW - Ue = 400 V - Ie = 230 A. Ic = 6 x Ie = 1380 A.
30 000 operating cycles required.
- the above selection curves show the contactor rating needed: LC1G330.

## Selection according to required electrical durability, use in category AC-4 (440 V < Ue ⩽ 690 V)

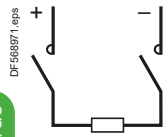
Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled.
The current broken (Ic) in AC-4 is equal to 6 x Ie (Ie = rated operational current of the motor).



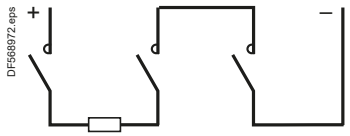





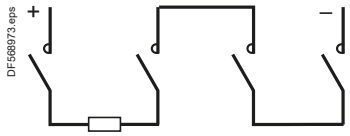

*1 pole*




*2 poles*




*3 poles*




*4 poles*

Coordination and standards

## Rated operational current (Ie) in Amperes, in utilisation category DC-1, resistive loads: time constant $\frac{L}{R}$ ≤ 1 ms, ambient temperature ≤ 60 °C

| Rated operational voltage Ue | No. of poles connected in series | Contactor rating | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC1 D09 | LC1 DT20 | LC1 D12 DT25 | LC1 D18 DT32 | LC1 D25 DT40 | LC1 D32 | LC1 D38 | LC1 D40A | LC1 DT60A |
| V | | | | | | | | | | |
| 24 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 48/75 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 125 | 1 | 4 | 4 | 4 | 4 | 7 | 7 | 7 | 7 | 7 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 250 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2 | 4 | 4 | 4 | 4 | 7 | 7 | 7 | 7 | 7 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 300 | 1 | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – |
| | 3 | 4 | 4 | 4 | 4 | 7 | 7 | 7 | 7 | – |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 460 | 1 | – | – | – | – | – | – | – | – | – |
| | 2 | – | – | – | – | – | – | – | – | – |
| | 3 | – | – | – | – | – | – | – | – | – |
| | 4 | – | – | – | – | – | – | – | – | – |

## Rated operational current (Ie) in Amperes, in utilisation category DC-2 to DC-5, inductive loads: time constant $\frac{L}{R}$ ≤ 15 ms, ambient temperature ≤ 60 °C

| Rated operational voltage Ue | No. of poles connected in series | Contactor rating | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC1 D09 | LC1 DT20 | LC1 D12 DT25 | LC1 D18 DT32 | LC1 D25 DT40 | LC1 D32 | LC1 D38 | LC1 D40A | LC1 DT60A |
| V | | | | | | | | | | |
| 24 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 48/75 | 1 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 125 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| | 2 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 3 | 20 | 20 | 20 | 25 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 250 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 1 |
| | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| | 3 | 8 | 8 | 8 | 8 | 32 | 40 | 40 | 50 | 50 |
| | 4 | – | 20 | 20 | 25 | 32 | – | – | – | 50 |
| 300 | 1 | | | | | | | | | |
| | 2 | | | | | | | | | |
| | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| | 4 | – | 8 | 8 | 8 | 32 | – | – | – | 50 |
| 460 | 1 | – | – | – | – | – | – | – | – | – |
| | 2 | | | | | | | | | |
| | 3 | | | | | | | | | |
| | 4 | – | – | – | – | – | – | – | – | – |

| Contactor rating | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LC1 D50A | LC1 D65A D80A | LC1 DT80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 | LC1 F780 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 7 | 7 | 7 | 12 | 12 | 12 | 12 | 205 | 225 | 250 | 270 | 315 | 360 | 450 | 540 | 855 | 855 | 1180 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 205 | 225 | 250 | 270 | 315 | 360 | 450 | 540 | 855 | 855 | 1180 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 355 | 405 | 505 | 605 | 960 | 960 | 1300 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 355 | 405 | 505 | 605 | 960 | 960 | 1300 |
| 1 | 1.5 | 1.5 | 2 | 2 | 10 | 10 | – | – | – | – | – | – | – | – | – | – | – |
| 7 | 7 | 7 | 12 | 12 | 200 | 200 | 180 | 205 | 225 | 245 | 285 | 325 | 405 | 485 | 770 | 770 | 1000 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 945 | 945 | 1300 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | |
| 7 | 7 | 7 | 12 | 12 | 200 | 200 | 185 | 205 | 225 | 250 | 290 | 330 | 415 | 495 | 785 | 785 | 1000 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1000 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | 200 | – | 185 | 205 | 225 | 245 | 285 | 325 | 410 | 490 | 775 | 775 | 1000 |

| Contactor rating | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LC1 D50A | LC1 D65A D80A | LC1 DT80A | LC1 D80 | LC1 D95 | LC1 D115 | LC1 D150 | LC1 G115 | LC1 G150 | LC1 G185 | LC1 G225 | LC1 G265 | LC1 G330 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 | LC1 F780 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1300 |
| 4 | 4 | 4 | 5 | 5 | 10 | 10 | - | - | - | - | - | - | - | - | - | - | – |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 190 | 210 | 230 | 250 | 290 | 335 | 420 | 500 | 795 | 795 | 1000 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 205 | 230 | 255 | 275 | 325 | 370 | 460 | 555 | 875 | 875 | 1000 |
| – | – | 65 | 100 | – | 200 | – | 205 | 230 | 255 | 275 | 325 | 370 | 460 | 555 | 875 | 875 | 1000 |
| 1 | 1.5 | 1.5 | 1 | 1 | 3 | 3 | – | – | – | – | – | – | – | – | – | – | – |
| 4 | 4 | 4 | 5 | 5 | 200 | 200 | 175 | 190 | 210 | 230 | 270 | 305 | 385 | 460 | 730 | 730 | 900 |
| 65 | 65 | 65 | 100 | 100 | 200 | 200 | 185 | 210 | 230 | 250 | 290 | 335 | 415 | 500 | 790 | 790 | 1000 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 355 | 405 | 505 | 605 | 960 | 960 | 1000 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 3 | 3 | 3 | 5 | 5 | 200 | 200 | 175 | 195 | 210 | 230 | 270 | 310 | 385 | 465 | 730 | 730 | 900 |
| – | – | 65 | 100 | – | 200 | – | 225 | 250 | 275 | 300 | 350 | 400 | 500 | 600 | 950 | 950 | 1000 |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| – | – | – | – | – | 200 | – | 175 | 190 | 210 | 230 | 270 | 310 | 385 | 460 | 730 | 730 | 800 |

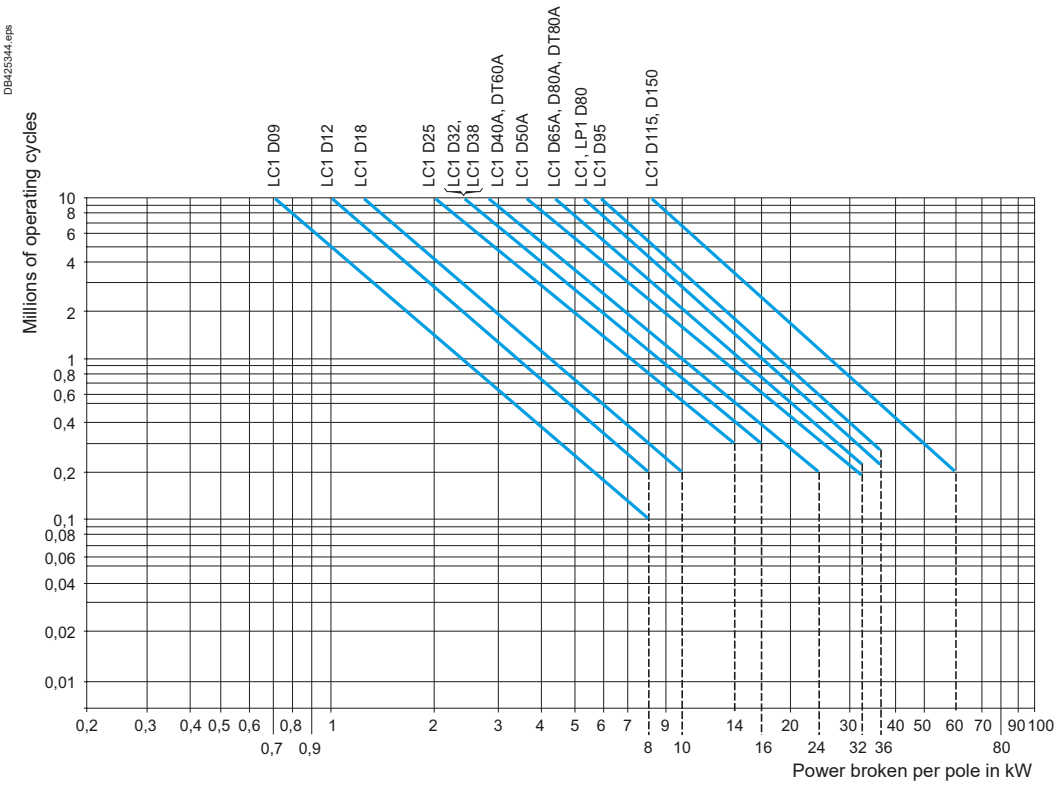
## Selection according to required electrical durability, use in categories DC-1 to DC-5

The criteria for contactor selection are:
- the rated operational current Ie
- the rated operational voltage Ue
- the utilisation category and the time constant L/R
- the required electrical durability.

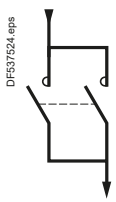
### Maximum operating rate (operating cycles)

The following limits must not be exceeded: 120 operating cycles/hour at rated operational current Ie.

### Electrical durability




**Example**
Series wound motor - P = 1.5 kW - Ue = 200 V - Ie = 7.5 A.
Utilisation: reversing, inching.
- Utilisation category = DC-5.
- Select contactor LC1D09 with 3 poles in series.
- The power broken is: Pc total = 2.5 x 200 x 7.5 = 3.75 kW.
- The power broken per pole is: 1.25 kW.
- The electrical durability read from the curve is ≥ 3 millions of operating cycles.




### Use of poles in parallel

Electrical durability can be increased by using poles connected in parallel.

With N poles connected in parallel, the electrical durability becomes: electrical durability read from the curves x N x 0.7.

***Note:***
*When the poles are connected in parallel, the maximum operational currents indicated on pages A5/64 and A5/65 must not be exceeded.*

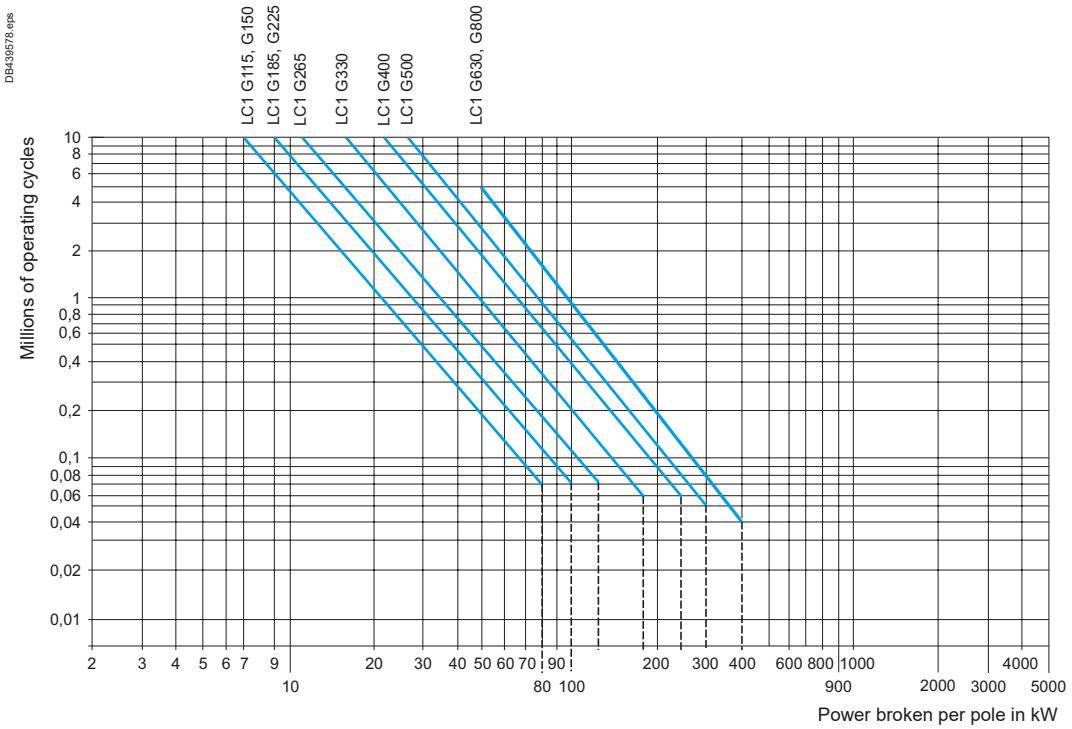
***Note:***
*Ensure that the connections are made in such a way as to equalise the currents in each pole.*

## Selection according to required electrical durability, use in categories DC-1 to DC-5

### Determining the electrical durability

The electrical durability can be read directly from the curves below, having previously calculated the power broken as follows:
P broken = U broken x I broken.
The tables below give the values of Uc and Ic for the various utilisation categories.

| Power broken | | | |
|---|---|---|---|
| **Utilisation categories** | **U broken** | **I broken** | **P broken** |
| DC-1<br>Non inductive or slightly inductive loads | Ue | Ie | Ue x Ie |
| DC-2<br>Shunt wound motors, breaking whilst motor running | 0.1 Ue | Ie | 0.1 Ue x Ie |
| DC-3<br>Shunt wound motors, reversing, inching | Ue | 2.5 Ie | Ue x 2.5 Ie |
| DC-4<br>Series wound motors, breaking whilst motor running | 0.3 Ue | Ie | 0.3 Ue x Ie |
| DC-5<br>Series wound motors, reversing, inching | Ue | 2.5 Ie | Ue x 2.5 Ie |




**Example**
Series wound motor: P = 40 kW - Ue = 200 V - Ie = 200 A.
Utilisation: reversing, inching.

- Utilisation category = DC-5.
- Select contactor LC1G150 with 2 poles in series.
- The power broken is: Pc total = 2.5 x 200 x 200 = 100 kW.
- The power broken per pole is 50 kW.
- The electrical durability read from the curve is 200000 operating cycles.

## General

The operating conditions of lighting circuits have the following characteristics:
- continuous duty: the switching device can remain closed for several days or even months
- a dispersion factor of 1: all luminaires in the same group are switched on or off simultaneously
- a relatively high temperature around the device due to the enclosure, the presence of fuses, or an unventilated control panel location.

This is why the operational current for lighting is lower than the value given for AC-1 duty.

## Protection

The continuous duty current drawn by a lighting circuit is constant. In fact:
- it is unlikely that the number of luminaires of an existing circuit will be modified
- this type of circuit cannot create an overload of long duration.

It is therefore only necessary to provide short-circuit protection.
This can be provided by:
- gG type fuses, or
- modular circuit breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type uses.

## Distribution system

### Single-phase circuit, 220/240 V

The tables on pages A5/69 to A5/73 are based on a single-phase 220/240 V circuit and can therefore be applied directly in this case.

### 3-phase circuit, 380/415 V (with neutral)

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between one phase and neutral. The contactor can then be selected from the 220/240 V single-phase tables for a number of lamps equal to $\frac{N}{3}$ lamps.

### 3-phase circuit, 220/240 V

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between 2 phases (L1-L2), (L2-L3), (L3-L1).
The contactor can then be selected from the 220/240 V single-phase table for a number of lamps equal to $\frac{N}{\sqrt{3}}$ lamps.

### Contactor selection tables

For the different types of lamps, the tables on pages A5/69 to A5/73 give the maximum number of lamps of unit power P (in Watts), which can be switched simultaneously for each size of contactor.
They are based on:
- a 220/240 V single-phase circuit
- an ambient temperature of 55 °C (2), taking into account the operating conditions (see General paragraph)
- an electrical life of more than 10 years (200 days' operation per year).

They take into account:
- the total current drawn (including ballast)
- transient phenomena which occur at switch-on
- the starting currents and their duration
- the circulation of any harmonics which may be present.

### Lamps with compensating capacitor C (µF) connected in parallel

Parallel connected compensating capacitors **C** cause a current peak at the moment of switch-on. To ensure that the value of this current peak remains compatible with the making characteristics of the contactors, the unit value of the capacitance must not exceed the following:

| **Switching contactor rating** (1) | **LC1 K09** | **LP1 K09** | **LC1 D09** | **LC1 D12** | **LC1 D18** | **LC1 D25** | **LC1 D32** | **LC1 D38** | **LC1 D40A** | **LC1 D50A** | **LC1 D65A** | **LC1 D80A** | **LC1 D80** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum unit value C (µF) of parallel connected compensating capacitor | 7 | 3 | 18 | 18 | 25 | 60 | 96 | 96 | 120 | 120 | 240 | 240 | 240 |
| **Switching contactor rating** (1) | **LC1 D80** | **LC1 D95** | **LC1 D115** | **LC1 D150** | **LC1 G185** | **LC1 G225** | **LC1 G265** | **LC1 G330** | **LC1 G400** | **LC1 G500** | **LC1 G630** | **LC1 G800** | |
| Maximum unit value C (µF) of parallel connected compensating capacitor | 240 | 240 | 300 | 360 | 800 | 1200 | 1700 | 2500 | 4000 | 6000 | 9000 | 10800 | |

This value is independent of the number of lamps switched by the contactor.
*(1) Validation tests have not been carried out with Deca Green contactors.*
*(2) For an ambient temperature of 40 °C, multiply the number by 1.2.*

## Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage,
- C: unit capacitance for each lamp,

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Incandescent and halogen lamps

| P (W) | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **IB (A)** | **0.27** | **0.34** | **0.45** | **0.68** | **0.91** | **1.40** | **2.30** | **3.40** | **4.60** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 35 | 28 | 21 | 14 | 10 | 6 | 4 | 2 | 2 | **K09** |
| | 59 | 47 | 35 | 23 | 17 | 11 | 7 | 4 | 3 | **D09, D12** |
| | 77 | 61 | 46 | 30 | 23 | 15 | 9 | 6 | 4 | **D18** |
| | 92 | 73 | 55 | 36 | 27 | 18 | 11 | 7 | 5 | **D25** |
| | 129 | 103 | 77 | 51 | 38 | 25 | 15 | 10 | 7 | **D32, D38** |
| | 163 | 129 | 97 | 64 | 48 | 31 | 19 | 13 | 9 | **D40A** |
| | 207 | 164 | 124 | 82 | 62 | 40 | 24 | 16 | 12 | **D50A, D65A, D80A** |
| | 296 | 235 | 177 | 117 | 88 | 57 | 34 | 23 | 17 | **D80, D95** |
| | 430 | 340 | 256 | 170 | 126 | 82 | 50 | 34 | 24 | **D115** |
| | 466 | 370 | 280 | 184 | 138 | 90 | 54 | 36 | 26 | **D150** |
| | 710 | 564 | 426 | 282 | 210 | 136 | 82 | 56 | 40 | **G185** |
| | 770 | 610 | 462 | 304 | 228 | 148 | 90 | 60 | 44 | **G225** |
| | 888 | 704 | 532 | 352 | 262 | 170 | 104 | 70 | 52 | **G265** |
| | 1006 | 800 | 604 | 400 | 298 | 194 | 118 | 80 | 58 | **G330** |
| | 1274 | 1010 | 764 | 504 | 378 | 244 | 148 | 100 | 74 | **G400** |
| | 1718 | 1364 | 1030 | 682 | 508 | 330 | 200 | 136 | 100 | **G500** |
| | 2328 | 1850 | 1396 | 924 | 690 | 448 | 272 | 184 | 136 | **G630** |
| | 2776 | 2204 | 1666 | 1102 | 824 | 534 | 326 | 220 | 162 | **G800** |

### Mixed lighting lamps

| P (W) | 100 | 160 | 250 | 500 | 1000 | |
|---|---|---|---|---|---|---|
| **IB (A)** | **0.45** | **0.72** | **1.10** | **2.30** | **4.50** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 21 | 13 | 8 | 4 | 2 | **K09** |
| | 35 | 22 | 14 | 7 | 3 | **D09, D12** |
| | 46 | 29 | 18 | 9 | 4 | **D18** |
| | 55 | 36 | 23 | 11 | 5 | **D25** |
| | 77 | 48 | 30 | 15 | 7 | **D32, D38** |
| | 97 | 61 | 38 | 19 | 9 | **D40A** |
| | 124 | 77 | 49 | 24 | 12 | **D50A, D65A, D80A** |
| | 177 | 111 | 70 | 34 | 17 | **D80, D95** |
| | 256 | 160 | 104 | 50 | 26 | **D115** |
| | 280 | 174 | 114 | 54 | 28 | **D150** |
| | 426 | 266 | 174 | 82 | 42 | **G185** |
| | 462 | 288 | 188 | 90 | 46 | **G225** |
| | 532 | 332 | 218 | 104 | 52 | **G265** |
| | 604 | 378 | 246 | 118 | 60 | **G330** |
| | 764 | 478 | 312 | 150 | 76 | **G400** |
| | 1030 | 644 | 422 | 202 | 102 | **G500** |
| | 1398 | 874 | 572 | 272 | 140 | **G630** |
| | 1666 | 1040 | 680 | 326 | 166 | **G800** |

*(1) Validation tests have not been carried out with Deca Green contactors.*

## Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Fluorescent lamps with starter. Single fitting

| | Non corrected | | | | With parallel correction | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **20** | **40** | **65** | **80** | **110** | **20** | **40** | **65** | **80** | **110** | |
| **IB (A)** | **0.39** | **0.45** | **0.70** | **0.80** | **1.2** | **0.17** | **0.26** | **0.42** | **0.52** | **0.72** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **5** | **5** | **7** | **7** | **16** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 24 | 21 | 13 | 12 | 8 | 56 | 36 | 22 | 18 | – | **K09** |
| | 41 | 35 | 22 | 20 | 13 | 94 | 61 | 38 | 30 | 22 | **D09, D12** |
| | 53 | 46 | 30 | 26 | 17 | 123 | 80 | 50 | 40 | 29 | **D18** |
| | 66 | 57 | 37 | 32 | 21 | 152 | 100 | 61 | 50 | 36 | **D25** |
| | 89 | 77 | 50 | 43 | 29 | 205 | 134 | 83 | 67 | 48 | **D32, D38** |
| | 112 | 97 | 62 | 55 | 36 | 258 | 169 | 104 | 84 | 61 | **D40A** |
| | 143 | 124 | 80 | 70 | 46 | 329 | 215 | 133 | 107 | 77 | **D50A, D65A, D80A** |
| | 205 | 177 | 114 | 100 | 66 | 470 | 367 | 190 | 153 | 111 | **D80, D95** |
| | 410 | 354 | 228 | 200 | 132 | 940 | 614 | 380 | 306 | 222 | **D115, D150** |
| | 492 | 426 | 274 | 240 | 160 | 1128 | 738 | 456 | 368 | 266 | **G185** |
| | 532 | 462 | 296 | 260 | 172 | 1224 | 800 | 490 | 400 | 288 | **G225** |
| | 614 | 532 | 342 | 300 | 200 | 1412 | 922 | 570 | 462 | 332 | **G265** |
| | 696 | 604 | 388 | 340 | 226 | 1600 | 1046 | 648 | 522 | 378 | **G330** |
| | 882 | 764 | 490 | 430 | 286 | 2024 | 1322 | 818 | 662 | 478 | **G400** |
| | 1190 | 1030 | 662 | 580 | 386 | 2728 | 1724 | 1104 | 892 | 644 | **G500** |
| | 1612 | 1398 | 698 | 786 | 524 | 3700 | 2418 | 1498 | 1210 | 874 | **G630, G800** |

### Fluorescent lamps with starter. Twin fitting

| | Non corrected | | | | | With series correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | |
| **IB (A)** | **2x0.22** | **2x0.41** | **2x0.67** | **2x0.82** | **2x1.1** | **2x0.13** | **2x0.24** | **2x0.39** | **2x0.48** | **2x0.65** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 2x21 | 2x11 | 2x7 | 2x5 | 2x4 | 2x36 | 2x20 | 2x12 | 2x10 | 2x7 | **K09** |
| | 2x36 | 2x18 | 2x10 | 2x8 | 2x6 | 2x60 | 2x32 | 2x20 | 2x16 | 2x12 | **D09, D12** |
| | 2x46 | 2x24 | 2x14 | 2x12 | 2x8 | 2x80 | 2x42 | 2x26 | 2x20 | 2x16 | **D18** |
| | 2x58 | 2x30 | 2x18 | 2x14 | 2x10 | 2x100 | 2x54 | 2x32 | 2x26 | 2x20 | **D25** |
| | 2x78 | 2x42 | 2x26 | 2x20 | 2x14 | 2x134 | 2x72 | 2x44 | 2x36 | 2x26 | **D32, D38** |
| | 2x100 | 2x52 | 2x32 | 2x26 | 2x18 | 2x168 | 2x90 | 2x56 | 2x44 | 2x32 | **D40A** |
| | 2x126 | 2x68 | 2x40 | 2x34 | 2x24 | 2x214 | 2x116 | 2x70 | 2x58 | 2x42 | **D50A, D65A, D80A** |
| | 2x180 | 2x96 | 2x58 | 2x48 | 2x36 | 2x306 | 2x166 | 2x102 | 2x82 | 2x60 | **D80, D95** |
| | 2x360 | 2x194 | 2x118 | 2x96 | 2x72 | 2x614 | 2x332 | 2x204 | 2x166 | 2x122 | **D115, D150** |
| | 2x436 | 2x234 | 2x142 | 2x116 | 2x86 | 2x738 | 2x400 | 2x246 | 2x200 | 2x148 | **G185** |
| | 2x472 | 2x254 | 2x154 | 2x126 | 2x94 | 2x800 | 2x432 | 2x266 | 2x216 | 2x160 | **G225** |
| | 2x544 | 2x292 | 2x178 | 2x146 | 2x108 | 2x922 | 2x500 | 2x308 | 2x250 | 2x184 | **G265** |
| | 2x618 | 2x332 | 2x202 | 2x166 | 2x124 | 2x1046 | 2x566 | 2x348 | 2x282 | 2x208 | **G330** |
| | 2x782 | 2x420 | 2x256 | 2x210 | 2x156 | 2x1322 | 2x716 | 2x440 | 2x358 | 2x264 | **G400** |
| | 2x1054 | 2x566 | 2x346 | 2x282 | 2x210 | 2x1784 | 2x966 | 2x594 | 2x482 | 2x356 | **G500** |
| | 2x1430 | 2x766 | 2x468 | 2x384 | 2x286 | 2x2418 | 2x1310 | 2x806 | 2x654 | 2x484 | **G630, G800** |

*(1) Validation tests have not been carried out with Deca Green contactors.*

## Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Fluorescent lamps without starter. Single fitting

| | Non corrected | | | | | With parallel correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **20** | **40** | **65** | **80** | **110** | **20** | **40** | **65** | **80** | **110** | |
| **IB (A)** | **0.43** | **0.55** | **0.80** | **0.95** | **1.4** | **0.19** | **0.29** | **0.46** | **0.57** | **0.79** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **5** | **5** | **7** | **7** | **16** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 22 | 17 | 12 | 10 | 6 | 50 | 33 | 20 | 16 | – | **K09** |
| | 37 | 29 | 20 | 16 | 11 | 84 | 55 | 34 | 28 | 20 | **D09, D12** |
| | 48 | 38 | 26 | 22 | 15 | 110 | 72 | 45 | 36 | 26 | **D18** |
| | 60 | 47 | 32 | 27 | 18 | 136 | 89 | 56 | 45 | 32 | **D25** |
| | 97 | 63 | 43 | 36 | 25 | 184 | 101 | 76 | 61 | 44 | **D32, D38** |
| | 102 | 80 | 55 | 46 | 31 | 231 | 151 | 95 | 77 | 55 | **D40A** |
| | 130 | 101 | 70 | 58 | 40 | 294 | 193 | 121 | 98 | 70 | **D50A, D65A, D80A** |
| | 186 | 145 | 100 | 84 | 57 | 421 | 275 | 173 | 140 | 101 | **D80, D95** |
| | 372 | 290 | 200 | 168 | 114 | 842 | 550 | 346 | 280 | 202 | **D115, D150** |
| | 446 | 348 | 240 | 202 | 136 | 1010 | 662 | 416 | 336 | 242 | **G185** |
| | 484 | 378 | 260 | 218 | 148 | 1094 | 716 | 452 | 364 | 262 | **G225** |
| | 558 | 436 | 300 | 252 | 170 | 1262 | 828 | 522 | 420 | 304 | **G265** |
| | 632 | 494 | 340 | 286 | 194 | 1432 | 938 | 590 | 476 | 344 | **G330** |
| | 800 | 624 | 430 | 362 | 246 | 1810 | 1186 | 748 | 604 | 434 | **G400** |
| | 1078 | 844 | 580 | 488 | 330 | 2442 | 1600 | 1008 | 814 | 586 | **G500** |
| | 1462 | 1144 | 786 | 662 | 448 | 3310 | 2168 | 1366 | 1104 | 796 | **G630, G800** |

### Fluorescent lamps without starter. Twin fitting

| | Non corrected | | | | | With series correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | **2x20** | **2x40** | **2x65** | **2x80** | **2x110** | |
| **IB (A)** | **2x0.25** | **2x0.47** | **2x0.76** | **2x0.93** | **2x1.3** | **2x0.14** | **2x0.26** | **2x0.43** | **2x0.53** | **2x0.72** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 2x19 | 2x10 | 2x6 | 2x5 | 2x3 | 2x34 | 2x18 | 2x11 | 2x9 | 2x6 | **K09** |
| | 2x32 | 2x16 | 2x10 | 2x8 | 2x6 | 2x56 | 2x30 | 2x18 | 2x14 | 2x10 | **D09, D12** |
| | 2x42 | 2x22 | 2x12 | 2x10 | 2x8 | 2x74 | 2x40 | 2x24 | 2x18 | 2x14 | **D18** |
| | 2x52 | 2x26 | 2x16 | 2x12 | 2x10 | 2x92 | 2x50 | 2x30 | 2x24 | 2x18 | **D25** |
| | 2x70 | 2x36 | 2x22 | 2x18 | 2x12 | 2x124 | 2x66 | 2x40 | 2x32 | 2x24 | **D32, D38** |
| | 2x88 | 2x46 | 2x28 | 2x22 | 2x16 | 2x156 | 2x84 | 2x50 | 2x40 | 2x30 | **D40A** |
| | 2x112 | 2x58 | 2x36 | 2x30 | 2x20 | 2x200 | 2x106 | 2x64 | 2x52 | 2x38 | **D50A, D65A, D80A** |
| | 2x160 | 2x84 | 2x52 | 2x42 | 2x30 | 2x234 | 2x152 | 2x92 | 2x74 | 2x54 | **D80, D95** |
| | 2x320 | 2x170 | 2x104 | 2x86 | 2x60 | 2x570 | 2x306 | 2x186 | 2x150 | 2x110 | **D115, D150** |
| | 2x384 | 2x204 | 2x126 | 2x102 | 2x74 | 2x686 | 2x368 | 2x222 | 2x180 | 2x132 | **G185** |
| | 2x416 | 2x220 | 2x136 | 2x112 | 2x80 | 2x742 | 2x400 | 2x242 | 2x196 | 2x144 | **G225** |
| | 2x480 | 2x254 | 2x158 | 2x128 | 2x92 | 2x856 | 2x462 | 2x278 | 2x226 | 2x166 | **G265** |
| | 2x544 | 2x288 | 2x178 | 2x146 | 2x104 | 2x970 | 2x522 | 2x316 | 2x256 | 2x188 | **G330** |
| | 2x688 | 2x366 | 2x226 | 2x184 | 2x132 | 2x1228 | 2x662 | 2x400 | 2x324 | 2x238 | **G400** |
| | 2x928 | 2x494 | 2x304 | 2x248 | 2x178 | 2x1656 | 2x892 | 2x540 | 2x438 | 2x322 | **G500** |
| | 2x1258 | 2x668 | 2x414 | 2x338 | 2x242 | 2x2246 | 2x1210 | 2x730 | 2x592 | 2x436 | **G630, G800** |

*(1) Validation tests have not been carried out with Deca Green contactors.*

## Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

### Low pressure sodium vapour lamps

| | Non corrected | | | | | | | With parallel correction | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **35** | **55** | **90** | **135** | **150** | **180** | **200** | **35** | **55** | **90** | **135** | **150** | **180** | **200** | |
| **IB (A)** | **1.2** | **1.6** | **2.4** | **3.1** | **3.2** | **3.3** | **3.4** | **0.3** | **0.4** | **0.6** | **0.9** | **1** | **1.2** | **1.3** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **–** | **–** | **17** | **17** | **25** | **36** | **36** | **36** | **36** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 6 | 5 | 3 | 2 | 2 | 2 | 2 | – | – | – | – | – | – | – | **K09** |
| | 10 | 7 | 5 | 3 | 3 | 3 | 3 | 40 | 30 | – | – | – | – | – | **D09, D12** |
| | 12 | 9 | 6 | 4 | 4 | 4 | 4 | 50 | 37 | 25 | – | – | – | – | **D18** |
| | 15 | 11 | 7 | 6 | 5 | 5 | 5 | 63 | 47 | 31 | 21 | 19 | 15 | 14 | **D25** |
| | 21 | 16 | 10 | 8 | 8 | 7 | 7 | 86 | 65 | 43 | 28 | 26 | 21 | 20 | **D32, D38** |
| | 27 | 20 | 13 | 10 | 10 | 10 | 9 | 110 | 82 | 55 | 36 | 33 | 27 | 25 | **D40A** |
| | 35 | 26 | 17 | 13 | 13 | 12 | 12 | 140 | 105 | 70 | 46 | 42 | 35 | 32 | **D50A, D65A, D80A** |
| | 50 | 37 | 25 | 19 | 18 | 18 | 17 | 200 | 150 | 100 | 66 | 60 | 50 | 46 | **D80, D95** |
| | 100 | 75 | 50 | 38 | 36 | 36 | 34 | 400 | 300 | 200 | 132 | 120 | 100 | 92 | **D115, D150** |
| | 140 | 104 | 70 | 54 | 52 | 50 | 48 | 560 | 420 | 280 | 186 | 168 | 140 | 128 | **G185** |
| | 152 | 114 | 76 | 58 | 56 | 54 | 54 | 606 | 454 | 302 | 202 | 182 | 152 | 140 | **G225** |
| | 174 | 130 | 88 | 68 | 66 | 64 | 62 | 700 | 524 | 350 | 232 | 210 | 174 | 162 | **G265** |
| | 198 | 148 | 98 | 76 | 74 | 72 | 70 | 792 | 594 | 396 | 264 | 238 | 198 | 182 | **G330** |
| | 250 | 188 | 124 | 96 | 94 | 90 | 88 | 1002 | 752 | 502 | 334 | 300 | 250 | 252 | **G400** |
| | 338 | 254 | 168 | 130 | 126 | 122 | 118 | 1352 | 1014 | 676 | 450 | 406 | 338 | 312 | **G500** |
| | 496 | 372 | 248 | 192 | 186 | 180 | 174 | 1982 | 1488 | 992 | 660 | 594 | 496 | 458 | **G630, G800** |

### High pressure sodium vapour lamps

| | Non corrected | | | | | With parallel correction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **150** | **250** | **400** | **700** | **1000** | **150** | **250** | **400** | **700** | **1000** | |
| **IB (A)** | **1.9** | **3.2** | **5** | **8.8** | **12.4** | **0.84** | **1.4** | **2.2** | **3.9** | **5.5** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **20** | **32** | **48** | **96** | **120** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 4 | 2 | 1 | – | – | – | – | – | – | – | **K09** |
| | 6 | 3 | 2 | 1 | – | – | – | – | – | – | **D09, D12** |
| | 7 | 4 | 3 | 1 | 1 | 17 | – | – | – | – | **D18** |
| | 10 | 5 | 3 | 2 | 1 | 22 | 13 | 8 | – | – | **D25** |
| | 13 | 8 | 5 | 2 | 2 | 30 | 18 | 11 | 6 | – | **D32, D38** |
| | 17 | 10 | 6 | 3 | 2 | 39 | 23 | 15 | 8 | 6 | **D40A** |
| | 22 | 13 | 8 | 4 | 3 | 50 | 30 | 19 | 10 | 7 | **D50A, D65A, D80A** |
| | 31 | 18 | 12 | 6 | 4 | 71 | 42 | 27 | 15 | 10 | **D80, D95** |
| | 62 | 36 | 24 | 12 | 8 | 142 | 84 | 54 | 30 | 20 | **D115, D150** |
| | 88 | 52 | 34 | 18 | 14 | 200 | 120 | 76 | 42 | 30 | **G185** |
| | 96 | 56 | 36 | 20 | 16 | 216 | 130 | 82 | 46 | 32 | **G225** |
| | 110 | 66 | 42 | 24 | 18 | 250 | 150 | 94 | 54 | 38 | **G265** |
| | 124 | 74 | 48 | 26 | 20 | 282 | 170 | 108 | 60 | 42 | **G330** |
| | 158 | 94 | 60 | 34 | 24 | 358 | 214 | 136 | 76 | 54 | **G400** |
| | 214 | 126 | 80 | 46 | 32 | 482 | 290 | 184 | 104 | 74 | **G500** |
| | 312 | 186 | 118 | 68 | 48 | 708 | 424 | 270 | 152 | 108 | **G630, G800** |

*(1) Validation tests have not been carried out with Deca Green contactors.*

## Usual values

The tables show the following values:
- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

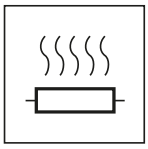
### High pressure mercury vapour lamps

| | Non corrected | | | | | | | With parallel correction | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **50** | **80** | **125** | **250** | **400** | **700** | **1000** | **50** | **80** | **125** | **250** | **400** | **700** | **1000** | |
| **IB (A)** | **0.54** | **0.81** | **1.20** | **2.30** | **4.10** | **6.80** | **9.90** | **0.3** | **0.45** | **0.67** | **1.3** | **2.3** | **3.8** | **5.5** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **–** | **–** | **–** | **10** | **10** | **10** | **18** | **25** | **40** | **60** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 14 | 9 | 6 | 3 | 1 | – | – | – | – | – | – | – | – | – | **K09** |
| | 22 | 14 | 9 | 5 | 2 | 1 | 1 | 40 | 26 | 17 | 9 | – | – | – | **D09, D12** |
| | 27 | 18 | 12 | 6 | 3 | 2 | 1 | 50 | 33 | 22 | 11 | 6 | – | – | **D18** |
| | 35 | 23 | 15 | 8 | 4 | 2 | 1 | 63 | 42 | 28 | 14 | 8 | 5 | 3 | **D25** |
| | 48 | 32 | 21 | 11 | 6 | 3 | 2 | 86 | 57 | 38 | 20 | 11 | 6 | 4 | **D32, D38** |
| | 61 | 40 | 27 | 14 | 8 | 4 | 3 | 110 | 73 | 49 | 25 | 14 | 8 | 6 | **D40A** |
| | 77 | 51 | 34 | 17 | 10 | 6 | 4 | 140 | 93 | 62 | 32 | 18 | 11 | 7 | **D50A, D65A, D80A** |
| | 111 | 74 | 49 | 26 | 14 | 8 | 6 | 200 | 133 | 89 | 46 | 26 | 15 | 10 | **D80, D95** |
| | 222 | 148 | 100 | 52 | 28 | 16 | 12 | 400 | 266 | 178 | 92 | 52 | 30 | 20 | **D115, D150** |
| | 310 | 206 | 140 | 72 | 40 | 24 | 17 | 560 | 372 | 250 | 128 | 72 | 44 | 30 | **G185** |
| | 336 | 224 | 152 | 78 | 44 | 26 | 18 | 606 | 404 | 272 | 140 | 78 | 48 | 32 | **G225** |
| | 388 | 258 | 174 | 90 | 50 | 30 | 20 | 700 | 466 | 312 | 162 | 90 | 54 | 38 | **G265** |
| | 440 | 294 | 198 | 102 | 58 | 34 | 24 | 792 | 528 | 354 | 182 | 102 | 62 | 42 | **G330** |
| | 556 | 372 | 250 | 130 | 72 | 44 | 30 | 1002 | 668 | 448 | 232 | 130 | 78 | 54 | **G400** |
| | 752 | 500 | 338 | 176 | 98 | 60 | 40 | 1352 | 902 | 606 | 312 | 176 | 106 | 74 | **G500** |
| | 1102 | 734 | 496 | 258 | 144 | 88 | 60 | 1982 | 1322 | 888 | 458 | 258 | 156 | 108 | **G630, G800** |

### Metal iodine vapour lamps

| | Non corrected | | | | With parallel correction | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **P (W)** | **250** | **400** | **1000** | **2000** | **250** | **400** | **1000** | **2000** | |
| **IB (A)** | **2.5** | **3.6** | **9.5** | **20** | **1.4** | **2** | **5.3** | **11.2** | |
| **C (µF)** | **–** | **–** | **–** | **–** | **32** | **32** | **64** | **140** | **LC1 (1)** |
| Max. no. of lamps according to P (W) | 3 | 2 | – | – | – | – | – | – | **K09** |
| | 4 | 3 | 1 | – | – | – | – | – | **D09, D12** |
| | 6 | 4 | 1 | – | – | – | – | – | **D18** |
| | 7 | 5 | 2 | – | 13 | 9 | – | – | **D25** |
| | 10 | 7 | 2 | 1 | 18 | 13 | 4 | – | **D32, D38** |
| | 13 | 9 | 3 | 1 | 23 | 16 | 6 | – | **D40A** |
| | 16 | 11 | 4 | 2 | 30 | 21 | 7 | – | **D50A, D65A, D80A** |
| | 24 | 16 | 6 | 3 | 42 | 30 | 11 | 5 | **D80, D95** |
| | 48 | 32 | 12 | 6 | 84 | 60 | 22 | 10 | **D115, D150** |
| | 66 | 46 | 18 | 8 | 120 | 84 | 32 | 14 | **G185** |
| | 72 | 50 | 20 | 10 | 130 | 90 | 34 | 16 | **G225** |
| | 84 | 58 | 22 | 12 | 150 | 104 | 40 | 18 | **G265** |
| | 94 | 66 | 24 | 14 | 170 | 118 | 44 | 20 | **G330** |
| | 120 | 84 | 32 | 16 | 214 | 150 | 56 | 26 | **G400** |
| | 162 | 112 | 42 | 20 | 290 | 202 | 76 | 36 | **G500** |
| | 238 | 164 | 62 | 30 | 424 | 298 | 112 | 52 | **G630, G800** |

*(1) Validation tests have not been carried out with Deca Green contactors.*





# Selection

## General

A heating circuit is a power switching circuit supplying one or more resistive heating elements switched by a contactor. The same general rules apply as for motor circuits, except that heating circuits are not normally subjected to overload currents. It is therefore only necessary to provide short-circuit protection.

## Characteristics of heating elements

The examples below are based on resistive heating elements used for industrial furnaces or for the heating of buildings (infra-red or resistive radiant type, convector heaters, closed loop heating circuits, etc.). The variation in resistance values between hot and cold states causes a current peak at switch-on which never exceeds 2 to 3 times the rated operational current (In). This initial peak does not recur during normal operation where subsequent switching is thermostatically controlled. The rated power and current of a heater are given for the normal operating temperature.

## Protection

The steady state current drawn by a heating circuit is constant when the voltage is stable. In fact:

- it is unlikely that the number of loads in an existing circuit will be modified
- this type of circuit cannot create overloads. It is therefore only necessary to provide short-circuit protection.

This can be provided by:

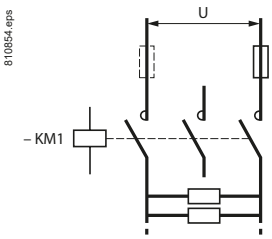
- gG type fuses, or
- modular circuit breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type fuses.

## Switching, control, protection

A heating element or group of heating elements of a given power may be either single-phase or 3-phase and may be supplied from a 220/127 V or a 400/230 V distribution system. Excluding a single-phase 127 V system (which is no longer commonly used), the following 3 types of circuit arrangement are possible:

- single-phase, 2-pole switching
- single-phase, 4-pole switching
- 3-phase switching




*Circuit controlled by 2 poles of the contactor.*

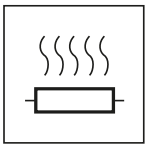
# Component selection according to the power switched

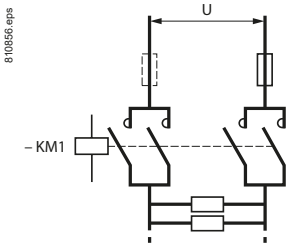
The combinations suggested below are based on an ambient temperature of 55 °C (60 °C for Giga contactors LC1G) and for powers at the nominal voltage, but they also ensure switching in the event of prolonged overloads up to 1.05 Ue.

**Single-phase, 2-pole switching**

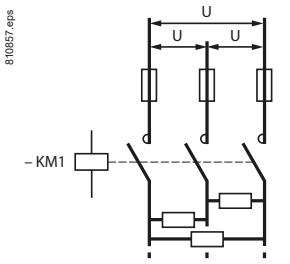
| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 220/240 V | 380/415 V | 660/690 V | 1000 V | |
| 3.5 | 6.5 | 11 | – | **LC1K09, LP1K09** |
| 4.5 | 8 | 14 | – | **LC1D12** |
| 6 | 10.5 | 18.5 | – | **LC1D18** |
| 7 | 13 | 22.5 | – | **LC1D25** |
| 10 | 18 | 30.5 | – | **LC1D32, LC1D38** |
| 13 | 22.5 | 39.5 | – | **LC1D40A** |
| 16.5 | 28.5 | 43.5 | – | **LC1D65A, LC1D80A** |
| 24 | 42 | 73 | 82.5 | **LC1D80, LP1D80** |
| 44 | 76 | 118 | 157 | **LC1D115, LC1D150** |
| 270 | 460 | 715 | 945 | **LC1F780** |

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 230 V | 400 V | 690 V | 1000 V | |
| 40 | 75 | 125 | 185 | **LC1G115** |
| 45 | 80 | 140 | 205 | **LC1G150** |
| 50 | 90 | 155 | 225 | **LC1G185** |
| 55 | 100 | 170 | 250 | **LC1G225** |
| 65 | 115 | 200 | 290 | **LC1G265** |
| 75 | 130 | 230 | 330 | **LC1G330** |
| 95 | 165 | 285 | 415 | **LC1G400** |
| 115 | 200 | 345 | 500 | **LC1G500** |
| 150 | 265 | 460 | 665 | **LC1G630** |
| 150 | 265 | 460 | 665 | **LC1G800** |






*Circuit controlled by a 4-pole contactor with the poles parallel connected in pairs using appropriate connecting links.*
*This solution enables the control of power values approximately equivalent to those controlled by the same contactor on 3-phase.*




*Circuit controlled by 3 poles of the contactor.*

## Component selection according to the power switched

### Single-phase, 4-pole switching

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 220/240 V | 380/415 V | 660/690 V | 1000 V | |
| 4.5 | 8 | 13.5 | – | **LC1K09004, LP1K09004** |
| 7 | 13 | 22.5 | – | **LC1DT25** |
| 12 | 21 | 36.5 | – | **LC1DT40** |
| 26 | 45.5 | 79.5 | – | **LC1DT80A** |
| 38 | 66 | 117.5 | 132 | **LC1D80004, LP1D80004** |
| 425 | 735 | 1140 | 1520 | **LC1F7804** |

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 230 V | 400 V | 690 V | 1000 V | |
| 65 | 120 | 205 | 300 | **LC1G1154** |
| 75 | 130 | 230 | 330 | **LC1G1504** |
| 80 | 145 | 250 | 365 | **LC1G1854** |
| 90 | 160 | 275 | 400 | **LC1G2254** |
| 105 | 185 | 320 | 465 | **LC1G2654** |
| 120 | 210 | 365 | 530 | **LC1G3304** |
| 150 | 265 | 460 | 665 | **LC1G4004** |
| 180 | 320 | 550 | 800 | **LC1G5004** |
| 245 | 425 | 735 | 1065 | **LC1G6304** |
| 245 | 425 | 735 | 1065 | **LC1G8004** |

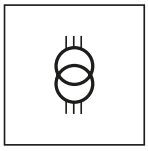
### 3-phase switching

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 220/240 V | 380/415 V | 660/690 V | 1000 V | |
| 4.5 | 8 | 13.5 | – | **LC1K09, LP1K09** |
| 7 | 13 | 22.5 | – | **LC1D12** |
| 10 | 18 | 30.5 | – | **LC1D18** |
| 13 | 22.5 | 39.5 | – | **LC1D25** |
| 18 | 31 | 52.5 | – | **LC1D32, LC1D38** |
| 22.5 | 38 | 68 | – | **LC1D40A** |
| 28.5 | 49 | 86 | – | **LC1D65A, LC1D80A** |
| 40.5 | 70.5 | 126 | 135.5 | **LC1D80, LP1D80** |
| 83 | 140 | 235 | 345 | **LC1D115, LC1D150** |
| 570 | 1000 | 1650 | 2400 | **LC1F780** |

| Maximum power (kW) | | | | Contactor rating |
|---|---|---|---|---|
| 230 V | 400 V | 690 V | 1000 V | |
| 70 | 125 | 220 | 320 | **LC1G115** |
| 80 | 140 | 245 | 360 | **LC1G150** |
| 90 | 155 | 270 | 395 | **LC1G185** |
| 95 | 170 | 295 | 430 | **LC1G225** |
| 115 | 200 | 345 | 505 | **LC1G265** |
| 130 | 230 | 395 | 575 | **LC1G330** |
| 165 | 285 | 495 | 720 | **LC1G400** |
| 195 | 345 | 595 | 865 | **LC1G500** |
| 265 | 460 | 795 | 1150 | **LC1G630** |
| 265 | 460 | 795 | 1150 | **LC1G800** |

### Application example

For a 220 V, 50 Hz, single-phase circuit supplying a total heating load of 12.5 kW.
Select a 3-pole contactor **LC1D65A**.



## Operating conditions

Maximum ambient temperature: 55 °C.

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:
- the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, layout and size of the windings, ...)
- the performance of the magnetic laminations used
- the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The inrush current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer.

## Contactor selection

The peak magnetising current of the transformer must be lower than the values given in the tables below.
Maximum operating rate: 120 operating cycles/hour.

| **Contactor rating** (1) | | | **LC1/ LP1 K06** | **LC1/ LP1 K09** | **LC1 D09** | **LC1 D12** | **LC1 D18** | **LC1 D25** | **LC1 D32** | **LC1 D38** | **LC1 D40A** | **LC1 D50A** | **LC1 D65A D80A** | **LC1 D80** | **LC1 D95** | **LC1 D115** | **LC1 D150** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum permissible current peak at switch-on | | **A** | 160 | 225 | 350 | w350 | 420 | 630 | 770 | 770 | 1100 | 1250 | 1400 | 1550 | 1650 | 1800 | 2000 |
| Maximum operational power (2) | 220 V 240 V | **kVA** | 2 | 2.5 | 4 | 4 | 5 | 7 | 8.5 | 8.5 | 14 | 16 | 18 | 19.5 | 19.5 | 25 | 25 |
| | 380 V 400 V | **kVA** | 3.5 | 5 | 7 | 7 | 8 | 12.5 | 15 | 15 | 24 | 27 | 31 | 34 | 34 | 50 | 50 |
| | 415 V 440 V | **kVA** | 4 | 5.5 | 8 | 8 | 9 | 14 | 17 | 17 | 28 | 32 | 36 | 39 | 39 | 55 | 55 |
| | 500 V | **kVA** | 5 | 7 | 9 | 9 | 11 | 16.5 | 20 | 20 | 32 | 36 | 40 | 45 | 45 | 65 | 65 |
| | 660 V 690 V | **kVA** | 6 | 8.5 | 12 | 12 | 14 | 21.5 | 26.5 | 26.5 | 42 | 48 | 53 | 59 | 59 | 80 | 80 |
| | 1000 V | **kVA** | – | – | – | – | – | – | – | – | – | – | – | 85 | 95 | 100 | 100 |

*(1) Deca Green contactors have not been validated for switching the primaries of 3-phase LV/LV transformers.*
*(2) Maximum operational power corresponding to a current peak at switch-on of 30 In.*

| **Contactor rating** | | | **LC1 G115** | **LC1 G150** | **LC1 G185** | **LC1 G225** | **LC1 G265** | **LC1 G330** | **LC1 G400** | **LC1 G500** | **LC1 G630** | **LC1 G630** | **LC1 G800** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum permissible current peak at switch-on | | **A** | 1800 | 2000 | 2900 | 3300 | 3800 | 5000 | 6300 | 7700 | 9000 | 11000 | 12000 |
| Maximum operational power (3) | 220 V 240 V | **kVA** | 25 | 25 | 40 | 45 | 50 | 65 | 75 | 100 | 120 | 145 | 175 |
| | 380 V 400 V | **kVA** | 50 | 50 | 75 | 80 | 90 | 120 | 130 | 170 | 200 | 245 | 280 |
| | 415 V 440 V | **kVA** | 55 | 55 | 80 | 90 | 100 | 130 | 140 | 190 | 220 | 270 | 310 |
| | 500 V | **kVA** | 65 | 65 | 95 | 100 | 110 | 140 | 170 | 225 | 260 | 315 | 350 |
| | 660 V 690 V | **kVA** | 80 | 80 | 120 | 130 | 140 | 170 | 200 | 270 | 350 | 425 | 400 |
| | 1000 V | **kVA** | 100 | 100 | 150 | 170 | 200 | 225 | 250 | 375 | 470 | 550 | 650 |

*(3) Maximum operational power corresponding to a current peak at switch-on of 30 In.*

## Standard contactors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz).
As a general rule, the peak current on energisation is lower when:

- the mains inductances are high
- the line transformer ratings are low
- the transformer short-circuit voltage is high
- the ratio between the sum of the ratings of the capacitors already switched into the circuit and that of the capacitor to be switched in is small (for multiple step capacitor banks).

In accordance with standards IEC 60070, NF C 54-100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched. The rated operational powers given in the tables below take this overload into account. Short-circuit protection is normally provided by gI type HPC fuses rated at 1.7 to 2 In.

## Contactor applications

### Operating conditions

Capacitors are directly switched. **The values of peak current at switch-on must not exceed the values indicated opposite.**
An inductor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. Inductance values are determined according to the selected operating temperature.

### Power factor correction by a single-step capacitor bank

The use of a choke inductor is unnecessary: the inductance of the mains supply is adequate to limit the peak to a value compatible with the contactor characteristics.

### Power factor correction by a multiple-step capacitor bank

Select a special contactor as defined on page B8/35.
**If a standard contactor is used, it is essential to insert a choke inductor in each of the three phases of each step.**

## Maximum operational power of contactors

### Standard contactors

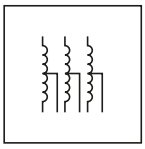
Maximum operating rate: 120 operating cycles/hour.
Electrical durability at maximum load: 100 000 operating cycles.
With choke inductors connected, where necessary.

| Operational power at 50/60 Hz | | | | | | Max. peak current | Contactor rating (1) |
|---|---|---|---|---|---|---|---|
| θ ≤ 40 °C (2) | | | θ ≤ 55 °C (2) | | | | |
| 220/240 V | 400/440 V | 600/690 V | 220/240 V | 400/440 V | 600/690 V | | |
| kvAR | kvAR | kvAR | kvAR | kvAR | kvAR | A | |
| 6 | 11 | 15 | 6 | 11 | 15 | 560 | **LC1D09, D12** |
| 9 | 15 | 20 | 9 | 15 | 20 | 850 | **LC1D18** |
| 11 | 20 | 25 | 11 | 20 | 25 | 1600 | **LC1D25** |
| 14 | 25 | 30 | 14 | 25 | 30 | 1900 | **LC1D32, D38** |
| 17 | 30 | 37 | 17 | 30 | 37 | 2160 | **LC1D40** |
| 22 | 40 | 50 | 22 | 40 | 50 | 2160 | **LC1D50** |
| 22 | 40 | 50 | 22 | 40 | 50 | 3040 | **LC1D65** |
| 35 | 60 | 75 | 35 | 60 | 75 | 3040 | **LC1D80, D95** |
| 50 | 90 | 125 | 38 | 75 | 80 | 3100 | **LC1D115** |
| 60 | 110 | 135 | 40 | 85 | 90 | 3300 | **LC1D150** |

*(1) Deca Green contactors have not been validated for switching the primaries of 3-phase LV/LV transformers.*
*(2) Upper limit of temperature category conforming to IEC 60070.*

| Operational power at 50/60 Hz | | | | | | Max. peak current | Contactor rating |
|---|---|---|---|---|---|---|---|
| θ ≤ 40 °C (3) | | | θ ≤ 60 °C (3) | | | | |
| 220/240 V | 400/440 V | 600/690 V | 220/240 V | 400/440 V | 600/690 V | | |
| kvAR | kvAR | kvAR | kvAR | kvAR | kvAR | A | |
| 50 | 90 | 150 | 45 | 80 | 135 | 1900 | **LC1G115** |
| 55 | 100 | 165 | 50 | 90 | 150 | 2480 | **LC1G150** |
| 60 | 110 | 185 | 55 | 100 | 165 | 3050 | **LC1G185** |
| 65 | 120 | 200 | 60 | 110 | 180 | 3710 | **LC1G225** |
| 75 | 140 | 235 | 70 | 125 | 210 | 4370 | **LC1G265** |
| 85 | 160 | 265 | 80 | 145 | 240 | 5450 | **LC1G330** |
| 110 | 200 | 335 | 100 | 185 | 305 | 6600 | **LC1G400** |
| 140 | 255 | 425 | 120 | 220 | 365 | 8250 | **LC1G500** |
| 210 | 385 | 640 | 160 | 295 | 485 | 10400 | **LC1G630** |
| 210 | 385 | 640 | 160 | 295 | 485 | 13200 | **LC1G800** |

*(3) Upper limit of temperature category conforming to IEC 60831-1.*

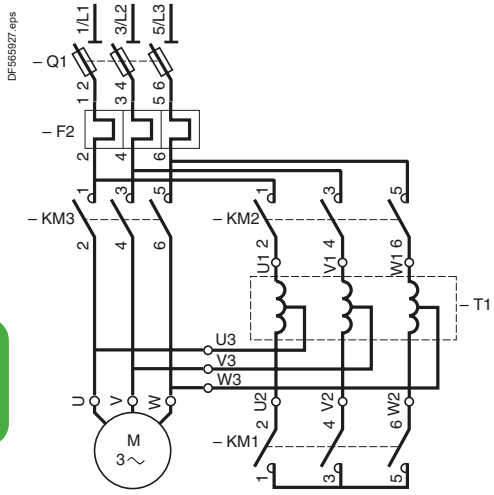


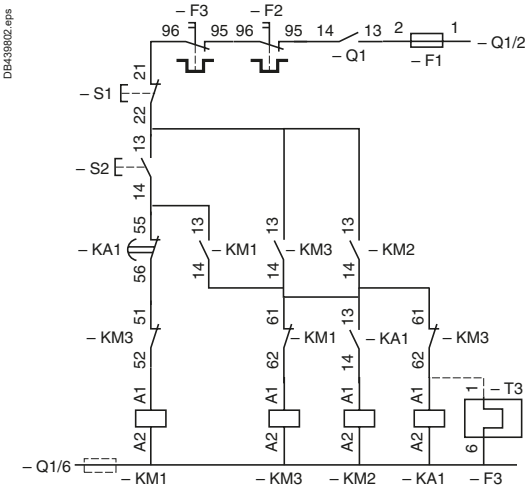


## Applications

Auto-transformer starting is suitable for starting all types of squirrel cage motors: with 3, 6 or even 9 terminals according to North American technology.
Starting is performed at reduced voltage and produces maximum torque at minimum line current.
It allows the starting torque ($C = f(U)^2$) to be adapted to the resistive torque of the driven machine by means of the 2 or 3 intermediate voltage take-off connections on the auto-transformer (0.65 and 0.8 Un or 0.5, 0.65 and 0.8 Un). In general, only one take-off connection is used.
This type of starting is used for high power and/or high inertia machines.
The motor is never disconnected from its power supply during starting (closed transition) and transient phenomena are eliminated.

### Recommended wiring scheme



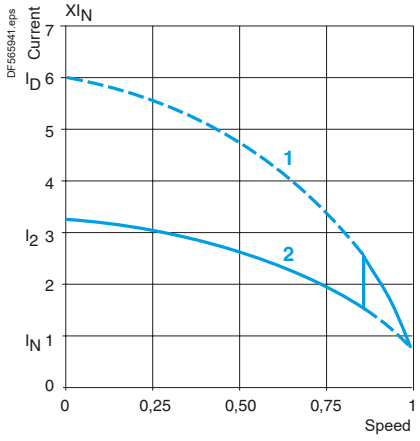




## Operation

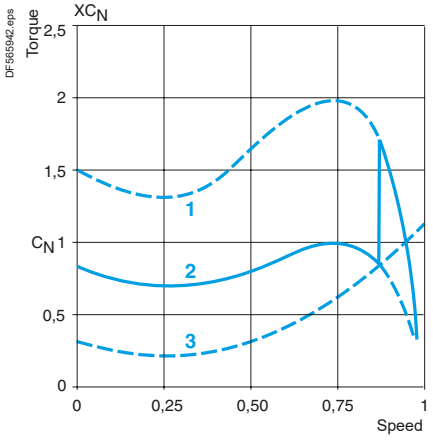
Starting is performed in 3 stages:
■ star connection of the auto-transformer is made by KM1, then contactor KM2 closes and the motor starts under reduced voltage
■ the neutral point is opened by KM1; part of the auto-transformer winding is switched into each phase for a short moment, constituting a stator starting inductance
■ KM3 switches the motor to full mains voltage and causes the auto-transformer to be shunted out of circuit by KM2.

The auto-transformer used generally has an air gap (adjusted or not) in order to obtain, during the second phase of starting, a series inductance whose value is compatible with correct starting.

## Operating curves

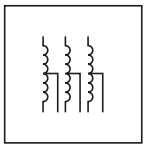



1 Direct switching current
2 Current with auto-transformer




1 Direct motor torque
2 Torque with auto-transformer
3 Resistive torque of the machine

*(1) Deca Green contactors have not been validated for auto-transformer starting.*



## Auto-transformer starters from 59 to 900 kW up to 440 V (type 1 coordination)

The components recommended in the table below have been determined according to the following characteristics:
- auto-transformer: on 0.65 Un connection with non adjusted air gap
- 3 starts per hour, of which 2 consecutive
- motor starting current: Id/In = 6
- Iq = 70 kA
- transient current on closing of KM3 ⩽ 7 $\sqrt{2}$ In
- maximum starting time: 30 seconds
- ambient temperature θ ⩽ 40 °C.

Switch-disconnector-fuses: operators and accessories, please consult your Regional Sales Office.
Contactors: 3-pole.
LC1D: see pages B8/23 and B8/24.
LC1G: see pages B9/10 to B9/13.

Auxiliary contact blocks:
- for contactors LC1D: one LADN11 (1 N/O + 1 N/C) on KM1.

Thermal overload relays:
- LR9D: see page B11/10.
- LR9G: see pages B11/13 and B11/14.

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | Switch-disconnector -fuse Reference | aM fuse | | Contactors (1) | | | Overload relays | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Size | Rating | KM3 LC1 | KM2 LC1 | KM1 LC1 | Reference | Setting range |
| 220/230 V kW | 380/400 V kW | 415 V kW | 440 V kW | In max A | | | A | | | | | A |
| 30 | 55 | 59 | 59 | 105 | **GS●K** | 22 x 58 | 125 | G115 | G115 | D3210 | LR9G115 | 28…115 |
| 40 | 75 | 80 | 80 | 138 | **GS●L** | T0 | 160 | G115 | G115 | D5011 | LR9G225 | 56…225 |
| 51 | 90 | 90 | 100 | 170 | **GS●N** | T1 | 200 | G115 | G115 | D6511 | LR9G225 | 56…225 |
| 63 | 110 | 110 | 110 | 205 | **GS●N** | T1 | 250 | G150 | G150 | D8011 | LR9G225 | 56…225 |
| 75 | 132 | 132 | 150 | 245 | **GS●N** | T1 | 250 | G150 | G150 | D9511 | LR9G500 | 125…500 |
| 90 | 160 | 160 | 185 | 300 | **GS●QQ** | T2 | 315 | G185 | G185 | G115 | LR9G500 | 125…500 |
| 110 | 200 | 200 | 220 | 370 | **GS●QQ** | T2 | 400 | G225 | G225 | G115 | LR9G500 | 125…500 |
| 140 | 250 | 257 | 280 | 460 | **GS2S** | T3 | 500 | G265 | G265 | G150 | LR9G500 | 125…500 |
| 180 | 315 | 355 | 375 | 584 | **GS2S** | T3 | 630 | G400 | G400 | G185 | LR9G630 | 157…630 |
| 200 | 355 | 375 | 400 | 635 | **GS2V** | T4 | 800 | G400 | G400 | G225 | LR9G630 | 157…630 |
| 220 | 400 | 425 | 450 | 710 | **GS2V** | T4 | 800 | G500 | G500 | G265 | LR9G630 | 157…630 |
| 250 | 450 | 475 | 500 | 800 | **GS2V** | T4 | 800 | G500 | G500 | G265 | LR9G630 | 157…630 |

*(1) Deca Green contactors have not been validated for auto-transformer starting.*

## Applications

These contactors are used to eliminate starting resistance in the rotor circuit of slip-ring motors.

The most common application is for starters without inching and without rotor speed adjustment: pumps, fans, conveyors, compressors, ...

In the case of control by means of a manually operated master controller, the use of contactors with magnetic blow-out is recommended. Please consult your Regional Sales Office.

For hoisting applications, contactor selection must take into account the type of motor duty, the operating rate, the rotor voltage and current, the type of connection, the ambient temperature, etc.
Please consult your Regional Sales Office.

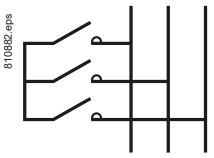
## Operation

The rotor circuit contactors are interlocked with the stator contactor and therefore do not open until after the stator contactor has opened, when the rotor voltage has disappeared, or virtually disappeared.

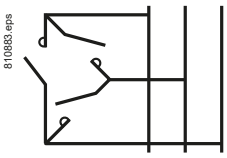
They make the current corresponding to the normal starting peak (1.5 to 2.5 times the rated rotor current) and open the circuit under no-load. Making and breaking are easy.

**Different types of rotor connection**

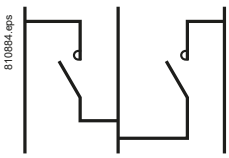
**Star connection**



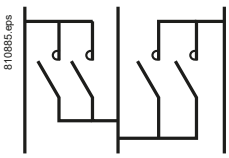

**Delta connection**




**'V' connection**




**'W' connection**




*(1) Deca Green contactors have not been validated for rotor circuits of slip-ring motors.*

## Contactor selection according to the type of connection

### Rotor current and voltage coefficients

Coefficients to be applied to the operational current values shown in the table below.

| Type of connection | Rotor I coefficient | 3-phase rotor Ue (2) | |
|---|---|---|---|
| | | Maximum | With counter-current |
| | Operational I | LC1G | LC1G |
| **Star** | 1 | 2000 V | 1000 V |
| **Delta** | 1.4 | 1700 V | 850 V |
| **In V** | 1 | 1700 V | 850 V |
| **In W** | 1.6 | 1700 V | 850 V |

## Selection according to the operational current

The selection examples below take into account:

- a ratio of 2 between the maximum operational rotor voltage (Uer) and the rated stator operational voltage (Ues). This ratio is given in standard IEC 60947-4,
- a guarantee of occasional duty (making and breaking capacities) specified in the above standards.

| Time current flowing | Contactor rating LC1 G150 | LC1 G185 | LC1 G265 | LC1 G400 | LC1 G500 | LC1 G630 | LC1 G800 |
|---|---|---|---|---|---|---|---|
| **Intermediate contactor: with number of operating cycles ≤ 30/h** | | | | | | | |
| 10 s | 450 A | 550 A | 800 A | 1100 A | 1500 A | 2000 A | 2500 A |
| 30 s | 280 A | 400 A | 550 A | 730 A | 1000 A | 1500 A | 2000 A |
| 60 s | 220 A | 300 A | 400 A | 550 A | 750 A | 1200 A | 1500 A |
| **Intermediate contactor: with number of operating cycles ≤ 60/h** | | | | | | | |
| 5 s | 450 A | 550 A | 800 A | 1100 A | 1500 A | 2000 A | 2500 A |
| 10 s | 330 A | 450 A | 620 A | 860 A | 1250 A | 1800 A | 2300 A |
| 30 s | 220 A | 300 A | 400 A | 550 A | 750 A | 1200 A | 1500 A |
| **Intermediate contactor: with number of operating cycles ≤ 150/h** | | | | | | | |
| 5 s | 300 A | 420 A | 580 A | 820 A | 1150 A | 1650 A | 2200 A |
| 10 s | 250 A | 350 A | 430 A | 600 A | 850 A | 1300 A | 1600 A |
| **Rotor short-circuit contactor and intermediate contactor: with number of operating cycles > 150/h** | | | | | | | |
| – | 200 A | 270 A | 350 A | 500 A | 700 A | 1000 A | 1600 A |
| **Electrical durability** | | | | | | | |
| For automatic starting, the electrical durability is in the region of 1 million operating cycles. | | | | | | | |

*(1) TeSys Deca Green contactors have not been validated for rotor circuits of slip-ring motors.*
*(2) For use up to 3000 V, please consult your Regional Sales Office.*

## Voltage drop caused by the inrush current

When the operating coil of a contactor is energised, the inrush current produces a voltage drop in the control circuit cable caused by the resistance of the conductors, which can adversely affect closing of the contactor.
An excessive voltage drop in the control supply cables (both a.c. and d.c.) can lead to non closure of the contactor poles or even destruction of the coil due to overheating.
This phenomenon is aggravated by:

- a long line
- a low control circuit voltage
- a cable with a small c.s.a.
- a high inrush power drawn by the coil.

The maximum length of cable, depending on the control voltage, the inrush power and the conductor c.s.a., is indicated in the graphs below.

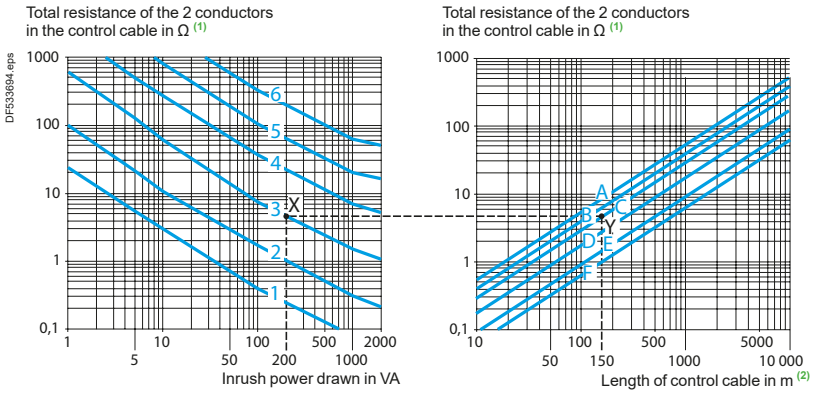
### Remedial action

To reduce the voltage drop at switch-on:

- increase the conductor c.s.a.
- use a higher control circuit voltage
- use an intermediate control relay.

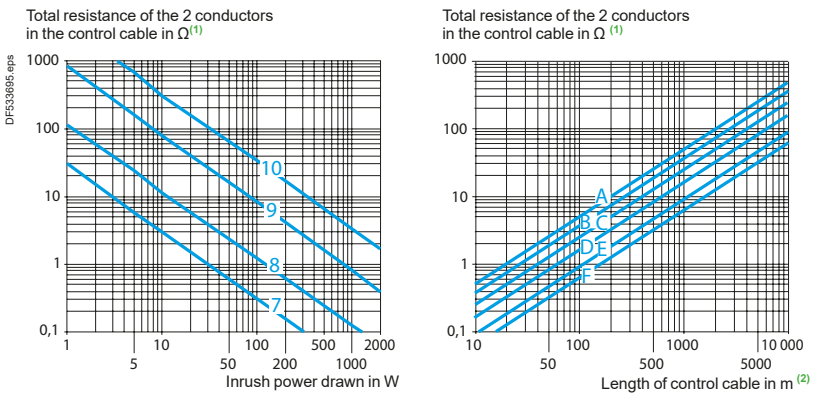
### Selection of conductor c.s.a.

These graphs are for a maximum line voltage drop of 5 %. They give a direct indication of the copper conductor c.s.a. to be used for the control cable, depending on its length, the inrush power drawn by the contactor coil and the control circuit voltage (see example page A5/83).




| | | |
|---|---|---|
| 1 ∼ 24 V | 3 ∼ 115 V | 5 ∼ 400 V |

| C.s.a. of copper cables | | |
|---|---|---|
| A 0.75 mm² | C 1.5 mm² | E 4 mm² |




| | | |
|---|---|---|
| 2 ∼ 48 V | 4 ∼ 230 V | 6 ∼ 690 V |

| | | |
|---|---|---|
| B 1 mm² | D 2.5 mm² | F 6 mm² |

| | |
|---|---|
| 7 ⎓ 24 V | 9 ⎓ 125 V |
| 8 ⎓ 48 V | 10 ⎓ 250 V |

| C.s.a. of copper cables | | |
|---|---|---|
| A 0.75 mm² | C 1.5 mm² | E 4 mm² |
| B 1 mm² | D 2.5 mm² | F 6 mm² |

*(1) For 3-wire control, the current only flows in 2 of the conductors.*
*(2) This is the length of the cable comprising 2 or 3 conductors. (Distance between the contactor and the control device).*


Life Is On Schneider Electric

## Voltage drop caused by the inrush current

What cable c.s.a. is required for the control circuit of an LC1 D40A, 115 V contactor, operated from a distance of 150 metres?

■ Contactor LC1D40A, voltage 115 V, 50 Hz: inrush power: 200 VA.

On the left-hand graph on the page opposite, point X is at the intersection of the vertical line corresponding to 200 VA and the ∿ 115 V voltage curve.

On the right-hand graph on the page opposite, point Y is at the intersection of the vertical line corresponding to 150 m and the horizontal line passing through point X.

Use the conductor c.s.a. indicated by the curve which passes through point Y, i.e.: 1.5 $mm^2$.

If point Y lies between two c.s.a. curves, choose the larger of the c.s.a. values.

### Calculating the maximum cable length

The maximum permissible length for acceptable line voltage drop is calculated by the formula:

$$L = \frac{U^2}{SA} .s.K$$

where:

L : distance between the contactor and the control device in m (length of the cable)
U : supply voltage in V
SA : apparent inrush power drawn by the coil in VA
s : conductor c.s.a. in $mm^2$
K : factor given in the table below.

| **a.c. supply** | **SA in VA** | **20** | **40** | **100** | **150** | **200** |
|---|---|---|---|---|---|---|
| | K | 1.38 | 1.5 | 1.8 | 2 | 2.15 |

| **d.c. supply** | Irrespective of the apparent inrush power SA, expressed in W |
|---|---|
| | K = 1.38 |

## Residual current in the coil due to cable capacitance

When the control contact of a contactor is opened, the control cable capacitance is effectively in series with the coil of the electromagnet. This capacitance can cause a residual current to be maintained in the coil, with the risk that the contactor will remain closed.

## This only applies to contactors operating on an a.c. supply.

This phenomenon is aggravated by:
- a long line length between the coil control contact and the contactor, or between the coil control contact and the power supply,
- a high control circuit voltage,
- a low coil consumption, sealed,
- a low value of contactor drop-out voltage.

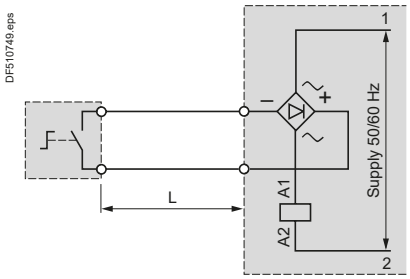
The maximum control cable length, according to the contactor coil supply voltage, is indicated in the graph on the page opposite.

## Remedial action

Various solutions can be adopted to avoid the risk of the contactor remaining closed due to cable capacitance:
- use a d.c. control voltage, or
- add a rectifier, connected as shown in the scheme below, but retaining an a.c. operating coil: in this way, rectified a.c. current flows in the control cable.

When calculating the maximum cable length, take the resistance of the conductors into account.

.




- Connect a resistor in parallel with the contactor coil (1).

Value of the resistance:

$$R\ \Omega = \frac{1}{10^{-3}\ C\ (\mu F)}\ \text{(C capacitance of the control cable)}$$

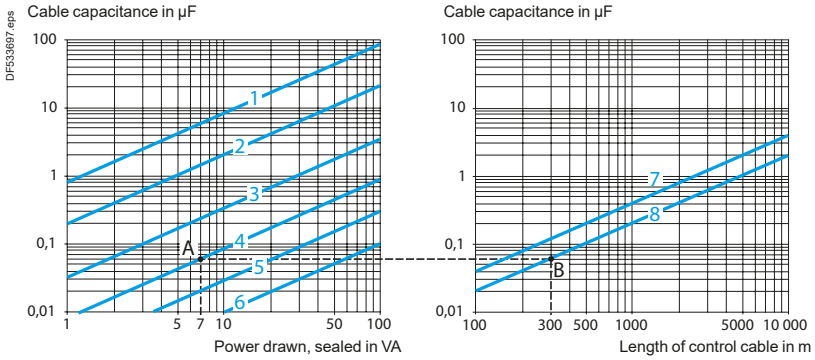
Power to be dissipated:

$$PW = \frac{U^2}{R}$$

*(1) To avoid increasing the voltage drop due to inrush current, this resistor must be brought into operation after the contactor has closed by using an N/O contact.*

## Residual current in the coil due to cable capacitance

These graphs are for a capacitance, between 2 conductors, of 0.2 µF/km. They make it possible to determine whether there is a risk of the contactor remaining closed due to the power drawn by the coil when sealed, as well as the control circuit voltage, according to the length of the control cable.




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | ∼ 24 V | 3 | ∼ 115 V | 5 | ∼ 400 V | 7 | 3-wire control |
| 2 | ∼ 48 V | 4 | ∼ 230 V | 6 | ∼ 690 V | 8 | 2-wire control |

In the zones below the straight lines for 3-wire and 2-wire control respectively, there is a risk of the contactor remaining closed.

**Examples**

What is the maximum length for the control cable of an LC1D12 contactor, operating on 230 V, with 2-wire control?

■ Contactor LC1D12, voltage 230 V, 50 Hz: power sealed 7 VA.

On the left-hand graph, point A is at the intersection of the vertical line for 7 VA with the ∼ 230 V voltage curve.

On the right-hand graph, point B is at the intersection of the horizontal line with the 2-wire control curve.

The maximum cable length is therefore 300 m.

In the same example, with a 600 m cable, the point lies in the risk zone. A resistor must therefore be connected in parallel with the contactor coil.

$$R = \frac{1}{10^{-3} \cdot C} = \frac{1}{10^{-3} \cdot 0.12} = 8.3\ \Omega$$

Value of this resistance:

$$P = \frac{U^2}{R} = \frac{(220)^2}{8300} = 6\ W$$

Power to be dissipated:

Alternative solution: use a d.c. control supply.

**Calculating the cable length**

The maximum permitted length of control cable to avoid the effects of capacitance is calculated using the formula:

$$L = 455 \cdot \frac{S}{U^2.Co}$$

L : distance between the contactor and the control device in km (length of the cable),
S : apparent power, sealed, in VA,
U : control voltage in V,
Co : line capacitance of the cable in µF/km.

## 3-phase 4-pole motors

### Current values for power in kW

| Rated operational power (1) | Indicative rated operational current values at: | | | |
|---|---|---|---|---|
| | 230 V | 400 V | 500 V | 690 V |
| kW | A | | | |
| 0.06 | 0.35 | 0.2 | 0.16 | 0.12 |
| 0.09 | 0.52 | 0.3 | 0.24 | 0.17 |
| 0.12 | 0.7 | 0.44 | 0.32 | 0.23 |
| 0.18 | 1 | 0.6 | 0.48 | 0.35 |
| 0.25 | 1.5 | 0.85 | 0.68 | 0.49 |
| 0.37 | 1.9 | 1.1 | 0.88 | 0.64 |
| 0.55 | 2.6 | 1.5 | 1.2 | 0.87 |
| 0.75 | 3.3 | 1.9 | 1.5 | 1.1 |
| 1.1 | 4.7 | 2.7 | 2.2 | 1.6 |
| 1.5 | 6.3 | 3.6 | 2.9 | 2.1 |
| 2.2 | 8.5 | 4.9 | 3.9 | 2.8 |
| 3 | 11.3 | 6.5 | 5.2 | 3.8 |
| 4 | 15 | 8.5 | 6.8 | 4.9 |
| 5.5 | 20 | 11.5 | 9.2 | 6.7 |
| 7.5 | 27 | 15.5 | 12.4 | 8.9 |
| 11 | 38 | 22 | 17.6 | 12.8 |
| 15 | 51 | 29 | 23 | 17 |
| 18.5 | 61 | 35 | 28 | 21 |
| 22 | 72 | 41 | 33 | 24 |
| 30 | 96 | 55 | 44 | 32 |
| 37 | 115 | 66 | 53 | 39 |
| 45 | 140 | 80 | 64 | 47 |
| 55 | 169 | 97 | 78 | 57 |
| 75 | 230 | 132 | 106 | 77 |
| 90 | 278 | 160 | 128 | 93 |
| 110 | 340 | 195 | 156 | 113 |
| 132 | 400 | 230 | 184 | 134 |
| 160 | 487 | 280 | 224 | 162 |
| 200 | 609 | 350 | 280 | 203 |
| 250 | 748 | 430 | 344 | 250 |
| 315 | 940 | 540 | 432 | 313 |
| 355 | 1061 | 610 | 488 | 354 |
| 400 | 1200 | 690 | 552 | 400 |
| 500 | 1478 | 850 | 680 | 493 |
| 560 | 1652 | 950 | 760 | 551 |
| 630 | 1844 | 1060 | 848 | 615 |
| 710 | 2070 | 1190 | 952 | 690 |
| 800 | 2340 | 1346 | 1076 | 780 |
| 900 | 2640 | 1518 | 1214 | 880 |
| 1000 | 2910 | 1673 | 1339 | 970 |

### Current values for power in hp

| Rated operational power (2) | Indicative rated operational current values at: | | | | | | |
|---|---|---|---|---|---|---|---|
| | 110 - 120 V | 200 V | 208 V | 220 - 240 V | 380 - 415 V | 440 - 480 V | 550 - 600 V |
| hp | A | | | | | | |
| 1/2 | 4.4 | 2.5 | 2.4 | 2.2 | 1.3 | 1.1 | 0.9 |
| 3/4 | 6.4 | 3.7 | 3.5 | 3.2 | 1.8 | 1.6 | 1.3 |
| 1 | 8.4 | 4.8 | 4.6 | 4.2 | 2.3 | 2.1 | 1.7 |
| 1 1/2 | 12 | 6.9 | 6.6 | 6 | 3.3 | 3 | 2.4 |
| 2 | 13.6 | 7.8 | 7.5 | 6.8 | 4.3 | 3.4 | 2.7 |
| 3 | 19.2 | 11 | 10.6 | 9.6 | 6.1 | 4.8 | 3.9 |
| 5 | 30.4 | 17.5 | 16.7 | 15.2 | 9.7 | 7.6 | 6.1 |
| 7 1/2 | 44 | 25.3 | 24.2 | 22 | 14 | 11 | 9 |
| 10 | 56 | 32.2 | 30.8 | 28 | 18 | 14 | 11 |
| 15 | 84 | 48.3 | 46.2 | 42 | 27 | 21 | 17 |
| 20 | 108 | 62.1 | 59.4 | 54 | 34 | 27 | 22 |
| 25 | 136 | 78.2 | 74.8 | 68 | 44 | 34 | 27 |
| 30 | 160 | 92 | 88 | 80 | 51 | 40 | 32 |
| 40 | 208 | 120 | 114 | 104 | 66 | 52 | 41 |
| 50 | 260 | 150 | 143 | 130 | 83 | 65 | 52 |
| 60 | - | 177 | 169 | 154 | 103 | 77 | 62 |
| 75 | - | 221 | 211 | 192 | 128 | 96 | 77 |
| 100 | - | 285 | 273 | 248 | 165 | 124 | 99 |
| 125 | - | 359 | 343 | 312 | 208 | 156 | 125 |
| 150 | - | 414 | 396 | 360 | 240 | 180 | 144 |
| 200 | - | 552 | 528 | 480 | 320 | 240 | 192 |
| 250 | - | - | - | 604 | 403 | 302 | 242 |
| 300 | - | - | - | 722 | 482 | 361 | 289 |
| 350 | - | - | - | 828 | 560 | 414 | 336 |
| 400 | - | - | - | 954 | 636 | 477 | 382 |
| 450 | - | - | - | 1030 | – | 515 | 412 |
| 500 | - | - | - | 1180 | 786 | 590 | 472 |

*(1) Values conforming to standard IEC 60072-1 (at 50 Hz).*
*(2) Values conforming to standard UL 508 (at 60 Hz).*

***Note:** These values are given as a guide. They may vary depending on the type of motor, its polarity and the manufacturer.*

## Standardisation

### Conformity to standards

Schneider Electric products satisfy, in the majority of cases, national (for example: BS in Great Britain, NF in France, DIN in Germany), European (for example: CENELEC) or international (IEC) standards. These product standards precisely define the performance of the designated products (such as IEC 60947 series for low voltage equipment).
When used correctly, as designated by the manufacturer and in accordance with regulations and correct practices, these products will allow users to build equipment, machine systems or installations that conform to their appropriate standards (for example: IEC 60204-1, relating to electrical equipment used on industrial machines).
Schneider Electric is able to provide proof of conformity of its production to the standards it has chosen to comply with, through its quality assurance system.
On request, and depending on the situation, Schneider Electric can provide the following:

- a declaration of conformity,
- a certificate of conformity (CB certificate, Asefa/Lovag),
- a homologation certificate or approval, in the countries where this procedure is required or for particular specifications, such as those existing in the merchant navy.

| Standard | Certification authority | | Country |
|---|---|---|---|
| | Name | Regulation authority | |
| **ANSI** | American National Standards Institute | ANSI | USA |
| **BS** | British Standards Institution | BSI | Great Britain |
| **CEI** | Comitato Elettrotecnico Italiano | CEI | Italy |
| **DIN/VDE** | Verband Deutscher Electrotechniker | VDE | Germany |
| **EN** | Comité Européen de Normalisation Electrotechnique | CENELEC | Europe |
| **TR Regulation** | Eurasian Customs Union | EAC | Russia, Belarus, Kazakhstan |
| **IEC** | International Electrotechnical Commission | IEC | Worldwide |
| **JIS** | Japanese Industrial Standards Committee | JISC | Japan |
| **NBN** | Institut Belge de Normalisation | IBN | Belgium |
| **NEN** | Nederlands Normalisatie Institut | NNI | Netherlands |
| **NF** | Union Technique de l'Electricité | UTE | France |
| **SAA** | Standards Association of Australia | SAA | Australia |
| **UNE** | Asociacion Española de Normalizacion y Certificacion | AENOR | Spain |

### European EN standards

These are technical specifications established in conjunction with, and with approval of, the relative bodies within the various CENELEC member countries (European Union, European Free Trade Association and many central and eastern European countries having «member» or «affiliated» status). Prepared in accordance with the principle of consensus, the European standards are the result of a weighted majority vote. Such adopted standards are then integrated into the national collection of standards, and contradictory national standards are withdrawn.
European standards incorporated within the French collection of standards carry the prefix NF EN. At the 'Union Technique de l'Electricité' *(Technical Union of Electricity)* (UTE), the French version of a corresponding European standard carries a dual number: European reference (NF EN …) and classification index (C …).
Therefore, the standard NF EN 60947-4-1 relating to motor contactors and starters, effectively constitutes the French version of the European standard EN 60947-4-1 and carries the UTE classification C 63-110.
This standard is identical to the British standard BS EN 60947-4-1 or the German standard DIN EN 60947-4-1.
Whenever reasonably practical, European standards reflect the international standards (IEC).
With regard to automation system components and distribution equipment, in addition to complying with the requirements of French NF standards, Schneider Electric brand components conform to the standards of all other major industrial countries.

## Regulations

### European Directives

Opening up of European markets assumes harmonisation of the regulations pertaining to each of the member countries of the European Union.
The purpose of the European Directive is to eliminate obstacles hindering the free circulation of goods within the European Union, and it must be applied in all member countries. Member countries are obliged to transcribe each Directive into their national legislation and to simultaneously withdraw any contradictory regulations. The Directives, in particular those of a technical nature which concern us, only establish the objectives to be achieved, referred to as "essential requirements".
The manufacturer must take all the necessary measures to ensure that his products conform to the requirements of each Directive applicable to his production.
As a general rule, the manufacturer certifies conformity to the essential requirements of the Directive(s) for his product by affixing the CE marking.
The CE marking is affixed to Schneider Electric brand products concerned, in order to confirm compliance with French and European regulations.

**Significance of the CE marking**

- The CE marking affixed to a product signifies that the manufacturer declares that the product conforms to the relevant European Directive(s) which concern it; this condition must be met to allow free distribution and circulation within the countries of the European Union of any product subject to one or more of the E.U. Directives.
- The CE marking is intended solely for national market control authorities.
- The CE marking must not be confused with a conformity mark.

## European Directives

For electrical equipment, only conformity to standards signifies that the product is suitable for its designated function, and only the guarantee of an established manufacturer can provide a high level of quality assurance.
For Schneider Electric brand products, one or several Directives are likely to be applicable, depending on the product, and in particular:

- the Low Voltage Directive 2014/35/EU: the CE marking relating to this Directive has been compulsory since April 2016.
- the Electromagnetic Compatibility Directive 2014/30/EU: the CE marking on products covered by this Directive has been compulsory since April 2016.

## CB certificate, Asefa/Lovag certificate

- CB certification is issued according to IEC standards in respect to a multilateral agreement between almost industrial countries called CB scheme. It allows international certification of electrical and electronic products so that a single certification facilitates a worldwide market access.
- The function of ASEFA (Association des Stations d'Essais Française d'Appareils électriques - *Association of French Testing Stations for Low Voltage Industrial Electrical Equipment)* is to carry out tests of conformity to standards and to issue certificates of conformity and test reports. ASEFA laboratories are authorised by the French authorisation committee (COFRAC). ASEFA is now a member of the European agreement group LOVAG (Low Voltage Agreement Group). This means that any certificates issued by LOVAG/ASEFA are recognised by all the authorities which are members of the group and carry the same validity as those issued by any of the member authorities.

# Quality labels

When components can be used in domestic and similar applications, it is sometimes recommended that a "Quality label" be obtained, which is a form of certification of conformity.

| Code | Quality label | Country |
|---|---|---|
| **CEBEC** | Comité Electrotechnique Belge | Belgium |
| **KEMA-KEUR** | Keuring van Electrotechnische Materialen | Netherlands |
| **NF** | Union Technique de l'Electricité | France |
| **ÖVE** | Österreichischer Verband für Electrotechnik | Austria |
| **SEMKO** | Svenska Electriska Materiel Kontrollanatalten | Sweden |

# Product certifications

In some countries, the certification of certain electrical components is a legal requirement. In this case, a certificate of conformity to the standard is issued by the official test authority.
Each certified device must bear the relevant certification symbols when these are mandatory:

| Code | Certification authority | Country |
|---|---|---|
| **CSA** | Canadian Standards Association | Canada |
| **UL** | Underwriters Laboratories | USA |
| **CCC** | China Compulsory Certification | China |

Note on certifications issued by the Underwriters Laboratories (UL). There are two levels of approval:

**"Recognized" (** **)** The component is fully approved for inclusion in equipment built in a workshop, where the operating limits are known by the equipment manufacturer and where its use within such limits is acceptable by the Underwriters Laboratories.
The component is not approved as a "Product for general use" because its manufacturing characteristics are incomplete or its application possibilities are limited.
A "Recognized" component does not necessarily carry the certification symbol.

**"Listed" (UL)** The component conforms to all the requirements of the classification applicable to it and may therefore be used both as a "Product for general use" and as a component in assembled equipment. A "Listed" component must carry the certification.

# Marine classification societies

Prior recognition by certain marine classification societies is generally required for electrical equipment which is intended for use on board merchant vessels.
Europe community has emitted regulation No. 391/2009 for common rules for Type approval of Marine equipment.
MR TA Mutual Recognition Type Approval is a certificate that is mutually recognized by all 12 classification societies from the **EU RO MR group** (European Recognized Organizations).
Renewal of marine certifications, or new products certification is now covered by EU-MR (Mutual Recognition) process and therefore removes the need for multiple marine certifications.
Current EU RO members include all major societies like DNV-GL, BV, ABS, LR as well as non-European societies like CCS, KR, NK, RMRS, etc.

| Rules | Classification authority | Country |
|---|---|---|
| **ABS** | American Bureau of Shipping | Unites States of America |
| **KRoS** | Korean register of Shipping | South Korea |
| **BV** | Bureau Veritas | France |
| **DNV-GL** | Det Norske Veritas - Germanischer Lloyd | Norway - Germany |
| **LRoS** | Lloyd's Register of Shipping | Great Britain |
| **NKK** | Nippon Kaiji Kyokaï | Japan |
| **RINA** | Registro Italiano Navale | Italy |
| **RMRoS** | Russian Maritime Register of Shipping | Russia |
| **CCS** | China Classification Society | Republic of China |

***Note:*** *for further details on a specific product, please refer to the "Characteristics" pages in this catalogue or consult your Regional Sales Office.*

**Degrees of protection against the penetration of solid bodies, water and personnel access to live parts**

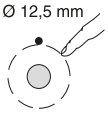
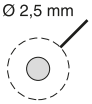
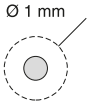
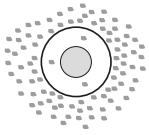
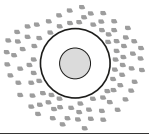
The European standard EN 60529 dated October 1991, IEC publication 529 (2nd edition - November 1989), defines a coding system (IP code) for indicating the degree of protection provided by electrical equipment enclosures against accidental direct contact with live parts and against the ingress of solid foreign objects or water. This standard does not apply to protection against the risk of explosion or conditions such as humidity, corrosive gasses, fungi or vermin.
Certain equipment is designed to be mounted on an enclosure which will contribute towards achieving the required degree of protection (example : control devices mounted on an enclosure).
Different parts of an equipment can have different degrees of protection (example : enclosure with an opening in the base).
Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.
Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

## IP ●●● code

The IP code comprises **2 characteristic numerals** (e.g. **IP 55**) and may include **an additional letter** when the actual protection of personnel against direct contact with live parts is better than that indicated by the first numeral (e.g. IP 20C).
Any characteristic numeral which is unspecified is replaced by an X (e.g. IP XXB).

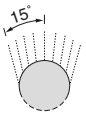
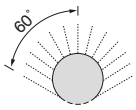
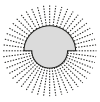
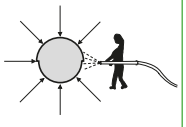
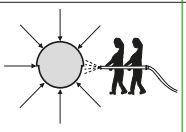
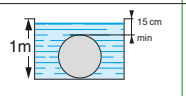
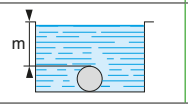
### 1st characteristic numeral

corresponds to protection of the equipment against penetration of solid objects and protection of personnel against direct contact with live parts.

| | Protection of the equipment | | Protection of personnel |
|---|---|---|---|
| 0 | Non-protected | | Non-protected |
| 1 | Ø 50 mm | Protected against the penetration of solid objects having a diameter greater than or equal to 50 mm | Protected against direct contact with the back of the hand (accidental contacts). |
| 2 | Ø 12,5 mm  | Protected against the penetration of solid objects having a diameter greater than or equal to 12.5 mm. | Protected against direct finger contact. |
| 3 | Ø 2,5 mm  | Protected against the penetration of solid objects having a diameter greater than or equal to 2.5 mm. | Protected against direct contact with a Ø2.5 mm tool. |
| 4 | Ø 1 mm  | Protected against the penetration of solid objects having a diameter greater than or equal to 1 mm. | Protected against direct contact with a Ø1 mm wire. |
| 5 |  | Dust protected (no harmful deposits). | Protected against direct contact with a Ø1 mm wire. |
| 6 |  | Dust tight. | Protected against direct contact with a Ø1 mm wire. |

### 2nd characteristic numeral

corresponds to protection of the equipment against penetration of water with harmful effects.

| | | |
|---|---|---|
| 0 | Non-protected | |
| 1 | | Protected against vertical dripping water, (condensation). |
| 2 |   | Protected against dripping water at an angle of up to 15°. |
| 3 |   | Protected against rain at an angle of up to 60°. |
| 4 |  | Protected against splashing water in all directions. |
| 5 |  | Protected against water jets in all directions. |
| 6 |  | Protected against powerful jets of water and waves. |
| 7 |   | Protected against the effects of temporary immersion. |
| 8 |   | Protected against the effects of prolonged immersion under specified conditions. |

### Additional letter

corresponds to protection of personnel against direct contact with live parts.

| | |
|---|---|
| A | With the back of the hand. |
| B | With the finger. |
| C | With a Ø2.5 mm tool. |
| D | With a Ø1 mm wire. |

**Degrees of protection against mechanical impact**

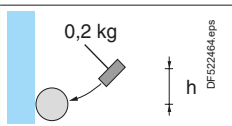
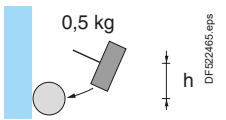
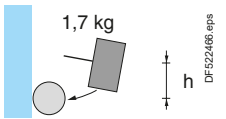
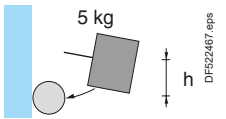
The European standard EN 50102 dated March 1995 defines a coding system (IK code) for indicating the degree of protection provided by electrical equipment enclosures against external mechanical impact.
Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.
Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

## IK ●● code

The IK code comprises **2 characteristic numerals** (e.g. **IK 05**).

### 2 characteristic numerals

corresponding to a value of impact energy.

| | | h (cm) | Energy (J) |
|---|---|---|---|
| **00** | Non-protected | | |
| **01** |  | 7.5 | 0.15 |
| **02** | | 10 | 0.2 |
| **03** | | 17.5 | 0.35 |
| **04** | | 25 | 0.5 |
| **05** | | 35 | 0.7 |
| **06** |  | 20 | 1 |
| **07** | | 40 | 2 |
| **08** |  | 30 | 5 |
| **09** |  | 20 | 10 |
| **10** | | 40 | 20 |


Life Is On Schneider Electric

# Part B

# COMPONENTS
## FOR CONVENTIONAL SOLUTIONS


**Linergy** BZ, HK
Busbar systems
Up to 630 A B1/1

GV, LAD, U
Wiring systems for motor starters
B2/1

**TeSys** Control
Switch-disconnectors
Up to 175 A B3/1

**TeSys** Power
Fuse carriers
Up to 125 A B4/1

**TeSys** Power
Switch-disconnector fuses
Up to 1250 A B5/1

**TeSys** Power
Deca, Giga and Modular
Motor circuit breakers
Up to 250 kW B6/1

**TeSys** Control
SK, K, Deca Control relays
Up to 10 A B7/1

**TeSys** Control
SK, K, SKGC, Deca, Modular and other Contactors
Up to 150 A (AC-3) B8/1

**TeSys** Control
Giga High power contactors
Up to 800 A (AC-3) B9/1

**TeSys** Control
F High power contactors
Up to 2600 A (AC-1) B10/1

**TeSys** Protect
LRK, Deca, Giga
Overload relays
Up to 630 A B11/1




This PDF Catalog is updated twice a year. Please check on the link below that you are using the last version.

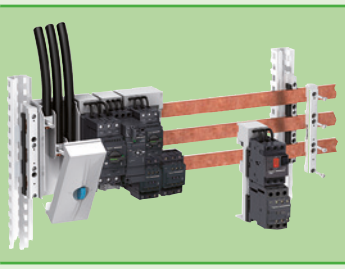
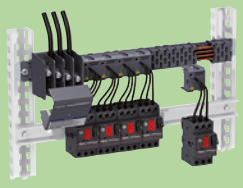
**Ref. MKTED210011EN**

# Linergy BZ, HK Busbar systems





## Busbar systems for electrical distribution and motors starters


| Type of product | Range | | Pages |
|---|---|---|---|
| Introduction<br>Linergy BZ | | | B1/2 |
| Multi-standard power busbar<br>Linergy BZ | From 160 to 630 A |  | B1/4 |
| Introduction<br>Linergy HK | | | B1/10 |
| Multi-standard hot-plug distribution system<br>Linergy HK | Up to 160 A |  | B1/12 |

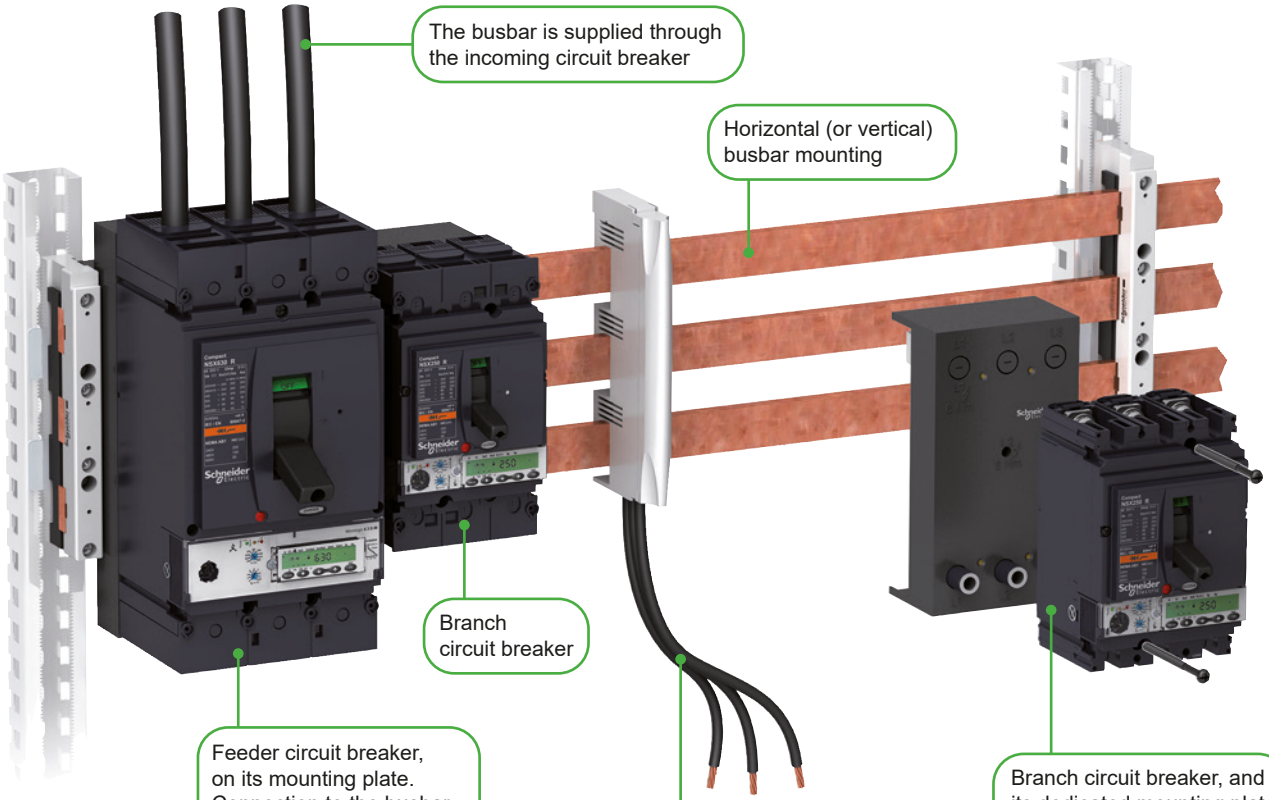
Technical Data for Designers B1/17

All Schneider Electric **distribution and connection systems** are brought together into a single brand name: **Linergy**

Distribution blocks
Device feeders
Power busbars
Hot plug busbar system
Terminal blocks and bars.

Catalogue reference: **LVYED213001EN**

## In enclosures, when space saving and fast connection are a strong requirement



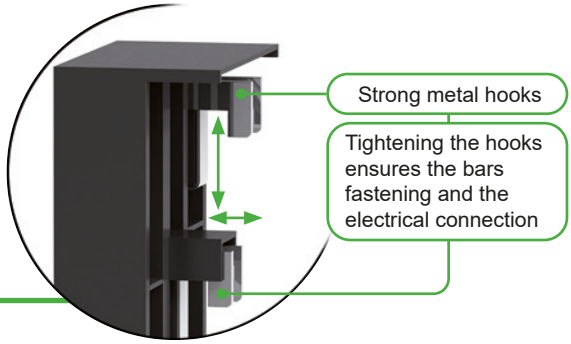

Ideal for industrial process application

## Advantages

- Considerable space saving: components are directly mounted on the busbar
- Quick connection, deconnection: a metal hook combines mechanical fastening and electrical connection
- Multi standard: conform to IEC and UL standards

## Detailed view: back face of a mounting plate

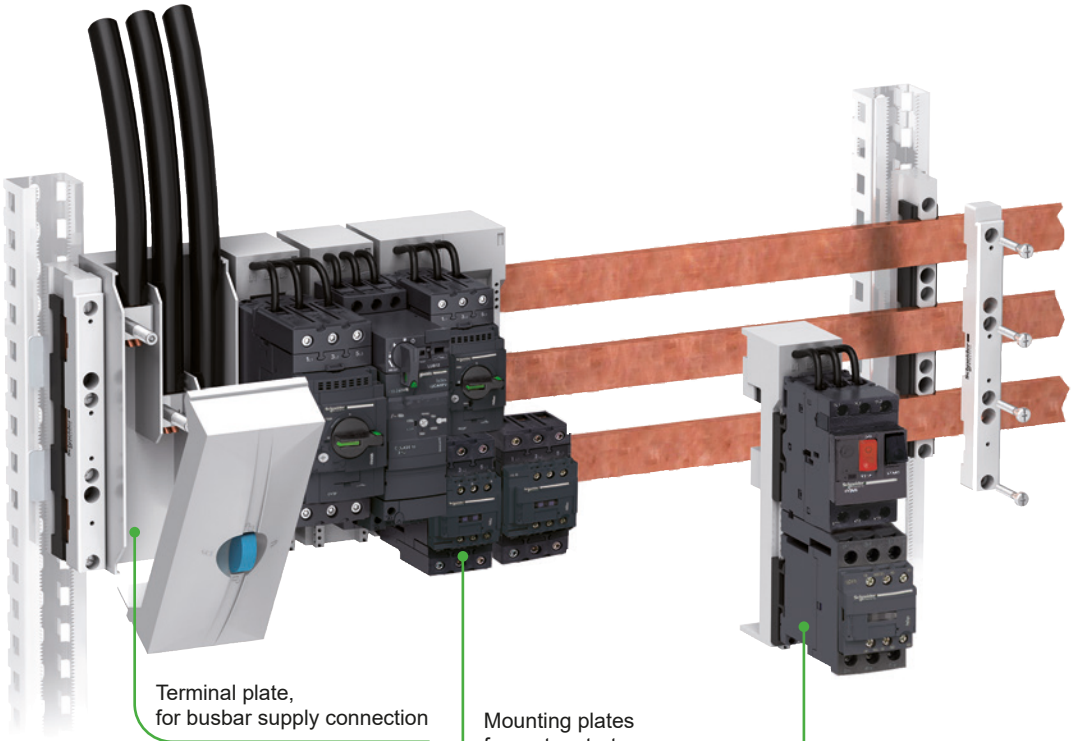
- Mounting plates, for Compact NSX, Powerpact and GV5 circuit breakers
- Compatible with bars:
  - Height 12, 15, 20, 25 or 30 mm,
  - Width 5 or 10 mm



# Introduction

## In control switchboards, when space saving, quick mounting and replacement are required



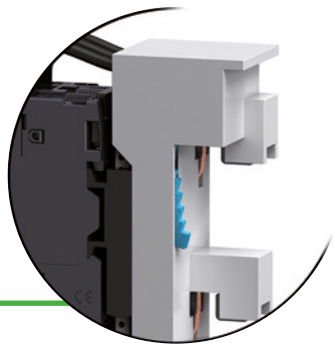



## Advantages

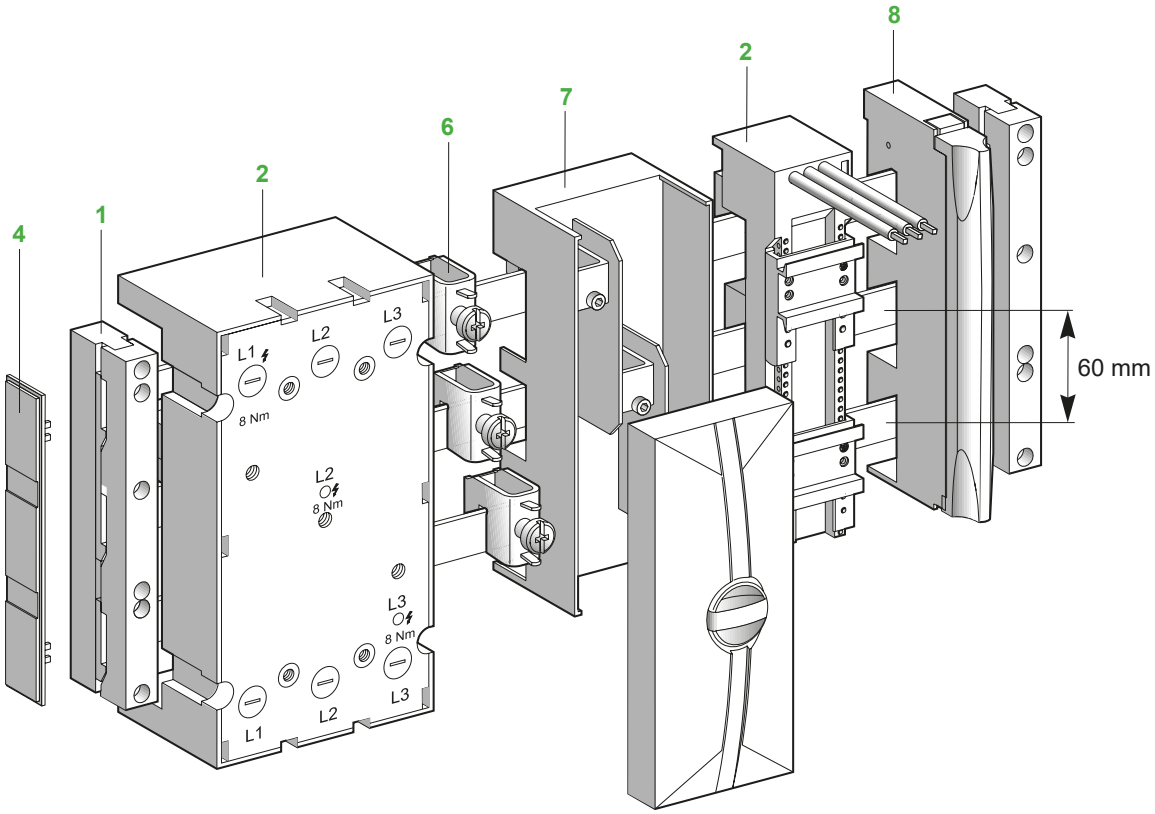
- Considerable space saving: components are directly mounted on the busbar
- Large choice of mounting plates (for a Deca Frame 2 (GV2) , a Deca Frame 3 (GV3) motor circuit breakers and assemblies, a Deca Frame 5 (GV5) Ultra)
- Quick connection, deconnection (power off): clip-on mounting plates
- Vibration resistant busbar connections: no periodical re-tightening required
- Multi standard: conform to IEC and UL standards

## Detailed view: back face of a motor starter mounting plate

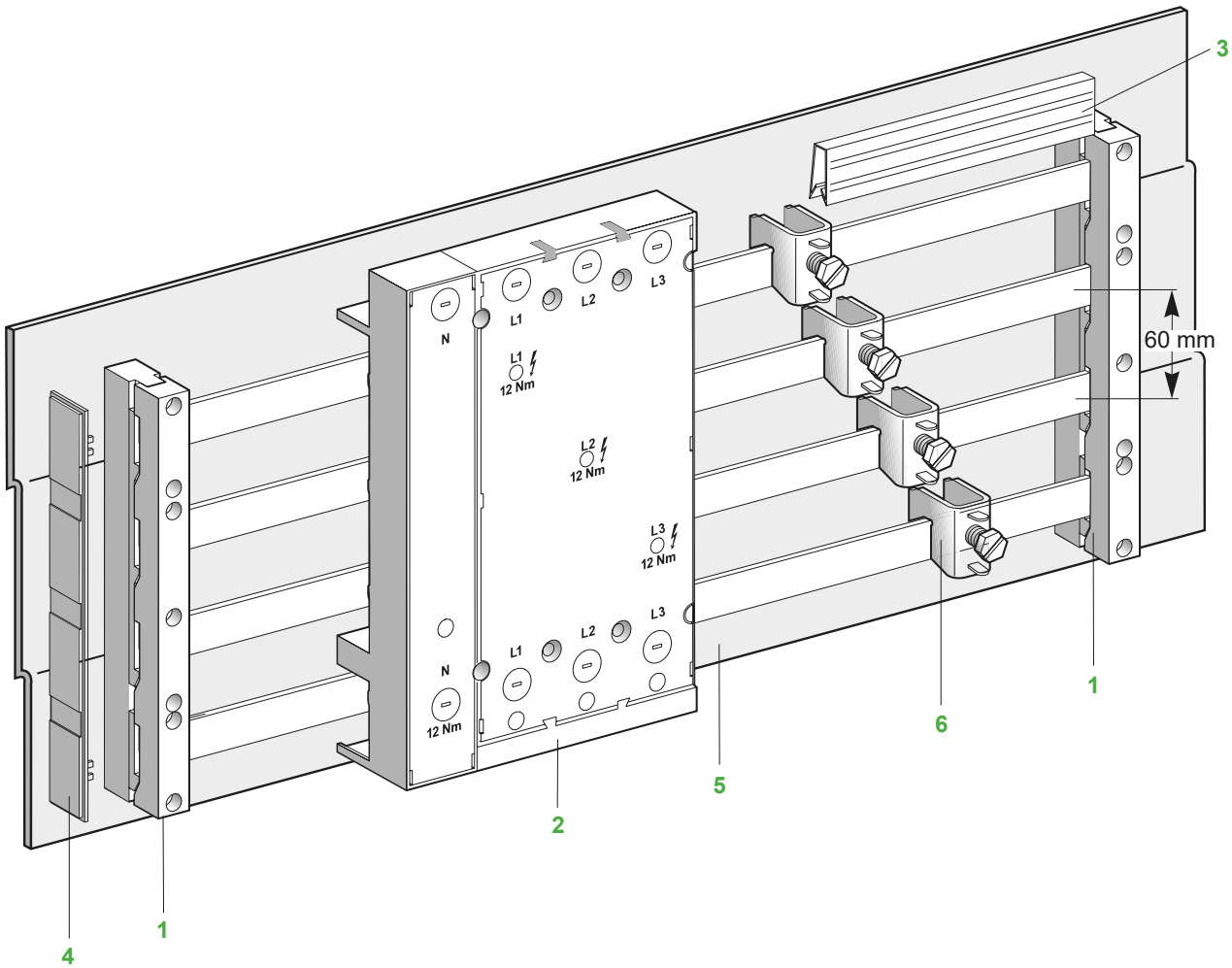
- A reliable electrical contact is ensured by copper blades
- The blue part locks the mounting plate on the busbar, compatibility is provided with the standard profiles:
  - Height 12, 15, 20, 25 or 30 mm,
  - Width 5 or 10 mm



DB400244.eps



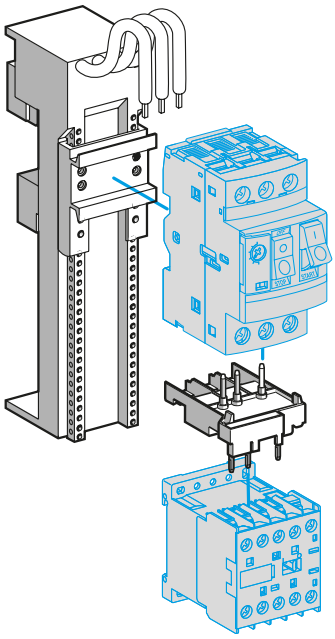

DB400245.eps

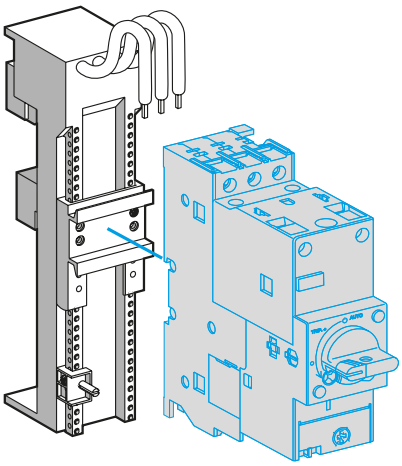





Life Is On Schneider Electric

# Introduction




*Installation examples.*

## Description

The mounting plate system for busbars simplifies the installation of motor feeder components used in your electrical installations.
Power distribution is performed by a busbar.

The mounting plates are fitted directly on this busbar, by snap-on mounting, thus implementing mechanical and electrical connection.

This system offers numerous benefits:
- space saving in cabinets
- fast, safe and reliable electrical and mechanical connection
- easy connection
- protection for users against electric shocks by direct contacts (IP20) by using busbars end covers
- equipment flexibility and modularity
- increased equipment availability: easier maintenance
- power supply without drilling (connectors) from 1.5 to 120 $mm^2$.

**Busbars system**
The busbar interaxis is 60 mm. Depending on the cross section of the bars, the busbar can withstand a maximum current of 630 A.

***Note:*** *The bars forming the busbar are not part of the LA9Z offer. They are not supplied by us. Their selection depends on the maximum current needed for your installation (see next page).*

**Support for 3P and 4P busbar (1)**
These are available in 2 versions: three-pole and four-pole.
For applications having to comply with the UL standard, use the LA9ZX01508 support (3P only).

**The mounting plates (2)**
These allow mounting of the power feeder components consisting of:
- a Deca Frame 2 (GV2) motor circuit breaker, mounted alone or in conjunction with a TeSys K or Deca contactor
- a Deca Frame 3 (GV3) motor circuit breaker, mounted alone or in conjunction with a Deca contactor
- a Ultra motor starter
- a Deca Frame 5 (GV5) motor circuit breaker
- an Integral motor starter
- a NSX100-250 or NSX400-630 A circuit breaker
- H/J/L PowerPact circuit breaker frame.

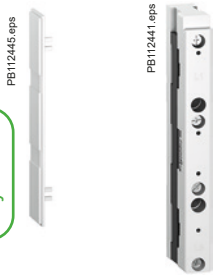
**Accessories**
Accessories complete the offer:
- covers (3) for 5 and 10 mm bars
- end covers (4)
- a base plate (5)
- 1P connectors (6)
- 3P connectors on mounting plate (7)
- a spring terminal 3P connection module (8).



References:
pages B1/6 to B1/9
Characteristics:
page B1/18
Curves:
page B1/19

# Product references






*LA9ZX01573* *LA9ZX01495*

## IEC busbar supports and accessories

| | | Min. order qty | Unit reference |
|---|---|---|---|
| 3-pole | For 12, 15, 20, 25, 30 x 5/10 mm busbars | 10 | **LA9ZX01495** |
| | End covers for 3-pole busbar support | 10 | **LA9ZX01573** |
| 4-pole | For 12, 15, 20, 25, 30 x 5/10 mm busbars | 10 | **LA9ZX01485** |
| | End covers for 4-pole busbar support (5 left, 5 right) | 10 | **LA9ZX01131** |

*LA9ZX01131* *LA9ZX01485*

## UL busbar supports and accessories

| | | Min. order qty | Unit reference |
|---|---|---|---|
| 3-pole | For 12, 20, 30 x 5/10 mm busbars | 10 | **LA9ZX01508** |
| | Base plate 240 x 700 | 2 | **LA9ZX01515** |
| | End covers for busbar support | 10 | **LA9ZX01573** |

## Other accessories

| | | Min. order qty | Unit reference |
|---|---|---|---|
| Covers, length 1 m | | | |
| | For 12-30 x 5 mm busbars | 10 | **LA9ZX01244** |
| | For 12-30 x 10 mm busbars | 10 | **LA9ZX01245** |

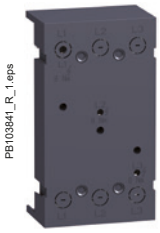
*LA9ZX01573* *LA9ZX01508*

*LA9ZX01244*

# Product references

*LA9ZA32627*

*LV429372*




*LA9ZA32600*

*LV432624*

## For Integral motor starter

| Operating current AC-3 440 V | Protection by contactor-circuit breaker | Mounting plate l x h x d | Min. order qty | Unit reference |
|---|---|---|---|---|
| **Mounting plate, 1-way** | | | | |
| 63 A | LD1, LD4LD● | 108 x 260 x 63 | 1 | **LA9ZA32627** |

## For Deca Frame 5 (GV5), Frame 6 (GV6) motor circuit breakers

| Ratings | | | Mounting plate l x h x d | Min. order qty | Unit reference |
|---|---|---|---|---|---|
| 150-220 A | GV5 | Mounting plate for 3P circuit breakers | 104 x 190 x 63 | 1 | **LV429372** |
| | | Mounting plate for 4P circuit breakers | 139 x 251 x 63 | 1 | **LV429373** |
| 320-500 A | GV6 | Mounting plate for 3P circuit breakers | 139 x 270 x 63 | 1 | **LV432623** |
| | | Mounting plate for 4P circuit breakers | 184 x 284 x 63 | 1 | **LV432624** |

## For PowerPact 3P circuit breakers

| Ratings | | Mounting plate l x h x d | Min. order qty | Unit reference |
|---|---|---|---|---|
| 60-100-150 A | Mounting plate for H frame circuit breakers | 104 x 190 x 63 | 1 | **LA9ZA32600** |
| 250 A | Mounting plate for J frame circuit breakers | 104 x 190 x 63 | 1 | **LV429372** |
| 250-400-600 A | Mounting plate for L frame circuit breakers | 139 x 270 x 63 | 1 | **LV432623** |

## Characteristics of busbar mounting plates

| Type of mounting plate | | LA9ZA32621 LA9ZA32622 | LA9ZA32427 LA9ZA32428 LA9ZA32434 LA9ZA32623 LA9ZA32442 LA9ZA32443 | LA9ZA32624 LA9ZA32625 LA9ZA32626 LA9ZA32627 | LV429372 LV429373 | LV432623 LV432624 | LA9ZA32600 |
|---|---|---|---|---|---|---|---|
| Degree of protection as per IEC 60529 | IP | 20 | | | | | |
| Rated insulation voltage | V | 690 | | | | | |
| Permissible current | A | 25 | 32 | 63 | 80-100-250 | 400-630 | 60-100-150 |
| Peak rated current | kA | 50 | 50 (1) | 50 | 50 | 50 | 50 |
| SCCR (UL) with Compact NSX circuit breaker protection | mm² | The reinforced breaking capacity due to cascading in circuit breaker combination is maintained | | | | | |
| Conductor cross section (color: black) | mm² | 4 | 6 | 10 | NA | | |
| | AWG | 12 | 10 | 8 | NA | | |
| Type of conductor insulating material | PVC | 105° | | | NA | | |

*(1) 35 kA with LUB12 for LA9ZA32427 and LA9ZA32428.*

Introduction: page B1/5
Characteristics: page B1/18
Curves: page B1/19

# Product references



PB112418_R_1.eps

*LA9ZA32443, LA9ZA32621*

PB112417_R_1.eps

*LA9ZA32434, LA9ZA32442*

PB112420_R_1.eps

*LA9ZA32622*

PB112421_R_1.eps

*LA9ZA32623*

PB112416_R_1.eps

*LA9ZA32427*

PB112419_R_1.eps

*LA9ZA32428*

PB112422_R_1.eps

*LA9ZA32624*

PB112423_R_1.eps

*LA9ZA32625*

PB112426_R_1.eps

*LA9ZA32626*

## For Deca Frame 2 (GV2) motor circuit breakers

| Operating current AC-3 440 V | Protection by motor circuit breaker | For contactor | Mounting plate l x h x d | Min. order qty | Unit reference |
|---|---|---|---|---|---|
| **Mounting plate, 1-way** | | | | | |
| 25 A | GV2ME<br>GV2P<br>GV2LE | LC1D<br>LC1K<br>LP4K06-K12 | 45 x 200 x 63 | 4 | **LA9ZA32621** |
| 32 A | GV2LE | | 63 x 200 x 63 | 4 | **LA9ZA32443** |
| **Mounting plate, 2-way** (3) | | | | | |
| 25 A | GV2ME<br>GV2P<br>GV2LE | LC1D<br>LC1K<br>LP4K06-K12 | 90 x 200 x 63 | 2 | **LA9ZA32622** |
| 32 A | GV2ME<br>GV2P<br>GV2LE | LC1D | 45 x 200 x 63 | 4 | **LA9ZA32434** |
| | | | 54 x 200 x 63 | 4 | **LA9ZA32442** |
| | | | 90 x 200 x 63 | 2 | **LA9ZA32623** |

## Ultra motor starters

| Operating current AC-3 440 V | Protection by power base | | Mounting plate l x h x d | Min. order qty | Unit reference |
|---|---|---|---|---|---|
| **Mounting plate, 1-way** | | | | | |
| 32 A | LUB12, LUB32 | | 45 x 200 x 63 | 4 | **LA9ZA32427** |
| **Mounting plate, 2-way** | | | | | |
| 32 A | LUB12, LUB32 | | 45 x 260 x 63 | 4 | **LA9ZA32428** |

## For Deca Frame 3 (GV3) motor circuit breakers

| Operating current AC-3 440 V | Protection by power base | For contactor | Mounting plate l x h x d | Min. order qty | Unit reference |
|---|---|---|---|---|---|
| **Mounting plate, 1-way** (1) | | | | | |
| 63 A | GV3P | – | 54 x 200 x 63 | 4 | **LA9ZA32624** |
| | GV3P | LC1D40A…65 A | 54 x 260 x 63 | 4 | **LA9ZA32625** |
| **Mounting plate, 2-way** (1) (2) | | | | | |
| 63 A | GV3P | LC2D40A…65 A | 117 x 260 x 63 | 4 | **LA9ZA32626** |

*(1) Contactor-circuit breaker combination without additional part.*
*(2) Use the LAD9R3 kit for the execution of changeover contactors.*
*(3) Use the LAD9R1 or LAD9R1V kit for the execution of changeover contactors.*

***Note:** the mounting plate rails can be shifted vertically in 1.25 mm increments.*

# Product references

*LA9ZX01285*

*LA9ZX01287*

## Terminals

| | I max | | Set of | Unit reference |
|---|---|---|---|---|
| One-pole for flat bars, 5 mm | 270 A | Capacity 4-35 mm² | 50 | LA9ZX01285 |
| | 400 A | Capacity 16-70 mm² | 25 | LA9ZX01287 |
| 3P cover, width 84 mm | | | 10 | LA9ZX01413 |

*LA9ZX01413*

## Terminals on mounting plate

| | I max | | Min. order qty | Unit reference |
|---|---|---|---|---|
| 3P, on mounting plate + cover, for 12 x 5 to 30 x 10 busbars, width 81 mm | 440 A | Capacity 35-120 mm² | 1 | LA9ZX01243 |
| 3P, on mounting plate + cover, for 20 x 5 to 30 x 10 busbars, width 135 mm | 560 A | Capacity 120-300 mm² | 1 | LA9ZX01754 |

*LA9ZX01243*

## Connection module

| | I max | | Min. order qty | Unit reference |
|---|---|---|---|---|
| 3P, spring terminal connection + cover, for 12 x 5 to 30 x 10 busbars, width 20 mm | 80 A | Capacity 1.5-16 mm² | 8 | LA9ZX01563 |

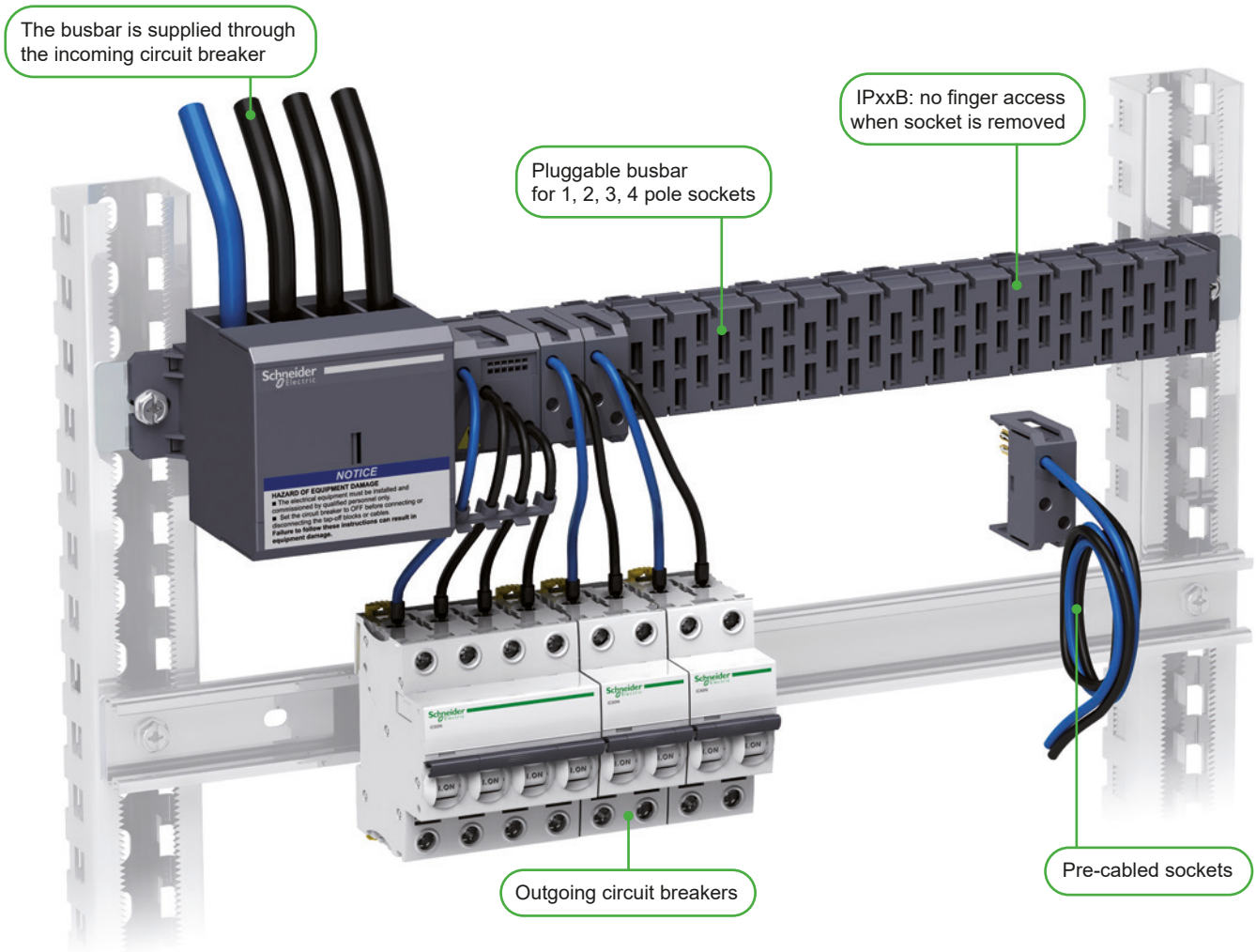
*LA9ZX01563*

## Connection by connectors

| | | LA9ZX01285 | | LA9ZX01287 | | LA9ZX01243 | | LA9ZX01563 | | LA9ZX01754 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| Flexible wire | mm² | 4 | 35 | 16 | 70 | 35 | 120 | 1.5 | 16 | 120 | 300 |
| Multi-strand wire | mm² | 4 | 35 | 16 | 70 | 35 | 120 | 1.5 | 16 | 120 | 300 |
| Rigid wire | mm² | 4 | 35 | – | – | – | – | 1.5 | 16 | - | - |
| Tightening torque | N.m | ... x 5 | | ... x 5 | | ... x 5-10 | | ... x 5-10 | | ... x 5-10 | |
| Cover | | LA9ZX01413 | | LA9ZX01413 | | Supplied without cover | | Supplied without cover | | Supplied without cover | |

Introduction: page B1/5
Characteristics: page B1/18
Curves: page B1/19

## Hot-plug distribution: when continuity of service is required




## Advantages

- Considerable time saving: stand alone busbar, fixed to the chassis with 2 screws
- Preserved continuity of service during modification: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets
- Multi standard: conform to IEC and UL standards

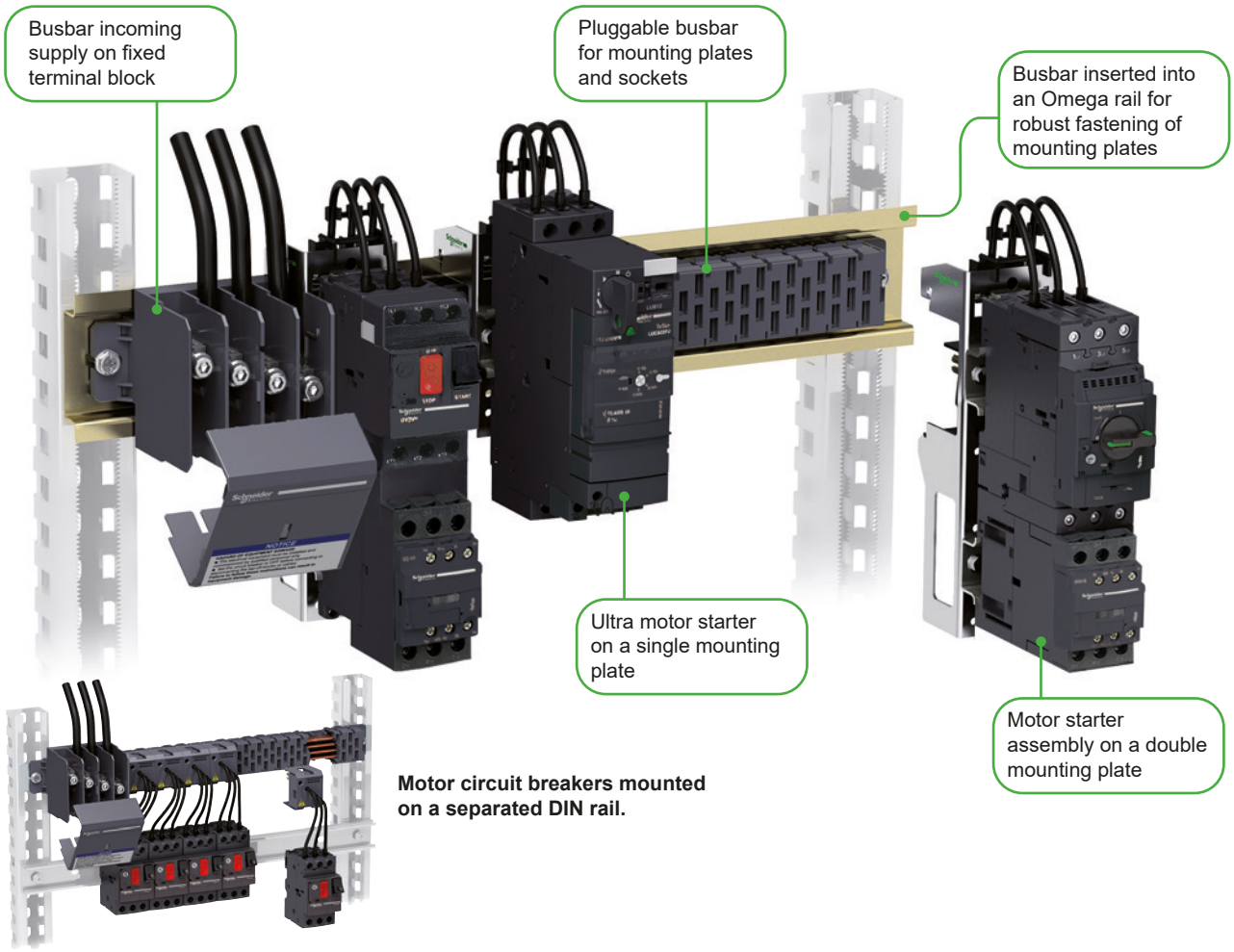
## Detailed view: pre cabled socket

- The assembling process and the technological choices ensure a long-lasting reliability
- Each wire is welded on a spring clip providing robustness to the socket and vibration resistant contacts

# Introduction



## When compactness and continuity of service are required





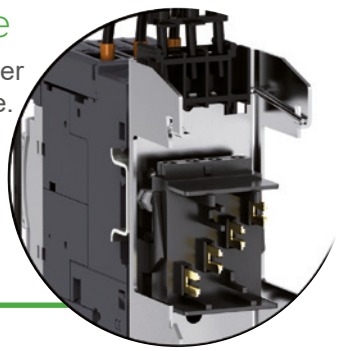

**Motor circuit breakers mounted on a separated DIN rail.**

## Advantages

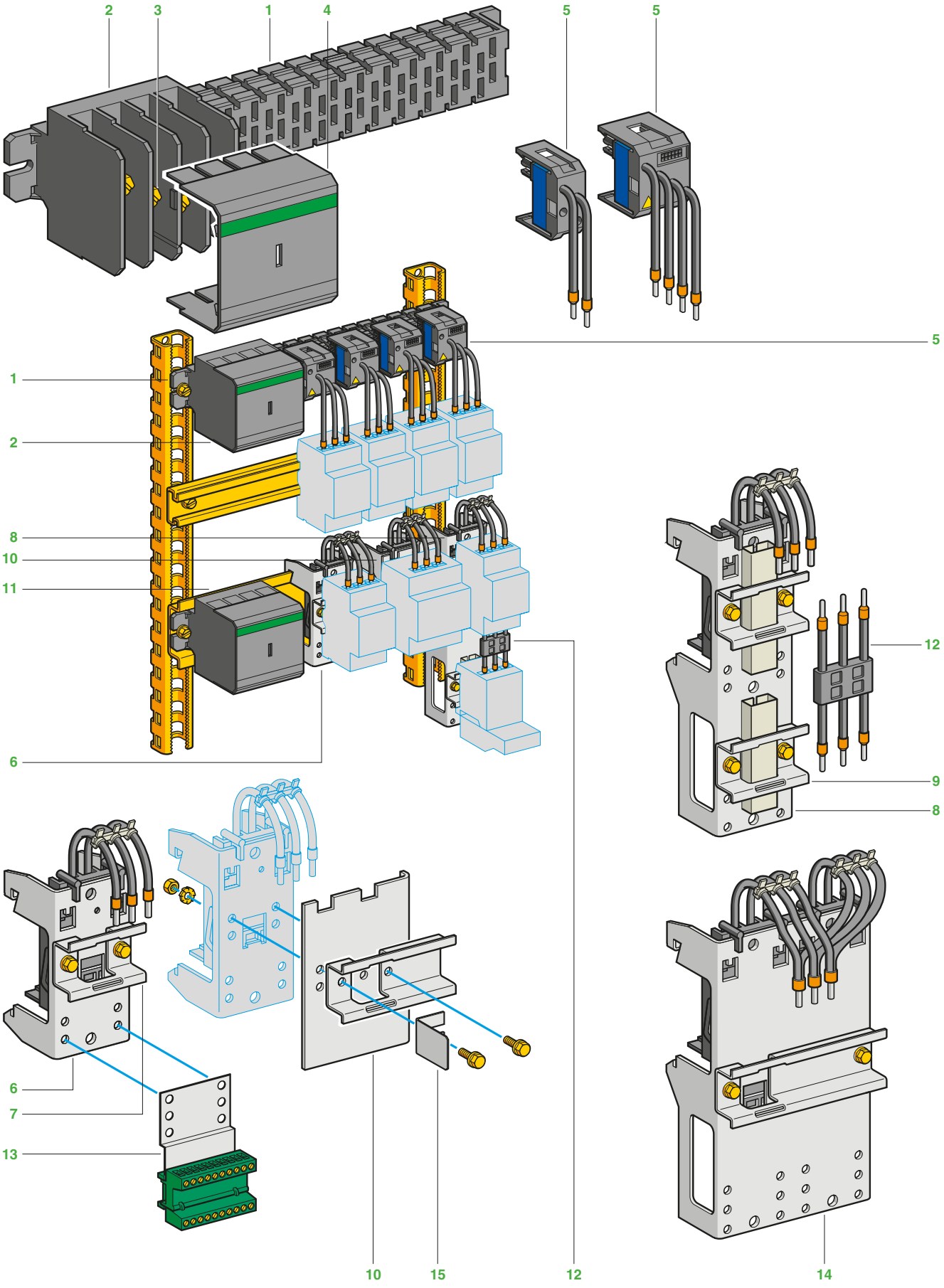
- Space saving in compact enclosures: the total volume is reduced to that of the motor starter assemblies
- Preserved continuity of service during modification and maintenance: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets, 23 mounting plates for motor starters up to 25 or 50 A
- Multi standard: conform to IEC and UL standards

## Detailed view: mounting plate back face

- Thanks to the plug and its pre-cabled wires the motor starter is safely assembled in the workshop, for immediate or later use.
- A piece of DIN profile rail is attached on the front face of the mounting plate for fastening the components.
- The metal mounting plate ensures a rigid and robust fastening on the omega rail.



DB404140.eps






Life Is On Schneider Electric

# Introduction

The assembly of automated control and distribution panels requires the use of products that are not only safe but also simple and quick to mount and cable.

The Linergy HK pre-assembled busbar system meets all these criteria by incorporating prefabricated components which cater for 3 principal functions:

## Carrying of electric current

By the pre-assembled 4-pole busbar system **1**, 160 A at 35 °C.

4-pole busbars can be used for 3-phase + Neutral or 3-phase + Common.

The busbars are available in 6 lengths: 344, 452, 560, 668, 992, 1100 mm.

An incoming supply terminal block **2** is located at the extreme left of the busbar.

"Knock-out" partitions allow connection of the power supply from above or below to connectors **3** which are protected by a removable cover **4**.
Upstream protection of the busbar is shown on page B1/20.

## Current distribution

Tap-off units **5** (factory assembled) are available in 4 versions:
- 2-pole,
- 3-pole,
- 4-pole (3-phase + Neutral),
- 4-pole (3-phase + Common).

The tap-offs clip onto the busbar with instantaneous mechanical and electrical connection to the busbars.
2 ratings are available: 16 and 32 A.
The tap-off units ensure not only rapid mounting, but also a neat appearance for the power distribution system and complete safety when accessing under live circuit conditions.

## Component mounting

Component mounting plates with incorporated tap-off allow mounting of and supply of power to components.
They are available in 25 A or 50 A ratings.

These mounting plates clip onto the mounting rail **11**, which also supports the busbar, and at the same time make electrical connection via the incorporated tap-off.

2 types of mounting plate are available:
- single plates **6** (height 105 mm), with bolt-on 35 mm wide ⎓ rail **7**, which may be bolted on in one of two positions, allowing height adjustment of 10 mm.
- double plates **8** and **14** (height 190 mm), with two bolt-on, 35 mm wide ⎓ rails **9** mounted on 100 mm fixing centres; each rail may be bolted on in one of 4 positions, allowing height adjustment in 10 mm steps. These plates are supplied with connectors **12** to allow wiring between control and protection devices.

Single mounting plates enable the following types of distribution:
- 2-pole (Ph + N) and (Ph + Ph)
- 3-pole,
- 4-pole (3 Ph + N or 3 Ph + common).

Double mounting plates enable the following types of distribution: 2-pole (Ph + N, Ph + Ph), 3-pole or 4-pole (3Ph+N and 3Ph + common).

Extension plates **10** can be bolted onto single and double mounting plates to enable mounting of wider components. Using a side stop **15** in conjunction with these extension plates also supports the Linergy HK busbar when used vertically.

A control terminal block **13** comprising a support plate bolted onto the single or double mounting plates and a 10-pole plug-in block, enables connection of the control circuit wires (c.s.a. 1.5 $mm^2$ max).

References:
pages B1/14 to B1/16
Characteristics:
pages B1/20 and B1/21
Dimensions:
pages B1/22 and B1/23

# Product references



PB112406_R.eps

*AK5JB1pp*

## Busbars

The busbars can be screw-mounted onto any type of support. However. if it is to be used in conjunction with component mounting plates incorporating a tap-off, it is essential that it is mounted on the AM1DL201 rail.
When mounting tap-offs, the rated operational current of the busbar should be taken into account: 160 A at 35 °C.

| Number of conductors | Number of tap-offs at 18 mm intervals | Length | Suitable for mounting in enclosure width | Reference | Weight |
|---|---|---|---|---|---|
| | | mm | mm | | kg |
| 4 (1) | 12 | 344 | 600 | **AK5JB143** | 0.700 |
| | 18 | 452 | 800 | **AK5JB144** | 0.900 |
| | 24 | 560 | 800 | **AK5JB145** | 1.100 |
| | 30 | 668 | 800 | **AK5JB146** | 1.300 |
| | 48 | 992 | 1200 | **AK5JB149** | 1.900 |
| | 54 | 1100 | 1200 | **AK5JB1410** | 2.100 |

## Removable power sockets

PB112411_R.eps

*AK5PC12*

PB112412_R.eps

*AK5PC14*

| Use | Number of points used on the busbar system | | Thermal current | Cable lengths | Min. order qty | Unit reference |
|---|---|---|---|---|---|---|
| | | Width | A | mm | | |
| Single-phase + Neutral | 1 | 9 mm | 16 | 200 | 6 (2) | **AK5PC12** |
| | | | 32 | 1000 | 6 (2) | **AK5PC32L** |
| 2-phase | 1 | | 16 | 200 | 6 (3) | **AK5PC12PH** |
| | | | 32 | 1000 | 6 (3) | **AK5PC32LPH** |
| 3-phase | 2 | 18 mm | 16 | 200 | 6 | **AK5PC13** |
| | | | 32 | 250 | 6 | **AK5PC33** |
| | | | | 1000 | 6 | **AK5PC33L** |
| 3-phase + Neutral | 2 | | 16 | 200 | 6 | **AK5PC14** |
| | | | 32 | 250 | 6 | **AK5PC34** |
| | | | | 1000 | 6 | **AK5PC34L** |
| 3-phase + common | 2 | | 16<br>10 (common) | 200 | 6 | **AK5PC131** |
| | | | 32<br>10 (common) | 250 | 6 | **AK5PC331** |

PB112405.eps

*AK5GF1*

## Accessories

| Description | Maximum no. of connections | C.s.a. mm² | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Cable guide | 4 | 2.5 or 4 | 20 | **AK5GF1** |

*(1) 4-pole: 3-phase + Neutral or 3-phase + Common.*
*(2) Total of 6 sockets supplied: 2 sockets (N + L1), 2 sockets (N + L2). 2 sockets (N + L3).*
*(3) Total of 6 sockets supplied: 2 sockets (L1 + L2), 2 sockets (L1 + L3). 2 sockets (L2 + L3).*
*(4) Cut and drill to suit use.*

Introduction: page B1/13
Characteristics: pages B1/20 and B1/21
Dimensions: pages B1/22 and B1/23

# Product references

PB112407_R.eps

*AK5PA241*

PB112408_R.eps

*AK5PA242*

PB500804_R.eps

*AM1DL201*

## Component mounting plates incorporating tap-off

### Single plate (height 105 mm)

| Use | No. of 18 mm points used on the busbar system | Phase | Thermal current | Number of ⊔ rails for com-ponent support | Min. order qty | Reference |
|---|---|---|---|---|---|---|
| | | | A | | | |
| Single-phase + neutral | 3 (54 mm width) | Ph1+N | 25 | 1 | 1 | **AK5PA211N1** |
| | | Ph2+N | 25 | 1 | 1 | **AK5PA211N2** |
| | | Ph3+N | 25 | 1 | 1 | **AK5PA211N3** |
| 2-phase | 3 | Ph1+Ph2 | 25 | 1 | 1 | **AK5PA211PH12** |
| | | Ph1+Ph3 | 25 | 1 | 1 | **AK5PA211PH13** |
| | | Ph2+Ph3 | 25 | 1 | 1 | **AK5PA211PH23** |
| 3-phase | 3 | – | 25 | 1 | 1 | **AK5PA231** |
| 3-phase + common | 3 | – | 25 | 1 | 1 | **AK5PA2311** |
| 3-phase + neutral | 3 | – | 25 | 1 | 1 | **AK5PA241** |

### Double plate (height 190 mm)

Prefabricated 25 A connectors are supplied for connecting the 2 protection and control devices.

| | | | | | | |
|---|---|---|---|---|---|---|
| Single-phase + neutral | 3 | Ph1+N | 25 | 2 | 1 | **AK5PA212N1** |
| | | Ph2+N | 25 | 2 | 1 | **AK5PA212N2** |
| | | Ph3+N | 25 | 2 | 1 | **AK5PA212N3** |
| 2-phase | 3 | Ph1+Ph2 | 25 | 2 | 1 | **AK5PA212PH12** |
| | | Ph1+Ph3 | 25 | 2 | 1 | **AK5PA212PH13** |
| | | Ph2+Ph3 | 25 | 2 | 1 | **AK5PA212PH23** |
| 3-phase | 3 | – | 25 | 2 | 1 | **AK5PA232** |
| | 6 (108 mm width) | – | 25 | 2 | 1 | **AK5PA232S** |
| | | | 50 | 1 | 1 | **AK5PA532** |
| 3-phase + neutral | 3 | – | 25 | 2 | 1 | **AK5PA242** |
| 3-phase + common | 3 | – | 25 (10 common) | 2 | 1 | **AK5PA2312** |
| | 6 | – | 25 (10 common) | 2 | 1 | **AK5PA2312S** |
| | | | 50 (10 common) | 1 | 1 | **AK5PA5312** |
| 3-phase + neutral | 6 | – | 50 | 1 | 1 | **AK5PA542** |

## Omega rail, width 75 mm

This rail is designed to accommodate the busbar system when it is used with Linergy HK mounting plates incorporating tap-offs. It supports the busbar system. The plates simply clip onto the rail.

| Material and surface treatment | Depth | Length | Min. order qty | Reference | Weight |
|---|---|---|---|---|---|
| | mm | mm | | | kg |
| 2 mm sheet steel | 15 | 2000 (4) | 6 | **AM1DL201** | 3.000 |

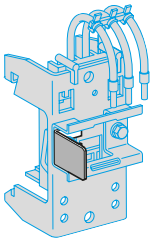
# Product references



PB112404.eps

*AK5BT01*

DF523288.eps



PB112415.eps

*AK5SB1*

PB112278.eps

*AB1R4*

## Extension plates

These plates bolt onto the equipment support plates, after having removed them from the rails, to be able to mount wider components.

| Use | | Number of tap-offs at 18 mm intervals | Reference |
|---|---|---|---|
| For mounting plates incorporating tap-off | Single | 4 | **AK5PE17** |
| | Double | 4 | **AK5PE27** |

## Side stop (AK5JB mounted vertically)

| Use | Set of | Reference |
|---|---|---|
| For extension plate (for AK5PA●●●) | 50 | **AK5BT01** |

## Control terminal blocks

| Description | Thermal current A | Set of | Reference |
|---|---|---|---|
| **10-pole terminal blocks, for screwing onto plate AK5 PA●●●** | | | |
| | 10 | 10 | **AK5SB1** |

## Accessories

| Description | Marking | Set of | Reference |
|---|---|---|---|
| **Strips of clip-in markers** 10 identical numbers, signs or capital letters per strip | 0…9 | 25 | **AB1R●** (1) |
| | + | 25 | **AB1R12** |
| | – | 25 | **AB1R13** |
| | A…Z | 25 | **AB1G●** (1) |

*(1) Replace the ● in the selected reference with the number or letter required. Example: **AB1R1** or **AB1GA.***

***Note:***

- *if the equipment is wider than the mounting plate, an extension plate can be used to increase the width of the support plate.*
- *for upstream protection, see page B1/20.*

Linergy BZ, HK

# Technical Data for Designers

Contents

Linergy BZ:
> characteristics ..... B1/18
> curves ..... B1/19
Linergy HK:
> characteristics ..... B1/20 and B1/21
> dimensions ..... B1/22 and B1/23

# Characteristics



PB112441.eps

*LA9ZX01495*

PB112440.eps

*LA9ZX01485*

PB112442.eps

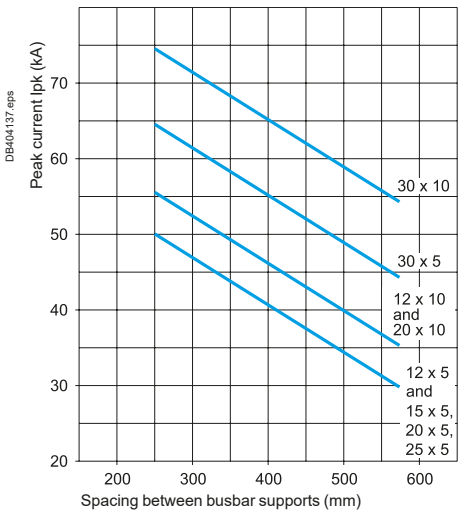
*LA9ZX01508*

## General characteristics

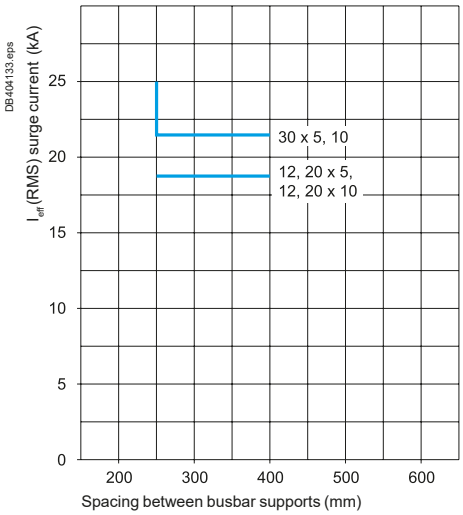
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **LA9ZX01495 and LA9ZX01485 (IEC 6.439-1)** | | | | | | | |
| Bar dimensions compatibility | **mm** | 12 x 5 | 15 x 5 | 20 x 5 | 25 x 5 | 30 x 5 | 12 x 10 | 20 x 10 | 30 x 10 |
| Max. rated operating current | **A** | 200 | 250 | 320 | 400 | 450 | 360 | 520 | 630 |
| Min. peak permissible rated current | **kA** | 30 | 30 | 30 | 30 | 45 | 35 | 35 | 53 |
| Distance max. between 2 busbars supports | **mm** | 570 | 570 | 570 | 570 | 570 | 570 | 570 | 570 |
| Degree of protection | **IP** | 20 (with cover LA9ZX01244 or LA9ZX01245) | | | | | | | |
| Thermal resistance | **°C** | 125 | | | | | | | |
| Rated current frequency | **Hz** | 50/60 | | | | | | | |
| Rated insulation voltage | **V** | 690 | | | | | | | |
| Rated operating voltage | **V** | 690 | | | | | | | |
| | | **LA9ZX01508 (UL) 508 A** | | | | | | | |
| Bar dimensions compatibility | **mm** | 12 x 5 | 20 x 5 | 30 x 5 | 12 x 10 | 20 x 10 | 30 x 10 | | |
| Rated operating current | **A** | 150 | 362 | 500 | 300 | 564 | 630 | | |
| $I_{eff}$ (RMS) surge current | **kA** | 18 | 18 | 22 - 25 | 18 | 18 | 22 - 25 | | |
| SCCR (protected by Compact NSX circuit breaker) 250 A 480 V AC | **kA** | 65 | - | - | 65 | - | - | | |
| SCCR (protected by Compact NSX circuit breaker) 250 A 600 V AC | | 25 | - | - | 25 | - | - | | |
| SCCR (protected by Compact NSX circuit breaker) 400 A 480 V AC | | - | 65 | 65 | - | 65 | 65 | | |
| SCCR (protected by Compact NSX circuit breaker) 400 A 600 V AC | | - | 35 | 35 | - | 35 | 35 | | |
| SCCR (protected by Compact NSX circuit breaker) 500 A 480 V AC | | - | - | 65 | - | - | 65 | | |
| SCCR (protected by Compact NSX circuit breaker) 600 A 600 V AC | | - | - | 35 | - | - | | | |
| SCCR (protected by Compact NSX circuit breaker) 600 A 480 V AC | | - | - | 50 | - | - | 50 | | |
| SCCR (protected by Compact NSX circuit breaker) 600 A 600 V AC | | - | - | 25 | - | - | 25 | | |
| SCCR (protected by fuses Class J or T ...) 400 A 480 V AC | | 100 | 100 | 100 | 100 | 100 | 100 | | |
| SCCR (protected by fuses Class J or T ...) 500 A 480 V AC | | - | - | 100 | - | - | 100 | | |
| SCCR (protected by fuses Class J or T ...) 500 A 600 V AC | | - | - | 100 | - | - | 100 | | |
| Distance max. between 2 busbars supports (busbar protected) | **mm** | 400 | 800 | 800 | 400 | 800 | 800 | | |
| Degree of protection | **IP** | 20 (with cover LA9ZX01244 or LA9ZX01245) | | | | | | | |
| Thermal resistance | **°C** | 125 | | | | | | | |
| Rated current frequency | **Hz** | 50/60 | | | | | | | |
| Rated operating voltage | **V** | 600 | | | | | | | |

# Curves

## Determining the spacing between busbar supports (LA9ZX01495 and LA9ZX01485), according to IEC 61439-1 (1)




## Short-circuit strength diagram according to UL845 (LA9ZX01508)



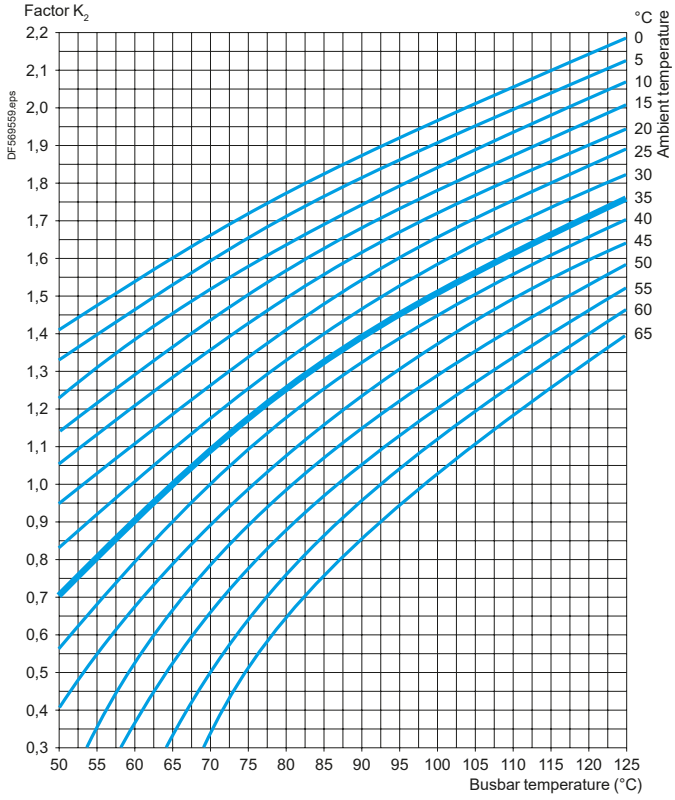

*(1) Depending on the short-circuit current.*

## Load resistance of busbar assemblies in IEC applications

**For an ambient temperature of 35 °C and a busbar temperature of 65 °C**

| Cross section | mm² | 12 x 5 | 15 x 5 | 20 x 5 | 25 x 5 | 30 x 5 | 12 x 10 | 20 x 10 | 30 x 10 |
|---|---|---|---|---|---|---|---|---|---|
| Permissible current | A | 200 | 250 | 320 | 400 | 450 | 360 | 520 | 630 |

In the event of changes in climatic conditions, the following curve indicates the correction factor $K_2$ to be applied.




**Example**: In normal operating conditions, a tinned busbar of 30 x 10 can permanently withstand 630 A.

For a load of 800 A, the correction factor $K_2$ to be applied will be 1.3 ($\frac{800\ A}{630\ A}$). As a result, the temperature rise in the busbars will reach 82.5 °C.

Introduction: page B1/5
References: pages B1/6 to B1/9
Characteristics: page B1/18

# Characteristics



## Busbar system characteristics

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Conforming to standards | | | IEC 60439 | | | | | |
| Product certifications | | | UL, CSA, DNV, LROS | | | | | |
| Degree of protection | Against access to live parts | | IP XXB conforming to IEC 60529 | | | | | |
| Flame resistance | Conforming to IEC 60695 | **°C** | 850 (incandescent wire) | | | | | |
| | Conforming to standard UL 94 | | V0 | | | | | |
| Number of conductors | AK5JB14● | | 4 | | | | | |
| Supply current | | | ~ | | | | | |
| Rated operational frequency | | **Hz** | 50 or 60 | | | | | |
| Rated operational current | Ambient temperature 35 °C | **A** | 160 | | | | | |
| | Coefficient K to be applied according to the ambient temperature | **°C** | 35 | 40 | 45 | 50 | 55 | 60 |
| | | **K** | 1 | 0.96 | 0.92 | 0.88 | 0.83 | 0.78 |
| Rated insulation voltage | Conforming to IEC 60439-1 | **V** | 690 | | | | | |
| | Conforming to UL and CSA | **V** | 600 | | | | | |
| Operational voltage | | | Off-load plugging-in and unplugging, with supply switched on | | | | | |
| | Conforming to IEC 60439-1 | **V** | 400 | | | | | |
| | Conforming to UL, CSA | **V** | 480 | | | | | |
| | | | Plugging-in and unplugging, with supply switched off | | | | | |
| | Conforming to IEC 60439-1 | **V** | 690 | | | | | |
| | Conforming to UL, CSA | **V** | 600 | | | | | |
| Maximum permissible peak current | | **kA** | 25 | | | | | |
| Maximum let-through energy | | **A²s** | 1 x 10 [7] | | | | | |
| Upstream short-circuit [(1)] and overload protection | Type of protection | | Schneider Electric circuit-breaker | | | Fuses | | |
| | | | NSX 160 N | NSX 160 H | | aM | gF | |
| | Rating | **A** | 160 | 160 | | 160 | 160 | |
| | Prospective short-circuit current | **kA** | 36 | 70 | | 100 | 100 | |
| | Operational current | **A** | 160 | 160 | | 160 | 160 | |
| Cabling | | | Maximum c.s.a. | | | Minimum c.s.a. | | |
| | Flexible cable with cable end | **mm²** | 70 | | | 2.5 | | |
| | Solid cable | **mm²** | 70 | | | 2.5 | | |
| | Tightening torque | **Nm** | 10 | | | | | |
| Mounting position | Horizontal or vertical [(2)] | | Fixing with screws provided | | | | | |

*(1) For conditions where conditional short-circuit current exceeds 25 kA.*
*(2) Using side stop* **AK5BT01** *on mounting plates* **AK5PA**.

Introduction: page B1/13
References: pages B1/14 to B1/16
Dimensions: pages B1/22 and B1/23

# Characteristics

## Tap-off characteristics

| Type | | AK5 PC12 | AK5 PC12PH | AK5 PC13 | AK5 PC14 | AK5 PC131 | AK5 PC32L | AK5 PC32LPH | AK5 PC33 PC33L | AK5 PC34 PC34L | AK5 PC331 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Conforming to standards | | IEC 60439 | | | | | | | | | |
| Product certifications | | UL, LROS, CSA, DNV | | | | | | | | | |
| Degree of protection | | Against access to live parts: IP XXB conforming to IEC 529 | | | | | | | | | |
| Polarity | | Phase + Neutral | Phase + Phase | 3-phase | 3-phase + Neutral | 3-phase + Common | Phase + Neutral | Phase + Phase | 3-phase | 3-phase + Neutral | 3-phase + Common |
| Conductor c.s.a. (UL cables) | **mm²** | 2 x 2.5 | 2 x 2.5 | 3 x 2.5 | 4 x 2.5 | 3 x 2.5<br>1 x 1.5 | 2 x 4 | 2 x 4 | 3 x 4 | 4 x 4 | 3 x 4<br>1 x 1.5 |
| Conductor colours | | Black<br>Blue<br>(Neutral) | Black | Black | Black<br>Blue<br>(Neutral) | Black<br>White | Black<br>Blue<br>(Neutral) | Black | Black | Black<br>Blue<br>(Neutral) | Black<br>White<br>(Common) |
| Permissible current | **A** | 16 | 16 | 16 | 16 | 16<br>10<br>(Common) | 32 | 32 | 32 | 32 | 32<br>10<br>(Common) |
| Rated insulation voltage | **V** | 690 conforming to IEC 60439-1 | | | | | | | | | |
| Rated peak current | **kA** | 6 | | | | | | | | | |
| Maximum let-through energy | **A²s** | 100 000 | | | | | 200 000 | | | | |
| Type of conductor insulation | | PVC 105 °C | | | | | | | | | |

## Tap-off characteristics

| Type | | AK5 PA211N1 PA211N2 PA211N3 PA212N1 PA212N2 PA212N3 | AK5 PA211PH12 PA211PH13 PA211PH23 PA212PH12 PA212PH13 PA212PH23 | AK5 PA231 PA232 PA232S | AK5 PA241 PA242 | AK5 PA2311 PA2312 PA2312S | AK5 PA532 | AK5 PA542 | AK5 PA5312 |
|---|---|---|---|---|---|---|---|---|---|
| Conforming to standards | | IEC 60439 | | | | | | | |
| Product certifications | | UL, LROS, CSA, DNV | | | | | | | |
| Degree of protection | | Against access to live parts: IP XXB conforming to IEC 60529 | | | | | | | |
| Polarity | | Phase + Neutral | Phase + Phase | 3-phase | 3-phase + Neutral | 3-phase + Common | 3-phase | 3-phase + Neutral | 3-phase + Common |
| Conductor c.s.a. (UL cables) | **mm²** | 2 x 4 | 2 x 4 | 3 x 4 | 4 x 4 | 3 x 4<br>1 x 1.5 | 2 x (3 x 4) | 2 x (4 x 4) | 2 x (3 x 4)<br>1 x 1.5 |
| Permissible current | **A** | 25 | 25 | 25 | 25 | 25<br>10<br>(Common) | 50 | 50 | 50<br>10<br>(Common) |
| Rated insulation voltage | **V** | 690 conforming to IEC 60439-1 | | | | | | | |
| Rated peak current | **kA** | 6 | | | | | | | |
| Maximum let-through energy | **A²s** | 200 000 | | | | | | | |
| Type of conductor insulation | | PVC 105 °C | | | | | | | |

## Characteristics of mounting rails AM1DL201

| | | |
|---|---|---|
| Type | | Omega ⌓ (width 75 mm, depth 15 mm) |
| Material | | 2 mm sheet steel |
| Surface treatment | | Galvanized |

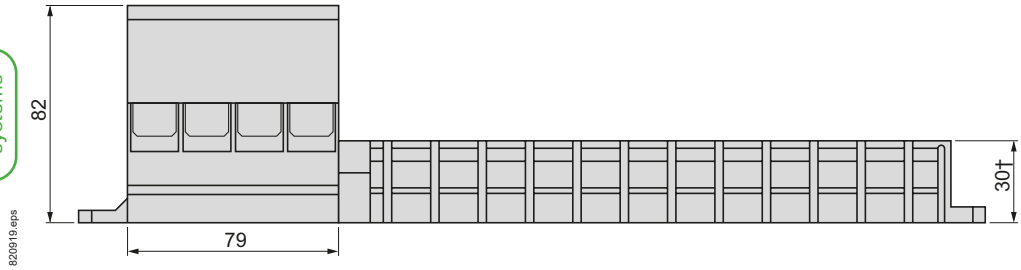
Introduction: page B1/13
References: pages B1/14 to B1/16
Dimensions: pages B1/22 and B1/23

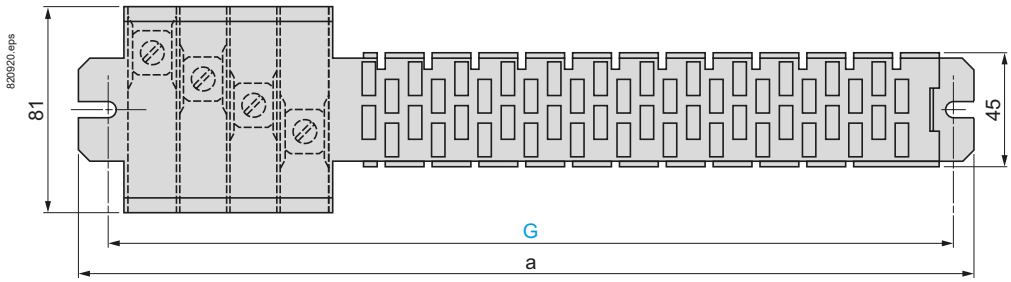
# Dimensions



## Busbars

**AK5JB●●●**

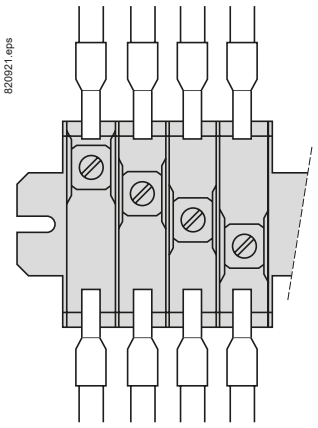



| AK5 | a | G | No. of 18 mm points |
|---|---|---|---|
| **JB143** | 344 | 330 | 12 |
| **JB144** | 452 | 438 | 18 |
| **JB145** | 560 | 546 | 24 |
| **JB146** | 668 | 654 | 30 |
| **JB149** | 992 | 978 | 48 |
| **JB1410** | 1100 | 1086 | 54 |

## Busbar feed units

**AK5JB●●●**



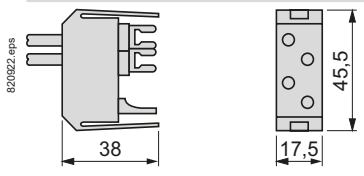

**Installation of AK5JB●●● busbar systems**

| Connection | | | C.s.a. in mm² min | C.s.a. in mm² max |
|---|---|---|---|---|
| Flexible cable with or without cable end | | | 1 x 2.5<br>2 x 2.5 | 1 x 70 (1)<br>2 x 35 |
| Flexible bar | | | – | 2 x (9 x 4) |
| Flexible bar<br>+<br>flexible cable with or without cable end | | | 9 x 4<br>+<br>1 x 2.5 | 9 x 4<br>+<br>1 x 35 |

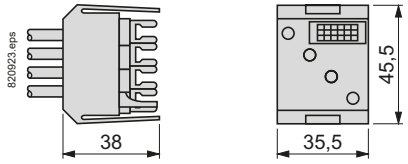
*(1) Maximum c.s.a. or connection of conductor without cable end.*

## Removable power sockets 16 and 32 A

**AK5PC12●. AK5PC32L●**

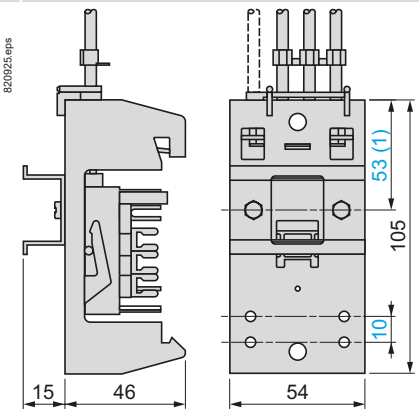



**AK5PC●3. AK5PC33L**
**AK5PC●4. AK5PC34L**
**AK5PC●31**



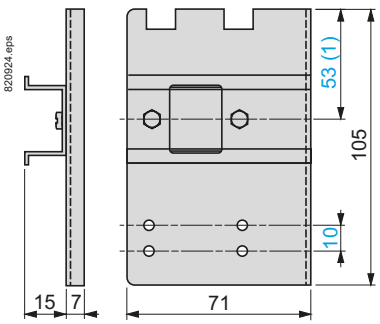

## Mounting plates incorporating tap-offs, 25 A

**AK5PA2●1. AK5PA2311. AK5PA211●●●●**




## Single width extension plates

**AK5PE17**



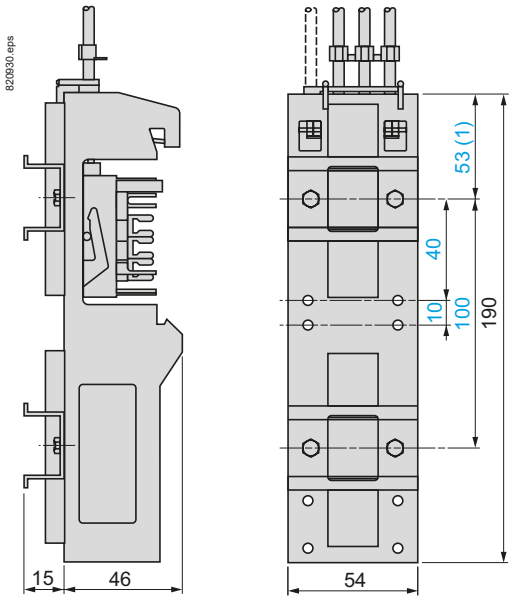

***Note:*** *It is recommended that the power sockets or the removable plates are connected as close as possible to the busbar feed unit.*

*(1) Can be fixed at 43 mm.*

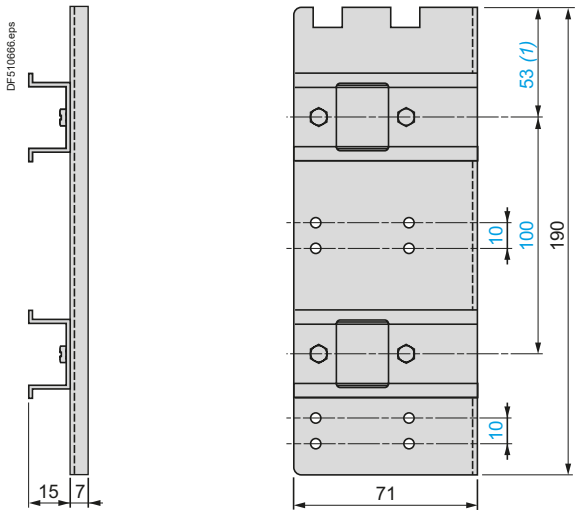
Introduction: page B1/13
References: pages B1/14 to B1/16
Characteristics: pages B1/20 and B1/21

# Dimensions

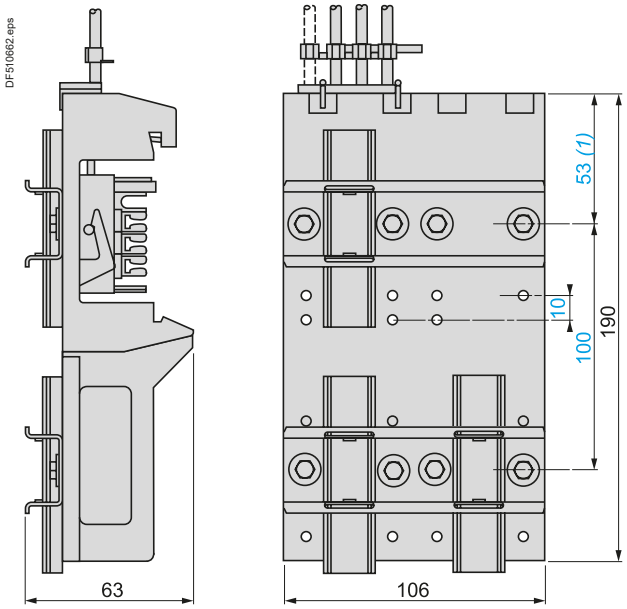
## Component mounting plates incorporating tap-off
**AK5PA232. AK5PA2312. AK5PA242**



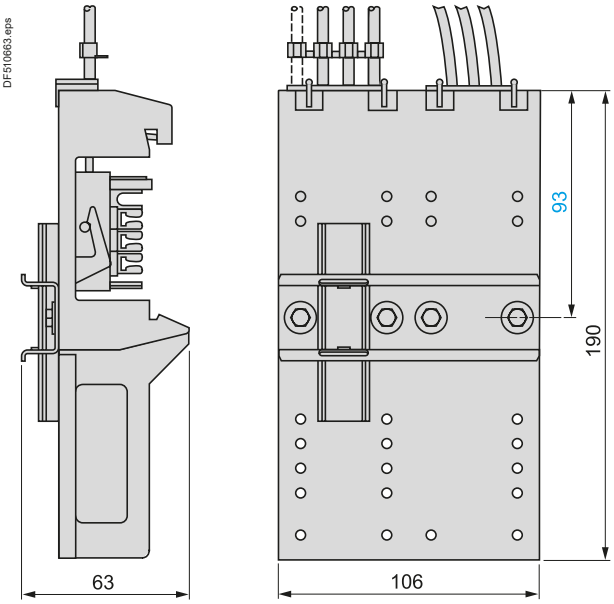

## Double extension plate
**AK5PE27**



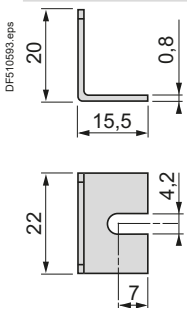

## Component mounting plates incorporating tap-off
**AK5PA232S. AK5PA2312S**



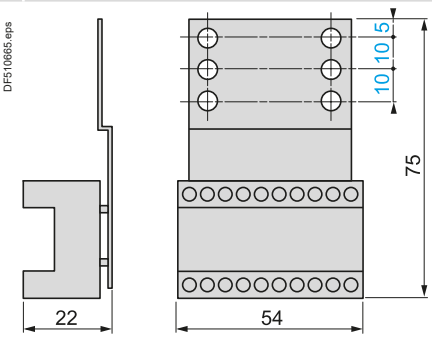

**AK5PA532. AK5PA5312. AK5PA542**




## Side stop
**AK5BT01**




## Control terminal block
**AK5SB1**




*(1) Can be fixed at 43 mm.*

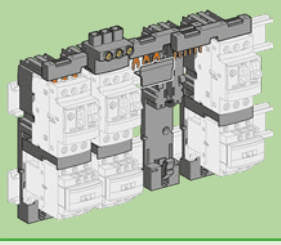
Introduction: page B1/13
References: pages B1/14 to B1/16
Characteristics: pages B1/20 and B1/21

# TeSys Control
# Wiring systems for motor starters

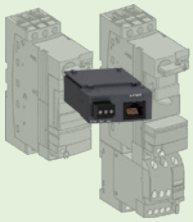
Chapter B2



## Power wiring systems for motor starters

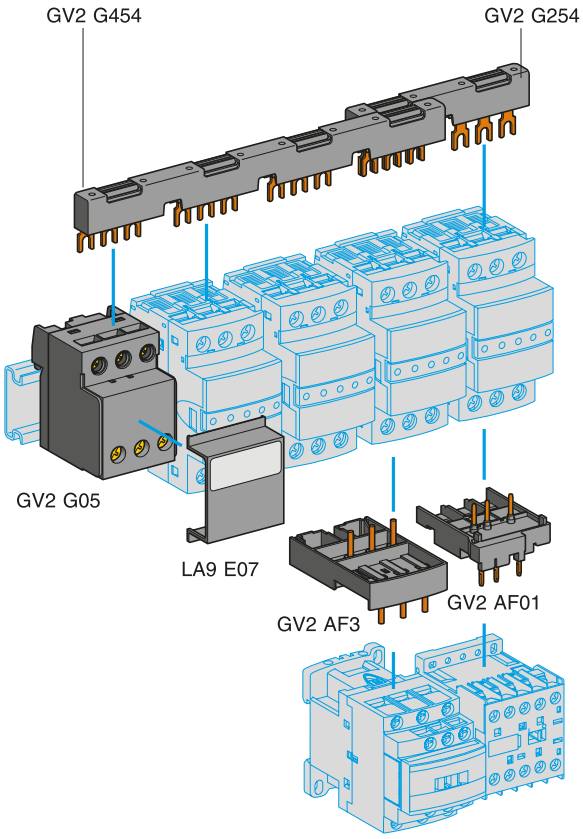

| Type of product | | Pages |
|---|---|---|
| Power wiring system for motor starter assemblies: screw clamp connection |  | B2/2 |
| Power wiring system for motor starter assemblies: spring terminals connection | | B2/4 |


## RJ45 Control wiring systems for motor starters

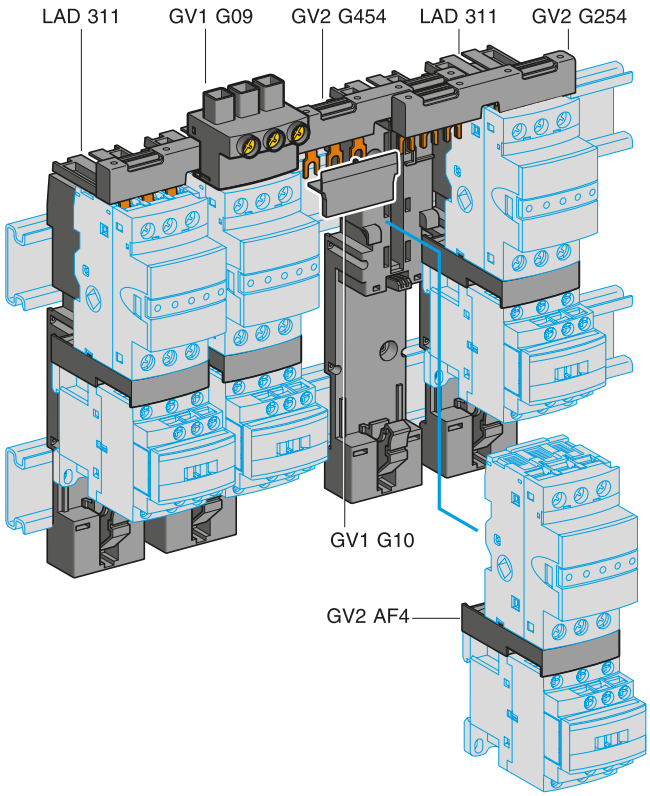

| | | |
|---|---|---|
| Motor starters-to-PLC Control wiring architectures Selection tables | | B2/6 |
| RJ45 connection module for Ultra motor starter Pluggable |  | B2/8 |

DB417847.eps

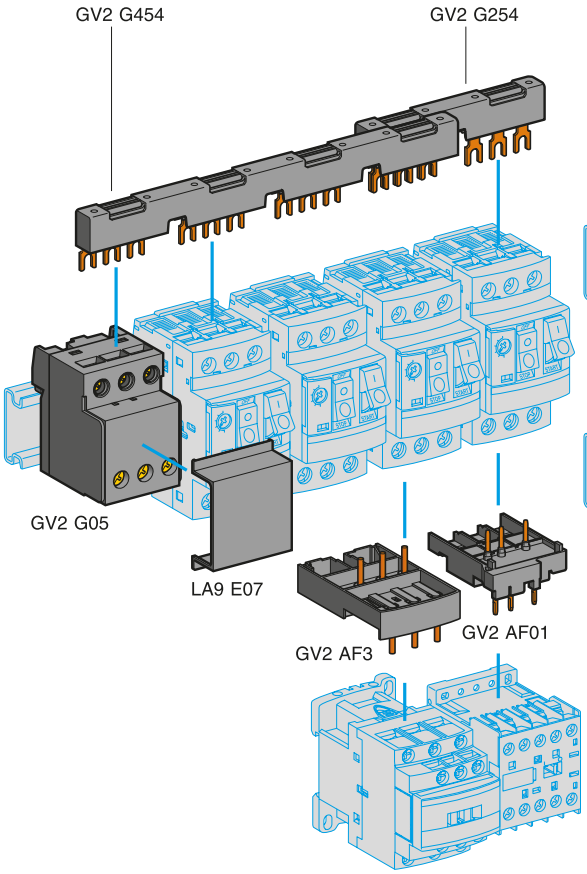
### Group of fuse carriers directly mounted on DIN rail



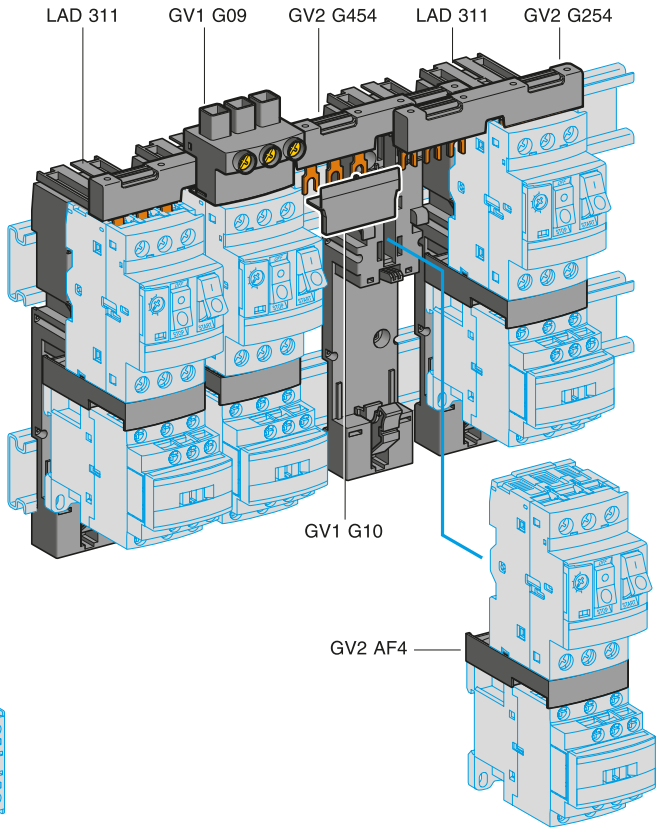

### Group of fuse carriers + contactors mounted on adapter plates




### Group of circuit breakers directly mounted on DIN rail




### Group of circuit breakers + contactors mounted on adapter plates






Life Is On Schneider Electric

# Product references

This system is convenient when time and space savings are required.
The motor starter can be composed of:
- LS1D323 fuse carrier + Deca (LC1D) contactor
- Deca Frame 2 (GV2) circuit breaker + Deca (LC1D) contactor.

## Upstream busbars and terminals

| Description | Application | Pitch (mm) | Unit reference |
|---|---|---|---|
| Sets of 3-pole 63 A busbars | 2 tap-offs | 45 | **GV2G245** |
| | | 54 | **GV2G254** |
| | | 72 | **GV2G272** |
| | 3 tap-offs | 45 | **GV2G345** |
| | | 54 | **GV2G354** |
| | 4 tap-offs | 45 | **GV2G445** |
| | | 54 | **GV2G454** |
| | | 72 | **GV2G472** |
| | 5 tap-offs | 54 | **GV2G554** |
| **Description** | **Application** | **Sold in lots of** | **Unit reference** |
| Terminal block for supply to one or more GV2G busbar sets | Connection from the top | 1 | **GV1G09** |
| | Can be fitted with current limiter GV1L3 (GV2ME and GV2P) | 1 | **GV2G05** |
| Cover for terminal block | For mounting in modular panels | 10 | **LA9E07** |
| Protective end cover | For unused busbar outlets | 5 | **GV1G10** |

## Assembling components

| Description | Application | Sold in lots of | Unit reference |
|---|---|---|---|
| Combination blocks | Between GV2 and contactor LC1K or LP1K (1) | 10 | **GV2AF01** |
| | Between GV2 and contactor LC1D09…D38 (1) | 10 | **GV2AF3** |
| | Between GV2 mounted on LAD311 and contactor LC1D09…D38 | 10 | **GV2AF4** |
| Adapter plates | For mounting a GV2ME and contactor LC1D09…D38 with front faces aligned | 1 | **LAD311** |
| Height compensation plate | 7.5 mm | 10 | **GV1F03** |

*(1) Ensures both the connection and a rigid support to the contactor. No extra fixing mean required.*

PB111872.eps

*GV2AF02*

## Accessories

| Description | Application | Sold in lots of | Unit reference |
|---|---|---|---|
| Adapter plates | For mounting a GV2 by screw fixing | 10 | **GV2AF02** |
| Motor starter adapter plate | For mounting a GV2 and a contactor LC1D09…D25. Item delivered with a GV1G02 flexible connection | 1 | **GK2AF01** |
| Flexible 3-pole connection for connecting a GV2 to a contactor LC1-D09…D25 | Centre distance between mounting rails: 100…120 mm | 10 | **GV1G02** |
| Incoming line spacer for UL 508 Type E applications | For GV2P (except 32 A) | 1 | **GV2GH7** |
| Clip-in marker holders (supplied with each circuit breaker) | For GV2 P, GV2L, GV2LE and GV2RT (8 x 22 mm) | 100 | **LA9D92** |

PB111907.eps

*GK2AF01*

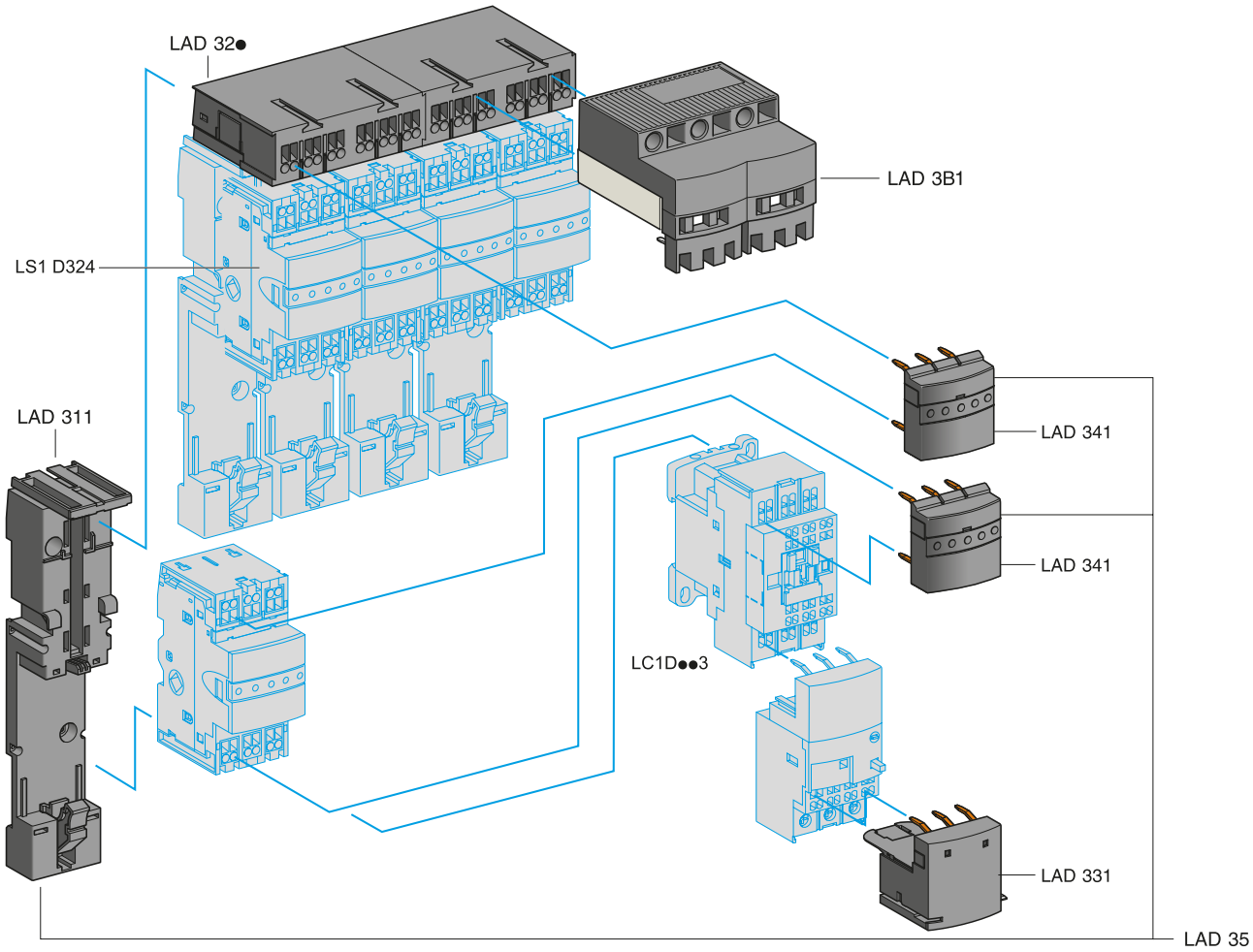
PB111869.eps

*GV1G02*

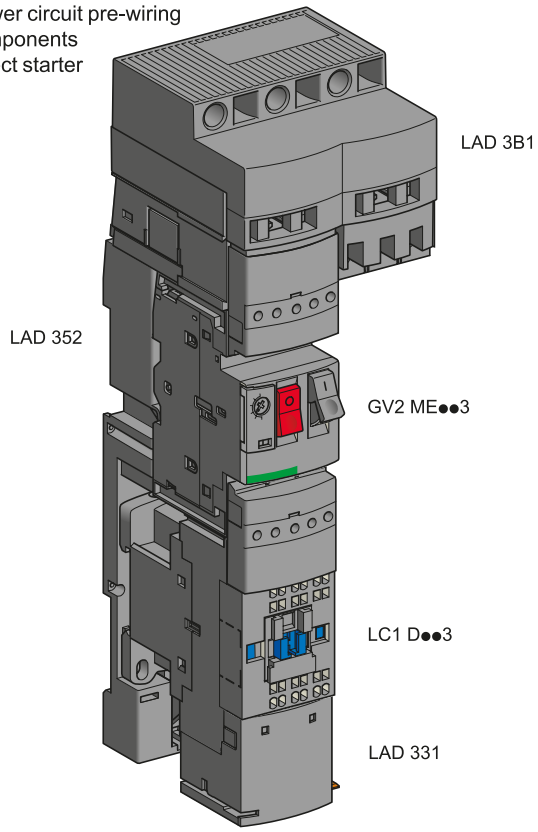
Dimensions:
page B2/13

DB438737.eps

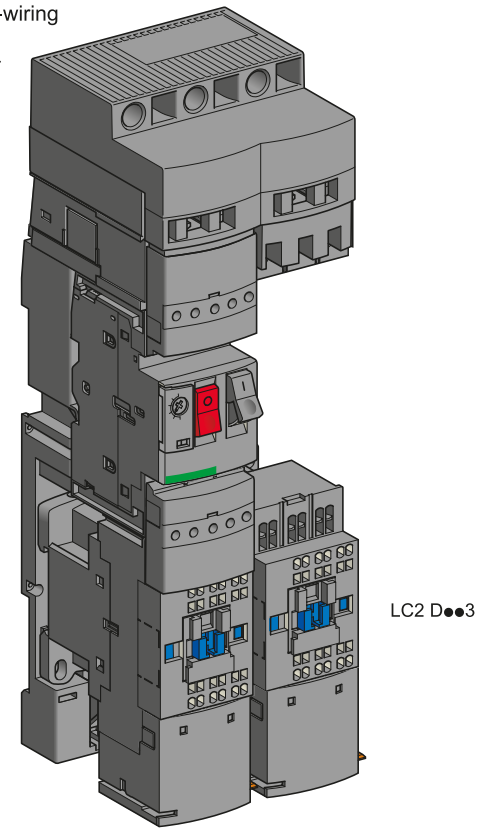
**Group of fuse carriers + contactors mounted on adapter plates**




Power circuit pre-wiring components
Direct starter




Power circuit pre-wiring components
Reversing starter






Life Is On Schneider Electric

# Product references

This system is convenient when time and space savings are required.
The motor starter can be composed of:
- LS1D323 fuse carrier + Deca (LC1D) contactor.
- Deca Frame 2 (GV2) circuit breaker + Deca (LC1D) contactor

PB111855.eps

*LAD3B1*

PB111843.eps

*LAD324*

## Upstream terminal and splitter blocks

| Description | Maximum connection c.s.a. | Application | Sold in lots of | Reference |
|---|---|---|---|---|
| Upstream terminal block | 16 mm² (1) | Power supply of 1 or 2 power splitter boxes | 1 | **LAD3B1** |
| **Description** | **Extension by** | **Number of starters** | | **Reference** |
| Power splitter box, 60 A | LAD32● | 2 | 1 | **LAD322** |
| | | 4 | 1 | **LAD324** |

PB121279.eps

*LAD311*

PB114204.eps

*LAD341*

## Assembling components

| Description | Composition | Sold in lots of | Reference |
|---|---|---|---|
| Plate for mounting a GV2ME circuit breaker and a contactor | For 1 starter | 10 | **LAD311** |
| Power connection module | For 1 starter | 10 | **LAD341** |
| Power connection kit for direct starter (2) | 1 plate LAD311 for GV2ME and 2 power connection modules LAD341 | | **LAD352** |

PB121280.eps

*LAD331*

## Downstream terminal and accessory

| Description | Maximum connection c.s.a. | Application | Sold in lots of | Reference |
|---|---|---|---|---|
| Downstream terminal block | 6 mm² | Connection of motor cables | 10 | **LAD331** |
| Cable end reducer | - | For connection of conductors from 1 to 1.5 mm² | 20 | **LAD99** |

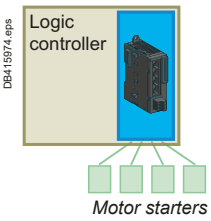
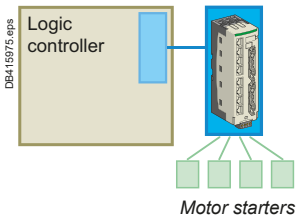
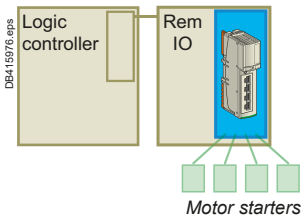
*(1) Cables with one end pre-crimped are available to allow fast connection. References:*
*1 set of 3 x 6 mm² cables (length 1 m: **LAD3B061**, length 2 m: **LAD3B062** and length 3 m: **LAD3B063**),*
*1 set of 3 x 10 mm² cables (length 1 m: **LAD3B101**, length 2 m: **LAD3B102** and length 3 m: **LAD3B103**),*
*1 set of 3 x 16 mm² cables (length 1 m: **LAD3B161**, length 2 m: **LAD3B162** and length 3 m: **LAD3B163**).*
*(2) To build a reversing starter, order 2 kits **LAD352**.*

Wiring systems

Dimensions:
page B2/12

## Selection table

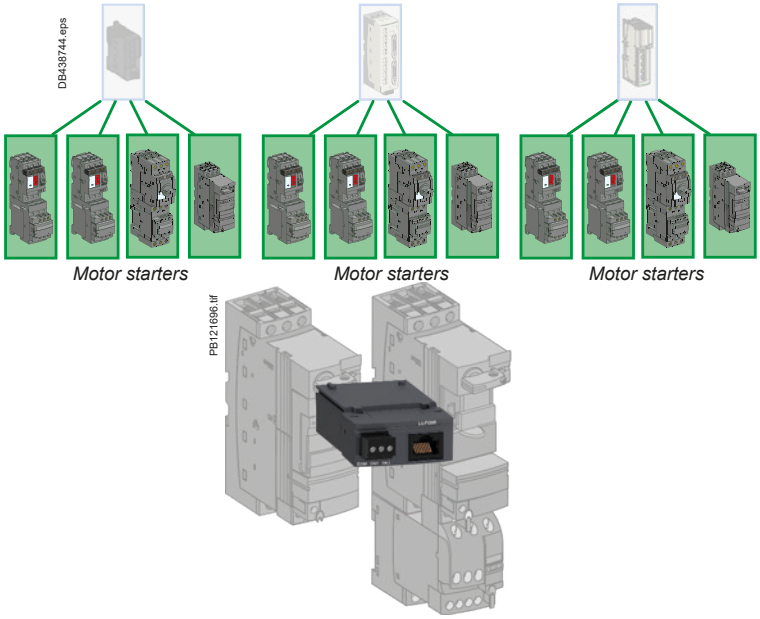


| Product type | Connection interfaces for a group of motor starters | | |
|---|---|---|---|
| **IO system name** | **Modicon TM3** | **Modicon Telefast** | **Modicon STB** |
| **Architecture** |  |  |  |
| | | | |
| **Application** | Control of single or multiple motor-starters assemblies by mean of a logic controller. Machines or processes requiring easy, fast cabling and replacement of motor starters. | | |
| **Function** | **IO module:** Ensures the direct connection of up to **4 motor starters** to logic controller (Modicon M221, M241, M251) | **Splitter box:** Ensures the connection of up to **8 motor starters** to a logic controller via Modicon Telefast multiwire cable | **IO module:** Ensures the connection of up to **4 motor starters** to a logic controller via an automation island (Modicon STB distributed IO architecture) |
| **Upstream compatibility** | With Modicon M221, M241, M251 logic controller, via logic controller internal bus | With any logic controller equipped with HE10 inputs/ outputs module | With Modicon STB automation island, via automation island internal bus |
| **Upstream connectors** | Backplane bus connector | HE10 connector | Backplane bus connector |
| **Compatibility** – **Motor circuit breaker - Type** / **Contactor - Type / Amp** / **Motor circuit breaker + Contactor - terminals** | All types of motor starters equipped with RJ45 connection system | | |
| **Motor control** | Reversing / Non reversing | | |
| **Number of motor starters** | **4** | **8** | **4** |
| **Downstream connector type** | RJ45 | | |
| **Reference** | **TM3XTYS4** | **LU9G02 / LU9G03** | **STBEPI2145K *** |
| **Pages** | Refer to Modicon M221/M241/ M251 catalogue | Ultra motor starters - pages B2/8 and A4/20 | Refer to IP20 distributed IO Modicon STB catalogue |

** STBEPI2145K: GV2 + contactor D09 to D32, Ultra only.*

## RJ45 connection components for motor starter

### Common components for Modicon TM3, Modicon Telefast, Modicon STB systems

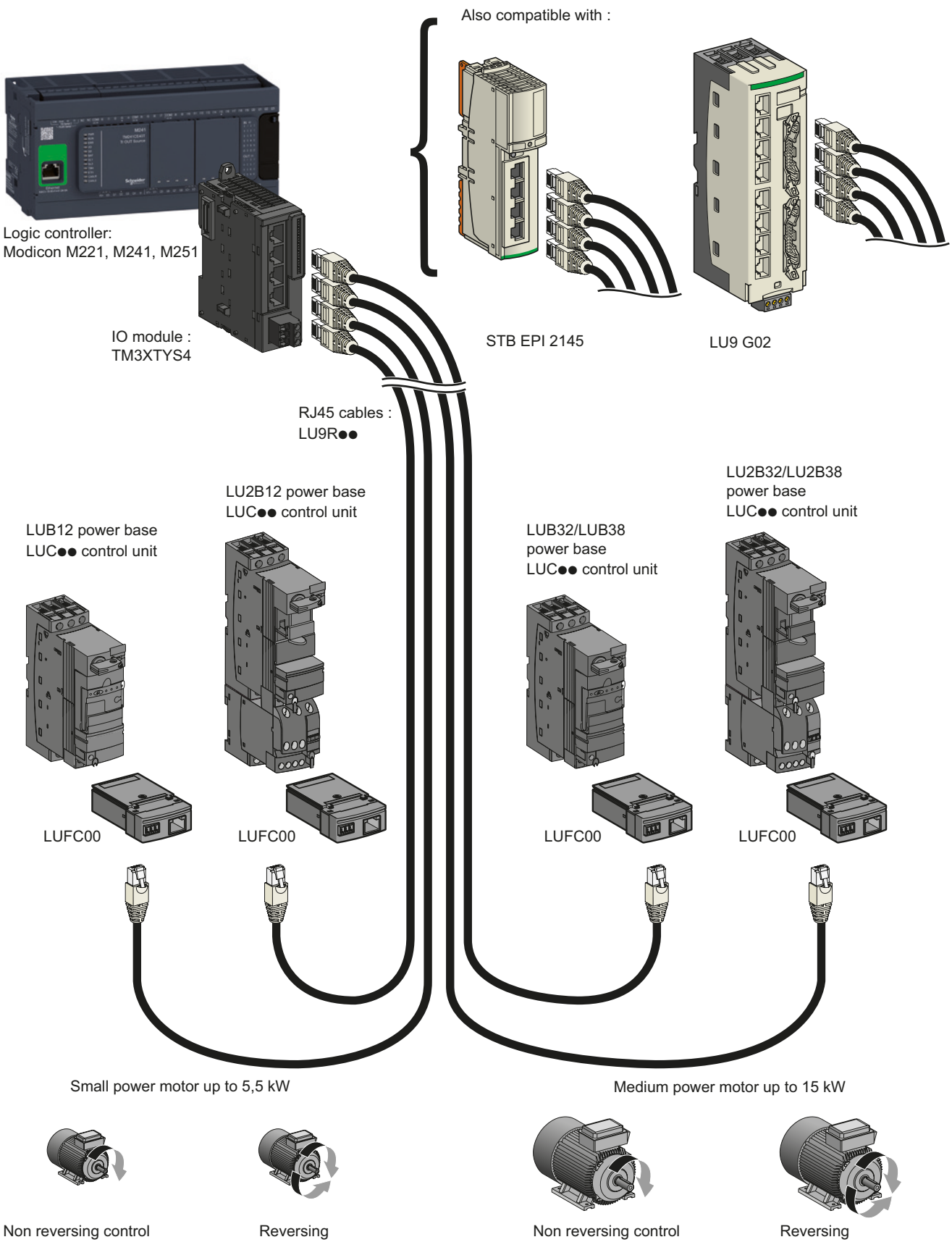



| |
|---|
| |
| **Connection module:**<br>ensures the compatibility Ultra motor starters to the RJ45 connection system |
| TM3XTYS4 / LU9G02 / LU9G03 / STBEPI2145K |
| RJ45 |
| Ultra motor starters<br>12 to 38 A |
| Screw-clamp |
| Reversing or Non reversing |
| |
| Plug-in module |
| **LUFC00** |
| B2/8 |

## Description



DB439800.eps



## "Plug and play", for single or reversing motor starters

The LUFC00 parallel connection module provides a simple and efficient solution for control and monitoring of a Ultra direct or reverse motor starter.

## Compact, fast cabling

The connection to the Ultra power base is simply achieved by insertion of the module into it. The status and control signals are carried by a simple pre-connectorized RJ45 cable (LU9R●●) between an IO module or splitter box and Ultra motor starter.

## Features

■ On / OFF / Reverse control (functions non provided with LUB12, 32, 38 power bases).
■ Handle position, power contacts position monitoring (function provided with all power bases).

## Compatibility

12, 32 or 38 A direct motor starters: LUB12, LUB32 or LUB38 power base + LUC●● control unit (coil code BL),
LUB120, LUB320 or LUB380 power base + LU9N11C connector + LUC●● control unit (coil code BL)

12, 32 or 38 A reversing motor starters: LU2B12, LU2B32 or LU2B38 power base + LU9MRC connector + LUC●● control unit (coil code BL).

PB121285.eps

*LUFC00*

PB121287.eps

*LU9MRC*

PB121286.eps

*LU9BN11C*

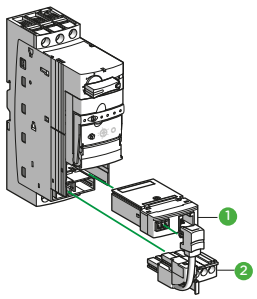
| Ultra RJ45 connection module | |
|---|---|
| **Designation** | **Commercial ref** |
| 1 Parallel wiring module | **LUFC00** |

| Ultra coil connector | |
|---|---|
| **Designation** | **Commercial ref** |
| 2 Pre wired coil connector for LUB120, LUB320 or LUB380 power base | **LU9BN11C** |
| 3 Pre wired coil connector for LU2B12, LU2B32 or LU2B38 power base | **LU9MRC** |

## Design / Installation

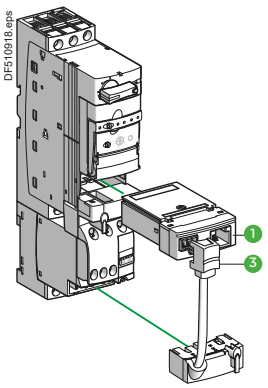
The LUFC00 parallel (RJ45) connection module acts as a connection interface for controlling the coil (except with LUB12, 32, 38) and the monitoring of the auxiliary contacts. As a necessary complement, a pre wired connector is needed for carrying the signal to the coil and collecting:
■ the status of the protection device (OK / Alarm) with LU9BN11C,
■ the electrical interlock contacts with LU9MRC.
As the "reversing" is higher than the "direct" power base, the LU9MRC link is longer than the LU9BN11C.

DF566964.eps




*Direct motor starter (LUB120, 320, 380 power base).*

DF510918.eps




*Reversing motor starter (LU2B12, 32, 38 power base).*

## Product references

| | |
|---|---|
| GV1F03 | GV2GH7 |
| GV1G02 | LA9D92 |
| GV1G09 | LA9E07 |
| GV1G10 | LAD311 |
| GV2AF01 | LAD322 |
| GV2AF02 | LAD324 |
| GV2AF3 | LAD331 |
| GV2AF4 | LAD341 |
| GV2AF5 | LAD351 |
| GV2G05 | LAD352 |
| GV2G245 | LAD3B1 |
| GV2G254 | LU9BN11C |
| GV2G272 | LU9G02 |
| GV2G345 | LU9G03 |
| GV2G354 | LUFC00 |
| GV2G445 | STBEPI2145K |
| GV2G454 | TM3XTYS4 |
| GV2G472 | |
| GV2G554 | |



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

## Contents

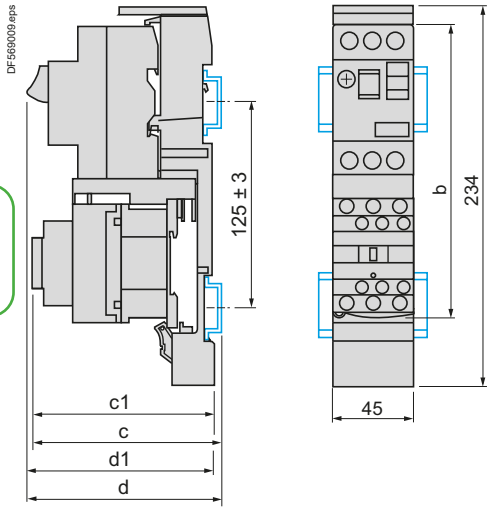
Power wiring systems for motor starter assemblies:
> Dimensions (GV2 + LAD311 assembly).....B2/12
> Dimensions (GV2G●●● busbars) .....B2/13

IO module, splitter box, for motor starters control circuits
> Dimensions .....B2/14

# Dimensions

## GV2AF4 + LAD311

**Combination GV2ME + Deca contactor**




| GV2ME + | LC1D09…D18 | LC1D25 and D32 |
|---|---|---|
| **b** | 176.4 | 186.8 |
| **c1** | 103.1 | 136.4 |
| **c** | 135.6 | 141.9 |
| **d1** | 107 | 107 |
| **d** | 112.5 | 112.5 |

## 7.5 mm height compensation plate GV1F03

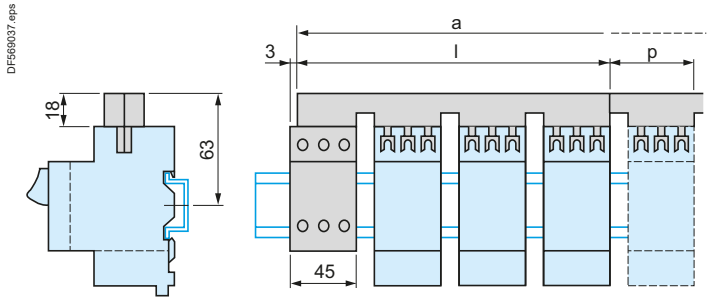
Wiring systems
Ref.

References:
page B2/5

# Dimensions

## Deca Frame 2 (GV2ME, GV2P, GV2L, GV2LE)

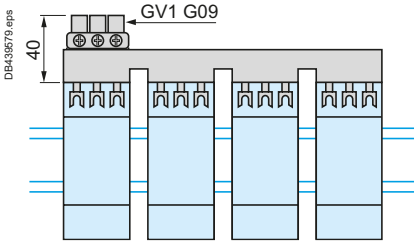
### Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05




| | l | p |
|---|---|---|
| **GV2G445** (4 x 45 mm) | 179 | 45 |
| **GV2G454** (4 x 54 mm) | 206 | 54 |
| **GV2G472** (4 x 72 mm) | 260 | 72 |

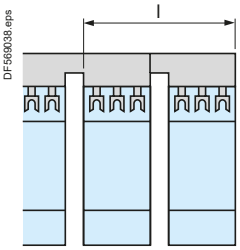
| | a | | | |
|---|---|---|---|---|
| **Number of tap-offs** | **5** | **6** | **7** | **8** |
| **GV2G445** | 224 | 269 | 314 | 359 |
| **GV2G454** | 260 | 314 | 368 | 422 |
| **GV2G472** | 332 | 404 | 476 | 548 |

### Sets of busbars GV2G●●● with terminal block GV1G09

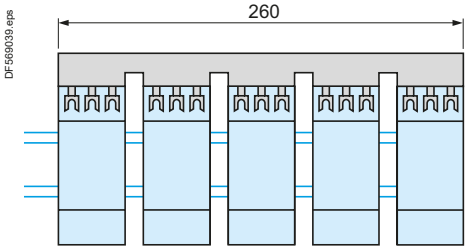



| | l |
|---|---|
| **GV2G245** (2 x 45 mm) | 89 |
| **GV2G254** (2 x 54 mm) | 98 |
| **GV2G272** (2 x 72 mm) | 116 |

### Sets of busbars GV2G245, GV2G254, GV2G272

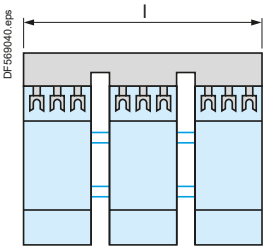



### Sets of busbars GV2G554




| | l |
|---|---|
| **GV2G345** (3 x 45 mm) | 134 |
| **GV2G354** (3 x 54 mm) | 152 |

### Sets of busbars GV2G345 and GV2G354

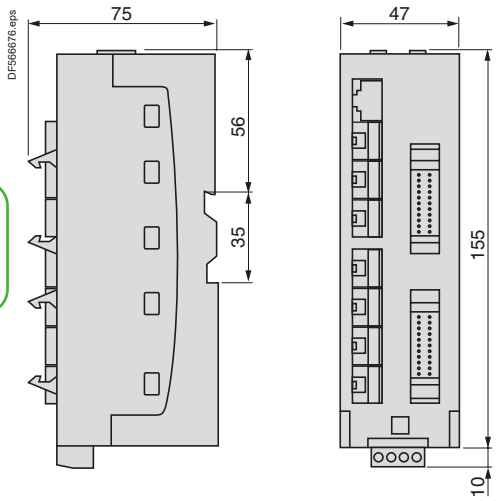



References:
page B2/3

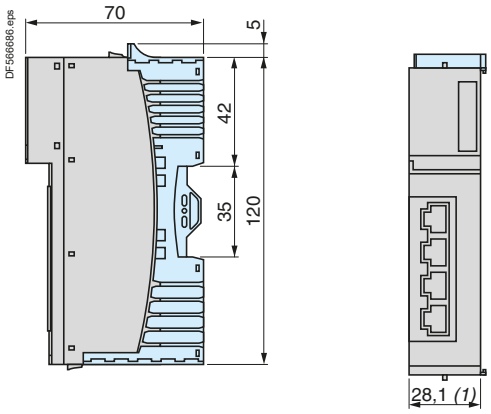
# Dimensions

## Parallel RJ45 wiring modules

### Splitter box LU9G02




### Parallel wiring module Advantys STBEPI2145




*(1) Dimension to be multiplied by the number of **STBEPI2145** modules present in the configuration.*

# TeSys Control
# Switch-disconnectors



## Door mounting isolation switch


| Type of product | Range | | Pages |
|---|---|---|---|
| Switch-disconnectors | Up to 12 or 20 A | | B3/2 |
| Switch-disconnectors, high performance applications | From 12 to 175 A | | B3/6 |
| Accessories for switch-disconnectors | | | B3/8 |


Technical Data for Designers B3/17

PB121292.eps

*VCDN20*

PB121293.eps

*VCCDN20*

PB119284.eps

*VBDN20*

## Switch-disconnectors for standard applications

- 3-pole rotary switch-disconnectors, 12 to 20 A
- Marking on operator ○ |.
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

### Main and Emergency stop switch-disconnectors for door mounting

| Operator | | | Ith | Reference |
|---|---|---|---|---|
| Handle | Front plate | Fixing | | |
| | mm | mm | A | |
| Red, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 60 x 60 | Ø22.5 | 12 | **VCDN12** |
| | | | 20 | **VCDN20** |

### Main and Emergency stop switch-disconnectors for mounting at back of an enclosure (1)

| Operator | | | Ith | Reference |
|---|---|---|---|---|
| Handle | Front plate | Fixing | | |
| | mm | mm | A | |
| Red, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 60 x 60 | Ø22.5 | 12 | **VCCDN12** |
| | | | 20 | **VCCDN20** |

### Main switch-disconnectors for door mounting

| Operator | | | Ith | Reference |
|---|---|---|---|---|
| Handle | Front plate | Fixing | | |
| | mm | mm | A | |
| Black, padlockable with up to 3 padlocks (Ø4 to Ø8) | Black 60 x 60 | Ø22.5 | 12 | **VBDN12** |
| | | | 20 | **VBDN20** |

*(1) Switches supplied with a shaft extension* **VZN17** *and a door interlock plate* **KZ32** *(see page B3/5).*

Characteristics:
pages B3/18 to B3/21

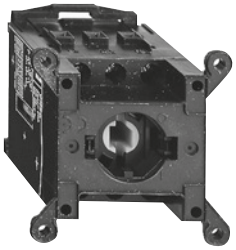
Dimensions:
pages B3/22 and B3/23

Schemes:
page B3/23



Life Is On Schneider Electric

812801.tif



*VN20*

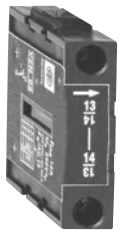
580586.tif

*VZN11*

580587.tif

*VZN14*

580588.tif

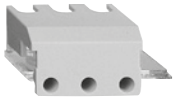


*VZN05*

812805.tif

*VZN26*

812806.tif



*VZN08*

## Switch-disconnectors for standard applications

### Switch bodies

| Description | Rating A | Reference |
|---|---|---|
| 3-pole switch-disconnectors | 12 | **VN12** |
| | 20 | **VN20** |

### Add-on modules

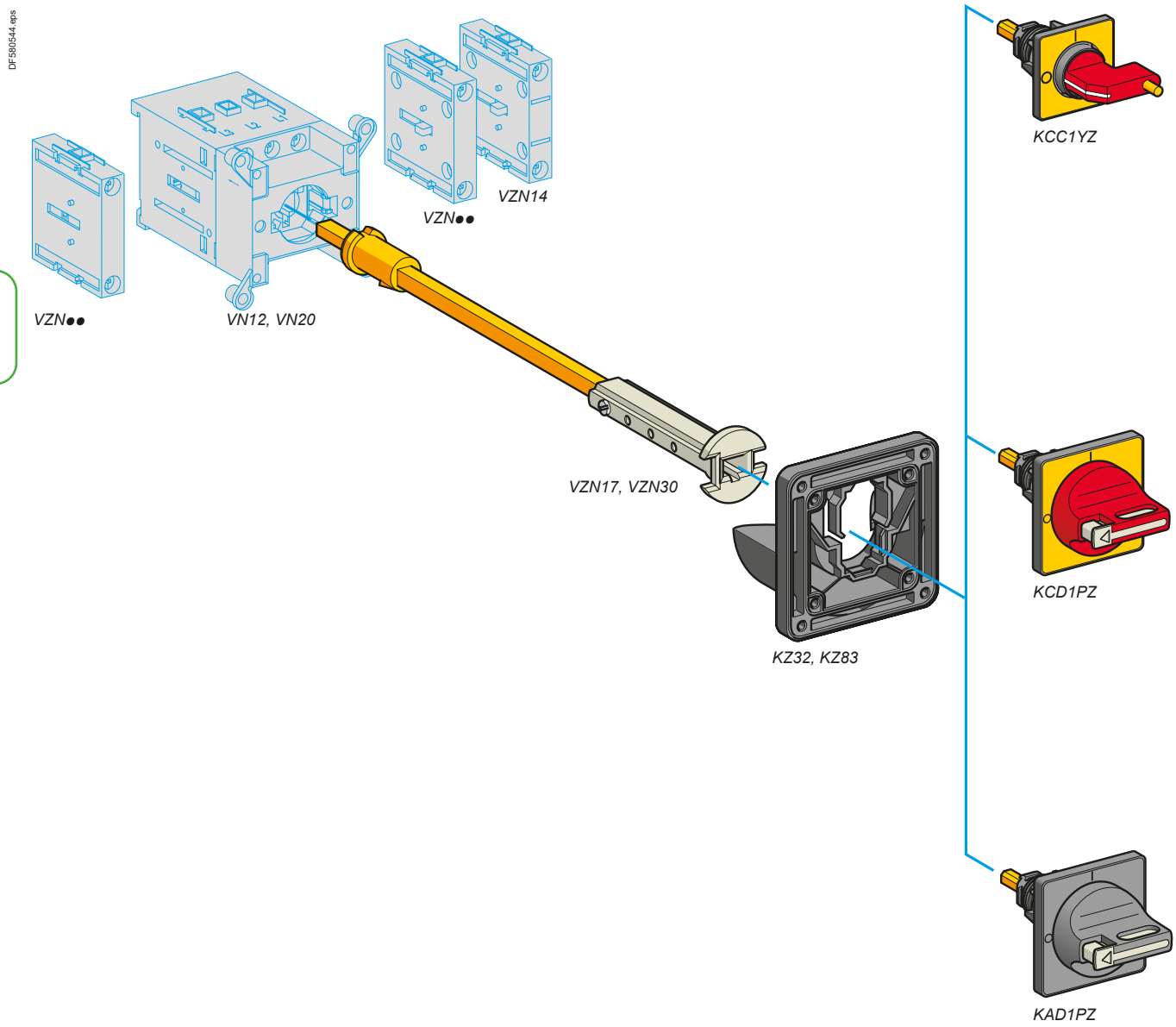
| Description | Rating A | Reference |
|---|---|---|
| Main pole modules | 12 | **VZN12** |
| | 20 | **VZN20** |
| Neutral pole module with early make and late break contacts | 12 and 20 | **VZN11** |
| Earthing module | 12 and 20 | **VZN14** |
| Auxiliary contact block modules | 1 N/O late make contact | **VZN05** |
| | 1 N/C early break contact | **VZN06** |
| Input terminal protection shrouds | For add-on pole modules or auxiliary contact block modules (single-pole shroud) | **VZN26** |
| | For switch bodies (3-pole shroud) | **VZN08** |

### Maximum number of add-on modules that can be fitted on a switch body

| | | | | |
|---|---|---|---|---|
| VZN12 or VZN20 | + | **VN12** | + | VZN12 or VZN20 |
| | | | | or |
| or | | **or** | | VZN11 + VZN14 |
| | | **VN20** | | or |
| VZN05 or VZN06 | | | | VZN05 or VZN06 |



Characteristics: pages B3/18 to B3/21
Dimensions: pages B3/22 and B3/23
Schemes: page B3/23


DF580544.eps
VZN●●
VN12, VN20
VZN●●
VZN14
VZN17, VZN30
KZ32, KZ83
KCC1YZ
KCD1PZ
KAD1PZ

## Switch-disconnectors for standard applications

- Degree of protection IP 65.
- Marking on operator ○ |.
- Padlockable operating handle (padlocks not supplied).
- Operator fixing by 1 Ø22.5 hole; for other operators see pages B3/11 and B3/13.
- For other accessories and empty enclosures, see pages B3/14, B3/15 and chapter A1.

### Operators for main and Emergency stop switch-disconnectors

| Handle | Front plate mm | Reference |
|---|---|---|
| Red, padlockable with 1 padlock (Ø4 to Ø6) | Yellow 45 x 45 | **KCC1YZ** |
| Red, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 60 x 60 | **KCD1PZ** |

### Operators for main switch-disconnectors

| Handle | Front plate mm | Reference |
|---|---|---|
| Black, padlockable with up to 3 padlocks (Ø4 to Ø8) | Black 60 x 60 | **KAD1PZ** |

### Accessories for door interlocking

**For rear fixing switch-disconnectors mounted at the back of an enclosure, in addition to a direct operator**

| Description | Front plate | Distance enclosure back/door | Sold in lots of | Unit reference |
|---|---|---|---|---|
| | mm | mm | | |
| Shaft extensions | – | 300…330 | 1 | **VZN17** |
| | | 400…430 | 1 | **VZN30** |
| Door interlock plate | 45 x 45 or 60 x 60 | – | 5 | **KZ32** |
| Plate for door mounting | 45 x 45 or 60 x 60 | – | 5 | **KZ83** |

Switch-disconnectors

Characteristics: pages B3/18 to B3/21
Dimensions: pages B3/22 and B3/23
Schemes: page B3/23

PB121294.eps

*VCF0*

PB121295.eps

*VCF5*

PB121296.eps

*VCCF0*

## Switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 12 to 175 A
- Marking on operator ○ ⏐.
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

### Main and Emergency stop switch-disconnectors for door mounting

| Handle | Front plate mm | Fixing | Rating A | Reference | Weight kg |
|---|---|---|---|---|---|
| Red, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 60 x 60 | Ø22.5 | 12 | **VCD02** | 0.215 |
| | | | 20 | **VCD01** | 0.215 |
| | | | 25 | **VCD0** | 0.215 |
| | | | 32 | **VCD1** | 0.215 |
| | | | 40 | **VCD2** | 0.215 |
| | | 4 screws | 12 | **VCF02** | 0.250 |
| | | | 20 | **VCF01** | 0.250 |
| | | | 25 | **VCF0** | 0.250 |
| | | | 32 | **VCF1** | 0.250 |
| | | | 40 | **VCF2** | 0.250 |
| | | | 63 | **VCF3** | 0.560 |
| | | | 80 | **VCF4** | 0.560 |
| Red, long, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 90 x 90 | 4 screws | 125 | **VCF5** | 1.200 |
| | | | 175 | **VCF6** | 1.200 |

### Main and Emergency stop switch-disconnectors for mounting at back of an enclosure (1)

| Handle | Front plate mm | Fixing | Rating A | Reference | Weight kg |
|---|---|---|---|---|---|
| Red, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 60 x 60 | Ø22.5 | 12 | **VCCD02** | 0.392 |
| | | | 20 | **VCCD01** | 0.392 |
| | | | 25 | **VCCD0** | 0.392 |
| | | | 32 | **VCCD1** | 0.392 |
| | | | 40 | **VCCD2** | 0.392 |
| | | 4 screws | 12 | **VCCF02** | 0.527 |
| | | | 20 | **VCCF01** | 0.527 |
| | | | 25 | **VCCF0** | 0.527 |
| | | | 32 | **VCCF1** | 0.527 |
| | | | 40 | **VCCF2** | 0.527 |
| | | | 63 | **VCCF3** | 0.440 |
| | | | 80 | **VCCF4** | 0.680 |
| Red, long, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 90 x 90 | 4 screws | 125 | **VCCF5** | 1.320 |
| | | | 175 | **VCCF6** | 1.320 |

*(1) Unit supplied with a shaft extension **VZN17** or **VZ18** and a door interlock plate **KZ32** or **KZ74** (see page B3/14).*

Characteristics: pages B3/18 to B3/21
Dimensions: pages B3/24 and B3/25
Schemes: page B3/25

PB121515.eps

*VBD01*

PB119275.eps

*VBF4*

PB121298.eps

*VVE1*

## Switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 12 to 175 A
- Marking on operator ○┘.
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

### Main switch-disconnectors for door mounting

| Handle | Front plate mm | Fixing | Rating A | Reference | Weight kg |
|---|---|---|---|---|---|
| Black, padlockable with up to 3 padlocks (Ø4 to Ø8) | Black 60 x 60 | Ø22.5 | 12 | **VBD02** | 0.215 |
| | | | 20 | **VBD01** | 0.215 |
| | | | 25 | **VBD0** | 0.215 |
| | | | 32 | **VBD1** | 0.215 |
| | | | 40 | **VBD2** | 0.215 |
| | | 4 screws | 12 | **VBF02** | 0.250 |
| | | | 20 | **VBF01** | 0.250 |
| | | | 25 | **VBF0** | 0.250 |
| | | | 32 | **VBF1** | 0.250 |
| | | | 40 | **VBF2** | 0.250 |
| | | | 63 | **VBF3** | 0.560 |
| | | | 80 | **VBF4** | 0.560 |
| Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8) | Black 90 x 90 | 4 screws | 125 | **VBF5** | 1.200 |
| | | | 175 | **VBF6** | 1.200 |

### Main and Emergency stop switch-disconnectors

**For mounting in an enclosure or for modular distribution boards**

| Handle | Front plate mm | Fixing | Rating A | Reference | Weight kg |
|---|---|---|---|---|---|
| Red, padlockable with 1 padlock (Ø4 to Ø6) | Yellow 45 x 45 | 4 screws | 25 | **VVE0** | 0.250 |
| | | | 32 | **VVE1** | 0.250 |
| | | | 40 | **VVE2** | 0.250 |
| | | | 63 | **VVE3** | 0.530 |
| | | | 80 | **VVE4** | 0.530 |

### Main switch-disconnectors

**For mounting in an enclosure or for modular distribution boards**

| Handle | Front plate mm | Fixing | Rating A | Reference | Weight kg |
|---|---|---|---|---|---|
| Black, not padlockable | Black 45 x 45 | 4 screws | 25 | **VVD0** | 0.250 |
| | | | 32 | **VVD1** | 0.250 |
| | | | 40 | **VVD2** | 0.250 |
| | | | 63 | **VVD3** | 0.560 |
| | | | 80 | **VVD4** | 0.560 |



Characteristics: pages B3/18 to B3/21
Dimensions: pages B3/24 and B3/25
Schemes: page B3/25

PB121299.eps

*V5*

580537.tif

*VZ0*

580538.tif

*VZ11*

580539.tif

*VZ15*

580540.tif

*VZ20*

## Switch-disconnectors for high performance applications

### Switch bodies

| Description | Rating A | Reference |
|---|---|---|
| 3-pole switch-disconnectors (1) | 12 | **V02** |
| | 20 | **V01** |
| | 25 | **V0** |
| | 32 | **V1** |
| | 40 | **V2** |
| | 63 | **V3** |
| | 80 | **V4** |
| | 125 | **V5** |
| | 175 | **V6** |

### Add-on modules

| Description | Rating A | Reference |
|---|---|---|
| Main pole modules | 12 | **VZ02** |
| | 20 | **VZ01** |
| | 25 | **VZ0** |
| | 32 | **VZ1** |
| | 40 | **VZ2** |
| | 63 | **VZ3** |
| | 80 | **VZ4** |
| Neutral pole modules with early make and late break contacts (1) | 12 to 40 | **VZ11** |
| | 63 to 80 | **VZ12** |
| | 125 and 175 | **VZ13** |
| Earthing modules | 12 to 40 | **VZ14** |
| | 63 and 80 | **VZ15** |
| | 125 and 175 | **VZ16** |

### Auxiliary contact block modules

| Description | Type | Reference |
|---|---|---|
| **Auxiliary contact block modules with 2 auxiliary contacts** | N/O + N/C (2) | **VZ7** |
| | N/O + N/O | **VZ20** |

*(1) Protection shrouds are available if required: see page B3/14.*
*(2) Late make N/O, early break N/C contacts*

## Switch-disconnectors for high performance applications

### Maximum number of add-on modules that can be fitted on a switch body

#### 1 add-on module on each side of the switch body

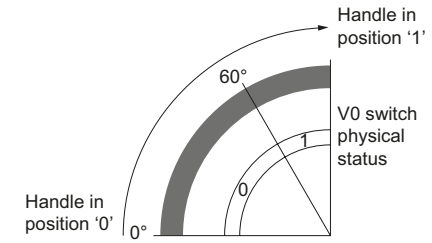
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VZ7 or VZ20 | + | **V0●** | + | VZ7 or VZ20 | | VZ7 | + | **V5** | + | VZ7 |
| or | | | | or | | or | | | | or |
| VZ11 or VZ12 | + | **V0** | + | VZ11 or VZ12 | | VZ20 | + | **or** | + | VZ20 |
| or | | **to** | | or | | or | | | | or |
| VZ14 or VZ15 | + | | + | VZ14 or VZ15 | | VZ13 | + | **V6** | + | VZ13 |
| or | | **V4** | | or | | or | | | | or |
| VZ0●/VZ0 to VZ4 | + | | + | VZ0●/VZ0 to VZ4 | | VZ16 | + | | + | VZ16 |

#### 2 add-on modules on each side of the switch body

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VZ0● | + | VZ0● | + | **V0●** | + | VZ0● | + | VZ7 | or | VZ20 | or | VZ11 | or | VZ14 |
| VZ0 | + | VZ0 | + | **V0** | + | VZ0 | + | VZ7 | or | VZ20 | or | VZ11 | or | VZ14 |
| VZ1 | + | VZ1 | + | **V1** | + | VZ1 | + | VZ7 | or | VZ20 | or | VZ11 | or | VZ14 |
| VZ2 | + | VZ2 | + | **V2** | + | VZ2 | + | VZ7 | or | VZ20 | or | VZ11 | or | VZ14 |
| VZ3 | + | VZ3 | + | **V3** | + | VZ3 | + | VZ7 | or | VZ20 | or | VZ12 | or | VZ15 |
| VZ4 | + | VZ4 | + | **V4** | + | VZ4 | + | VZ7 | or | VZ20 | or | VZ12 | or | VZ15 |

***Note:*** *The add-on modules mounted next to the switch body are main pole modules. Maximum of 3 main pole modules per switch body.*

## Auxiliary switch switching angles

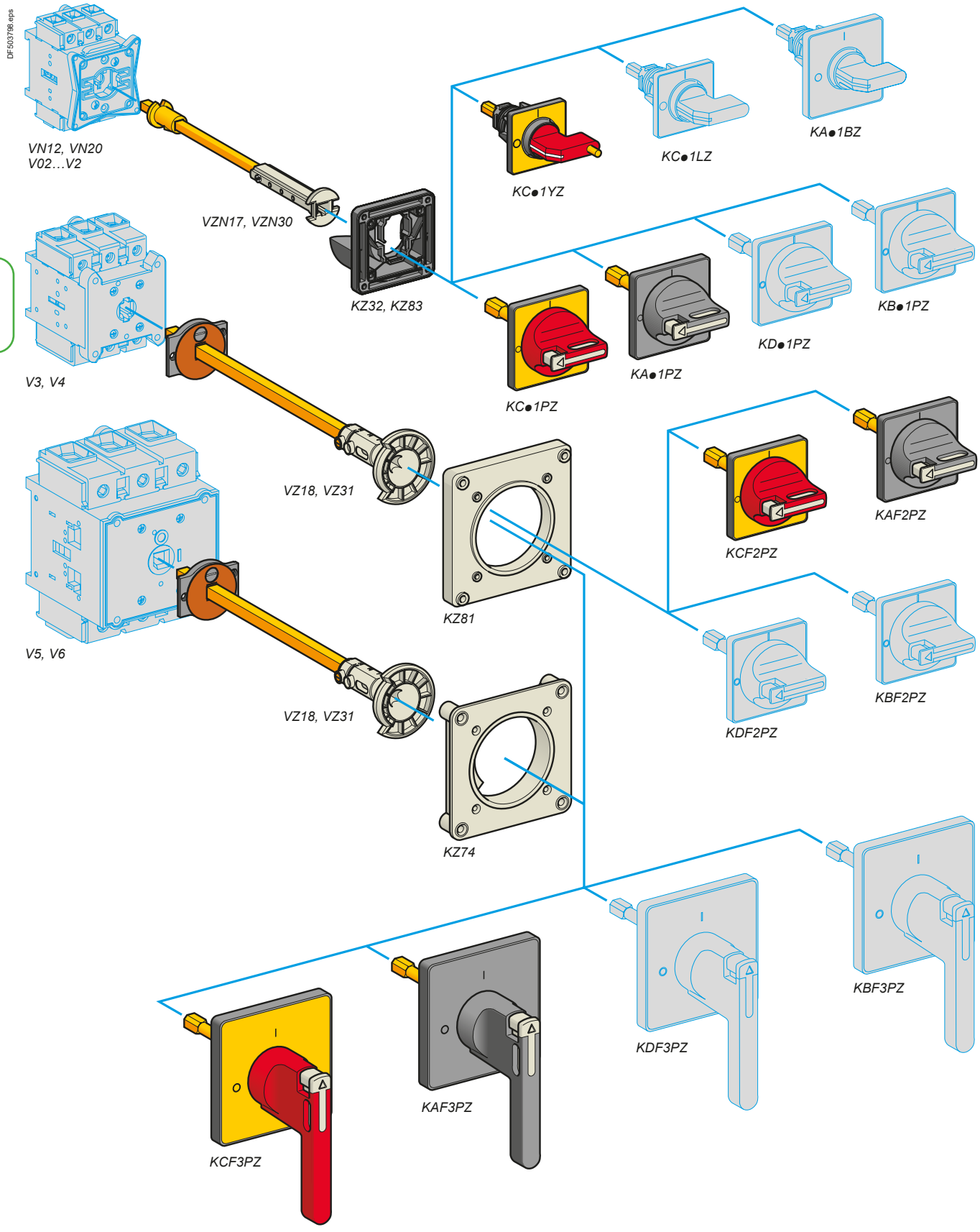



Switching angle representation - example with V0 switch

**0: contact open 1: contact close**

| Handle travel 0 > 1 | | 0° | 30° | 60° | 90° |
|---|---|---|---|---|---|
| 3-pole switch-disconnectors V02 / V01 / V0 / V1 / V2 / V3 / V4 / V5 / V6 | | | | 60° | |
| | | | 0 | | 1 |
| Main pole modules VZ02 / VZ01 / VZ0 / VZ1 / VZ2 / VZ3 / VZ4 | | | | 60° | |
| | | | 0 | | 1 |
| Neutral pole modules with early make and late break contacts VZ11 / VZ12 / VZ13 | | | | 45° | |
| | | | 0 | | 1 |
| Auxiliary contact block modules with 2 auxiliary contacts (N/0+N/C) VZ7 | | | | | 75° |
| Late make N0 and earlier break NC | **N/0** | | 0 | | 1 |
| (Early break N0 and late make NC for travel 1-0) | **N/C** | 1 | | 0 | |
| | | | 20° | | |
| Auxiliary contact block modules with 2 auxiliary contacts (N/0+N/C) VZ20 | | | | 60° | |
| | | | 0 | | 1 |
| | | | 0 | | 1 |
| | | | | 60° | |

Characteristics: pages B3/18 to B3/21
Dimensions: pages B3/24 and B3/25
Schemes: page B3/25





Life Is On Schneider Electric

- Marking on operator .
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

## Handles and front plates for main and Emergency stop switch-disconnectors

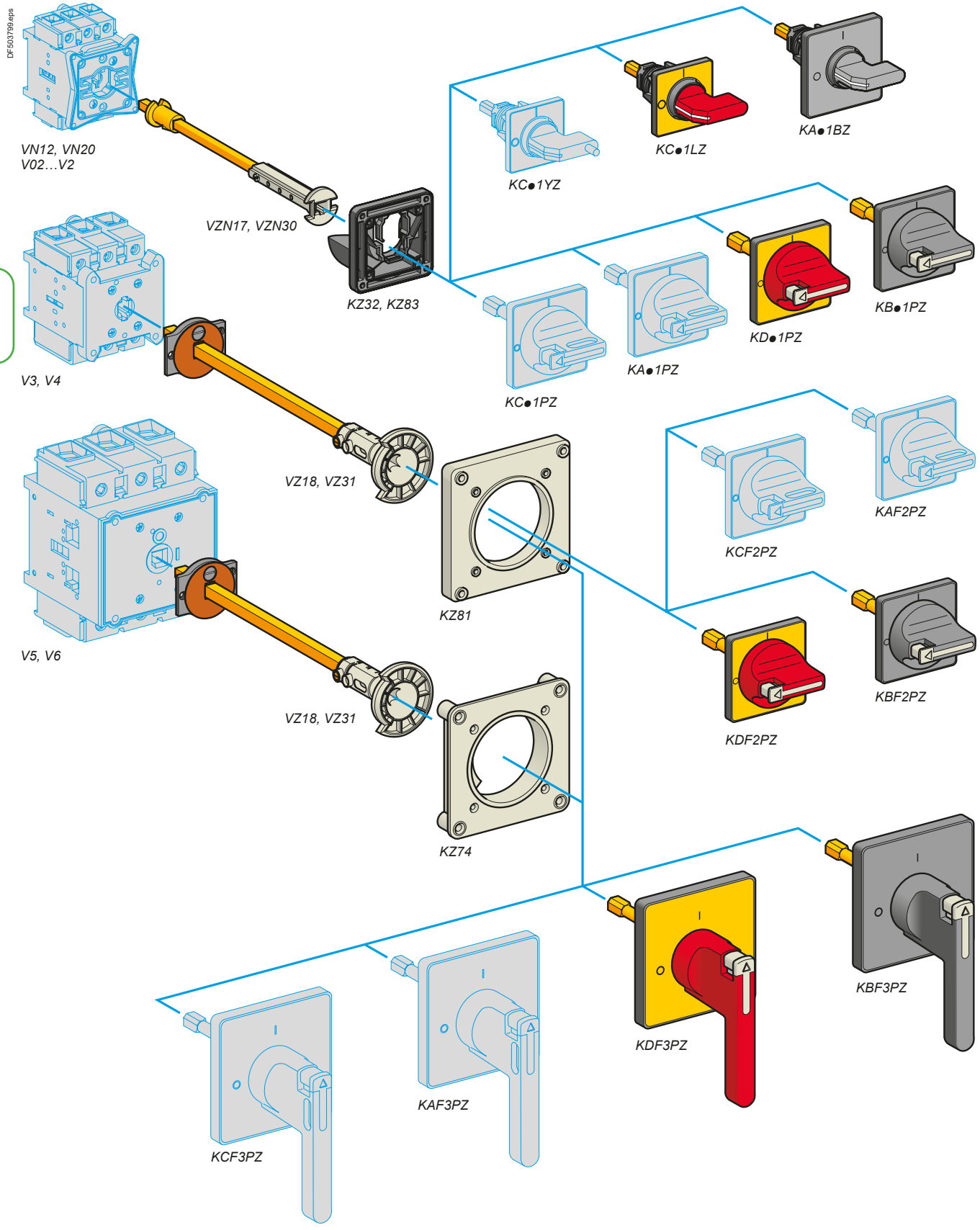
| For switch body | Operator | | | Reference |
|---|---|---|---|---|
| | Handle | Front plate | | |
| | | Dimensions | Fixing | |
| | | mm | | |
| **VN12, VN20 V02…V2** | Red, padlockable with 1 padlock (Ø4 to Ø6) | Yellow 45 x 45 | Ø22.5 | **KCC1YZ** |
| | | | 4 screws | **KCE1YZ** |
| | Red, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 60 x 60 | Ø22.5 | **KCD1PZ** |
| | | | 4 screws | **KCF1PZ** |
| **V3 and V4** | Red, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 60 x 60 | 4 screws | **KCF2PZ** |
| **V5 and V6** | Red, long, padlockable with up to 3 padlocks (Ø4 to Ø8) | Yellow 90 x 90 | 4 screws | **KCF3PZ** (1) |

## Handles and front plates for main switch-disconnectors

| For switch body | Operator | | | Reference |
|---|---|---|---|---|
| | Handle | Front plate | | |
| | | Dimensions | Fixing | |
| | | mm | | |
| **VN12, VN20 V02…V2** | Black, padlockable with up to 3 padlocks (Ø4 to Ø8) | Black 60 x 60 | Ø22.5 | **KAD1PZ** |
| | | | 4 screws | **KAF1PZ** |
| **V3 and V4** | Black, padlockable with up to 3 padlocks (Ø4 to Ø8) | Black 60 x 60 | 4 screws | **KAF2PZ** |
| **V5 and V6** | Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8) | Black 90 x 90 | 4 screws | **KAF3PZ** (1) |

*(1) For door mounting of 63 and 80 A switch-disconnectors, adapter plate **KZ106** must be ordered separately (see page B3/14).*

Switch-disconnectors





Life Is On Schneider Electric

## Product references

- Marking on operator .
- Degree of protection IP 65.

### Handles and front plates for Emergency stop switch-disconnectors

| For switch body | Operator | | | Reference |
|---|---|---|---|---|
| | Handle | Front plate | | |
| | | Dimensions | Fixing | |
| | | mm | | |
| **VN12, VN20 V02…V2** | Red, not padlockable | Yellow 45 x 45 | Ø22.5 | **KCC1LZ** |
| | | | 4 screws | **KCE1LZ** |
| | | Yellow 60 x 60 | Ø22.5 | **KDD1PZ** |
| | | | 4 screws | **KDF1PZ** |
| **V3 and V4** | Red, long, not padlockable | Yellow 60 x 60 | 4 screws | **KDF2PZ** |
| **V5 and V6** | Red, long, not padlockable | Yellow 90 x 90 | 4 screws | **KDF3PZ** (1) |

### Handles and front plates for switch-disconnectors

| For switch body | Operator | | | Reference |
|---|---|---|---|---|
| | Handle | Front plate | | |
| | | Dimensions | Fixing | |
| | | mm | | |
| **VN12, VN20 V02…V2** | Black, not padlockable | Black 45 x 45 | 4 screws | **KAE1BZ** |
| | | Black 60 x 60 | Ø22.5 | **KBD1PZ** |
| | | | 4 screws | **KBF1PZ** |
| **V3 and V4** | Black, not padlockable | Black 60 x 60 | 4 screws | **KBF2PZ** |
| **V5 and V6** | Black, not padlockable | Black 90 x 90 | 4 screws | **KBF3PZ** (1) |

*(1) For door mounting of 63 and 80 A switch-disconnectors, adapter plate **KZ106** must be ordered separately (see next page).*

Switch-disconnectors

Characteristics: pages B3/18 to B3/21
Dimensions: pages B3/24 and B3/25
Schemes: page B3/25

# Product references



580583.tif

*VZ8*

PB121516.eps

*VZ26*

580584.tif

*VZ29*

## Input terminal protection shrouds

| Description | For use on | Reference |
|---|---|---|
| For switch bodies (3-pole shroud) | V02…V2 | **VZ8** |
| | V3 and V4 | **VZ9** |
| | V5 and V6 | **VZ10** |
| For add-on pole modules (single-pole shroud) | VZ02…VZ2, VZ11, VZ14 | **VZ26** |
| | VZ3, VZ4, VZ12, VZ15 | **VZ27** |
| | VZ13, VZ16 | **VZ28** |
| For contact blocks with 2 auxiliary contacts | – | **VZ29** |

## Components for door interlocking

**For rear fixing switch-disconnectors mounted at the back of an enclosure, in addition to a direct operator**

| Description | For use on | Distance enc. back/door | Sold in lots of | Unit reference |
|---|---|---|---|---|
| | | mm | | |
| Shaft extensions | VN12, VN20 V02…V2 | 300…330 | 1 | **VZN17** (1) |
| | | 400…430 | 1 | **VZN30** (1) |
| | V02…V2 | 300…330 | 1 | **VZ17** |
| | | 400…430 | 1 | **VZ30** |
| | V3 and V4 | 300…320 | 1 | **VZ18** |
| | | 400…420 | 1 | **VZ31** |
| | V5 and V6 | 330…350 | 1 | **VZ18** |
| | | 430…450 | 1 | **VZ31** |
| Door interlock plates | VN12, VN20 V02…V2 | – | 5 | **KZ32** |
| | V3…V6 | – | 5 | **KZ74** |

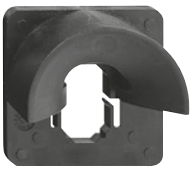
| Description | For use on | Front plate dimensions | Sold in lots of | Unit reference |
|---|---|---|---|---|
| | | mm | | |
| Plates for door mounting of handles with 4 screw fixing | VN12, VN20 V02…V2 | 45 x 45 or 60 x 60 | 5 | **KZ83** |
| | V3…V6 | 60 x 60 or 90 x 90 | 5 | **KZ81** |
| Adapter plate for switch-disconnectors | V3 and V4 | 90 x 90 | 5 | **KZ106** |

*(1) Can be used with V02 to V2 switches.*

PB121517.eps

*VZ31*

580585.tif



*KZ32*

PB121518.eps

*KZ81*

Characteristics: pages B3/18 to B3/21
Dimensions: pages B3/24 and B3/25
Schemes: page B3/25

# Product references

PB121519.eps

*KZ15*

PB121520.eps

*KZ67*

PB121521.eps

*Z01*

## Accessories for operators

| Description | For use on | Front plate dimensions | Sold in lots of | Unit reference |
|---|---|---|---|---|
| | | mm | | |
| Legend holder with silver coloured blank legend plate | Front plate | 45 x 45 | 5 | **KZ13** |
| | | 60 x 60 | 5 | **KZ15** |
| | | 90 x 90 | 5 | **KZ103** |
| Legend holders without legend plate | Front plate | 45 x 45 | 20 | **KZ14** |
| | | 60 x 60 | 10 | **KZ16** |
| | | 90 x 90 | 5 | **KZ101** |
| Silver coloured blank legend plates for engraving by customer | KZ16 | – | 10 | **KZ77** |
| Seals | VN12, VN20 | 45 x 45 | 5 | **KZ65** |
| | V02…V2 | 60 x 60 | 5 | **KZ66** |
| | V3 and V4 | 60 x 60 | 5 | **KZ62** |
| | V3…V6 | 90 x 90 | 5 | **KZ67** |
| Tightening tool | For operators with Ø22.5 fixing | – | 5 | **Z01** |

Switch-disconnectors

Characteristics:
pages B3/18 to B3/21

Dimensions:
pages B3/24 and B3/25

Schemes:
page B3/25

# Product references



| | | |
|---|---|---|
| KAD1PZ | VBF4GE | VCFN20GE |
| KAD1XZ | VBF5 | VCFN25GE |
| KAE1BZ | VBF5GEN | VCFN32GE |
| KAF1PZ | VBF6 | VCFN40GE |
| KAF2PZ | VBF6GEN | VCFXGE1 |
| KAF2XZ | VBFXGE1 | VCFXGE2 |
| KAF3PZ | VBFXGE2 | VCFXGE4 |
| KBD1PZ | VBFXGE4 | VCFXGE6 |
| KBF1PZ | VBFXGE6 | VGP1 |
| KBF2PZ | VC1GUN | VGPCLIP1 |
| KBF3PZ | VC2GUN | VN12 |
| KCC1LZ | VC3GUN | VN20 |
| KCC1YZ | VC4GUN | VVD0 |
| KCD1PZ | VC5GUN | VVD1 |
| KCD1YZ | VC6GUN | VVD2 |
| KCE1LZ | VCCD0 | VVD3 |
| KCE1YZ | VCCD01 | VVD4 |
| KCF1PZ | VCCD02 | VVE0 |
| KCF1YZ | VCCD1 | VVE1 |
| KCF2PZ | VCCD2 | VVE2 |
| KCF2YZ | VCCDN12 | VVE3 |
| KCF3PZ | VCCDN20 | VVE4 |
| KCG2YZ | VCCF0 | VZ0 |
| KDD1PZ | VCCF01 | VZ01 |
| KDF1PZ | VCCF02 | VZ02 |
| KDF2PZ | VCCF1 | VZ1 |
| KDF3PZ | VCCF2 | VZ10 |
| KZ32 | VCCF3 | VZ11 |
| KZ74 | VCCF4 | VZ12 |
| KZ80 | VCCF5 | VZ13 |
| KZ81 | VCCF6 | VZ14 |
| KZ82 | VCD0 | VZ15 |
| KZ83 | VCD01 | VZ16 |
| V0 | VCD02 | VZ17 |
| V01 | VCD1 | VZ17L127 |
| V02 | VCD2 | VZ17L69 |
| V1 | VCDN12 | VZ18 |
| V2 | VCDN20 | VZ2 |
| V3 | VCF0 | VZ20 |
| V4 | VCF01 | VZ26 |
| V5 | VCF01GE | VZ27 |
| V6 | VCF01GEGP | VZ28 |
| VBD0 | VCF02 | VZ29 |
| VBD01 | VCF02GE | VZ3 |
| VBD02 | VCF02GEGP | VZ30 |
| VBD1 | VCF0GE | VZ31 |
| VBD2 | VCF0GEGP | VZ4 |
| VBDN12 | VCF1 | VZ45 |
| VBDN20 | VCF1GE | VZ7 |
| VBF0 | VCF1GEGP | VZ8 |
| VBF01 | VCF1YZ | VZ9 |
| VBF01GE | VCF2 | VZN05 |
| VBF02 | VCF2GE | VZN06 |
| VBF02GE | VCF3 | VZN08 |
| VBF0GE | VCF3GE | VZN11 |
| VBF1 | VCF4 | VZN12 |
| VBF1GE | VCF4GE | VZN14 |
| VBF2 | VCF5 | VZN17 |
| VBF2GE | VCF5GEN | VZN19 |
| VBF3 | VCF6 | VZN20 |
| VBF3GE | VCF6GEN | VZN26 |
| VBF4 | VCFN12GE | VZN30 |

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

Contents

Characteristics ..... B3/18 to B3/21
Switch-disconnectors for standard applications:
> Dimensions ..... B3/22 to B3/23
> Schemes ..... B3/23
Switch-disconnectors for high performance applications:
> Dimensions ..... B3/24 to B3/25
> Schemes ..... B3/25

## Characteristics

### Environment

| Switch type (bare type) | | | VN12 VZN12 | V02 VZ02 | VN20 VZN20 | V01 VZ01 | V0 VZ0 | VVD0 VVE0 | V1 VZ1 | VVD1 VVE1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-3 and UL/CSA 60947-4-1 | | | | | | | |
| Product certifications | | | UL, CSA, UKCA | UL, CSA, DNV-GL, CCC, IEC, UKCA | UL, CSA, UKCA | UL, CSA, DNV-GL, IEC, EAC, CCC (1), UKCA | | | | |
| Degree of protection with protection shroud | | | IP 20 conforming to IEC 60529 | | | | | | | |
| Ambient air temperature | | **° C** | -20…+50 | | | | | | | |
| Flame resistance | | **° C** | 960 conforming to IEC 60695-2-11 | | | | | | | |
| Shock resistance 1/2 sine wave = 11ms conforming to IEC60068-2-27 | | **gn** | 15 | 30 | 15 | 30 | | | | |
| Vibration resistance 10…150 Hz conforming to IEC 60068-2-6 | | **gn** | 5 | 1 | | | | | | |

### Electrical characteristics, a.c. operation

| Switch type (bare type) | | | | VN12 VZN12 | V02 VZ02 | VN20 VZN20 | V01 VZ01 | V0 VZ0 | VVD0 VVE0 | V1 VZ1 | VVD1 VVE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated operational voltage (Ue) | | | **V** | 690 | | | | | | | |
| Rated impulse withstand voltage (Uimp) | | | **kV** | 6 | 8 | 6 | 8 | | | | |
| Conventional thermal currents in free air (Ith) and rated uninterrupted (Iu) | | | **A** | 12 | | 20 | | 25 | | 32 | |
| Conventional thermal current in enclosure (Ithe) | | | **A** | 10 | | 16 | | 20 | | 25 | |
| Power dissipation per pole for the above operational currents | AC-23A | | **W** | – | | | | 1.25 | | 2 | |
| | AC-21A | | **W** | – | | | | 3.2 | | 5 | |
| Rated operational power and current | AC-21A/22A | 230…690 V | **A** | 12 | | 20 | | 25 | | 32 | |
| | AC-23A | 230 V | **A/kW** | 10.6/3 | | 14/4 | | 19.7/5.5 | | | |
| | | 240 V | **A/kW** | 10.6/3 | | 14/4 | | 19.9/5.5 | | 18.9/5.5 | |
| | | 400 V | **A/kW** | 8.1/4 | | 11/5.5 | | 14.5/7.5 | | 21.8/11 | |
| | | 415 V | **A/kW** | 8.1/4 | | 11/5.5 | | 14/7.5 | | 21/11 | |
| | | 500 V | **A/kW** | 8.9/5.5 | | 11.9/7.5 | | 16.7/11 | | | |
| | | 690 V | **A/kW** | 8.6/7.5 | | 12.3/11 | | 17.5/15 | | | |
| Rated operational power | AC -3 | 230/240 V | **kW** | 1.5 | | 3 | | 4 | | | |
| | | 400/415 V | **kW** | 3 | | 4 | | 5.5 | | 7.5 | |
| | | 500 V | **kW** | 4 | | 5.5 | | 7.5 | | | |
| | | 690 V | **kW** | 4 | 5.5 | | 7.5 | 11 | | | |
| Intermittent duty class | | | | 30 | | | | | | | |
| Characteristics in normal operating conditions | Rated making capacity AC-21A/22A/23A (I rms) | | **A/** 400 V | 120 | | 200 | | 250 | | 320 | |
| | Rated breaking capacity AC-21A/22A/23A (I rms) | | **A/** 400 V | 120 | | 200 | | | | 250 | |
| Short-circuit characteristics | Permissible rms short time rating (Icw) | | **A/** 400V/1s | 140 | 300 | 140 | 300 | | | 384 | |
| | Rated making capacity under short-circuit conditions (Icm) I peak | | **kA/** 400 V | 0.5 | 1 | 0.5 | 1 | | | | |
| | Rated conditional short-circuit current (I rms) with aM/gG fuses | | **kA/** 400 V | 6 | 10 | 6 | 10 | | | | |
| | | | **A** | 12 | | 20 | | 25 | | 35 | |

*(1) CCC: except for VVD, VVE switches.*

References: page B3/3
Dimensions: page B3/22
Schemes: page B3/23

| V2<br>VZ2 | VVD2<br>VVE2 | V3<br>VZ3 | VVD3<br>VVE3 | V4<br>VZ4 | VVD4<br>VVE4 | V5 | V6 | VZ7<br>VZ20 | VZN05<br>VZN06 |
|---|---|---|---|---|---|---|---|---|---|
| IEC/EN 60947-3 and UL/CSA 60947-4-1 | | | | | | | | IEC/EN 60947-5-1, UL/CSA 60947-5-1 | |
| UL, CSA, DNV-GL, IEC, EAC, CCC [1], UKCA | | | | | | | | | |
| IP 20 conforming to IEC 60529 | | | | | | | | | |
| -20…+50 | | | | | | | | | |
| 960 conforming to IEC 60695-2-11 | | | | | | | | | |
| 30 | | | | | | | | – | |
| 1 | | | | | | | | – | |

| V2<br>VZ2 | VVD2<br>VVE2 | V3<br>VZ3 | VVD3<br>VVE3 | V4<br>VZ4 | VVD4<br>VVE4 | V5 | V6 | VZ7<br>VZ20 | VZN05<br>VZN06 |
|---|---|---|---|---|---|---|---|---|---|
| 690 | | | | | | | | | |
| 8 | | | | | | | | | 6 |
| 40 | | 63 | | 80 | | 125 | 175 | 12 | 12 |
| 32 | | 50 | | 63 | | 100 | 140 | 10 | 10 |
| 2.4 | | 4.2 | | 5.1 | | 7.5 | 11 | – | |
| 5.4 | | 6.4 | | 12.5 | | 15 | 25 | – | |
| 40 | | 63 | | 80 | | 125 | 160 | Ie/AC-15 | |
| 25.8/7.5 | | 50.3/15 | | 61.2/18.5 | | 71.9/22 | 96.6/30 | 6 A | |
| 24.8/7.5 | | 48.2/15 | | 58.5/18.5 | | 68/22 | 92.7/30 | 6 A | |
| 29/15 | | 41.5/22 | | 57/30 | | 68.5/37 | 83/45 | 4 A | |
| 28/15 | | 40/22 | | 55/30 | | 66/37 | 80/45 | 4 A | |
| 28.5/18.5 | | 44/30 | | 54/37 | | 64.5/45 | 79/55 | 2 A | |
| 17.5/15 | | 25/22 | | 33/30 | | 42/37 | 49/45 | 1 A | |
| 5.5 | | 11 | | 15 | | 22 | 30 | – | |
| 11 | | 18.5 | | 22 | | 30 | 37 | – | |
| 15 | | 22 | | 30 | | 37 | 45 | – | |
| 11 | | 18.5 | | | | 30 | 37 | – | |
| 30 | | | | | | | | – | |
| 400 | | 630 | | 800 | | 1250 | 1750 | – | |
| 320 | | 500 | | 640 | | 1000 | 1400 | – | |
| 480 | | 756 | | 960 | | 1500 | 2100 | – | |
| 1 | | 2.1 | | | | 2.8 | | – | |
| 10 | | | | | | | | 1 | |
| 50 | | 63 | | 80 | | 125 | 200 | 16 | 16 |

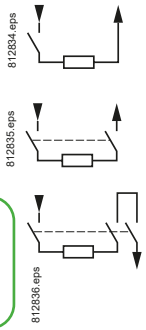
*(1) CCC: except for VVD, VVE switches.*

References: page B3/3
Dimensions: page B3/22
Schemes: page B3/23

## Characteristics

### Electrical characteristics, d.c. operation

| Switch type (bare type) | | | | VN12 VZN12 | V02 VZ02 | VN20 VZN20 | V01 VZ01 | V0 VZ0 | VVD0 VVE0 | V1 VZ1 | VVD1 VVE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated operational current DC-1 (L/R = 1ms) | 24 V | 1 contact | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 2 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 48 V | 1 contact | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 2 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 60 V | 1 contact | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 2 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 110 V | 1 contact | **A** | 1.5 | | 2 | | 9 | | 10 | |
| | | 2 contacts | **A** | 8 | | 10 | | 12 | | 16 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 220 V | 1 contact | **A** | 1.5 | | 2 | | 2.5 | | 3 | |
| | | 2 contacts | **A** | 7 | | 8 | | 10 | | 12 | |
| | | 3 contacts | **A** | 10 | | 14 | | 16 | | 20 | |
| | 250 V | 1 contact | **A** | 0.6 | | 0.7 | | 0.8 | | 1 | |
| | | 2 contacts | **A** | 3 | | 4 | | 6 | | 8 | |
| | | 3 contacts | **A** | 8 | | 10 | | 12 | | 16 | |
| Rated operational current DC-2 to DC-5 (L/R ≤ 15ms) | 24 V | 1 contact | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 2 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 48 V | 1 contact | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 2 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 60 V | 1 contact | **A** | 10 | | 14 | | 16 | | 20 | |
| | | 2 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 110 V | 1 contact | **A** | 1.5 | | 2 | | 2.5 | | 3 | |
| | | 2 contacts | **A** | 3 | | 4 | | 5 | | 6 | |
| | | 3 contacts | **A** | 12 | | 20 | | 25 | | 32 | |
| | 220 V | 1 contact | **A** | 0.4 | | 0.5 | | 0.5 | | 0.8 | |
| | | 2 contacts | **A** | 1.4 | | 1.5 | | 1.5 | | 2 | |
| | | 3 contacts | **A** | 1 | | 2 | | 3 | | 4 | |
| | 250 V | 1 contact | **A** | 0.3 | | 0.4 | | 0.5 | | 0.8 | |
| | | 2 contacts | **A** | 0.4 | | 0.6 | | 0.8 | | 1 | |
| | | 3 contacts | **A** | 1.2 | | 2.4 | | 1.6 | | 2 | |




### Other characteristics

| Switch type (bare type) | | | VN12 VZN12 | V02 VZ02 | VN20 VZN20 | V01 VZ01 | V0 VZ0 | VVD0 VVE0 | V1 VZ1 | VVD1 VVE1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Mechanical durability (millions of operating cycles) | | | 0.05 | 0.1 | 0.05 | 0.1 | | | | |
| Electrical durability in cat. AC-21 (millions of operating cycles) | | | 0.05 | 0.1 | 0.05 | 0.1 | | | | |
| Electrical durability in cat. DC-1 to 5 (operating cycles) | | | 30000 | | | | | | | |
| Suitable for isolation | | | Yes | | | | | | | |
| Cabling | Flexible cable + cable end | **mm²** | 4 | 6 | 4 | 6 | | | | |
| | Solid cable | **mm²** | 4 | 10 | 4 | 10 | | | | |
| Tightening torque | | **N.m** | 0.7 | 2.1 | 0.7 | 2.1 | | | | |

References: page B3/3
Dimensions: page B3/22
Schemes: page B3/23

| V2<br>VZ2 | VVD2<br>VVE2 | V3<br>VZ3 | VVD3<br>VVE3 | V4<br>VZ4 | VVD4<br>VVE4 | V5 | V6 | VZ7<br>VZ20 | VZN05<br>VZN06 |
|---|---|---|---|---|---|---|---|---|---|
| 40 | | 63 | | 80 | | 125 | 175 | 8 (Ie/DC-1) | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | 8 (Ie/DC-1) | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 35 | | 40 | | 50 | | 60 | 70 | 4 (Ie/DC-1) | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 12 | | 20 | | 25 | | 30 | 37 | 2 (Ie/DC-1) | |
| 20 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 4 | | 6 | | 8 | | 12 | 15 | 1 (Ie/DC-1) | |
| 14 | | 25 | | 30 | | 40 | 50 | – | |
| 25 | | 30 | | 40 | | 80 | 100 | – | |
| 2 | | 4 | | 5 | | 3 | 10 | 0.8 (Ie/DC-1) | |
| 12 | | 20 | | 25 | | 30 | 40 | – | |
| 20 | | 30 | | 40 | | 50 | 61 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 25 | | 40 | | 50 | | 60 | 70 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 40 | | 63 | | 80 | | 125 | 175 | – | |
| 5 | | 6 | | 8 | | 10 | 12 | – | |
| 8 | | 10 | | 20 | | 22 | 24 | – | |
| 40 | | 50 | | 63 | | 70 | 80 | – | |
| 1 | | 1.5 | | 2 | | 2.2 | 2.4 | – | |
| 3 | | 4 | | 6 | | 7 | 8 | – | |
| 7 | | 10 | | 15 | | 16 | 13 | – | |
| 1 | | 1.2 | | 1.5 | | 1.6 | 1.8 | – | |
| 2 | | 3 | | 6 | | 7 | 8 | – | |
| 6 | | 8 | | 10 | | 12 | 14 | – | |

| V2<br>VZ2 | VVD2<br>VVE2 | V3<br>VZ3 | VVD3<br>VVE3 | V4<br>VZ4 | VVD4<br>VVE4 | V5 | V6 | VZ7<br>VZ20 | VZN05<br>VZN06 |
|---|---|---|---|---|---|---|---|---|---|
| 0.1 | | 0.03 | | | | | | 0.1 | 0.05 |
| 0.1 | | 0.03 | | | | | | 0.1 (AC-15) | 0.05 |
| 30000 | | | | | | | | 30000 (DC-1) | |
| Yes | | | | | | | | – | |
| 6 | | 16 | | | | 70 | | 2 x 0.75…1.5 | |
| 10 | | 25 | | | | 95 | | 2 x 1…2.5 | |
| 2.1 | | 4 | | | | 22.6 | | 0.7 | |

References:
page B3/3

Dimensions:
page B3/22

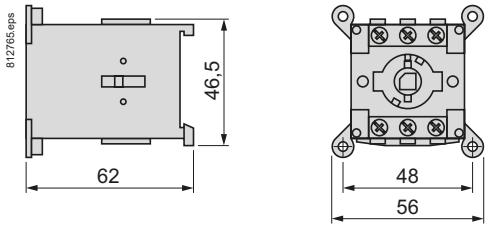
Schemes:
page B3/23

# Dimensions, mounting

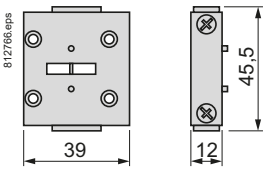
## Dimensions

### Switch-disconnectors

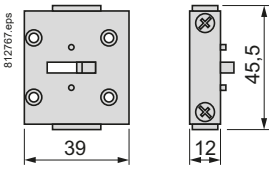
**Switch bodies VN12, VN20**




**Add-on modules VZN12, VZN20**



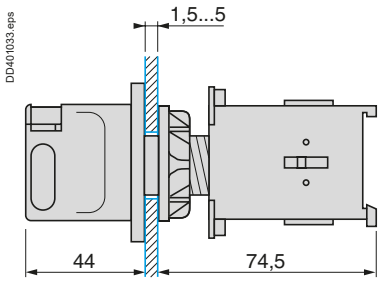

**Add-on modules VZN11, VZN14 VZN05 and VZN06**

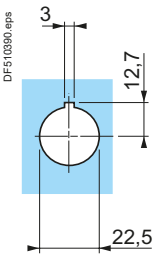



## Mounting

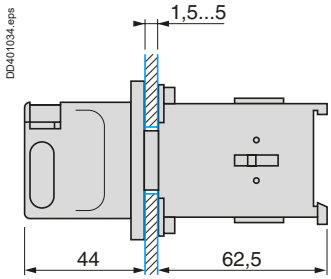
### Switch-disconnector mounted on enclosure door

**VCDN12, VCDN20, VBDN12, VBDN20**
**Single hole fixing**

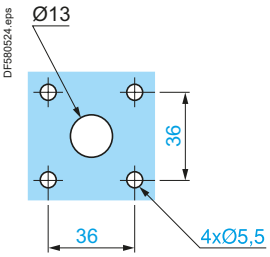


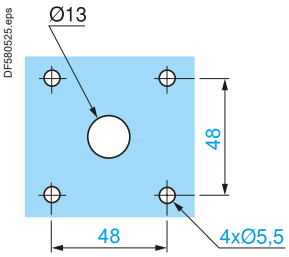

**VN12, VN20**
**4 screw fixing**




**45 x 45 front plate**




**60 x 60 front plate**




References:
pages B3/2 to B3/5

Characteristics:
pages B3/18 to B3/21

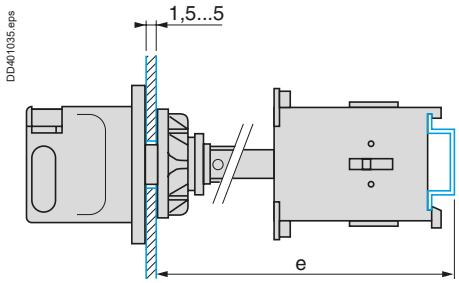
Schemes:
page B3/23

## Mounting (continued)

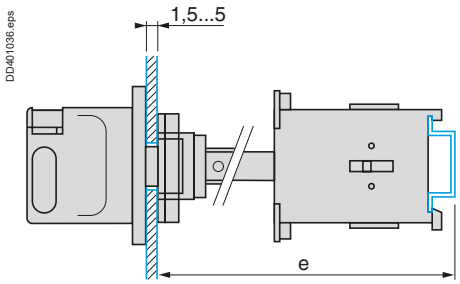
**Switch-disconnector mounted at back of enclosure with shaft extension VZN17 or VZN30 (clip-on mounting on ⊔ rail)**

**VN12, VN20**

**Single hole fixing**



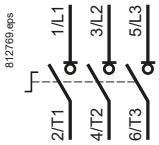

**4 screw fixing**




| | Shaft extension | Distance (e) enclosure back/door |
|---|---|---|
| | | mm |
| **VN12, VN20** | VZN17 | 300…330 |
| | VZN30 | 400…430 |

## Schemes

**Switch body VN12, VN20**




**Main pole module VZN12, VZN20**

**Neutral pole module VZN11**

**Auxiliary contact blocks**

**VZN05**

**VZN06**

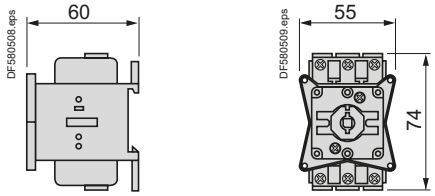
References:
pages B3/2 to B3/5

Characteristics:
pages B3/18 to B3/21

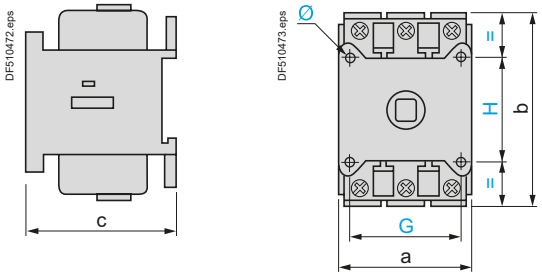
## Dimensions

### Switch-disconnectors

#### Switch bodies V0●, V0 to V2

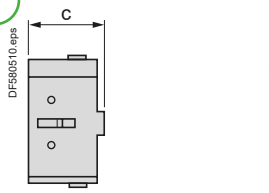



#### Switch bodies V3 to V6

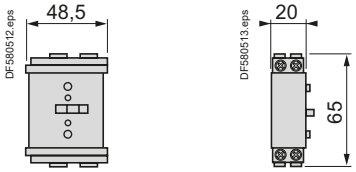



| | a | b | c | G | H | Ø |
|---|---|---|---|---|---|---|
| **V3, V4** | 60 | 83 | 65 | 48 | 48 | 3 |
| **V5, V6** | 90 | 125 | 90 | 68 | 68 | 4.5 |

#### Add-on modules VZ02 to VZ4 and VZ11 to VZ16




#### Add-on modules VZ7, VZ20

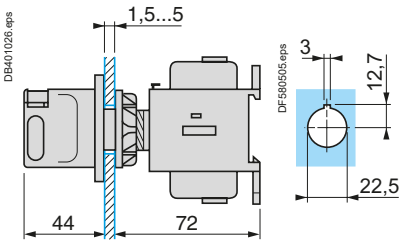



| | a | b | c |
|---|---|---|---|
| **VZ02 and VZ01, VZ0 to VZ2, VZ11, VZ14** | 16 | 74 | 35 |
| **VZ3, VZ4, VZ12, VZ15** | 20 | 83 | 46 |
| **VZ13, VZ16** | 30 | 125 | 63 |

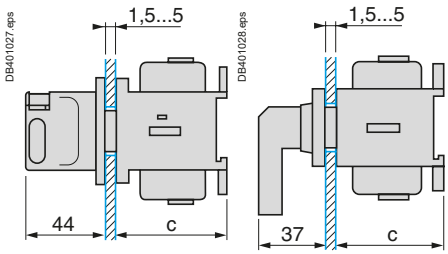
## Mounting

### Switch-disconnector mounted on enclosure door

#### Single hole fixing V0●, V0 to V2

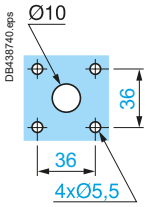



#### 4 screw fixing V0●, V0 to V4

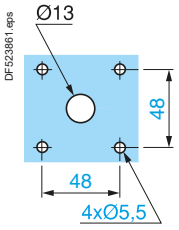



| | c |
|---|---|
| **V0●, V0 to V2** | 60 |
| **V3, V4** | 65 |

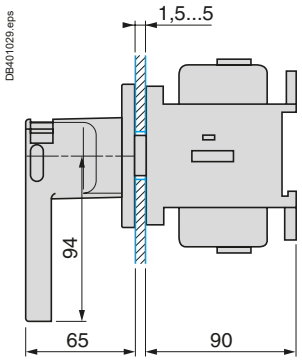
#### 4 screw fixing 45 x 45 front plate V0●, V0 to V2



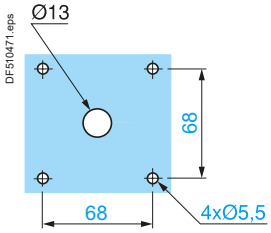

#### 4 screw fixing 60 x 60 front plate V0●, V0 to V4




#### V5 and V6. 4 screw fixing




#### 90 x 90 front plate

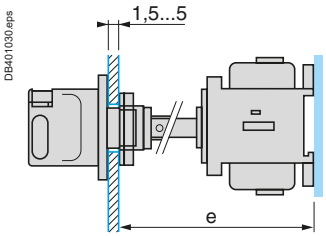



References:
pages B3/6 to B3/9
Characteristics:
pages B3/18 to B3/21
Schemes:
page B3/25

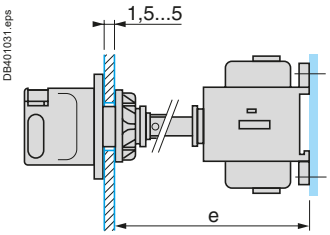
## Mounting (continued)

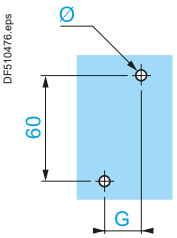
### Switch-disconnector mounted at back of enclosure

**4 screw fixing**
**V0●, V0 to V2 with shaft extension VZ17 or VZ30 (clip-on mounting on ⊔ rail possible for V0● to V2)**

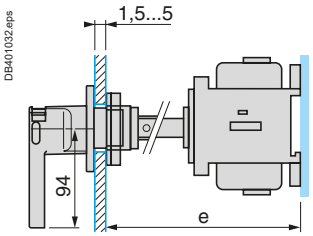


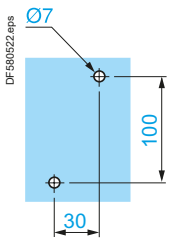

**Single hole fixing**
**V3 to V4 with shaft extension VZ18 or VZ31**




**V5 and V6 with shaft extension VZ18 or VZ31**



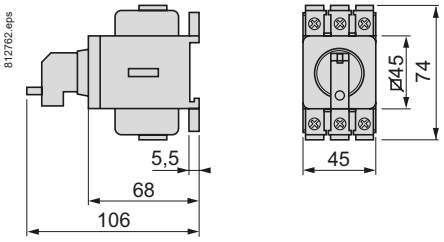




| | Shaft extension | Distance (e) enc.back/door | Ø | G |
|---|---|---|---|---|
| | | mm | | |
| **V02 and V01 V0 to V2** | VZ17 | 300…330 | 2 x 4.2 | 15 |
| | VZ30 | 400…430 | 2 x 4.2 | 15 |
| **V3 and V4** | VZ18 | 300…320 | 2 x 5 | 20 |
| | VZ31 | 400…420 | 2 x 5 | 20 |

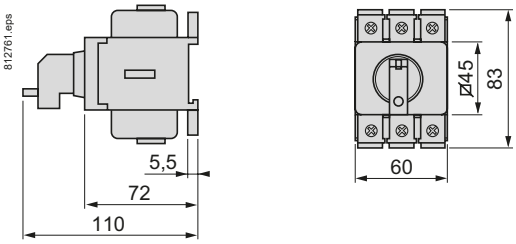
| | Shaft extension | Distance (e) enc. back/door |
|---|---|---|
| | | mm |
| **V5 and V6** | VZ18 | 300…350 |
| | **VZ31** | 430…450 |

### Switch-disconnectors for modular distribution boards

**VV●0 to VV●2**



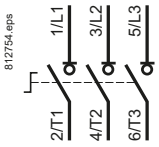

**VV●3 to VV●4**




## Schemes

### Switch body

**V02 and V01**
**V0 to V6**




### Main pole module

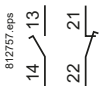
**VZ02 and VZ01**
**VZ0 to VZ4**

### Neutral pole module

**VZ11 to VZ13**

### Auxiliary contact blocks

**VZ7**




**VZ20**

References:
pages B3/6 to B3/9

Characteristics:
pages B3/18 to B3/21

# TeSys Power
# Fuse carriers



## Fuse carriers


| Type of product | Range | | Pages |
|---|---|---|---|
| **Introduction** | | | B4/2 |
| For protection of control circuits or transformer | Up to 25, 32, 50 or 125 A | | B4/3 |
| For protection of control circuits or transformer<br>For North American market | Up to 30 A | | B4/5 |
| For protection of motors or transformers | Up to 25, 32 A | | B4/6 |

Technical Data for Designers B4/11

## Operation: safety

The fuse carrier performs two basic functions:
- it isolates the downstream circuit by means of a visible break and wide opening contacts,
- it holds the cartridge fuses designed to protect the installation against short-circuits.

The type of cartridge fuse needed to protect the circuit must be determined before selecting the fuse carrier.

## Cartridge fuse selection (type, rating, size)

### Type

| | |
|---|---|
| **Application** | ■ Motor protection.<br>■ Transformer protection. |
| **Solution** | ■ **aM type** fuses. These fuses are designed to withstand high current peaks of a very short duration. They must be combined with a thermal overload relay coupled with a contactor. |
| **Application** | ■ Lighting circuit protection.<br>■ Supply line protection.<br>■ Furnace protection. |
| **Solution** | ■ **gG** type fuses, which are more widely used but whose limiting capacity is weaker than that of **aM** type fuses. |

### Rating

**gG fuses**
**aM fuses**

See standard NF C 15-100.
Table 53 A paragraph 532-2-1 and table 52 C paragraph 523-1.

| Motors 3 x 220 V | | Motors 3 x 400 V | | Cartridge fuses type aM | | Fuse carrier |
|---|---|---|---|---|---|---|
| P | in | P | in | Size | Rating | |
| kW | A | kW | A | | A | |
| 9 | 32 | 15 | 28.5 | 10 x 38 | 32 | **LS1D32** |

### Size

Use the “fuse characteristics” table opposite to select the correct fuse size according to:
- the nominal current of the circuit to be protected,
- the operational voltage.

## Fuse carrier selection

| | |
|---|---|
| **Application** | **Isolation** of a circuit for safety reasons only. |
| **Solution** | The fuse carrier may be fitted with links.<br>The maximum permissible current is indicated in the “pole characteristics” table opposite. |
| **Application** | **Isolation** of a circuit and its **protection** against short-circuits. |
| **Solution** | Select a fuse carrier according to:<br>■ the type of cartridge fuse required,<br>■ the maximum permissible current in the fuse carrier poles (see “pole characteristics” table opposite). If the operational current is greater than the maximum permissible current in the poles of the fuse carrier corresponding to the cartridge fuse size selected, select the fuse carrier the next size up.<br>The **safety** provided by using a fuse carrier can be increased by adding a padlocking device with up to three padlocks. |

## Recommendations for use

The fuse carrier conforms to utilisation category AC-21A/22A of standard IEC 60947-3. It is therefore recommended that the fuse carrier early break auxiliary contacts always be inserted in the coil circuit of the contactor with which it is in series. If the fuse carrier is not associated with a contactor, it is essential to ensure that it will be operated off-load.

Fuse carriers
Ref.

# Product references - DF type

*DF101*

*DF103*

*DF141*

*DF143NC*

*DF221*

*DF223NC*

*DF101NV*

*DF103V*

*DF141NV*

*DF143VC*

*DF221NV*

*DF223VC*

## For protection of control circuits or transformers

### Fuse carriers (1)

| Conventional thermal current (Ith) | Size of cartridge fuse or link | Composition | Sold in lots of | Unit reference |
|---|---|---|---|---|
| A | mm | | | |
| **25** | 8.5 x 32 | 1 P | 12 | **DF81** |
| | | N | 12 | **DF10N** |
| | | 1 P + N (2) | 6 | **DF81N** |
| | | 2 P | 6 | **DF82** |
| | | 3 P | 4 | **DF83** |
| | | 3 P + N (2) | 3 | **DF83N** |
| **32** | 10 x 38 | 1 P | 12 | **DF101** |
| | | N | 12 | **DF10N** |
| | | 1 P + N (2) | 6 | **DF101N** |
| | | 2 P | 6 | **DF102** |
| | | 3 P | 4 | **DF103** |
| | | 3 P + N (2) | 3 | **DF103N** |
| **50** | 14 x 51 | 1 P | 6 | **DF141** |
| | | N | 6 | **DF14N** |
| | | 1 P + N (2) | 3 | **DF141N** |
| | | 2 P | 3 | **DF142** |
| | | 3 P | 2 | **DF143C** (3) |
| | | 3 P + N (2) | 1 | **DF143NC** (3) |
| **125** | 22 x 58 | 1 P | 6 | **DF221** |
| | | N | 6 | **DF22N** |
| | | 1 P + N (2) | 3 | **DF221N** |
| | | 2 P | 3 | **DF222** |
| | | 3 P | 2 | **DF223C** (3) |
| | | 3 P + N (2) | 1 | **DF223NC** (3) |

### Fuse carriers with "blown fuse" indicators (LED) (1) (4)

| Conventional thermal current (Ith) | Size of cartridge fuse or link | Composition | Sold in lots of | Unit reference |
|---|---|---|---|---|
| A | mm | | | |
| **25** | 8.5 x 32 | 1 P | 12 | **DF81V** |
| | | 1 P + N (2) | 6 | **DF81NV** |
| | | 2 P | 6 | **DF82V** |
| | | 3 P | 4 | **DF83V** |
| | | 3 P + N (2) | 3 | **DF83NV** |
| **32** | 10 x 38 | 1 P | 12 | **DF101V** |
| | | 1 P + N (2) | 6 | **DF101NV** |
| | | 2 P | 6 | **DF102V** |
| | | 3 P | 4 | **DF103V** |
| | | 3 P + N (2) | 3 | **DF103NV** |
| **50** | 14 x 51 | 1 P | 6 | **DF141V** |
| | | 1 P + N (2) | 3 | **DF141NV** |
| | | 2 P | 3 | **DF142V** |
| | | 3 P | 2 | **DF143VC** (3) |
| | | 3 P + N (2) | 1 | **DF143NVC** (3) |
| **125** | 22 x 58 | 1 P | 6 | **DF221V** |
| | | 1 P + N (2) | 3 | **DF221NV** |
| | | 2 P | 3 | **DF222V** |
| | | 3 P | 2 | **DF223VC** (3) |
| | | 3 P + N (2) | 1 | **DF223NVC** (3) |

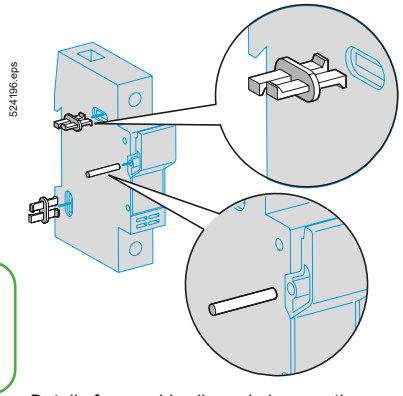
*(1) Each pole can be marked. A clip-in marker holder is provided for this purpose. Clip-in markers type AB1R● or AB1G● can also be used. DF8●●● and DF10●●● are pad lockable fuse carriers.*
*(2) N: neutral pole fitted with a locked tubular link as standard.*
*(3) A letter "C" in the reference indicates that the fuse carrier can be fitted with auxiliary early break, "blown fuse" signalling and "fuse present" signalling contacts.*
*(4) Operational voltage of the blown fuse indicator: 110 V...690 V.*

Introduction: page B4/2
Characteristics: page B4/12
Dimensions: page B4/13
Schemes: page B4/13

# Product references - DF type

*DF14AM●*

*DF14AP*




*Detail of assembly clip and pin mounting*

## Accessories

### Auxiliary early break and "blown fuse" signalling contacts (1)

| Fuse carriers to be equipped | Size of cartridge fuse or link | Number of contacts | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **DF14** (3 P or 3 P + N) | 14 x 51 | 1 | 1 | **DF14AM1** |
| | | 2 | 1 | **DF14AM2** |
| **DF22** (3 P or 3 P + N) | 22 X 58 | 1 | 1 | **DF22AM1** |
| | | 2 | 1 | **DF22AM2** |

### Fuse carrier assembly kits (2)

| Fuse carriers to be assembled | Size of cartridge fuse or link | Composition | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **DF8** | 8.5 x 32 | 1 pin, 2 clips | 12 | **DF10AP** |
| **DF10** | 10 x 38 | | | |
| **DF14** | 14 x 51 | 1 pin, 3 clips | 10 | **DF14AP** |
| **DF22** | 22 x 58 | 1 pin, 3 clips | 10 | **DF22AP** |

### Marking accessories

| Description | Composition | Marking | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **Clip-in markers** | Strip of 10 identical numbers or letters | 0…9 | 25 | **AB1R●** (3) |
| | | A…Z | 25 | **AB1G●** (3) |

## Substitution

### Fuse carriers

| Old range | | | New range | |
|---|---|---|---|---|
| Reference | Size of cartridge fuse or link | Composition | Reference w/o indicator | Reference with indicator |
| DF6AB08 | 8.5 x 32 | 1 P | **DF81** | **DF81V** |
| DF6AB10 | 10 x 38 | 1 P | **DF101** | **DF101V** |
| DF6N10 | 8.5 x 32 or 10 x 38 | 1 N | **DF10N** | **–** |
| GK1CC | 8.5 x 32 | 1 P + N | **DF81N** | **DF81NV** |
| GK1CD | 8.5 x 32 | 2 P | **DF82** | **DF82V** |
| GK1CF | 8.5 x 32 | 3 P | **DF83** | **DF83V** |
| GK1CH | 8.5 x 32 | 3 P + N | **DF83N** | **DF83NV** |
| GK1DC | 10 x 38 | 1 P + N | **DF101N** | **DF101NV** |
| GK1DD | 10 x 38 | 2 P | **DF102** | **DF102V** |
| GK1DF | 10 x 38 | 3 P | **DF103** | **DF103V** |
| GK1DH | 10 x 38 | 3 P + N | **DF103N** | **DF103NV** |
| GK1EB | 14 x 51 | 1 P | **DF141** | **DF141V** |
| GK1EN | 14 x 51 | 1 N | **DF14N** | **–** |
| GK1EC | 14 x 51 | 1 P + N | **DF141N** | **DF141NV** |
| GK1ED | 14 x 51 | 2 P | **DF142** | **DF142V** |
| GK1EF | 14 x 51 | 3 P | **DF143C** | **DF143VC** |
| GK1EH | 14 x 51 | 3 P + N | **DF143NC** | **DF143NVC** |
| GK1FB | 22 x 58 | 1 P | **DF221** | **DF221V** |
| GK1FN | 22 x 58 | 1 N | **DF22N** | **–** |
| GK1FC | 22 x 58 | 1 P + N | **DF221N** | **DF221NV** |
| GK1FD | 22 x 58 | 2 P | **DF222** | **DF222V** |
| GK1FF | 22 x 58 | 3 P | **DF223C** | **DF223VC** |
| GK1FH | 22 x 58 | 3 P + N | **DF223NC** | **DF223NVC** |

### Fuse carrier assembly kits

| Old range | | New range |
|---|---|---|
| Reference | Size of cartridge fuse or link | Reference |
| GK1AP2 | 8.5 x 32 or 10 x 38 | **DF10AP** |
| GK1AP3 | 8.5 x 32 or 10 x 38 | **DF10AP** |
| | 14 x 51 | **DF14AP** |
| GK1AP4 | 8.5 x 32 or 10 x 38 | **DF10AP** |
| | 22 x 58 | **DF22AP** |
| GK1AP5 | 14 x 51 | **DF14AP** |
| GK1AP6 | 14 x 51 | **DF14AP** |
| | 22 x 58 | **DF22AP** |
| GK1AP9 | 22 x 58 | **DF22AP** |

*(1) These auxiliary contacts provide the following functions: early break, "blown fuse" signalling (if the fuse carrier is fitted with striker fuses) and "fuse present" signalling.*
*(2) 1 pin and 2 clips are required to assemble two DF8 or DF10 fuse carriers together. 1 pin and 3 clips are required to assemble two DF14 or DF22 fuse carriers together.*
*(3) When ordering, replace the ● in the reference with the number or letter required. Example: **AB1R1** or **AB1GA**.*

Introduction: page B4/2
Characteristics: page B4/12
Dimensions: page B4/13
Schemes: page B4/13



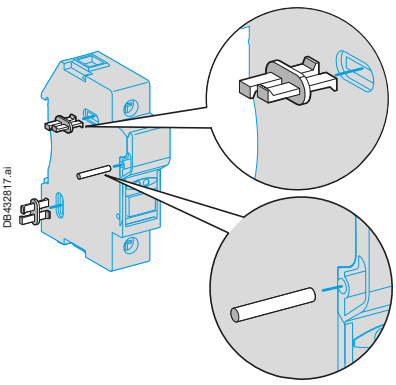
Life Is On Schneider Electric

## For protection of control circuits or transformers

### References

*DFCC1*

*DFCC3V*




*Detail of assembly clip and pin mounting*

**Fuse carriers** (1)

| Conventional thermal current (Ith) | Size of cartridge fuse or link | Composition | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **A** | | | | |
| **30** | Class CC | 1 P | 12 | **DFCC1** |
| | | 2 P | 12 | **DFCC2** |
| | | 3 P | 6 | **DFCC3** |

**Fuse carriers with "blown fuse" indicators (LED)** (1) (2)

| Conventional thermal current (Ith) | Size of cartridge fuse or link | Composition | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **A** | | | | |
| **30** | Class CC | 1 P | 12 | **DFCC1V** |
| | | 2 P | 6 | **DFCC2V** |
| | | 3 P | 6 | **DFCC3V** |

**Fuse carrier assembly kits** (3)

| Fuse carriers to be assembled | Size of cartridge fuse or link | Composition | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **DFCC** | Class CC | 1 pin, 2 clips | 12 | **DF10AP** |

**Marking accessories**

| Description | Composition | Marking | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **Clip-in markers** | Strip of 10 identical numbers or letter | 0…9 | 25 | **AB1R●** (4) |
| | | A…Z | 25 | **AB1G●** (4) |

*(1) Each pole can be marked. A clip-in marker holder is provided for this purpose. Clip-in markers type AB1R● or AB1G● can also be used. DFCC fuse holders are pad lockable.*
*(2) Operational voltage of the blown fuse indicator: 230 V...690 V.*
*(3) 1 pin and 2 clips are required to assemble two DFCC fuse carriers together.*
*(4) When ordering, replace the p in the reference with the number or letter required. Example: **AB1R1** or **AB1GA**.*

# Product references - LS type

PB111831.eps

*LS1D323*

PB111830.eps

*LS1D32*

PB111830.eps

*LS1D32*

PB121303.eps

*+ LA8D324*

## For protection of motors or transformers

### 3-pole basic blocks

**Connection by spring terminals**

| Rating | Cartridge fuse size | Number of early break contacts (1) | Single-phase protection device (2) | Reference (3) | Weight kg |
|---|---|---|---|---|---|
| **25 A** | 10 x 38 | – (4) | Without | **LS1D323** | 0.270 |

**Connection by screw clamp terminals or connectors**

| | | | | | |
|---|---|---|---|---|---|
| **32 A** | 10 x 38 | – (4) | Without | **LS1D32** | 0.300 |

### 4-pole basic blocks

**Connection by screw clamp terminals or connectors**

| | | | | | |
|---|---|---|---|---|---|
| **32 A** | 10 x 38 | – (4) | Without | **LS1D32 + LA8D324** (5) | 0.300 |

### Fuse carriers for the North American market

**25 and 30 A basic blocks:** please consult your Regional Sales Office.

*(1) With 1 or 2 early break contacts to be inserted in the contactor control circuit.*
*(2) Fuse carriers with single-phase protection device must be fitted with striker fuses.*
*(3) LS1D: clips directly onto a 35 mm ⊔ rail or screw fixing.*
*(4) Addition of add-on contact block, see page B4/7.*
*(5) Can be mounted on left-hand or right-hand side of the basic block.*

# Product references - for LS type

## Add-on contact blocks

| Description | For use on | Mounting | Maximum number | Type of contacts | Sold in lots of | Unit reference |
|---|---|---|---|---|---|---|
| Instantaneous auxiliary contacts (early break contacts) | LS1D32 | Front | 1 | N/O + N/C | 10 | **GVAE11** |
| | | | | N/O + N/O | 10 | **GVAE20** |
| | LS1D323 | Front | 1 | N/O + N/C | 10 | **GVAE113** |
| | | | | N/O + N/O | 10 | **GVAE203** |

## Operators

### External handles

| | | | |
|---|---|---|---|
| 32 A | 3 or 4 | Right-hand side (IP54) | **LS1D32005** (1) |
| | | Left-hand side (IP54) | **LS1D32006** |

## Links

### Tubular links

| For fuse carrier | | Sold in lots of | Unit reference |
|---|---|---|---|
| Rating | Number of poles | | |
| 32 A | 3 or 4 | 10 | **DK1CB92** (2) |

*(1) Reference **LS1D32005** replaces reference DK1FB005.*
*(2) For use on a neutral circuit, the tubular link can be interlocked with special device **LA8D25906** (sold in lots of 10).*

## Accessories for LS1D32 (screw clamp terminals)

| Description | Application | Sold in lots of | Unit reference |
|---|---|---|---|
| Plate for mounting | LS1D32 and contactor LC1D09...D38 with front faces aligned | 1 | **LAD311** |
| Combination blocks | Between LS1D32 and contactor LC1K or LP1K | 10 | **GV2AF01** |
| | Between LS1D32 and contactor LC1D09...D38 | 10 | **GV2AF3** |
| | Between LS1D32 mounted on LAD311 and contactor LC1D09...D38 | 10 | **GV2AF4** |

| Description | Application | Pitch mm | Reference |
|---|---|---|---|
| Sets of 3-pole 63 A busbars | 2 tap-offs | 45 | **GV2G245** |
| | | 54 | **GV2G254** |
| | | 72 | **GV2G272** |
| | 3 tap-offs | 45 | **GV2G345** |
| | | 54 | **GV2G354** |
| | 4 tap-offs | 45 | **GV2G445** |
| | | 54 | **GV2G454** |
| | | 72 | **GV2G472** |
| | 5 tap-offs | 54 | **GV2G554** |

| Description | Application | Sold in lots of | Unit reference |
|---|---|---|---|
| Protective end cover | For unused busbar outlets | 5 | **GV1G10** |
| Terminal block Connection from the top | For supply to one or more GV2G busbar sets | 1 | **GV1G09** |
| Cover for terminal block | For mounting in modular panels | 10 | **LA9E07** |
| Padlocking device | For use with up to 4 padlocks (not supplied) Ø6 mm shank max | 1 | **GV2V03** |

## Accessories for LS1D323 (spring terminals)

| Description | Application | Reference |
|---|---|---|
| Plate for mounting | LS1D323 and contactor LC1D09...D38 with front faces aligned | **LAD311** |

| Description | Extension by | Number of starters | Reference |
|---|---|---|---|
| Power splitter box, 63 A | LAD32● | 2 | **LAD322** |
| | | 4 | **LAD324** |

| Description | Kit contents | Reference |
|---|---|---|
| Assembly and power connection kit for LS1D323 and LC1D093...D323 | 1 LAD311 plate for mounting LS1D323<br>2 LAD341 power connection modules<br>- between LS1D323 and power splitter box<br>- between LS1D323 and contactor | **LAD352** |

| Description | Maximum capacity | Application | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Upstream terminal block | 16 mm² | Power supply to 1 or 2 power splitter boxes | 1 | **LAD3B1** |
| Downstream terminal block | 16 mm² | Connection of motor cables | 1 | **LAD331** |
| Cable end reducer | – | For connection of conductors from 1 to 1.5 mm² | 20 | **LAD99** |

## Product references

| | |
|---|---|
| DF101 | DF222V |
| DF101N | DF223C |
| DF101NV | DF223NC |
| DF101PV | DF223NVC |
| DF101V | DF223VC |
| DF102 | DF22AM1 |
| DF102V | DF22AM2 |
| DF103 | DF22AP |
| DF103N | DF22N |
| DF103NV | DF81 |
| DF103V | DF81N |
| DF10AP | DF81NV |
| DF10N | DF81V |
| DF141 | DF82 |
| DF141N | DF82V |
| DF141NV | DF83 |
| DF141V | DF83N |
| DF142 | DF83NV |
| DF142V | DF83V |
| DF143C | DFCC1 |
| DF143NC | DFCC1V |
| DF143NVC | DFCC2 |
| DF143VC | DFCC2V |
| DF14AM1 | DFCC3 |
| DF14AM2 | DFCC3V |
| DF14AP | DK1CB92 |
| DF14N | LA8D324 |
| DF221 | LS1D30 |
| DF221N | LS1D32 |
| DF221NV | LS1D32005 |
| DF221V | LS1D32006 |
| DF222 | LS1D323 |



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers



## Contents

DF type:
> Characteristics ..... B4/12
> Dimensions and schemes ..... B4/13
DF type for the North American market:
> Characteristics ..... B4/14
> Dimensions and schemes ..... B4/15
LS, GK type:
> Characteristics ..... B4/16
> Dimensions..... B4/17
> Schemes ..... B4/18

# Characteristics - DF type

## Environment characteristics

| Fuse carrier type | | | DF8 | DF10 | DF14 | DF22 |
|---|---|---|---|---|---|---|
| **Conforming to standards** | | | IEC/EN 60947-3, IEC/HD 60269-2 | IEC/EN 60947-3 (1), IEC/HD 60269-2, R22HL2, UL 4248-1 (2), CSA C22.2 No 4248-1 (2) | IEC/EN 60947-3, UL 4248-1, CSA C22.2 No 4248-1 | |
| **Product certification** | | | IEC, EAC, CCC, UKCA | IEC, UL, CSA, EAC, DNV-GL, CCC, UKCA | IEC, UL, CSA, EAC, UKCA | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 20 | | | |
| **Ambient air temperature** | Storage | **°C** | -40…+80 | | | |
| | For operation, with derating (1) | **°C** | -20…+60 | | | |
| **Operating positions** | | | ± 23° in relation to normal mounting plane | | | |
| **Flame resistance** | Conforming to IEC 60695-2-1 | **°C** | 960 | | | |

## Pole characteristics

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Fuse size** | | **mm** | 8.5 x 32 | | 10 x 38 | | 14 x 51 | 22 x 58 | |
| **Maximum power dissipated by fuse** | | **W** | 2.50 | | 3.00 | | 5.00 | 9.50 | |
| **Rated insulation voltage** (Ui) with tubular links, a.c. or D.C. supply | | **V** | 500 | | 690 | | 690 | 690 | |
| **Rated impulse withstand voltage** (Uimp) | | **kV** | 6 | | 6 | | 8 | 8 | |
| **Conventional thermal current** (Ith) for ambient air temperature ≤ 20 °C (3) | | | | | | | | | |
| | With tubular links | **A** | 25 | | 32 | | 50 | 125 | |
| | With aM cartridge fuses | **A** | 25 | | 32 | | 50 | 125 | |
| | With gG cartridge fuses | **A** | 25 | | 32 | | 50 | 100 | |
| **Rated conditional short-circuit current** Conforming to IEC 60947-3 | | | | | | | | | |
| | 400 V | **kA** | 20 | | 120 | | 120 | 120 | |
| | 500 V | **kA** | – | | 120 | | 120 | 120 | |
| | 690 V | **kA** | – | | – | | 80 | 80 | |
| **Peak withstand current (dynamic stress)** Conforming to IEC 60269-1 | | | | | | | | | |
| | With tubular links | **kA** | 11 | | 15 | | 15 | 19 | |
| **Cabling** (number of conductors x c.s.a.) | | | **Min.** | **Max.** | **Min.** | **Max.** | **Min.** | **Max.** | **Min.** | **Max.** |
| | Solid cable | **mm²** | 1 x 1.5 | 1 x 16<br>2 x 6 | 1 x 1.5 | 1 x 16<br>2 x 6 | 1 x 2.5 | 1 x 25<br>2 x 10 | 1 x 2.5 | 1 x 35<br>2 x 25 |
| | Flexible cable without cable end | **mm²** | 1 x 1.5 | 1 x 10<br>2 x 6 | 1 x 1.5 | 1 x 10<br>2 x 6 | 1 x 2.5 | 1 x 25<br>2 x 10 | 1 x 2.5 | 1 x 35<br>2 x 16 |
| | Flexible cable with cable end | **mm²** | 1 x 1.5 | 1 x 10<br>2 x 6 | 1 x 1.5 | 1 x 10<br>2 x 6 | 1 x 2.5 | 1 x 25<br>2 x 10 | 1 x 2.5 | 1 x 35<br>2 x 16 |
| **Tightening torque** | | **Nm** | 2.2 | | | | 3.5 | | 4 | |

## Characteristics of early break and signalling contacts DF14 AM and DF22 AM

| | | | | | | |
|---|---|---|---|---|---|---|
| **Rated insulation voltage** (Ui) a.c. supply | | **V** | 250 | | | |
| **Conventional thermal current** (Ith) for ambient air temperature ≤ 20 °C (1) | | **A** | 5 | | | |
| **Rated operational current** | | | **24 V** | **48 V** | **127 V** | **240 V** |
| | Category AC-15 | **A** | 4 | 4 | 3 | 2.5 |
| | Category DC-13 | **A** | 3 | 1 | 0.2 | 0.1 |
| **Definition of rated characteristics** | Conforming to IEC 60947-5-1 | | B300 | | | |
| **Low load operating characteristics** | Minimum voltage | **V** | 10 | | | |
| | Minimum current | **mA** | 30 | | | |
| **Cabling** | | | Faston connectors | | | |

*(1) DF101PV excluded.*
*(2) DF101PV add UL/CSA 4248-19.*
*(3) For use in an installation with ambient temperature > 20 °C, apply a derating coefficient:*

| Maximum temperature | 20 °C | 30 °C | 40 °C | 50 °C | 60 °C |
|---|---|---|---|---|---|
| Max. relative humidity | 95 % | 90 % | 80 % | 50 % | 50 % |
| Current derating coefficient | 1 | 0.95 | 0.9 | 0.8 | 0.7 |

| Number of poles (each side) | 1 to 3 | 4 to 6 | ≥7 |
|---|---|---|---|
| Current derating coefficient | 1 | 0.95 | 0.9 |

Introduction: page B4/2
References: pages B4/3 and B4/4
Dimensions: page B4/13
Schemes: page B4/13

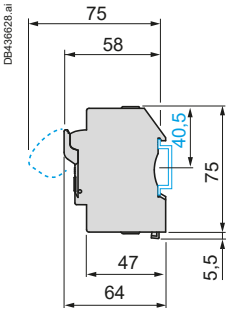
# Dimensions, schemes - DF type

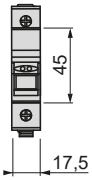
## Dimensions

### Modular fuse carriers 25 A and 32 A

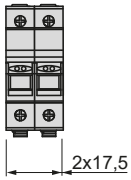
**Mounting on 35 mm ⊔ rail**

**DF81 and DF81V**
**DF101 and DF101V**
**DF10N**




**DF81N and DF81NV**
**DF82 and DF82V**
**DF101N and DF101NV**
**DF102 and DF102V**



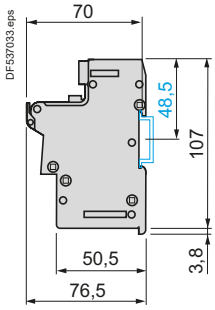

**DF83 and DF83V**
**DF103 and DF103V**

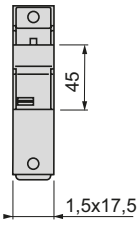
**DF83N and DF83NV**
**DF103N and DF103NV**

### Modular fuse carriers 50 A

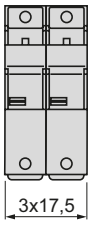
**Mounting on 35 mm ⊔ rail**

**DF141 and DF141V**
**DF14N**

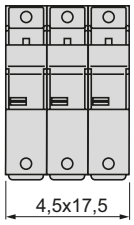


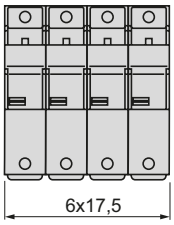

**DF141N and DF141NV**
**DF142 and DF142V**




**DF143C and DF143VC**



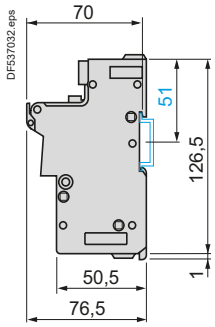

**DF143NC and DF143NVC**

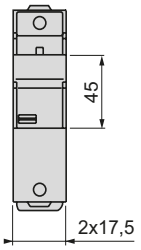



### Modular fuse carriers 125 A

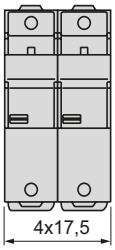
**Mounting on 35 mm ⊔ rail**

**DF221 and DF221V**
**DF22N**

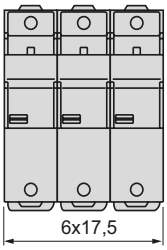


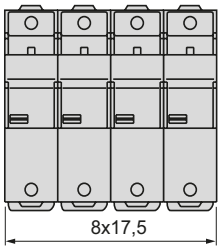

**DF221N and DF221NV**
**DF222 and DF222V**




**DF223C and DF223VC**



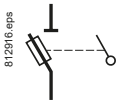

**DF223NC and DF223NVC**



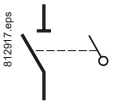

## Schemes

### Modular fuse carriers

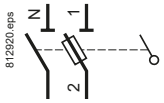
**DF•1P**



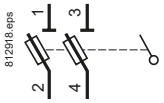

**DF•N**



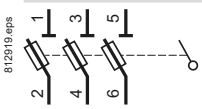

**DF•1P + N**



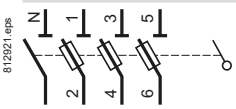

**DF•2P**




**DF•3P**




**DF•3P + N**




Introduction:
page B4/2

References:
pages B4/3 and B4/4

Characteristics:
page B4/12

# Characteristics - DF type

## Environment characteristics

| Fuse carrier type | | | DFCC |
|---|---|---|---|
| **Conforming to standards** | | | UL 4248-1 & 4, CSA 22-2 No 4248-1 & 4 |
| **Product certification** | | | UL, CSA, CCC, UKCA |
| **Degree of protection** | Conforming to IEC 60529 | | IP 20 |
| **Ambient air temperature** | Storage | **°C** | -40…+80 |
| | For operation, with derating (1) | **°C** | -20…+60 |
| **Operating positions** | Without derating | | ±23° in relation to normal vertical mounting plane |
| **Flame resistance** | Conforming to IEC 60695-2-1 | **°C** | 960 |

## Pole characteristics

| Fuse carrier type | | | DFCC | |
|---|---|---|---|---|
| **Fuse size** | | | Class CC | |
| **Maximum power dissipated by fuse** | | **W** | 3.00 | |
| **Rated insulation voltage** (Ui) with tubular links, a.c. supply | | **V** | 600 | |
| **Rated impulse withstand voltage** (Uimp) | | **kV** | 6 | |
| **Conventional thermal current** (Ith) for ambient air temperature ⩽ 40 °C (1) | | | | |
| | With tubular links | **A** | 30 | |
| | With aM cartridge fuses | **A** | 30 | |
| | With gG cartridge fuses | **A** | 30 | |
| **Short-circuit current withstand** With UL 248-4 Class CC fuses | | | | |
| | Conforming to UL 512 at 600 V | **kA** | 200 | |
| **Cabling** (number of conductors x c.s.a.) | | | **Min.** | **Max.** |
| | Solid cable | **mm²** | 1 x 1.5 | 1 x 16<br>2 x 6 |
| | Flexible cable without cable end | **mm²** | 1 x 1.5 | 1 x 10<br>2 x 6 |
| | Flexible cable with cable end | **mm²** | 1 x 1.5 | 1 x 10<br>2 x 6 |
| **Tightening torque** | | **Nm** | 2.2 | |

*(1) For use in an installation with ambient temperature > 20 °C, apply a derating coefficient:*

| Maximum temperature | 20 °C | 30 °C | 40 °C | 50 °C | 60 °C |
|---|---|---|---|---|---|
| Max. relative humidity | 95 % | 90 % | 80 % | 50 % | 50 % |
| Current derating coefficient | 1 | 0.95 | 0.9 | 0.8 | 0.7 |

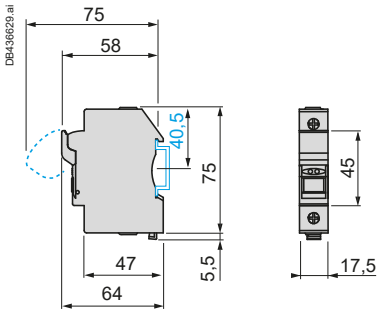
# Dimensions, schemes - DF type

## Dimensions

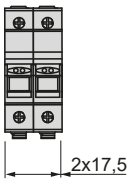
### Modular fuse carriers 30 A

#### Mounting on 35 mm ⊔ rail

DFCC1 and DFCC1V




DFCC2 and DFCC2V

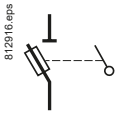



DFCC3 and DFCC3V

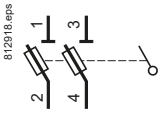
## Schemes

### Modular fuse carriers

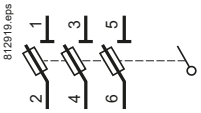
DFCC1P




DFCC2P




DFCC3P



# Characteristics - LS type

## Environment

| Fuse carrier type | | | LS1D32 | LS1D323 |
|---|---|---|---|---|
| **Conforming to standards** | NF EN 60947-3 | | ● | |
| | IEC 60947-3 | | ● | |
| **Product certifications** | | | BV, UR | |
| **Ambient air temperature** for operation with links without derating | | **°C** | -50…+70 | |
| **Maximum tilt** in relation to normal vertical mounting plane | | | ±23° | |

## Pole characteristics

| | | | | |
|---|---|---|---|---|
| **Fuse size** | | | 10 x 38 | 10 x 38 |
| **Rated operational voltage** with links. a.c. supply | | **V** | 690 | 690 |
| **Maximum continuous current** at ambient temperature ≤ 40 °C [1] (Min. cable Ø/Ie) | | | | |
| | With tubular links | **mm²/A** | 6/32 or 4/25 or 2.5/16 | 4/25 or 2.5/16 |
| | With **aM** fuses | **mm²/A** | 6/32 or 4/22 or 2.5/20 | 4/25 or 2.5/20 |
| | With **gG** fuses | **mm²/A** | 4/25 or 2.5/20 or 1.5/16 | 2.5/20 or 1.5/16 |

## Early break contact characteristics

| | | | | |
|---|---|---|---|---|
| **Rated operational voltage** | | **V** | ∼ 250. ⎓ 60 | ∼ 250. ⎓ 60 |
| **Conventional thermal current** | | **A** | 2.5 | 2.5 |

## Blow fuse contact characteristics 95/96-98

| | | | | |
|---|---|---|---|---|
| **Rated operational voltage** | | **V** | – | – |
| **Conventional thermal current** | | **A** | – | – |

## Cartridge fuse characteristics

| | | | | |
|---|---|---|---|---|
| **Fuse size** | | | 10 x 38 | 10 x 38 |
| Type **aM** | ∼ 400 V | **A** | 32 [2] | 25 |
| | ∼ 500 V | **A** | 20 | 20 |
| | ∼ 660 V | **A** | – | – |
| Type **gG** | ∼ 400 V | **A** | 25 [2] | 25 |
| | ∼ 500 V | **A** | 25 | 25 |
| | ∼ 660 V | **A** | – | – |
| **Maximum power dissipated by fuse** | | **W** | 3 | 3 |

## Cabling

### Connection by screw clamp terminals or connectors

| Number and c.s.a. of conductors | | Min. | Max. | Min. | Max. |
|---|---|---|---|---|---|
| Solid cable | **mm²** | 2 x 1 | 2 x 6 | – | – |
| Flexible cable without cable end | **mm²** | 2 x 1.5 | 2 x 6 | – | – |
| Flexible cable with cable end | **mm²** | 2 x 1 | 2 x 4 | – | – |
| **Connection** | | Screw clamp terminals | | – | – |
| **Tightening torque** | **Nm** | 1.7 | | – | – |

### Connection by spring terminals

| Number and c.s.a. of conductors | | Min. | Max. | Min. | Max. |
|---|---|---|---|---|---|
| Solid cable | **mm²** | – | – | 2 x 1 [3] | 2 x 4 |
| Flexible cable without cable end | **mm²** | – | – | 2 x 1.5 [1] | 2 x 4 |

*(1) For use in an installation with ambient temperature > 55 °C, apply a derating coefficient equivalent to* $\sqrt{\frac{120 - \text{ambient temperature}}{80}}$

*(2) These values are for fuse carriers mounted side by side with a gap of 10 mm between them or mounted with sets of busbars **GV2●54**. If mounted side by side without a gap, use the following fuse sizes: **aM** fuse: 25 A and **gG** fuse: 20 A.*

*(3) For cross-sections 1 to 1.5 mm², the use of an **LA9D99** cable end reducer is recommended.*

Introduction: page B4/2 | References: pages B4/6 to B4/8 | Dimensions: page B4/17 | Schemes: page B4/18

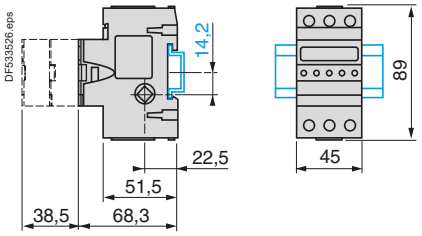


Life Is On Schneider Electric

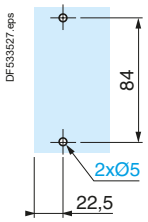
# Dimensions, mounting - LS type

## LS1D32

### Mounting on rail NSYDPR200BD

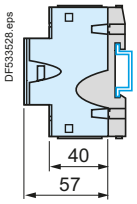



### Panel mounting

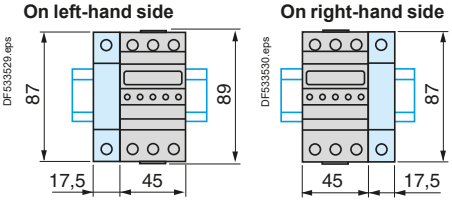



## LS1D32 + LA8D324

### Mounting on rail NSYDPR200BD




### Mounting of 4th pole



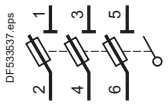

Fuse carriers
Ref.

# Schemes - LS type

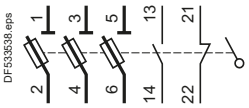
## Fuse carriers without single-phase protection device

### 3-pole

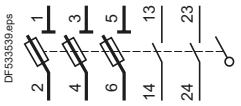
**LS1D32, D323**




**LS1D32, D323 + GVAE11●**

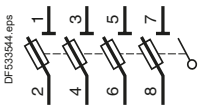



**LS1D32, D323 + GVAE20●**




### 4-pole

**LS1D32 + LA8D324**







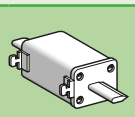
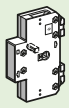

Life Is On Schneider Electric

# TeSys Power
# Switch-disconnector fuses




## Introduction B5/2

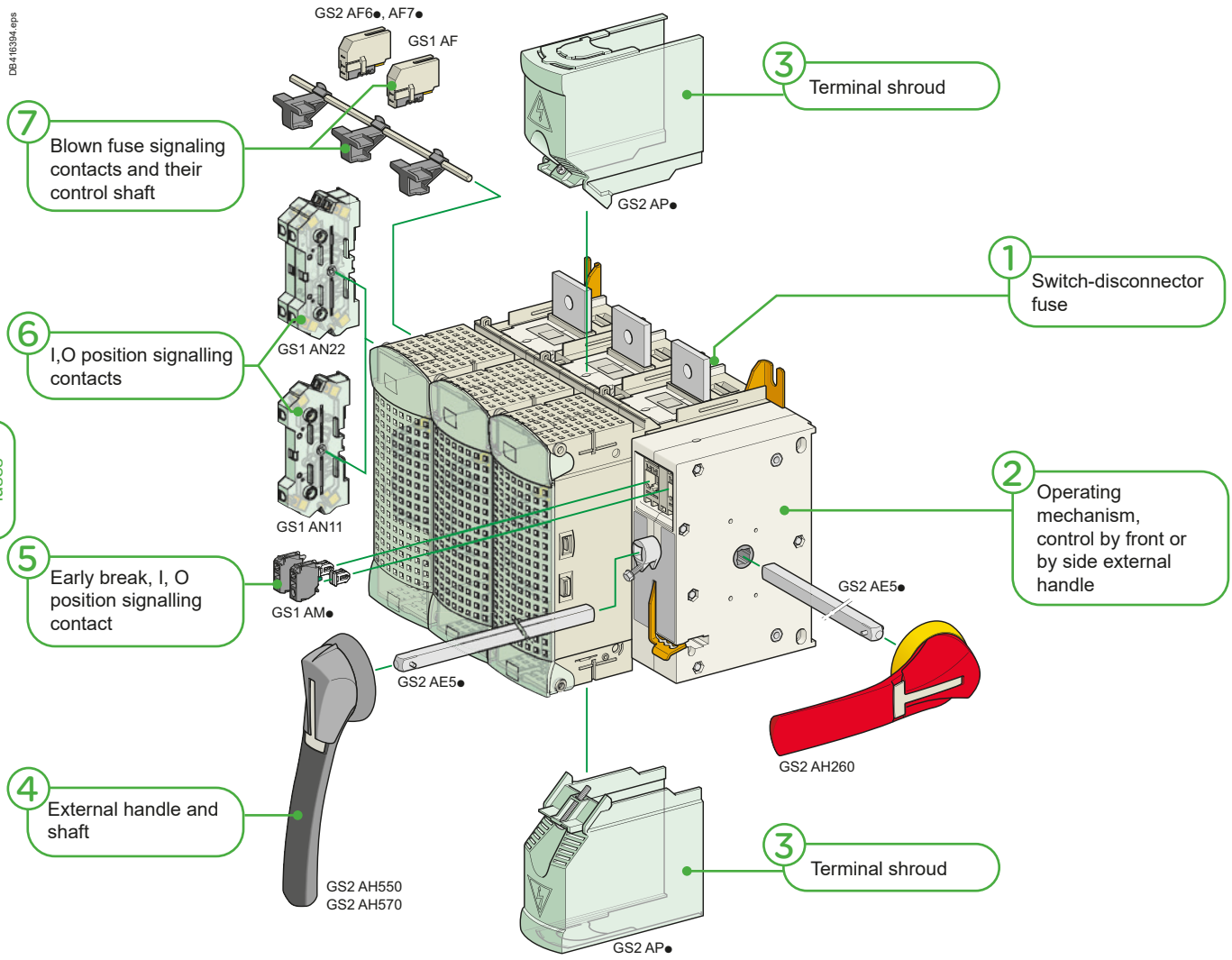
## Switch-disconnector fuses

| Type of product | Range | | Pages |
|---|---|---|---|
| IEC - Switch-disconnector fuses<br>For NFC / DIN fuses | From 32 to 1250 A | | B5/4 |
| IEC - Switch-disconnector fuses<br>For BS fuses | From 32 to 1250 A | | B5/6 |
| UL - Switch-disconnector fuses<br>For CC / J fuses | From 30 to 800 A | | B5/8 |
| NFC - Cartridge fuses<br>Type aM, gG | From 0.16 to 125 A | | B5/10 |
| DIN - Cartridge fuses<br>Type aM, gG | From 10 to 1250 A |  | B5/11 |
| Auxiliary contacts for IEC and<br>UL switch-disconnector fuses | From 32 to 1250 A |  | B5/12 |
| Handles | From 32 to 1250 A | | B5/13 |
| Other accessories | From 32 to 1250 A | | B5/14 |

## Technical Data for Designers B5/17

## A customizable functional block

Whatever its rating, the switch-disconnector fuse fits the need: particular position of the handle, triggering of an automatic control before full opening, enhanced protection of terminals...




Customizable

### GS2630 A switch-disconnector fuse

**1 Switch-disconnector fuse**
- NFC/DIN or BS fuse compatible
- Enhanced isolation between poles
- On-load making/breaking with double break isolation of the power circuit

**2 Operating mechanism**
- For one front or side external handle, right or left side
- Cavity for early-break contacts

**3 Terminal shrouds**
- For use when the switch-disconnector fuse is installed outside an enclosure or when the operating voltage is over 500 V AC

**4 Operating handle**
- Padlockable in open position

**5 GS1AM●●● Early-break signalling contacts**
Activated before the poles are opened

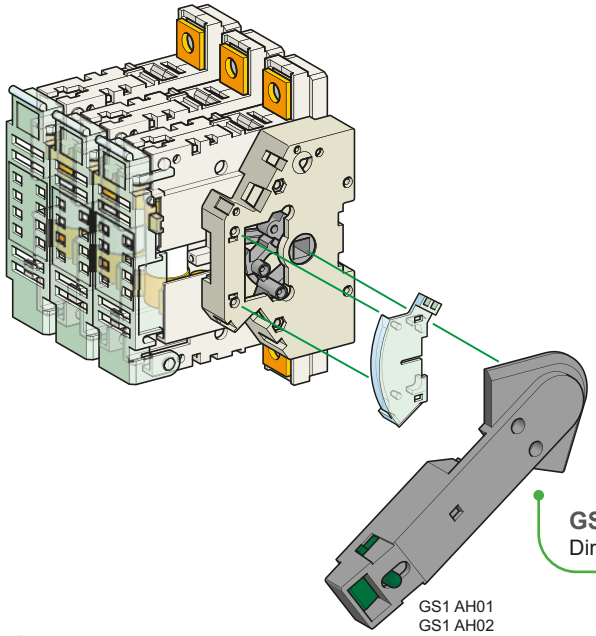
**6 GS1AN●● Position signalling contacts**
- Synchronized with the poles operation

**7 GS1AF●● Blown fuse signalling contacts**
- A missing fuse is also indicated

## Simplicity of the direct operating

The mounting of an operating handle directly on the side of the switch-disconnector fuse is a simple operation.
This handle will be for use by qualified personnel only.
As the mechanical design is simplified, the manoeuvre will be immediately understood by the operator.
Each handle can be padlocked in open position. Locking device for 3 padlocks.

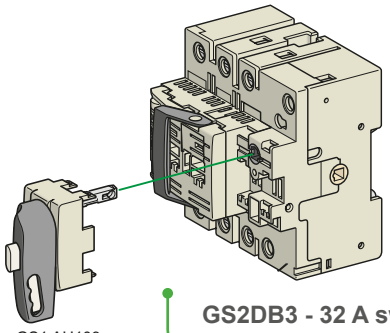
DB416395.eps



GS1 AH01
GS1 AH02

**GS1JD3 - 100 A switch-disconnector fuse**
Direct lateral operating

DB416396.eps



GS1 AH103

**GS2DB3 - 32 A switch-disconnector fuse**
Direct front operating

Position of the handle, a free choice

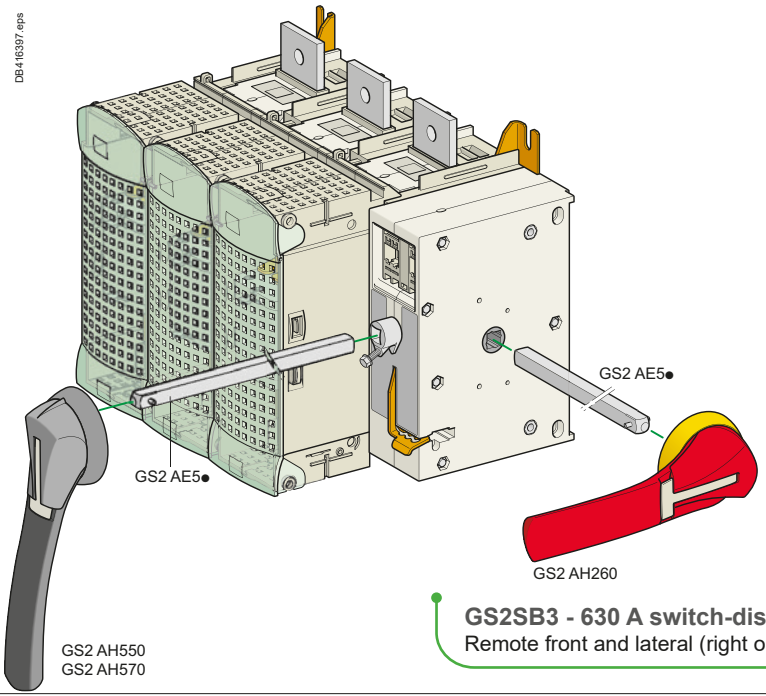


## Performance remote operating

Located on the front or side panel of an enclosure, the operating handle provide complementary features:
- simple (IP55) or reinforced (IP65) protection against dust
- intermediate "Test" position
- door interlock when the handle is in "Close" position, opening by mean of a special tool is needed for opening.
- optional key-operated handle lock

The handles are available in different lengths. They are chosen according the operating effort which depends on the rating of the switch-disconnector fuse.
The drive shaft can be cut to the ideal length.
The choice of a red and yellow handle (CNOMO standard) will identify an "Emergency Stop handle" among others handles, generally grey and black.

DB416397.eps




GS2 AH260

GS2 AH550
GS2 AH570

**GS2SB3 - 630 A switch-disconnector fuse**
Remote front and lateral (right only) operating

## IEC - For NFC / DIN fuses - From 32 to 1250 A

*GS1DD3*

*GS1FD3*

*GS1KD4*

| Rating A | | | 32 | | 50 | | 63 | | 100 | | 125 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of poles | | | 3 | 3+N | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 |
| Fuse size | | | 10 x 38 | | 14 x 51 | | Size 000 | | 22 x 58 | | 22 x 58 | |
| **For direct operators** | | | | | | | | | | | | |
| **Switch-disconnector fuses reference** | | | **GS1DD3** | **GS1DD4** | **GS1FD3** | **GS1FD4** | **GS1GD3** | **GS1GD4** | **GS1JD3** | **GS1JD4** | **GS1KD3** | **GS1KD4** |
| Handle | Black | | **GS1AH103** | | **GS1AH01** | | | | **GS1AH02** | | | |
| Auxiliary contacts | O/I + Test | 1NO + 1NC | - | | **GS1AN11** | | | | | | | |
| | | 2NO + 2NC | - | | **GS1AN22** | | | | | | | |
| | O/I + early break | | **GS1AM111** (1 OF) | | **GS1AM1** (1 OF) | | | | | | | |
| | | | **GS1AM211** (2 OF) | | **GS1AM2** (2 OF) | | | | | | | |
| | Blown fuse | | - | | **GS1AF1** | | - | | **GS1AF23** | **GS1AF24** | **GS1AF23** | **GS1AF24** |
| **For external left hand side-mounted operators** | | | | | | | | | | | | |
| **Switch-disconnector fuses reference** | | | **GS1DD3** | **GS1DD4** | **GS2FG3** | **GS2FG4** | **GS2GG3** | **GS2GG4** | **GS2JG3** | **GS2JG4** | **GS2KG3** | **GS2KG4** |
| Handle | Black/Grey | IP65 | **GS2AH310** | | | | | | **GS2AH330** | | | |
| | Red/Yellow | IP65 | **GS2AH320** | | | | | | **GS2AH340** | | | |
| Auxiliary contacts | O/I + Test | 1NO + 1NC | - | | **GS1AN11G** | | | | | | | |
| | | 2NO + 2NC | - | | **GS1AN22G** | | | | | | | |
| | O/I + early break | 1NO | **GS1AM110** | | | | | | | | | |
| | | 2NO | **GS1AM101** | | | | | | | | | |
| | Blown fuse | | - | | **GS1AF1** | | - | | **GS1AF23** | **GS1AF24** | **GS1AF23** | **GS1AF24** |
| **For external front-mounted and right-hand side-mounted operators** | | | | | | | | | | | | |
| **Switch-disconnector fuses reference** | | | **GS1DD3** | **GS1DD4** | **GS2F3** | **GS2F4** | **GS2G3** | **GS2G4** | **GS2J3** | **GS2J4** | **GS2K3** | **GS2K4** |
| Front-mounted handle | Black/Grey | IP55 | **GS2AH515** | | | | | | **GS2AH535** | | | |
| | Black/Grey | IP65 | **GS2AH510** | | | | | | **GS2AH530** | | | |
| | Red/Yellow | IP65 | **GS2AH520** | | | | | | **GS2AH540** | | | |
| Front-mounted handle + Test position | Black/Grey | IP65 | **GS2AHT510** | | | | | | **GS2AHT530** | | | |
| | Red/Yellow | IP65 | **GS2AHT520** | | | | | | **GS2AHT540** | | | |
| RH side-mounted handle | Black/Grey | IP55 | **GS2AH215** | | | | | | **GS2AH235** | | | |
| | Black/Grey | IP65 | **GS2AH210** | | | | | | **GS2AH230** | | | |
| | Red/Yellow | IP65 | **GS2AH220** | | | | | | **GS2AH240** | | | |
| Auxiliary contacts | O/I + Test | 1NO + 1NC | - | | **GS1AN11** | | | | | | | |
| | | 2NO + 2NC | - | | **GS1AN22** | | | | | | | |
| | | 1NO + 1NC + test | - | | **GS1ANT11** | | | | | | | |
| | | 2NO + 2NC + test | - | | **GS1ANT22** | | | | | | | |
| | O/I + Test + early break | 1NO | - | | **GS1AM110** | | | | | | | |
| | | 1NC | - | | **GS1AM101** | | | | | | | |
| | Blown fuse | | - | | **GS1AF1** | | - | | **GS1AF23** | **GS1AF24** | **GS1AF23** | **GS1AF24** |
| **Accessories** | | | | | | | | | | | | |
| Shaft for external handle (mm) | | 200 | **GS2AE82** | | **GS2AE22** | | | | | | | |
| | | 320 | **GS2AE8** | | **GS2AE2** | | | | | | | |
| | | 400 | **GS2AE81** | | **GS2AE21** | | | | | | | |
| Terminal shroud | | | Integrated | | | | | | **GS1AP33** (3P), **GS1AP34** (4P) | | | |
| **Dimensions** | | | | | | | | | | | | |
| | Direct front-mounted version | | page B5/25 | | page B5/26 | | | | | | | |
| | External front-mounted version | | page B5/25 | | page B5/27 | | | | | | | |

### Handles

PF568668.tif
*GS1AH01*

PF568669.tif
*GS1AH02*

PB123949.eps
*GS2AH●10*
*GS2AH●20*

PB123950.eps
*GS2AH●30*
*GS2AH●40*

PB123951.eps
*GS2AH●50*
*GS2AH●60*

PB123952.eps
*GS2AH●70*
*GS2AH●80*

See details on handles page B5/13.

Characteristics: pages B5/18 and B5/19
Dimensions: pages B5/25 to B5/29
Schemes: page B5/33

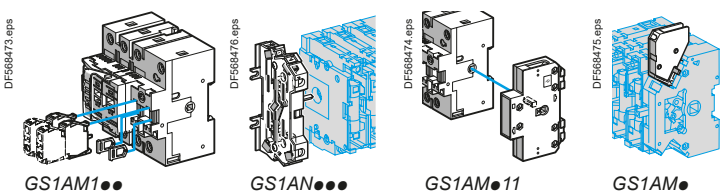
*GS1KKD3*

*GS1LLD4*

*GS1ND3*

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **125** | | | | **160** | | | | **250** | | **400** | | **630** | | **1250** | | | | |
| 3 | 4 | | | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | | | |
| Size 00 | | | | Size 00 | | Size 0 | | Size 1 | | Size 2 | | Size 3 | | Size 4 | | | | |
| **GS1KKD3** | **GS1KKD4** | **GS1LLD3** | **GS1LLD4** | **GS1LD3** | **GS1LD4** | **GS1ND3** | **GS1ND4** | **GS1QQD3** | **GS1QQD4** | **GS2S3** | **GS2S4** | **GS2V3** | **GS2V4** | | | | | |
| **GS1AH02** | | | | | | | | | | **GS2AH104** | | **GS2AH105** | | | | | | |
| **GS1AN11** | | | | | | | | | | | | | | | | | | |
| **GS1AN22** | | | | | | | | | | | | | | | | | | |
| **GS1AM1** (1 OF) | | | | | | | | | | **GS1AM110** (1 NO) | | | | | | | | |
| **GS1AM2** (2 OF) | | | | | | | | | | **GS1AM101** (1 NC) | | | | | | | | |
| - | | | | **GS1AF33** | **GS1AF34** | **GS1AF43** | **GS1AF44** | **GS1AF43** | **GS1AF44** | **GS2AF63** | **GS2AF64** | **GS2AF73** | **GS2AF74** | | | | | |
| **GS2KKG3** | **GS2KKG4** | **GS2LLG3** | **GS2LLG4** | **GS2LG3** | **GS2LG4** | **GS2NG3** | **GS2NG4** | **GS2QQG3** | **GS2QQG4** | **GS2SG3** | **GS2SG4** | **GS2VG3** | | | | | | |
| **GS2AH330** | | | | | | | | | | **GS2AH350** | | | | | | | | |
| **GS2AH340** | | | | | | | | | | **GS2AH360** | | | | | | | | |
| **GS1AN11G** | | | | | | | | | | | | | | | | | | |
| **GS1AN22G** | | | | | | | | | | | | | | | | | | |
| **GS1AM110** | | | | | | | | | | | | | | | | | | |
| **GS1AM101** | | | | | | | | | | | | | | | | | | |
| - | | | | **GS1AF33** | **GS1AF34** | **GS1AF43** | **GS1AF44** | **GS1AF43** | **GS1AF44** | **GS2AF63** | **GS2AF64** | **GS2AF73** | **GS2AF74** | | | | | |
| **GS2KK3** | **GS2KK4** | **GS2LL3** | **GS2LL4** | **GS2L3** | **GS2L4** | **GS2N3** | **GS2N4** | **GS2QQ3** | **GS2QQ4** | **GS2S3** | **GS2S4** | **GS2V3** | **GS2V4** | | | | | |
| **GS2AH535** | | | | | | | | | | - | | | | | | | | |
| **GS2AH530** | | | | | | | | | | **GS2AH550** | | **GS2AH570** | | | | | | |
| **GS2AH540** | | | | | | | | | | **GS2AH560** | | **GS2AH580** | | | | | | |
| **GS2AHT530** | | | | | | | | | | - | | | | | | | | |
| **GS2AHT540** | | | | | | | | | | - | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| **GS2AH235** | | | | | | | | | | - | | | | | | | | |
| **GS2AH230** | | | | | | | | | | **GS2AH250** | | | | | | | | |
| **GS2AH240** | | | | | | | | | | **GS2AH260** | | | | | | | | |
| **GS1AN11** | | | | | | | | | | | | | | | | | | |
| **GS1AN22** | | | | | | | | | | | | | | | | | | |
| **GS1ANT11** | | | | | | | | | | - | | | | | | | | |
| **GS1ANT22** | | | | | | | | | | - | | | | | | | | |
| **GS1AM110** | | | | | | | | | | - | | | | | | | | |
| **GS1AM101** | | | | | | | | | | - | | | | | | | | |
| - | | | | **GS1AF33** | **GS1AF34** | **GS1AF43** | **GS1AF44** | **GS1AF43** | **GS1AF44** | **GS2AF63** | **GS2AF64** | **GS2AF73** | **GS2AF74** | | | | | |
| **GS2AE22** | | | | | | | | | | **GS2AE52** | | | | | | | | |
| **GS2AE2** | | | | | | | | | | **GS2AE5** | | | | | | | | |
| **GS2AE21** | | | | | | | | | | **GS2AE51** | | | | | | | | |
| **GS1AP33** (3P), **GS1AP34** (4P) | | | | | | **GS1AP43** (3P), **GS1AP44** (4P) | | | | **GS2AP73** | **GS2AP64** | **GS2AP83** | **GS2AP84** | | | | | |
| page B5/26 | | | | | | | | | | page B5/28 | | | | | | | | |
| page B5/27 | | | | | | | | | | page B5/29 | | | | | | | | |

## Auxiliary contacts




*GS1AM1●●* *GS1AN●●●* *GS1AM●11* *GS1AM●*

See details on auxiliary contacts, page B5/12.

### Maximal number of auxiliary contacts

| Switch rating (A) | Standard configuration | With additional bracket | Reference of additional bracket |
|---|---|---|---|
| 30...32 | 4 | 4 | **GS1AD10** (1) |
| 32...400 | 4 | 4 | **GS2AD20** (2) |
| 200...400 | 8 | 8 | **GS2AD20** (2) |
| 630...1250 | 8 | - | - |

*(1) Only compatible with switch disconnector fuses starting by GS1D●●*
*(2) Only compatible with switch disconnector fuses starting by GS2●●●*

Characteristics: pages B5/18 and B5/19
Dimensions: pages B5/25 to B5/29
Schemes: page B5/33

## IEC - For BS fuses - From 32 to 1250 A

*GS1DDB3*

*GS2JB3*

| Rating A | | | 32 | | | | 63 | | 100 | | 160 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of poles | | | 3 | 3+N | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 |
| Fuse size | | | A1 | | A1 | | A2-A3 | | A4 | | A4 | | B1-B2 | |
| **For direct operators** | | | | | | | | | | | | | | |
| **Switch-disconnector fuses reference** | | | **GS1DDB3** | **GS1DDB4** | - | | | | | | | | | |
| Handle | Black | | **GS1AH103** | | - | | | | | | | | | |
| Auxiliary contacts | O/I + Test | 1NO + 1NC | - | | - | | | | | | | | | |
| | | 2NO + 2NC | - | | - | | | | | | | | | |
| | O/I + early break | | **GS1AM111** (1 OF) | | - | | | | | | | | | |
| | | | **GS1AM211** (2 OF) | | - | | | | | | | | | |
| **For external front-mounted and right-hand side-mounted operators** | | | | | | | | | | | | | | |
| **Switch-disconnector fuses reference** | | | **GS1DDB3** | **GS1DDB4** | **GS2DB3** | **GS2DB4** | **GS2GB3** | **GS2GB4** | **GS2JB3** | **GS2JB4** | **GS2LLB3** | **GS2LLB4** | **GS2LB3** | **GS2LB4** |
| Front-mounted handle | Black/Grey | IP55 | **GS2AH515** | | | | | | **GS2AH535** | | | | | |
| | Black/Grey | IP65 | **GS2AH510** | | | | | | **GS2AH530** | | | | | |
| | Red/Yellow | IP65 | **GS2AH520** | | | | | | **GS2AH540** | | | | | |
| Front-mounted handle + Test position | Black/Grey | IP65 | **GS2AHT510** | | | | | | **GS2AHT530** | | | | | |
| | Red/Yellow | IP65 | **GS2AHT520** | | | | | | **GS2AHT540** | | | | | |
| RH side-mounted handle | Black/Grey | IP55 | **GS2AH215** | | | | | | **GS2AH235** | | | | | |
| | Black/Grey | IP65 | **GS2AH210** | | | | | | **GS2AH230** | | | | | |
| | Red/Yellow | IP65 | **GS2AH220** | | | | | | **GS2AH240** | | | | | |
| Auxiliary contacts | O/I + Test | 1NO + 1NC | - | | **GS1AN11** | | | | | | | | | |
| | | 2NO + 2NC | - | | **GS1AN22** | | | | | | | | | |
| | | 1NO + 1NC + test | - | | **GS1ANT11** | | | | | | | | | |
| | | 2NO + 2NC + test | - | | **GS1ANT22** | | | | | | | | | |
| | O/I + Test + early break | 1NO | **GS1AM110** - max 4 contacts | | | | | | | | | | | |
| | | 1NC | **GS1AM101** - max 4 contacts | | | | | | | | | | | |
| **Accessories** | | | | | | | | | | | | | | |
| Shaft for external handle (mm) | | 200 | **GS2AE82** | | **GS2AE22** | | | | | | | | | |
| | | 320 | **GS2AE8** | | **GS2AE2** | | | | | | | | | |
| | | 400 | **GS2AE81** | | **GS2AE21** | | | | | | | | | |
| Terminal shroud | | | Integrated | | | | | | **GS1AP33** (3P), **GS1AP34** (4P) | | | | | |
| **Dimensions** | | | | | | | | | | | | | | |
| | Direct front-mounted version | | page B5/25 | | | | page B5/26 | | | | | | | |
| | External front-mounted version | | page B5/25 | | | | page B5/27 | | | | | | | |

Switch-disconnector fuses

*GS2MMB3*

*GS2SB3*

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200 | | | | 250 | | | | 315 | | | | 400 | | | | 630 | | | | 800 | | | | 1250 | | | |
| | 3 | | 4 | | 3 | | 4 | | 3 | | 4 | | 3 | | 4 | | 3 | | 4 | | 3 | | 4 | | 3 | | 4 | |
| | B1-B2 | | | | B1...B3 | | | | B1...B3 | | | | B1...B4 | | | | C1-C2 | | | | C1...C3 | | | | D1 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | - | | | | | | | | | | | | | | | | - | | | | | | | | - | | | |
| | - | | | | | | | | | | | | | | | | - | | | | | | | | - | | | |
| | - | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | - | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | - | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | - | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **GS2MMB3** | | **GS2MMB4** | | **GS2NB3** | | **GS2NB4** | | **GS2PPB3** | | **GS2PPB4** | | **GS2QQB3** | | **GS2QQB4** | | **GS2SB3** | | **GS2SB4** | | **GS2TB3** | | **GS2TB4** | | | | **GS2VB4** | |
| | **GS2AH535** | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | **GS2AH530** | | | | | | | | | | | | | | | | **GS2AH550** | | | | | | | | **GS2AH570** | | | |
| | **GS2AH540** | | | | | | | | | | | | | | | | **GS2AH560** | | | | | | | | **GS2AH580** | | | |
| | **GS2AHT530** | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | **GS2AHT540** | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **GS2AH235** | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | **GS2AH230** | | | | | | | | | | | | | | | | **GS2AH250** | | | | | | | | | | | |
| | **GS2AH240** | | | | | | | | | | | | | | | | **GS2AH260** | | | | | | | | | | | |
| | **GS1AN11** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **GS1AN22** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **GS1ANT11** | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | **GS1ANT22** | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| | **GS1AM110** - max 8 contacts | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **GS1AM101** - max 8 contacts | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **GS2AE22** | | | | | | | | | | | | | | | | **GS2AE52** | | | | | | | | | | | |
| | **GS2AE2** | | | | | | | | | | | | | | | | **GS2AE5** | | | | | | | | | | | |
| | **GS2AE21** | | | | | | | | | | | | | | | | **GS2AE51** | | | | | | | | | | | |
| | **GS1AP43** (3P), **GS1AP44** (4P) | | | | | | | | | | | | | | | | **GS2AP73** (3P), **GS2AP64** (4P) | | | | | | | | **GS2AP83** | | **GS2AP84** | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | page B5/26 | | | | | | | | | | | | | | | | page B5/28 | | | | | | | | | | | |
| | page B5/27 | | | | | | | | | | | | | | | | page B5/29 | | | | | | | | | | | |

# Product references

## UL - For CC and J fuses - From 32 to 800 A

*GS1DU3*

*GS2GU3N*

| Rating | | | 30 Compact | | 30 | | 60 | 100 | |
|---|---|---|---|---|---|---|---|---|---|
| Number of poles | | | 3 | | 3 | | 3 | 3 | |
| Fuse size | | | CC | J | CC | J | J | J | |
| **For direct operators** | | | | | | | | | |
| **Switch-disconnector fuses reference** | | | **GS1DDU3** | **GS1DU3** | **-** | | | | |
| Handle | Black | | **GS1AH106** | - | - | | | | |
| Auxiliary contacts | O/I + Test | 1NO + 1NC | - | | | | | | |
| | | 2NO + 2NC | - | | | | | | |
| | O/I + early break | 1NO | **GS1AM110 + GS1AD10** | | - | | | | |
| | | 1NC | **GS1AM101 + GS1AD10** | | - | | | | |
| **For external front-mounted operators** | | | | | | | | | |
| **Switch-disconnector fuses reference** | | | **GS1DDU3** | **GS1DU3** | **GS2EEU3** | **GS2EU3N** | **GS2GU3N** | **GS2JU3N** | |
| Front-mounted handle | Black/Grey | 1,3R, 12 | **GS2AH110** | | **GS2AH130** | | | | |
| | | 4, 4X | **GS2AH410** | | **GS2AH430** | | | | |
| | Red/Yellow | 1,3R, 12 | **GS2AH120** | | **GS2AH140** | | | | |
| | | 4, 4X | **GS2AH420** | | **GS2AH440** | | | | |
| Front-mounted handle + Test position | Black/Grey | 1,3R, 12 | **GS2AHT110** | | **GS2AHT130** | | | | |
| | | 4, 4X | **GS2AHT410** | | **GS2AHT430** | | | | |
| | Red/Yellow | 1,3R, 12 | **GS2AHT120** | | **GS2AHT140** | | | | |
| | | 4, 4X | **GS2AHT420** | | **GS2AHT440** | | | | |
| Auxiliary contacts | O/I + Test | 1NO + 1NC | - | | **GS1AN11** | | | | |
| | | 2NO + 2NC | - | | **GS1AN22** | | | | |
| | | 1NO + 1NC + test | - | | **GS1ANT11** | | | | |
| | | 2NO + 2NC + test | - | | **GS1ANT22** | | | | |
| | O/I + Test + early break | 1NO | **GS1AM110** - max 4 contacts (1) | | **GS1AM110** - max 4 contacts (1) | | | | |
| | | 1NC | **GS1AM101** - max 4 contacts (1) | | **GS1AM101** - max 4 contacts (1) | | | | |
| **Accessories** | | | | | | | | | |
| Shaft for external handle (mm) | | 320 | **GS2AE8** | | **GS2AE2** | | | | |
| | | 400 | **GS2AE81** | | **GS2AE21** | | | | |
| Terminal shroud | | | Integrated | | | | | | |
| **Dimensions** | | | | | | | | | |
| | Direct front-mounted version | | page B5/25 | | | | page B5/26 | | |
| | External front-mounted version | | page B5/25 | | | | page B5/27 | | |

*(1) 4 more contacts allowed with GS1AD10 additional bracket.*

Switch-disconnector fuses

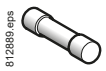
Characteristics: pages B5/22 and B5/23
Dimensions: pages B5/30 to B5/32
Schemes: page B5/33

*GS2QU3N*

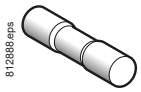
*GS2TU3*

| | 200 | 400 | 600 | 800 |
|---|---|---|---|---|
| | 3 | 3 | 3 | 3 |
| | J | J | J | J |
| | | | | |
| | - | | - | - |
| | - | | - | |
| | - | | - | |
| | - | | - | |
| | - | | - | |
| | - | | - | |
| | | | | |
| | **GS2MU3N** | **GS2QU3N** | **GS2SU3** | **GS2TU3** |
| | **GS2AH130** | | - | |
| | **GS2AH430** | | **GS2AH150** | |
| | **GS2AH140** | | - | |
| | **GS2AH440** | | **GS2AH160** | |
| | **GS2AHT130** | | - | |
| | **GS2AHT430** | | - | |
| | **GS2AHT140** | | - | |
| | **GS2AHT440** | | - | |
| | **GS1AN11** | | | |
| | **GS1AN22** | | | |
| | **GS1ANT11** | | - | |
| | **GS1ANT22** | | - | |
| | **GS1AM110** - max 8 contacts [1] | | **GS1AM110** - max 8 contacts only | |
| | **GS1AM101** - max 8 contacts [1] | | **GS1AM101** - max 8 contacts only | |
| | | | | |
| | **GS2AE2** | | **GS2AE5** | |
| | **GS2AE21** | | **GS2AE51** | |
| | **GS2AP43** | **GS2AP53** | **GS2AP73** | |
| | | | | |
| | page B5/26 | | page B5/28 | |
| | page B5/27 | | page B5/29 | |

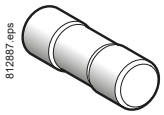
# Product references




*DF2CA●●●*
*DF2CN●●*




*DF2EA●●●*
*DF2EN●●*




*DF2FA●●*
*DF2FN●●*



## NFC Cartridge fuses - Type aM / gG - From 0.25 to 125 A

| Fuse type | Maximum rated voltage | Rating | Sold in lots of | Fuses without striker | |
|---|---|---|---|---|---|
| | | | | Unit reference | |
| | V ∼ | A | | aM | gG |
| Cylindrical 8.5 x 31.5 | 400 | 1 | 10 | – | DF2BN0100 |
| | | 2 | 10 | DF2BA0200 | DF2BN0200 |
| | | 4 | 10 | DF2BA0400 | DF2BN0400 |
| | | 6 | 10 | DF2BA0600 | DF2BN0600 |
| | | 8 | 10 | – | DF2BN0800 |
| | | 10 | 10 | – | DF2BN1000 |
| | | 12 | 10 | – | DF2BN1200 |
| | | 16 | 10 | – | DF2BN1600 |
| | | 20 | 10 | – | DF2BN2000 |
| Cylindrical 10 x 38 | 500 | 0.50 | 10 | DF2CA005 | – |
| | | 1 | 10 | DF2CA01 | – |
| | | 2 | 10 | DF2CA02 | DF2CN02 |
| | | 4 | 10 | DF2CA04 | DF2CN04 |
| | | 6 | 10 | DF2CA06 | DF2CN06 |
| | | 8 | 10 | DF2CA08 | DF2CN08 |
| | | 10 | 10 | DF2CA10 | DF2CN10 |
| | | 12 | 10 | DF2CA12 | DF2CN12 |
| | | 16 | 10 | DF2CA16 | DF2CN16 |
| | | 20 | 10 | – | DF2CN20 |
| | 400 | 20 | 10 | DF2CA20 | – |
| | | 25 | 10 | DF2CA25 | DF2CN25 |
| | | 32 | 10 | DF2CA32 | DF2CN32 |
| Cylindrical 14 x 51 | 690 | 0.25 | 10 | DF2EA002 | – |
| | | 0.50 | 10 | DF2EA005 | – |
| | 500 | 16 | 10 | DF2EA16 | – |
| | | 20 | 10 | DF2EA20 | – |
| | | 25 | 10 | DF2EA25 | DF2EN25 |
| | | 32 | 10 | DF2EA32 | DF2EN32 |
| | | 40 | 10 | DF2EA40 | DF2EN40 |
| | 400 | 50 | 10 | DF2EA50 | DF2EN50 |
| Cylindrical 22 x 58 | 690 | 10 | 10 | – | DF2FN10 |
| | | 20 | 10 | – | DF2FN20 |
| | | 25 | 10 | – | DF2FN25 |
| | | 32 | 10 | – | DF2FN32 |
| | | 40 | 10 | DF2FA40 | DF2FN40 |
| | | 50 | 10 | DF2FA50 | DF2FN50 |
| | 500 | 63 | 10 | DF2FA63 | DF2FN63 |
| | | 80 | 10 | DF2FA80 | DF2FN80 |
| | | 100 | 10 | DF2FA100 | DF2FN100 |
| | 400 | 125 | 10 | DF2FA125 | – |

For protection of equipment with current peaks
For protection of circuits without significant current peaks


Life Is On Schneider Electric

# Product references

PB121654.eps

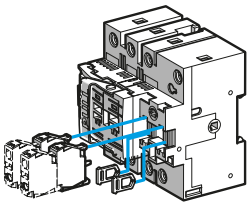
*DF2HA1161*

## DIN Cartridge fuses - Type aM /gG - From 10 to 1250 A

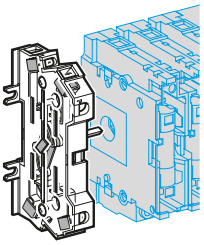
| Fuse type | Maximum rated voltage | Rating | Sold in lots of | | Fuses without striker Unit reference | | Fuses with striker Unit reference | |
|---|---|---|---|---|---|---|---|---|
| | V ~ | A | aM | gG | aM | gG | aM | gG |
| Blade size 00 | 690 | 100 | 3 | 10 | – | **DF2FGN100** | – | – |
| | | 125 | 3 | 10 | – | **DF2FGN125** | – | – |
| | 500 | 160 | - | 10 | – | **DF2FGN160** | – | – |
| Blade size 1 | 690 | 160 | 3 | 3 | **DF2HA1161** | – | – | – |
| | | 200 | 3 | 3 | **DF2HA1201** | **DF2HN1201** | – | – |
| | | 250 | 3 | - | **DF2HA1251** | – | – | – |
| | 500 | 250 | - | 3 | – | **DF2HN1251** | – | – |



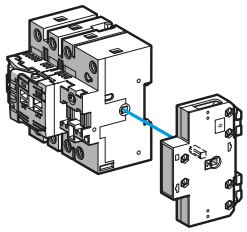
For protection of equipment with current peaks
For protection of circuits without significant current peaks



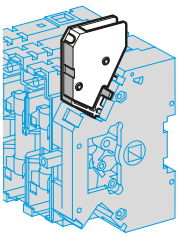

*GS1AM1●●*




*GS1AN●●●*




*GS1AM●11*




*GS1AF●●*



## Auxiliary contacts for IEC and UL switch-disconnector fuses

### Auxiliary early break and/or O, I and Test position signalling contacts (1) (2) (3)

| Switch rating | | Contact type | Type of operator | Rated operating current Ie (A) | | Reference |
|---|---|---|---|---|---|---|
| **A** (CEI) | **A** (UL) | | | < 24 V DC | < 240 V AC | |
| 32…1250 | 30 Compact 30...800 | 1 N/O | External, front or side-mounted (4) | 2.8 | 3 | **GS1AM110** |
| | | 1 N/C | External, front or side-mounted (4) | 2.8 | 3 | **GS1AM101** |

### Auxiliary O, I and Test position signalling contacts (3) (5)

| Switch rating | | Contact type | Type of operator | Rated operating current Ie (A) | | Reference |
|---|---|---|---|---|---|---|
| **A** (CEI) | **A** (UL) | | | < 24 V DC | < 240 V AC | |
| **Auxiliary O and I position signalling contacts** | | | | | | |
| 50…1250 | 30...800 | 1 N/C + 1 N/O | External, front or RH side-mounted Direct | – | 10 | **GS1AN11** |
| | | | External, LH side | – | 10 | **GS1AN11G*** |
| | | 2 N/C + 2 N/O | External, front or RH side-mounted Direct | – | 10 | **GS1AN22** |
| | | | External, LH side | – | 10 | **GS1AN22G*** |
| **Auxiliary O, I and Test position signalling contacts** (3) | | | | | | |
| 50…400 | 30...400 | 1 N/C + 1 N/O | External, front side-mounted | – | 10 | **GS1ANT11** |
| | | 2 N/C + 2 N/O | External, front side-mounted | – | 10 | **GS1ANT22** |

### Auxiliary early break O and I position signalling contacts

| Switch rating | Contact type | Type of operator | Rated operating current Ie (A) | | Reference |
|---|---|---|---|---|---|
| **A** (CEI) | | | < 24 V DC | < 240 V AC | |
| 32 | 1 C/O | – | 12 | 4 | **GS1AM111*** |
| | 2 C/O | – | 12 | 4 | **GS1AM211*** |
| 50…400 | 1 C/O | Direct, RH side | 12 | 4 | **GS1AM1*** |
| | 2 C/O | Direct, RH side | 12 | 4 | **GS1AM2*** |

### Auxiliary "blown fuse" signalling contacts for use with NF C and DIN fuses (6)

| Contact type | Switch rating | Fuse size | Number of poles | Rated operating current Ie (A) | | Reference |
|---|---|---|---|---|---|---|
| | **A** (CEI) | | | < 24 V DC | < 240 V AC | |
| 1st C/O | 50 | 14 x 51 | 3 or 4 | 12 | 4 | **GS1AF1*** |
| | 100 and 125 | 22 x 58 | 3 | 12 | 4 | **GS1AF23*** |
| | | | 4 | 12 | 4 | **GS1AF24*** |
| | 160 | Size 0 | 3 | 12 | 4 | **GS1AF33*** |
| | | | 4 | 12 | 4 | **GS1AF34*** |
| | 250 and 400 | Size 1 and Size 2 | 3 | 12 | 4 | **GS1AF43*** |
| | | | 4 | 12 | 4 | **GS1AF44*** |
| | 630 | Size 3 | 3 | 12 | 4 | **GS2AF63*** |
| | | | 4 | 12 | 4 | **GS2AF64*** |
| | 1250 | Size 4 | 3 | 12 | 4 | **GS2AF73*** |
| | | | 4 | 12 | 4 | **GS2AF74*** |
| 2nd C/O | 50…1250 | – | 3 or 4 | 12 | 4 | **GS1AF*** |

*(*) Not for UL switch-disconnector.*

*(1) **For 32 A (CEI), 30 (UL) switch-disconnector fuses, these auxiliary contacts allow:***
*- early break and O and I position signalling,*
*- O, I and Test position signalling,*
*- O and I position signalling,*
*- Test position signalling.*
***For 50 to 400 A (CEI), 30-400 A (UL) switch-disconnector fuses, they allow:***
*- early break,*
*- O, I and Test position signalling,*
*- O and I position signalling,*
*- Test position signalling.*
***For 630 and 1250 A (CEI), 630 and 800 A (UL) switch-disconnector fuses, they allow:***
*- early break and O and I position signalling,*

*(2) Maximum number of auxiliary contacts:*

| Switch rating **A** (CEI) | **A** (UL) | | Standard | With additional bracket | Reference of additional bracket |
|---|---|---|---|---|---|
| 32 (7) | 30 Compact | CC | 4 | 4 + 4 | **GS1AD10** |
| | | J | 2 | 2 + 4 | **GS1AD10** |
| 32 (8)…160 | 30...100 | | 4 | 4 + 4 | **GS2AD20** |
| 200…400 | 200 and 400 | | 8 | 8 + 4 | **GS2AD20** |
| 630…1250 | 600 and 800 | | 8 | 8 | **–** |

*(3) The Test position allows testing of the control circuits off-load. Auxiliary contacts **GS1AM110**, **GS1AM101** and **GS1ANT●●** only allow the text function with external handles **GS2AHT●●●**.*
*(4) These auxiliary contacts can also be used with 630, 800 and 1250 A switch-disconnector fuses fitted with a direct front-mounted operator.*
*(5) Reversible add-on attachments for converting an N/C contact to an N/O contact and vice versa.*
*(6) For striker fuses (BS fuses are not available with striker).*
*(7) For **GS1DDB3** fuse switch disconnector only.*
*(8) For 32 A: for fuse switch disconnector **GS2DB3** only.*

Characteristics: page B5/24
Dimensions: page B5/33
Schemes: page B5/33

*GS1AH01*

*GS1AH02*

*GS2AH●10*
*GS2AH●20*

*GS2AH●30*
*GS2AH●40*

*GS2AH●50*
*GS2AH●60*

*GS2AH●70*
*GS2AH●80*

## Handles for IEC and UL switch-disconnector fuses

### Handles for direct operators

| Switch rating A (CEI) | Switch rating A (UL) | Type of operator | Handle colour | Reference |
|---|---|---|---|---|
| **Handles for direct operators, padlockable** | | | | |
| - | 30 Compact | Front-mounted | Black | **GS2AH106** |
| 32 | - | Front | Black | **GS1AH103** |
| 50 and 63 | - | RH side | Black | **GS1AH01** |
| 100…400 | - | RH side | Black | **GS1AH02** |
| - | 600 and 800 | Front-mounted | Black | **GS2AH107** |
| 630 and 800 | - | Front | Black | **GS2AH104** |
| 1250 | - | Front | Black | **GS2AH105** |

### Handles for external operator

| Switch rating A (CEI) | Switch rating A (UL) | Handle colour | Degree of protection | Protection index Nema | Reference |
|---|---|---|---|---|---|
| **Handles for front-mounted external operators, padlockable and lockable in position O (1) Door interlock in I position (2)** | | | | | |
| 32…63 | - | Grey/Black | IP 65 | – | **GS2AH510** |
| | | | IP55 | – | **GS2AH515** |
| | | Red/Yellow | IP 65 | – | **GS2AH520** |
| 100…400 | - | Grey/Black | IP 65 | – | **GS2AH530** |
| | | | IP55 | – | **GS2AH535** |
| | | Red/Yellow | IP 65 | – | **GS2AH540** |
| 630 and 800 | - | Grey/Black | IP65 | – | **GS2AH550** |
| | | Red/Yellow | IP65 | – | **GS2AH560** |
| 1250 | - | Grey/Black | IP65 | – | **GS2AH570** |
| | | Red/Yellow | IP65 | – | **GS2AH580** |
| - | 30 Compact | Grey/Black | – | 1, 3R, 12 | **GS2AH110** |
| | | Red/Yellow | – | 1, 3R, 12 | **GS2AH120** |
| | | Grey/Black | – | 1, 3R, 4, 4X, 12 | **GS2AH410** |
| | | Red/Yellow | – | 1, 3R, 4, 4X, 12 | **GS2AH420** |
| - | 30…400 | Grey/Black | – | 1, 3R, 12 | **GS2AH130** |
| | | Red/Yellow | – | 1, 3R, 12 | **GS2AH140** |
| | | Grey/Black | – | 1, 3R, 4, 4X, 12 | **GS2AH430** |
| | | Red/Yellow | – | 1, 3R, 4, 4X, 12 | **GS2AH440** |
| - | 600 and 800 | Grey/Black | – | 1, 3R, 12 | **GS2AH150** |
| | | Red/Yellow | – | 1, 3R, 12 | **GS2AH160** |
| **Handles for front-mounted external operators with test facility (3), padlockable and lockable in "O" position (1). Door interlock in "I" position (2)** | | | | | |
| 32…63 | - | Grey/Black | IP 65 | – | **GS2AHT510** |
| | | Red/Yellow | IP65 | – | **GS2AHT520** |
| 100…400 | - | Grey/Black | IP65 | – | **GS2AHT530** |
| | | Red/Yellow | IP65 | – | **GS2AHT540** |
| - | 30 Compact | Grey/Black | – | 1, 3R, 12 | **GS2AHT110** |
| | | Red/Yellow | – | 1, 3R, 12 | **GS2AHT120** |
| | | Grey/Black | – | 1, 3R, 4, 4X, 12 | **GS2AHT410** |
| | | Red/Yellow | – | 1, 3R, 4, 4X, 12 | **GS2AHT420** |
| - | 30…400 | Grey/Black | – | 1, 3R, 12 | **GS2AHT130** |
| | | Red/Yellow | – | 1, 3R, 12 | **GS2AHT140** |
| | | Grey/Black | – | 1, 3R, 4, 4X, 12 | **GS2AHT430** |
| | | Red/Yellow | – | 1, 3R, 4, 4X, 12 | **GS2AHT440** |
| **Handles for external right-hand side-mounted operators, padlockable and lockable in "O" position (1)** | | | | | |
| 32…63 | - | Grey/Black | IP 65 | – | **GS2AH210** |
| | | | IP55 | – | **GS2AH215** |
| | | Red/Yellow | IP65 | – | **GS2AH220** |
| 100…400 | - | Grey/Black | IP65 | – | **GS2AH230** |
| | | | IP55 | – | **GS2AH235** |
| | | Red/Yellow | IP65 | – | **GS2AH240** |
| 630…1250 | - | Grey/Black | IP65 | – | **GS2AH250** |
| | | Red/Yellow | IP65 | – | **GS2AH260** |
| **Handles for external left-hand side-mounted operators, padlockable and lockable in "O" position (1)** | | | | | |
| 32…63 | - | Grey/Black | IP 65 | – | **GS2AH310** |
| | | Red/Yellow | IP65 | – | **GS2AH320** |
| 100…400 | - | Grey/Black | IP65 | – | **GS2AH330** |
| | | Red/Yellow | IP65 | – | **GS2AH340** |
| 630…1250 | - | Grey/Black | IP65 | – | **GS2AH350** |
| | | Red/Yellow | IP65 | – | **GS2AH360** |

*(1) Lockable with device **GS2AX1,** to be ordered separately.*
*(2) Door interlock override by means of a tool.*
*(3) The Test facility allows testing of the control circuits off-load, by using auxiliary contacts **GS1AM110**, **GS1AM101** or **GS1ANT●●**. In the "Test" position, the enclosure door can be opened.*

Dimensions:
pages B5/25 to B5/32

PB121455.eps

*GS2AE5*

PB121456.eps

*GS2AE2 - GS2AE21*

PB121457.tif

*GS2AE8 - GS2AE81*

## Accessories for IEC and UL switch-disconnector fuses

### Shafts for external operators

| Switch rating A (CEI) | A (UL) | Shaft length mm | Shaft cross section mm | Reference |
|---|---|---|---|---|
| 32 | 30 Compact | 200 | 5 x 5 | **GS2AE82** |
| | | 320 | 5 x 5 | **GS2AE8** |
| | | 400 | 5 x 5 | **GS2AE81** |
| 50…400 | 30...400 | 200 | 10 x 10 | **GS2AE22** |
| | | 320 | 10 x 10 | **GS2AE2** |
| | | 400 | 10 x 10 | **GS2AE21** |
| 630…1250 | 600 and 800 | 200 | 12 x 12 | **GS2AE52** |
| | | 320 | 12 x 12 | **GS2AE5** |
| | | 40 | 12 x 12 | **GS2AE51** |

### Terminal protection shrouds for upstream or downstream connector plates

| Switch rating A (CEI) | A (UL) | Number of poles | Reference |
|---|---|---|---|
| 50 and 63 | 30 Compact, 30...60 (3P) | 3 or 4 | (1) |
| 100…160 | 100 | 3 | **GS1AP33** |
| | – | 4 | **GS1AP34** |
| 200…400 | 200 | 3 | **GS1AP43** |
| | – | 4 | **GS1AP44** |
| – | 400 | 3 | **GS1APU53** |
| 630…800 | 600 and 800 | 3 | **GS2AP73** |
| | – | 4 | **GS2AP64** |
| 1250 | – | 3 | **GS2AP83** |
| | | 4 | **GS2AP84** |

### Devices for locking fuse covers in "I" position (2)

| Switch rating A | Fuse size | Number of poles | Reference |
|---|---|---|---|
| 50 | 14 x 51 | 3 or 4 | (3) |
| 63 | Size 00C | 3 or 4 | **GS1AV1** |
| 100…160 | 22 x 58, Size 00 | 3 or 4 | **GS1AV2** |
| 160 | Size 0 | 3 | **GS1AV33** |
| 250 | Size 1 | 3 | **GS1AV53** |
| | | 4 | **GS1AV54** |
| 400 | Size 2 | 3 | **GS1AV73** |
| | | 4 | **GS1AV74** |

### Cage terminals for connection of bare cables (without lug)

| Switch rating A | Number of poles | Reference |
|---|---|---|
| 50 and 63 | 3 or 4 | (4) |
| 100…160 | 3 | **GS1AW33** |
| | 4 | **GS1AW34** |
| 200…250 | 3 | **GS1AW43** |
| | 4 | **GS1AW44** |

### External handle locking device

| Switch rating A | Description | Reference |
|---|---|---|
| 32…1250 | Device for RONIS EL11AP keylock (lock to be ordered separately). | **GS2AX1** |

### Flat mounting kit

| Switch rating A | Description | Reference |
|---|---|---|
| 50…400 | The kit, for use with a front-mounted external handle, includes:<br>■ a 200 mm shaft, cross section 10 x 10 mm,<br>■ an adapter plate | **GS2ADL2** |

*(1) For these ratings, the switch-disconnector fuses are fitted with terminal covers as standard.*
*(2) For NF C and DIN switch-disconnector fuses fitted with right-hand mounted direct operator.*
*(3) For this rating, switch-disconnector fuses are fitted with a cover locking device as standard.*
*(4) For these ratings, switch-disconnector fuses are fitted with cage terminals as standard.*

# Product references

GS1AD010
GS1AD10
GS1AE6
GS1AE7
GS1AF
GS1AF1
GS1AF23
GS1AF24
GS1AF33
GS1AF34
GS1AF43
GS1AF44
GS1AH01
GS1AH02
GS1AH101
GS1AH102
GS1AH103
GS1AH110
GS1AH130
GS1AH160
GS1AH220
GS1AH440
GS1AM1
GS1AM101
GS1AM110
GS1AM111
GS1AM2
GS1AM211
GS1AN11
GS1AN11G
GS1AN22
GS1AN22G
GS1ANT11
GS1ANT22
GS1AP33
GS1AP34
GS1AP43
GS1AP44
GS1AP63
GS1AP83
GS1AV1
GS1AV2
GS1AV33
GS1AV54
GS1AV73
GS1AW303
GS1AW306
GS1AW33
GS1AW34
GS1AW403
GS1AW406
GS1AW43
GS1AW44
GS1AW503
GS1AW606
GS1AW903
GS1DD3
GS1DD4
GS1DDB3
GS1DDB4
GS1DDU3
GS1DU3
GS1FD3
GS1FD4
GS1GD3
GS1GD4
GS1JD3
GS1JD4
GS1KD3
GS1KD4
GS1KKD3
GS1KKD4
GS1LD3
GS1LD4
GS1LLD3
GS1LLD4
GS1ND3
GS1ND4
GS1QQD3
GS1QQD4
GS2AD030N
GS2AD040N
GS2AD20
GS2ADL2
GS2AE2
GS2AE21
GS2AE22
GS2AE23
GS2AE5
GS2AE51
GS2AE52
GS2AE61
GS2AE8
GS2AE81
GS2AE82
GS2AEH12
GS2AESB
GS2AF63
GS2AF64
GS2AF73
GS2AF74
GS2AH100TO200
GS2AH104
GS2AH106
GS2AH110
GS2AH120
GS2AH130
GS2AH140
GS2AH150
GS2AH160
GS2AH170
GS2AH180
GS2AH210
GS2AH215
GS2AH220
GS2AH230
GS2AH235
GS2AH240
GS2AH250
GS2AH260
GS2AH310
GS2AH320
GS2AH330
GS2AH340
GS2AH350
GS2AH360
GS2AH36F
GS2AH410
GS2AH420
GS2AH430
GS2AH440
GS2AH510
GS2AH515
GS2AH520
GS2AH530
GS2AH535
GS2AH540
GS2AH550
GS2AH560
GS2AH570
GS2AH580
GS2AH60F
GS2AHT110
GS2AHT120
GS2AHT130
GS2AHT140
GS2AHT410
GS2AHT420
GS2AHT430
GS2AHT440
GS2AHT510
GS2AHT520
GS2AHT530
GS2AHT540
GS2AP43
GS2AP53
GS2AP64
GS2AP73
GS2AP83
GS2AP84
GS2AX1
GS2DB3
GS2DB4
GS2EEU3
GS2EU3N
GS2F3
GS2F4
GS2FG3
GS2FG4
GS2G3
GS2G4
GS2GB3
GS2GB4
GS2GG3
GS2GG4
GS2GU3N
GS2J3
GS2J4
GS2JB3
GS2JB4
GS2JG3
GS2JG4
GS2JU3N
GS2K3
GS2K4
GS2KG3
GS2KG4
GS2KK3
GS2KK4
GS2KKG3
GS2KKG4
GS2L3
GS2L4
GS2LB3
GS2LB4
GS2LG3
GS2LG4
GS2LL3
GS2LL4
GS2LLB3
GS2LLB4
GS2LLG3
GS2LLG4
GS2MMB3
GS2MMB4
GS2MU3N
GS2N3
GS2N4
GS2NB3
GS2NB4
GS2NG3
GS2NG4
GS2PPB3
GS2PPB4
GS2QQ3
GS2QQ4
GS2QQB3
GS2QQB4
GS2QQG3
GS2QQG4
GS2QU3N
GS2S3
GS2S4
GS2SB3
GS2SB4
GS2SG3
GS2SG4
GS2SU3
GS2TB3
GS2TB4
GS2TU3
GS2V3
GS2V4
GS2VG3



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers



## Contents

Characteristics:
> switch-disconnector fuses.... B5/18 to B5/23
> auxiliary contacts .....B5/24
Dimensions ..... B5/25 to B5/33
Schemes.....B5/33

## IEC - For NFC / DIN fuses - From 32 to 1250 A

### Switch-disconnector-fuse characteristics

| Type | | | | GS1DD | GS●F | GS●G | GS●J |
|---|---|---|---|---|---|---|---|
| **Environment** | | | | | | | |
| Conforming to standards | Switch-disconnector fuses | | | IEC 60947-3 | | | |
| | Fuses | | | IEC 60269-1 and 2 | | | |
| Product certifications | | | | ASEFA/LOVAG, LROS, UKCA | | | |
| Degree of protection conforming to IEC 60529 | On front panel with terminal covers | | | IP 20 | | | |
| Ambient air temperature around the device | Storage | | °C | -40…+80 | | | |
| | Operation | | °C | -20…+70 | | | |
| Flame resistance conforming to IEC 60695-2-1 | Body | | °C | 960 | 960 | | |
| | Fuse cover | | °C | – | 850 | | |
| **Pole characteristics** | | | | | | | |
| Conventional thermal current (Ith) for ambient temperature ≤ 40 °C | | | A | 32 | 50 | 63 | 100 |
| Fuse size | | | | 10 x 38 | 14 x 51 | T00C | 22 x 58 |
| Power dissipated per 1 pole | | | W | 1.20 | 2.45 | 4.35 | 6.80 |
| Maximum fuse dissipation allowed per 1 pole | | | W | 2.90 | 4.60 | 6.00 | 9.00 |
| Rated insulation voltage (Ui) | | | V | 800 | 750 | 750 | 750 |
| Rated impulse withstand voltage (Uimp) | | | kV | 8 | 8 | 8 | 8 |
| Rated operational current (Ie) | Cat. AC-23A/B (1) | ∼ 400 V | A | 32 | 50 | 63 | 100 |
| | | ∼ 500 V | A | 32 | 50 | 63 | 100 |
| | | ∼ 690 V | A | 32 | 50 | 63 | 100 (3) |
| | Cat. DC-23A/B (1) | ⎓ 440 V (2) | A | 20 | 40 | 40 | 100 |
| Rated operational power | Cat. AC-23A/B (1) | ∼ 400 V | kW | 15 | 25 | 30 | 51 |
| | | ∼ 500 V | kW | 18.5 | 33 | 40 | 63 |
| | | ∼ 690 V | kW | 25 | 45 | 55 | 90 |
| Rated conditional short-circuit current | I rms at ∼ 400 V with protection by gG (gl) fuses | | kA | 100 | 100 | 100 | 100 |
| | Rating of associated fuses | | A | 32 | 50 | 63 | 100 |
| Peak value of permissible current (dynamic short-circuit withstand) | Conforming to IEC 60269-1 | ∼ 400 V | kA | 5.5 | 7.6 | 10.6 | 20 |
| Rated making capacity | I rms at 400 V Cat. AC-23B | | A | 320 | 500 | 630 | 1000 |
| Rated breaking capacity | I rms at 400 V Cat. AC-23B | | A | 256 | 400 | 500 | 800 |
| Mechanical durability | Number of operating cycles | | | 20000 | 10000 | 10000 | 10000 |
| Electrical durability | Number of operating cycles cat. AC/DC-23A/B (1) | | | 1500/300 | 1500/300 | 1500/300 | 1500/300 |
| Cabling | Cable (c.s.a. min/max) | | mm² | 2.5/16 | 6/25 | 10/25 | 25/95 |
| | Bars (max width) | | mm | – | – | – | 20 |
| Tightening torque | | | N.m | 3 | 3.2 | 3.2 | 12 |

*(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.*
*(2) 2 poles in series per phase.*
*(3) With terminal covers.*
*(4) Poles not juxtaposed.*

References: pages B5/4 and B5/5
Dimensions: pages B5/25 to B5/29
Schemes: page B5/33

| | GS●K | GS●KK | GS●LL | GS●L | GS●N | GS●QQ | GS2S | GS2V |
|---|---|---|---|---|---|---|---|---|
| | IEC 60947-3 | | | | | | | |
| | IEC 60269-1 and 2 | | | | | | | |
| | ASEFA/LOVAG, LROS, UKCA | | | | | | | |
| | IP 20 | | | | | | | |
| | -40…+80 | | | | | | | |
| | -20…+70 | | | | | | | |
| | 960 | | | | | | | |
| | 850 | | | | | | | |
| | 125 | 125 | 160 | 160 | 250 | 400 | 630 | 1250 |
| | 22 x 58 | T00 | T00 | T0 | T1 | T2 | T3 | T4 |
| | 8.63 | 6.00 | 10.40 | 10.40 | 19.00 | 24.40 | 61.00 | 154.00 |
| | 11.00 | 12.00 | 12.00 | 15.00 | 23.00 | 33.00 | 60.00 | 110.00 |
| | 750 | 750 | 750 | 750 | 750 | 800 | 1000 | 1000 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 |
| | 125 | 125 | 160 | 160 | 250 | 400 | 630 | 1000 |
| | 125 | 125 | 160 | 160 | 250 | 315 | 500 | 800 |
| | 100 (3) | 100 (3) | 125 (3) | 125 (3) | 250 (3) | 250/315 | 315/400 | 630 |
| | 100 | 100 | 125 | 125 | 200 | 200/315 (4) | 400/630 (4) | 1000 |
| | 63 | 63 | 80 | 80 | 132 | 220 | 355 | 560 |
| | 90 | 90 | 110 | 110 | 160 | 220 | 355 | 560 |
| | 80 | 80 | 110 | 110 | 220 | 220/295 | 295/400 | 400/475 |
| | 100 | 100 | 100 (50) | 100 | 100 | 50 | 100 | 100 |
| | 125 | 125 | 125 (160) | 160 | 250 | 400 | 630 | 1250 |
| | 20 | 20 | 22.7 | 20 | 32.5 | 40 | 70 | 90 |
| | 1250 | 1250 | 1600 | 1600 | 2500 | 4000 | 6300 | 10 000 |
| | 1000 | 1000 | 1280 | 1280 | 2000 | 3200 | 5040 | 8000 |
| | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 8000 | 5000 |
| | 1000/200 | 1000/200 | 1000/200 | 1000/200 | 1000/200 | 1000/200 | 1000/200 | 500/100 |
| | 35/95 | 35/95 | 50/95 | 50/95 | 95/240 | 185/240 | 2 x 150 / 2 x 300 | - / 4 x 185 |
| | 20 | 20 | 20 | 20 | 32 | 45 | 63 | 80 |
| | 12 | 12 | 12 | 12 | 25 | 25 | 44 | 44 |

References:
pages B5/4 and B5/5

Dimensions:
pages B5/25 to B5/29

Schemes:
page B5/33

## IEC - For BS fuses - From 32 to 1250 A

### Switch-disconnector-fuse characteristics

| Type | | | | GS1DDB | GS2DB | GS2GB | GS2JB |
|---|---|---|---|---|---|---|---|
| **Environment** | | | | | | | |
| Conforming to standards | Switch-disconnector fuses | | | IEC 60947-3 | | | |
| | Fuses | | | IEC 60269-1 and 2 | | | |
| Product certifications | | | | ASEFA/LOVAG, LROS, UKCA | | | |
| Degree of protection conforming to IEC 60529 | On Front panel, with terminal covers | | | IP 20 | | | |
| Ambient air temperature around the device | Storage | | °C | -40…+80 | | | |
| | Operation | | °C | -20…+70 | | | |
| Flame resistance conforming to IEC 60695-2-1 | Body | | °C | 960 | | | |
| | Fuse cover | | °C | – | | 850 | |
| **Pole characteristics** | | | | | | | |
| Conventional thermal current (Ith) for ambient temperature ⩽ 40 °C | | | A | 32 | 32 | 63 | 100 |
| Fuse size | | | | A1 | A1 | A2-A3 | A4 Ø ⩽ 31 mm |
| Power dissipated per 1 pole | | | W | 1.20 | 1.20 | 4.35 | 3.70 |
| Maximum fuse dissipation allowed per 1 pole | | | W | 3.10 | 3.10 | 3.80 | 8.60 |
| Rated insulation voltage (Ui) | | | V | 800 | 750 | 750 | 750 |
| Rated impulse withstand voltage (Uimp) | | | kV | 8 | 8 | 8 | 8 |
| Rated operational current (Ie) | Cat. AC-23A/B (1) | ∼ 400 V | A | 32 | 32 | 63 | 100 |
| | | ∼ 500 V | A | 32 | 32 | 63 | 100 |
| | | ∼ 690 V | A | 32 | 32 | 63 | 100 (4) |
| | Cat. DC-23A/B (1) | ⎓ 440 V (2) | A | 20 | 20 | 40 | 100 |
| Rated operational power | Cat. AC-23A/B (1) | ∼ 400 V | kW | 15 | 15 | 30 | 51 |
| | | ∼ 500 V | kW | 18.5 | 18.5 | 40 | 63 |
| | | ∼ 690 V | kW | 25 | 25 | 55 | 90 |
| Rated conditional short-circuit current | I rms at ∼ 400 V with protection by gG (gl) fuses | | kA | 80 | 80 | 80 | 80 |
| | Rating of associated fuses | | A | 32 | 32 | 63 | 100 |
| Peak value of permissible current (dynamic short-circuit withstand) | Conforming to IEC 60269-1 | ∼ 400 V | kA | 5.5 | 9 | 10.6 | 20 |
| Rated making capacity | I rms at 400 V Cat. AC-23B | | A | 320 | 320 | 630 | 1000 |
| Rated breaking capacity | I rms at 400 V Cat. AC-23B | | A | 256 | 256 | 500 | 800 |
| Mechanical durability | Number of operating cycles | | | 20000 | 10000 | 10000 | 10000 |
| Electrical durability | Number of operating cycles cat. AC/DC-23A/B (1) | | | 1500/300 | 1500/300 | 1500/300 | 1500/300 |
| Cabling | Cable (c.s.a. min/max) | | $mm^2$ | 2.5/16 | 6/25 | 10/25 | 25/95 |
| | Bars (max width) | | mm | – | – | – | 20 |
| Tightening torque | | | N.m | 3 | 3.2 | 3.2 | 12 |

*(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.*
*(2) 2 poles in series per phase.*
*(3) Fit switch-disconnector fuses **GS2LB** with B1 or B2 fuses and **GS2LLB** with A4 fuses.*
*(4) With terminal covers.*
*(5) Poles not juxtaposed.*

References: pages B5/6 and B5/7
Dimensions: pages B5/25 to B5/29
Schemes: page B5/33

| | GS2LB or LLB [3] | GS2MMB | GS2NB | GS2PPB | GS2QQB | GS2SB | GS2TB | GS2VB |
|---|---|---|---|---|---|---|---|---|
| | IEC 60947-3 | | | | | | | |
| | IEC 60269-1 and 2 | | | | | | | |
| | ASEFA/LOVAG, LROS, UKCA | | | | | | | |
| | IP 20 | | | | | | | |
| | -40…+80 | | | | | | | |
| | -20…+70 | | | | | | | |
| | 960 | | | | | | | |
| | 850 | | | | | | | |
| | 160 | 200 | 250 | 315 | 400 | 630 | 800 | 1250 |
| | B1-B2 or A4 [3] | B1-B2 | B1…B3 | B1…B3 | B1…B4 | C1-C2 | C1…C3 | D1 |
| | 11.20 or 9.70 | 8.80 | 13.80 | 17.00 | 24.40 | 61.00 | 68.00 | 154.00 |
| | 13.40 or 15.30 | 14.30 | 19.70 | 29.60 | 29.60 | 55.00 | 70.00 | 100.00 |
| | 750 | 750 | 750 | 800 | 800 | 1000 | 1000 | 1000 |
| | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 12 |
| | 160 | 200 | 250 | 315 | 400 | 630 | 800 | 1000 |
| | 160 | 200 | 250 | 315 | 315 | 500 | 630 | 800 |
| | 125 [4] | 200/160 [4] | 250 [4] | 250/315 [4] | 250/315 | 315/400 | 630 | 630 |
| | 125 | 200 | 200 | 200 | 200/315 [5] | 400/630 [5] | 800 | 1000 |
| | 80 | 100 | 132 | 150 | 220 | 355 | 450 | 560 |
| | 110 | 140 | 160 | 220 | 220 | 355 | 450 | 560 |
| | 110 | 150/185 | 220 | 220/295 | 220/295 | 295/400 | 400 | 400/475 |
| | 80 | 80 | 80 | 80 | 50 | 80 | 80 | 80 |
| | 160 | 200 | 250 | 315 | 400 | 630 | 800 | 1250 |
| | 22.7 | 32.5 | 32.5 | 40 | 40 | 70 | 80 | 90 |
| | 1600 | 2000 | 2500 | 3150 | 4000 | 6300 | 8000 | 10 000 |
| | 1280 | 1600 | 2000 | 2520 | 3200 | 5040 | 6400 | 8000 |
| | 10000 | 10000 | 10000 | 10000 | 10000 | 8000 | 8000 | 5000 |
| | 1000/200 | 1000/200 | 1000/200 | 1000/200 | 1000/200 | 1000/200 | 500/100 | 500/100 |
| | 50/95 | 95/240 | 95/240 | 185/240 | 185/240 | 2 x 150 / 2 x 300 | 2 x 185 / 2 x 300 | - / 4 x 185 |
| | 20 | 32 | 32 | 45 | 45 | 63 | 63 | 80 |
| | 12 | 25 | 25 | 25 | 25 | 44 | 44 | 44 |



References:
pages B5/6 and B5/7

Dimensions:
pages B5/25 to B5/29

Schemes:
page B5/33

## UL, CSA, IEC - For CC and J fuses - From 32 to 800 A

### Switch-disconnector-fuse characteristics

| Type | | | | GS1DDU3 | GS1DU3 | GS2EEU3 | GS2EU3N |
|---|---|---|---|---|---|---|---|
| **Environment** | | | | | | | |
| Conforming to standards | Switch-disconnector fuses | | | UL 489, CSA 22.2 n°5, IEC 60947-3 | | UL 98, UL 248, CSA 22.2 n°4, IEC 60947-3 | |
| | Fuses | | | UL 248 | | | |
| Degree of protection conforming to IEC 60529 | With terminal covers | | | IP 20 | | | |
| Ambient air temperature around the device | Storage | | °C | -40…+80 | | | |
| | Operation | | °C | -20…+70 | | | |
| Flame resistance conforming to IEC 60695-2-1 | Body | | °C | 960 | 960 | 960 | |
| | Fuse cover | | °C | – | – | 850 | |
| **Pole characteristics** | | | | | | | |
| Conventional thermal current (Ith) for ambient temperature ≤ 40 °C | | | A | 30 | 30 | 30 | 30 |
| Fuse size | | | | CC | J | CC | J |
| Rated insulation voltage (Ui) | | | V | 800 | 800 | 750 | 750 |
| Rated impulse withstand voltage (Uimp) | | | kV | 8 | 8 | 8 | 8 |
| Rated operational current (Ie) | Cat. AC-23A/B (1) | ∼ 400 V | A | 32 | 32 | 32 | 32 |
| | | ∼ 500 V | A | 32 | 32 | 32 | 32 |
| | | ∼ 690 V | A | 32 | 32 | 32 | 32 |
| Rated operational power | Cat. AC-23A/B (1) | ∼ 400 V | kW | 15 | 15 | 15 | 15 |
| | | ∼ 500 V | kW | 18.5 | 18.5 | 18.5 | 18.5 |
| | | ∼ 690 V | kW | 25 | 25 | 25 | 25 |
| Prospective short-circuit current withstand | Conforming to UL 98 / UL 489 | ∼ 600 V | kA | 100 | 100 | 200 | 200 |
| Peak value of permissible current (dynamic short-circuit withstand) | Conforming to IEC 60269-1 | ∼ 400 V | kA | 5.5 | 5.5 | 7.6 | 17.6 |
| Rated making capacity | I rms at 400 V Cat. AC-23B | | A | 300 | 300 | 300 | 300 |
| Rated breaking capacity | I rms at 400 V Cat. AC-23B | | A | 240 | 240 | 240 | 240 |
| Mechanical durability | Number of operating cycles | | | 10000 | 10000 | 10000 | 10000 |
| Electrical durability | Number of operating cycles Cat. AC/DC-23A/B (1) | | | 1500/300 | 1500/300 | 1500/300 | 1500/300 |
| Cabling | Cable (c.s.a. min/max) | | $mm^2$ | 2.5/6 | 2.5/6 | 2.5/6 | 2.5/16 |
| | | | AWG | #14/#10 | #14/#10 | #14/#10 | #14/#6 |
| | Bars (max width) | | mm | - | - | - | - |
| Tightening torque | | | N.m | 3 (for wire) | 4 (for wire) | 5.5 (for wire) | 3.5 (for wire) |
| | | | lb-in | 27 | 27 | 48 | 31 |

*(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.*

References: pages B5/8 and B5/9
Dimensions: pages B5/30 to B5/32
Schemes: page B5/33

| | GS2GU3N | GS2JU3N | GS2MU3N | GS2QU3N | GS2SU3 | GS2TU3 |
|---|---|---|---|---|---|---|
| | UL 98, CSA 22.2 n°4, IEC 60947-3 | | | | | |
| | UL 248 | | | | | |
| | IP 20 | | | | | |
| | -40…+80 | | | | | |
| | -20…+70 | | | | | |
| | 960 | | | | | |
| | 850 | | | | | |
| | 60 | 100 | 200 | 400 | 600 | 800 |
| | J | J | J | J | J | L |
| | 750 | 750 | 750 | 800 | 1000 | 1000 |
| | 8 | 8 | 8 | 8 | 12 | 12 |
| | 63 | 100 | 200 | 400 | 630 | 800 |
| | 63 | 100 | 200 | 315 | 630 | 630 |
| | 63 | 100 | 200 | 250 | 630 | 630 |
| | 30 | 51 | 100 | 220 | 355 | 450 |
| | 40 | 63 | 140 | 220 | 450 | 560 |
| | 55 | 90 | 185 | 220 | 600 | 600 |
| | 100 | 200 | 200 | 200 | 200 | 200 |
| | 17.6 | 22 | 32 | 36 | 80 | 80 |
| | 600 | 1000 | 2000 | 4000 | 6000 | 8000 |
| | 480 | 800 | 1600 | 3200 | 4800 | 6400 |
| | 10000 | 10000 | 8000 | 6000 | 5000 | 5000 |
| | 1500/300 | 1500/300 | 1000/200 | 1000/200 | 1000/200 | 500/100 |
| | 2.5/16 | 4/50 | 16/150 | 25/300 | 2 x 150 | – |
| | #14/#6 | #12/#1 | #6/300 Kcmil | #4/600 Kcmil | #2/600 Kcmil | – |
| | - | 20 | 32 | 45 | 100 | 100 |
| | 3.5 (for wire) | 4 (for wire) | 18 (for lug) | 35 (for lug) | 35 (for lug) | 35 (for lug) |
| | 31 | 35.4 | 160 | 310 | 310 | 310 |



References:
pages B5/8 and B5/9
Dimensions:
pages B5/30 to B5/32
Schemes:
page B5/33

## Auxiliary contacts

| GS1AM●11, GS1AM1 and GS1AM2 early break and signalling contact characteristics | | | |
|---|---|---|---|
| Conventional thermal current (Ith) for ambient temperature ≤ 40 °C | | **A** | 16 |
| Rated operational current (Ie) | Cat. AC-15 | **A** | 127 V: 5 - 230 V: 4 - 400 /415 V: 3 - 440 V: 2 |
| | Cat. DC-13 | **A** | 24 V: 12 - 48 V: 2 - 110 V: 0.6 - 220 V: 0.4 |
| Durability | Number of operating cycles | | Mechanical: 1000000<br>Electrical: cat. AC-15: 30000 |
| Fuse protection | gG | **A** | 6 max |
| Cabling | | **mm** | Faston connectors: 1 x 6.35 or 2 x 2.8 |

| GS1AN and GS1ANT signalling contact characteristics | | | |
|---|---|---|---|
| Conventional thermal current (Ith) for ambient temperature ≤ 40 °C | | **A** | 20 |
| Rated operational current (Ie) | Cat. AC-15 | **A** | 127 V: 12 - 230 V: 10 - 400/415 V: 8 - 440 V: 6 |
| | Cat. DC-13 | **A** | 48 V: 4 - 110 V: 1.2 - 220 V: 1 |
| Durability | Number of operating cycles | | Mechanical: 30000<br>Electrical: cat. AC-15: 30000 |
| Fuse protection | gG | **A** | 16 max |
| Cabling | Cable (c.s.a. min/max) | **mm²** | Min: 1.5 - max: 10 |

| GS1AM110 and GS1AM101 early break and signalling contact characteristics | | | |
|---|---|---|---|
| Conventional thermal current (Ith) for ambient temperature ≤ 40 °C | | **A** | 10 |
| Rated operational current (Ie) | Cat. AC-15 | **A** | 120 V: 6 - 240 V: 3 - 400 V: 1.8 - 480 V: 1.5 |
| | Cat. DC-13 | **A** | 24 V: 2.8 - 48 V: 1.4 - 125 V: 0.55 - 250 V: 0.27 - 400 V: 0.15 |
| Durability | Number of operating cycles | | Mechanical: 5000000<br>Electrical: cat. AC-15: 1000000 |
| Cabling | Cable (c.s.a. min/max) | **mm²** | Min: 1 x 0.22 - max: 2 x 2.5 |

| GS●AF "blown fuse" signalling contact characteristics | | | |
|---|---|---|---|
| Conventional thermal current (Ith) for ambient temperature ≤ 40 °C | | **A** | 16 |
| Rated operational current (Ie) | Cat. AC-15 | **A** | 230 V: 4 - 400 V: 3 |
| | Cat. DC-13 | **A** | 24 V: 12 - 48 V: 2 - 110 V: 0.6 - 220 V: 0.4 |
| Durability | Number of operating cycles | | Mechanical: 30000<br>Electrical: cat. AC-15: 30000 |
| Cabling | | **mm** | Faston connectors: 1 x 6.35 |



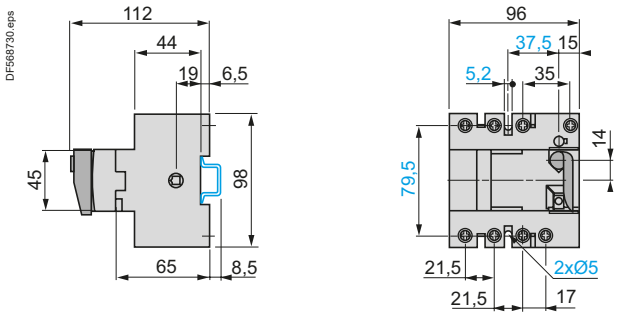
References:
page B5/12
Dimensions:
page B5/33
Schemes:
page B5/33

# Dimensions

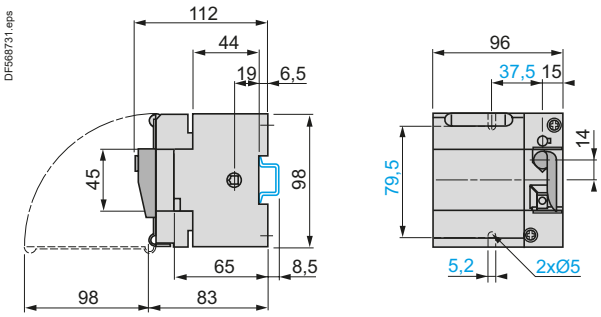
## IEC - GS1●● (32 A) Switch-disconnector-fuse

### Direct front-mounted operator

#### GS1DD

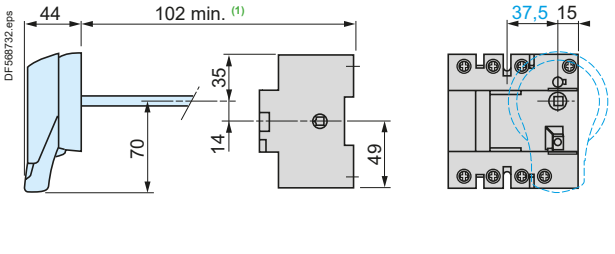


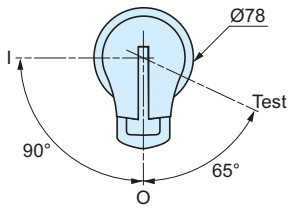

#### GS1DDB



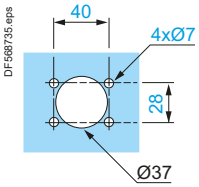

### External front-mounted operator

#### GS1DD

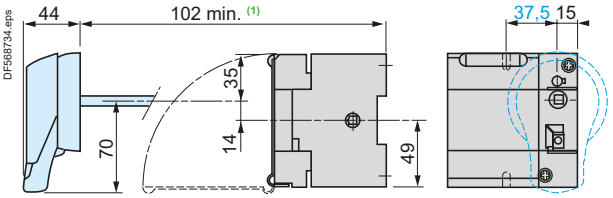


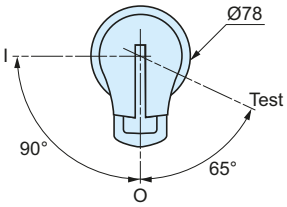




#### Door cut-out

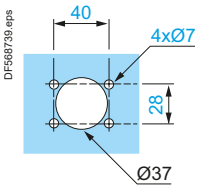



#### GS1DDB



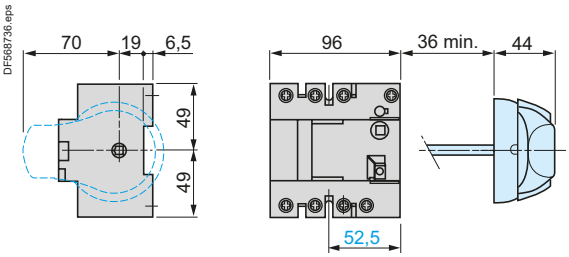

#### Door cut-out

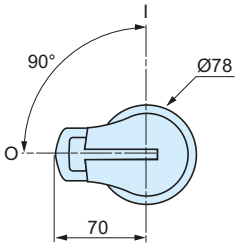



*(1) With 1 or 2 auxiliary contacts GS1AM1●●: 130 mm.*
*(2) With 3 or 4 auxiliary contacts GS1AM1●●: 155 mm.*

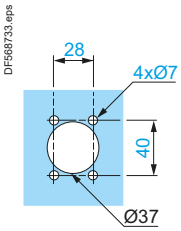
### External right-hand side-mounted operator

#### GS1DD

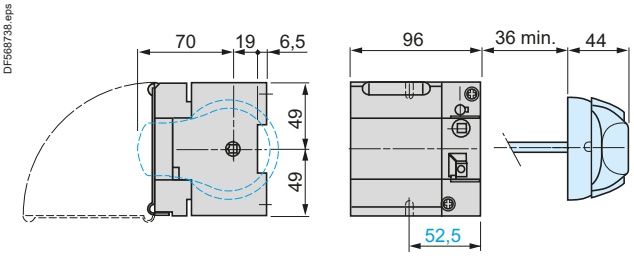


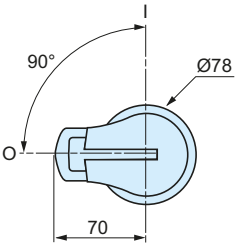




#### Door cut-out

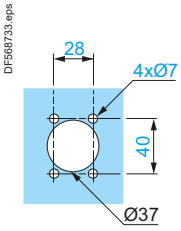



#### GS1DDB




#### Door cut-out




References:
pages B5/4 and B5/5

Characteristics:
pages B5/18 and B5/19

Schemes:
page B5/33

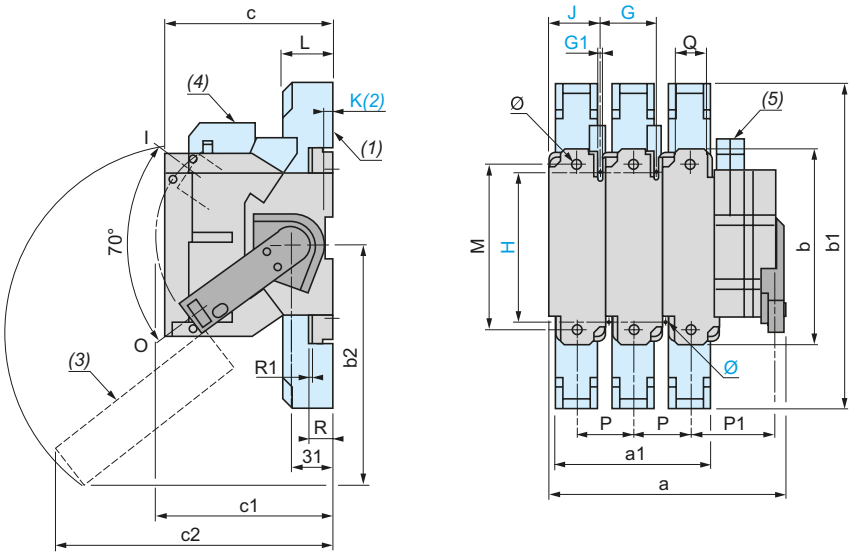
# Dimensions

## IEC - GS1●● (50...400 A) Switch-disconnector-fuse

**Direct right-hand side-mounted operator**

**GS1FD (50 A), GD (63 A), JD (100 A), KD, KKD (125 A), LD, LLD (160 A), ND (250 A) and QQD (400 A)**

DF538732.eps




| GS1 | | a | a1 | b | b1 | b2 | c | c1 | c2 | G | G1 | H | J | K | Ø | L | M | P | P1 | Q | R | R1 | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FD** | **3P** | 118 | – | 118 | – | – | 87 | 134 | – | 27 | 5.4 | 106 | 31 | 6.5 | 5 | – | – | 27 | 33.5 | – | – | – | – |
| | **4P** | 145 | – | 118 | – | – | 87 | 134 | – | 27 | 5.4 | 106 | 31 | 6.5 | 5 | – | – | 27 | 33.5 | – | – | – | – |
| **GD** | **3P** | 133 | – | 118 | – | 159 | 116.5 | 134 | 145 | 32 | 5.4 | 106 | 36 | 6.5 | 5 | – | – | 32 | 36 | – | – | – | – |
| | **4P** | 165 | – | 118 | – | 159 | 116.5 | 134 | 145 | 32 | 5.4 | 106 | 36 | 6.5 | 5 | – | – | 32 | 36 | – | – | – | – |
| **JD, KD** | **3P** | 150 | 108 | 162 | 268 | – | 116 | 173 | – | 36 | 5.4 | 127 | 40 | – | 5 | 44 | 141 | 36 | 38 | 20 | 19.5 | 2.5 | 8.5 |
| | **4P** | 186 | 144 | 162 | 268 | – | 116 | 173 | – | 36 | 5.4 | 127 | 40 | – | 5 | 44 | 141 | 36 | 38 | 20 | 19.5 | 2.5 | 8.5 |
| **KKD, LLD** | **3P** | 150 | 108 | 162 | 268 | 141 | 126.5 | 173 | 193 | 36 | 5.4 | 127 | 40 | – | 5 | 44 | 141 | 36 | 38 | 20 | 19.5 | 2.5 | 8.5 |
| | **4P** | 186 | 144 | 162 | 268 | 141 | 126.5 | 173 | 193 | 36 | 5.4 | 127 | 40 | – | 5 | 44 | 141 | 36 | 38 | 20 | 19.5 | 2.5 | 8.5 |
| **LD** | **3P** | 192 | 136 | 162 | 268 | 174 | 136.5 | 173 | 229 | 50 | 5.4 | 140 | 54 | – | 5 | 44 | 141 | 50 | 45 | 20 | 19.5 | 2.5 | 8.5 |
| | **4P** | 242 | 172 | 162 | 268 | 174 | 136.5 | 173 | 229 | 50 | 5.4 | 140 | 54 | – | 5 | 44 | 141 | 50 | 45 | 20 | 19.5 | 2.5 | 8.5 |
| **ND** | **3P** | 253 | 180 | 195 | 345 | 185 | 146 | 173 | 251 | 60 | 6.4 | 162 | 64 | – | 6 | 65 | 166 | 60 | 81 | 32 | 19.5 | 2.5 | 11 |
| | **4P** | 313 | 240 | 195 | 345 | 185 | 146 | 173 | 251 | 60 | 6.4 | 162 | 64 | – | 6 | 65 | 166 | 60 | 81 | 32 | 19.5 | 2.5 | 11 |
| **QQD** | **3P** | 271 | 192 | 205 | 355 | 200 | 149 | 173 | 260 | 66 | 6.4 | 172 | 70 | – | 6 | 65 | 175 | 66 | 86 | 50 | 20 | 3 | 11 |
| | **4P** | 337 | 258 | 205 | 355 | 200 | 149 | 173 | 260 | 66 | 6.4 | 172 | 70 | – | 6 | 65 | 175 | 66 | 86 | 50 | 20 | 3 | 11 |

*(1) Terminal cover.*
*(2) Mounting on ⊔ rail only for GS1FD and GS1GD (50 and 63 A).*
*(3) Protective screen, lockable in I position.*
*(4) 1 or 2 auxiliary contacts GS1AF●●.*
*(5) 1 or 2 auxiliary contacts GS1AM●.*

Ref.
Switch-disconnector fuses

References:
pages B5/4 and B5/5
Characteristics:
pages B5/18 and B5/19
Schemes:
page B5/33

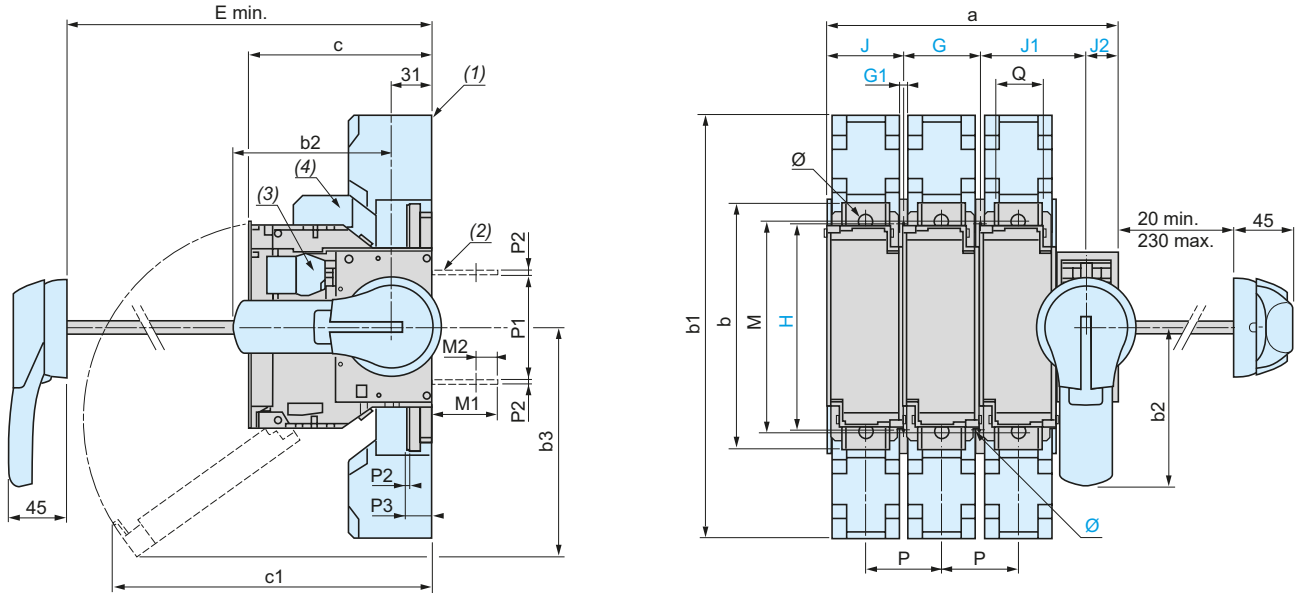
# Dimensions

## IEC - GS2●● (32...400 A) Switch-disconnector-fuse

**External front and right-hand side-mounted operator**

**GS2DB (32 A), F (50 A), G, GB, JB (63 A), J (100 A), K, KK (125 A), L, LL, LB, LLB (160 A), MMB (200 A), N, NB (250 A), PPB (315 A), QQ and QQB (400 A)**

DF538733.eps



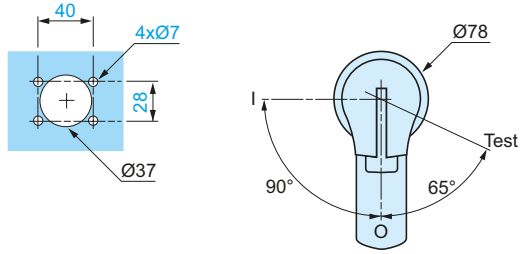

| GS2 | | a | b | b1 | b2 | b3 | c | c1 | E min. | G | G1 | H | J | J1 | J2 | Ø | M | M1 | M2 | P | P1 | P2 | P3 | Q | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F, DB | 3P | 121 | 118 | – | 70 | 85 | 87 (5) | 153 | 100 (5) | 27 | 5.4 | 106 | 31 | 45 | 18 | 5 | – | 15 | 6 | 27 | 59 | 2 | – | 12 | – |
| | 4P | 148 | 118 | – | 70 | 85 | 87 (5) | 153 | 100 (5) | 27 | 5.4 | 106 | 31 | 45 | 18 | 5 | – | 15 | 6 | 27 | 59 | 2 | – | 12 | – |
| G, GB | 3P | 136 | 118 | – | 70 | 159 | 116.5 (6) | 145 | 125 | 32 | 5.4 | 106 | 36 | 50 | 18 | 5 | – | 15 | 6 | 32 | 59 | 2 | – | 12 | – |
| | 4P | 168 | 118 | – | 70 | 159 | 116.5 (6) | 145 | 125 | 32 | 5.4 | 106 | 36 | 50 | 18 | 5 | – | 15 | 6 | 32 | 59 | 2 | – | 12 | – |
| J, JB, K | 3P | 148 | 162 | 268 | 125 | 141 | 116 (6) | 187 | 135 | 36 | 5.4 | 127 | 40 | 54 | 18 | 5 | 141 | 41 | 8 | 36 | 62 | 2.5 | 19.5 | 20 | 8.5 |
| | 4P | 184 | 162 | 268 | 125 | 141 | 116 (6) | 187 | 135 | 36 | 5.4 | 127 | 40 | 54 | 18 | 5 | 141 | 41 | 8 | 36 | 62 | 2.5 | 19.5 | 20 | 8.5 |
| KK, LL | 3P | 148 | 162 | 268 | 125 | 141 | 126.5 (6) | 193 | 135 | 36 | 5.4 | 127 | 40 | 54 | 18 | 5 | 141 | 41 | 8 | 36 | 62 | 2.5 | 19.5 | 20 | 8.5 |
| | 4P | 184 | 162 | 268 | 125 | 141 | 126.5 (6) | 193 | 135 | 36 | 5.4 | 127 | 40 | 54 | 18 | 5 | 141 | 41 | 8 | 36 | 62 | 2.5 | 19.5 | 20 | 8.5 |
| L, LB, LLB | 3P | 190 | 162 | 268 | 125 | 174 | 136.5 | 229 | 145 | 50 | 5.4 | 140 | 54 | 64 | 18 | 5 | 141 | 41 | 8 | 50 | 62 | 2.5 | 19.5 | 20 | 8.5 |
| | 4P | 240 | 162 | 268 | 125 | 174 | 136.5 | 229 | 145 | 50 | 5.4 | 140 | 54 | 64 | 18 | 5 | 141 | 41 | 8 | 50 | 62 | 2.5 | 19.5 | 20 | 8.5 |
| MMB, NB, N | 3P | 234 | 195 | 345 | 125 | 185 | 146 | 251 | 154 | 60 | 6.4 | 162 | 64 | 86 | 25 | 6 | 166 | 52 | 17 | 60 | 84 | 2.5 | 19.5 | 32 | 11 |
| | 4P | 294 | 195 | 345 | 125 | 185 | 146 | 251 | 154 | 60 | 6.4 | 162 | 64 | 86 | 25 | 6 | 166 | 52 | 17 | 60 | 84 | 2.5 | 19.5 | 32 | 11 |
| PPB, QQB, QQ | 3P | 252 | 205 | 355 | 125 | 200 | 149 | 260 | 157 | 66 | 6.4 | 172 | 70 | 91 | 25 | 6 | 175 | 54 | 14.5 | 66 | 84 | 3 | 20 | 50 | 11 |
| | 4P | 318 | 205 | 355 | 125 | 200 | 149 | 260 | 157 | 66 | 6.4 | 172 | 70 | 91 | 25 | 6 | 175 | 54 | 14.5 | 66 | 84 | 3 | 20 | 50 | 11 |

*(1) Terminal cover.*
*(2) Rear access connector plates (option).*
*(3) 1 to 8 auxiliary contacts GS1AM1●●.*
*(4) 1 or 2 auxiliary contacts GS1AF●●.*
*(5) 1 auxiliary contact GS1AM1●●: + 23.5 mm, 2 auxiliary contacts GS1AM1●●: + 47 mm.*
*(6) 132 mm with 2 auxiliary contacts GS1AM1●●.*

**Door cut-out**

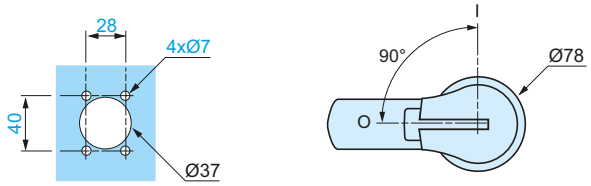
**For external front-mounted operator**

DF568742.eps




**For external right-hand side-mounted operator**

DF568743.eps




References:
pages B5/6 and B5/7

Characteristics:
pages B5/20 and B5/21

Schemes:
page B5/33

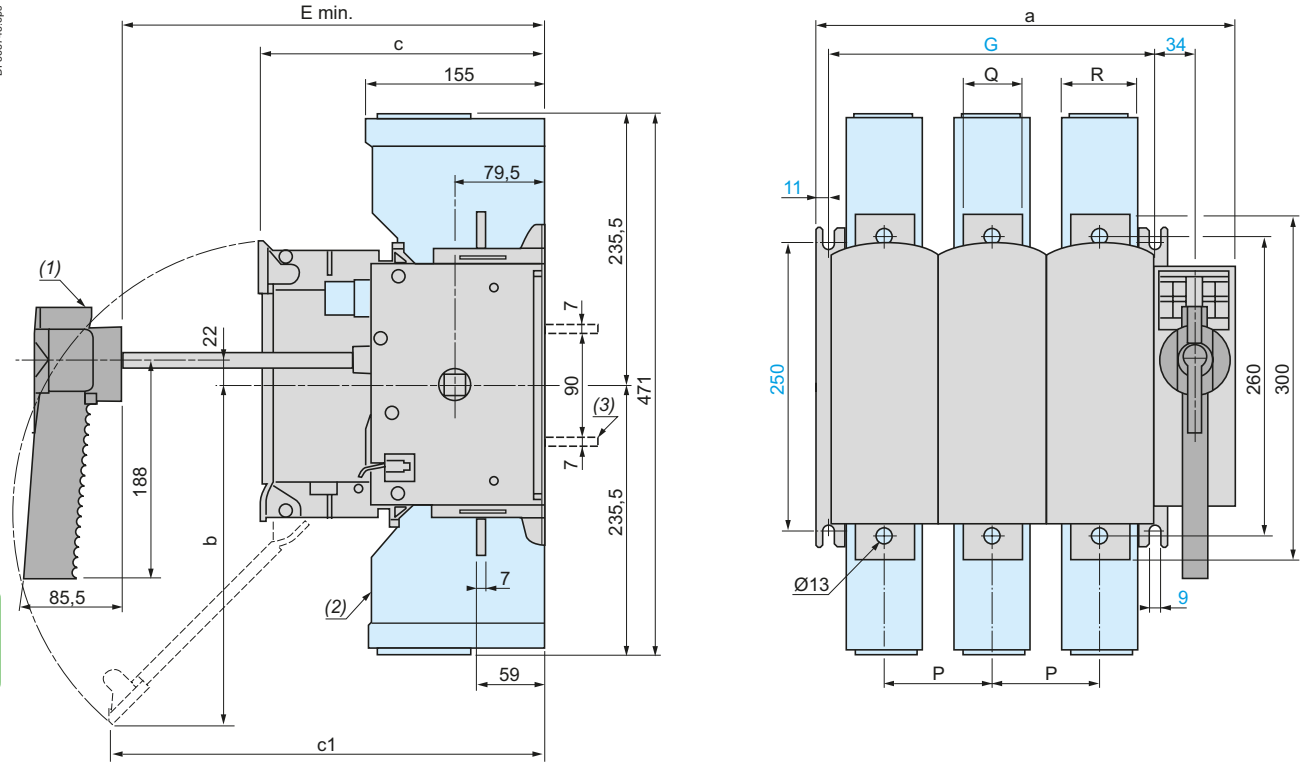
# Dimensions

## IEC - GS2●● (630...1250 A) Switch-disconnector-fuse

**Direct front-mounted operator**

**GS2S, SB (630 A), TB (800 A), V and VB (1250 A)**

DF568745.eps

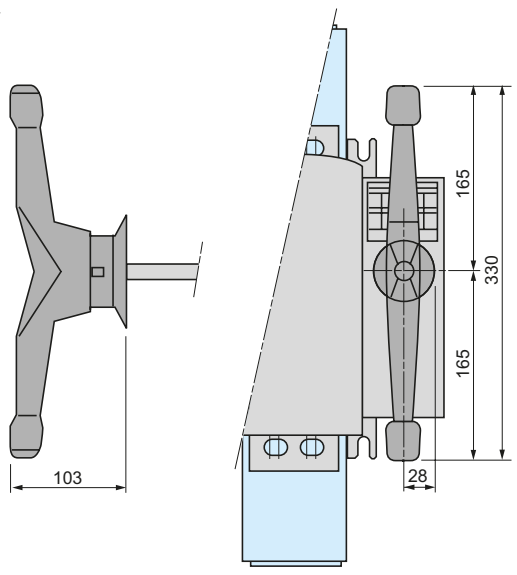



| GS2 | | a | b | c | c1 | E min. | G | P | Q | R |
|---|---|---|---|---|---|---|---|---|---|---|
| S, SB, TB | 3P | 364 | 300 | 250 | 380 | 265 | 284 | 94 | 51 | 65 |
| | 4P | 458 | 300 | 250 | 380 | 265 | 378 | 94 | 51 | 65 |
| V, VB | 3P | 442 | 355 | 289 | 295 | 304 | 362 | 120 | 77 | 88 |
| | 4P | 562 | 355 | 289 | 295 | 304 | 482 | 120 | 77 | 88 |

*(1) Handle GS2AH104 for GS2S, GS2SB and GS2TB.*
*(2) Terminal cover.*
*(3) Rear access connector plates (GS2V and GS2VB).*

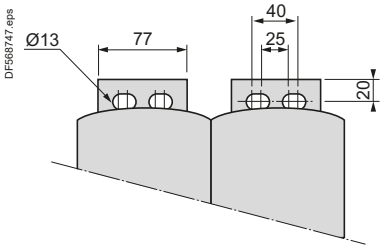
### Handle GS2AH105 for GS2V and GS2VB (direct front-mounted operator)

DF568746.eps




### Connector plates for GS2V and GS2VB

DF568747.eps




References: page B5/5
Characteristics: pages B5/19 to B5/21
Schemes: page B5/33

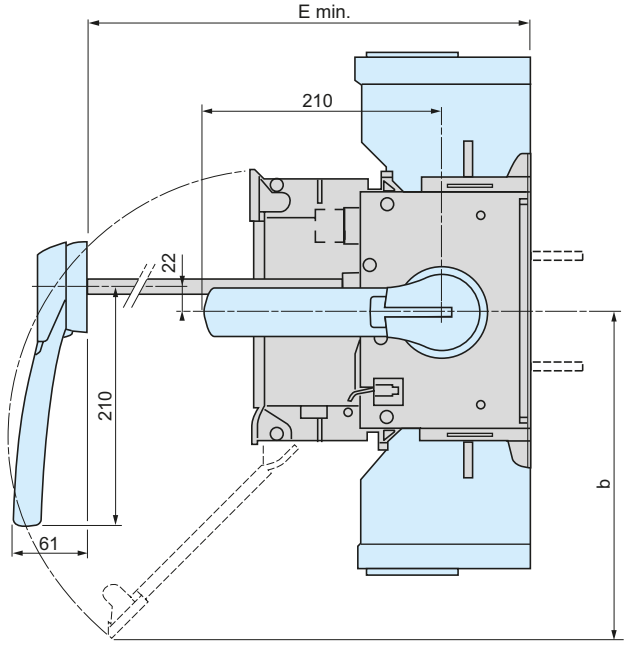
# Dimensions

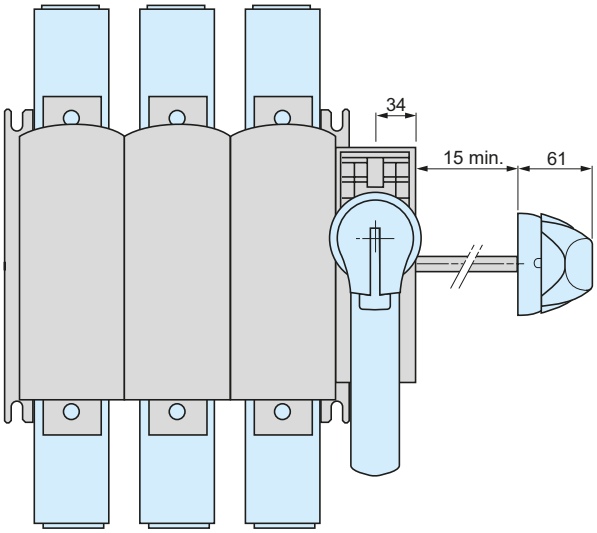
## IEC - GS2●● (630...1250 A) Switch-disconnector-fuse

**External front and right-hand side-mounted operator**

**GS2S, SB (630 A), TB (800 A), V and VB (1250 A)**

DF538734.eps

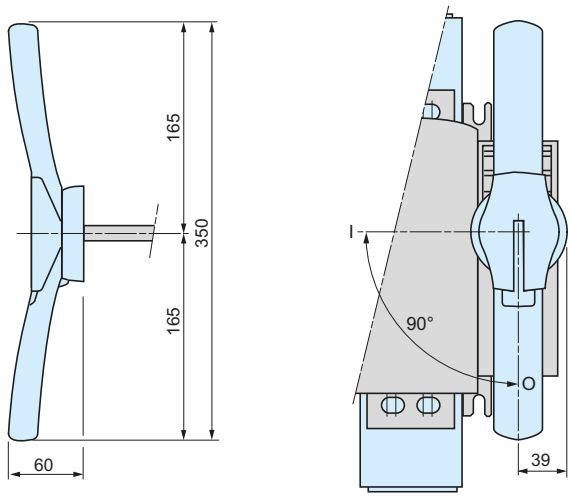



| GS2 | | b | E min. |
|---|---|---|---|
| S, SB, TB | 3P | 297 | 265 |
| | 4P | 297 | 265 |
| V, VB | 3P | 350 | 304 |
| | 4P | 350 | 304 |

**Handle GS2AH570 or GS2AH580 for GS2V and GS2VB (external front-mounted operator)**

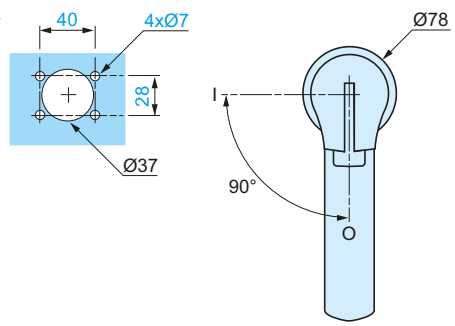
DF568749.eps




**Door cut-out**

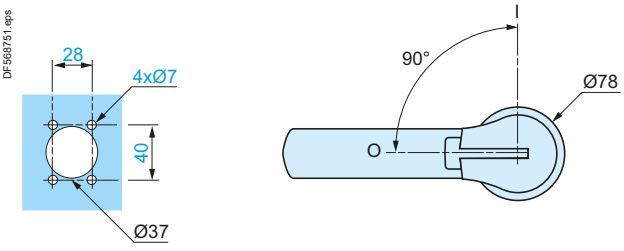
**For external front-mounted operator**

DF568750.eps




**For external right-hand side-mounted operator**

DF568751.eps




References:
page B5/5

Characteristics:
pages B5/19 to B5/21

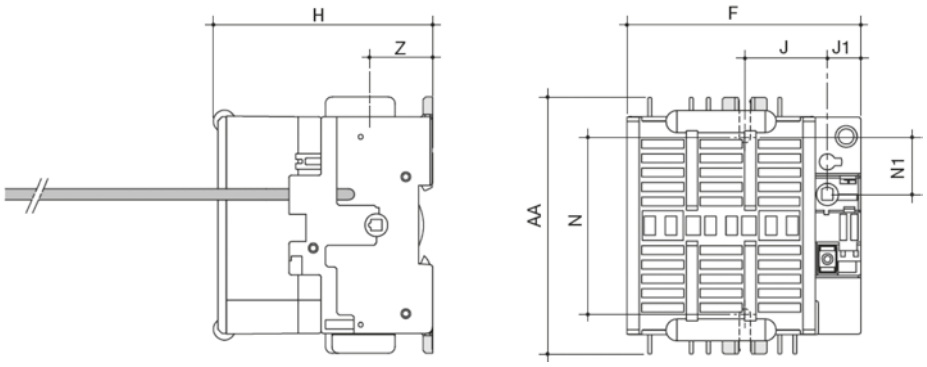
Schemes:
page B5/33

# Dimensions

## UL, CSA, IEC - GS1●● GS2●● Switch-disconnector fuses (30 and 60 A)

### GS1DU3 (30 A) class CC fuses, GS1DDU3 (30 A) class J fuses

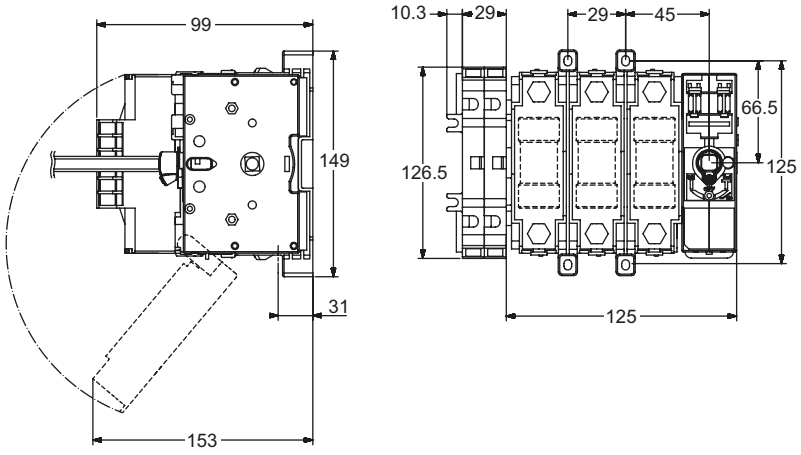
DB417416.eps




| Rating | F | H | J | J1 | N | N1 | AA | Z |
|---|---|---|---|---|---|---|---|---|
| **30 / CC** | 96 | 83.5 | 37.5 | 15 | 79.5 | 25.5 | 116 | 28.5 |
| **30 / J** | 105 | 99 | 37.5 | 15 | 79.5 | 25.5 | 116 | 28.5 |

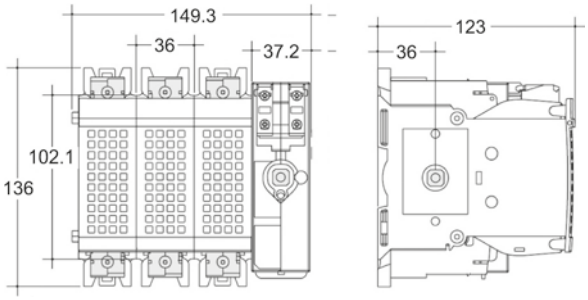
### GS2EEU3 (30 A) class CC fuses

DB417417.eps




### GS2EU3N, GS2GU3N (60 A) class J fuses

DB417418.eps

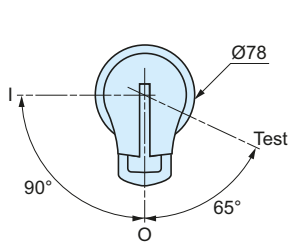



## Accessories

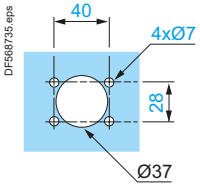
### Handle for 30 and 60 A switch-disconnector fuses

**External front handle** | **Door cut-out**

DF568732.eps

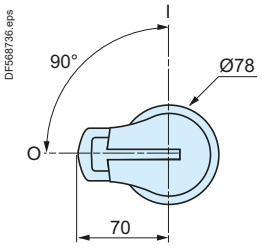



DF568735.eps

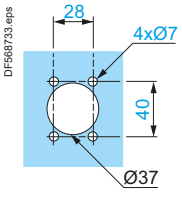



**External side handle** | **Door cut-out**

DF568736.eps




DF568733.eps




References:
pages B5/8 and B5/9

Characteristics:
pages B5/22 and B5/23

Schemes:
page B5/33

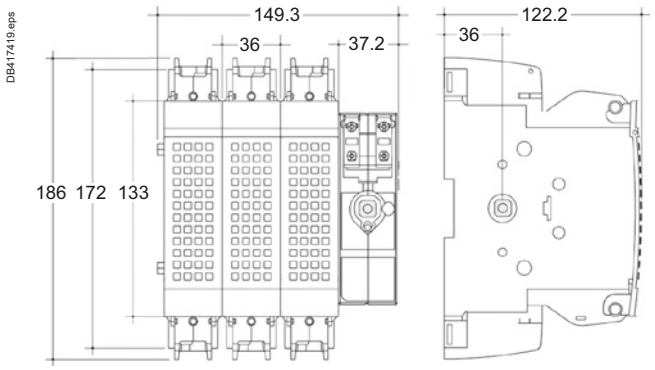


Life Is On Schneider Electric

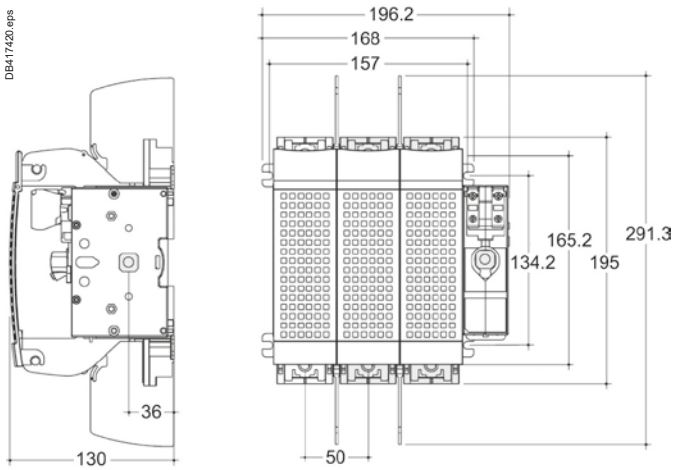
# Dimensions

## UL, CSA, IEC - GS2●● Switch-disconnector fuses (100 and 400 A)

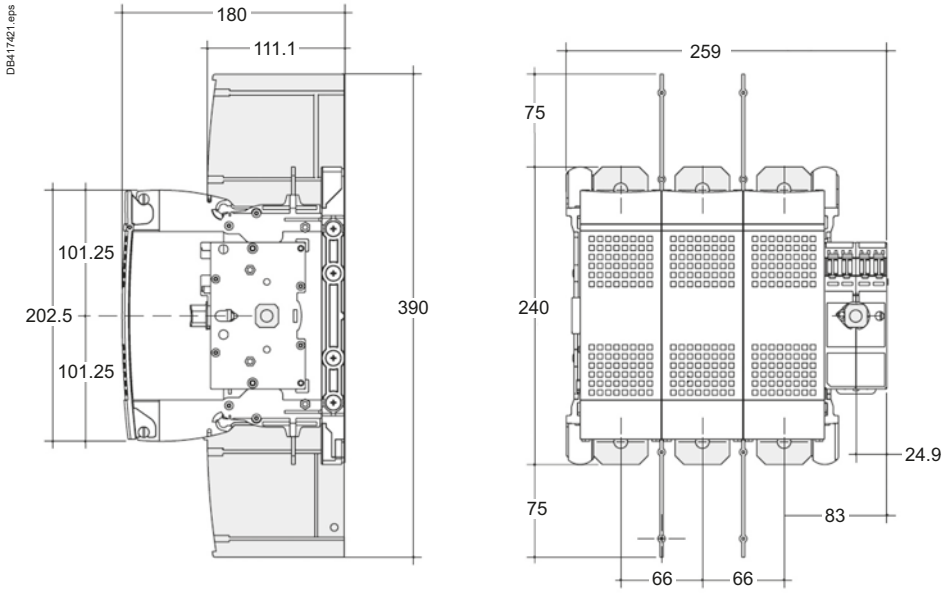
### GS2JU3N (100 A) class J fuses




### GS2MU3N (200 A) class J fuses



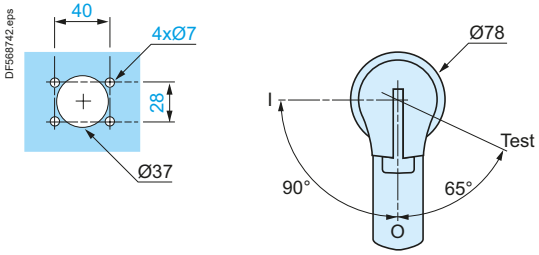

### GS2QU3N (400 A) class CC fuses



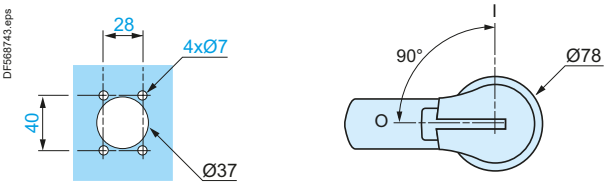

## Accessories

### Handle for 100, 200 and 400 A switch-disconnector fuses

#### For external front-mounted operator




#### For external right-hand side-mounted operator




References:
pages B5/8 and B5/9

Characteristics:
pages B5/22 and B5/23

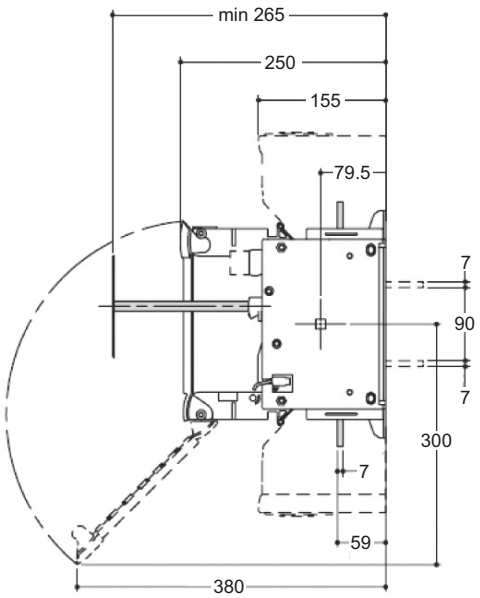
Schemes:
page B5/33

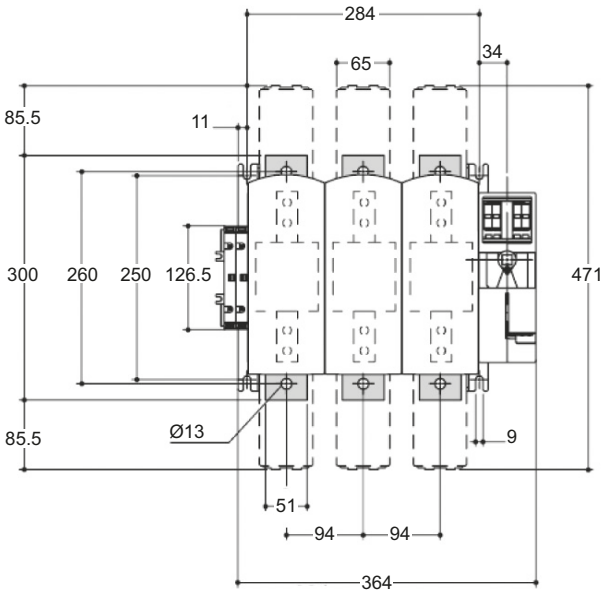
# Dimensions

## UL, CSA, IEC - GS2●● Switch-disconnector fuses (600 and 800 A)

### GS2SU3 (600 A), GS2TU3 (800 A) class J fuses

DB417422.eps



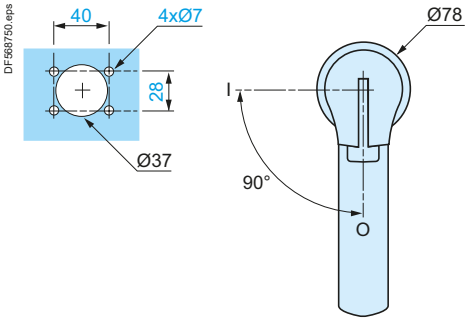

Ref.
Switch-disconnector fuses

## Accessories

### Handle for 600 and 800 A switch-disconnector fuses

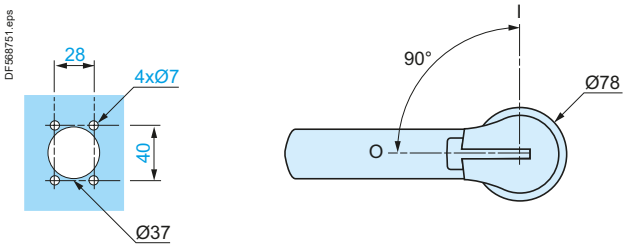
#### For external front-mounted operator

DF568750.eps




#### For external right-hand side-mounted operator

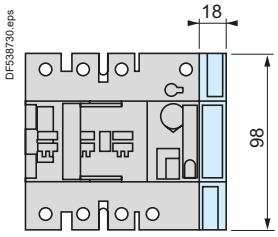
DF568751.eps



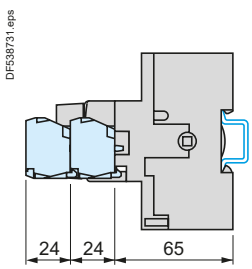
# Dimensions, schemes

## Auxiliary contacts

### GS1AM111, GS1AM211



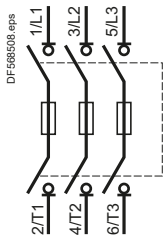

### GS1AM110, GS1AM101




## Schemes

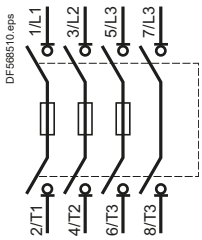
### 3-pole GS

**32 to 1250 A**

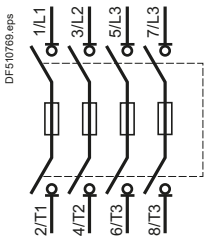



### 4-pole GS

**32 A**




**50 to 1250 A**




## Auxiliary contacts

### GS1AM110

**1 N/O**

### GS1AM101

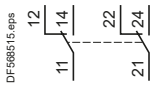
**1 N/C**

### GS1AM111 and GS1AM1

**1 C/O**

### GS1AM211 and GS1AM2

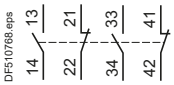
**2 C/O**




### GS1AN••

**1 N/C + 1 N/O**

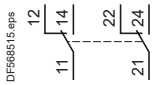
**2 N/C + 2 N/O**




### GS1AF•

**1 C/O**

**2 C/O**



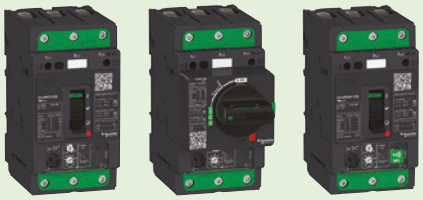

References:
page B5/12

Characteristics:
page B5/24

# TeSys Power
# Deca, Giga and Modular
# Motor circuit breakers



## TeSys Power - Deca, Giga Motor circuit breakers


| Type of product | Range (400/415 V AC) | | Pages |
|---|---|---|---|
| Introduction | | | B6/3 |
| TeSys Deca Frame 2 - Motor circuit breakers<br>Magnetic, Thermal magnetic<br>(Product ref. GV2L, GV2LE, GV2P, GV2ME) | 0.06 or 15 kW | | B6/11 |
| TeSys Deca Frame 2 - Motor circuit breakers<br>Thermal magnetic - delayed tripping - For high current peak motors or 3-phase transformers (Product ref. GV2RT)<br>Add-on blocks, accessories<br>(for TeSys Deca Frame 2 circuit breakers) | 0.09 or 11 kW | | B6/18 |
| TeSys Deca Frame 3 - Motor circuit breakers<br>Magnetic, Thermal magnetic<br>(Product ref. GV3L, GV3P)<br>Add-on blocks, accessories<br>(for TeSys Deca Frame 3 circuit breakers) | 5.5 to 45 kW | | B6/25 |
| TeSys Deca Frame 4 - Motor circuit breakers<br>Magnetic, Thermal magnetic<br>(Product ref. GV4L, GV4LE, GV4P, GV4PE, GV4PEM, GV4PB)<br>Add-on blocks, accessories<br>(for TeSys Deca Frame 4 circuit breakers) | 0.25 to 55 kW<br>1/2 to 60 HP |  | B6/31 |
| TeSys Giga Frame 5, 6 - Motor circuit breakers<br>Thermal magnetic<br>(Product ref. GV5P, GV6P)<br>Add-on blocks, accessories<br>(for TeSys Giga Frame 5, 6 circuit breakers) | 55 to 250 kW | | B6/49 |
| **PowerLogic™ Energy measurement solutions** | | | |
| PowerTag Energy sensors<br>can be used with TeSys Deca, Giga motor circuit breakers | | | B6/58 |
| PowerTag Energy Link<br>Modbus TCP/IP concentrator for PowerTag Energy sensors | | | B6/62 |
| **TeSys Power - Modular circuit breakers for auxiliary circuits** | | | |
| Modular circuit breakers<br>Thermal magnetic<br>(Product ref. GB) | 0.5 to 20 A | | B6/63 |

GV2LE

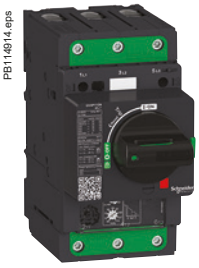
GV2P

GV2ME

GV3L

GV3P80

GV4●E●●●




GV4●●●●

GV5P150F

GV6P500F

## Circuit breakers for motor protection and control

Deca, Giga motor circuit breakers provide compact, reliable and efficient solutions for:

- isolation,
- protection against short circuits and overloads,
- On-Off manual control of motors from 0.06 to 250 kW.

They are conforming to, depending of the versions, IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1 and UL 60497-4-1, CSA 22.2 n° 60497-4-1.

## Deca, Giga protection technologies

Deca, Giga circuit breakers are carried with 3 variants:

- Magnetic detection: product references GV2LE, GV2L, GV3L, GV4L, GV4LE for protection against short-circuit.
- Thermal-magnetic: product references GV2ME (1), GV2P, GV3P, GV4P, GV4PE, GV5, GV6 for protection against short-circuits, overload, phase loss and phase unbalance.
- Advanced: product references GV4PEM combines GV4P protections and motor jam, long start, ground-fault protections.

With a magnetic circuit breaker, a thermal relay is frequently associated in order to have a short circuit protection and an overload protection.

### TeSys Deca - Frame 2 circuit breakers: 45 mm width, for motors up to 15 kW

The most commonly used circuit breaker. with a choice of about 100 auxiliaries and accessories. TeSys Deca Frame 2 circuit breakers and TeSys K, Deca contactors can be easily assembled as a single block with one accessory.
The high Frame 2 electrical endurance (up to 100 000 operating cycles) makes it very suitable for direct manual motor control, especially ref. GV2ME (1) (thermal-magnetic c.b., Ith up to 32 A).

Enclosure mounting is well adapted to ref. GV2L and GV2P, with their possible extended rotary handle and visible trip indication.

### TeSys Deca - Frame 3 circuit breakers: 55 mm width, for motors up to 45 kW

High performance breakers, high breaking capacity (Ics 100 kA /400 V for ratings up to 32 A, 50 kA up to 80 A).
Wide choice of auxiliaries / accessories, possible extended rotary handle. Visible tri indication.
Patented Everlink connectors provide everlasting connection (no re-tightening required).

Direct monoblock starter assembly with TeSys Deca contactors. No accessory required.

### TeSys Deca - Frame 4 circuit breakers: 81 mm width, for motors up to 55 kW

State-of-the-art technology, TeSys Deca Frame 4 is compact and robust. Electronic core of ref. GV4P gives a great detection accuracy, with alarming and advanced protections for ref. GV4PEM, GV4PB.
Magnetic, electronic thermal-magnetic, or electronic thermal magnetic with advanced protections versions.
Ratings up to 115 A with breaking capacity Ics of 25 kA/400 V (B series), 50 kA/400 V (N series) or 100 kA/400 V (S series).

### TeSys Giga - Frame 5: 105 mm width, for motors up to 110 kW / Frame 6: 140 mm width, for motors up to 250 kW

TeSys Giga - Frame 5 and 6 with advanced thermal-magnetic trip unit provide more effective protection to high power motors in the most demanding appliances.
They provide protection to motors against overloads with selection of a trip class (5, 10 or 20), short-circuits, phase unbalance or phase loss.
Adjustable over-load and short circuit current settings provide flexibility.
Wide choice of auxiliaries/accessories are available for indication, control and operation.

*(1) Ref. **GV2ME●●AP** are specific **GV2ME** references for CEE zone.*

PB121671.eps
*GV2L*

PB111879_10.eps
*GV2LE*

PB121672.eps

PB121673.tif

PB121313.eps
*GV2P* *GV2ME* *GV2RT*

PB121697.tif
*GV3L*

PB121680.tif
*GV3P*

PB114914_L14.eps
*GV4L*

PB114914_L14.eps

PB114917_14.eps
*GV4P* *GV4PEM*

PB120632_L16.eps
*GV5P150F*

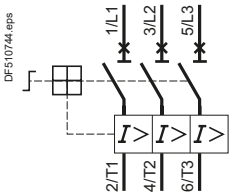
PB120633.eps
*GV6P500F*

## TeSys Deca, Giga circuit breakers - Range overview

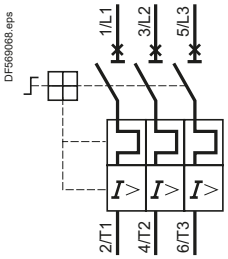
Molded case circuit breakers for motor protection and control

| Product reference | Protection against | | | Range (kW / 415 V AC) | Control | Terminals | Dimensions (W x H x D) |
|---|---|---|---|---|---|---|---|
| | Short-circuits | Overload | Jam, ground-fault, long start... (Multifunction - see page B6/6) | | | | |
| **Deca - Frame 2** | | | | | | | |
| GV2L | ● | | | 0.09 to 15 | Rotary handle | Screw clamp | 44.5 x 89 x 97 (with rotary handle) |
| GV2LE | ● | | | 0.06 to 15 | Toggle | Screw clamp | 44.5 x 89 x 78.5 (with toggle) |
| GV2P | ● | ● | | 0.06 to 15 | Rotary handle | Screw clamp | 44.5 x 89 x 97 (with rotary handle) |
| GV2ME (1) | ● | ● | | 0.06 to 11 | Push button | Screw clamp, lug or spring | 44.5 x 89 x 78.2 (with push button) (2) |
| GV2RT | ● | ● | | 0.09 to 11 | Toggle | Screw clamp | 44.5 x 89 x 78.5 (with toggle) |
| **Deca - Frame 3** | | | | | | | |
| GV3L | ● | | | 11 to 45 | Rotary handle | Lug, EverLink (BTR screw) | 55 x 132 x 136 (with rotary handle) |
| GV3P | ● | ● | | 5.5 to 45 | | | |
| **Deca - Frame 4** | | | | | | | |
| GV4L | ● | | | 0.25 to 55 kW | Rotary handle | Lug, EverLink (BTR screw) | 81 x 156 x 116 (with toggle)<br>81 X 156 x 165 (with rotary handle) |
| GV4LE | ● | | | | Toggle | | |
| GV4P | ● | ● | | | Rotary handle | | |
| GV4PE | ● | ● | | | Toggle | | |
| GV4PEM | ● | ● | ● | | Toggle | | |
| GV4PB | ● | ● | ● | ½ to 60 HP | Toggle | | |
| **Giga - Frame 5** | | | | | | | |
| GV5P150● | ● | ● | | 55 to 110 | Direct rotary handle | Lug, screw clamp | 105 x 161 x 155 (3) (with direct rotary handle) |
| GV5P220● | ● | ● | | | | | |
| **Giga - Frame 6** | | | | | | | |
| GV6P320● | ● | ● | | 132 to 250 | Direct rotary handle | Lug, screw clamp | 140 x 255x 179 (3) (with direct rotary handle) |
| GV6P500● | ● | ● | | | | | |

*(1) Ref. **GV2ME●●AP** are specific **GV2ME** references for CEE zone.*
*(2) 44.5 x 101 x 78.2 mm for **GV2ME●●3**.*
*(3) Depth without keylock.*

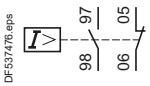



*Thermal protection circuit breaker (with rotary control)*




*Thermal magnetic protection circuit breaker (with rotary control)*

*Voltage trip*




*Fault signalling*

## Basic functions

**Short circuit protection (magnetic/thermal magnetic circuit breakers)**
It provides a protection of the installation against short-circuit by an instantaneous trip of the circuit breaker. The tripping is obtained by means of a magnetic element incorporated in the motor circuit breaker or by an electronic detection (ref. GV4P, GV5 and GV6).
The magnetic tripping threshold is not adjustable, except on ref. GV4L, and is a fixed ratio of the maximum setting current In.

**Overload protection (thermal magnetic circuit breakers)**
It provides a protection of the motor against overload. When current drawn by the motor is above its rated current, this continuous overcurrent lead to increase of motor internal temperature and reduce motor life time. Use of suitable protective device shall avoid this damage to the motor. This is obtained by means of a thermal element incorporated in the motor circuit breaker, or by sensors for electronic products (ref. GV4P, GV5 and GV6).
An automatic compensation for ambient temperature variations is also provided.
The rated operational current of the motor is displayed by turning a graduated knob.

**Motor ON/OFF control**
The circuit breaker provides a local manual control of the motor when used on its own (without contactor). The operation is possible by push buttons, toggle, or a single rotary handle.

**Contacts position indication**
Because they are suitable for isolation, the circuit breakers, in the open position, provide an adequate isolation distance and indicate the accurate position of the moving contacts by the position of the operators.

## Additional functions

They are provided by additional modules.

**Under voltage protection**
Trips the circuit breaker in case of under voltage. The user is therefore protected against sudden starting of the machine when normal voltage is restored. Circuit breaker reset and/or start button “I” has to be pressed to restart the motor.

**Remote off-power**
Circuit breaker can be remotely tripped with the addition of a shunt trip.

**Off-power locking**
The operators on both open-mounted and enclosed motor circuit breakers can be locked in the off position “O” by up to 3 padlocks.

## Motor circuit breakers versus fuse protection ?

Circuit breakers are a common solution for Powering motor against short circuits and overloads.
As a comparison, a fuse based solution can only provide a partial protection depending on the choice of the fuse type and rating. The thermal magnetic circuit breaker is adjustable and can be fine-tuned to the practical motor load.
The fuse based solution offers a very fast protection.

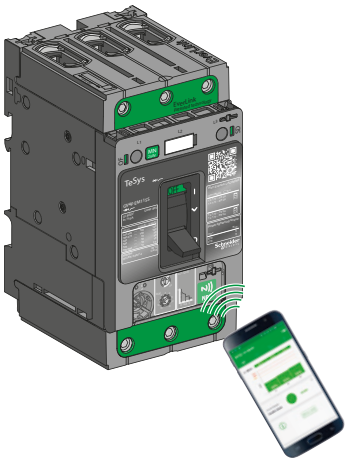
PB114917.eps

## Advanced protections embedded on Deca - Frame 4 ref. GV4PEM, GV4PB (multifunction)

In addition to basic protections, ref. GV4PEM, GV4PB embed protections against:
- Long start (high inertia, resistive torque machines)
- Jam (overtorque, machine failure)
- Ground-fault (reduced isolation)
- Unbalanced (phase currents are not equal)
- Phase loss (1 or 2 phases missing).

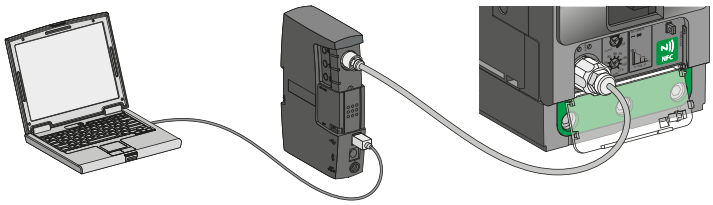
Fully configurable-advanced protections:
- wireless with 'EcoStruxure Power Device App' application for Android smartphone through NFC (near field communication).

DB439411.eps



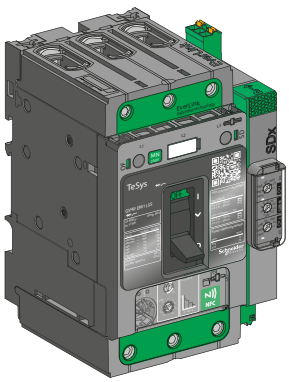
- with EcoStruxure Power Commission software on a computer connected to the test socket through a configuration and maintenance module.

DB439412.eps



Remote indications:
Ref. GV4PEM, GV4PB circuit breaker may be equipped with an SDx alarming / fault differentiation module to prevent to trip or to identify the type of fault after a trip (see page B6/44).

DB439413.eps



## EverLink technology for Frame 3 and 4

Frame 3 and 4 features a cable connection method with patented creep-compensating technology built directly into the terminal — EverLink:
- With EverLink connectors, save space and time during panel assembly.
- Bare cable connections are as safe as compression lug ones.

PB121680.tif

PB114914_24.eps

DF526139.eps

*EverLink terminals, with BTR screws*

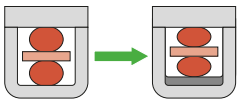
### No overheating connections - EverLink creep-compensated terminals for Frame 3, 4

The EverLink patented technology for terminals dramatically reduces the risk of loose bare cables due to copper creeping. Vibration withstand is improved and periodic re-tightening is no longer needed.

EverLink® Long lasting connection quality

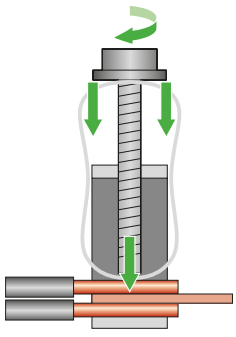
**The clamp connectors which don't need re-tightening.**

**Creeping phenomena**

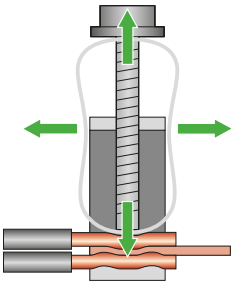


Copper conductors are subject to creep with the time, reducing the contact pressure in conventional clamps

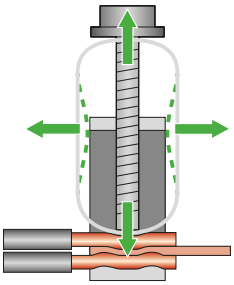
During the tightening a force is applied on the conductors and on a spring.



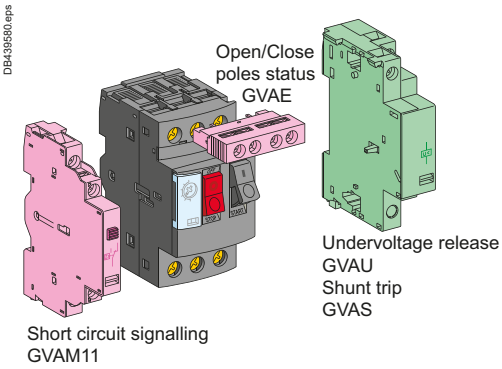
Maintaining of cables assured by pressure of spring and crimping of conductor on the contact plate.



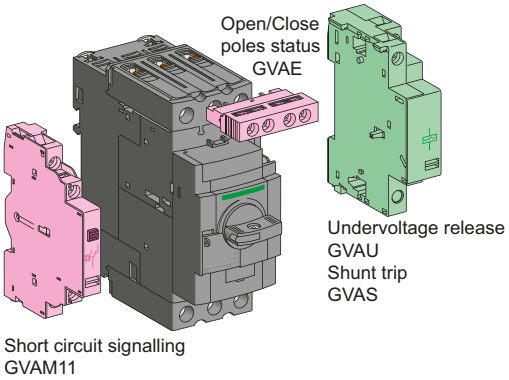
The spring compensates for cable conductor creep. Tightening force is assured.



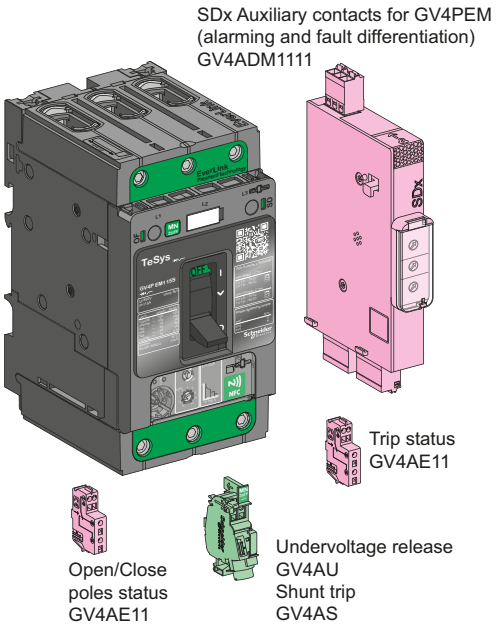
## Auxiliary functions provided by add-on blocks



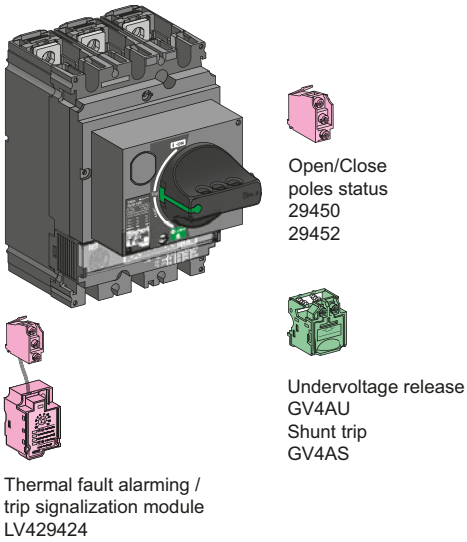

**TeSys** Deca - Frame 2




**TeSys** Deca - Frame 3




**TeSys** Deca - Frame 4




**TeSys** Giga - Frame 5, 6

**Auxiliary contacts add-on blocks**
For control, alarms, automatic actions:
- **Instantaneous** indication of the position of the circuit breaker contacts
- **Trip indication**,
- **Alarming.**

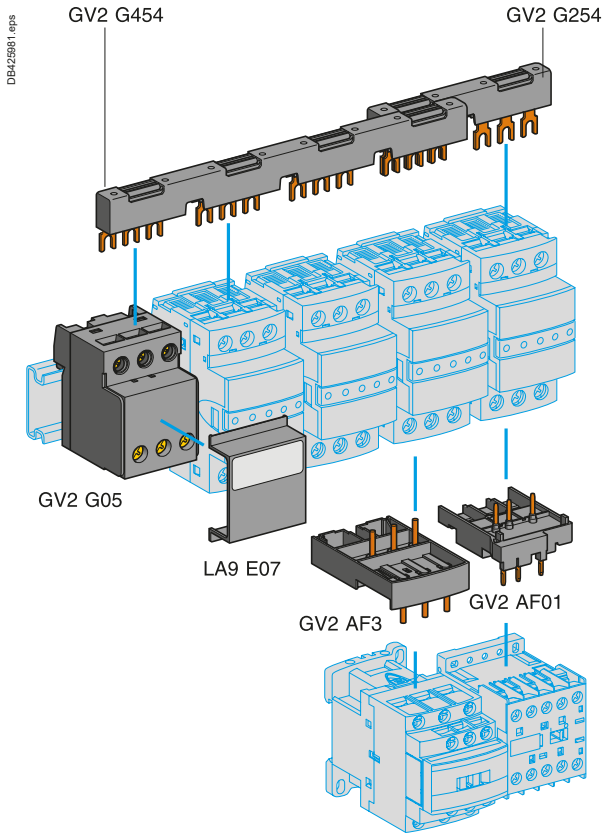
**Trip units**
For remote tripping of circuit breaker:
- **Shunt trip / MX**, trips the circuit breaker when powered
- **Undervoltage release / MN**, trips the circuit breaker when voltage is loss.

## Compact power circuits wiring with TeSys Deca circuit breakers (Frame 2) and Deca contactors (1)

**Busbars and combination blocks**

Power busbars and combinations blocks provide a compact solution for assembling a group of motor starters. They save wiring time and provide a clear finish aspect.

These solutions are available for Deca - Frame 2 circuit breakers + Deca contactors.




*(1) Details on this solution in chapter B2 of catalog.*

# TeSys Deca - Frame 2

## 0.06 to 15 kW

## Product references

PB121671.tif

*GV2L16*

### Motor circuit breakers from 0.09 to 15 kW

**Deca - Frame 2 (ref. GV2L): Control by rotary knob, connection by screw clamp terminals**

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Magnetic protection rating | Tripping current Id ± 20 % | Use in association with thermal overload relay (class 10 A) | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | | |
| kW | kA | | kW | kA | | kW | kA | | A | A | | |
| **0.09** | ★ | ★ | **–** | – | – | **–** | – | – | 0.4 | 5 | LRD03 | **GV2L03** |
| **0.12** | ★ | ★ | **–** | – | – | **0.37** | ★ | ★ | 0.63 | 8 | LRD04 | **GV2L04** |
| **0.18** | ★ | ★ | **–** | – | – | **–** | – | – | 0.63 | 8 | LRD04 | **GV2L04** |
| **–** | – | – | **–** | – | – | **0.55** | ★ | ★ | 1 | 13 | LRD05 | **GV2L05** |
| **0.25** | ★ | ★ | **–** | – | – | **–** | – | – | 1 | 13 | LRD05 | **GV2L05** |
| **–** | – | – | **–** | – | – | **0.75** | ★ | ★ | 1 | 13 | LRD06 | **GV2L05** |
| **0.37** | ★ | ★ | **0.37** | ★ | ★ | **–** | – | – | 1 | 13 | LRD05 | **GV2L05** |
| **0.55** | ★ | ★ | **0.55** | ★ | ★ | **1.1** | ★ | ★ | 1.6 | 22.5 | LRD06 | **GV2L06** |
| **–** | – | – | **0.75** | ★ | ★ | **–** | – | – | 1.6 | 22.5 | LRD06 | **GV2L06** |
| **0.75** | ★ | ★ | **1.1** | ★ | ★ | **1.5** | 4 | 100 | 2.5 | 33.5 | LRD07 | **GV2L07** |
| **1.1** | – | – | **–** | – | – | **–** | – | – | | | LRD08 | **GV2L08** |
| **1.5** | ★ | ★ | **1.5** | ★ | ★ | **3** | 4 | 100 | 4 | 51 | LRD08 | **GV2L08** |
| **–** | – | – | **–** | – | – | **–** | – | – | | | LRD08 | **GV2L08** |
| **2.2** | ★ | ★ | **3** | ★ | ★ | **4** | 4 | 100 | 6.3 | 78 | LRD10 | **GV2L10** |
| **3** | ★ | ★ | **4** | 10 | 100 | **5.5** | 4 | 100 | 10 | 138 | LRD12 | **GV2L14** |
| **4** | – | – | **–** | – | – | **–** | – | – | | | LRD14 | **GV2L14** |
| **–** | – | – | **–** | – | – | **7.5** | 4 | 100 | 10 | 138 | LRD14 | **GV2L14** |
| **–** | – | – | **–** | – | – | **9** | 4 | 100 | 14 | 170 | LRD16 | **GV2L16** |
| **5.5** | 50 | 50 | **7.5** | 10 | 75 | **11** | 4 | 100 | 14 | 170 | LRD16 | **GV2L16** |
| **7.5** | 50 | 50 | **9** | 10 | 75 | **15** | 4 | 100 | 18 | 223 | LRD21 | **GV2L20** |
| **9** | 50 | 50 | **11** | 10 | 75 | **18.5** | 4 | 100 | 25 | 327 | LRD22 | **GV2L22** |
| **11** | 50 | 50 | **15** | 10 | 75 | **–** | – | – | 25 | 327 | LRD22 | **GV2L22** |
| **15** | 50 | 50 | **18.5** | 10 | 75 | **22** | 4 | 100 | 32 | 416 | LRD32 | **GV2L32** |

*(1) As % of Icu. Associated current limiter or fuses, where required.*
*★ > 100 kA.*



Characteristics: pages B6/72 to B6/74
Curves: pages B6/77 to B6/82
Dimensions, schemes: pages B6/90 to B6/92, B6/99

## Product references

PB111879.eps

*GV2LE*

### Magnetic motor circuit breakers from 0.06 to 15 kW

**Deca - Frame 2 (ref. GV2LE): control by rocker lever, connection by screw clamp terminals**

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Magnetic protection rating | Tripping current Id ± 20 % | Use in association with thermal overload relay | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | | |
| kW | kA | | kW | kA | | kW | kA | | A | A | | |
| **0.06** | ★ | ★ | – | – | – | – | – | – | 0.4 | 5 | LR2K0302 | **GV2LE03** |
| **0.09** | ★ | ★ | – | – | – | – | – | – | 0.4 | 5 | LR2K0304 | **GV2LE03** |
| **0.12** | ★ | ★ | – | – | – | **0.37** | ★ | ★ | 0.63 | 8 | LR2K0304 | **GV2LE04** |
| **0.18** | ★ | ★ | – | – | – | – | – | – | 0.63 | 8 | LR2K0305 | **GV2LE04** |
| – | – | – | – | – | – | **0.55** | ★ | ★ | 1 | 13 | LR2K0305 | **GV2LE05** |
| **0.25** | ★ | ★ | – | – | – | – | – | – | 1 | 13 | LR2K0306 | **GV2LE05** |
| – | – | – | – | – | – | **0.75** | ★ | ★ | 1 | 13 | LR2K0306 | **GV2LE05** |
| **0.37** | ★ | ★ | **0.37** | ★ | ★ | – | – | – | 1 | 13 | LR2K0306 | **GV2LE05** |
| **0.55** | ★ | ★ | **0.55** | ★ | ★ | **1.1** | ★ | ★ | 1.6 | 22.5 | LR2K0307 | **GV2LE06** |
| – | – | – | **0.75** | ★ | ★ | – | – | – | 1.6 | 22.5 | LR2K0307 | **GV2LE06** |
| **0.75** | ★ | ★ | **1.1** | ★ | ★ | **1.5** | 3 | 75 | 2.5 | 33.5 | LR2K0308 | **GV2LE07** |
| **1.1** | ★ | ★ | – | – | – | – | – | – | 2.5 | 33.5 | LR2K0308 | **GV2LE07** |
| **1.5** | ★ | ★ | **1.5** | ★ | ★ | **3** | 3 | 75 | 4 | 51 | LR2K0310 | **GV2LE08** |
| – | – | – | **2.2** | ★ | ★ | – | – | – | 4 | 51 | LR2K0312 | **GV2LE08** |
| **2.2** | ★ | ★ | **3** | 50 | 100 | **4** | 3 | 75 | 6.3 | 78 | LR2K0312 | **GV2LE10** |
| **3** | ★ | ★ | **4** | 10 | 100 | **5.5** | 3 | 75 | 10 | 138 | LR2K0314 | **GV2LE14** |
| **4** | ★ | ★ | **5.5** | 10 | 100 | – | – | – | 10 | 138 | LR2K0316 | **GV2LE14** |
| – | – | – | – | – | – | **7.5** | 3 | 75 | 10 | 138 | LRD14 | **GV2LE14** |
| – | – | – | – | – | – | **9** | 3 | 75 | 14 | 170 | LRD16 | **GV2LE16** |
| **5.5** | 15 | 50 | **7.5** | 6 | 75 | **11** | 3 | 75 | 14 | 170 | LR2K0321 | **GV2LE16** |
| **7.5** | 15 | 50 | **9** | 6 | 75 | **15** | 3 | 75 | 18 | 223 | LRD21 | **GV2LE20** |
| **9** | 15 | 40 | **11** | 4 | 75 | **18.5** | 3 | 75 | 25 | 327 | LRD22 | **GV2LE22** |
| **11** | 15 | 40 | **15** | 4 | 75 | – | – | – | 25 | 327 | LRD22 | **GV2LE22** |
| **15** | 10 | 50 | **18.5** | 4 | 75 | **22** | 3 | 75 | 32 | 416 | LRD32 | **GV2LE32** |

*(1) As % of Icu.*
*★ > 100 kA.*



Characteristics: pages B6/72 to B6/74
Curves: pages B6/77 to B6/82
Dimensions, schemes: pages B6/90 to B6/92, B6/99

PB121673.tif

*GV2ME*

## Motor circuit breakers from 0.06 to 15 kW / 400 V, with screw clamp terminals

### Deca - Frame 2 (ref. GV2ME) with pushbutton control

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Setting range of thermal trips (2) | Magnetic tripping current Id ± 20 % | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | |
| kW | kA | % | kW | kA | % | kW | kA | % | A | A | |
| – | – | – | – | – | – | **–** | – | – | 0.1…0.16 | 1.5 | **GV2ME01** |
| **0.06** | ★ | ★ | – | – | – | – | – | – | 0.16…0.25 | 2.4 | **GV2ME02** |
| **0.09** | ★ | ★ | – | – | – | – | – | – | 0.25…0.40 | 5 | **GV2ME03** |
| **0.12** | ★ | ★ | – | – | – | **0.37** | ★ | ★ | 0.40…0.63 | 8 | **GV2ME04** |
| **0.18** | ★ | ★ | – | – | – | **–** | – | – | | | |
| **0.25** | ★ | ★ | – | – | – | **0.55** | ★ | ★ | 0.63…1 | 13 | **GV2ME05** |
| **0.37** | ★ | ★ | **0.37** | ★ | ★ | **–** | – | – | 1…1.6 | 22.5 | **GV2ME06** |
| **0.55** | ★ | ★ | **0.55** | ★ | ★ | **0.75** | ★ | ★ | | | |
| **–** | – | – | **0.75** | ★ | ★ | **1.1** | ★ | ★ | | | |
| **0.75** | ★ | ★ | **1.1** | ★ | ★ | **1.5** | 3 | 75 | 1.6…2.5 | 33.5 | **GV2ME07** |
| **1.1** | ★ | ★ | **1.5** | ★ | ★ | **2.2** | 3 | 75 | 2.5…4 | 51 | **GV2ME08** |
| **1.5** | ★ | ★ | **2.2** | ★ | ★ | **3** | 3 | 75 | | | |
| **2.2** | ★ | ★ | **3** | 50 | 100 | **4** | 3 | 75 | 4…6.3 | 78 | **GV2ME10** |
| **3** | ★ | ★ | **4** | 10 | 100 | **5.5** | 3 | 75 | 6…10 | 138 | **GV2ME14** |
| **4** | ★ | ★ | **5.5** | 10 | 100 | **7.5** | 3 | 75 | | | |
| **5.5** | 15 | 50 | **7.5** | 6 | 75 | **9** | 3 | 75 | 9…14 | 170 | **GV2ME16** |
| **–** | – | – | **–** | – | – | **11** | 3 | 75 | | | |
| **7.5** | 15 | 50 | **9** | 6 | 75 | **15** | 3 | 75 | 13…18 | 223 | **GV2ME20** |
| **9** | 15 | 40 | **11** | 4 | 75 | **18.5** | 3 | 75 | 17…23 | 327 | **GV2ME21** |
| **11** | 15 | 40 | **15** | 4 | 75 | **–** | – | – | 20…25 | 327 | **GV2ME22** (3) |
| **15** | 10 | 50 | **18.5** | 4 | 75 | **22** | 3 | 75 | 24…32 | 416 | **GV2ME32** |

## Motor circuit breakers from 0.06 to 15 kW / 400 V, with lugs

To order thermal magnetic circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above.
Example: ref. **GV2ME08** becomes **GV2ME086**.

### Thermal magnetic circuit breakers GV2ME with built-in auxiliary contact block

With instantaneous auxiliary contact block (composition, see page B6/21):

■ GVAE1, add suffix **AE1TQ** to the motor circuit breaker reference selected above.
Example: **GV2ME01AE1TQ**.
■ GVAE11, add suffix **AE11TQ** to the motor circuit breaker reference selected above.
Example: **GV2ME01AE11TQ**.
■ GVAN11, add suffix **AN11TQ** to the motor circuit breaker reference selected above.
Example: **GV2ME01AN11TQ**.

These circuit breakers with built-in contact block are sold in lots of 20 units in a single pack.

*(1) As % of Icu.*
*(2) The thermal trip setting must be within the range marked on the graduated knob.*
*(3) Maximum rating which can be mounted in enclosures **GV2MC** or **MP**, please consult your Regional Sales Office.*
★ *> 100 kA.*

Characteristics: pages B6/72 to B6/76
Curves: pages B6/83 to B6/85
Dimensions, schemes: pages B6/93 to B6/97, B6/99

## Product references - UL applications

PB121673.tif

*GV2ME*

### Motor circuit breakers from 3/4 to 20 HP / 460 V, with screw clamp terminals

**Deca - Frame 2 (ref. GV2ME) with pushbutton control**

| Thermal setting (A) | Maximum Horsepower ratings | | | | | | | | Group Motor applications | Reference |
|---|---|---|---|---|---|---|---|---|---|---|
| | Single-Phase | | | Three-Phase | | | | | | |
| | 115 V | 200 V | 230 V | 115 V | 200 V | 230 V | 460 V | 575 V | Max. Fuse or Circuit breaker (A) | |
| 0.1…0.16 | – | – | – | – | – | – | – | – | 450 | **GV2ME01** |
| 0.16…0.25 | – | – | – | – | – | – | – | – | 450 | **GV2ME02** |
| 0.25…0.40 | – | – | – | – | – | – | – | – | 450 | **GV2ME03** |
| 0.40…0.63 | – | – | – | – | – | – | – | – | 450 | **GV2ME04** |
| 0.63…1 | – | – | – | – | – | – | – | 1/2 | 450 | **GV2ME05** |
| 1…1.6 | – | – | 1/10 | – | – | – | 3/4 | 3/4 | 450 | **GV2ME06** |
| 1.6…2.5 | – | 1/6 | 1/6 | – | 1/2 | 1/2 | 1 | 1.5 | 450 | **GV2ME07** |
| 2.5…4 | 1/8 | 1/4 | 1/3 | – | 3/4 | 3/4 | 2 | 3 | 450 | **GV2ME08** |
| 4…6.3 | 1/4 | 1/2 | 1/2 | 3/4 | 1 | 1.5 | 3 | 5 | 450 | **GV2ME10** |
| 6…10 | 1/2 | 1 | 1.5 | 1 | 2 | 3 | 5 | 7.5 | 450 | **GV2ME14** |
| 9…14 | 3/4 | 2 | 2 | 2 | 3 | 3 | 10 | 10 | 450 | **GV2ME16** |
| 13…18 | 1 | 2 | 3 | 2 | 5 | 5 | 10 | 15 | 450 | **GV2ME20** |
| 17…23 | 1.5 | 3 | 3 | 3 | 5 | 7.5 | 15 | 20 | 450 | **GV2ME21** |
| 20…25 | 2 | – | – | – | 7.5 | 7.5 | 15 | 20 | 450 | **GV2ME22** |
| 24…32 | 2 | 5 | 5 | 5 | 7.5 | 10 | 20 | 25 | 450 | **GV2ME32** |



Characteristics:
pages B6/72 to B6/76

Curves:
pages B6/83 to B6/85

Dimensions, schemes:
pages B6/93 to B6/97, B6/99

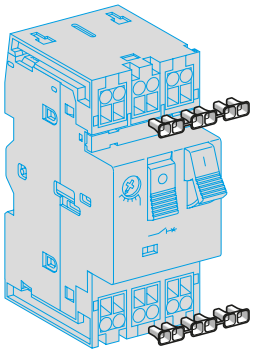
# Product references

*GV2ME●●3*

## Motor circuit breakers from 0.06 to 11 kW, with spring terminal connections

### Deca - Frame 2 (ref. GV2ME) (1) with pushbutton control

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | Setting range of thermal trips (3) | Magnetic tripping current Id ± 20 % | Reference |
|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | | | |
| P | Icu | Ics (2) | P | Icu | Ics (2) | | | |
| kW | kA | % | kW | kA | % | A | A | |
| – | – | – | – | – | – | 0.1…0.16 | 1.5 | **GV2ME013** |
| **0.06** | ★ | ★ | – | – | – | 0.16…0.25 | 2.4 | **GV2ME023** |
| **0.09** | ★ | ★ | – | – | – | 0.25…0.40 | 5 | **GV2ME033** |
| **0.12**<br>**0.18** | ★<br>★ | ★<br>★ | – | – | – | 0.40…0.63 | 8 | **GV2ME043** |
| **0.25**<br>**0.37** | ★<br>★ | ★<br>★ | **0.37** | ★ | ★ | 0.63…1 | 13 | **GV2ME053** |
| **0.37**<br>**0.55** | ★<br>★ | ★<br>★ | **0.37**<br>**0.55**<br>**0.75** | ★<br>★<br>★ | ★<br>★<br>★ | 1…1.6 | 22.5 | **GV2ME063** |
| **0.75** | ★ | ★ | **1.1** | ★ | ★ | 1.6…2.5 | 33.5 | **GV2ME073** |
| **1.1**<br>**1.5** | ★<br>★ | ★<br>★ | **1.5**<br>**2.2** | ★<br>★ | ★<br>★ | 2.5…4 | 51 | **GV2ME083** |
| **2.2** | ★ | ★ | **3** | 50 | 100 | 4…6.3 | 78 | **GV2ME103** |
| **3**<br>**4** | ★<br>★ | ★<br>★ | **4**<br>**5.5** | 10<br>10 | 100<br>100 | 6…10 | 138 | **GV2ME143** |
| **5.5** | 15 | 50 | **7.5** | 6 | 75 | 9…14 | 170 | **GV2ME163** |
| **7.5** | 15 | 50 | **9** | 6 | 75 | 13…18 | 223 | **GV2ME203** |
| **9**<br>**11** | 15<br>15 | 40<br>40 | **11** | 4 | 75 | 17…23 | 327 | **GV2ME213** |
| **11** | 15 | 40 | **15** | 4 | 75 | 20…25 | 327 | **GV2ME223** |




*LA9D99*

### Contact blocks

| Description | Mounting | Maximum number | Type of contacts | Sold in lots of | Unit reference |
|---|---|---|---|---|---|
| **Instantaneous auxiliary contacts** | Front | 1 | N/O + N/C | 10 | **GVAE113** |
| | | | N/O + N/O | 10 | **GVAE203** |
| | LH side | 2 | N/O + N/C | 1 | **GVAN113** |
| | | | N/O + N/O | 1 | **GVAN203** |

### Accessory

| Description | Application | Sold in lots of | Unit reference |
|---|---|---|---|
| **Cable end reducer** | For connection of conductors from 1 to 1.5 mm² | 20 | **LA9D99** |

*(1) For connection of conductors from 1 to 1.5 mm², the use of an **LA9D99** cable end reducer is recommended.*
*(2) Maximum rating which can be mounted in enclosures **GV2MC** or **MP**, please consult your Regional Sales Office*
*(3) The thermal trip setting must be within the range marked on the graduated knob.*
*★ > 100 kA.*

Characteristics: pages B6/72 to B6/76
Curves: pages B6/83 to B6/85
Dimensions, schemes: pages B6/93 to B6/97, B6/99

# Product references

PB121672.tif

*GV2P08*

## Motor circuit breakers from 0.06 to 30 kW / 400 V

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Setting range of thermal trips (2) | Magnetic tripping current Id ± 20 % | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | |
| kW | kA | % | kW | kA | % | kW | kA | % | A | A | |
| **Deca - Frame 2 (ref. GV2P): control by rotary knob** | | | | | | | | | | | |
| **Screw clamp terminals** | | | | | | | | | | | |
| – | – | – | – | – | – | – | – | – | 0.1…0.16 | 1.5 | **GV2P01** |
| **0.06** | ★ | ★ | – | – | – | – | – | – | 0.16…0.25 | 2.4 | **GV2P02** |
| **0.09** | ★ | ★ | – | – | – | – | – | – | 0.25…0.40 | 5 | **GV2P03** |
| **0.12** | ★ | ★ | – | – | – | **0.37** | ★ | ★ | 0.40…0.63 | 8 | **GV2P04** |
| **0.18** | ★ | ★ | – | – | – | **–** | – | – | | | |
| **0.25** | ★ | ★ | – | – | – | **0.55** | ★ | ★ | 0.63…1 | 13 | **GV2P05** |
| **0.37** | ★ | ★ | **0.37** | ★ | ★ | **–** | – | – | 1…1.6 | 22.5 | **GV2P06** |
| **0.55** | ★ | ★ | **0.55** | ★ | ★ | **0.75** | ★ | ★ | | | |
| **0.75** | ★ | ★ | **1.1** | ★ | ★ | **1.5** | 8 | 100 | 1.6…2.5 | 33.5 | **GV2P07** |
| **1.1** | ★ | ★ | **1.5** | ★ | ★ | **2.2** | 8 | 100 | 2.5…4 | 51 | **GV2P08** |
| **2.2** | ★ | ★ | **3** | ★ | ★ | **4** | 6 | 100 | 4…6.3 | 78 | **GV2P10** |
| **3** | ★ | ★ | **5** | 50 | 100 | **5.5** | 6 | 100 | 6…10 | 138 | **GV2P14** |
| **5.5** | ★ | ★ | **7.5** | 42 | 75 | **9** | 6 | 100 | 9…14 | 170 | **GV2P16** |
| **–** | – | – | **–** | – | – | **11** | 6 | 100 | | | |
| **7.5** | 50 | 50 | **9** | 10 | 75 | **15** | 4 | 100 | 13…18 | 223 | **GV2P20** |
| **9** | 50 | 50 | **11** | 10 | 75 | **18.5** | 4 | 100 | 17…23 | 327 | **GV2P21** |
| **11** | 50 | 50 | **15** | 10 | 75 | **–** | – | – | 20…25 | 327 | **GV2P22** |
| **15** | 50 | 50 | **18.5** | 10 | 75 | **22** | 4 | 100 | 24…32 | 416 | **GV2P32** |

How to use the table : select your load operating voltage, then select its standard power value (below, in the same column). The appropriate circuit breaker is in the extreme right column, in the corresponding row.
Example: GV2P04 can protect 0.12 and 0.18 kW under 400/415 V, and 0.18 kW under 440 V, and 0,37 kW under 690 V. No 500 V standard power value can fit GV2P04.

## Motor circuit breakers up to 50 HP / 600 V, UL 60947-4-1 type E

**Deca - Frame 2 (ref. GV2P)** (3)

To obtain a GV2P motor circuit breaker, UL 60947-4-1 type E, use the following with the circuit breaker:
■ a “Large Spacing” adapter **GV2GH7.**

## Motor circuit breakers from 3/4 to 20 HP / 460 V, with screw clamp terminals

**Deca - Frame 2 (ref. GV2P) with rotary handle**

| Thermal setting (A) | Maximum Horsepower ratings (4) | | | | | | | | Group Motor applications | Reference |
|---|---|---|---|---|---|---|---|---|---|---|
| | Single-Phase | | | Three-Phase | | | | | | |
| | 115 V | 200 V | 230 V | 115 V | 200 V | 230 V | 460 V | 575 V | Max. Fuse or Circuit breaker (A) | |
| 0.1…0.16 | – | – | – | – | – | – | – | – | 450 | **GV2P01** |
| 0.16…0.25 | – | – | – | – | – | – | – | – | 450 | **GV2P02** |
| 0.25…0.40 | – | – | – | – | – | – | – | – | 450 | **GV2P03** |
| 0.40…0.63 | – | – | – | – | – | – | – | – | 450 | **GV2P04** |
| 0.63…1 | – | – | – | – | – | – | – | 1/2 | 450 | **GV2P05** |
| 1…1.6 | – | – | 1/10 | – | – | – | 3/4 | 3/4 | 450 | **GV2P06** |
| 1.6…2.5 | – | 1/6 | 1/6 | – | 1/2 | 1/2 | 1 | 1.5 | 450 | **GV2P07** |
| 2.5…4 | 1/8 | 1/4 | 1/3 | – | 3/4 | 3/4 | 2 | 3 | 450 | **GV2P08** |
| 4…6.3 | 1/4 | 1/2 | 1/2 | 3/4 | 1 | 1.5 | 3 | 5 | 450 | **GV2P10** |
| 6…10 | 1/2 | 1 | 1.5 | 1 | 2 | 3 | 5 | 7.5 | 450 | **GV2P14** |
| 9…14 | 3/4 | 2 | 2 | 2 | 3 | 3 | 10 | 10 | 450 | **GV2P16** |
| 13…18 | 1 | 2 | 3 | 2 | 5 | 5 | 10 | 15 | 450 | **GV2P20** |
| 17…23 | 1.5 | 3 | 3 | 3 | 5 | 7.5 | 15 | 20 | 450 | **GV2P21** |
| 20…25 | 2 | – | – | – | 7.5 | 7.5 | 15 | 20 | 450 | **GV2P22** |
| 24…32 | 2 | 5 | 5 | 5 | 7.5 | 10 | 20 | 25 | 450 | **GV2P32** |

*(1) As % of Icu.*
*(2) The thermal trip setting must be within the range marked on the graduated knob.*
*(3) Accessory: see page B6/23.*
*(4) 3P FLA corresponding values: see page A5/86.*
★ *> 100 kA.*

Characteristics: pages B6/72 to B6/76
Curves: pages B6/83 to B6/86
Dimensions, schemes: pages B6/93 to B6/97, B6/99

# Product references

PB121514.eps

*GV2RT*

## For motors with high current peak on starting

### Deca - Frame 2 (ref. GV2RT) control by rocker lever

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | Setting range of thermal trips [1] | Magnetic tripping current Id ± 20 % | Reference |
|---|---|---|---|---|---|---|---|
| 220/ 230 V | 400/ 415 V | 440 V | 500 V | 690 V | | | |
| kW | kW | kW | kW | kW | A | A | |
| 0.06 | 0.09 | 0.09<br>0.12 | – | – | 0.25…0.40 | 8 | **GV2RT03** |
| – | 0.12<br>0.18 | 0.18 | – | 0.37 | 0.40…0.63 | 13 | **GV2RT04** |
| 0.09<br>0.12 | 0.25<br>0.37 | 0.25<br>0.37 | 0.37 | 0.55 | 0.63…1 | 22 | **GV2RT05** |
| 0.18<br>0.25 | 0.37<br>0.55 | 0.37<br>0.55 | 0.37<br>0.55<br>0.75 | 0.75<br>1.1 | 1…1.6 | 33 | **GV2RT06** |
| 0.37 | 0.75 | 0.75<br>1.1 | 1.1 | 1.5 | 1.6…2.5 | 51 | **GV2RT07** |
| 0.55<br>0.75 | 1.1<br>1.5 | 1.5 | 1.5<br>2.2 | 2.2<br>3 | 2.5…4 | 78 | **GV2RT08** |
| 1.1 | 2.2 | 2.2<br>3 | 3 | 4 | 4…6.3 | 138 | **GV2RT10** |
| 1.5<br>2.2 | 3<br>4 | 4 | 4<br>5.5 | 5.5<br>7.5 | 6…10 | 200 | **GV2RT14** |
| 2.2<br>3 | 5.5 | 5.5<br>7.5 | 7.5 | 9<br>11 | 9…14 | 280 | **GV2RT16** |
| 4 | 7.5 | 7.5<br>9 | 9 | 15 | 13…18 | 400 | **GV2RT20** |
| 5.5 | 9<br>11 | 11 | 11 | 18.5 | 17…23 | 400 | **GV2RT21** |

*(1) The thermal trip setting must be within the range marked on the graduated knob.*

## For primaries of 3-phase transformers

### Deca - Frame 2 (ref. GV2RT) control by rocker lever

| Standard power ratings | | | | | Setting range of thermal trips [2] | Magnetic tripping current Id ± 20 % | Reference |
|---|---|---|---|---|---|---|---|
| 230/240 V | 400/415 V | 440 V | 500 V | 690 V | | | |
| kVA | kVA | kVA | kVA | kVA | A | A | |
| – | – | – | – | – | 0.25…0.40 | 8 | **GV2RT03** |
| – | – | – | – | – | 0.40…0.63 | 13 | **GV2RT04** |
| – | – | 0.63 | 0.63 | 1 | 0.63…1 | 22 | **GV2RT05** |
| 0.4 | 0.63 | 1 | 1 | – | 1…1.6 | 33 | **GV2RT06** |
| 0.63 | 1 | – | 1.6 | 1.6<br>2 | 1.6…2.5 | 51 | **GV2RT07** |
| 1 | 1.6<br>2 | 1.6<br>2 | 2<br>2.5 | 2.5 | 2.5…4 | 78 | **GV2RT08** |
| 1.6<br>2 | 2.5 | 2.5<br>4 | 4 | 4<br>5<br>6.3 | 4…6.3 | 138 | **GV2RT10** |
| 2.5 | 4<br>5 | 5 | 5<br>6.3 | – | 6…10 | 200 | **GV2RT14** |
| 4 | 6.3 | 6.3 | – | 10<br>12.5 | 9…14 | 280 | **GV2RT16** |
| 5<br>6.3 | 10 | 10 | 10<br>12.5 | 10 | 13…18 | 400 | **GV2RT20** |

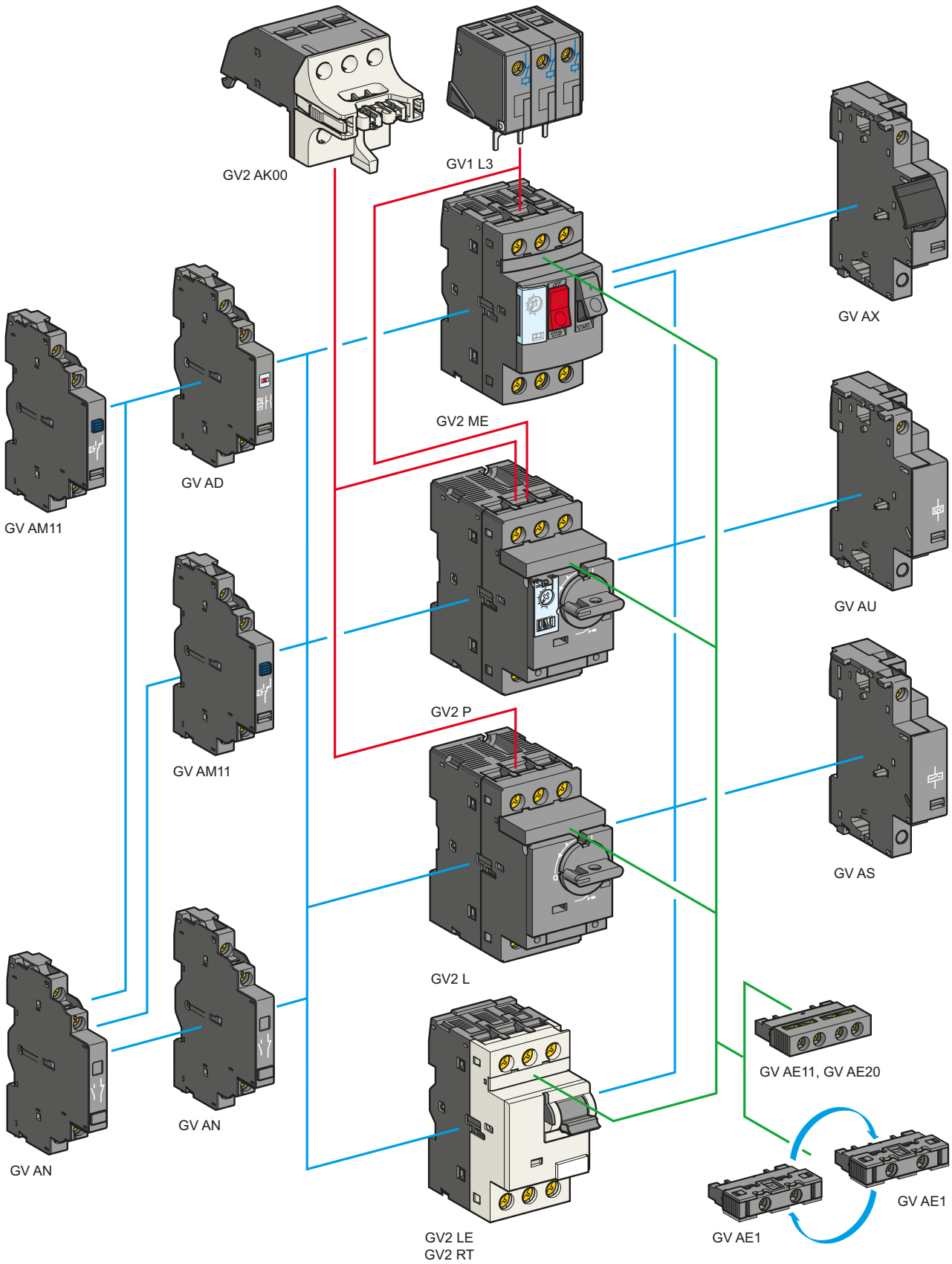
## Accessory [3]

| Description | Reference |
|---|---|
| **Padlockable external operator** (IP 54)<br>black handle, blue legend plate | **GV2AP03** |

*(2) The thermal trip setting must be within the range marked on the graduated knob.*

*(3) Other accessories such as mounting, cabling and marking accessories are identical to those used for **GV2ME** motor circuit breakers, see page B6/23.*

Characteristics: pages B6/72 to B6/76
Curves: pages B6/83 to B6/85
Dimensions, schemes: pages B6/98 to B6/99


DB439407.eps
GV2 AK00
GV1 L3
GV AX
GV2 ME
GV AD
GV AM11
GV AU
GV2 P
GV AM11
GV AS
GV2 L
GV AE11, GV AE20
GV AN
GV AN
GV AE1
GV AE1
GV2 LE
GV2 RT

## Contact blocks

| Description | Mounting | Maximum number | Type of contacts | | Sold in lots of | Unit reference |
|---|---|---|---|---|---|---|
| **Instantaneous auxiliary contacts** | Front (1) | 1 | N/O or N/C (2) | | 10 | **GVAE1** |
| | | | N/O + N/C | | 10 | **GVAE11** |
| | | | N/O + N/O | | 10 | **GVAE20** |
| | Side (LH) | 2 | N/O + N/C | | 1 | **GVAN11** |
| | | | N/O + N/O | | 1 | **GVAN20** |
| **Fault signalling contact + instantaneous auxiliary contact** | Side (3) (LH) | 1 | N/O (fault) | + N/O | 1 | **GVAD1010** |
| | | | | + N/C | 1 | **GVAD1001** |
| | | | N/C (fault) | + N/O | 1 | **GVAD0110** |
| | | | | + N/C | 1 | **GVAD0101** |
| **Short-circuit signalling contact** | Side (LH) | 1 | C/O common point | | 1 | **GVAM11** |

## Electric trips

| Mounting | Voltage | | Reference |
|---|---|---|---|
| **Undervoltage or shunt trips (4)** | | | |
| **Side** (1 block on RH side of circuit breaker) | 24 V | 50 Hz | **GVA●025** |
| | | 60 Hz | **GVA●026** |
| | 48 V | 50 Hz | **GVA●055** |
| | | 60 Hz | **GVA●056** |
| | 100 V | 50 Hz | **GVA●107** |
| | 100…110 V | 60 Hz | **GVA●107** |
| | 110…115 V | 50 Hz | **GVA●115** |
| | | 60 Hz | **GVA●116** |
| | 120…127 V | 50 Hz | **GVA●125** |
| | 127 V | 60 Hz | **GVA●115** |
| | 200 V | 50 Hz | **GVA●207** |
| | 200…220 V | 60 Hz | **GVA●207** |
| | 220…240 V | 50 Hz | **GVA●225** |
| | | 60 Hz | **GVA●226** |
| | 380…400 V | 50 Hz | **GVA●385** |
| | | 60 Hz | **GVA●386** |
| | 415…440 V | 50 Hz | **GVA●415** |
| | 415 V | 60 Hz | **GVA●416** |
| | 440 V | 60 Hz | **GVA●385** |
| | 480 V | 60 Hz | **GVA●415** |
| | 500 V | 50 Hz | **GVA●505** |
| | 600 V | 60 Hz | **GVA●505** |
| **Undervoltage trip, INRS (can only be mounted on GV2ME) Safety device for dangerous machines conforming to INRS and VDE 0113** | | | |
| **Side** (1 block on RH side of circuit breaker GV2ME) | 110…115 V | 50 Hz | **GVAX115** |
| | | 60 Hz | **GVAX116** |
| | 127 V | 60 Hz | **GVAX115** |
| | 220…240 V | 50 Hz | **GVAX225** |
| | | 60 Hz | **GVAX226** |
| | 380…400 V | 50 Hz | **GVAX385** |
| | | 60 Hz | **GVAX386** |
| | 415…440 V | 50 Hz | **GVAX415** |
| | 440 V | 60 Hz | **GVAX385** |

PB111870.eps

*GV1L3*

## Limiter blocks

| Description | Mounting | Maximum number | Reference |
|---|---|---|---|
| **Visible isolation block** (5) | Front (1) | 1 | **GV2AK00** (6) |
| **Limiters** | At top (GV2ME and GV2P) for circuit breakers with screw clamp connections | 1 | **GV1L3** |
| | Independent (7) | 1 | **LA9LB920** |

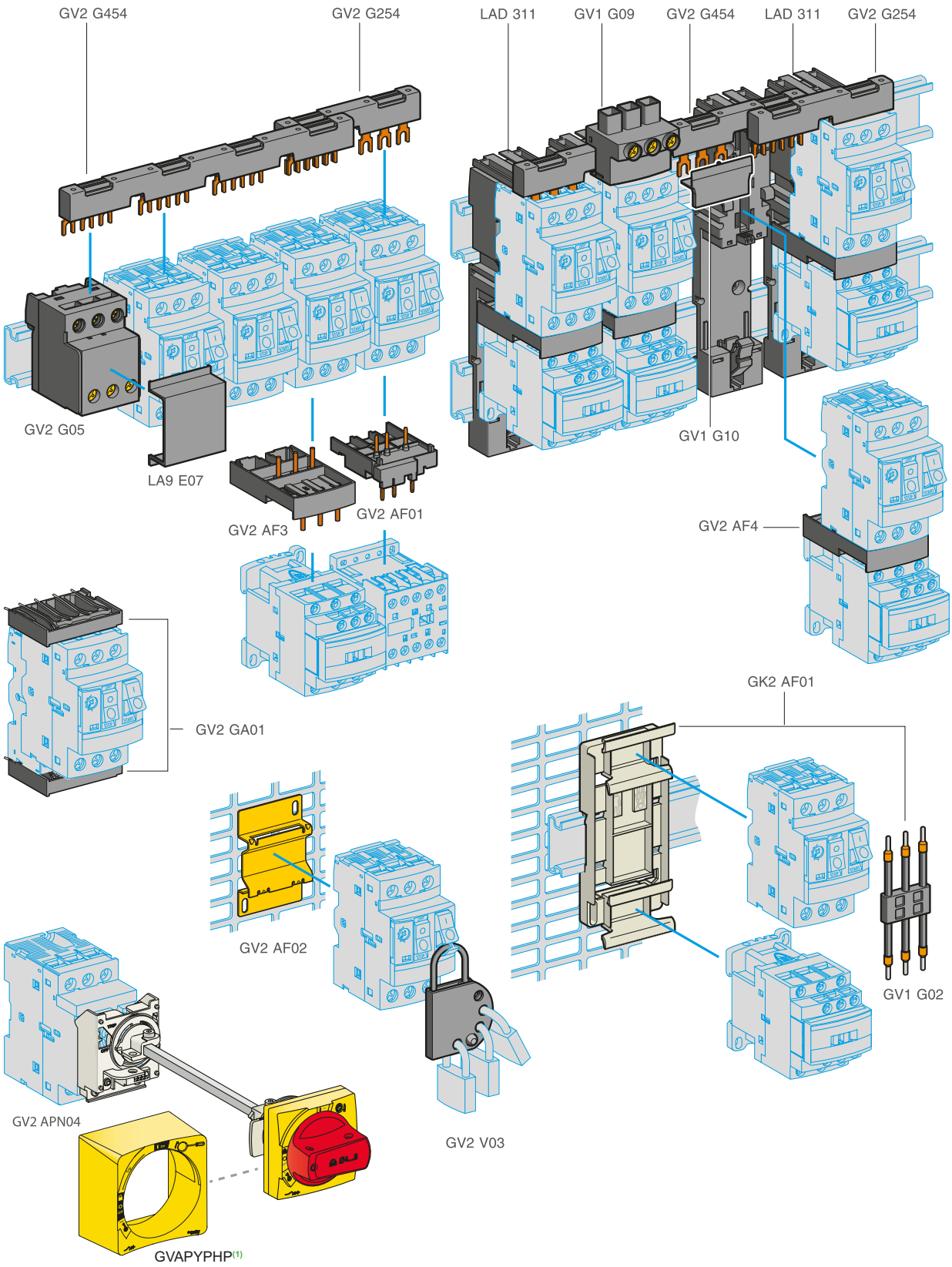
PB138227.eps

*LA9LB920*

*(1) Mounting of a **GVAE** contact block or a **GV2AK00** visible isolation block on **GV2P** and **GV2L**.*
*(2) Choice of N/C or N/O contact operation, depending on which way round the reversible block is mounted.*
*(3) The **GVAD** is always mounted next to the circuit breaker.*
*(4) To order an undervoltage trip: replace the dot (●) in the reference with a **U**, example: **GVAU025**.*
*To order a shunt trip: replace the dot (●) in the reference with an **S**, example: **GVAS025**.*
*(5) Visible isolation of the 3 poles upstream of circuit breaker **GV2P** and **GV2L**.*
*(6) Ie Max = 32 A.*
*(7) For more information about the current limiter **LA9LB920**, see pages A4/31 and A4/61.*

Characteristics: pages B6/87 to B6/89
Dimensions, schemes: pages B6/90 to B6/99

DB126629.eps




*(1) Standard front plate must be removed from the assembly and replaced by Protective front plate (GVAPYPHP).*



Life Is On Schneider Electric

## Product references

### Accessories for circuit breakers with screw clamp connections

| Description | Application | Sold in lots of | Unit reference |
|---|---|---|---|
| **Adapter plates** | For mounting a GV2 by screw fixing | 10 | **GV2AF02** |
| | For mounting a GV2ME and contactor LC1D09…D38 with front faces aligned | 1 | **LAD311** |
| **Height compensation plate** | 7.5 mm to align GV2ME-GV2LE and GV2P-GV2L and allow the use of a common GV2G●●● busbar | 10 | **GV1F03** |
| **Combination blocks** | Between GV2 and contactor LC1K or LP1K | 10 | **GV2AF01** |
| | Between GV2 and contactor LC1D09…D38 | 10 | **GV2AF3** |
| | Between GV2 mounted on LAD311 and contactor LC1D09…D38 | 10 | **GV2AF4** |
| **Motor starter adapter plate** | With 3-pole connection for mounting a GV2 and a contactor LC1D09…D25 | 1 | **GK2AF01** |

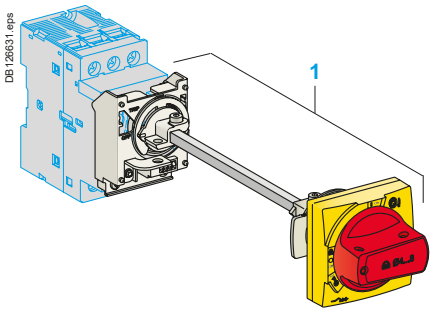
| Description | Application | Pitch | Reference |
|---|---|---|---|
| | | mm | |
| **Sets of 3-pole Ie = 63 A busbars** | 2 tap-offs | 45 | **GV2G245** |
| | | 54 | **GV2G254** |
| | | 72 | **GV2G272** |
| | 3 tap-offs | 45 | **GV2G345** |
| | | 54 | **GV2G354** |
| | 4 tap-offs | 45 | **GV2G445** |
| | | 54 | **GV2G454** |
| | | 72 | **GV2G472** |
| | 5 tap-offs | 54 | **GV2G554** |

PB119241.eps

*GV1G09*

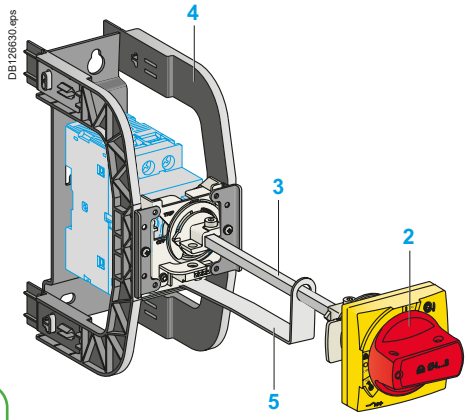
| Description | Ie | Application | Sold in lots of | Unit reference |
|---|---|---|---|---|
| | A | | | |
| **Protective end cover** | - | For unused busbar outlets | 5 | **GV1G10** |
| **Terminal block** for supply to one or more GV2G busbar sets | 63 | Connection from the top | 1 | **GV1G09** |
| | 63 | Can be fitted with current limiter GV1L3 (GV2ME and GV2P) | 1 | **GV2G05** |
| **Cover for terminal block** | - | For mounting in modular panels | 10 | **LA9E07** |
| **Flexible 3-pole connection** for connecting a GV2 to a contactor LC1D09…D25 | 25 | Centre distance between mounting rails: 100…120 mm | 10 | **GV1G02** |
| **"Large Spacing" adapter** UL 60947-4-1 type E | - | For GV2P●● (except 32 A) | 1 | **GV2GH7** |
| **Clip-in marker holders** (supplied with each circuit breaker) | - | For GV2P, GV2L, GV2LE and GV2RT (8 x 22 mm) | 100 | **LA9D92** |

## Product references

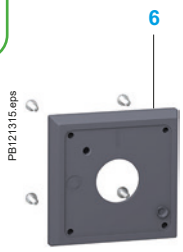


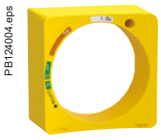

### Extended Rotary Handle

Allows a circuit breaker or a starter-controller installed in back of an enclosure to be operated from the front of the enclosure.
A rotary handle can be black or red/yellow, IP54 or IP65. It includes a function for locking the circuit breaker or the starter in the O (Off) for red/yellow handle, in the O (Off) or I (On) for black handle, by means of up to 3 padlocks with a shank diameter of 4 to 8 mm. The extended shaft must be adjusted to use in different size enclosures. The IP54 rotary handle is fixed with a nut (Ø22) to make easier the assembling. The new Laser Square tool brings the accuracy to align the circuit breaker and the rotary handle.






*GVAPYPHP*

## Padlockable external operators for ref. GV2P and GV2L

### Description

1 Kit handle + mounting system
2 Universal handle
3 Shaft
4 Bracket
5 Shaft support plate for deep enclosure
6 Retrofit accessory
7 Laser Square accessory

### Kit handle + mounting system

| Description | | Item | Reference |
|---|---|---|---|
| **For GV2P/L** | Black handle, front plate, with trip status, IP 54 | 1 | **GV2APN01** |
| | Red handle, front plate, with trip status, IP 54 | 1 | **GV2APN02** |
| | Black handle, front plate, without trip status, IP 65 | 1 | **GV2APN03** |
| | Red handle, front plate, without trip status, IP 65 | 1 | **GV2APN04** |
| **For GV2LE** | Padlocking in “On” and “Off” position<br>Black handle, blue front plate, IP 54 | - | **GV2AP03** |

### Universal handle

| | | | |
|---|---|---|---|
| **For GV2P/L** | Black handle, with trip status, IP54 | 2 | **GVAPB54** |
| | Red handle, with trip status, IP54 | 2 | **GVAPR54** |
| | Red handle, without trip status, IP65 | 2 | **GVAPR65** |

### External handle protection frame

| | | | |
|---|---|---|---|
| **For GV2P/L** | Yellow frame | 1 | **GVAPYPHP** |
| | Black frame | 1 | **GVAPBPHP** |

### Shaft

| | | | |
|---|---|---|---|
| **For GV2P/L** | L = 315 mm | 3 | **GVAPA1** |

### Bracket

| | | | |
|---|---|---|---|
| **For GV2P/L** | | 4 | **GVAPH02** |

### Shaft support plate for deep enclosure

| | | | |
|---|---|---|---|
| **For GV2P/L** | Depth ≥ 250 mm | 5 | **GVAPK11** |

### Retrofit accessory

| | | | |
|---|---|---|---|
| **For GV2P/L** | | 6 | **GVAPP1** |

### Laser Square accessory

| | | | |
|---|---|---|---|
| **For GV2P/L** | | 7 | **GVAPL01** |

### Sticker

| | Sold in lots of | | |
|---|---|---|---|
| For German | 10 | - | **GVAPSDE** |
| For Chinese | 10 | - | **GVAPSCN** |
| For Portuguese | 10 | - | **GVAPSPT** |
| For Italian | 10 | - | **GVAPSIT** |

## Padlocking device

| Description | | Reference |
|---|---|---|
| **For all GV2 device** | For use with up to 4 padlocks, Ø6 mm shank max. (padlocks not included) | **GV2V03** |

Dimensions, schemes:
page B6/91

# TeSys Deca
# - Frame 3
# 11 to 45 kW

## Product references

PB121697.tif

*GV3L25*

### Motor circuit breakers from 11 to 45 kW

**Deca - Frame 3 (ref. GV3L): control by rotary knob, connection by EverLink® BTR screw connectors**

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Magnetic protection rating | Tripping current Id ± 20 % | Use in association with thermal overload relay (class 10 A) | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | | |
| kW | kA | | kW | kA | | kW | kA | | A | A | | |
| **11** | 100 | 100 | **15** | 12 | 50 | **18.5** | 6 | 50 | 25 | 350 | LRD325 | **GV3L25** |
| **15** | 100 | 100 | **18.5** | 12 | 50 | **22** | 6 | 50 | 32 | 448 | LRD332 | **GV3L32** |
| **18.5** | 50 | 100 | **22** | 12 | 50 | **37** | 6 | 50 | 40 | 560 | LRD340 | **GV3L40** |
| **22** | 50 | 100 | **30** | 12 | 50 | **45** | 6 | 50 | 50 | 700 | LRD350 | **GV3L50** |
| **30** | 50 | 100 | **37** | 12 | 50 | **55** | 6 | 50 | 65 | 910 | LRD365 | **GV3L65** |
| **37** | 50 | 60 | **45** | 12 | 50 | **55** | 6 | 50 | 73 | 1120 | LRD380 | **GV3L73** |
| **45** | 50 | 60 | **45** | 12 | 50 | **55** | 6 | 50 | 80 | 1120 | LRD380 | **GV3L80**(2) |

**Connection by lugs**

To order these circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above.
Example: ref. **GV3L32** becomes **GV3L326**.

*(1) As % of Icu. Associated current limiter or fuses, where required.*
*(2) 750 A Lock Rotor Current max.*
★ *> 100 kA.*



Characteristics: pages B6/102 to B6/104
Curves: pages B6/106 to B6/108
Dimensions, schemes: pages B6/115 to B6/117

# Product references

PB121680.tif

*GV3P80*

PB121675.eps

*GV3P651*

PB121703.eps

*GV3P736*

## Motor circuit breakers up to 45 kW / 400 V

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Setting range of thermal trips (2) | Magnetic tripping current Id ± 20 % | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | |
| kW | kA | % | kW | kA | % | kW | kA | % | A | A | |
| **Deca - Frame 3 (ref. GV3P): control by rotary knob** | | | | | | | | | | | |
| **Connection by EverLink® BTR screw connectors (3)** | | | | | | | | | | | |
| **5.5** | 100 | 100 | **7.5** | 12 | 50 | **11** | 6 | 50 | 9…13 | 182 | **GV3P13** |
| **7.5** | 100 | 100 | **9** | 12 | 50 | **15** | 6 | 50 | 12…18 | 252 | **GV3P18** |
| **11** | 100 | 100 | **15** | 12 | 50 | **18.5** | 6 | 50 | 17…25 | 350 | **GV3P25** |
| **15** | 100 | 100 | **18.5** | 12 | 50 | **22** | 6 | 50 | 23…32 | 448 | **GV3P32** |
| **18.5** | 50 | 100 | **22** | 12 | 50 | **37** | 6 | 50 | 30…40 | 560 | **GV3P40** |
| **22** | 50 | 100 | **30** | 12 | 50 | **45** | 6 | 50 | 37…50 | 700 | **GV3P50** |
| **30** | 50 | 100 | **45** | 12 | 50 | **55** | 6 | 50 | 48…65 | 910 | **GV3P65** |
| **37** | 50 | 60 | **45** | 12 | 50 | **55** | 6 | 50 | 62...73 | 1120 | **GV3P73** |
| **45** | 50 | 60 | **45** | 12 | 50 | **55** | 6 | 50 | 70...80 | 1120 | **GV3P80 (4)** |

**Connection by EverLink® BTR screw connectors, for assembly with a contactor**

To assemble a **GV3P32** to **P73** circuit breaker with an **LC1D40A** to **D73A** contactor, it is possible to use the circuit breaker supplied without downstream EverLink® power terminal block. To order this product, add the digit **1** to the end of the references selected above. Example: ref. **GV3P73** becomes **GV3P731**. Do not use direct mounting between **GV3P80** and **LC1D80A** because of potential overheating, use cable link.

**Connection by lugs**

To order thermal magnetic circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: **GV3P25** becomes **GV3P256.**

## Motor circuit breakers up to 40 HP / 460 V, UL 60947-4-1 type E

**Deca - Frame 3 - ref. GV3P13 (5) to GV3P65 (5)**

To obtain a motor-circuit breaker **GV3P**, UL 60947-4-1 type E, use the following with the circuit breaker:

- a "Large Spacing" cover **GV3G66**,
- a short-circuit signalling contact **GVAM11**.

## Motor circuit breakers from 7.5 to 50 HP / 460 V, with screw clamp terminals

**Deca - Frame 3 (ref. GV3P) with rotary handle**

| Thermal setting (A) | Maximum Horsepower ratings (6) | | | | | | Reference |
|---|---|---|---|---|---|---|---|
| | Single-Phase | | Three-Phase | | | | |
| | 115 V | 230 V | 200 V | 230 V | 460 V | 575 V | |
| 9…13 | 1/2 | 1.5 | 3 | 3 | 7.5 | 10 | **GV3P13** |
| 12…18 | 3/4 | 2 | 3 | 5 | 7.5 | 10 | **GV3P18** |
| 17…25 | 1.5 | 3 | 5 | 7.5 | 15 | 20 | **GV3P25** |
| 23…32 | 2 | 3 | 7.5 | 7.5 | 20 | 25 | **GV3P32** |
| 30…40 | 3 | 5 | 10 | 10 | 25 | 30 | **GV3P40** |
| 37…50 | 3 | 7.5 | 10 | 10 | 30 | 40 | **GV3P50** |
| 48…65 | 3 | 10 | 15 | 15 | 40 | 50 | **GV3P65** |
| 62…73 | 5 | 15 | 20 | 25 | 50 | 60 | **GV3P73** |

**Deca - Frame 3 - ref. GV3P13 to GV3P65 - with connection by lugs (5)**

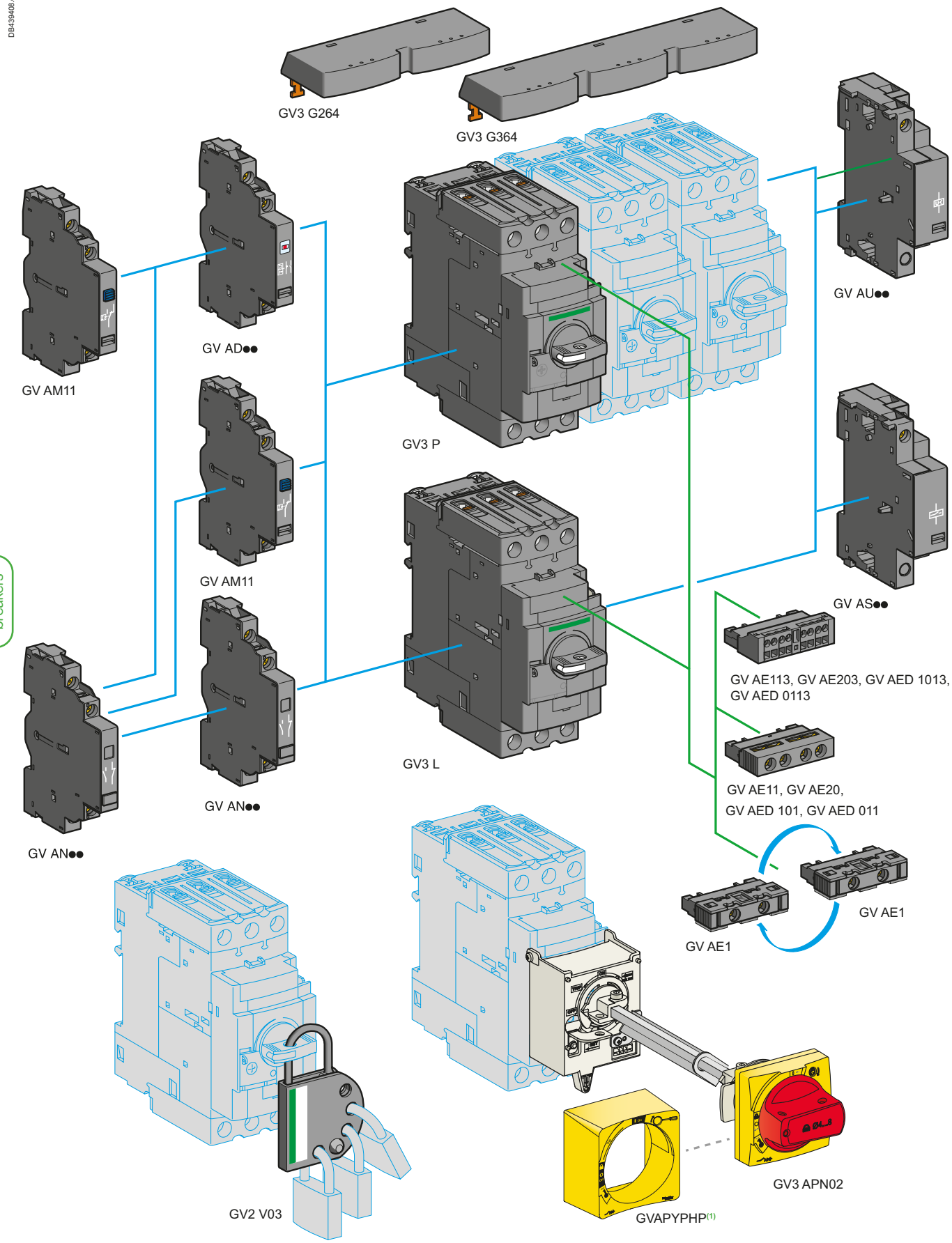
To obtain a motor-circuit breaker ref. **GV3P**, UL 60947-4-1 type E, with connection by lugs, add the digit **6** to the end of reference selected above and use the following with the circuit breaker:

- two IP 20 covers **LAD96570**,
- a short-circuit signalling contact **GVAM11**.

*(1) As % of Icu.*
*(2) The thermal trip setting must be within the range marked on the graduated knob.*
*(3) BTR screws: hexagon socket head. Require use of an insulated Allen key, in compliance with local wiring regulations.*
*(4) For applications with stable full load current with maximum 80 A and Lock Rotor Current maximum 750 A.*
*(5) Accessories: see page B6/30.*
*(6) 3P FLA corresponding values: see page A5/86.*

Motor circuit breakers

Characteristics: pages B6/102 to B6/105
Curves: pages B6/109 to B6/111
Dimensions, schemes: pages B6/115 and B6/117




*(1) Standard front plate must be removed from the assembly and replaced by Protective front plate (GVAPYPHP).*



Life Is On Schneider Electric

# Product references

## Contact blocks

| Description | Mounting | Maximum number | Type of contacts | | Sold in lots of | Unit reference |
|---|---|---|---|---|---|---|
| **Instantaneous auxiliary contacts** | Front | 1 | N/O or N/C (1) | | 10 | **GVAE1** |
| | | | N/O + N/C | | 10 | **GVAE11** (2) |
| | | | N/O + N/O | | 10 | **GVAE20** (2) |
| | Side (LH) | 2 | N/O + N/C | | 1 | **GVAN11** (2) |
| | | | N/O + N/O | | 1 | **GVAN20** (2) |
| **Fault signalling contact + instantaneous auxiliary contact** | Front | 1 | N/O (fault) | + N/O | 1 | **GVAED101** (2) |
| | | | N/O (fault) | + N/C | 1 | **GVAED011** (2) |
| | Side (3) (LH) | 1 | N/O (fault) | + N/O | 1 | **GVAD1010** |
| | | | | + N/C | 1 | **GVAD1001** |
| | | | N/C (fault) | + N/O | 1 | **GVAD0110** |
| | | | | + N/C | 1 | **GVAD0101** |
| **Short-circuit signalling contact** | Side (LH) | 1 | C/O common point | | 1 | **GVAM11** |

## Electric trips - undervoltage or shunt (4)

| Mounting | Voltage | | Reference |
|---|---|---|---|
| **Side** (1 block on RH side of circuit breaker) | 24 V | 50 Hz | **GVA●025** |
| | | 60 Hz | **GVA●026** |
| | 48 V | 50 Hz | **GVA●055** |
| | | 60 Hz | **GVA●056** |
| | 100 | 50 Hz | **GVA●107** |
| | 100…110 V | 60 Hz | **GVA●107** |
| | 110…115 V | 50 Hz | **GVA●115** |
| | | 60 Hz | **GVA●116** |
| | 120…127 V | 50 Hz | **GVA●125** |
| | 127 V | 60 Hz | **GVA●115** |
| | 200 V | 50 Hz | **GVA●207** |
| | 200…220 V | 60 Hz | **GVA●207** |
| | 220…240 V | 50 Hz | **GVA●225** |
| | | 60 Hz | **GVA●226** |
| | 380…400 V | 50 Hz | **GVA●385** |
| | | 60 Hz | **GVA●386** |
| | 415…440 V | 50 Hz | **GVA●415** |
| | 415 V | 60 Hz | **GVA●416** |
| | 440 V | 60 Hz | **GVA●385** |
| | 480 V | 60 Hz | **GVA●415** |
| | 500 V | 50 Hz | **GVA●505** |
| | 600 V | 60 Hz | **GVA●505** |

## Accessories

| Description | | | Reference |
|---|---|---|---|
| **Set of 3-pole busbars** **Ie = 115 A** Pitch: 64 mm | 2 tap-off | GV3P●● and GV3L●● | **GV3G264** |
| | 3 tap-off | GV3P●● and GV3L●● | **GV3G364** |
| **Cover** "Large Spacing" UL 60947-4-1 type E (Only one cover required on supply side) | | GV3P●● | **GV3G66** |

PB108356.eps

*GV3G66*

*(1) Choice of N/C or N/O contact operation, depending on which way round the reversible block is mounted.*
*(2) Contact blocks available in version with spring terminal connections. Add a figure **3** at the end of the references selected above. Example: **GVAED101** becomes **GVAED1013**.*
*(3) The **GVAD●●** is always mounted next to the circuit breaker.*
*(4) To order an undervoltage trip: replace the dot (●) in the reference with a **U**, example: **GVAU025**. To order a shunt trip: replace the dot (●) in the reference with an **S**, example: **GVAS025**.*

PB121324.eps

*LV426992*

*LV426990*

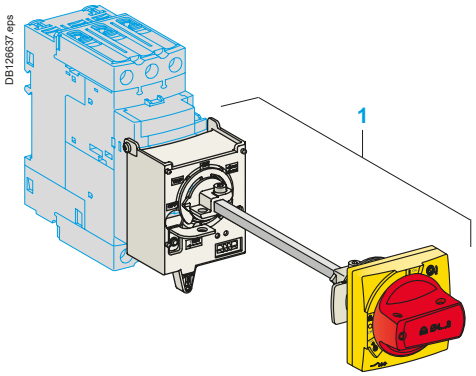
*Limited torque throwaway bits*

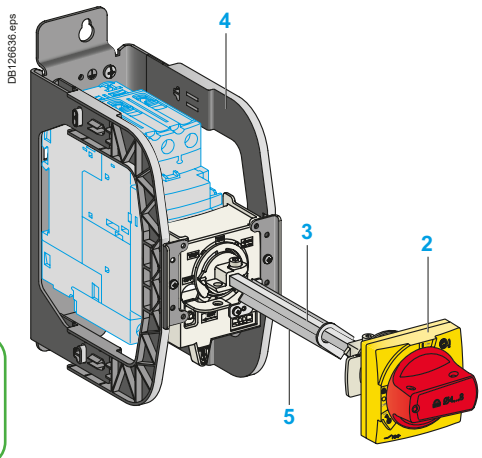
## Torque limiting breakaway bits

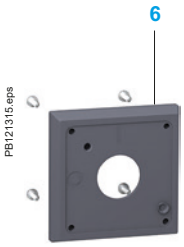
| Description | Sold in lots of | Reference |
|---|---|---|
| 5 N.m Yellow | 6 | **LV426992** |
| 9 N.m Green | 6 | **LV426990** |

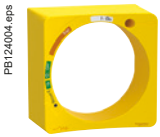
Characteristics: pages B6/112 to B6/114
Schemes: page B6/117

## Product references




*GVAPYPHP*

### Extended Rotary Handle

Allows a circuit breaker or a starter-controller installed in back of an enclosure to be operated from the front of the enclosure.
A rotary handle can be black or red/yellow, IP54 or IP65. It includes a function for locking the circuit breaker or the starter in the O (Off) or I (On) position (depending of the type of rotary handle) by means of up to 3 padlocks with a shank diameter of 4 to 8 mm. The extended shaft must be adjusted to use in different size enclosures. The IP54 rotary handle is fixed with a nut (Ø22) to make easier the assembling. The new Laser Square tool brings the accuracy to align the circuit breaker and the rotary handle.

### Padlockable external operators for Deca - Frame 3

**Description**

1 Kit handle + mounting system
2 Universal handle
3 Shaft
4 Bracket
5 Shaft support plate for deep enclosure
6 Retrofit accessory
7 Laser Square accessory

**Kit handle + mounting system**

| Description | | Item | Reference |
|---|---|---|---|
| **For GV3P/L** | Black handle, front plate, with trip status, IP 54 | 1 | **GV3APN01** |
| | Red handle, front plate, with trip status, IP 54 | 1 | **GV3APN02** |
| | Black handle, front plate, without trip status, IP65 | 1 | **GV3APN03** |
| | Red handle, front plate, without trip status, IP 65 | 1 | **GV3APN04** |
| **Universal handle** | | | |
| **For GV3P/L** | Black handle, with trip status, IP54 | 2 | **GVAPB54** |
| | Red handle, with trip status, IP54 | 2 | **GVAPR54** |
| | Red handle, without trip status IP65 | 2 | **GVAPR65** |
| **External handle protection frame** | | | |
| **For GV2P/L** | Yellow frame | 1 | **GVAPYPHP** |
| | Black frame | 1 | **GVAPBPHP** |
| **Shaft** | | | |
| **For GV3P/L** | L = 315 mm | 3 | **GVAPA1** |
| **Shaft support plate for deep enclosure** | | | |
| **For GV3P/L** | Depth ⩾ 300 mm | 5 | **GVAPK12** |
| **Retrofit accessory** | | | |
| **For GV3P/L** | | 6 | **GVAPP1** |
| **Laser Square accessory** | | | |
| **For GV3P/L** | | 7 | **GVAPL01** |

| Sticker | | Sold in lots of | | |
|---|---|---|---|---|
| **Warning label** | For German | 10 | - | **GVAPSDE** |
| | For Chinese | 10 | - | **GVAPSCN** |
| | For Portuguese | 10 | - | **GVAPSPT** |
| | For Italian | 10 | - | **GVAPSIT** |

Dimensions, schemes:
pages B6/116

# TeSys Deca - Frame 4

## 0.25 to 55 kW - 1/2 to 60 HP

## Protection

TeSys Deca - Frame 4 motor circuit breakers covers motor protection from 0.25 to 55 kW at 415 V AC (from 0.8 to 115 A) in one frame and are available in 3 breaking capacities: 25, 50 and 100 kA at 415 V AC IEC (15, 35, 65 kA at 480 V UL).

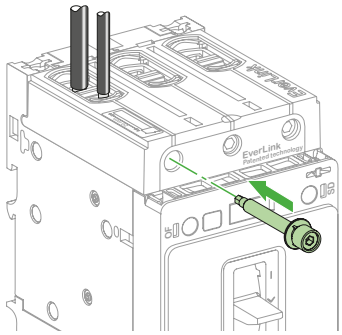
TeSys Deca - Frame 4 motor circuit breakers are available with 3 types of protection:
- Magnetic ref. GV4L: to be used with an overload relay or a drive
- Thermal magnetic ref. GV4P: electronic protection with wide range setting, dual class (10 & 20)
- Multifunction motor protection ref. GV4PEM: ref. GV4P with adjustable advanced protections and possibility to have

a side module SDx for alarming and motor functional fault differentiation.

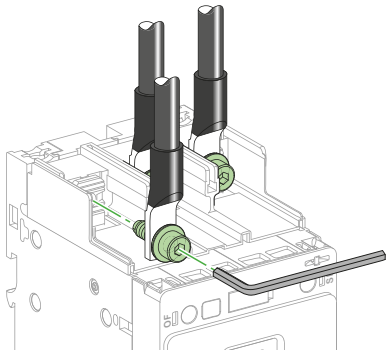
## Power connection

TeSys Deca - Frame 4 motor circuit breaker come in standard with 2-holes EverLink™ power connectors with creep (1) compensation for bare copper cables. This Schneider Electric patented technique makes it possible to achieve accurate and durable tightening torque in order to avoid cable creep.
Products may be delivered with connectors for bars or cables with compression lugs (except for the ref. GV4PB).
Whatever, the connectors are field interchangeable and can be removed for the installation of one of both.
And to tight at the right torque power connections particularly in the field, torque limiting breakaway bits may be used.

DB425664.eps




DB425926.eps



## Mounting

TeSys Deca - Frame 4 motor circuit breaker can be mounted on a backplate or on a DIN rail (35 or 75 mm).

## Handle

TeSys Deca - Frame 4 motor circuit breaker can be ordered with a toggle or a direct rotary handle (except for ref. GV4P Multifunction).
It is also possible to equip a toggle one with a direct rotary handle, or a front extended one, or a side one.

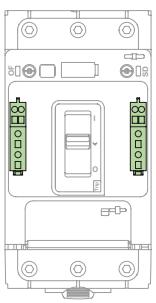
## Auxiliaries

TeSys Deca - Frame 4 circuit breakers can be equipped with an open/close (OF) contact and a trip indication (SD) contact. These contacts are common point changeover type, with a normally open (NO) and a normally closed (NC) contact. TeSys Deca - Frame 4 motor circuit breaker may be equipped too with an MN (undervoltage release) or MX (shunt trip) coil.

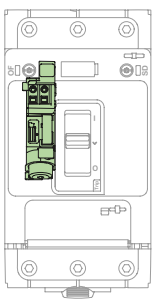
Ref. GV4P Multifunction circuit breakers can be equipped with 1 or 2 SDx module(s) in order to have alarming and motor functional fault differentiation (SDx - See page B6/44)

Auxiliaries have spring connections for cables up to 1.5 mm².

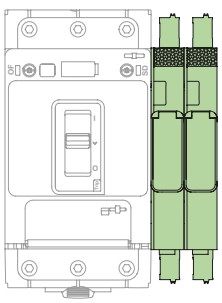
DB424978.eps **OF** **SD**



DB424979.eps **MN/MX**

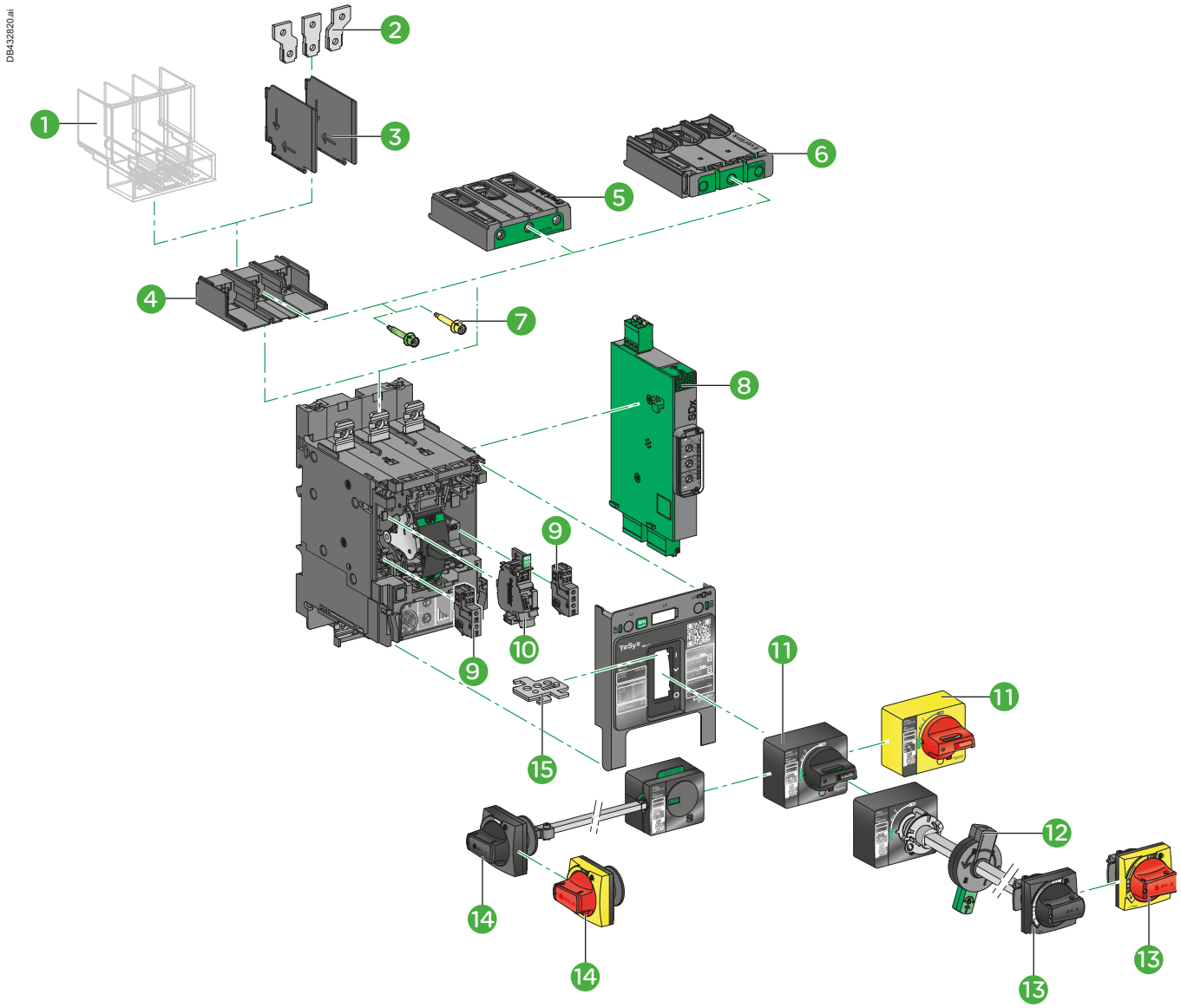


DB425752.eps **SDx**



*(1) Creep: normal crushing phenomenon of conductors, that is accentuated over time.*

## Introduction




1 Long terminal shield **LAD96590**
2 Terminal spreaders **LV426940**
3 Interphase barriers **LV426920**
4 Crimp lug connector **GV4LUG**
5 EverLink® connector **LAD96595**
6 Everlink® terminals and large spacing cover **GV4G66 + LAD96595**
7 Torque limiting breakaway bits **LV42699●**
8 SDx alarming/fault differentiation module **GV4ADM1111** (only with GV4PEM)
9 Auxiliary contact block for OF or SD function **GV4AE11**
10 - MN undervoltage release **GV4AU●●**
- MX shunt trip **GV4AS●●**
11 Direct mounting black or red on yellow bezel rotary handle **GV4ADN01/ GV4ADN02**
12 Open door shaft operator (for front extended rotary handle) **LV426937**
13 Front extended rotary handle kit with red handle on yellow bezel or black handle **GV4APN01/ GV4APN02 /GV4APN04**
14 Side rotary handle kit with red handle on yellow bezel or black handle **LV426935/LV426936**.
15 Toggle locking device **29370**

# Introduction

PB114910.eps

*GV4L*

PB114909.eps

*GV4LE*

## Standard version

**Protection**
Setting is made using dial.

**Trip class (class)**
Ref. GV4L can be used with class 5, 10 or 20 relay.

**Short circuit protection (Ii)**
Protection with an adjustable pick-up **Ii = 6 to 14 In**. Settings are made in amperes.

**Standards and certifications**
IEC/EN 60947-1, IEC/EN 60947-2, CCC, EAC.



References: page B6/35
Characteristics: pages B6/120 to B6/122
Curves: pages B6/124 to B6/128
Dimensions, schemes: pages B6/134, B6/135, B6/137

# Product references

## Magnetic motor circuit breakers from 0.25 to 55 kW

| Standard power ratings of 3-phase motors - 50 / 60 Hz | | | | | | | | | In | Magnetic setting range (Ii) | Use in association with overload relay Class 10 or 20 | Reference with EverLink terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | | | with toggle | with rotary handle |
| kW | kA | % | kW | kA | % | kW | kA | % | A | A | | | |
| **0.25... 0.75** | 25 | 100 | **0.37... 1.1** | 10 | 100 | **0.55... 1.5** | - | - | 2 | 12... 28 | LRD05 (0.63... 1A)<br>LRD06 (1... 1.6A)<br>LRD07 (1.6... 2.5A) | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE02N** | **GV4L02N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE02S** | - |
| **0.55... 1.5** | 25 | 100 | **0.75... 1.5** | 10 | 100 | **1.1... 2.2** | - | - | 3,5 | 21... 49 | LRD07 (1.6... 2.5A)<br>LRD08 (2.5... 4A) | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE03N** | **GV4L03N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE03S** | - |
| **1.5... 3** | 25 | 100 | **2.2... 4** | 10 | 100 | **3... 7.5** | - | - | 7 | 42... 98 | LRD08 (2.5... 4A)<br>LRD10 (4...6A) | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE07N** | **GV4L07N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE07S** | - |
| **3... 5.5** | 25 | 100 | **3... 7.5** | 10 | 100 | **5.5... 11** | - | - | 12,5 | 75... 175 | LRD12 (5.5... 8A)<br>LRD14 (7... 10A)<br>LRD313 (9...13A) | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE12N** | **GV4L12N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE12S** | - |
| **5.5... 11** | 25 | 100 | **7.5... 15** | 10 | 100 | **7.5... 18.5** | - | - | 25 | 150... 350 | LRD318 (12... 18A)<br>LRD325 (17... 25A) | **GV4LE25B** | **GV4L25B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE25N** | **GV4L25N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE25S** | - |
| **11... 22** | 25 | 100 | **15... 30** | 10 | 100 | **18.5... 45** | - | - | 50 | 300... 700 | LRD332 (23... 32A)<br>LRD340 (30... 40A)<br>LRD350 (37... 50A) | **GV4LE50B** | **GV4L50B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE50N** | **GV4L50N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE50S** | - |
| **18.5... 37** | 25 | 100 | **22... 55** | 10 | 100 | **30... 55** | - | - | 80 | 480... 1120 | LRD365 (48... 65A)<br>LRD3363 (63... 80A) | **GV4LE80B** | **GV4L80B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE80N** | **GV4L80N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE80S** | **GV4L80S** |
| **30... 55** | 25 | 100 | **30... 75** | 10 | 100 | **45... 90** | - | - | 115 | 690... 1610 | LR9D5567 (60... 100A)<br>LR9F5367 (60... 100A)<br>LR9D5369 (90... 150A)<br>LR9F5369 (90...150A) | **GV4LE115B** | **GV4L115B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | | | **GV4LE115N** | **GV4L115N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | | | **GV4LE115S** | **GV4L115S** |

**Connection by lugs**

To order circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: ref. **GV4LE02N** becomes **GV4LE02N6**.

*(1) As % of Icu.*

Characteristics:
pages B6/120 to B6/122

Curves:
pages B6/124 to B6/128

Dimensions, schemes:
pages B6/134, B6/135, B6/137

# Introduction

*GV4P*

*GV4PE*

## Standard version

**Protection**
Settings are made using dials.

**Overload or thermal protection (Ir)**
Inverse-time thermal protection against overloads with adjustable pick-up Ir.
Wide range setting made in amperes.
The tripping curve for the thermal protection, which indicates the time delay tr before tripping, is defined by the selected trip class.

**Trip class (class)**
The class is selected as a function of the normal motor starting time.
■ Class 10: starting time less than 10 s.
■ Class 20: starting time less than 20 s.
For a given class, it is necessary to check that all motor-feeder components are sized to carry the 7.2 Ir starting current without excessive temperature rise during the time corresponding to the class.

**Short time delay protection (Isd)**
Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly useful for wide range settings circuit breakers).
Fixed pick-up **Isd = 13 Ir.**

**Short-circuit protection (Ii)**
Instantaneous protection with non-adjustable pick-up **Ii=17 In**.

**Phase unbalance or phase loss (Iunbal, tunbal)**
This function opens the circuit breaker if a phase unbalance occurs:
■ that is greater than the 30 % of Irms (fixed pick-up): **Iunbal**
■ following the non-adjustable time delay (**tunbal**) equal to:
□ 0.7 s during starting
□ 4 s during normal operation.
Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

**Ground-fault protection (Ig, tg)**
Residual type ground-fault protection:
■ fixed pick-up **Ig = In**
■ fixed time delay **tg = 0.1 s.**

## Indications

**Front indications**
■ Green “Ready” LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.
■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise.

## Standards and certifications

IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1, CCC, EAC, CSA (cCSAus).

# Product references

## Thermal magnetic motor circuit breakers from 0.25 to 55 kW

| Standard power ratings of 3-phase motors - 50 / 60 Hz in category AC-3 | | | | | | | | | Thermal setting range (Ir) | Reference with EverLink terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | | |
| P | Icu | Ics (1) | P | Icu | Ics (1) | P | Icu | Ics (1) | | with toggle | with rotary handle |
| kW | kA | % | kW | kA | % | kW | kA | % | A | | |
| 0.25... 0.75 | 25 | 100 | 0.37... 1.1 | 10 | 100 | 0.55... 1.5 | - | - | 0.8... 2 | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE02N | GV4P02N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE02S | - |
| 0.55... 1.5 | 25 | 100 | 0.75... 1.5 | 10 | 100 | 1.1... 2.2 | - | - | 1.4... 3.5 | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE03N | GV4P03N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE03S | - |
| 1.5... 3 | 25 | 100 | 2.2... 4 | 10 | 100 | 3... 7.5 | - | - | 2.9... 7 | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE07N | GV4P07N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE07S | - |
| 3... 5.5 | 25 | 100 | 3... 7.5 | 10 | 100 | 5.5... 11 | - | - | 5... 12.5 | - | - |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE12N | GV4P12N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE12S | - |
| 5.5... 11 | 25 | 100 | 7.5... 15 | 10 | 100 | 7.5... 18.5 | - | - | 10... 25 | GV4PE25B | GV4P25B |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE25N | GV4P25N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE25S | - |
| 11... 22 | 25 | 100 | 15... 30 | 10 | 100 | 18.5... 45 | - | - | 20... 50 | GV4PE50B | GV4P50B |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE50N | GV4P50N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE50S | - |
| 22... 37 | 25 | 100 | 30... 55 | 10 | 100 | 37... 55 | - | - | 40... 80 | GV4PE80B | GV4P80B |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE80N | GV4P80N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE80S | GV4P80S |
| 37... 55 | 25 | 100 | 45... 75 | 10 | 100 | 75... 90 | - | - | 65... 115 | GV4PE115B | GV4P115B |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | GV4PE115N | GV4P115N |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | GV4PE115S | GV4P115S |

## Thermal magnetic motor circuit breakers from 3/4 to 75 HP / 480 V

| Single-Phase | | | | 3-Phase | | | | | | | | Rating | Reference with EverLink terminals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 120 V | | 240 V | | 208 V | | 240 V | | 480 V | | 600 V | | | | |
| Power | FLA | Power | FLA | Power | FLA | Power | FLA | Power | FLA | Power | FLA | | with toggle | with rotary handle |
| HP | A | Hp | A | Hp | A | Hp | A | Hp | A | Hp | A | A | | |
| - | - | 1/10 | 1.5 | - | - | - | - | 3/4 | 1.6 | 1 | 1.7 | 2 | - | - |
| | | | | | | | | | | | | | GV4PE02N | GV4P02N |
| | | | | | | | | | | | | | GV4PE02S | - |
| 1/10 | 3 | 1/4 | 2.9 | 1/2 | 2.4 | 3/4 | 3.2 | 2 | 3.4 | 2 | 2.7 | 3.5 | - | - |
| | | | | | | | | | | | | | GV4PE03N | GV4P03N |
| | | | | | | | | | | | | | GV4PE03S | - |
| 1/4 | 5.8 | 3/4 | 6.9 | 1-1/2 | 6.6 | 2 | 6.8 | 3 | 4.8 | 5 | 6.1 | 7 | - | - |
| | | | | | | | | | | | | | GV4PE07N | GV4P07N |
| | | | | | | | | | | | | | GV4PE07S | - |
| 1/2 | 9.8 | 1-1/2 | 10 | 3 | 10.6 | 3 | 9.6 | 7-1/2 | 11 | 10 | 11 | 12.5 | - | - |
| | | | | | | | | | | | | | GV4PE12N | GV4P12N |
| | | | | | | | | | | | | | GV4PE12S | - |
| 1-1/2 | 20 | 3 | 17 | 5 | 16.7 | 7-1/2 | 22 | 15 | 21 | 20 | 22 | 25 | GV4PE25B | GV4P25B |
| | | | | | | | | | | | | | GV4PE25N | GV4P25N |
| | | | | | | | | | | | | | GV4PE25S | - |
| 3 | 34 | 7-1/2 | 40 | 10 | 30.8 | 15 | 42 | 30 | 40 | 40 | 41 | 50 | GV4PE50B | GV4P50B |
| | | | | | | | | | | | | | GV4PE50N | GV4P50N |
| | | | | | | | | | | | | | GV4PE50S | - |
| 7-1/2 | 80 | 15 | 68 | 25 | 74.8 | 30 | 80 | 60 | 77 | 75 | 77 | 80 | GV4PE80B | GV4P80B |
| | | | | | | | | | | | | | GV4PE80N | GV4P80N |
| | | | | | | | | | | | | | GV4PE80S | GV4P80S |
| 10 | 100 | 20 | 88 | 30 | 88 | 40 | 104 | 75 | 96 | 100 | 99 | 115 | GV4PE115B | GV4P115B |
| | | | | | | | | | | | | | GV4PE115N | GV4P115N |
| | | | | | | | | | | | | | GV4PE115S | GV4P115S |

**Connection by lugs**

To order circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: **GV4PE02N** becomes **GV4PE02N6**.

*(1) As % of Icu.*

Characteristics: pages B6/120 to B6/123
Curves: pages B6/129 to B6/131
Dimensions, schemes: pages B6/134, B6/135, B6/137

PB114917.eps

*GV4PEM*

## Advanced version

**Basic protection**
Settings are made using dials.

**Overloads or thermal protection (Ir)**
Inverse-time thermal protection against overloads with adjustable pick-up Ir.
Wide range setting made in amperes.
The tripping curve for the thermal protection, which indicates the time delay tr before tripping, is defined by the selected trip class.

**Trip class (class)**
The class is selected as a function of the normal motor starting time.
■ Class 10: starting time less than 10 s.
■ Class 20: starting time less than 20 s.
For a given class, it is necessary to check that all motor-feeder components are sized to carry the 7.2 Ir starting current without excessive temperature rise during the time corresponding to the class.

**Short-circuit protection (Ii)**
Instantaneous protection with non-adjustable pick-up **Ii = 17 In**.

## Advanced protection

Settings are made with an Android smartphone with dedicated application and using wireless NFC (Near Field Communication), or a computer with EcoStruxure Power Commission software and the configuration/maintenance tool kit (“Maintenance case” TRV00910).
The LV434206 pocket battery allows the GV4PEM controller to be powered for adjustments and tests when no internal source is available.

**Short time delay protection (Isd)**
Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly useful for wide range settings circuit breakers).
Adjustable pick-up **Isd = 5...13 Ir** (13 by default).

**Phase unbalance or phase loss (Iunbal, tunbal)**
This function opens the circuit breaker if a phase unbalance occurs:
■ that is greater than the 10…40 % of Irms (30% by default): **Iunbal**
■ following a time delay (**tunbal**) equal to:
□ 0.7 s during starting (non adjustable)
□ 1…10 s during normal operation (4 s by default).
Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

**Ground-fault protection (Ig, tg)**
Residual type ground-fault protection, with OFF position:
■ adjustable pick-up **Ig**:
□ 0.7…1 In for products with nominal current from 2 to 50 A
□ 0.4…1 In for products with nominal current from 80 to 115 A
■ adjustable time delay **tg** 0.1...0.4 s.

**Jam (Ijam, tjam)**
This function detects locking of the motor shaft caused by the load, with OFF position (OFF by default). During motor starting the function is disabled.
During normal operation, it causes tripping:
■ above the **Ijam** pick-up that can be fine-adjusted from 1.5 to 8 Ir
■ in conjunction with the **tjam** time delay that can be adjusted from 1 to 30 s.

**Long start (Ilong, tlong)**
This protection supplements thermal protection (class). It is used to optimize the protection according to the starting parameters, with OFF position (OFF by default).
It detects abnormal motor starting i.e. when the starting current remains too high or too low with respect to a pick-up value and a time delay.
It causes tripping:
■ in relation with a **Ilong** pick-up that can be fine-adjusted from 1.5 to 8 Ir
■ in conjunction with the **tlong** time delay that can be adjusted from 1 to 200 s.

## Indications

**Front indications**
■ Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.
■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise.

**Remote indications via SDx module**
See description on page B6/44.

**Standards and certifications**
IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1, CCC, EAC, CSA (cCSAus).

# Product references

## Advanced thermal magnetic motor circuit breakers from 0.25 to 55 kW

| Standard power ratings of 3-phase motors - 50 / 60 Hz in category AC-3 | | | | | | | | | Thermal setting range (Ir) | "Reference with EverLink terminals" |
|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 690 V | | | | |
| P | Icu | Ics [1] | P | Icu | Ics [1] | P | Icu | Ics [1] | | with toggle |
| kW | kA | % | kW | kA | % | kW | kA | % | A | |
| **0.25... 0.75** | 25 | 100 | **0.37... 1.1** | 10 | 100 | **0.55... 1.5** | - | - | 0.8... 2 | **-** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM02N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM02S** |
| **0.55... 1.5** | 25 | 100 | **0.75... 1.5** | 10 | 100 | **1.1... 2.2** | - | - | 1.4... 3.5 | **-** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM03N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM03S** |
| **1.5... 3** | 25 | 100 | **2.2... 4** | 10 | 100 | **3... 7.5** | - | - | 2.9... 7 | **-** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM07N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM07S** |
| **3... 5.5** | 25 | 100 | **3... 7.5** | 10 | 100 | **5.5... 11** | - | - | 5... 12.5 | **-** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM12N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM12S** |
| **5.5... 11** | 25 | 100 | **7.5... 15** | 10 | 100 | **7.5... 18.5** | - | - | 10... 25 | **GV4PEM25B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM25N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM25S** |
| **11... 22** | 25 | 100 | **15... 30** | 10 | 100 | **18.5... 45** | - | - | 20... 50 | **GV4PEM50B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM50N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM50S** |
| **22... 37** | 25 | 100 | **30... 55** | 10 | 100 | **37... 55** | - | - | 40... 80 | **GV4PEM80B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM80N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM80S** |
| **37... 55** | 25 | 100 | **45... 75** | 10 | 100 | **75... 90** | - | - | 65... 115 | **GV4PEM115B** |
| | 50 | 100 | | 25 | 100 | | 8 | 25 | | **GV4PEM115N** |
| | 100 | 100 | | 30 | 100 | | 10 | 25 | | **GV4PEM115S** |

**Connection by lugs**

To order circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: **GV4PE02N** becomes **GV4PE02N6**.

*(1) As % of Icu.*

Motor circuit breakers

Characteristics: pages B6/120 to B6/123
Curves: pages B6/129 to B6/131
Dimensions, schemes: pages B6/134, B6/135, B6/137

PB120622.eps

*GV4PB*

## Advanced version

Ref. GV4PB is based on GV4PEM with specific tripping curve to follow UL489 SH supplement. It is designed with a large space connector in order to increase creepage and clearance distance.

## Basic protection

Settings are made using dials.

**Overloads or thermal protection (Ir)**

Inverse-time thermal protection against overloads with adjustable pick-up Ir. Wide range setting made in amperes.

The tripping curve for the thermal protection, which indicates the time delay tr before tripping, is defined by the selected trip class.

**Trip class (class)**

The class is selected as a function of the normal motor starting time. It corresponds to the value of the tripping time delay for a current of 600 % of the rated tripping current according to UL489, SH supplement.

The rated tripping current is selected as 125 % of the dial value.

- Class 10: starting time less than 10 s.
- Class 20: starting time less than 20 s.

For a given class, it is necessary to check that all motor-feeder components are sized to withstand the 7.5 Ir starting current without excessive temperature rise during the time corresponding to the class.

**Short-circuit protection (Ii)**

Instantaneous protection with non-adjustable pick-up **Ii=17 In**.

## Advanced protection (same as ref. GV4PEM)

Settings are made with:

- Android smartphone using wireless NFC (Near Field Communication), or EcoStruxure Power Device App. computer + EcoStruxure Power Commission software and configuration/maintenance tool kit TRV00910
- LV434206 pocket battery, allows the GV4PB controller to be powered for adjustment and test. LV434206 pocket battery needs to be connected to the GV4PB controller to set the advanced protection.

**Short time delay protection (Isd)**

Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly useful for wide range settings circuit breakers).

Adjustable pick-up **Isd = 5...13 Ir** (13 by default).

**Phase unbalance or phase loss (Iunbal, tunbal)**

This function opens the circuit breaker if a phase unbalance occurs:

- that is greater than the 10…40 % of Irms (30 % by default): **Iunbal**
- following a time delay **(tunbal)** equal to:
  - 0.7 s during starting (non adjustable)
  - 1…10 s during normal operation (4 s by default).

Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

**Ground-fault protection (Ig, tg)**

Residual type ground-fault protection, with OFF position:

- adjustable pick-up **Ig**:
  - 0.7…1 In for products with nominal current from 2 to 50 A
  - 0.4…1 In for products with nominal current from 80 to 115 A
- adjustable time delay **tg** 0.1...0.4 s.

**Jam (Ijam, tjam)**

This function detects locking of the motor shaft caused by the load, with OFF position (OFF by default). During motor starting the function is disabled.

During normal operation, it causes tripping:

- above the **Ijam** pick-up that can be fine-adjusted from 1.5 to 8 Ir
- in conjunction with the **tjam** time delay that can be adjusted from 1 to 30 s.

**Long start (Ilong, tlong)**

This protection supplements thermal protection (class). It is used to optimize the protection according to the starting parameters, with OFF position (OFF by default). It detects abnormal motor starting i.e. when the starting current remains too high or too low with respect to a pick-up value and a time delay.

It causes tripping:

- in relation with a **Ilong** pick-up that can be fine-adjusted from 1.5 to 8 Ir
- in conjunction with the **tlong** time delay that can be adjusted from 1 to 200 s.

## Indications

**Front indications**

- Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.
- Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise

**Remote indications via SDx module**

See description on page B6/44.

**Conforming to standards:**

IEC/EN 60947-2, IEC/EN 60947-4-1

**Product certifications:**

UL 489, CSA C22.2 n°5.

# Product references - UL applications

## GV4PB - selection according to Short Circuit Current Rating (SCCR)

| 240 V AC<br>SCCR<br>kA | 480Y/277 V AC<br>SCCR<br>kA | 600Y/347 V AC<br>SCCR<br>kA | Reference |
|---|---|---|---|
| 35 | 18 | 14 | **GV4PB●●●B** (1) |
| 65 | 35 | 18 | **GV4PB●●●N** |
| 100 | 65 | 25 | **GV4PB●●●S** |

*(1) Example: **GV4PB07S**, **GV4PB115S**.*

## GV4PB thermal magnetic motor circuit breakers - selection according to FLA

| 3P<br>200 V<br>FLA<br>A | 3P<br>230 V<br>FLA<br>A | 3P<br>460 V<br>FLA<br>A | Rated<br>% | Dial range<br>A | Reference | | |
|---|---|---|---|---|---|---|---|
| - | - | 1.6 | 100 | 0.8 to 2 | | **GV4PB02N** | **GV4PB02S** |
| 2.5 | 2.2 | 3 | 100 | 1.4 to 3.5 | | **GV4PB03N** | **GV4PB03S** |
| 4.8 | 4.2 | 4.8 | 100 | 2.9 to 7 | | **GV4PB07N** | **GV4PB07S** |
| 7.8 | 9.6 | 7.6 | 100 | 5 to 12.5 | | **GV4PB12N** | **GV4PB12S** |
| 17.5 | 22 | 21 | 100 | 10 to 25 | **GV4PB25B** | **GV4PB25N** | **GV4PB25S** |
| 48 | 42 | 40 | 100 | 20 to 50 | **GV4PB50B** | **GV4PB50N** | **GV4PB50S** |
| 62 | 54 | 52 | 80 | 40 to 80 | **GV4PB80B** | **GV4PB80N** | **GV4PB80S** |
| 92 | 80 | 77 | 80 | 65 to 115 | **GV4PB115B** | **GV4PB115N** | **GV4PB115S** |

**Connection by lugs**

Please order GV4LUG accessory and LV426920 interphase barriers or LAD96590 terminal shield.



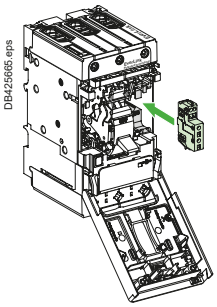
Characteristics:
pages B6/120 to B6/123

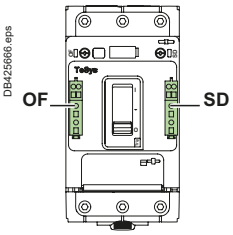
Curves:
pages B6/129 to B6/131

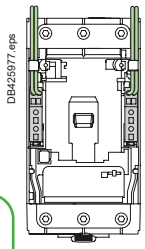
Dimensions, schemes:
pages B6/134, B6/135, B6/137

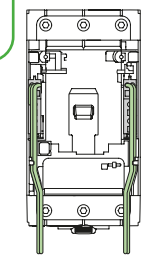
## Product references

*GV4AE11 auxiliary contact block*

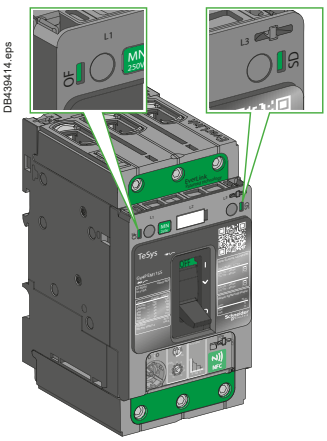


*Pluggable auxiliary contact - OF or SD is dependent on cavity. Multiple internal wiring possibilities, even with long terminal shields*




*Visible presence of auxiliary contact block in OF or SD cavity*

## Auxiliary contact blocks

Auxiliary contacts give an indication of the circuit breaker status.
They can be used for remote visual signaling, alarming, electrical locking, relay activation, etc...
An auxiliary contact block provides one changeover contact with common point for OF or SD function, depending on the breaker cavity where it is inserted.

### Auxiliary contact - Open/Close OF function

Indicates Open/Closed position of the circuit breaker contacts.

### Auxiliary contact - Trip alarm SD function

- Indicates that the circuit breaker has tripped due to:
  - Electrical fault (overload, short circuit, ...)
  - shunt trip
  - undervoltage release
  - "push-to-trip" button.
- Resets when circuit breaker is reset.

### Electrical characteristic

| Characteristics | | | | | | |
|---|---|---|---|---|---|---|
| Rated thermal current (A) | | 5 | | | | |
| Minimum load | | 2 mA at 17 V DC | | | | |
| **Utilization cat. (IEC 60947-5-1)** | | **AC12** | **AC15** | **DC12** | **DC13** | **DC14** |
| Operational current (A) | 24 V AC/DC | 5 | 5 | 5 | 2.5 | 1 |
| | 48 V AC/DC | 5 | 5 | 2.5 | 1.2 | 0.2 |
| | 110...127 V AC / 110 V DC | 5 | 4 | 0.6 | 0.35 | 0.05 |
| | 220/240 V AC | 5 | 3 | - | - | - |
| | 250 V DC | - | - | 0.3 | 0.05 | 0.03 |
| | 380/440 V AC | 5 | 2.5 | - | - | - |
| | 660/690 V AC | 5 | 0.11 | - | - | - |

Pilot duty B600 according UL508 and CSA 22.2 n°14.

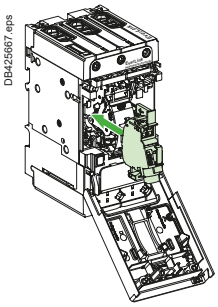
### Installation and connection

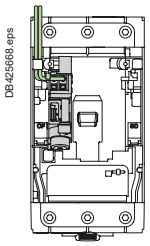
- Auxiliary contact blocks snap into left (for OF function) and right (for SD function) cavities behind the front accessory cover of the circuit breaker and their presence is visible on the front face through green flags.
- One model serves for all indication functions depending on where it is fitted in the circuit breaker.
- Each NO and NC spring terminal may be connected by one 0.5...1.5 mm² flexible copper wire and by two for the common point.
- Wires can be exited out of any of the four corners of the breaker under the accessory cover.

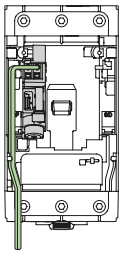
| Description | Maximum number | Mounting | Type of contacts | Sold in lots of | Reference |
|---|---|---|---|---|---|
| **Auxiliary contact block for OF or SD indication** | 2 (1 OF + 1 SD) | Internal plug-in | NO + NC | 1 | **GV4AE11** |

Characteristics: page B6/133
Schemes: page B6/137

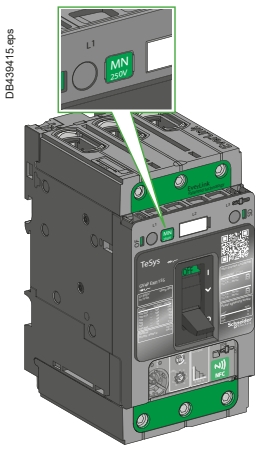
*GV4AS137 shunt trip*



*MN or MX plugged into cavity. Multiple internal wiring possibilities, even with long terminal shields*




*Visible presence of MN undervoltage release in circuit breaker cavity, visible rated voltage through the window.*

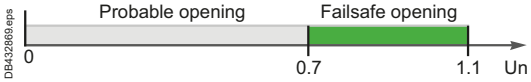
## MX shunt trip, MN undervoltage release

MX and MN trip the circuit breaker on a control signal. They are mainly used for remote and emergency-off commands.

It is advised to test the system every six months.

### MX shunt trip

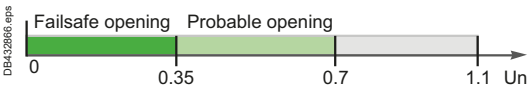
- Trips the circuit breaker when the control voltage rises above 70 % of its rated voltage (Un).
- Impulse type ⩾ 20 ms or maintained control signals.
- Shunt trip 110...130 V AC is suitable for ground-fault protection when combined with a Class I ground-fault sensing element.
- Continuous duty rated coil (1).




*Opening conditions of the MX release.*

### MN undervoltage release

- Trips the circuit breaker when the control voltage drops below 35 % of its rated voltage.
- Between 35 % and 70 % of the rated voltage opening is only probable.
- Above 70 % of the rated voltage, opening does not take place.
- Continuous duty rated coil.
- Circuit breaker closing is possible only if the voltage exceeds 85 % of the rated voltage. If an undervoltage condition exists, operation of the closing mechanism of the circuit breaker will not permit the main contacts to touch, even momentarily. This is commonly called "Kiss Free".




*Opening conditions of the MN release.*

*Closing conditions of the MN release.*

### Installation, connection

Accessories snap into cavities under the circuit breaker front accessory cover. Spring-type terminals in order to insure a fast and reliable connection to 0.5...1.5 mm² flexible copper wire (one per terminal).

### Operation

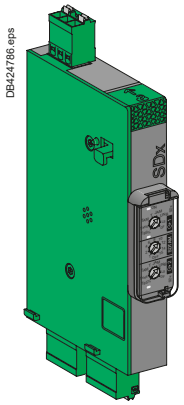
Circuit breaker must be locally reset after trip by shunt trip (MX) or undervoltage release (MN).Tripping by MX or MN has priority over manual closing; in the presence of a standing trip order such an action does not result in main contacts closing, even temporarily.

| Description | Maximum number | Mounting | Voltage | Reference |
|---|---|---|---|---|
| MX Shunt trip | 1 | Internal, plug-in | 24 V∿ 50/60 Hz, 24 V⎓ | **GV4AS027** |
| | | | 48 V∿ 50/60 Hz, 48 V⎓ | **GV4AS057** |
| | | | 110-130 V∿ 50/60 Hz 125 V⎓ | **GV4AS137** |
| | | | 220-240 V∿ 50 Hz, 208-240 V∿ 60 Hz, 277 V 60 Hz | **GV4AS287** |
| | | | 380-415 V∿ 50 Hz, 440-480 V∿ 60 Hz | **GV4AS487** |
| MN undervoltage release | 1 | Internal, plug-in | 24 V∿ 50/60 Hz, 24 V⎓ | **GV4AU027** |
| | | | 48 V∿ 50/60 Hz, 48 V⎓ | **GV4AU057** |
| | | | 110-130 V∿ 50/60 Hz 125 V⎓ | **GV4AU137** |
| | | | 220-240 V∿ 50 Hz, 208-240 V∿ 60 Hz | **GV4AU247** |
| | | | 277 V∿ 60 hZ | **GV4AU286** |
| | | | 380-415 V∿ 50 Hz | **GV4AU415** |
| | | | 440-480 V∿ 60 Hz | **GV4AU486** |

*(1) Except for MX 24 V AC/DC (in case of continuous activation, may generate some minor perturbation in sensitive environment).*

Characteristics:
page B6/132

Schemes:
page B6/137




*GV4ADM1111 SDx contact module*

## SDx contact module for GV4PEM, GV4PB (Multifunction)

The SDx provides alarming and functional fault differentiation for GV4PEM, GV4PB (Multifunction) circuit breaker. This module has 2 NO/NC outputs dry contacts which can be assigned with one of the 8 following SD status:

- SD**T95%** overload alarm: thermal image of the motor is greater than 95 % of the permissible temperature rise.
- SD**Txxs** overload alarm: circuit breaker will trip in xx seconds with the same load. xx is adjustable between 10 to 40 seconds (default 20 seconds) on the circuit breaker itself through NFC or a computer with EcoStruxure Power Commission software and an interface module (TRV00911).
- SD**TAM** overload alarm just before tripping: in the event of a phase unbalance, overload, or on a jam fault, this output is activated to open the contactor and avoid circuit breaker tripping. In that case, contact can be manually or automatically reset after an adjustable cooling time from 1 to 15 minutes. If after a 400 ms delay the motor is not stopped, the circuit breaker will trip.
- SD**T** overload trip indication: circuit breaker has tripped due to an overload fault
- SD**JAM** jam trip indication: circuit breaker has tripped due to a jam fault
- SD**UNB** phase unbalance trip indication: circuit breaker has tripped due to an unbalance fault
- SD**LS** long start trip indication: circuit breaker has tripped due to a long start fault
- SD**GF** ground-fault trip indication: circuit breaker has tripped due to a ground-fault.

Outputs are automatically reset either when alarm disappears or when the circuit breaker is restarted.

### Output characteristics

- 2 NO/NC dry contacts
- 24...250 V AC/DC
- Minimum load: 2 mA under 24 V DC
- Max load: 5 A
- AC15 (230 V max - 400 VA)
- DC13 (24 V - 50 W)

### Power characteristics

- 24...240 V AC/DC

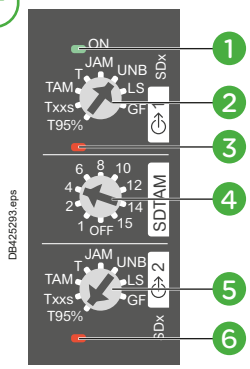
**Contact rating (per UL/CSA B300 & R300)**

| Standard | Rated Voltage Ue | Operational Current Ie | Make | Break | Ithe |
|---|---|---|---|---|---|
| | | A | VA | VA | A |
| B300 | 120 V AC | 3 | 3600 | 360 | 5 |
| | 240 V AC | 1.5 | | | |
| R300 | 125 V DC | 0.22 | 28 | 28 | 1 |
| | 250 V DC | 0.1 | | | |

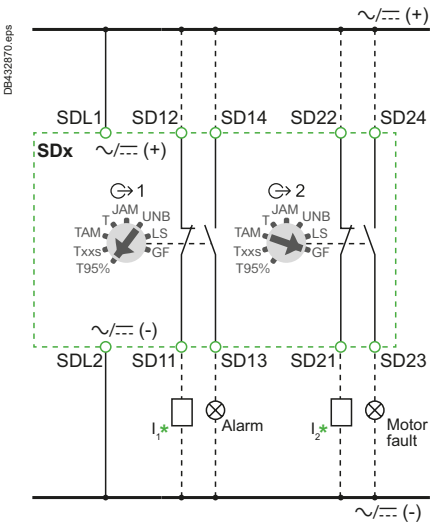
*The rated operational current Ie (A), the rated operational voltage Ue (V) and the break apparent power B (V.A) are correlated by the formula B = Ue · Ie; with Ie ≤ Ith.*

### Installation, connection, settings and indication

The SDx module is clipped on the right side of the circuit breaker. Each removable spring terminal can be connected by one 0.5... 1.5 mm² copper wire. Settings and indications are available on the front face.

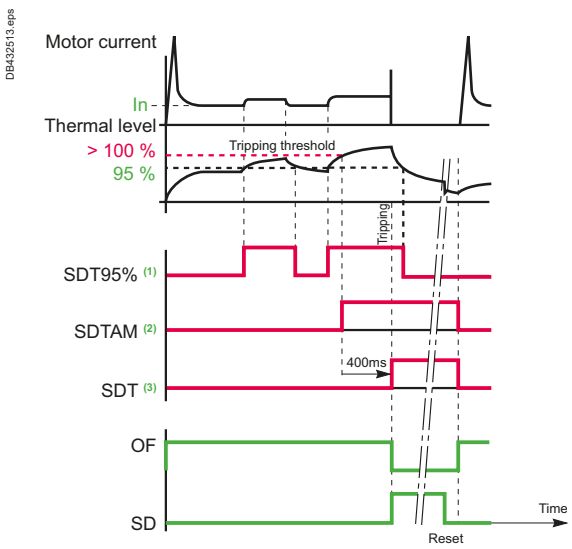



1. Green led lighted when the module is powered.
2. Output 1: SD status assignment.
3. Red led lighted when output 1 is activated.
4. Cooling time setting before automatic restart (OFF – 1…15 min).
5. Output 2: SD status assignment.
6. Red led lighted when output 2 is activated.




* I1, I2: PLC digital inputs - used as alarm inputs, as an example.

*SDx wiring diagram*




*GV4PEM curves*
*SDx modules curves*
*Aux. contacts curves*

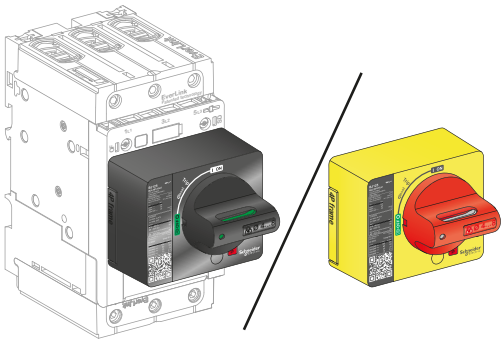
*(1) SDT95% (= 95% overload)*
*(2) SDTAM (overload tripping pre alarm) here not connected to any contactor coil*
*(3) SDT (= tripping on thermal fault)*

| Description | Mounting | Maximum number | Type of contacts | Unit reference |
|---|---|---|---|---|
| **SDx: alarming / fault differentiation module** | Side | 2 | N/O / N/C | **GV4ADM1111** |

Dimensions:
pages B6/136 and B6/137

Schemes:
page B6/137

DB424920.eps

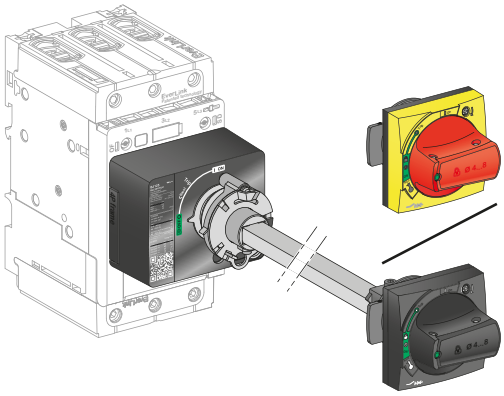


*Direct mounting rotary handle*

PB121325.eps

*GV4ADN02 direct mounting rotary handle*

DB424921.eps



*Front extended rotary handle (door-mounting)*

PB121326.eps

*GV4APN01 front extended rotary handle kit*

PB106297.eps

*GVAPL01 laser tool*

## Direct mounting rotary handles

**Installation**
The direct mounting rotary handle has to be mounted by 3 screws on the front accessory cover.

**Operation**
The direct mounting rotary handle maintains:
- suitability for isolation
- indication of the three positions OFF (**O**), ON (**I**) and tripped (**Trip**)
- access to the "push-to-trip" button
- visibility and access to the trip unit.

**Device padlocking**
The circuit breaker may be locked in the OFF position by using one to three padlocks (not supplied) or in ON position after customer modification of the rotary handle before installation, padlock shackle Ø4-8 mm. Locking in the ON position does not prevent the circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker trips. Unlocking is required for the handle to go to the tripped then the OFF position.

**Variations: door locking**
Door locking built-in functionality can be activated by the customer to prevent opening the door when the circuit breaker is ON or in trip position. For exceptional situations, door locking can be temporarily disabled with a tool by qualified personnel to open the door when the circuit breaker is closed.

| Description | Type | Degree of protection | Reference |
|---|---|---|---|
| Direct mounting rotary handle | Black handle | IP40 | **GV4ADN01** |
| | Red handle on yellow bezel (VDE standard, for machine control) | IP40 | **GV4ADN02** |

## Front extended rotary handles

**Installation**
The door-mounted (extended) rotary handle is made up of:
- a unit that has to be screwed on the front accessory cover of the circuit breaker
- an assembly (handle mechanism and front plate) on the door that is always secured in the same position, whether the circuit breaker is installed vertically or horizontally
- an adjustable extension shaft.

The handle mechanism is fixed with a nut (Ø22 mm) to make assembly easier. The Laser Square tool (GVAPL01) can be used to accurately align the hole on the door with the circuit breaker.

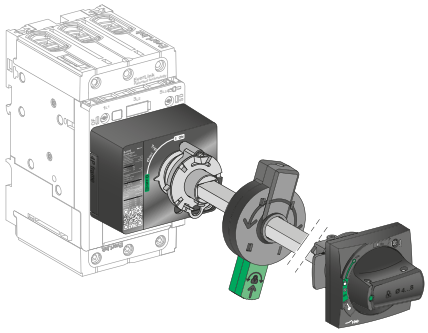
**Operation when door is closed**
The door mounted handle makes it possible to operate a circuit breaker installed in an enclosure from the front. The door mounted operating handle maintains:
- suitability for isolation
- indication of the three positions OFF (**O**), ON (**I**) and tripped (**Trip**)
- visibility and access to trip unit when the door is open
- degree of protection of the handle on the door: IP54 or IP65 as per IEC 60529.

**Mechanical door locking when device closed**
A standard feature of the extended rotary handle is a locking function, built into the shaft, that disables door opening when the circuit breaker is in the ON or tripped positions.
Door locking can be temporarily disabled with a tool by qualified personnel to open the door without opening the circuit breaker. This operation is not possible if the handle is locked by a padlock.

**Device and door padlocking**
Padlocking locks the circuit breaker handle and disables door opening:
- standard situation, in the OFF position, using 1 to 3 padlocks, shackle Ø4-8 mm, padlocks are not supplied
- for the black handle, with a voluntary modification of the door handle (to be done by the customer during installation), in the ON and OFF positions. Locking in the ON position does not prevent the circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker trips. Unlocking is required for the handle to go to the tripped then the OFF position.

**Shaft length**
The shaft length is the distance between the back of the circuit breaker and the door:
- minimum shaft length is 214 mm
- maximum shaft length is 627 mm
- shaft length must be adjusted.

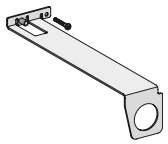
Dimensions:
pages B6/134 to B6/136

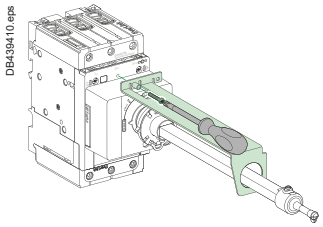



*Open door shaft operator mounted on front extended rotary handle assembly*

*GV4APN01*
*Front extended rotary handle kit*

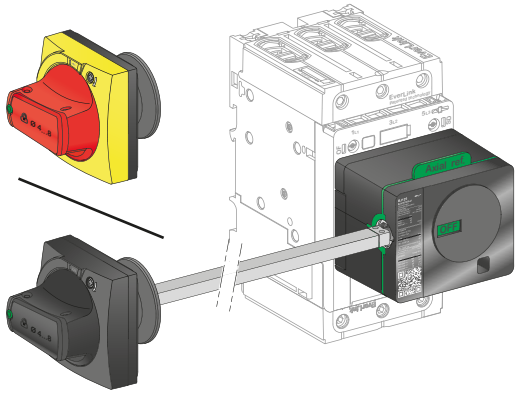
*LV426937*
*Open door shaft operator*




*LV426938*
*Support arm for extended rotary handle*

*GVAPL01 - Laser tool*




*Side extended rotary handle (cover mounting)*

*LV426936 - Side rotary handle kit*

*LV426998, LV426997 - Universal handles*

## Front extended rotary handles (cont.)

**Operation when door is opened**
An open door shaft operator can be used to operate the circuit breaker when door is opened. This accessory complies with UL508 A.
The indication of the three positions OFF (**O**), ON (**I**) and tripped (**Trip**) is visible on the circuit breaker.
The circuit breaker itself may be locked in OFF position when the door is opened by 1 padlock / lockout hasp, shackle Ø4-8 mm.

| Description | Type | Degree of protection | Reference |
|---|---|---|---|
| Front extended rotary handle kit | Black handle | IP54 | **GV4APN01** |
| | Red handle on yellow bezel | IP54 | **GV4APN02** |
| | | IP65 | **GV4APN04** |
| Open door shaft operator | | | **LV426937** |
| Support arm for extended rotary handle | | | **LV426938** |
| Laser tool | | | **GVAPL01** |
| Spare part: GV4 universal handle (for replacement of front. ext. or side rotary handle) | Black handle | IP54 | **LV426997** |
| | Red handle on yellow bezel | IP54 | **LV426998** |
| | | IP65 | **LV426999** |

## Side rotary handles (left or right)

**Installation**
The side-mounted rotary handle is made up of:
- a unit that has to be screwed on the front accessory cover of the circuit breaker
- an assembly (handle and front plate) on the side (left or right) of the enclosure
- an adjustable extension shaft

The handle mechanism is fixed with a nut (Ø22 mm) to make assembly easier.

**Operation**
The side mounted rotary handle makes it possible to operate circuit breakers installed in enclosure from the side. The side mounted rotary handle maintains:
- suitability for isolation
- indication of the three positions OFF (**O**), ON (**I**) and tripped (**Trip**). Moreover, the position is visible on the circuit breaker itself
- visibility and access to trip unit when the door is open
- degree of protection of the handle on the side: IP54 or IP65 as per IEC 529.

**Device padlocking**
The circuit breaker may be locked in the OFF position, or, for the black rotary handle only, in ON position after voluntary modification of the side handle (to be done by the customer during installation), by using one to three padlocks, padlock shackle Ø4-8 mm ; padlocks are not supplied.
Locking in the ON position does not prevent free circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker tripping. Unlocking is required to go to the tripped then the OFF position.

**Shaft length**
The shaft length is the distance between the side of the circuit breaker and the side of the enclosure:
- minimum shaft length is 45 mm
- maximum shaft length is 480 mm
- shaft length must be adjusted.

| Description | Type | Degree of protection | Reference |
|---|---|---|---|
| Side rotary handle kit | Black handle | IP54 | **LV426935** |
| | Red handle on yellow bezel (VDE standard, for machine control) | IP54 (1) | **LV426936** |
| Spare part: GV4 universal handle (for replacement of front. ext. or side rotary handle) | Black handle | IP54 | **LV426997** |
| | Red handle on yellow bezel | IP54 | **LV426998** |
| | | IP65 | **LV426999** |

*(1) IP65 possible with **LV426935** kit (Black handle not used) + **LV426999** Red handle on yellow bezel universal handle.*

Dimensions:
page B6/136

# Product references

## Handle padlocking devices

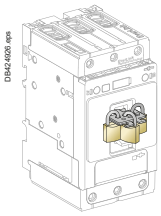
Padlocking systems can receive up to three padlocks with diameters of 5-8 mm (4-8 mm for rotary handles); padlocks not supplied. Locking in the OFF position guarantees isolation as per IEC 60947-2.

**Direct rotary handle padlocking**
By padlock – No accessory required.
- Lock in OFF position.
- Lock in ON position with simple mechanism modification.

**Front Extended /Side rotary handle padlocking**
By padlock – No accessory required.
- Lock in OFF position.
- Lock in ON position with simple mechanism modification (black handle only).

Door opening prevented.

**Toggle handle padlocking**
By padlock – removable toggle locking device required **29370**.
- Lock in OFF position.

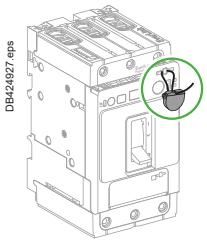
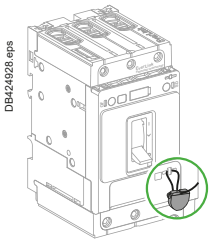
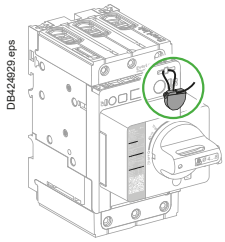
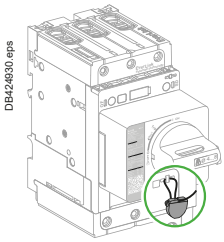



*3 padlocks mounted on 29370 toggle locking device*

*29370 removable toggle locking device*

| Description | Reference |
|---|---|
| Removable toggle locking device for 1 to 3 padlocks | **29370** |

## Sealing devices

| Control type | ■ Front removal.<br>■ Access to auxiliaries. | ■ Access to settings and test connector. |
|---|---|---|
| Toggle |  |  |
| Rotary handle |  |  |

| Description | Reference |
|---|---|
| Bag of 6 leads + 6 sealing accessories | **LV429375** |

*LV429375 leads + sealing accessories*

# Product references

*LAD96595*
*EverLink connector*

*GV4LUG*
*crimped lug connector*

*LAD96590*
*transparent terminal shield*

*LV426920*
*interphase barriers*

*LV426940*
*spreader 3-pole*

*LV426990*
*9 N.m green throwaway bits*

*LV426992*
*5 N.m yellow throwaway bits*

## EverLink power connection

| Description | Reference |
|---|---|
| EverLink connector | **LAD96595** |

## Crimp lug/busbar connection

| Description | | Sold in lots of | Reference |
|---|---|---|---|
| Crimped lug connector + screws | | 1 | **GV4LUG** |
| Transparent terminal shield for crimped lug connector | | 1 | **LAD96590** |
| Interphase barriers | | 6 | **LV426920** |
| Spreader 3-pole | To increase the pitch to 35 mm | 1 | **LV426940** |

## Limited torque throwaway bits

| Description | Sold in lots of | Reference |
|---|---|---|
| Green - 9 N.m | 6 | **LV426990** |
| Yellow - 5 N.m | 6 | **LV426992** |

***Note:*** *torque limiting breakaway bits may be used, particularly in the field, to tighten at the right torque EverLink™ or compression lug power connections.*

*LV434206*
*pocket battery*

*TRV00910*
*maintenance case*

*TRV00911*
*Spare USB maintenance interface*

*TRV00915*
*spare power supply 110-240 V AC*

*TRV00917*
*spare GV4PEM cord for USB maintenance interface*

## Test tool, software, demo for GV4PEM

### Test tool

| | |
|---|---|
| Pocket battery<br>Allows the ref. GV4PEM or GV4PB controller to be powered for adjustments and tests when no internal source is available. | **LV434206** |
| Maintenance case<br>Comprising:<br>■ USB maintenance interface<br>■ Power supply<br>■ GV4PEM cord<br>■ USB cord<br>■ RJ45/RJ45 male cord | **TRV00910** |
| Spare USB maintenance interface | **TRV00911** |
| USB interface spare power supply, 110-240 V AC, with 4 different socket adapters | **TRV00915** |
| Spare cord for connecting GV4PEM to USB maintenance interface | **TRV00917** |

### Software

| | |
|---|---|
| Configuration and setting software EcoStruxure Power Commission | **Free download** |

# TeSys Giga - Frame 5, 6

## 55 to 250 kW

# Product references

PB120638.eps

*GV5P220F*

## Thermal-magnetic circuit breakers Frame 5 with screw clamp terminals up to 110 kW (1)

### Control by direct rotary handle

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Thermal setting range (Ir) | Reference | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 660/690 V | | | | | |
| P | Icu | Ics (2) | P | Icu | Ics (2) | P | Icu | Ics (2) | | | |
| kW | kA | % | kW | kA | % | kW | kA | % | A | | kg |
| **55...75** | 36 | 100 | **75...90** | 30 | 100 | **90... 110** | 8 | 100 | 70…150 | **GV5P150F** | 2.4 |
| | 70 | 100 | | 50 | 100 | | 10 | 100 | | **GV5P150H** | |
| **90...110** | 36 | 100 | **110** | 30 | 100 | **110...132** | 8 | 100 | 100…220 | **GV5P220F** | 2.6 |
| | 70 | 100 | | 50 | 100 | | 10 | 100 | | **GV5P220H** | |

*(1) Breakers have to be used with suitable rating of contactors, as defined in section A6.*
*(2) As % of Icu.*

PB120633.eps

*GV6P320F*

## Thermal-magnetic circuit breakers Frame 6 with screw clamp terminals up to 250 kW (1)

### Control by direct rotary handle

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | | | | | | | Thermal setting range (Ir) | Reference | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 400/415 V | | | 500 V | | | 660/690 V | | | | | |
| P | Icu | Ics (2) | P | Icu | Ics (2) | P | Icu | Ics (2) | | | |
| kW | kA | % | kW | kA | % | kW | kA | % | A | | kg |
| **132...160** | 36 | 100 | **160...200** | 25 | 100 | **200...250** | 10 | 100 | 160…320 | **GV6P320F** | 6.5 |
| | 70 | 100 | | 50 | 100 | | 10 | 100 | | **GV6P320H** | |
| **200...250** | 36 | 100 | **250...315** | 25 | 100 | **315...400** | 10 | 100 | 250…500 | **GV6P500F** | 6.7 |
| | 70 | 100 | | 50 | 100 | | 10 | 100 | | **GV6P500H** | |

*(1) Breakers have to be used with suitable rating of contactors, as defined in section A6.*
*(2) As % of Icu.*

## Thermal-magnetic circuit breakers Frame 5/6 with screw clamp terminals (1)

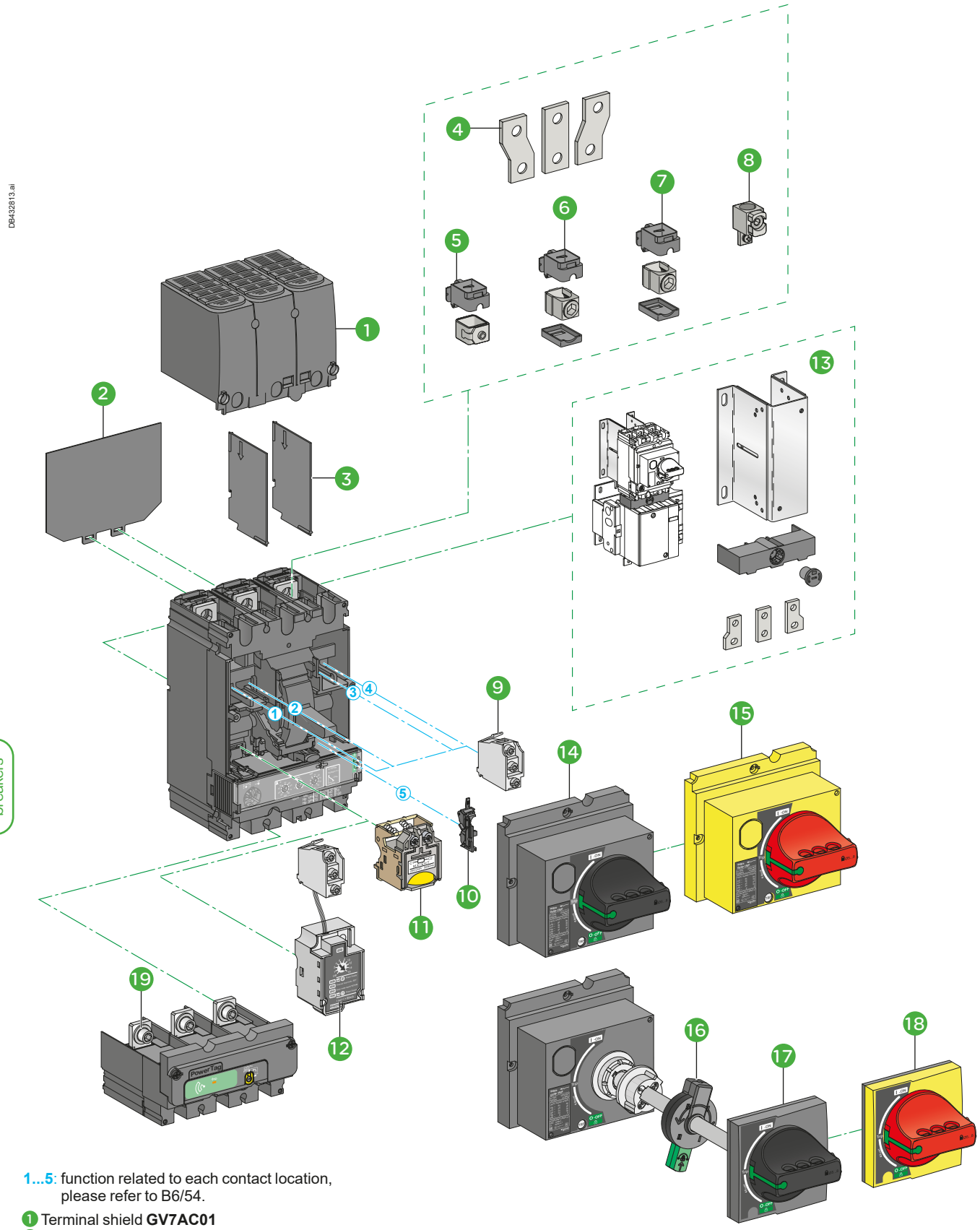
### Control by direct rotary handle

| Thermal setting | 3-Phase | | | Standard breaking capacity | High breaking capacity |
|---|---|---|---|---|---|
| | 230 V | 460 V | 575 V | | |
| A | HP | HP | HP | Reference | Reference |
| 90…150 | 50 | 100 | 150 | **GV5P150F** | **GV5P150H** |
| 133…220 | 75 | 150 | 200 | **GV5P220F** | **GV5P220H** |
| 160…320 | 125 | 250 | 300 | **GV6P320F** | **GV6P320H** |
| 250…500 | 150 | 350 | 500 | **GV6P500F** | **GV6P500H** |

*(1) Breakers have to be used with suitable rating of contactors, as defined in section A6.*

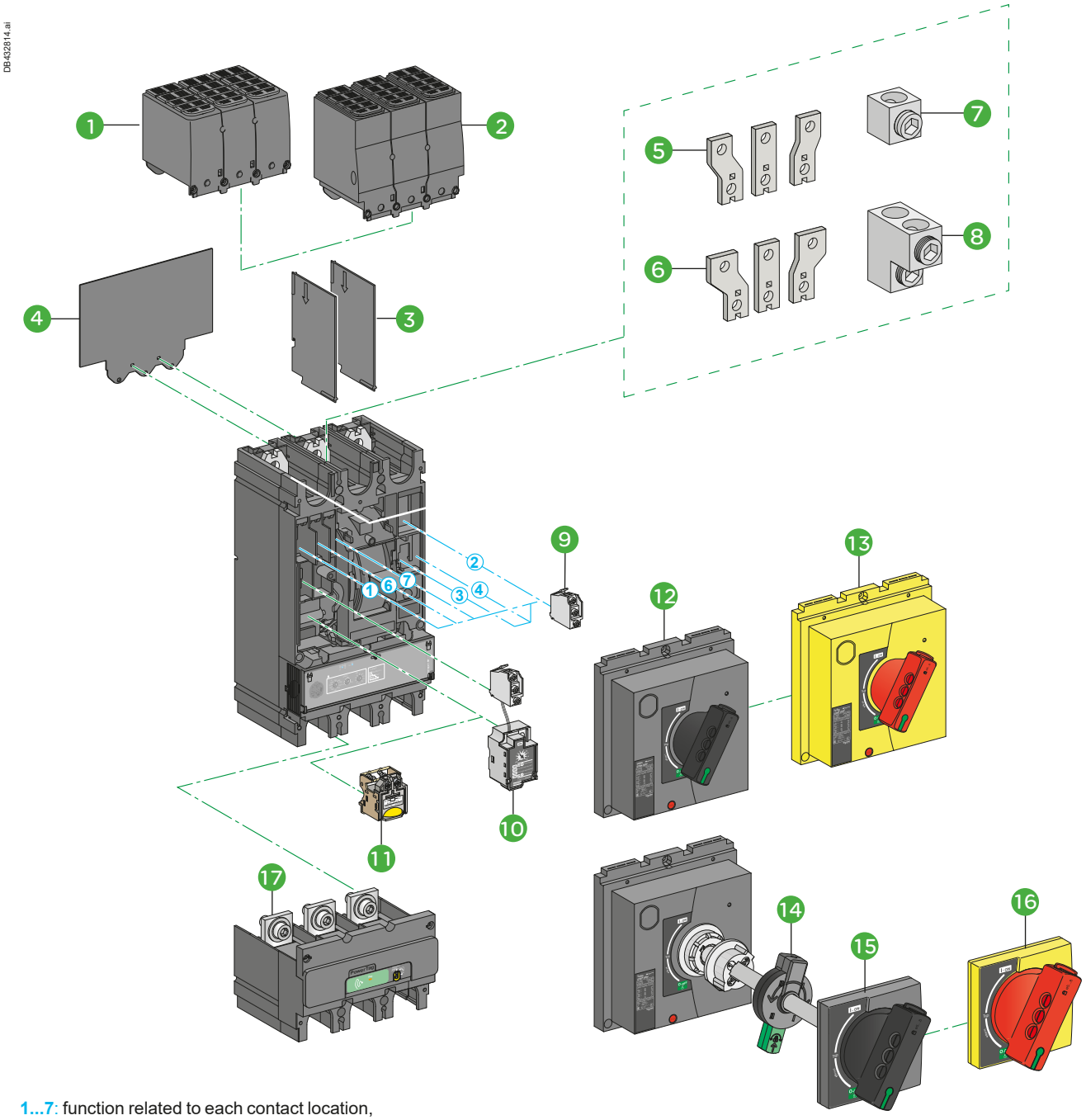


Characteristics: page B6/140
Curves: pages B6/141 to B6/143
Dimensions: pages B6/146 to B6/152




1...5: function related to each contact location, please refer to B6/54.

1. Terminal shield **GV7AC01**
2. Insulating screen **GV7AC05**
3. Interphase barriers **GV7AC04**
4. Spreaders 45 mm **GV7AC03**
5. Steel connector **GV7AC021** (1.5-95 mm²)
6. Aluminum connector **LV429227** (25-95 mm²)
7. Aluminum connector **GV7AC022** (120-185 mm²)
8. Aluminum connector **LV429244** (120-240 mm²)
9. OF, SD, or SDE indication contacts **29450** (standard) / **29452** (for low level)
10. SDE adapter **LV429451**
11. UVR or SHT voltage release **LV42940●/LV42938●**
12. SDTAM thermal fault module **LV429424**
13. Combination kit for contactor **GV7AC06/GV7AC08**
14. Direct rotary handle black **GV5AP03** (shipped with the device)
15. Direct rotary handle red on yellow bezel **GV7AP04**
16. Open door shaft operator **LV426937**
17. Extended rotary handle black **GV7AP01**
18. Extended rotary handle red on yellow bezel **GV7AP02**
19. PowerTag M250 wireless energy sensor **LV434020**




1...7: function related to each contact location, please refer to B6/54.

1. Terminal shield 45 mm **LV432593**
2. Terminal shield 52.5 mm **LV432595**
3. Interphase barriers **LV432570**
4. Insulating screen **LV432578**
5. Spreader 52.5 mm **LV432490**
6. Spreader 70 mm **LV432492**
7. Aluminum connector **LV432479** (1 x 35-300 mm$^2$)
8. Aluminum connector **LV432481** (2 x 35-300 mm$^2$)
9. OF, SD, or SDE indication contacts **29450** (standard) / **29452** (for low level)
10. SDTAM thermal fault module **LV429424**
11. UVR or SHT voltage releases **LV42940●/ LV42938●**
12. Direct rotary handle black **GV6AP03** (shipped with the device)
13. Direct rotary handle red on yellow bezel **LV432599**
14. Open door shaft operator **LV426937**
15. Extended rotary handle black **LV432598**
16. Extended rotary handle red on yellow bezel **LV432600**
17. PowerTag M630 wireless energy sensor **LV434022**

## Add-on auxiliary contacts - OF contacts

These allow remote indication of the circuit breaker contact states. They can be used for signalling, electrical locking, relaying, etc. They are available in two versions: standard and low level. They include a terminal block and the auxiliary circuits leave the circuit breaker through a hole provided for this purpose.
They perform the following functions, depending on where they are located in the circuit breaker:

| Location | Function | Application |
|---|---|---|
| 1 and/or 4 (GV5)<br>1 and/or 4, 6, 7 (GV6) | C/O contact | Indicates the position of the circuit breaker poles. |
| 2 | Trip indication | Indicates that the circuit breaker has tripped due to an overload, a short-circuit, a differential fault or the operation of a voltage trip (undervoltage or shunt trip), or of the “push to trip” test button. It resets when the circuit breaker is reset. |
| 3 | Electrical fault indication | Indicates that the circuit breaker has tripped due to an overload, a short-circuit or a differential fault. It resets when the circuit breaker is reset. |
| 5 | Adapter for electrical fault indication | This accessory is mandatory for GV5 to provide electrical fault indication. |

| Type | Reference |
|---|---|
| **Standard** | **29450** |
| **Low level** | **29452** |
| **Adapter for electrical fault indication** | **LV429451** |

## Thermal fault module - SDTAM

GV5/ GV6 can be equipped with thermal fault module. This module has:
■ a contact to indicate overload fault in the circuit-breaker
■ a contact to open the contactor. In the event of overload or phase unbalance, this output is activated 400 ms before circuit-breaker tripping to open the contactor and avoid circuit breaker tripping.

| Voltage | Reference |
|---|---|
| **24...415 V AC/DC** | **LV429424** (1) |

## Electric trips

These allow the circuit breaker to be tripped via an electrical control signal.
■ Undervoltage release (UVR) - LV42940●
■ Trips the circuit breaker when the control voltage drops below 35 % of its rated voltage.
■ Between 35 % and 70 % of the rated voltage opening is possible but not guaranteed.
■ Above 70 % of the rated voltage, opening does not take place.
■ Continuous duty rated coil.
■ Circuit breaker closing is possible only if the voltage exceeds 85 % of the rated voltage.
■ Shunt trip (SHT) - LV42938●
Trips the circuit breaker when the control voltage rises above 0.7 times the rated voltage.
■ Impulse type ⩾ 20 ms or maintained control signals.
■ Operation (LV42940● or LV42938●)
□ When the circuit breaker has been tripped by an UVR or by a SHT, it must be reset either locally.
□ Tripping has priority over manual closing: if a tripping order is present, manual action does not result in closing, even temporarily, of the contacts.
□ Durability: 50 % of the mechanical durability of the circuit breaker.

| Type | Voltage | Reference |
|---|---|---|
| **Undervoltage trip** | 220…240 V, 50/60 Hz | **LV429407** |
| **Shunt trip** | 110…130 V, 50/60 Hz | **LV429386** |
| | 220…240 V, 50/60 Hz | **LV429387** |

*(1) **LV429424** takes the place of the UVR/SHT electric trip coil and an auxiliary contact (C/O contact 1).*

Motor circuit breakers

Characteristics:
pages B6/144 and B6/145
Schemes:
page B6/152

# Product references

PB120641.eps

*LV432479*

PB120642.eps

*LV432490*

PB120643.eps

*LV432593*

PB120644.eps

*GV7AC04*

PB120640.eps

*GV6AP03*

PB120645.eps

*LV432599*

PB120646.eps

*GV7AP02*

## Cabling accessories

**Cable connectors:** The connectors for Frame 5 snap directly on to the device terminals or are secured by clips to right-angle and straight terminal extensions as well as spreaders. Frame 6 connectors are screwed directly to the device terminals.

**Spreaders:** Spreaders may be used to increase the pitch from 35 mm to 45 mm for Frame 5. The 45 mm pitch can be increased to 52.5 or 70 mm for Frame 6.

**Long terminal shields:** They are used for front connection with cables or insulated bars. They comprise two parts assembled with captive screws, forming an IP40 cover. The top part is equipped with sliding grids with break marks for precise adaptation to cables or insulated bars. The rear part completely blocks off the connection zone. Partially cut squares can be removed to adapt to all types of connection for cables with lugs or copper bars. Long terminal shields may be mounted upstream and downstream of the breaker.

**Phase barriers:** These interphase barriers are used for maximum insulation at the power-connection points.

**Insulating screens:** Accessories providing insulation at the rear of the device, where they are fitted. Their use is mandatory for devices with spreaders, installed on backplates, when terminal shields are not used.

**Frame 5 Combination kits:** These kits allow link between the circuit breaker and the contactor. The cover provides protection against direct finger contact. The kit comprises links, a protective shield and a depth adjustable metal bracket for the breaker.

| Description | Application | Sold in lots of | Unit reference GV5 | Unit reference GV6 |
|---|---|---|---|---|
| **Steel connectors (set of 3)** | 1.5…95 mm² ≤ 150 A | 1 | **GV7AC021** | **–** |
| **Aluminium connectors (set of 3)** | 25…95 mm² ≤ 220 A | 1 | **LV429227** | |
| | 120…185 mm² ≤ 220 A | 1 | **GV7AC022** | |
| | 120…240 mm² ≤ 220 A | 1 | **LV429244** | |
| | 35...300 mm² | 1 | | **LV432479** |
| | 2 x 35...300 mm² | 1 | | **LV432481** |
| **Spreader** 3-pole (1) | 35…45 mm pole pitch | 1 | **GV7AC03** | |
| | 52.5 mm pole pitch | 1 | | **LV432490** |
| | 70 mm pole pitch | 1 | | **LV432492** |
| **Long terminal shield (IP40)** (1) | 35 mm pole pitch | 1 | **GV7AC01** | |
| | 45 mm pole pitch | 1 | | **LV432593** |
| | 52.5 mm pole pitch | 1 | | **LV432595** |
| **Phase barriers (set of 6)** | | 1 | **GV7AC04** | **LV432570** |
| **Insulating screens (set of 2)** | 45 mm | 1 | **GV7AC05** | |
| | 70 mm | | | **LV432578** |
| **Combination Kits** (2) | | | | |
| **For contactor LC1F115…F185** | Connection kits between breaker and contactor | 1 | **GV7AC06** | |
| **For contactor LC1D115 and D150** | | 1 | **GV7AC08** | |

## Direct rotary handle

The circuit breaker is always supplied direct rotary handle (black handle, black plate) as standard and it provides IP40 protection. The other type handles can be used by replacing this direct rotary handle. It includes a device for locking the circuit breaker in the O (Off) position by means of up to 3 padlocks with a shackle diameter of 5 to 8 mm (padlocks not included). A MCC conversion accessory allows the direct rotary handle to be mounted on the enclosure door. In this case, the door cannot be opened if the circuit breaker is in the “ON” position. Circuit breaker closing is inhibited if the enclosure door is open and prevents the device from being closed if the door is open.

| Description | Type | Sold in lots of | Unit reference GV5 | Unit reference GV6 |
|---|---|---|---|---|
| **Direct rotary handle** | Black handle, black legend plate | 1 | **GV5AP03** | **GV6AP03** |
| | Red handle, yellow legend plate | 1 | **GV7AP04** | **LV432599** |
| **MCC conversion accessory** | Four mounting direct rotary handle on enclosure door | 1 | **GV7AP05** | **LV432606** |

## Extended rotary handle

Allows to operate a circuit breaker from the front of the switch board, which's installed in the back of an enclosure, which provides IP55 protection. It comprises:

- a unit which is screwed onto the front accessory cover of the circuit breaker,
- an assembly (handle mechanism and front plate) to be fitted on the enclosure door,
- an extension shaft which must be adjusted.
- The distance minimum and maximum distances between the mounting surface and the door are
  - 185...600 mm for Frame 5
  - 209...600 mm for Frame 6

It includes a device for locking the circuit breaker in the O (Off) position by means of up to 3 padlocks with a shackle diameter of 5 to 8 mm (padlocks not included) and disables opening enclosure door.

| Description | Type | Sold in lots of | Unit reference GV5 | Unit reference GV6 |
|---|---|---|---|---|
| **Extended rotary handle** | Black handle, black legend plate | 1 | **GV7AP01** | **LV432598** |
| | Red handle, yellow legend plate | 1 | **GV7AP02** | **LV432600** |

*(1) Terminal shields cannot be used together with spreaders.*

*(2) The kit comprises links, a protective shield and a depth adjustable metal bracket for the breaker.*

Dimensions:
page B6/149

## Front extended rotary handles (cont.)

**Operation when door is opened**
An open door shaft operator can be used to operate the circuit breaker when door is opened. This accessory complies with UL508 A.
The indication of the three positions OFF (**O**), ON (**I**) and tripped (**Trip**) is visible on the circuit breaker.
The circuit breaker itself may be locked in OFF position when the door is opened by 1 padlock / lockout hasp, shackle Ø4-8 mm.

PB121328.eps

*LV426937*
*Open door shaft operator*

| Description | Reference |
|---|---|
| Open door shaft operator | **LV426937** |
| Laser tool | **GVAPL01** |

PB106297.eps

*GVAPL01 Laser tool*

## Other accessories

| | |
|---|---|
| Bag of 6 tamper seals + 6 cover caps (1 large, 5 small) for screw heads | **LV429375** |

PB120637.eps

*LVA429375*
*Sealing accessories*

## PowerTag Measurement module

**Wireless-communication module**
PowerTag is directly mounted on the bottom side of the circuit breaker.
It provides capability to measure energy, monitor voltage loss, and trigger alarms.
It then delivers useful data to a concentrator for monitoring and diagnosis of the associated circuit breaker.
In addition to monitoring and alarming, PowerTag solution provides a complete knowledge of real time electrical values with a rich and accurate data transfer every 5 seconds.
PowerTag energy sensors can be quickly and easily installed in new or existing panels at any time. Compared to traditional metering solutions, installation time and commissioning are much shorter with no wiring, hence an error proof high density solution and a built-in class 1 accuracy.

PB121345.eps

*LV434020, LV434022*

**Functions**
PowerTag energy sensor measures the following values in accordance with the IEC 61557-12 standard:
- ■ Energy (4 quadrants):
  - □ Active energy (Wh): total and partial, delivered and received
  - □ Active energy per phase (Wh): total
  - □ Reactive energy (VARh): partial, delivered and received
- ■ Power:
  - □ Active power (W): total and per phase
  - □ Reactive power (VAR): total
  - □ Apparent power (VA): total
- ■ Voltages (V): phase-to-phase (U12, U23, U31) and phase-to-neutral (V1N, V2N, V3N)
- ■ Currents (A): per phase (I1, I2, I3)
- ■ Frequency
- ■ Power factor
- ■ Voltage loss alarm:
  - □ PowerTag energy sensor sends a "voltage loss" alarm and the current-per-phase value before being de-energized
  - □ At "voltage loss", PowerTag adds an overload alarm if the current is higher than the rated current of the associated protective device.

***Note:*** *functions listed above depend on concentrators/gateways.*

| Description | Reference |
|---|---|
| PowerTag M250 3P: suitable for Frame 5 up to 220 A | **LV434020** |
| PowerTag M630 3P: suitable for Frame 6 up to 500 A | **LV434022** |

Motor circuit breakers

Dimensions:
page B6/150

# PowerLogic™ Energy measurement solutions

# Presentation

## PowerTag Energy

It is a wireless-communication energy sensor dedicated to:
- Energy Management
- Load Monitoring
- Power Availability applications.

It provides a class 1 solution to monitor energy at any level of a distribution panel, from load to main incomer.

Thanks to the wireless communication between PowerTag Energy Sensors and PowerTag Energy Link gateway, the solution can be quickly and easily installed in new or existing panels.

**Main features**
Real time measurement (saved in the sensors):
- U, V, I (up to 2000 A)
- P, PF and energy values
- Diagnostics, alarming.

## PowerTag Energy - Main components

**Measurement - PowerTag Energy sensors**
Voltages and currents are measured and processed by a sensor:
1. PowerTag Energy Monoconnect: directly mounted on the device terminals, upstream (Acti9, Multi9 only) or downstream (Acti9, Multi9, TeSys Deca - Frame 5, 6 circuit breakers
2. PowerTag Energy Phase Neutral: sensor is crossed by the conductors, voltage pickup connector mounted on device terminals
3. PowerTag Energy Flex: sensor is crossed by the conductors
4. PowerTag Energy Rope: fixed on bar conductors.

**Processing and communication – PowerTag Energy Link**
The system works with a concentrator or a gateway:
- to collect data from the sensors
- to process data
- to provide additional alarms
- and make them available via Ethernet.

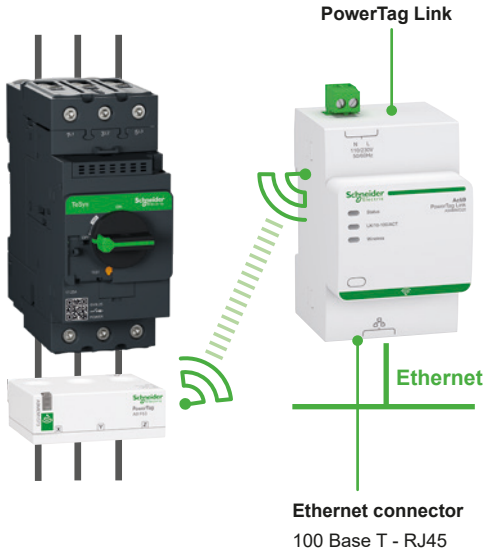
**PowerTag Energy Link**

| Connection (voltage and current) | Features |
|---|---|
| **Upstream** | ■ Energy management: consumption in kWh<br>■ Load monitoring: real-time measurements |
| **Downstream**<br>Preferred installation to take full benefit of voltage loss alarming in diagnosing the load | ■ Energy management: consumption in kWh<br>■ Load monitoring: real-time measurements<br>■ Power availability: voltage loss alarming |

***Note:***
*In combination with a contactor, Variable Speed Drive or motor starter: PowerTag Energy can ONLY be installed UPSTREAM of these devices.*
*Select the PowerTag Energy devices, check the possible mounting positions in the PowerLogic – PowerTag Energy - Selection guide.*

**Scan or Click to download:**

> PowerLogic - PowerTag Energy - Selection guide




*Communication between PowerTag Energy Flex 63 A and PowerTag Link ref. A9XMWD20*

*A9MEM1573* *A9MEM1570*

*PowerTag Flex 63 A (terminals are for voltage measurement)*

## Energy measurement – PowerLogic

### PowerTag Energy Flex 63 A (F63)

As per IEC 61557-12 PMD-II/DD/K55/1 standard:
with its flex design this PowerTag Energy can be used below a **Deca Motor circuit breakers Frame 2, 3-type (ref. GV2●●●, GV3●●●)** up to 63 A on 3P or 3P + N networks. The voltage picking is done by mean of 3 (3P) or 4 (3P + N) terminals. The shapes for brackets allow to mount and maintain it where needed in a panel.

**Main characteristics**

PowerTag Energy measures the following values in accordance with the IEC 61557-12 standard PMD-I/DD/K55/1.
Energy:
■ Active energy (kWh): total and partial, delivered and received.
Real-time measurement values:
■ Voltages (V): phase-to-phase and phase-to-neutral
■ Currents (A): per phase.
■ Power:
□ Active power (W): total and per phase
□ Apparent power (VA): total
■ Power factor.
Voltage loss alarms:
■ PowerTag Energy sends a 'voltage loss' alarm and the current-per-phase value before being de-energized
■ At 'voltage loss', PowerTag Energy adds an overload alarm if the current is higher than the rated current of the associated protective device.
***Note:*** *functions listed above depends on Concentrator/Gateway.*

| Description | Reference |
|---|---|
| PowerTag Energy Flex 63 A 3P | **A9MEM1573** |
| PowerTag Energy Flex 63 A 3P+N | **A9MEM1570** |

**Installation**

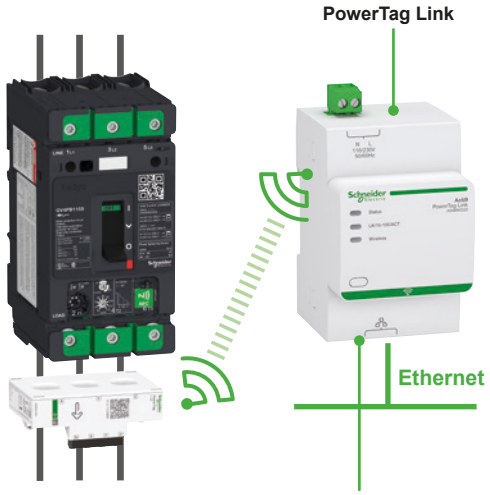
Neutral picking shall be connected to have phase-to-neutral voltages, energy per phase and power per phase provided.

The existing PowerTag cable ends have been designed for screw terminals for 16 mm².
To adapt PowerTag F63 to the different types of product terminals, it is possible to replace the PowerTag Energy voltage measurement terminals by other cable ends for WG22/0.33 mm² wire.

**Scan or Click to download:**

> PowerLogic - PowerTag Energy - Selection guide

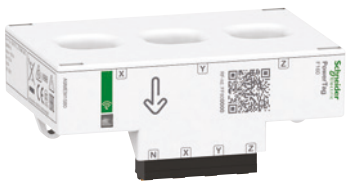
Characteristics / Dimensions:
page B6/154




*Communication between PowerTag Energy Flex 160 A and PowerTag Link ref. A9XMWD20*



PB121658.eps



*PowerTag Energy Flex 160 A Ref. A9MEM1580*

## Energy measurement – PowerLogic

### PowerTag Energy Flex 160 A (F160)

As per IEC 61557-12 PMD-II/DD/K70/1 standard: with its flex design this PowerTag Energy can be used below a **Deca motor circuit breaker Frame 4 - type (ref GV4●●●●)** up to 160 A on 3P or 3P + N networks. Its removable spring connector for voltage picking facilitates its installation, and shapes for brackets allows to mount and maintain it where needed in a panel.

**Main characteristics**

PowerTag Energy Flex 160 A measures the following values in accordance with the IEC 61557-12 standard PMD-II/DD/K70/1.

■ Energy (4 quadrants):
□ Active energy (kWh): total and partial, delivered and received
□ Active energy per phase (kWh): total and partial, delivered and received
□ Reactive energy (kVARh): total and partial, delivered and received
□ Reactive energy per phase (kVARh): total and partial, delivered and received
□ Apparent energy (kVAh): total and partial
□ Apparent energy per phase (kVAh): total and partial.
■ Real-time measurement values:
□ Voltages (V): phase-to-phase (U12, U23, U31) and phase-to-neutral (V1N, V2N, V3N)
□ Currents (A): per phase (I1, I2, I3), calculated neutral current when connected (IN)
□ Power:
Active power (W): total and per phase
Reactive power (VAR): total and per phase
Apparent power (VA): total and per phase
□ Frequency (Hz).
□ Power factor: total and per phase.
■ Voltage loss alarms:
□ PowerTag Energy Flex sensor sends a 'voltage loss' alarm and the current-per phase value before being de-energized.
□ At 'voltage loss'', PowerTag Energy Flex adds an overload alarm if the current is higher than the rated current of the associated protective device.

***Note:** functions listed above depends on Concentrator/Gateway.*

| Description | Reference |
|---|---|
| PowerTag Energy Flex 160 A 3P / 3P+N | **A9MEM1580** |

**Installation**

PowerTag Energy Flex 160 A can be installed in a panel directly on cables or busbars, associated to a product or not. Voltage pickings removable spring terminal has to be wired by 1 copper wire per phase with following characteristics:

### Wire range

| Solid | Stranded | Stranded with terminals ends |
|---|---|---|
| 0.2...1.5 mm² | 0.2...2.5 mm² | 0.25...1.5 mm² |
| 24...16 AWG | 24...14 AWG | 24...16 AWG |

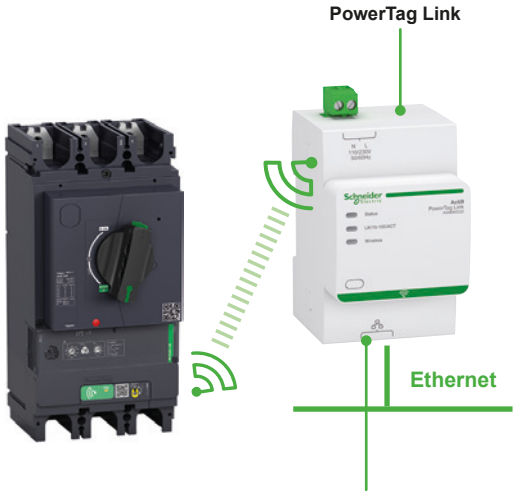
If phase-to-neutral voltages, energy per phase and power per phase are needed, then a Neutral picking cable must be connected between the spring-type connector of the PowerTag Energy Flex and a Neutral in the control panel.

PowerTag Energy Flex 160 A is mainly advised for ComPact NSXm, ComPact INS160, Acti9 NG125, Acti9 C120, Power**Pact** B, TeSys Deca - Frame 4 - type circuit breaker, and all other devices with a rating between 63 A and 160 A.

**Scan or Click to download:**

> PowerLogic - PowerTag Energy - Selection guide

Characteristics / Dimensions:
page B6/155




*Communication between PowerTag Monoconnect M630 and PowerTag Link ref. A9XMWD20*

## Energy measurement – PowerLogic

**PowerTag Energy Monoconnect 250 A (M250)**
**PowerTag Energy Monoconnect 630 A (M630)**

As per IEC 61557-12 PMD-II/DD/K70/1 standard:
PowerTag Energy Monoconnect is directly mounted on the bottom side of a **TeSys Deca - Frame 4 or 5 circuit breaker**, for 3P and 3P+N electrical networks.
Thanks to its integrated design, it does not require any specific wiring, and is compatible with the same connection accessories than the device it is mounted on. In addition to monitoring and alarming, PowerTag solution provides a complete knowledge of real time electrical values with a rich and accurate data transfer every 5 seconds.
PowerTag Energy sensors can be quickly and easily installed in new or existing panels at any time. Compared to traditional metering solutions, installation time and commissioning are much shorter with no wiring, hence an error proof high density solution and a built-in class 1 accuracy.

### Functions

PowerTag Energy sensor measures the following values in accordance with the IEC 61557-12 standard.
■ Energy (4 quadrants):
□ Active energy (kWh): total and partial, delivered and received
□ Active energy per phase (kWh): total
□ Reactive energy (kVARh): partial, delivered and received.
■ Real-time measurement values:
□ Voltages (V): phase-to-phase (U12, U23, U31) and phase-to-neutral (V1N, V2N, V3N)
□ Currents (A): per phase (I1, I2, I3).
■ Power:
□ Active power (W): total and per phase
□ Reactive power (VAR): total
□ Apparent power (VA): total.
■ Frequency (Hz)
■ Power factor
■ Voltage loss alarm:
□ PowerTag Energy sends a "voltage loss" alarm and the current-per-phase value before being de-energized
□ At 'voltage loss', PowerTag adds an overload alarm if the current is higher than the rated current of the associated protective device.
***Note:*** *functions listed above depends on Concentrators/Gateways.*

*LV434020*

*LV434022*

| Description | Reference |
|---|---|
| PowerTag Monoconnect M250 3P: suitable for GV5 up to 220 A | **LV434020** |
| PowerTag Monoconnect M630 3P: suitable for GV6 up to 500 A | **LV434022** |

### Installation

The module is self-powered and is installed for fixed devices directly on the bottom side of the circuit breaker or Vigi add-on terminals. For plug-in devices, it has to be installed on the base itself, top or bottom.
PowerTag Energy M250/M630 3P has to be used with 3P devices, and an external neutral voltage tap is provided in case of the installation has a neutral to provide phase-to-neutral voltages, active energy per phase and power per phase.
PowerTag Energy M250/M630 3P + N has to be used with 4P devices and with ComPact INS/INV switches.

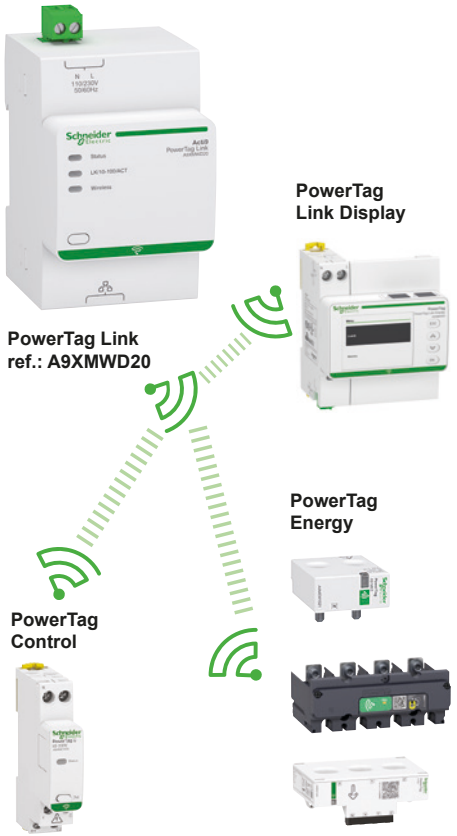
In case of retrofit, following points have to been checked:
■ Clearance to be able to add PowerTag Energy module and to respect bending radius of cables.
■ Condition of power connectors: to be replaced if damaged.
■ Tightening torques depending on the connector used.

**Scan or Click to download:**

> PowerLogic - PowerTag Energy - Selection guide

Characteristics / Dimensions:
page B6/156

# Ethernet Connection Concentrator for PowerTag Energy sensors




## Energy measurement – PowerLogic

### PowerTag Link

Ethernet connection concentrator (Modbus TCP/IP) for wireless devices with data display web pages.
The associated PowerTag Energy sensors allow alarms to be managed via email for terminal loads, and energy, power, current and voltage to be measured accurately in real time.
The associated PowerTag Control modules are designed to monitor and control a circuit and notify wirelessly to the concentrator the information status of a contact (OF, SD, CT or TL position indication...).
The associated PowerTag Link Display allows user to visualize data from energy sensors connected to the gateway.
The entire system can easily be installed in existing LV equipments using Multi9/ Acti9/Compact NSX type circuit breakers, TeSys and competitor's devices.

Data transmitted:
- Total and partial energy
- Active, apparent and reactive power, phase-to-phase and phase-to-neutral voltage
- Currents I1, I2, I3
- Power factor (cos φ)
- Voltage loss and overload information
- Control order to a circuit
- Information status of a contact.

**Functions**
PowerTag Link permits:
- Concentration of PowerTag Energy wireless sensor data
- Ethernet connection via the RJ45 port
- Load monitoring:
  - alarm sent by the energy sensor in the event of a voltage loss,
  - pre-alarms on predefined thresholds (50 %, 80 %) or customized thresholds (thresholds on currents, power, voltages and cumulative energies),
  - load running time counter,
  - power synthesis (kW),
  - Alarm management on current/voltage/load level thresholds by e-mail,
  - Send control orders to PowerTag Control output to operate a load remotely and get load status thanks to feedback loop on associated input,
  - Collect status of contact from PowerTag Control input,
  - Display of alarms and pre-alarms on PowerTag Link embedded web pages,
  - Easy integration into system with Com'X 200, Com'X 510 and other Schneider Electric software and third-party Building Management Systems (BMS) thanks to EcoStruxure Power Commission report in pdf format. This report provides dynamically all the Modbus registers and associated meanings for an easy integration into the system,
  - Remote metering capability using the PowerTag Link monitoring page,
  - Send measured data and alarms to the PowerTag Link Display that can be installed locally.

| Description | Reference |
|---|---|
| PowerTag Link | **A9XMWD20** |

**Installation**
- On DIN rail (width 54 mm).
- 230 V AC power supply.

**Testing and start-up**
Pairing of wireless devices must be performed via the EcoStruxure Power Commission software, freely available by downloading.
- The software makes it possible, in particular, to attribute to each circuit a name, a use and the current rating (useful for alarms).

**Commissioning software: EcoStruxure Power Commission** (1)
- Configuration and communication test of wireless devices
- Editing of a complete test report (pdf) with the Modbus communication registers for easy integration into a supervision system
- Windows XP, Windows 7, Windows 8 and Windows 10 compatible
- Downloadable from: https://www.schneider-electric.com/ww/en/download/document/Ecoreach_Installer

*(1) new name of Ecoreach software.*

**Scan or Click to download:**
> PowerLogic - PowerTag Energy - Selection guide

Characteristics / Dimensions:
page B6/157

# **TeSys** Modular circuit breakers

## 0.5 to 20 A

## (for equipment and control circuits)

PB110899_20.eps

*GB2CB*

PB110901_20.eps

*GB2CD*

PB110902_20.eps

*GB2DB*

PB110900_20.eps

*GB2CS*

## Introduction

Modular thermal-magnetic circuit breakers protect and isolate the control circuits of industrial equipment with contactor coils, transformers….
They protect and isolate single-phase auxiliary circuits such as solenoid valves, electro-brakes, battery chargers, supplied from the control circuit voltage.

### Ref. GB2CB, GB2CD, GB2DB

12 ratings are available, from 0.5 to 20 A, in single-pole (GB2CB), single-pole + neutral (GB2CD) and 2-pole (GB2DB) versions.
They have a magnetic tripping threshold set at between 12 and 16 In to withstand the current peaks generated by many industrial components.

### Ref. GB2CS

2 ratings are available, 0.5 and 1 A, in single-pole version.
The magnetic tripping threshold is set between 5 and 7 In.

### Functions, installation

Clip-on fixing onto all types of 35 mm ⊥ rails, on ⊏ rails and on Telequick mounting plates.
Upstream and downstream marking by means of AB1 clip-in markers.
Clear indication of “I” and “O” positions on the operator.
Tamper-proof device which requires no special maintenance (fixed magnetic and thermal tripping thresholds).

## Selection for the protection of circuits supplied by transformers

Single-phase transformers.
Magnetising peak: 20 In.
Operation of magnetic trips: 13 In.

| Power | Primary (1) | | Secondary | | | |
|---|---|---|---|---|---|---|
| VA | 220/240 V | 380/415 V | 24 V | 48 V | 110 V | 220 V |
| **40** | GB2DB05 | GB2DB05 | GB2CD07 | GB2CD06 | GB2CD05 | GB2CD05 |
| **63** | GB2DB05 | GB2DB05 | GB2CD08 | GB2CD07 | GB2CD06 | GB2CD05 |
| **100** | GB2DB06 | GB2DB05 | GB2CD10 | GB2CD07 | GB2CD06 | GB2CD05 |
| **160** | GB2DB07 | GB2DB06 | GB2CD14 | GB2CD09 | GB2CD07 | GB2CD06 |
| **250** | GB2DB07 | GB2DB06 | GB2CD16 | GB2CD12 | GB2CD08 | GB2CD07 |
| **400** | GB2DB08 | | GB2CD22 | GB2CD14 | GB2CD09 | GB2CD07 |
| **630** | GB2DB10 | GB2DB08 | – | GB2CD21 | GB2CD12 | GB2CD08 |
| **1000** | GB2DB14 | GB2DB09 | – | – | GB2CD16 | GB2CD10 |
| **1600** | GB2DB20 | GB2DB14 | – | – | – | GB2CD14 |
| **2000** | GB2DB21 | GB2DB14 | – | – | GB2CD22 | GB2CD16 |
| **2500** | GB2DB22 | GB2DB20 | – | – | – | GB2CD20 |
| **3000** | GB2DB22 | GB2DB20 | – | – | – | GB2CD21 |
| **4000** | – | GB2DB21 | – | – | – | GB2CD22 |
| **5000** | – | GB2DB22 | – | – | – | – |

*(1) If the breaking capacity of the **GB2** is insufficient, use a **GV2RT** with 2 poles connected in series.*

# Product references

PB110899_20.eps

*GB2CB●●*

## Circuit breakers with magnetic tripping threshold: 12 to 16 In

### Single-pole

| Conventional rated thermal current Ith (1) | Magnetic tripping current Id ± 20 % | Sold in lots of | Unit reference |
|---|---|---|---|
| A | A | | |
| 0.5 | 6.6 | 6 | **GB2CB05** |
| 1 | 14 | 6 | **GB2CB06** |
| 2 | 26 | 6 | **GB2CB07** |
| 3 | 40 | 6 | **GB2CB08** |
| 4 | 52 | 6 | **GB2CB09** |
| 5 | 66 | 6 | **GB2CB10** |
| 6 | 83 | 6 | **GB2CB12** |
| 8 | 108 | 6 | **GB2CB14** |
| 10 | 138 | 6 | **GB2CB16** |
| 12 | 165 | 6 | **GB2CB20** |
| 16 | 220 | 6 | **GB2CB21** |
| 20 | 270 | 6 | **GB2CB22** |

PB110901_20.eps

*GB2CD●●*

### Single-pole + neutral

| Conventional rated thermal current Ith (1) | Magnetic tripping current Id ± 20 % | Sold in lots of | Unit reference |
|---|---|---|---|
| A | A | | |
| 0.5 | 6.6 | 6 | **GB2CD05** |
| 1 | 14 | 6 | **GB2CD06** |
| 2 | 26 | 6 | **GB2CD07** |
| 3 | 40 | 6 | **GB2CD08** |
| 4 | 52 | 6 | **GB2CD09** |
| 5 | 66 | 6 | **GB2CD10** |
| 6 | 83 | 6 | **GB2CD12** |
| 8 | 108 | 6 | **GB2CD14** |
| 10 | 138 | 6 | **GB2CD16** |
| 12 | 165 | 6 | **GB2CD20** |
| 16 | 220 | 6 | **GB2CD21** |
| 20 | 270 | 6 | **GB2CD22** |

PB110902_20.eps

*GB2DB●●*

### 2-pole

| Conventional rated thermal current Ith (1) | Magnetic tripping current Id ± 20 % | Sold in lots of | Unit reference |
|---|---|---|---|
| A | A | | |
| 0.5 | 6.6 | 3 | **GB2DB05** |
| 1 | 14 | 3 | **GB2DB06** |
| 2 | 26 | 3 | **GB2DB07** |
| 3 | 40 | 3 | **GB2DB08** |
| 4 | 50 | 3 | **GB2DB09** |
| 5 | 66 | 3 | **GB2DB10** |
| 6 | 83 | 3 | **GB2DB12** |
| 8 | 108 | 3 | **GB2DB14** |
| 10 | 138 | 3 | **GB2DB16** |
| 12 | 165 | 3 | **GB2DB20** |
| 16 | 220 | 3 | **GB2DB21** |
| 20 | 270 | 3 | **GB2DB22** |

*(1) Conforming to IEC 60947-1.*



Characteristics:
pages B6/160 to B6/162

Dimensions, schemes:
page B6/163

# Product references

## Circuit breakers with magnetic tripping threshold: 5 to 7 In

PB110900_20.eps

*GB2CS●●*

### Single-pole

| Conventional rated thermal current Ith (1) | Magnetic tripping current Id ± 20 % | Sold in lots of | Unit reference |
|---|---|---|---|
| A | A | | |
| 0.5 | 3.3 | 6 | **GB2CS05** |
| 1 | 6 | 6 | **GB2CS06** |

*(1) Conforming to IEC 60947-1.*

## Accessories for circuit breakers ref. GB2-CB, DB and CS

PB121347.eps

*GB2G210*

| Description | Sold in lots of | Unit reference |
|---|---|---|
| Busbar set for supply to<br>10 GB2 DB or<br>20 GB2CB or GB2CS with 2 connectors | 1 | **GB2G210** |



Characteristics:
pages B6/160 to B6/162

Dimensions, schemes:
page B6/163



Life Is On Schneider Electric

# Product references

29450
29452
GB2CB05
GB2CB06
GB2CB07
GB2CB08
GB2CB09
GB2CB10
GB2CB12
GB2CB14
GB2CB16
GB2CB20
GB2CB21
GB2CB22
GB2CD05
GB2CD06
GB2CD07
GB2CD08
GB2CD09
GB2CD10
GB2CD12
GB2CD14
GB2CD16
GB2CD20
GB2CD21
GB2CD22
GB2CS05
GB2CS06
GB2DB05
GB2DB06
GB2DB07
GB2DB08
GB2DB09
GB2DB10
GB2DB12
GB2DB14
GB2DB16
GB2DB20
GB2DB21
GB2DB22
GB2G210
GK2AF01
GK2AX50
GV1F03
GV1G02
GV1L3
GV1V02
GV2AF01
GV2AF02
GV2AF3
GV2AF4
GV2AF5
GV2AK00
GV2AP01
GV2AP02
GV2AP03
GV2AP04
GV2APK01
GV2APN01
GV2APN02
GV2APN03
GV2APN04
GV2CP21
GV2GH7
GV2L03
GV2L04
GV2L05
GV2L06
GV2L07
GV2L08
GV2L10
GV2L14
GV2L16
GV2L20
GV2L22
GV2L32
GV2LE03
GV2LE04
GV2LE05
GV2LE06
GV2LE07
GV2LE08
GV2LE10
GV2LE14
GV2LE16
GV2LE20
GV2LE22
GV2LE32
GV2ME01
GV2ME013
GV2ME016
GV2ME01AP
GV2ME02
GV2ME023
GV2ME02AP
GV2ME03
GV2ME033
GV2ME036
GV2ME03AP
GV2ME04
GV2ME043
GV2ME046
GV2ME04AP
GV2ME05
GV2ME053
GV2ME056
GV2ME05AP
GV2ME06
GV2ME063
GV2ME066
GV2ME06AP
GV2ME07
GV2ME073
GV2ME076
GV2ME07AP
GV2ME08
GV2ME083
GV2ME086
GV2ME08AP
GV2ME10
GV2ME103
GV2ME106
GV2ME10AP
GV2ME14
GV2ME143
GV2ME146
GV2ME14AP
GV2ME16
GV2ME163
GV2ME166
GV2ME16AP
GV2ME20
GV2ME203
GV2ME206
GV2ME20AP
GV2ME21
GV2ME213
GV2ME216
GV2ME21AP
GV2ME22
GV2ME223
GV2ME226
GV2ME22AP
GV2ME32
GV2ME323S
GV2ME326
GV2ME32AP
GV2P01
GV2P02
GV2P03
GV2P04
GV2P05
GV2P06
GV2P07
GV2P08
GV2P10
GV2P14
GV2P16
GV2P20
GV2P21
GV2P22
GV2P32
GV2PC01
GV2PC02
GV2RT03
GV2RT04
GV2RT05
GV2RT053
GV2RT06
GV2RT07
GV2RT073
GV2RT08
GV2RT10
GV2RT14
GV2RT16
GV2RT20
GV2RT21
GV2SN14
GV2SN15
GV2SN17
GV2SN35
GV2SN37
GV2V03
GV3A02
GV3A03
GV3A08
GV3A09
GV3APK01
GV3APN01
GV3D22
GV3G66
GV3L25
GV3L32
GV3L326
GV3L40
GV3L50
GV3L65
GV3L73
GV3L80
GV3P13
GV3P18
GV3P25
GV3P256
GV3P32
GV3P321
GV3P40
GV3P401
GV3P406
GV3P50
GV3P501
GV3P506
GV3P65
GV3P651
GV3P656
GV3P73
GV3P731
GV3P736
GV3P80
GV3PC01
GV3PC02
GV4ADM1111
GV4ADN01
GV4ADN02
GV4AE11
GV4APN01
GV4APN02
GV4APN04
GV4AS027
GV4AS057
GV4AS137
GV4AS287
GV4AS487
GV4AU027
GV4AU057
GV4AU137
GV4AU247
GV4AU286
GV4AU415
GV4AU486
GV4G66
GV4L02N
GV4L02N6
GV4L03N
GV4L03N6
GV4L07N
GV4L07N6
GV4L115B
GV4L115B6
GV4L115N
GV4L115N6
GV4L115S
GV4L12N
GV4L12N6
GV4L25B
GV4L25B6
GV4L25N
GV4L25N6
GV4L50B
GV4L50B6
GV4L50N
GV4L50N6
GV4L80B
GV4L80B6
GV4L80N
GV4L80N6
GV4L80S
GV4LE02N
GV4LE02N6
GV4LE02S
GV4LE02S6
GV4LE03N
GV4LE03N6
GV4LE03S
GV4LE03S6
GV4LE07N
GV4LE07N6
GV4LE07S
GV4LE07S6
GV4LE115B
GV4LE115B6
GV4LE115N
GV4LE115N6
GV4LE115S
GV4LE115S6
GV4LE12N
GV4LE12N6
GV4LE12S
GV4LE12S6

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

## Product references

GV4LE25B
GV4LE25B6
GV4LE25N
GV4LE25N6
GV4LE25S
GV4LE25S6
GV4LE50B
GV4LE50B6
GV4LE50N
GV4LE50N6
GV4LE50S
GV4LE50S6
GV4LE80B
GV4LE80B6
GV4LE80N
GV4LE80N6
GV4LE80S
GV4LE80S6
GV4LUG
GV4P02N
GV4P02N6
GV4P03N
GV4P03N6
GV4P07N
GV4P07N6
GV4P115B
GV4P115B6
GV4P115N
GV4P115N6
GV4P115S
GV4P12N
GV4P12N6
GV4P25B
GV4P25B6
GV4P25N
GV4P25N6
GV4P50B
GV4P50B6
GV4P50N
GV4P50N6
GV4P80B
GV4P80B6
GV4P80N
GV4P80N6
GV4P80S
GV4PB02N
GV4PB02S
GV4PB03N
GV4PB03S
GV4PB07N
GV4PB07S
GV4PB115B
GV4PB115N
GV4PB115S
GV4PB12N
GV4PB12S
GV4PB25B
GV4PB25N
GV4PB25S
GV4PB50B
GV4PB50N
GV4PB50S
GV4PB80B
GV4PB80N
GV4PB80S
GV4PE02N
GV4PE02N6
GV4PE02S
GV4PE02S6
GV4PE03N
GV4PE03N6
GV4PE03S
GV4PE03S6
GV4PE07N
GV4PE07N6
GV4PE07S
GV4PE07S6
GV4PE115B
GV4PE115B6
GV4PE115N
GV4PE115N6
GV4PE115S
GV4PE115S6
GV4PE12N
GV4PE12N6
GV4PE12S
GV4PE12S6
GV4PE25B
GV4PE25B6
GV4PE25N
GV4PE25N6
GV4PE25S
GV4PE25S6
GV4PE50B
GV4PE50B6
GV4PE50N
GV4PE50N6
GV4PE50S
GV4PE50S6
GV4PE80B
GV4PE80B6
GV4PE80N
GV4PE80N6
GV4PE80S
GV4PE80S6
GV4PEM02N
GV4PEM02N6
GV4PEM02S
GV4PEM02S6
GV4PEM03N
GV4PEM03N6
GV4PEM03S
GV4PEM03S6
GV4PEM07N
GV4PEM07N6
GV4PEM07S
GV4PEM07S6
GV4PEM115B
GV4PEM115B6
GV4PEM115N
GV4PEM115N6
GV4PEM115S
GV4PEM115S6
GV4PEM12N
GV4PEM12N6
GV4PEM12S
GV4PEM12S6
GV4PEM25B
GV4PEM25B6
GV4PEM25N
GV4PEM25N6
GV4PEM25S
GV4PEM25S6
GV4PEM50B
GV4PEM50B6
GV4PEM50N
GV4PEM50N6
GV4PEM50S
GV4PEM50S6
GV4PEM80B
GV4PEM80B6
GV4PEM80N
GV4PEM80N6
GV4PEM80S
GV4PEM80S6
GV5AP03
GV5P150F
GV5P150H
GV5P220F
GV5P220H
GV6AP03
GV6P320F
GV6P320H
GV6P500F
GV6P500H
GV7AC01
GV7AC021
GV7AC022
GV7AC03
GV7AC04
GV7AC05
GV7AC06
GV7AC08
GV7AP01
GV7AP02
GV7AP04
GV7AP05
GVAD0101
GVAD0110
GVAD1001
GVAD1010
GVAE1
GVAE11
GVAE113
GVAE20
GVAE203
GVAED011
GVAED0113
GVAED101
GVAED1013
GVAM11
GVAN11
GVAN113
GVAN20
GVAN203
GVAPA2
GVAPBPHP
GVAPH02
GVAPK11
GVAPYPHP
GVAS025
GVAS026
GVAS055
GVAS115
GVAS116
GVAS207
GVAS225
GVAS226
GVAS385
GVAS415
GVAU025
GVAU055
GVAU115
GVAU116
GVAU125
GVAU207
GVAU225
GVAU226
GVAU385
GVAU386
GVAU415
GVAU416
GVAU505
GVAX115
GVAX116
GVAX225
GVAX226
GVAX385
GVAX386
GVAX415
LA9E07
LAD311
LAD96590
LAD96595
LV429385
LV429386
LV429387
LV429388
LV429405
LV429406
LV429407
LV429408



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers



Deca - Frame 2:
> characteristics ..... B6/72 to B6/76
> curves ..... B6/77 to B6/86
> characteristics - accessories ..... B6/87 to B6/89
> dimensions, schemes ..... B6/90 to B6/99

Deca - Frame 3:
> characteristics ..... B6/102 to B6/105
> curves ..... B6/106 to B6/111
> characteristics - accessories ..... B6/112 to B6/114
> dimensions, schemes ..... B6/115 to B6/117

Deca - Frame 4:
> characteristics ..... B6/120 to B6/123
> curves ..... B6/124 to B6/131
> characteristics - accessories ..... B6/132 to B6/133
> dimensions, schemes ..... B6/134 to B6/137

Giga - Frame 5 - Frame 6:
> characteristics ..... B6/140
> curves ..... B6/141 to B6/143
> characteristics - accessories ..... B6/144 to B6/145
> dimensions, schemes ..... B6/146 to B6/152

PowerTag Energy sensors:
> PowerTag Energy Flex 63 A ..... B6/154
> PowerTag Energy Flex 160 A ..... B6/155
> PowerTag Energy Monoconnect 250 A ..... B6/156
> PowerTag Energy Link ..... B6/157

Modular:
> characteristics ..... B6/160 to B6/162
> dimensions, schemes ..... B6/163

# TeSys Deca - Frame 2

## 0.06 to 15 kW

# Characteristics

## Environment

| Circuit breaker type | | | | GV2L | GV2LE | GV2ME | GV2P | GV2RT |
|---|---|---|---|---|---|---|---|---|
| Conforming to standards | | | | IEC/EN 60947-4-1, IEC/EN 60947-2 | | | | |
| | | | | CSA C22.2 n°60947-4-1 (1), UL 60947-4-1 | | | | |
| Product certifications | | | | CCC, EAC, BV, LROS, DNV-GL, RINA, UL (1), CSA, UKCA | CCC, EAC, BV, RINA, UL (1), UKCA | CCC, UL, CSA, EAC, ATEX, BV, LROS, UKCA, DNV-GL, RINA | CCC, UL, CSA, EAC, ATEX, BV, LROS, DNV-GL, RINA, UKCA | CCC, UL, CSA, EAC, BV, LROS, UKCA |
| Climatic withstand | | | | According to IACS E10 | | | | |
| Degree of protection (front face) | Conforming to IEC 60529 | Open mounted | | Against direct finger contact: IP20 | | | | |
| | | In enclosure | | IP65 with GV2PC01 GV2PC02 enclosure | - | IP41 with GV2M●01 IP55 with GV2M●02 enclosure | IP 65 with GV2PC01 GV2PC02 enclosure | - |
| Shock resistance | Conforming to IEC 60068-2-27 | | | 30 gn - 11 ms | | | | |
| Vibration resistance | Conforming to IEC 60068-2-6 | | | 5 gn (5 to 150 Hz) | | | | |
| Ambient air temperature | Storage | | °C | -40…+80 | | | | |
| | Operation | Open mounted | °C | -20…+60 | | | | |
| | | In enclosure | °C | -20…+40 | | | | |
| Temperature compensation | | Open mounted | °C | -20…+60 | | | | |
| | | In enclosure | °C | -20…+40 | | | | |
| Flame resistance | Conforming to IEC 60695-2-11 | | °C | 960 | | | | |
| Maximum operating altitude | | | m | 2000 | | | | |
| Suitable for isolation | Conforming to IEC 60947-1 § 7-1-6 | | | Yes | | | | |
| Resistance to mechanical impact | | | J | 0.5 | | | | |
| | | | | IK04 | | | | |
| Sensitivity to phase failure | | | | Yes, conforming to IEC 60947-4-1 § 8-2-1-5-2 for GV2ME & GV2P | | | | |

## Technical characteristics

| Circuit breaker type | | | GV2L | GV2LE | GV2ME | GV2P | GV2RT |
|---|---|---|---|---|---|---|---|
| Utilisation category | Conforming to IEC 60947-2 | | A | | | | |
| | Conforming to IEC 60947-4-1 | | AC-3 | | | | |
| Rated operational voltage (Ue) | Conforming to IEC 60947-2 | V | 690 | | | | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-2 | V | 690 | | | | |
| Rated voltage | Conforming to UL 60947-4-1 | V | - | - | 600 | 600 | 600 |
| | CSA C 22.2 n° 60947-4-1 | | 480 | 480 | 600 | 600 | 600 |
| Rated operational frequency | Conforming to IEC 60947-4-1 UL, CSA | Hz | 50/60 | | | | |
| Rated impulse withstand voltage (U imp) | Conforming to IEC 60947-2 | kV | 6 | | | | |
| Total power dissipated per pole | | W | 1.8 | | 2.5 | | |
| Mechanical durability (C.O.: Closing, Opening) | | C.O. | 100 000 | | | | |
| Electrical durability for AC-3/415V duty (C.O.: Closing, Opening) | 415 V In | C.O. | 100 000 | | | | |
| Duty class (maximum operating rate) | | C.O./h | 40 | | 25 | | |
| Maximum conventional rated thermal current (Ith) | Conforming to IEC 60947-4-1 | A | 0.4...32 | 0.4...32 | 0.16...32 | 0.16...32 | 0.40...23 |
| Rated duty | Conforming to IEC 60947-4-1 | | Continuous duty | | | | |

*(1) **GV2L03** to **GV2L22**, **GV2LE03** to **GV2LE22**.*
*(2) UL 60947-4-1 type E for **GV2P●●** (except 32 A).*

References:
pages B6/11 to B6/18

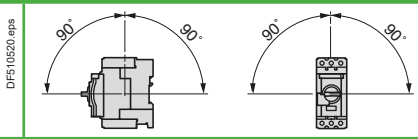
Curves:
pages B6/77 to B6/86

Dimensions:
pages B6/90 to B6/99

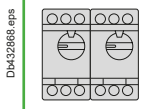
# Characteristics

## Mounting characteristics

Operating position
Without derating, in relation to normal vertical mounting plane (1)




## Products side by side



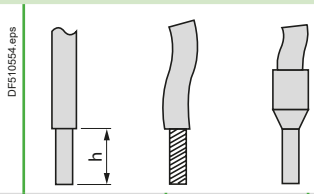

When several products **GV2ME●●**, **GV2P●●**, **GV2RT●●** are mounted side by side, the thermal trip setting Ir maybe need to be adjusted up to 1.1xIn.

Do not exceed the maximum thermal setting Ir.
E.g: **GV2ME14**, thermal setting range: 6...10, do not adjust Ir above 10 A.

## Connection characteristics

### Connection to screw clamp terminals or spring terminals

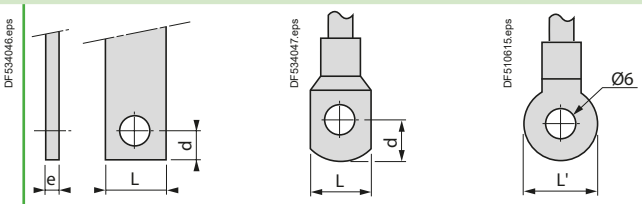
Bare cables




| Circuit breaker type | | | GV2L | | GV2LE | | GV2ME | | GV2P | | GV2RT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| Connection to screw clamp terminals (Max. number of conductors x c.s.a.) | Solid cable | mm² | 2 x 1 | 2 x 6 | 2 x 1 | 2 x 6 | 2 x 1 | 2 x 6 | 2 x 1 | 2 x 6 | 2 x 1 | 2 x 6 |
| | Flexible cable without cable end | mm² | 2 x 1.5 | 2 x 6 | 2 x 1.5 | 2 x 6 | 2 x 1.5 | 2 x 6 | 2 x 1.5 | 2 x 6 | 2 x 1.5 | 2 x 6 |
| | Flexible cable with cable end | mm² | 2 x 1 | 2 x 4 | 2 x 1 | 2 x 4 | 2 x 1 | 2 x 4 | 2 x 1 | 2 x 4 | 2 x 1 | 2 x 4 |
| Tightening torque | | N.m | 1.7 | | | | | | | | | |
| Connection to spring terminals Number of conductors x c.s.a. | Solid cable | mm² | – | – | – | – | 2 x 1 (2) | 2 x 6 | – | – | – | – |
| | Flexible cable without cable end | mm² | – | – | – | – | 2 x 1.5 (2) | 2 x 4 | – | – | – | – |

### Connection by bars or lugs

Bars or lugs




| Circuit breaker type | | | GV2ME●●6 |
|---|---|---|---|
| Pitch | Without spreaders | mm | 13.5 |
| | With spreaders | mm | – |
| Bars or cables with lugs | e | mm | ≤ 6 |
| | L | mm | ≤ 9.5 |
| | L' | mm | ≤ 9.5 |
| | d | mm | ≤ 10 |
| Screws | | | M4 |
| | Tightening torque | N.m | 1.7 |
| Bare cables (copper or aluminium) with connectors | Height (h) | mm | – |
| | C.s.a. | mm² | – |
| | Tightening torque | N.m | – |

*(1) When mounting on a vertical rail, fit a stop to prevent any slippage.*
*(2) For cross-sections 1 to 1.5 mm², the use of an **LA9D99** cable end reducer is recommended.*

References:
pages B6/11 to B6/18
Curves:
pages B6/77 to B6/86
Dimensions:
pages B6/90 to B6/99

# Characteristics

## Breaking capacity of GV2L and GV2LE

| Circuit breaker type | | | | GV2LE | | | | | | | | | GV2L | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 03 to 06 | 07 | 08 | 10 | 14 | 16 | 20 | 22 | 32 | 03 to 05 | 06 & 07 | 08 | 10 | 14 | 16 | 20 | 22 | 32 |
| Rating | | | A | 0.4 to 1.6 | 2.5 | 4 | 6.3 | 10 | 14 | 18 | 25 | 32 | 0.4 to 1 | 1.6 to 2.5 | 4 | 6.3 | 10 | 14 | 18 | 25 | 32 |
| Breaking capacity conforming to IEC 60947-2 | 230/240 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 50 | 50 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 50 | 50 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 100 | 100 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 100 | 100 |
| | 400/415 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | 15 | 15 | 15 | 10 | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 50 | 50 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 40 | 50 | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 50 | 50 |
| | 440 V | Icu | kA | ★ | ★ | ★ | 50 | 15 | 8 | 8 | 6 | 6 | ★ | ★ | ★ | ★ | 20 | 20 | 20 | 20 | 20 |
| | | Ics % (1) | | ★ | ★ | ★ | 100 | 100 | 50 | 50 | 50 | 50 | ★ | ★ | ★ | ★ | 75 | 75 | 75 | 75 | 75 |
| | 500 V | Icu | kA | ★ | ★ | ★ | 50 | 10 | 6 | 6 | 4 | 4 | ★ | ★ | ★ | ★ | 10 | 10 | 10 | 10 | 10 |
| | | Ics % (1) | | ★ | ★ | ★ | 100 | 100 | 75 | 75 | 75 | 75 | ★ | ★ | ★ | ★ | 100 | 75 | 75 | 75 | 75 |
| | 690 V | Icu | kA | ★ | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | ★ | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | Ics % (1) | | ★ | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | ★ | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Associated fuses (if required) if Isc > breaking capacity Icu conforming to IEC 60947-2 amendment 1 | 230/240 V | aM | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 80 | 80 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 100 | 100 |
| | | gG | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 100 | 100 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 125 | 125 |
| | 400/415 V | aM | A | ★ | ★ | ★ | ★ | ★ | 63 | 63 | 80 | 80 | ★ | ★ | ★ | ★ | ★ | 80 | 100 | 100 | 100 |
| | | gG | A | ★ | ★ | ★ | ★ | ★ | 80 | 80 | 100 | 100 | ★ | ★ | ★ | ★ | ★ | 100 | 125 | 125 | 125 |
| | 440 V | aM | A | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 63 | 63 | ★ | ★ | ★ | ★ | 50 | 63 | 80 | 80 | 80 |
| | | gG | A | ★ | ★ | ★ | 63 | 63 | 63 | 63 | 80 | 80 | ★ | ★ | ★ | ★ | 63 | 80 | 100 | 100 | 100 |
| | 500 V | aM | A | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 50 | 50 | ★ | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 50 |
| | | gG | A | ★ | ★ | ★ | 63 | 63 | 63 | 63 | 63 | 63 | ★ | ★ | ★ | ★ | 63 | 63 | 63 | 63 | 63 |
| | 690 V | aM | A | ★ | 16 | 25 | 32 | 32 | 40 | 40 | 40 | 40 | ★ | 20 | 25 | 40 | 40 | 50 | 50 | 50 | 50 |
| | | gG | A | ★ | 20 | 32 | 40 | 40 | 50 | 50 | 50 | 50 | ★ | 25 | 32 | 50 | 50 | 63 | 63 | 63 | 63 |
| Cable protection against thermal stress in the event of short-circuit (PVC insulated copper cables) Minimum c.s.a. protected at 40 °C and at Isc max. | 1 mm² | | kA | ● | ● | ● | ≤10 | ≤ 6 | (2) | (2) | (2) | (2) | ● | ● | ● | ≤10 | ≤ 6 | (2) | (2) | (2) | (2) |
| | 1.5 mm² | | kA | ● | ● | ● | ≤20 | ≤10 | (2) | (2) | (2) | (2) | ● | ● | ● | ≤20 | ≤10 | (2) | (2) | (2) | (2) |
| | 2.5 mm² | | | ● | ● | ● | ● | ● | ● | ● | ● | (2) | ● | ● | ● | ● | ● | ● | ● | ● | (2) |
| | 4…6 mm² | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

★ *> 100 kA.*
● *Cable c.s.a. protected.*
*(1) As % of Icu.*
*(2) Cable c.s.a. not protected.*

Ref.
Motor circuit breakers

References:
pages B6/12 and B6/13
Curves:
pages B6/77 to B6/86
Dimensions:
pages B6/90 to B6/99

## Characteristics

### Breaking capacity of GV2ME, GV2RT and GV2P

| Circuit breaker type | | | | GV2ME and GV2RT | | | | | | | | | GV2P | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 01 to 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 & 22 | 32 | 01 to 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 & 22 | 32 |
| Rating | | | A | 0.1 to 1.6 | 2.5 | 4 | 6.3 | 10 | 14 | 18 | 23 & 25 | 32 | 0.1 to 1.6 | 2.5 | 4 | 6.3 | 10 | 14 | 18 | 23 & 25 | 32 |
| Breaking capacity conforming to IEC 60947-2 | 230/240 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 50 | 50 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 100 | 100 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 400/415 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | 15 | 15 | 15 | 10 | ★ | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 50 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 40 | 50 | ★ | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 50 |
| | 440 V | Icu | kA | ★ | ★ | ★ | 50 | 15 | 8 | 8 | 6 | 6 | ★ | ★ | ★ | ★ | ★ | 50 | 20 | 20 | 20 |
| | | Ics % (1) | | ★ | ★ | ★ | 100 | 100 | 50 | 50 | 50 | 50 | ★ | ★ | ★ | ★ | ★ | 75 | 75 | 75 | 75 |
| | 500 V | Icu | kA | ★ | ★ | ★ | 50 | 10 | 6 | 6 | 4 | 4 | ★ | ★ | ★ | ★ | 50 | 42 | 10 | 10 | 10 |
| | | Ics % (1) | | ★ | ★ | ★ | 100 | 100 | 75 | 75 | 75 | 75 | ★ | ★ | ★ | ★ | 100 | 75 | 75 | 75 | 75 |
| | 690 V | Icu | kA | ★ | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | ★ | 8 | 8 | 6 | 6 | 6 | 4 | 4 | 4 |
| | | Ics % (1) | | ★ | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | ★ | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Associated fuses (if required) if Isc > breaking capacity Icu conforming to IEC 60947-2 | 230/240 V | aM | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 80 | 80 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | | gG | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | 100 | 100 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 400/415 V | aM | A | ★ | ★ | ★ | ★ | ★ | 63 | 63 | 80 | 80 | ★ | ★ | ★ | ★ | ★ | ★ | 100 | 100 | 100 |
| | | gG | A | ★ | ★ | ★ | ★ | ★ | 80 | 80 | 100 | 100 | ★ | ★ | ★ | ★ | ★ | ★ | 125 | 125 | 125 |
| | 440 V | aM | A | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 63 | 63 | ★ | ★ | ★ | ★ | ★ | 50 | 63 | 80 | 80 |
| | | gG | A | ★ | ★ | ★ | 63 | 63 | 63 | 63 | 80 | 80 | ★ | ★ | ★ | ★ | ★ | 63 | 80 | 100 | 100 |
| | 500 V | aM | A | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 50 | 50 | ★ | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 50 |
| | | gG | A | ★ | ★ | ★ | 63 | 63 | 63 | 63 | 63 | 63 | ★ | ★ | ★ | ★ | 63 | 63 | 63 | 63 | 63 |
| | 690 V | aM | A | ★ | 16 | 25 | 32 | 32 | 40 | 40 | 40 | 40 | ★ | 20 | 25 | 40 | 40 | 50 | 50 | 50 | 50 |
| | | gG | A | ★ | 20 | 32 | 40 | 40 | 50 | 50 | 50 | 50 | ★ | 25 | 32 | 50 | 50 | 63 | 63 | 63 | 63 |

★ > 100 kA.
(1) As % of Icu.

Ref.
Motor circuit breakers

# Characteristics

## Breaking capacity of GV2ME, GV2RT and GV2P (used in association with current limiter GV1L3)

| Circuit breaker type | | | | GV2ME and GV2RT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 01 to 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 | 22 | 32 |
| Rating | | | A | 0.1 to 1.6 | 2.5 | 4 | 6.3 | 10 | 14 | 18 | 23 | 25 | 32 |
| Breaking capacity conforming to IEC 60947-2 | 230/240 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 400/415 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | 100 | 100 | 100 | 100 | 100 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 40 | 40 | 40 |
| | 440 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | 50 | 20 | 20 | 20 | 20 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | 75 | 75 | 75 | 75 | 75 |
| | 500 V | Icu | kA | ★ | ★ | ★ | ★ | 50 | 42 | 10 | 10 | 10 | 10 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | 100 | 100 | 75 | 75 | 75 | 75 |

| Circuit breaker type | | | | GV2P | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 01 to 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 | 22 | 32 |
| Rating | | | A | 0.1 to 1.6 | 2.5 | 4 | 6.3 | 10 | 14 | 18 | 23 | 25 | 32 |
| Breaking capacity conforming to IEC 60947-2 | 230/240 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 400/415 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 440 V | Icu | kA | ★ | ★ | ★ | ★ | ★ | 100 | 100 | 100 | 100 | 100 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 50 |
| | 500 V | Icu | kA | ★ | ★ | ★ | ★ | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Ics % (1) | | ★ | ★ | ★ | ★ | 50 | 50 | 50 | 50 | 50 | 50 |
| | 690 V (3) | Icu = Ics | kA | ★ | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |

| Circuit breaker type | | | | GV2ME | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 01 to 06 | 07 | 08 | 10 | 14 | 16 | 20 | 21 | 22 | 32 |
| Rating | | | A | 0.1 to 1.6 | 2.5 | 4 | 6.3 | 10 | 14 | 18 | 23 | 25 | 32 |
| Cable protection against thermal stress in the event of short-circuit (PVC insulated copper cables) | Minimum c.s.a. protected at 40 °C at Isc max. | 1 mm² | | ● | ● | ● | ⩽ 10 kA | ⩽ 6 kA | (2) | (2) | (2) | (2) | (2) |
| | | 1.5 mm² | | ● | ● | ● | ⩽ 20 kA | ⩽ 10 kA | (2) | (2) | (2) | (2) | (2) |
| | | 2.5 mm² | | ● | ● | ● | ● | ● | ● | ● | ● | ● | (2) |
| | | 4…6 mm² | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

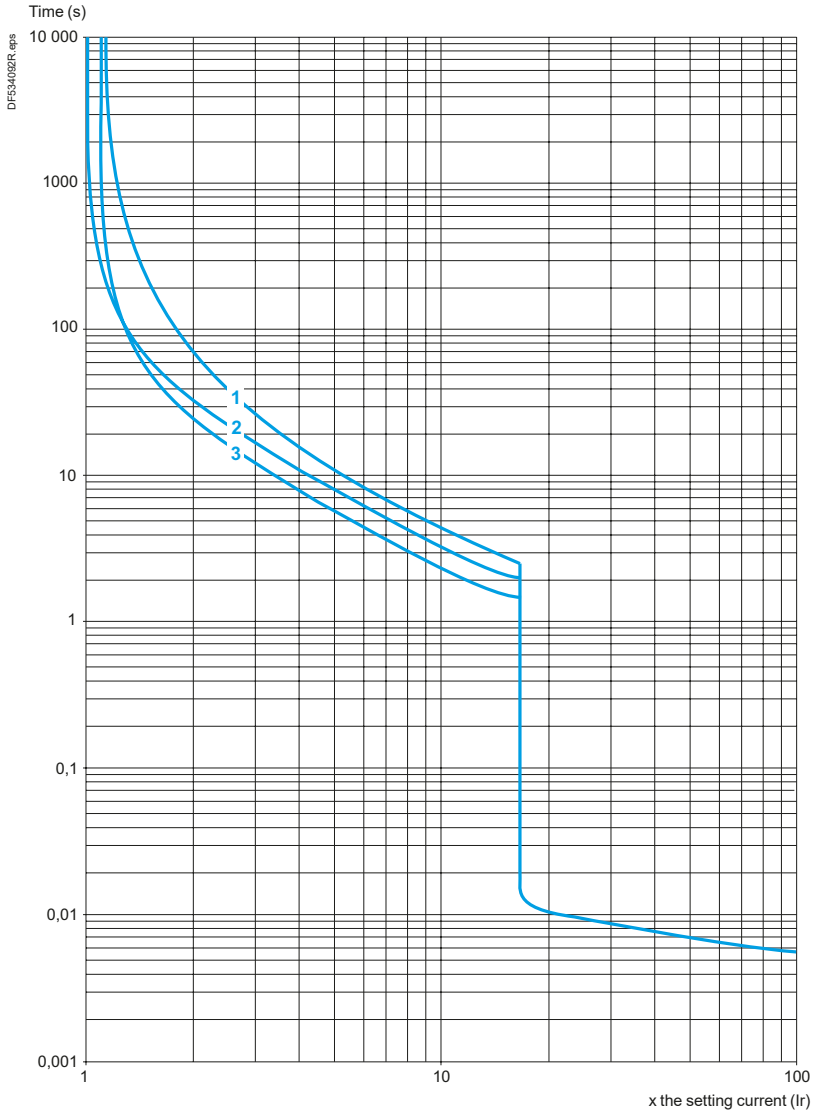
★ *> 100 kA.*
● *Cable c.s.a. protected.*
*(1) As % of Icu.*
*(2) Cable c.s.a. not protected.*
*(3) With limiter **LA9LB920**.*

References:
pages B6/14 to B6/18
Curves:
pages B6/83 to B6/86
Dimensions:
pages B6/93 to B6/98

## Curves

### Tripping curves for GV2L or LE combined with thermal overload relay LRD or LR2K

**Average operating times at 20 °C related to multiples of the setting current**




1 3 poles from cold state
2 2 poles from cold state
3 3 poles from hot state

Ref.
Motor circuit breakers

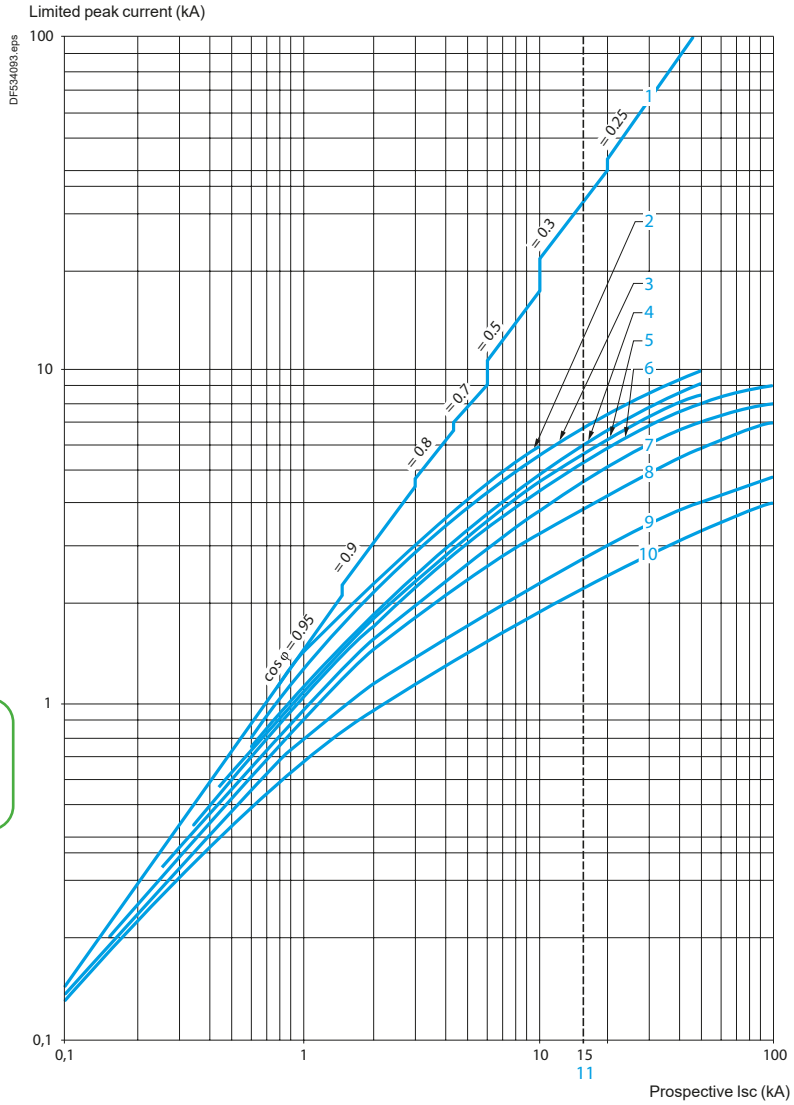
References:
pages B6/12 and B6/13
Characteristics:
pages B6/72 to B6/76
Dimensions:
pages B6/90 to B6/92, B6/99

# Curves

## Current limitation on short-circuit for GV2L and GV2LE only (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




**1** Maximum peak current
**2** 32 A
**3** 25 A
**4** 18 A
**5** 14 A
**6** 10 A
**7** 6.3 A
**8** 4 A
**9** 2.5 A
**10** 1.6 A
**11** Limit of rated ultimate breaking capacity on short-circuit of GV2LE (14, 18, 23 and 25 A ratings).

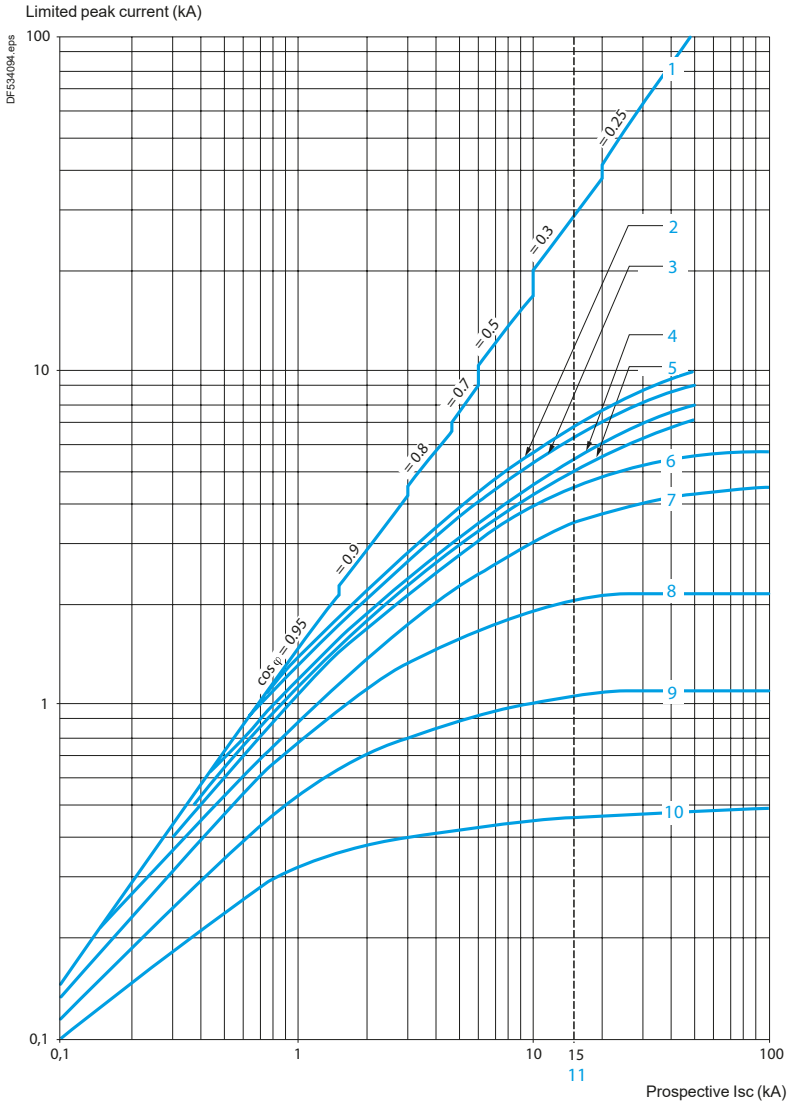
Ref.
Motor circuit breakers

# Curves

## Current limitation on short-circuit for GV2L and GV2LE + thermal overload relay LRD or LR2K (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




**1** Maximum peak current
**2** 32 A
**3** 25 A
**4** 18 A
**5** 14 A
**6** 10 A
**7** 6.3 A
**8** 4 A
**9** 2.5 A
**10** 1.6 A
**11** Limit of rated ultimate breaking capacity on short-circuit of GV2LE (14, 18, 23 and 25 A ratings).

Ref.
Motor circuit breakers

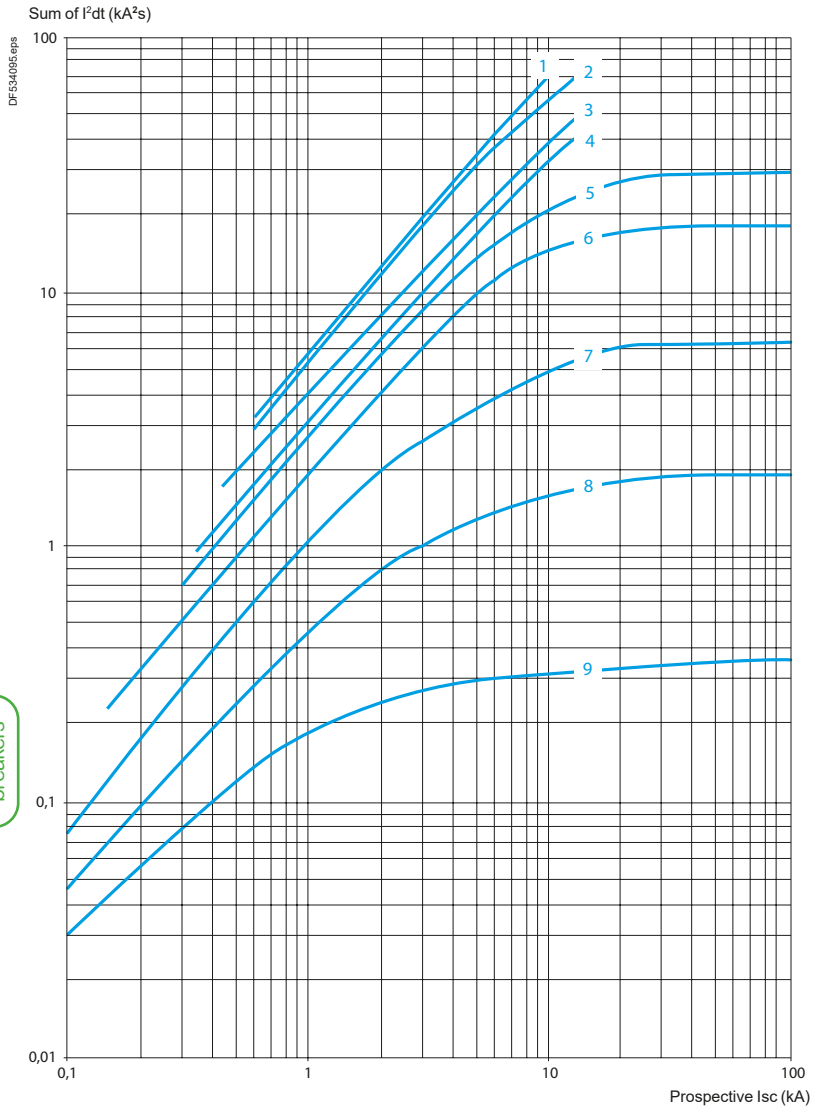
References:
pages B6/12 and B6/13
Characteristics:
pages B6/72 to B6/76
Dimensions:
pages B6/90 to B6/92, B6/99

# Curves

## Thermal limit on short-circuit for GV2LE only

### Thermal limit in kA²s in the magnetic operating zone

Sum of I²dt = f (prospective Isc) at 1.05 Ue = 435 V




**1** 32 A
**2** 25 A
**3** 18 A
**4** 14 A
**5** 10 A
**6** 6.3 A
**7** 4 A
**8** 2.5 A
**9** 1.6 A

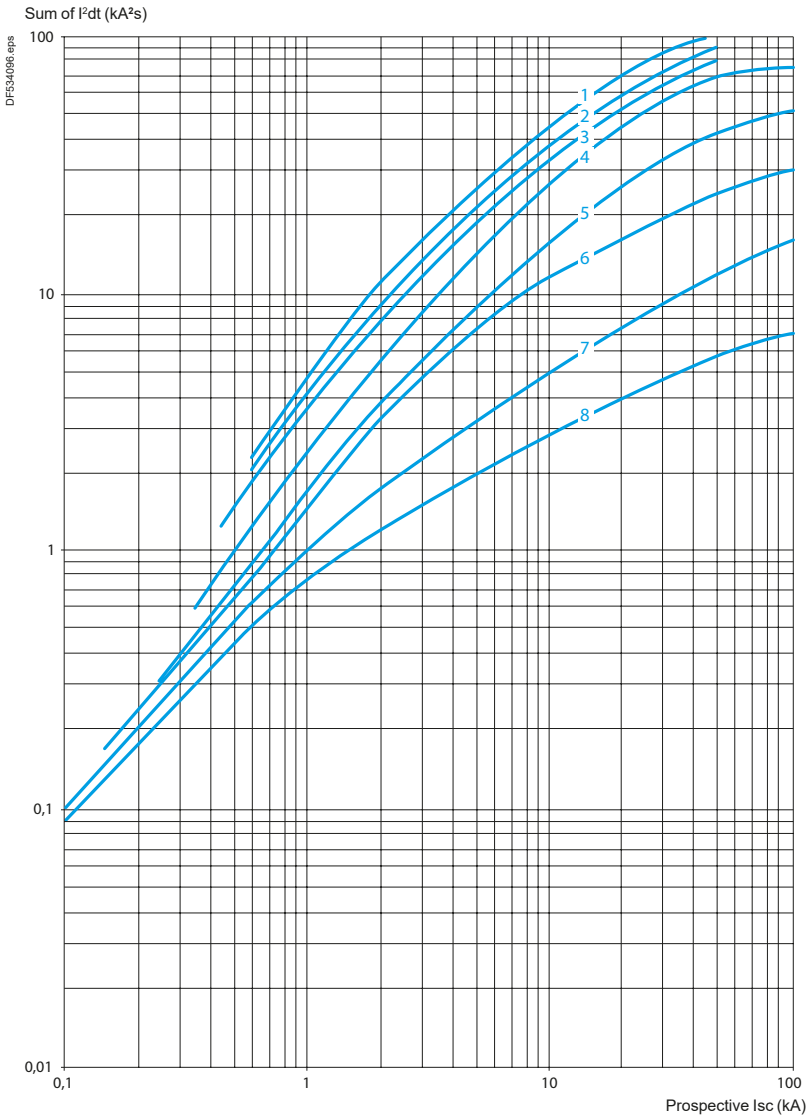
Ref.
Motor circuit breakers

# Curves

## Thermal limit on short-circuit for GV2L only

### Thermal limit in kA²s in the magnetic operating zone

Sum of I²dt = f (prospective Isc) at 1.05 Ue = 435 V




1 25 A and 32 A
2 18 A
3 14 A
4 10 A
5 6.3 A
6 4 A
7 2.5 A
8 1.6 A

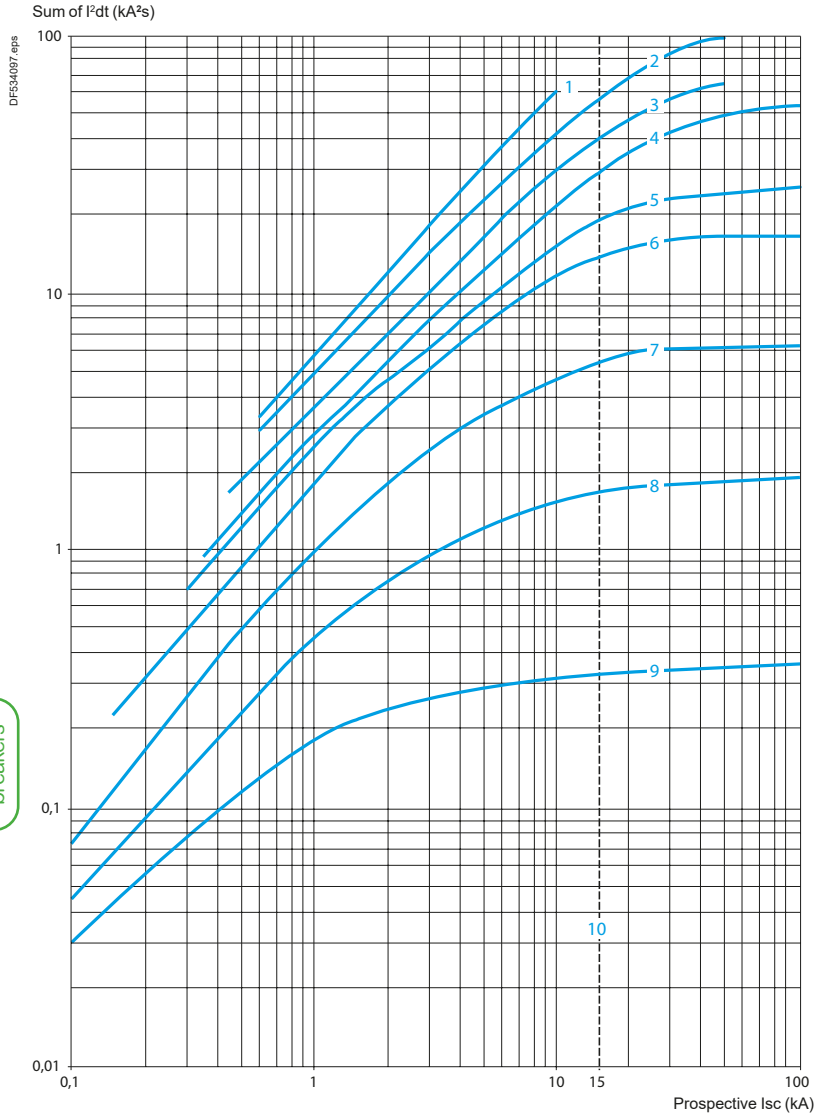
Ref.
Motor circuit breakers

# Curves

## Thermal limit on short-circuit for GV2L and GV2LE + thermal overload relay LRD or LR2K

### Thermal limit in kA²s in the magnetic operating zone

Sum of I²dt = f (prospective Isc) at 1.05 Ue = 435 V



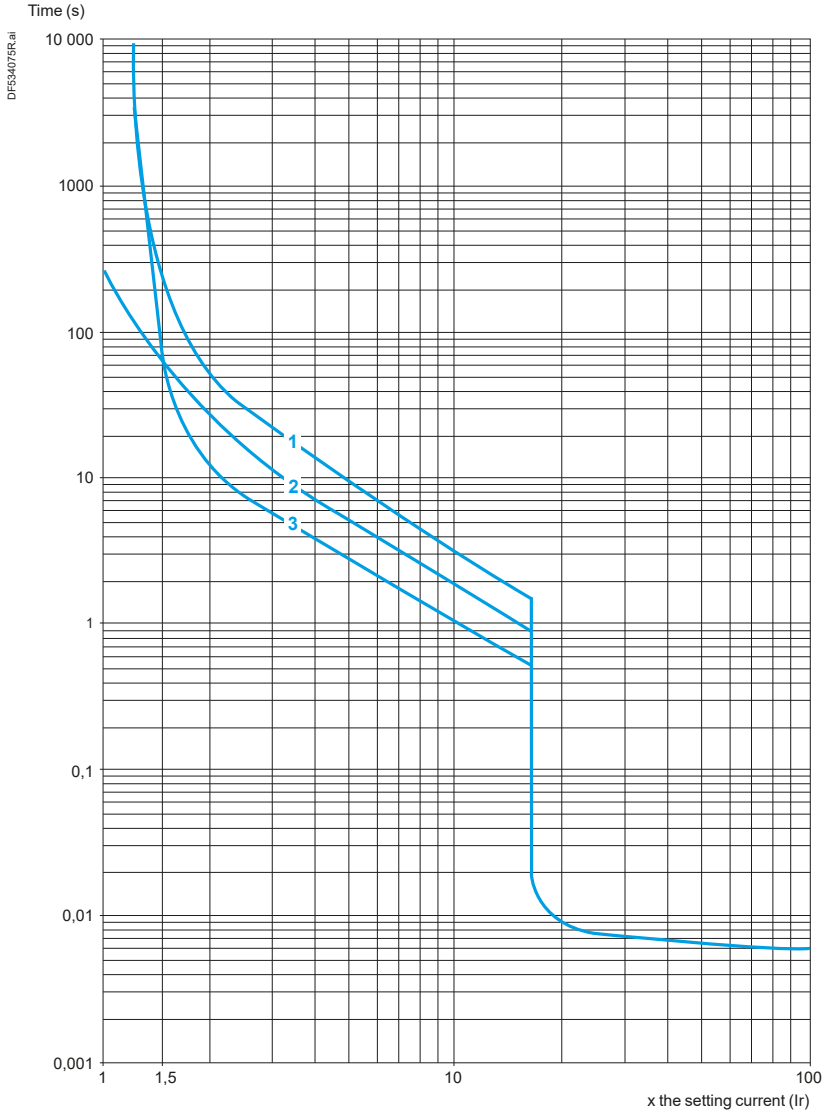

**1** 32 A (GV2LE32)
**2** 25 A and 32 A (GV2L32)
**3** 18 A
**4** 14 A
**5** 10 A
**6** 6.3 A
**7** 4 A
**8** 2.5 A
**9** 1.6 A
**10** Limit of rated ultimate breaking capacity on short-circuit of GV2LE (14, 18, 23 and 25 A ratings).

Ref.
Motor circuit breakers

# Curves

## Thermal-magnetic tripping curves for GV2ME, GV2RT and GV2P

### Average operating times at 20 °C related to multiples of the setting current




**1** 3 poles from cold state
**2** 2 poles from cold state
**3** 3 poles from hot state

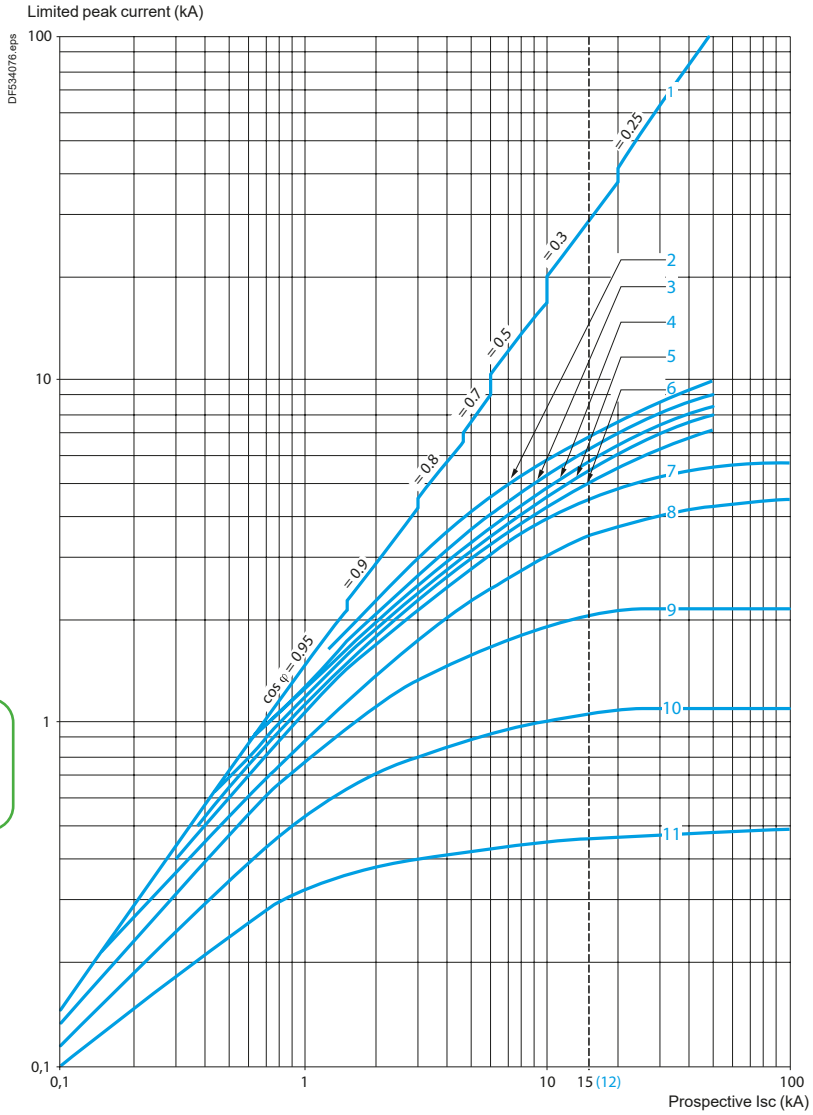
Ref.
Motor circuit breakers

# Curves

## Current limitation on short-circuit for GV2ME, GV2RT and GV2P (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




**1** Maximum peak current
**2** 24 - 32 A
**3** 20 - 25 A
**4** 17 - 23 A
**5** 13 - 18 A
**6** 9 - 14 A
**7** 6 - 10 A
**8** 4 - 6.3 A
**9** 2.5 - 4 A
**10** 1.6 - 2.5 A
**11** 1 - 1.6 A
**12** Limit of rated ultimate breaking capacity on short-circuit of GV2ME (14, 18, 23 and 25 A ratings)

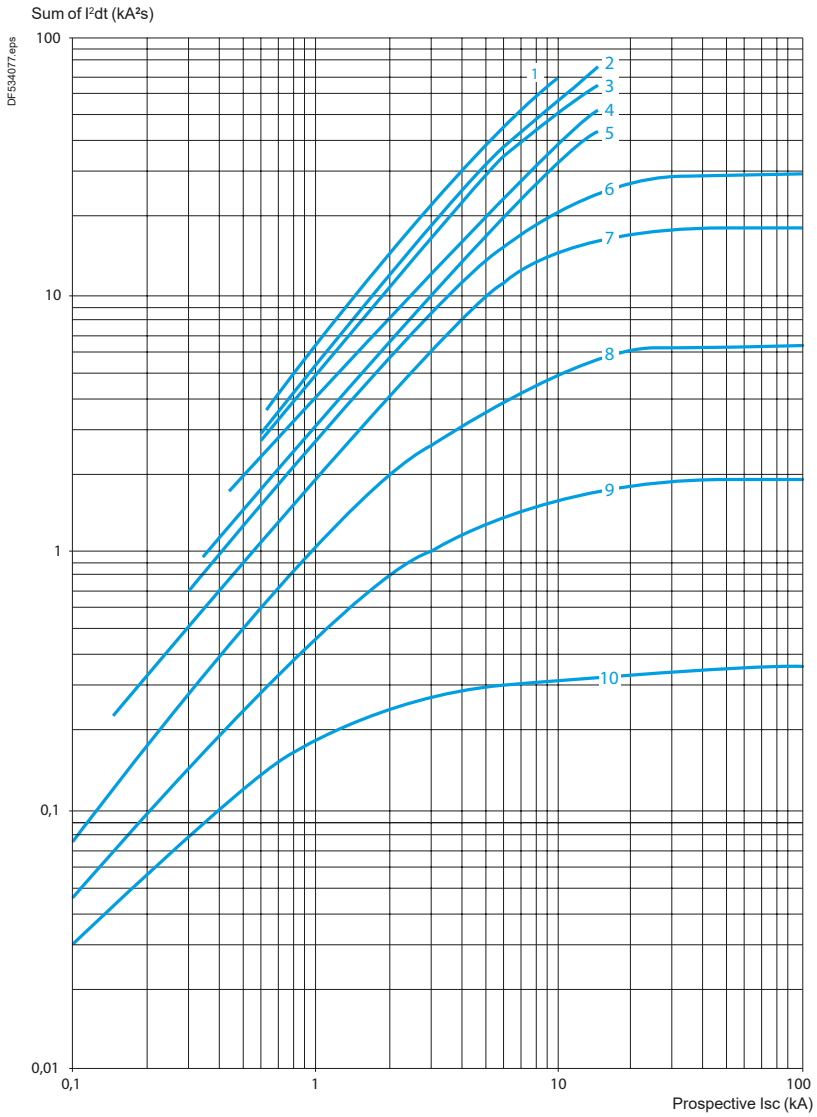
Ref.
Motor circuit breakers

# Curves

## Thermal limit on short-circuit for GV2ME and GV2RT

### Thermal limit in kA²s in the magnetic operating zone

Sum of I²dt = f (prospective Isc) at 1.05 Ue = 435 V




**1** 24 - 32 A
**2** 20 - 25 A
**3** 17 - 23 A
**4** 13 - 18 A
**5** 9 - 14 A
**6** 6 - 10 A
**7** 4 - 6.3 A
**8** 2.5 - 4 A
**9** 1.6 - 2.5 A
**10** 1 - 1.6 A

Ref.
Motor circuit breakers

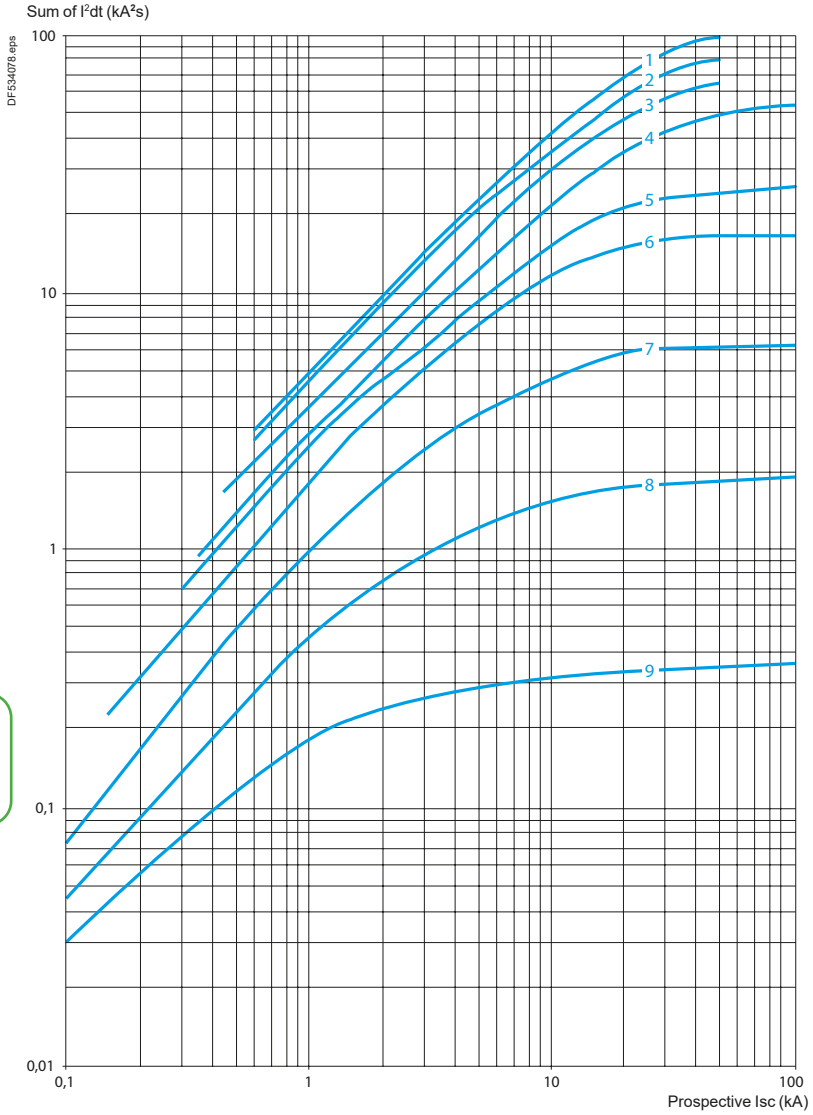
References:
pages B6/14 to B6/18
Characteristics:
pages B6/72 to B6/76
Dimensions:
pages B6/93 to B6/99

# Curves

## Thermal limit on short-circuit for GV2P

### Thermal limit in kA²s in the magnetic operating zone

Sum of I²dt = f (prospective Isc) at 1.05 Ue = 435 V




**1** 20 - 25 A, 24 - 32 A
**2** 17 - 23 A
**3** 13 - 18 A
**4** 9 - 14 A
**5** 6 - 10 A
**6** 4 - 6.3 A
**7** 2.5 - 4 A
**8** 1.6 - 2.5 A
**9** 1 - 1.6 A

Ref.
Motor circuit breakers

# Characteristics

## Characteristics of GV2 electric trips

| Type of trip | | | GVAU●●● MN undervoltage trip | GVAX●●● MN undervoltage trip for GV2ME - safety device for dangerous machines | GVAS●●● MX shunt trip |
|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 690 | 500 | 690 |
| | Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1 | **V** | 600 | - | 600 |
| Operational voltage (Ue) | Conforming to IEC 60947-1 | **V** | 0.85...1.1 Uc | 0.85...1.1 Uc | 0.7...1.1 Uc |
| Drop-out voltage | | **V** | 0.7...0.35 Uc | 0.7...0.35 Uc | 0.75...0.2 Uc |
| Inrush consumption | ~ ⎓ | **VA** | 12 | 12 | 14 |
| Sealed consumption | ~ ⎓ | **VA** | 3.5 | 3.5 | 5 |
| Operating time | Conforming to IEC 60947-1 | **ms** | From the moment the voltage reaches its operational value until opening of the circuit breaker. 10...15 | | |
| On-load factor | | | 100 % | | |
| Cabling (screw clamp connection) | Number of conductors | | 2 or 4 | | |
| | Solid cable | **mm²** | 1...2.5 | | |
| | Flexible cable without cable end | **mm² AWG** | 0.75...2.5 | | |
| | Flexible cable with cable end | **mm²** | 0.75...2.5 | | |
| Tightening torque | | **N.m** | 1.4 max | | |
| Mechanical durability (C.O.: Close - Open) | | **C.O.** | 30000 (GV2ME and GV2P) | | |

Ref.
Motor circuit breakers

References:
page B6/21

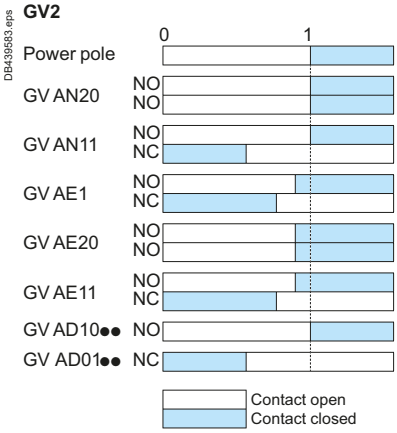
Dimensions:
pages B6/90 and B6/93

## Characteristics

| Type of contacts | | | Instantaneous auxiliary GVAN, GVAD | | | | | | | Fault signalling GVAD, GVAM11 (1) | | | | Instantaneous auxiliary GVAE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) (associated insulation coordination) | Conforming to IEC 60947-1 | **V** | 690 | | | | | | | 690 | | | | 250 (690 in relation to main circuit) | | | |
| | Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1 | **V** | 600 | | | | | | | 300 | | | | 300 | | | |
| Conventional thermal current (Ith) | Conforming to IEC 60947-5-1 | **A** | 6 | | | | | | | 2.5 | | | | 2.5 | | | |
| | Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1 | **A** | 5 | | | | | | | 1 | | | | 1 | | | |
| Mechanical durability (C.O.: Close - Open) | | **C.O.** | 100 000 | | | | | | | 1000 | | | | 100 000 | | | |
| Operational power and current conforming to IEC 60947-5-1. a.c. operation | | | AC-15/100 000 C.O. | | | | | | | AC-14/1000 C.O. | | | | AC-15/100 000 C.O. | | | |
| | **Rated operational voltage (Ue)** | **V** | **48** | **110 127** | **230 240** | **380 415** | **440** | **500** | **690** | **24** | **48** | **110 127** | **230 240** | **24** | **48** | **110 127** | **230 240** |
| Operation | Operational power, normal conditions | **VA** | 300 | 500 | 720 | 850 | 650 | 500 | 414 | 36 | 48 | 72 | 72 | 48 | 60 | 120 | 120 |
| | Occasional breaking and making capacities, abnormal conditions | **kVA** | 3 | 7 | 13 | 15 | 13 | 12 | 9 | 0.22 | 0.3 | 0.45 | 0.45 | 0.48 | 0.6 | 1.27 | 2.4 |
| | Rated operational current (Ie) | **A** | 6 | 4.5 | 3.3 | 2.2 | 1.5 | 1 | 0.6 | 1.5 | 1 | 0.5 | 0.3 | 2 | 1.25 | 1 | 0.5 |
| Operational power and current conforming to IEC 60947-5-1. d.c. | | | DC-13/100 000 C.O. | | | | | | | DC-13/1000 C.O. | | | | DC-13/100 000 C.O. | | | |
| | **Rated operational voltage (Ue)** | **V** | **24** | **48** | **60** | **110** | **240** (2) | **–** | **–** | **24** | **48** | **60** | **–** | **24** | **48** | **60** | **–** |
| Operation | Operational power, normal conditions | **W** | 140 | 240 | 180 | 140 | 120 | – | – | 24 | 15 | 9 | – | 24 | 15 | 9 | – |
| | Occasional breaking and making capacities, abnormal conditions | **W** | 240 | 360 | 240 | 210 | 180 | – | – | 100 | 50 | 50 | – | 100 | 50 | 50 | – |
| | Rated operational current (Ie) | **A** | 6 | 5 | 3 | 1.3 | 0.5 | – | – | 1 | 0.3 | 0.15 | – | 1 | 0.3 | 0.15 | – |
| Low power switching reliability of contact | | | **GVAE**: Number of failures for "n" million operating cycles (17 V-5 mA): = $10^{-6}$ | | | | | | | | | | | | | | |
| Minimum operational conditions | | **V** | 17 | | | | | | | | | | | | | | |
| | | **mA** | 5 | | | | | | | | | | | | | | |
| Short-circuit protection | | | By **GB2CB●●** circuit breaker (rating according to operational current for Ue ⩽ 415 V) or by gG fuse 10 A max | | | | | | | | | | | **GB2CB06** or gG fuse 10 A max | | | |
| Cabling, screw clamp terminals | Number of conductors | | **1** | | | **2** | | | | | | | | | | | |
| | Solid cable | **mm²** | 1…2.5 | | | 1…2.5 | | | | | | | | | | | |
| | Flexible cable without cable end | **mm²** | 0.75…2.5 | | | 0.75…2.5 | | | | | | | | | | | |
| | Flexible cable with cable end | **mm²** | 0.75…1.5 | | | 0.75…1.5 | | | | | | | | | | | |
| | Tightening torque | **N.m** | 1.4 max | | | 1.4 max | | | | | | | | | | | |
| Cabling, spring terminal connections | | | **GVAN** only | | | | | | | | | | | | | | |
| | Flexible cable without cable end | **mm²** | 0.75…2.5 | | | 0.75…2.5 | | | | – | | | | 0.75…1.5 | | | |

**Operation of instantaneous auxiliary contacts**

**GV2**




**Operation of fault signalling contacts**

**GVAM11**
Change of state following tripping on short-circuit.

**GVAD10●●** and **GVAD01●●**
Change of state following tripping on short-circuit, overload or undervoltage.

*(1) For application example of fault signalling contact and short-circuit signalling contact.*
*(2) Add an RC circuit type **LA4D** to the load terminals.*

References: page B6/21
Dimensions: pages B6/90 and B6/93

# Characteristics

## Characteristics of 3-pole busbars GV2G●●●

| | | | GV2G●●● |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 690 |
| Conventional thermal current (Ith) | Conforming to IEC 60439-1 | **A** | 63 |
| Rated operational current (Ie) | | **A** | 63 |
| Permissible peak current (I peak) | | **kA** | 11 |
| Permissible thermal limit ($I^2t$) | | **$kA^2s$** | 104 |
| Degree of protection | Conforming to IEC 60529 | | IP 20 |
| Terminal block | | | Yes |

## Characteristics of terminal blocks GV2G05 and GV1G09 (for GV2ME and GV2P)

| | | | | |
|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 690 | |
| Conventional thermal current (Ith) | Conforming to IEC 60439-1 | **A** | 63 | |
| Rated operational current (Ie) | | **A** | 63 | 115 |
| Degree of protection | Conforming to IEC 60529 | | IP 20 | |
| Connection | Solid cable | **$mm^2$** | 1 x 1.5 to 25 or 2 x 1.5 to 6 | |
| | Flexible cable without cable end | **$mm^2$** | 1 x 1.5 to 16 or 2 x 1.5 to 4 | |
| | Flexible cable with cable end | **$mm^2$** | 1 x 1.5 to 16 or 2 x 1.5 to 4 | |
| | Flexible or solid cable AWG | | 1 AWG 4 | |
| Tightening torque | Connector | **N.m** | 2.2 | |
| | Screw clamp terminals | **N.m** | 1.7 | |

## Characteristics of current limiters (GV2ME and GV2P)

| **Type** | | | **GV1L3** | | **LA9LB920** | |
|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 690 | | 690 | |
| Conventional thermal current (Ith) | Conforming to IEC 60947-1 | **A** | 63 | | 63 | |
| Rated operational current (Ie) | | **A** | 32 | | 32 | |
| Operating threshold | rms current | **A** | 1500 (non adjustable threshold) | | 1000 (non adjustable threshold) | |
| Connection | | | **1 conductor** | **2 conductors** | **1 conductor** | **2 conductors** |
| | Solid cable | **$mm^2$** | 1.5…25 | 1.5…10 | 1.5…25 | 1.5…10 |
| | Flexible cable without cable end | **$mm^2$** | 1.5…25 | 2.5…10 | 1.5…25 | 1.5…10 |
| | Flexible cable with cable end | **$mm^2$** | 1.5…16 | 1.5… 4 | 1.5…16 | 1.5… 4 |
| Tightening torque | | **N.m** | 2.2 | | | |

Ref.
Motor circuit breakers

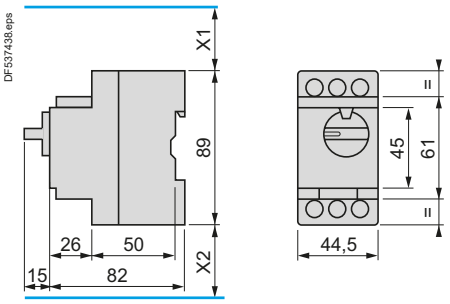
References:
page B6/21

Dimensions:
page B6/97

# Dimensions and mounting

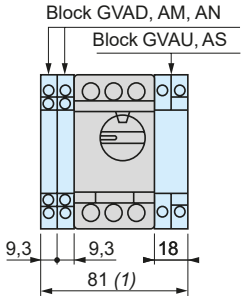
## GV2L

### Dimensions



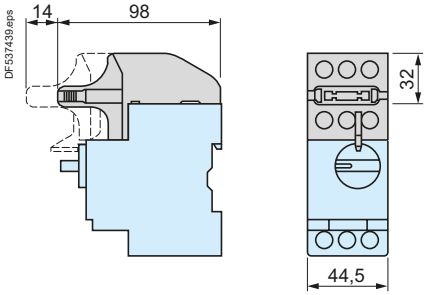

*X1 Electrical clearance = 40 mm for Ue ⩽ 415 V, or 80 mm for Ue = 440 V, or 120 mm for Ue = 500 and 690 V.*
*X2 = 40 mm.*

### GVAD, AM, AN, AU, AS



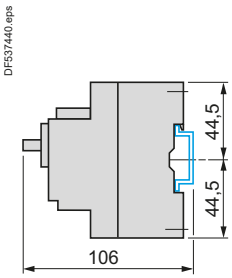

*(1) Maximum.*

### GV2AK00

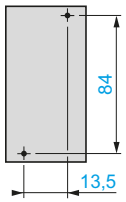



### Mounting

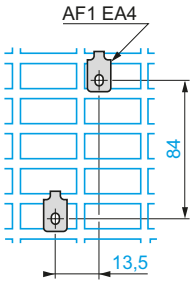
#### On rail AM1DE200, AM1ED200 (35 x 15)



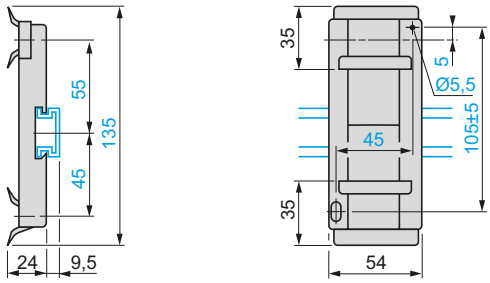

#### Panel mounted




#### On pre-slotted mounting plate AM1PA



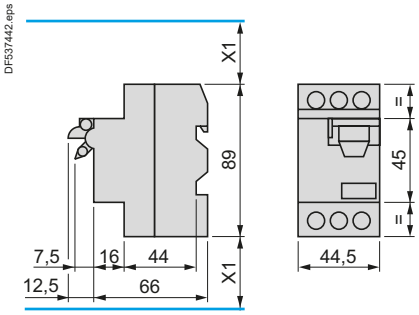

### Adapter plate GK2AF01




### 7.5 mm height compensation plate GV1F03

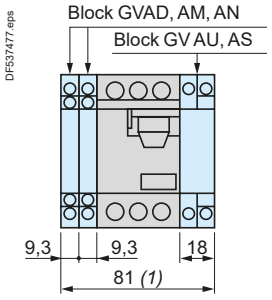
## GV2LE

### Dimensions



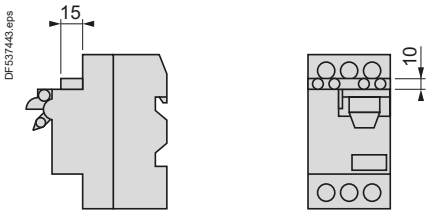

*X1 Electrical clearance = 40 mm for Ue ⩽ 690 V.*

### GVAD, AM, AN, AU, AS



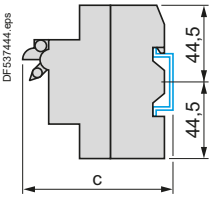

*(1) Maximum.*

### GVAE



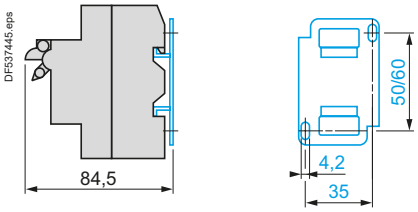

### Mounting

#### On 35 mm ⎓ rail

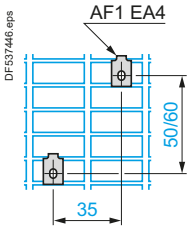



*c = 80 on AM1DP200 (35 x 7.5) and 88 on AM1DE200, ED200 (35 x15)*

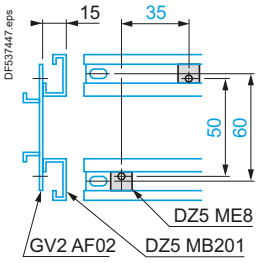
#### On panel with adapter plate GV2AF02




#### On pre-slotted plate AM1PA




#### On rails DZ5MB201

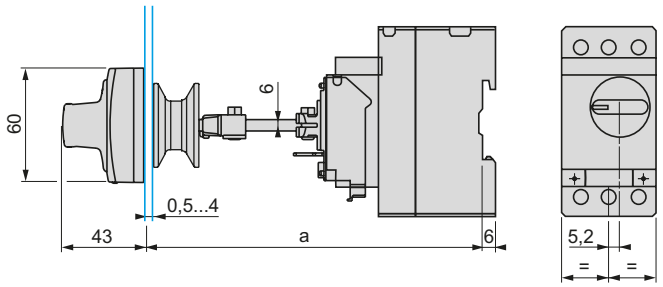



References:
pages B6/12 to B6/13
Characteristics:
pages B6/72 to B6/76
Curves:
pages B6/77 to B6/86

## Mounting

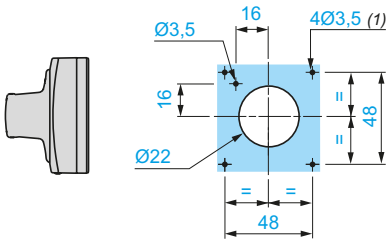
### Mounting of external operator GV2APN01, GV2APN02 or GV2APN04 for motor circuit breakers GV2L

DB127415.eps




**Door cut-out**

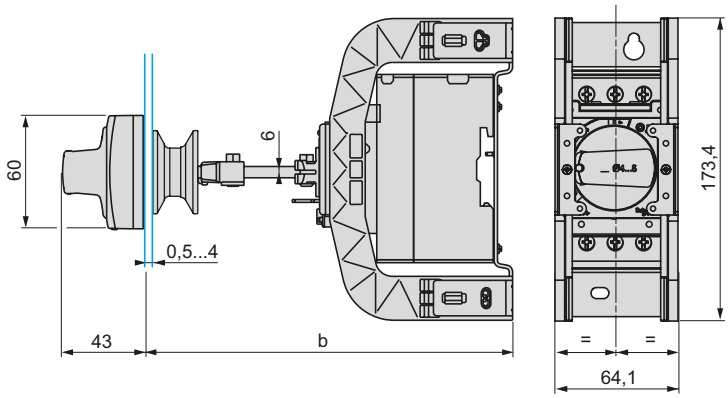
DB126634.eps




*(1) For IP65 only.*

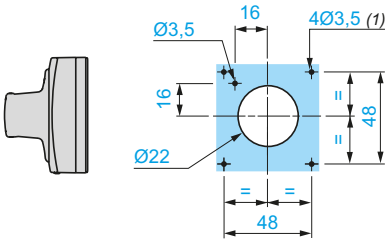
### Mounting of external operator GVAPH02 for motor circuit breakers GV2L

DB127414.eps




**Door cut-out**

DB126634.eps

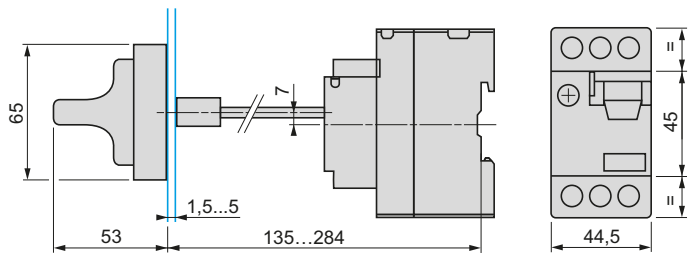



*(1) For IP65 only.*

| | a | | b | |
|---|---|---|---|---|
| | Mini | Maxi | Mini | Maxi |
| **GV2APN●●** | 140 | 250 | | |
| **GV2APN●● + GVAPH02** | | | 151 | 250 |
| **GV2APN●● + GVAPK11** | 250 | 434 | - | - |
| **GV2APN●● + GVAPH02 + GVAPK11** | - | - | 250 | 445 |

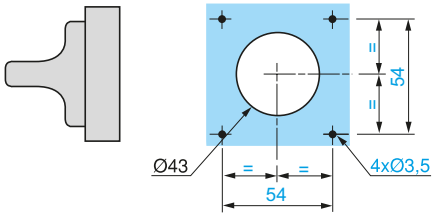
### Mounting of external operator GV2AP03 for GV2LE

DB126649.eps




**Door cut-out**

DF569008.eps

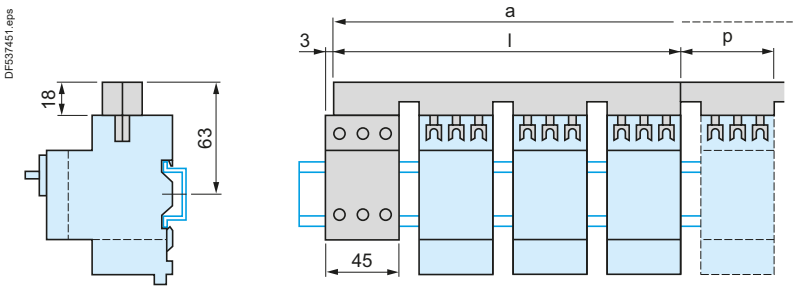



References:
page B6/24

# Dimensions and mounting

## GV2LE

### Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05

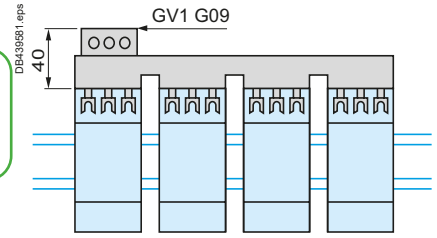



| | l | p |
|---|---|---|
| **GV2G445** (4 x 45 mm) | 179 | 45 |
| **GV2G454** (4 x 54 mm) | 206 | 54 |
| **GV2G472** (4 x 72 mm) | 260 | 72 |

| | a | | | |
|---|---|---|---|---|
| **Number of tap-offs** | **5** | **6** | **7** | **8** |
| **GV2G445** | 224 | 269 | 314 | 359 |
| **GV2G454** | 260 | 314 | 368 | 422 |
| **GV2G472** | 332 | 404 | 476 | 548 |

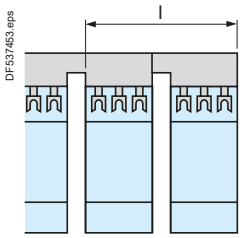
## Sets of busbars GV2LE

### Sets of busbars GV2G●●● with term. block GV1G09

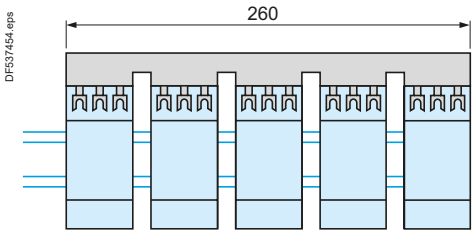



| | l |
|---|---|
| **GV2G245** (2 x 45 mm) | 89 |
| **GV2G254** (2 x 54 mm) | 98 |
| **GV2G272** (2 x 72 mm) | 116 |

### Sets of busbars GV2G245, GV2G254, GV2GR272

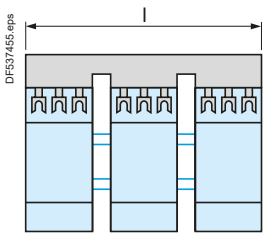



### Set of busbars GV2G554




| | l |
|---|---|
| **GV2G345** (3 x 45 mm) | 134 |
| **GV2G354** (3 x 54 mm) | 152 |

### Sets of busbars GV2G345 and GV2G354

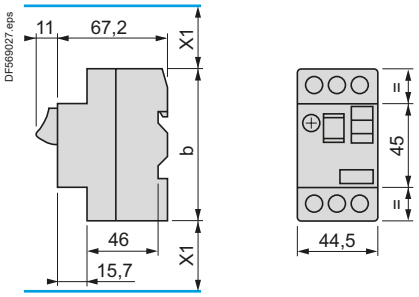



Ref.
Motor circuit breakers
References: page B6/23
Characteristics: page B6/89

# Dimensions and mounting

## Dimensions

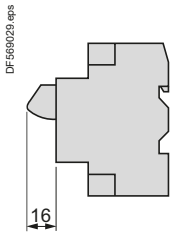
### GV2ME



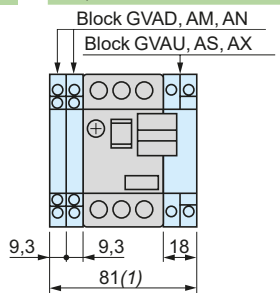

| | b |
|---|---|
| **GV2ME●●** | 89 |
| **GV2ME●●3** | 101 |

*(1) Maximum.*
*X1 Electrical clearance = 40 mm for Ue ≤ 690 V*

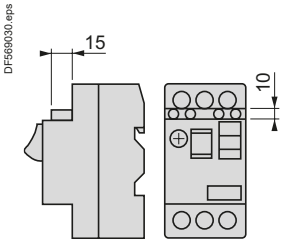
### GVAX



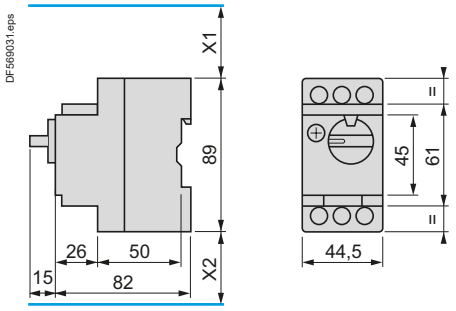

### GVAD, AM, AN, AU, AS, AX




### GVAE

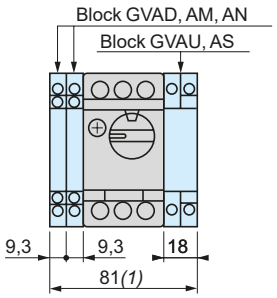



### GV2P

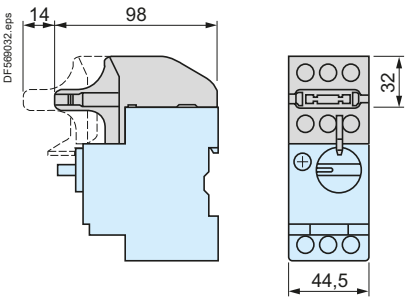



*(1) Maximum.*
*X1 Electrical clearance = 40 mm for Ue ≤ 415 V, or 80 mm for Ue = 440 V, or 120 mm for Ue = 500 and 690 V*
*X2 = 40 mm*

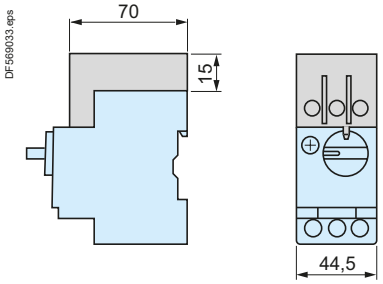
### GVAD, AM, AN, AU, AS




### GV2AK00




### GV2GH7




References:
pages B6/14 to B6/17

Characteristics:
pages B6/72 to B6/76

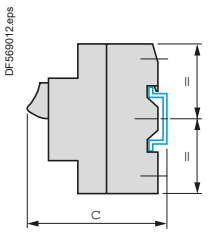
Curves:
pages B6/83 to B6/86

# Dimensions and mounting

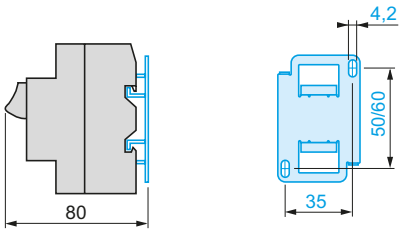
## Mounting

### GV2ME

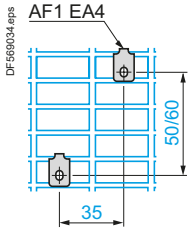
#### On 35 mm ⊔ rail



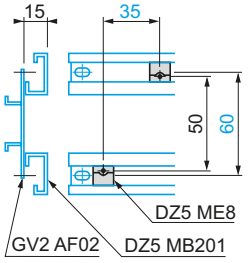

#### On panel with adapter plate GV2AF02




#### On pre-slotted plate AM1PA



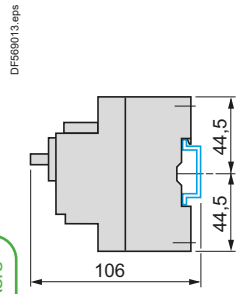

#### On rails DZ5MB201



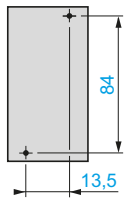

*c = 78.5 on AM1 DP200 (35 x 7.5)*
*c = 86 on AM1 DE200, ED200 (35 x 15)*

### GV2P

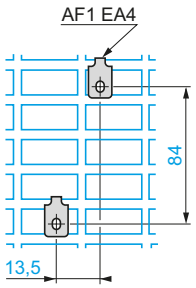
#### On rail AM1DE200, ED200 (35 x 15)



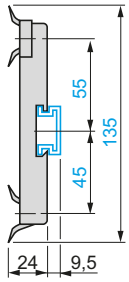

#### Panel mounted

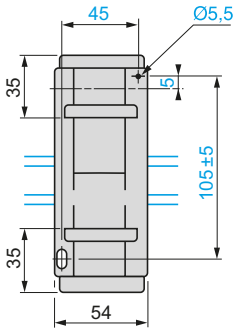



#### On pre-slotted plate AM1PA




#### Adapter plate GK2AF01

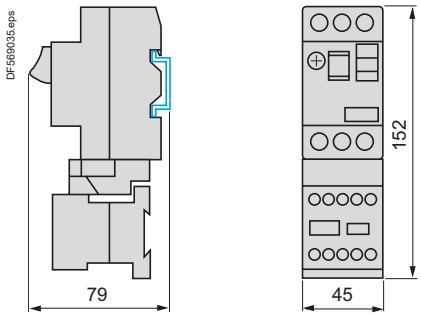



## Dimensions

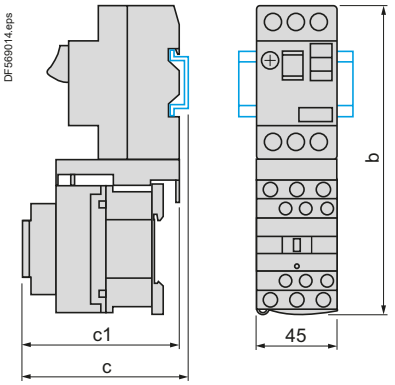
### GV2AF01

#### Combination GV2ME + k contactor

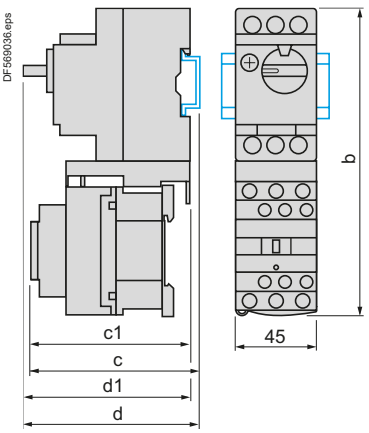



### GV2AF3

#### Combination GV2ME + d contactor




#### Combination GV2P + d contactor




| GV2ME + | LC1D09 ...D18 | LC1D25 and D32 |
|---|---|---|
| **b** | 176.4 | 186.8 |
| **c1** | 94.1 | 100.4 |
| **c** | 99.6 | 105.9 |

| GV2P + | LC1D09 ...D18 | LC1D25 and D32 |
|---|---|---|
| **b** | 176.4 | 186.8 |
| **c1** | 100.1 | 106.4 |
| **c** | 105.6 | 111.9 |
| **d1** | 95 | 95 |
| **d** | 100.5 | 100.5 |

References:
pages B6/14 to B6/17

Characteristics:
pages B6/72 to B6/76

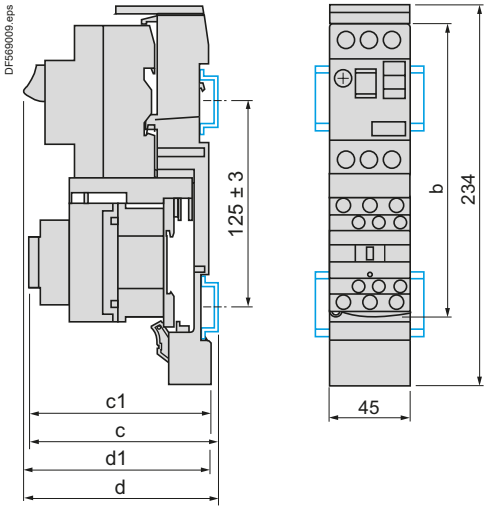
Curves:
pages B6/83 to B6/86

# Dimensions and mounting

## Dimensions

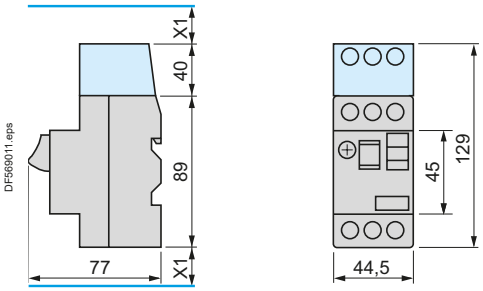
### GV2AF4 + LAD311

**Combination GV2ME + d contactor**



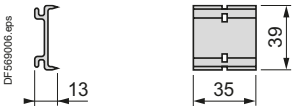

| GV2ME + | LC1D09…D18 | LC1D25 and D32 |
|---|---|---|
| **b** | 176.4 | 186.8 |
| **c1** | 130.1 | 136.4 |
| **c** | 135.6 | 141.9 |
| **d1** | 107 | 107 |
| **d** | 112.5 | 112.5 |

### GV2ME + GV1L3 (current limiter)




*X1 = 10 mm for Ue = 230 V*
*or 30 mm for 230 V < Ue ≤ 690 V*

### 7.5 mm height compensation plate GV1F03

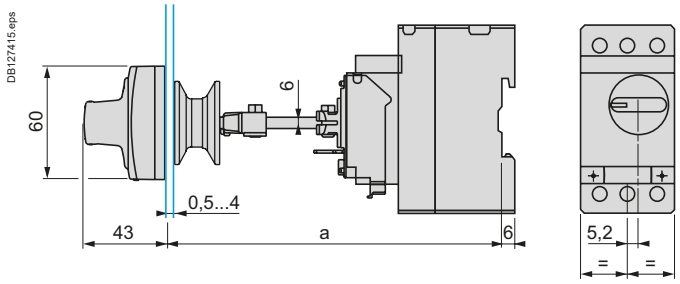



Ref.
Motor circuit breakers

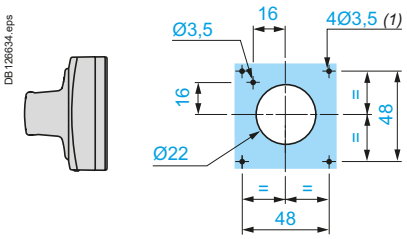
# Dimensions and mounting

## Mounting

### Mounting of external operator GV2APN01, GV2APN02 or GV2APN04 for motor circuit breakers GV2P

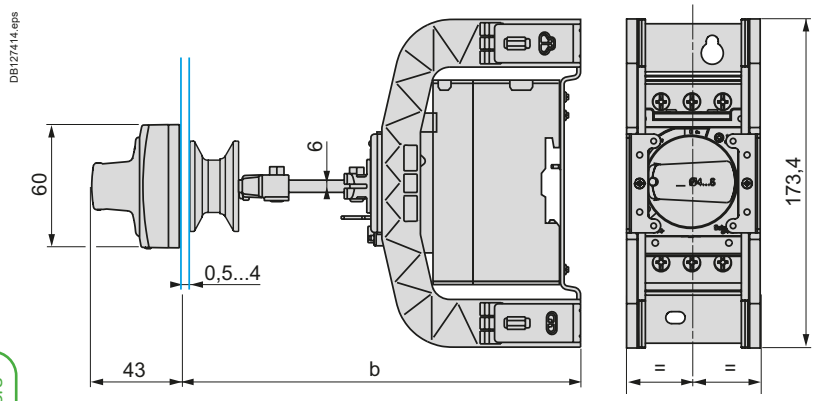



**Door cut-out**

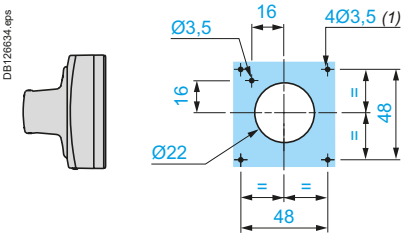



*(1) For IP65 only.*

### Mounting of external operator GVAPH02 for motor circuit breakers GV2P




**Door cut-out**




*(1) For IP65 only.*

| | a | | b | |
|---|---|---|---|---|
| | Mini | Maxi | Mini | Maxi |
| **GV2APN●●** | 140 | 250 | | |
| **GV2APN●● + GVAPH02** | | | 151 | 250 |
| **GV2APN●● + GVAPK11** | 250 | 434 | - | - |
| **GV2APN●● + GVAPH02 + GVAPK11** | - | - | 250 | 445 |

Ref.
Motor circuit breakers

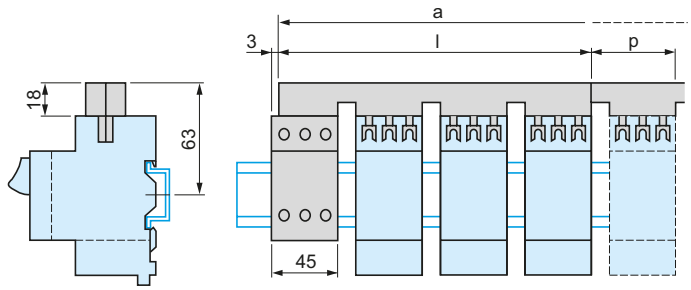
References:
page B6/24

# Dimensions and mounting

## GV2ME, GV2P

### Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05

DF569037.eps

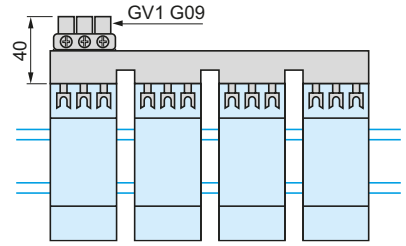



| | l | p |
|---|---|---|
| **GV2G445** (4 x 45 mm) | 179 | 45 |
| **GV2G454** (4 x 54 mm) | 206 | 54 |
| **GV2G472** (4 x 72 mm) | 260 | 72 |

| | a | | | |
|---|---|---|---|---|
| **Number of tap-offs** | **5** | **6** | **7** | **8** |
| **GV2G445** | 224 | 269 | 314 | 359 |
| **GV2G454** | 260 | 314 | 368 | 422 |
| **GV2G472** | 332 | 404 | 476 | 548 |

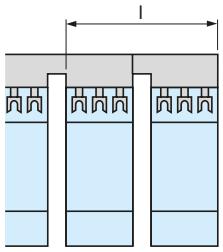
### Sets of busbars GV2G●●● with terminal block GV1G09

DB439582.eps




### Sets of busbars GV2G245, GV2G254, GV2G272

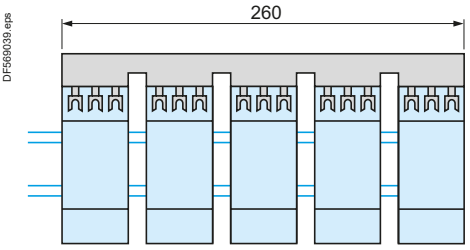
DF569038.eps




| | l |
|---|---|
| **GV2G245** (2 x 45 mm) | 89 |
| **GV2G254** (2 x 54 mm) | 98 |
| **GV2G272** (2 x 72 mm) | 116 |

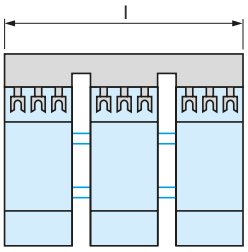
### Sets of busbars GV2G554

DF569039.eps




### Sets of busbars GV2G345 and GV2G354

DF569040.eps



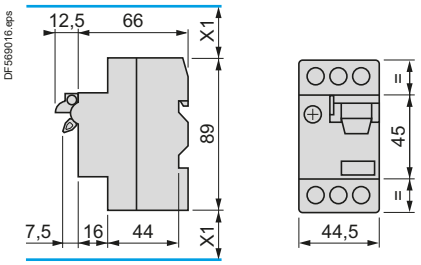

| | l |
|---|---|
| **GV2G345** (3 x 45 mm) | 134 |
| **GV2G354** (3 x 54 mm) | 152 |

References:
page B6/23

# Dimensions and mounting

## GV2RT

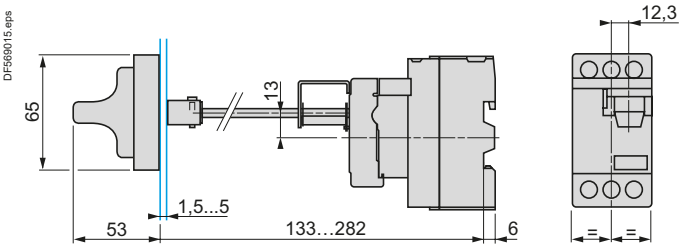
### Dimensions



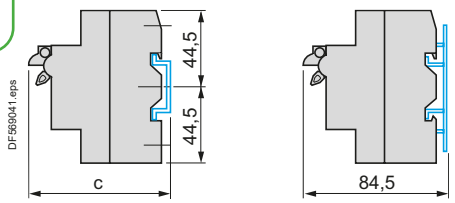

*X1: Electrical clearance = 40 mm for Ue < 690 V*

### Mounting

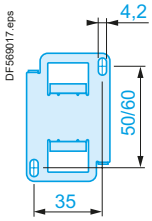
#### Mounting of external operator GV2AP03



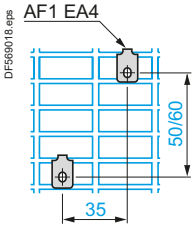

#### On 35 mm ⎓ rail



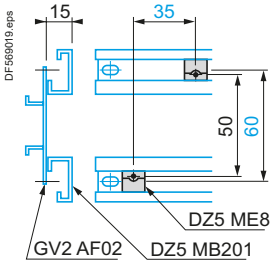

#### On panel with adapter plate GV2AF02




#### On pre-slotted plate AM1PA




#### On rails DZ5MB



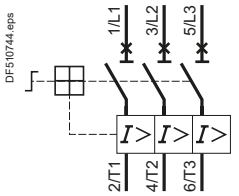

*c = 80 on AM1DP200 (35 x 7.5)*
*c = 88 on AM1DE200, ED200 (35 x 15)*

Ref.
Motor circuit breakers

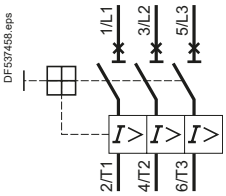
# Schemes

## Schemes

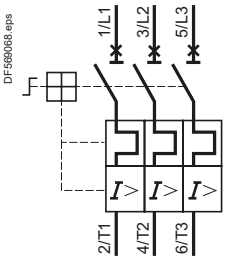
### GV2L●●



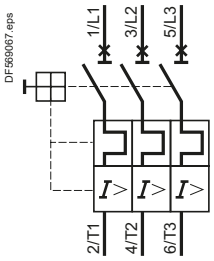

### GV2LE●●




### GV2P●●

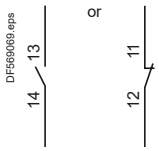



### GV2ME●● and GV2RT

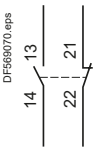



### Front mounting add-on contact blocks Instantaneous auxiliary contacts

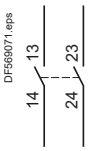
#### GVAE1




#### GVAE11

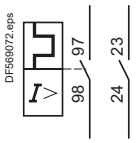



#### GVAE20

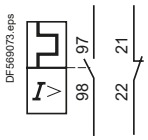



### Front mounting add-on contact blocks Instantaneous auxiliary contacts and fault signalling contacts

#### GVAED101

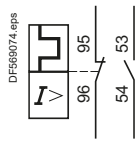



#### GVAED011

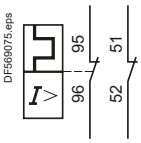



### Side mounting add-on contact blocks Instantaneous auxiliary contacts and fault signalling contacts

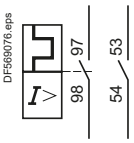
#### GVAD0110



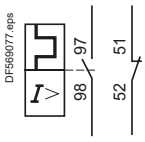

#### GVAD0101




#### GVAD1010

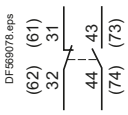



#### GVAD1001

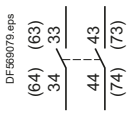



### Instantaneous auxiliary contacts

#### GVAN11

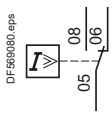



#### GVAN20



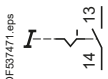

### Short-circuit signalling contacts

#### GVAM11

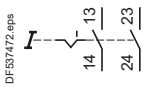



### Start-Stop signalling contact blocks

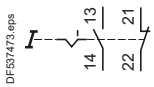
#### GK2AX10




#### GK2AX20

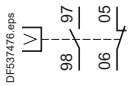



#### GK2AX50



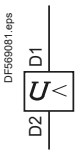

### Fault signaling contact blocks

#### GK2AX52

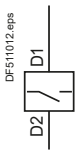



### Voltage trips

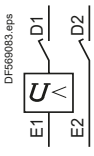
#### GVAU●●●




#### GVAS●●●

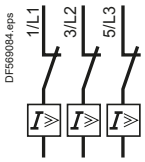



#### GVAX●●●

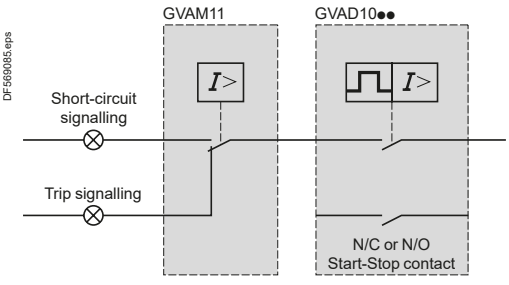



### Current limiter

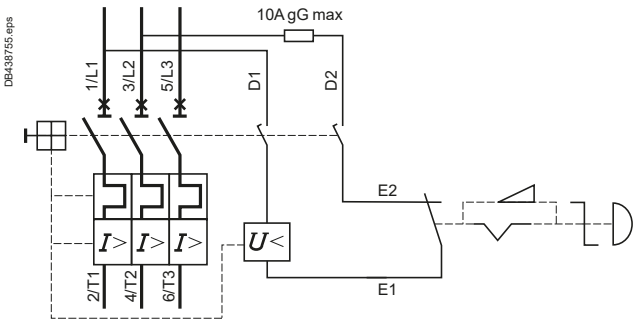
#### GV1L3




### Use of fault signalling contact and short-circuit signalling contact




### Connection of undervoltage trip for dangerous machines (conforming to INRS) on GV2ME only




References:
pages B6/11 to B6/24

# TeSys Deca - Frame 3
## 5 to 45 kW

# Characteristics

## Environment

| Circuit breaker type | | | | GV3L | GV3P |
|---|---|---|---|---|---|
| Conforming to standards | | | | IEC/EN 60947-4-1<br>IEC/EN 60947-2<br>UL 60947-4-1<br>CSA C22.2 n° 60947-4-1 | IEC/EN 60947-4-1<br>IEC/EN 60947-2<br>UL 60947-4-1<br>CSA C22.2 n° 60947-4-1 |
| Product certifications | | | | CCC, EAC, BV, LROS,<br>DNV-GL, ABS, UL [1], CSA [2], UKCA | CCC, UL[4], CSA[5], EAC, ATEX,<br>BV, LROS, DNV-GL, ABS, UKCA |
| Climatic withstand | | | | According to IACS E10 | |
| Degree of protection (front face) | Conforming to IEC 60529 | Open mounted | | Against direct finger contact: IP20 | |
| | | In enclosure | | - | **GV3PC01** and<br>**GV3PC02**: IP55 |
| Shock resistance | Conforming to IEC 60068-2-27 | | | On: 15 gn -11 ms (On: 5 gn -11 ms for GV3L73, GV3L80, GV3P73, GV3P80)<br>Off: 30 gn -11 ms | |
| Vibration resistance [3] | Conforming to IEC 60068-2-6 | | | 4 gn<br>(5…300 Hz) | |
| Ambient air temperature | Storage | | **°C** | -40…+80 | |
| | Operation | Open mounted | **°C** | -20…+60 [3] | |
| | | In enclosure | **°C** | – | -20…+40 |
| Temperature compensation | | Open mounted | **°C** | – | -20…+60 |
| | | In enclosure | **°C** | – | -20…+40 |
| Flame resistance | Conforming to IEC 60695-2-11 | | **°C** | 960 | |
| Maximum operating altitude | | | **m** | 3000 | |
| Suitable for isolation | Conforming to IEC 60947-1 § 7-1-6 | | | Yes | – |
| Resistance to mechanical impact | | | **J** | – | 10 |
| | | | | | IK09 (in enclosure) |
| Sensitivity to phase failure | | | | Yes, conforming to IEC 60947-4-1 § 8-2-1-5-2 for GV3P | |

## Technical characteristics

| Circuit breaker type | | | GV3L | GV3P |
|---|---|---|---|---|
| Utilisation category | Conforming to IEC 60947-2 | | A | – |
| | Conforming to IEC 60947-4-1 | | – | AC-3 |
| Rated operational voltage (Ue) | Conforming to IEC 60947-2 | **V** | 690 | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-2 | **V** | 690 | |
| Rated voltage | Conforming to UL 60947-4-1,<br>CSA C 22.2 n° 60947-4-1 | **V** | | 600 |
| Rated operational frequency | Conforming to IEC 60947-4-1<br>UL, CSA | **Hz** | 50/60 | |
| Rated impulse withstand voltage (U imp) | Conforming to IEC 60947-2 | **kV** | 6 | |
| Total power dissipated per pole | | **W** | 8 | |
| Mechanical durability (C.O.: Close, Open) | | **C.O.** | 50 000 | |
| Electrical durability for AC-3 duty | 415 V In | **C.O.** | 50 000 (20 000 for GV3L73, GV3P73, GV3L80, GV3P80) | |
| Duty class (maximum operating rate) | | **C.O./h** | 25 | |
| Maximum conventional rated thermal current (Ith) | Conforming to IEC 60947-4-1 | **A** | – | 13 to 80 |
| Rated duty | Conforming to IEC 60947-4-1 | | | Continuous duty |
| Operating threshold of magnetic trips | | | 14 I max | |

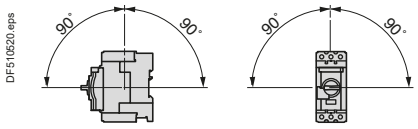
*(1), (2) For **GV3L25** to **73**, may be followed by 6 or by 1.*
*(3) Leave a space of 9 mm between 2 circuit breakers: either an empty space, or side mounting add-on contact blocks.*
*Side by side mounting is possible up to 40 °C.*
*(4), (5) For **GV3P13** to **73**, may be followed by 6 or by 1.*

Ref.
Motor circuit breakers

References: pages B6/26 and B6/27
Curves: pages B6/106 to B6/111
Dimensions: pages B6/115 and B6/116
Schemes: page B6/117

## Mounting characteristics

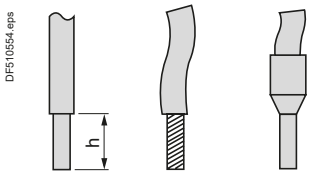
Operating position
Without derating, in relation to normal vertical mounting plane (1)




## Connection characteristics

### Connection to screw clamp terminals or spring terminals

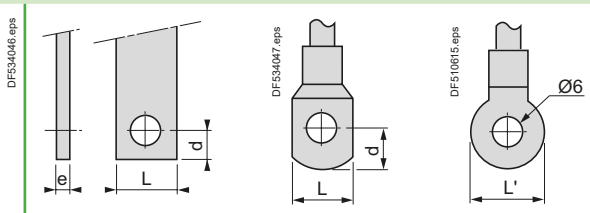
Bare cables




| Circuit breaker type | | | GV3L | | GV3P | |
|---|---|---|---|---|---|---|
| | | | Min. | Max. | Min. | Max. |
| Connection to screw clamp terminals (2) (Max. number of conductors x c.s.a.) | Solid cable | mm² | 2 x 1 | 1 x 25 and 1 x 35 | 2 x 1 | 1 x 25 and 1 x 35 |
| | Flexible cable without cable end | mm² | 2 x 1 | 1 x 25 and 1 x 35 | 2 x 1 | 1 x 25 and 1 x 35 |
| | Flexible cable with cable end | mm² | 2 x 1 | 1 x 25 and 1 x 35 | 2 x 1 | 1 x 25 and 1 x 35 |
| Tightening torque | | N.m | 5 | 5: 25 mm² 8: 35 mm² | 5 | 5: 25 mm² 8: 35 mm² |

### Connection by bars or lugs

Bars or lugs




| Circuit breaker type | | | GV3L●●6 | GV3P●●6 |
|---|---|---|---|---|
| Pitch | Without spreaders | mm | 17.5 | |
| | With spreaders | mm | – | |
| Bars or cables with lugs | e | mm | ≤ 6 | |
| | L | mm | ≤ 13.5 | |
| | L' | mm | ≤ 16.5 | |
| | d | mm | ≤ 10 | |
| Screws | | | M6 | |
| | Tightening torque | N.m | 6 | |
| Bare cables (copper or aluminium) with connectors | Height (h) | mm | – | |
| | C.s.a. | mm² | – | |
| | Tightening torque | N.m | – | |

*(1) When mounting on a vertical rail, fit a stop to prevent any slippage.*
*(2) For motor circuit breakers **GV3P**: BTR hexagon socket head screws, **Ever**Link® system. Require use of an insulated Allen key, in compliance with local electrical wiring regulations.*
*(3) For cross-sections 1 to 1.5 mm², the use of an **LA9D99** cable end reducer is recommended.*

References: pages B6/26 and B6/27
Curves: pages B6/106 to B6/111
Dimensions: pages B6/115 and B6/116
Schemes: page B6/117

# Characteristics

## Breaking capacity of GV3L

| Type | | | | GV3L25 | GV3L32 | GV3L40 | GV3L50 | GV3L65 | GV3L73 | GV3L80 |
|---|---|---|---|---|---|---|---|---|---|---|
| Breaking capacity of the circuit-breaker only or of the circuit-breaker combined with a thermal overload relay | 230/240 V | Icu | **kA** | 100 | 100 | 100 | 100 | 100 | 65 | 65 |
| | | Ics % (1) | | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | 400/415 V | Icu | **kA** | 100 | 100 | 50 | 50 | 50 | 50 | 50 |
| | | Ics % (1) | | 100 | 100 | 100 | 100 | 100 | 60 | 60 |
| | 440 V | Icu | **kA** | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | Ics % (1) | | 100 | 100 | 100 | 100 | 100 | 60 | 60 |
| | 500 V | Icu | **kA** | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| | | Ics % (1) | | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | 690 V | Icu | **kA** | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | Ics % (1) | | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Associated fuses (if required) for use with circuit breaker only or circuit breaker combined with a thermal overload relay if Isc > breaking capacity | 230/240 V | aM | **A** | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | | gG | **A** | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 415 V | aM | **A** | ★ | ★ | ★ | ★ | 125 | 125 | 125 |
| | | gG | **A** | ★ | ★ | ★ | ★ | 160 | 160 | 160 |
| | 440 V | aM | **A** | 63 | 80 | 125 | 125 | 125 | 125 | 125 |
| | | gG | **A** | 80 | 100 | 160 | 160 | 160 | 160 | 160 |
| | 500 V | aM | **A** | 63 | 63 | 63 | 63 | 80 | 80 | 80 |
| | | gG | **A** | 80 | 80 | 80 | 80 | 100 | 100 | 100 |
| | 690 V | aM | **A** | 50 | 50 | 50 | 50 | 63 | 63 | 63 |
| | | gG | **A** | 63 | 63 | 63 | 63 | 80 | 80 | 80 |
| Use of circuit breakers without fuses | | | | Minimum cable length (in metres) limiting the maximum short-circuit current to 35 kA maximum. | | | | | | |
| | Cable c.s.a. | | **mm²** | **≤ 25** | **35** | **50** | **70** | **95** | - (2) | - (2) |
| | Isc (rms) 3-phase, incoming (Ue = 415 V) | 50 kA | **m** | 5 | 6 | 8 | 10 | 13 | - (2) | - (2) |
| | | 45 kA | **m** | 5 | 5 | 7 | 8 | 10 | - (2) | - (2) |
| | | 40 kA | **m** | 5 | 5 | 5 | 5 | 8 | - (2) | - (2) |
| | | 37 kA | **m** | 5 | 5 | 5 | 5 | 5 | - (2) | - (2) |

★ *Fuse not required: breaking capacity Icn > Isc.*
*(1) As % of Icu.*
*(2) Please consult your Regional Sales Office.*

Ref.
Motor circuit breakers

# Characteristics

## Breaking capacity of GV3P

| Motor circuit breaker type | | | | GV3P | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 13 | 18 | 25 | 32 | 40 | 50 | 65 | 73 | 80 |
| Rating | | | A | 13 | 18 | 25 | 32 | 40 | 50 | 65 | 73 | 80 |
| Breaking capacity conforming to IEC 60947-2 | 230/240 V | Icu | kA | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Ics % (1) | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | 400/415 V | Icu | kA | 100 | 100 | 100 | 100 | 50 | 50 | 50 | 50 | 50 |
| | | Ics % (1) | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 60 | 60 |
| | 440 V | Icu | kA | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | Ics % (1) | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 60 | 60 |
| | 500 V | Icu | kA | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| | | Ics % (1) | | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | 690 V | Icu | kA | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | Ics % (1) | | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Associated fuses, if required if Isc > breaking capacity Icu | 230/240 V | aM | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | | gG | A | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |
| | 415 V | aM | A | ★ | ★ | ★ | ★ | 125 | 125 | 125 | 125 | 125 |
| | | gG | A | ★ | ★ | ★ | ★ | 160 | 160 | 160 | 160 | 160 |
| | 440 V | aM | A | 63 | 80 | 125 | 125 | 125 | 125 | 125 | 125 | 125 |
| | | gG | A | 80 | 100 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| | 500 V | aM | A | 63 | 63 | 63 | 63 | 80 | 80 | 80 | 80 | 80 |
| | | gG | A | 80 | 80 | 80 | 80 | 100 | 100 | 100 | 100 | 100 |
| | 690 V | aM | A | 50 | 50 | 50 | 50 | 63 | 63 | 63 | 63 | 63 |
| | | gG | A | 63 | 63 | 63 | 63 | 80 | 80 | 80 | 80 | 80 |

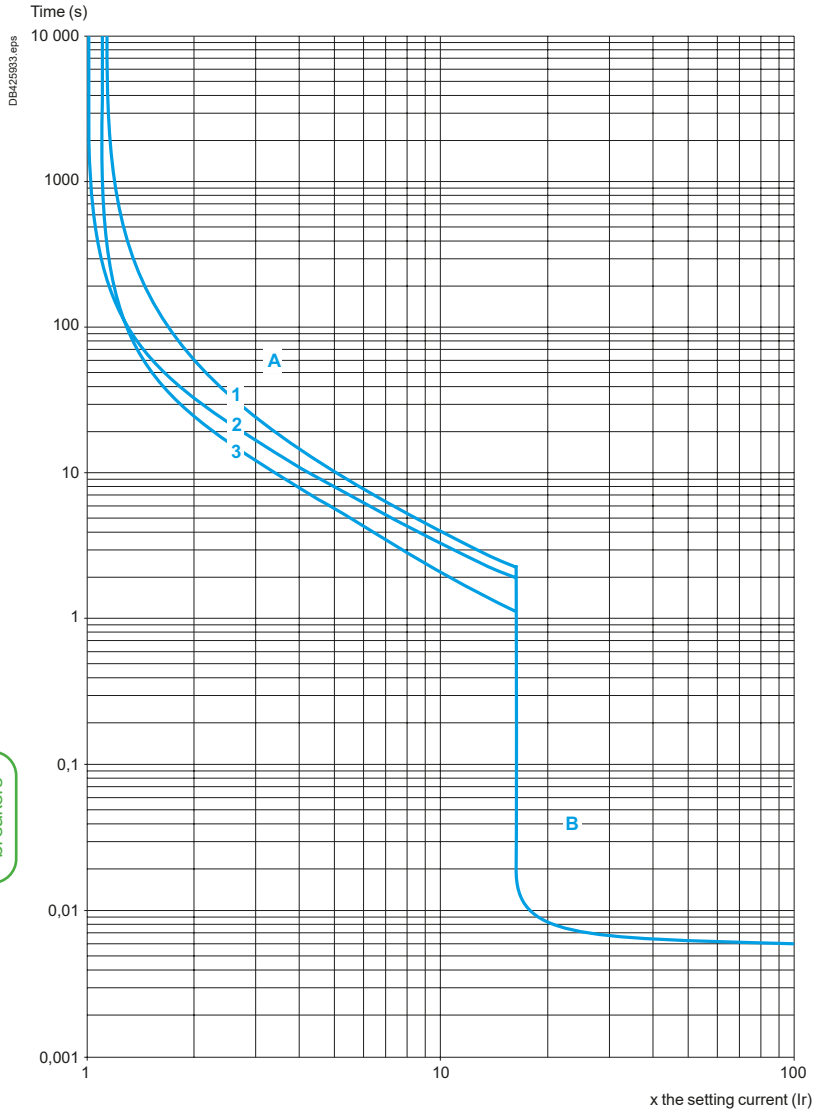
★ *Fuse not required: breaking capacity Icn > Isc.*
*(1) As % of Icu.*

Ref.
Motor circuit breakers

# Curves

## Tripping curves for GV3L combined with thermal overload relay LRD33

### Average operating time at 20 °C without prior current flow




**1** 3 poles from cold state
**2** 2 poles from cold state
**3** 3 poles from hot state

**A** Thermal overload relay protection zone
**B** GV3L protection zone

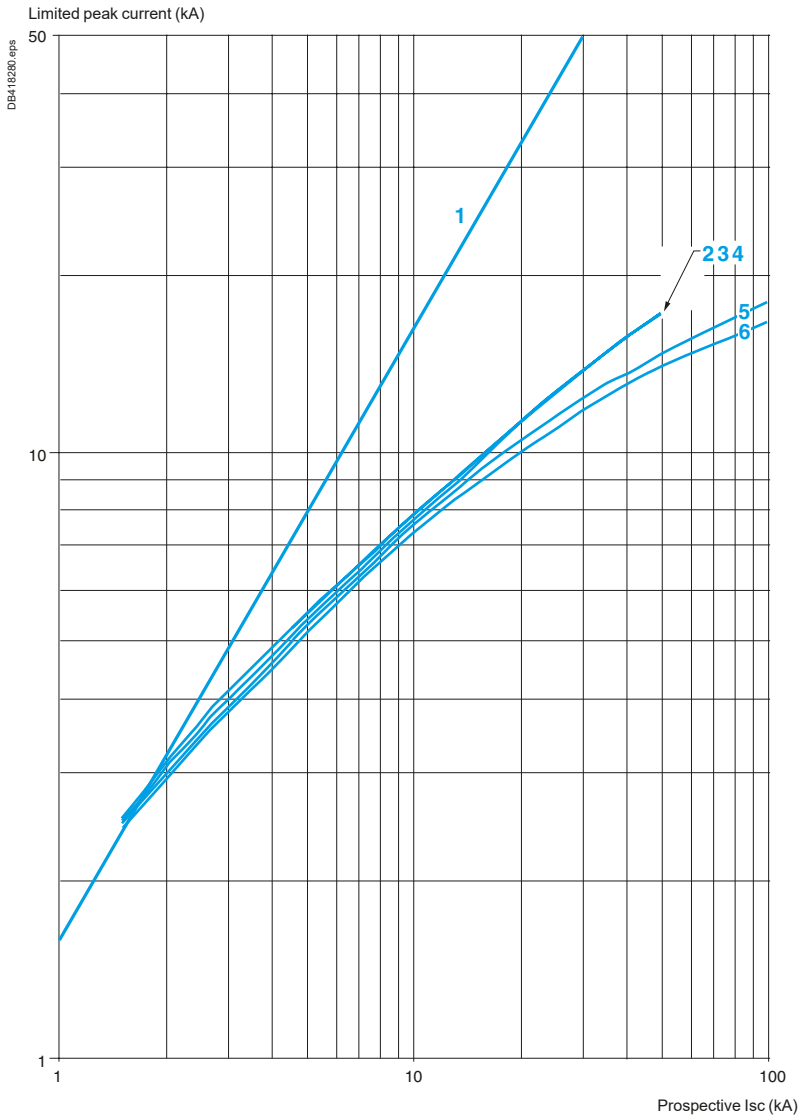
Ref.
Motor circuit breakers

# Curves

## Current limitation on short-circuit for GV3L (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




1 Maximum peak current
2 GV3L80 - GV3L73 - GV3L65
3 GV3L50
4 GV3L40
5 GV3L32
6 GV3L25

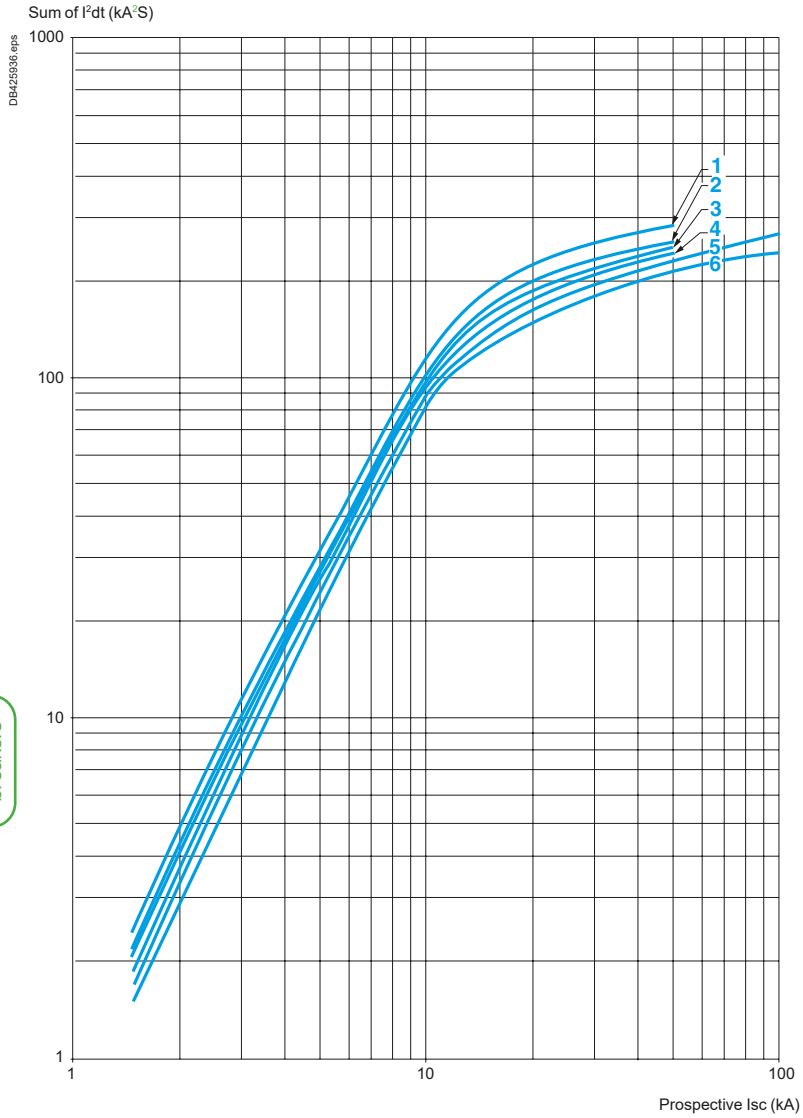
References: page B6/26
Characteristics: pages B6/102 to B6/104
Dimensions: pages B6/115 and B6/116
Schemes: page B6/117

# Curves

## Thermal limit on short-circuit for GV3L

### Thermal limit in kA²S

Sum of $I^2dt$ = f (prospective Isc) at 1.05 Ue = 435 V




1 GV3L73 - GV3L80
2 GV3L65
3 GV3L50
4 GV3L40
5 GV3L32
6 GV3L25

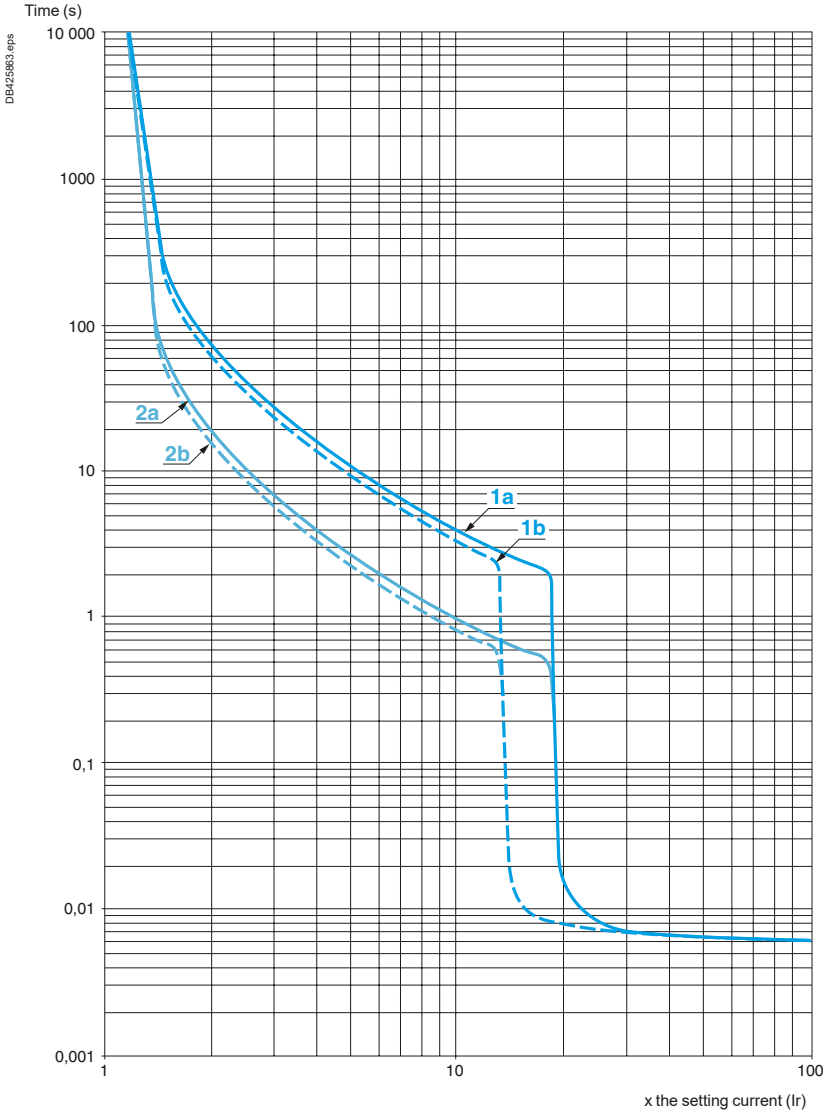
Ref.
Motor circuit breakers


Life Is On Schneider Electric

# Curves

## Thermal-magnetic tripping curves for GV3P

### Average operating times at 20 °C related to multiples of the setting current




**1a** 3 poles from cold state (Ir mini.): GV3P
**1b** 3 poles from cold state (Ir maxi.): GV3P
**2a** 3 poles from hot state (Ir mini.): GV3P
**2b** 3 poles from hot state (Ir maxi.): GV3P

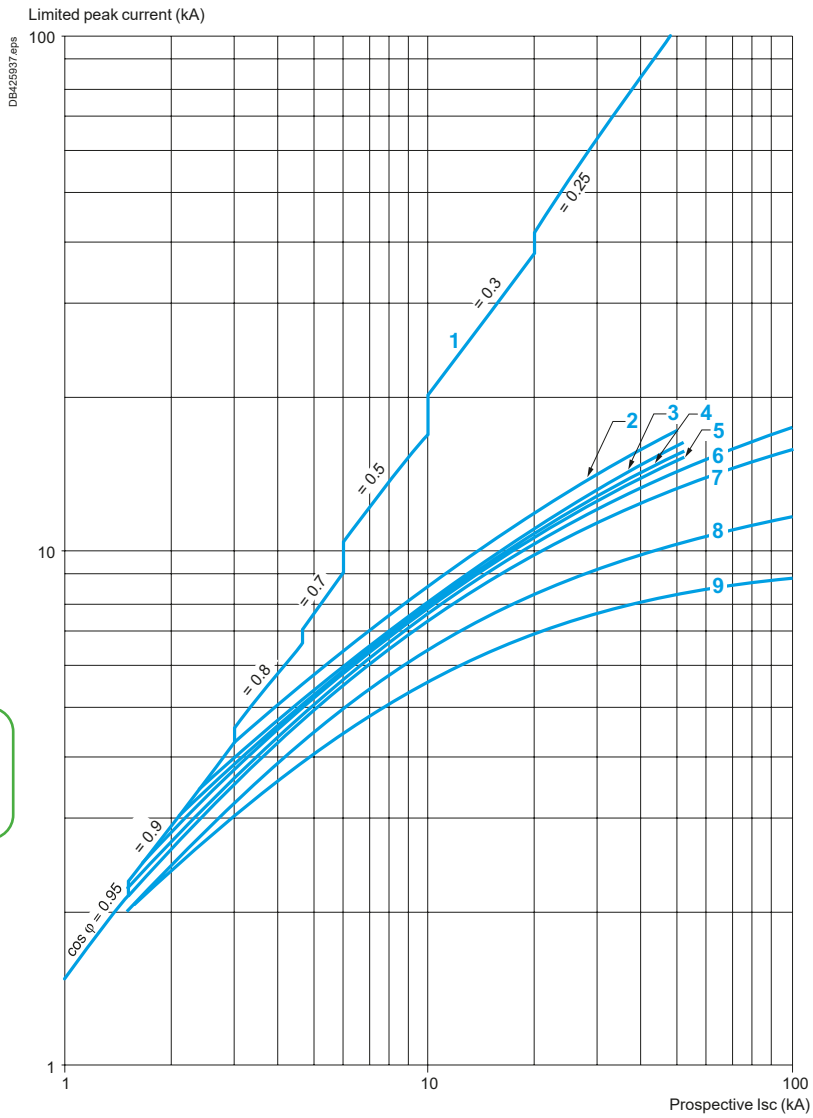
Ref.
Motor circuit breakers

# Curves

## Current limitation on short-circuit for GV3P (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




1 Maximum peak current
2 70-80 A (GV3P80); 62-73 A (GV3P73)
3 48-65 A (GV3P65)
4 37-50 A (GV3P50)
5 30-40 A (GV3P40)
6 23-32 A (GV3P32)
7 17-25 A (GV3P25)
8 12-18 A (GV3P18)
9 9-13 A (GV3P13)

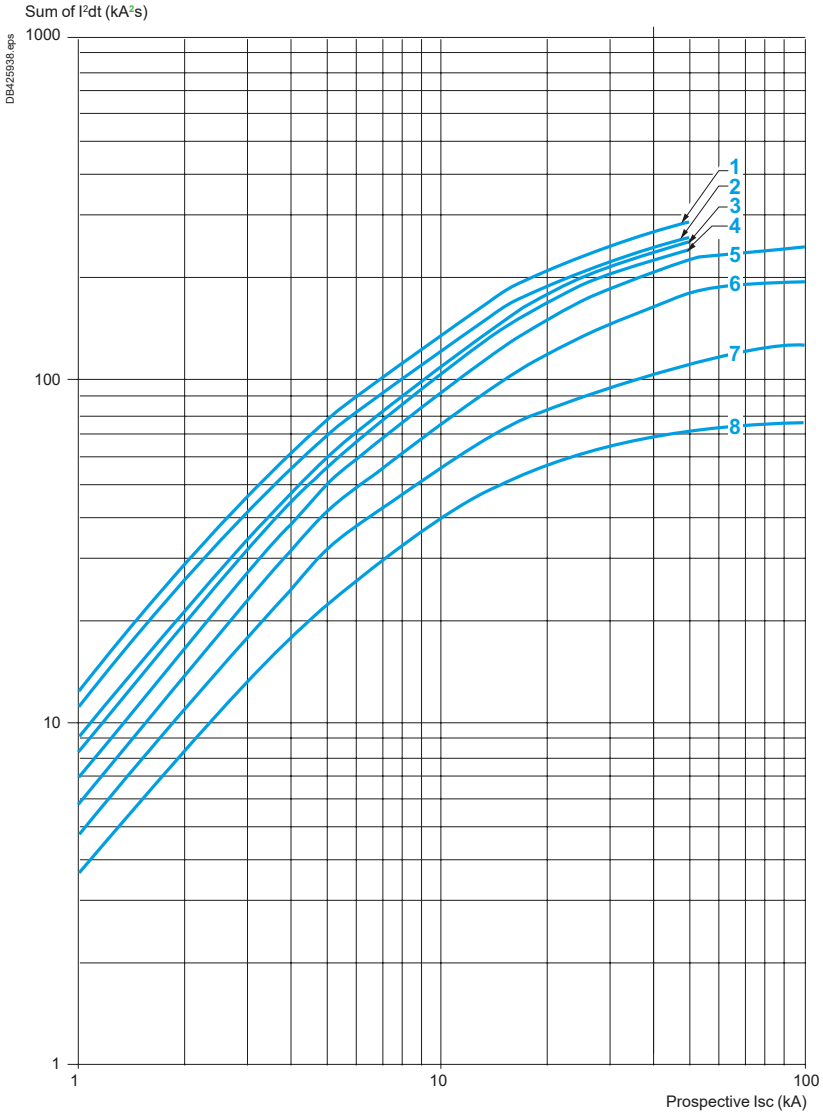
Ref.
Motor circuit breakers

# Curves

## Maximum thermal limit on short-circuit for GV3P

### Thermal limit in kA²s in the magnetic operating zone

Sum of I²dt = f (prospective Isc) at 1.05 Ue = 435 V




1 70-80 (GV3P80) - 62-73 (GV3P73)
2 48-65 A (GV3P65)
3 37-50 A (GV3P50)
4 30-40 A (GV3P40)
5 23-32 A (GV3P32)
6 17-25 A (GV3P25)
7 12-18 A (GV3P18)
8 9-13 A (GV3P13)

Ref.
Motor circuit breakers

# Characteristics

## Characteristics of GV3 electric trips

| Type of trip | | | GVAU●●● MN undervoltage trip | GVAS●●● MX shunt trip |
|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 690 | 690 |
| | Conforming to CSA C22-2 n°14, UL 508 | **V** | 600 | 600 |
| Operational voltage (Ue) | Conforming to IEC 60947-1 | **V** | 0.85...1.1 Uc | 0.7...1.1 Uc |
| Drop-out voltage | | **V** | 0.7...0.35 Uc | 0.75...0.2 Uc |
| Inrush consumption | ~ ⎓ | **VA** | 12 | 14 |
| Sealed consumption | ~ ⎓ | **VA** | 3.5 | 5 |
| Operating time | Conforming to IEC 60947-1 | **ms** | From the moment the voltage reaches its operational value until opening of the circuit breaker. 10...15 | |
| On-load factor | | | 100 % | |
| Cabling (spring connection) | Number of conductors | | 2 or 4 | |
| | Solid cable | **mm²** | 1...2.5 | |
| | Flexible cable without cable end | **mm² AWG** | 0.75...2.5 | |
| | Flexible cable with cable end | **mm²** | 0.75...2.5 | |
| Tightening torque | | **N.m** | 1.4 max | |
| Mechanical durability (C.O.: Close - Open) | | **C.O.** | 10000 (GV3P and GV3L) | |



References: page B6/29
Dimensions: page B6/115
Schemes: page B6/117

## Characteristics

| Type of contacts | | | Instantaneous auxiliary GVAN, GVAD | | | | | | | Fault signalling GVAD, GVAM11 (1) | | | | Instantaneous auxiliary GVAE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) (associated insulation coordination) | Conforming to IEC 60947-1 | V | 690 | | | | | | | 690 | | | | 250 (690 in relation to main circuit) | | | |
| | Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1 | V | 600 | | | | | | | 300 | | | | 300 | | | |
| Conventional thermal current (Ith) | Conforming to IEC 60947-5-1 | A | 6 | | | | | | | 2.5 | | | | 2.5 | | | |
| | Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1 | A | 5 | | | | | | | 1 | | | | 1 | | | |
| Mechanical durability (C.O.: Close - Open) | | C.O. | 100 000 | | | | | | | 1000 | | | | 100 000 | | | |
| Operational power and current conforming to IEC 60947-5-1. a.c. operation | | | AC-15/100 000 C.O. | | | | | | | AC-14/1000 C.O. | | | | AC-15/100 000 C.O. | | | |
| | **Rated operational voltage (Ue)** | V | **48** | **110 127** | **230 240** | **380 415** | **440** | **500** | **690** | **24** | **48** | **110 127** | **230 240** | **24** | **48** | **110 127** | **230 240** |
| Operation | Operational power, normal conditions | VA | 300 | 500 | 720 | 850 | 650 | 500 | 400 | 36 | 48 | 72 | 72 | 48 | 60 | 120 | 120 |
| | Occasional breaking and making capacities, abnormal conditions | kVA | 3 | 7 | 13 | 15 | 13 | 12 | 9 | 0.22 | 0.3 | 0.45 | 0.45 | 0.48 | 0.6 | 1.27 | 2.4 |
| | Rated operational current (Ie) | A | 6 | 4.5 | 3.3 | 2.2 | 1.5 | 1 | 0.6 | 1.5 | 1 | 0.5 | 0.3 | 2 | 1.25 | 1 | 0.5 |
| Operational power and current conforming to IEC 60947-5-1. d.c. | | | DC-13/100 000 C.O. | | | | | | | DC-13/1000 C.O. | | | | DC-13/100 000 C.O. | | | |
| | **Rated operational voltage (Ue)** | V | **24** | **48** | **60** | **110** | **240** (2) | **–** | **–** | **24** | **48** | **60** | **–** | **24** | **48** | **60** | **–** |
| Operation | Operational power, normal conditions | W | 140 | 240 | 180 | 140 | 120 | – | – | 24 | 15 | 9 | – | 24 | 15 | 9 | – |
| | Occasional breaking and making capacities, abnormal conditions | W | 240 | 360 | 240 | 210 | 180 | – | – | 100 | 50 | 50 | – | 100 | 50 | 50 | – |
| | Rated operational current (Ie) | A | 6 | 5 | 3 | 1.3 | 0.5 | – | – | 1 | 0.3 | 0.15 | – | 1 | 0.3 | 0.15 | – |
| Low power switching reliability of contact | | | **GVAE**: Number of failures for “n” million operating cycles (17 V-5 mA): = $10^{-6}$ | | | | | | | | | | | | | | |
| Minimum operational conditions d.c. operation | | V | 17 | | | | | | | | | | | | | | |
| | | mA | 5 | | | | | | | | | | | | | | |
| Short-circuit protection | | | By **GB2CB●●** circuit breaker (rating according to operational current for Ue ⩽ 415 V) or by gG fuse 10 A max | | | | | | | | | | | **GB2CB06** or gG fuse 10 A max | | | |
| Cabling, screw clamp terminals | Number of conductors | | **1** | | | **2** | | | | | | | | | | | |
| | Solid cable | $mm^2$ | 1…2.5 | | | 1…2.5 | | | | | | | | | | | |
| | Flexible cable without cable end | $mm^2$ | 0.75…2.5 | | | 0.75…2.5 | | | | | | | | | | | |
| | Flexible cable with cable end | $mm^2$ | 0.75…1.5 | | | 0.75…1.5 | | | | | | | | | | | |
| | Tightening torque | N.m | 1.4 max | | | 1.4 max | | | | | | | | | | | |
| Cabling, spring terminal connections | | | **GVAN** only | | | | | | | | | | | | | | |
| | Flexible cable without cable end | $mm^2$ | 0.75…2.5 | | | 0.75…2.5 | | | | – | | | | 0.75…1.5 | | | |

**Operation of instantaneous auxiliary contacts**

DB439583.eps

**GV3P, GV3L**

**Operation of fault signalling contacts**

**GVAM11**
Change of state following tripping on short-circuit.

**GVAD10●●** and **GVAD01●●**
Change of state following tripping on short-circuit, overload or undervoltage.

*(1) For application example of fault signalling contact and short-circuit signalling contact.*
*(2) Add an RC circuit type **LA4D** to the load terminals.*

References: page B6/29
Dimensions: page B6/115
Schemes: page B6/117

## Characteristics

### Characteristics of 3-pole busbars GV3G●●●

| | | | GV3G●64 |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 690 |
| Conventional thermal current (Ith) | Conforming to IEC 60439-1 | **A** | 115 |
| Rated operational current (Ie) | | **A** | 115 |
| Permissible peak current (I peak) | | **kA** | 20 |
| Permissible thermal limit ($I^2t$) | | **kA²s** | 300 |
| Degree of protection | Conforming to IEC 60529 | | IP 20 |
| Terminal block | | | – |



References: page B6/29
Dimensions: page B6/115

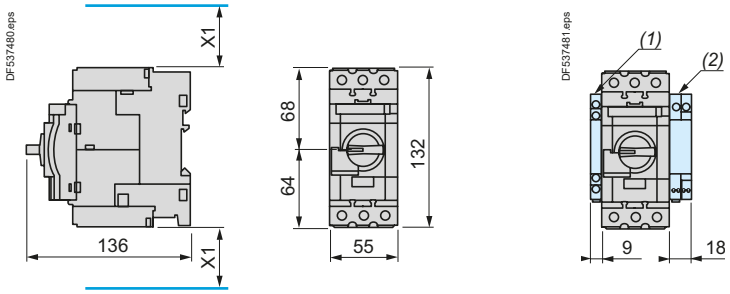


Life Is On Schneider Electric

# Dimensions and mounting

## GV3L, GV3P

### Dimensions



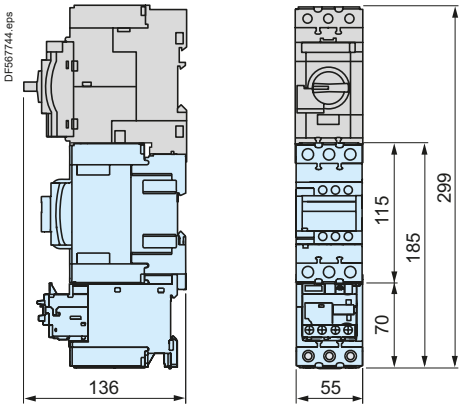

*X1 = Electrical clearance (ISC max)*
*40 mm for Ue ⩽ 500 V, 50 mm for Ue ⩽ 690 V*

*(1) Blocks **GVAN●●**, **GVAD●●** and **GVAM11**.*
*(2) Blocks **GV3AU●●** and **GV3AS●●**.*

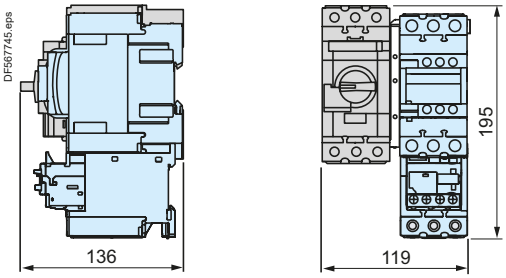
***Note:** Leave a space of 9 mm between 2 circuit breakers: either an empty space or side-mounting add-on contact blocks.*
*Side by side mounting is possible up to 40 °C.*

### Mounting

**Mounting with contactor LC1D40A…D80A and relay LR3D313…380** (1) (2) (3)

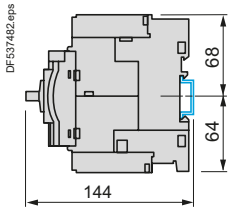



**Side by side mounting with contactor LC1D40A…D73A (S-shape busbar system GV3S** (1)**)**

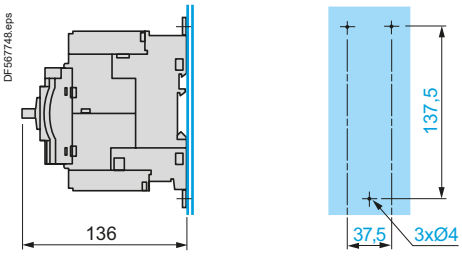



*(1) Mountings with c.b. up to **GV3L73**, **GV3P73**.*
*(2) For **GV3L80**, **GV3P80** use cable between components for dissipating heat. Consult online datasheets for values*
*(3) S-shape busbar system suitable up to 73 A.*

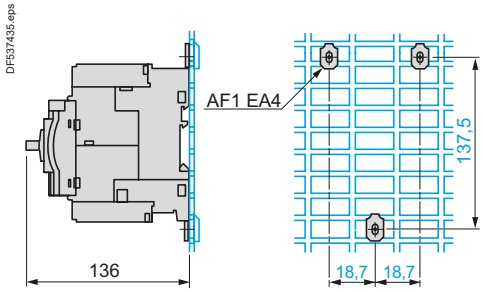
**Mounting on rail AM1DE200 or AM1ED201**



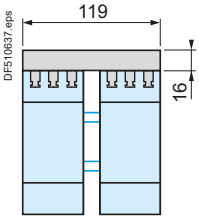

**Panel mounting, using M4 screws**



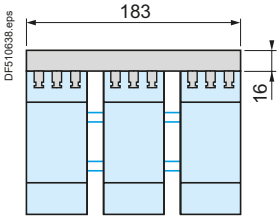

**Mounting on pre-slotted plate AM1PA**




**Set of busbars GV3G264**




**Set of busbars GV3G364**



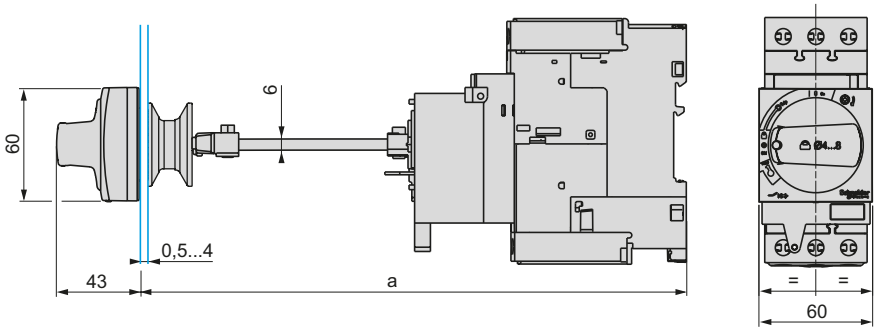

References:
pages B6/26 and B6/27
Characteristics:
pages B6/102 to B6/105
Curves:
pages B6/106 to B6/111
Schemes:
page B6/117

# Dimensions and mounting

## Mounting

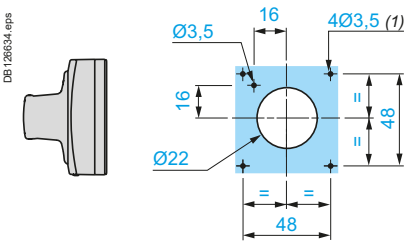
### Mounting of external operator GV3APN01, GV3APN02 or GV3APN04 for motor circuit breakers GV3L

DB127416.eps




**Door cut-out**

DB126634.eps




*(1) For IP65 only.*

| | a | | b | |
|---|---|---|---|---|
| | Mini | Maxi | Mini | Maxi |
| **GV3APN●●** | 189 | 300 | - | - |
| **GV3APN●● + GVAPK12** | 300 | 481 | | |

Ref.

Motor circuit breakers

References:
page B6/30

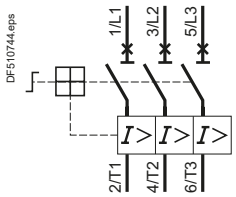


Life Is On Schneider Electric

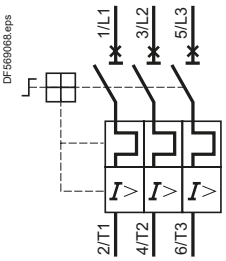
# Schemes

## Schemes

### GV3L●●

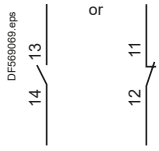



### GV3P●●

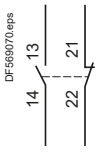



### Front mounting add-on contact blocks
### Instantaneous auxiliary contacts

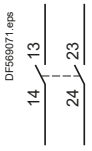
#### GVAE1




#### GVAE11

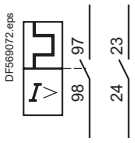



#### GVAE20

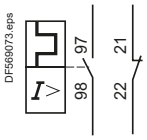



### Front mounting add-on contact blocks
### Instantaneous auxiliary contacts and fault signalling contacts

#### GVAED101

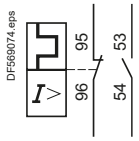



#### GVAED011

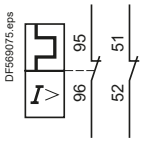



### Side mounting add-on contact blocks
### Instantaneous auxiliary contacts and fault signalling contacts

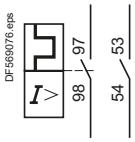
#### GVAD0110



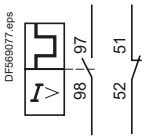

#### GVAD0101




#### GVAD1010

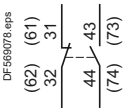



#### GVAD1001

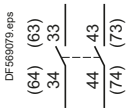



### Instantaneous auxiliary contacts

#### GVAN11

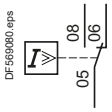



#### GVAN20



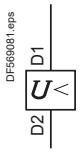

### Short-circuit signalling contacts

#### GVAM11

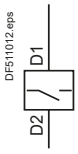



### Voltage trips

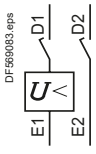
#### GVAU●●●




#### GVAS●●●

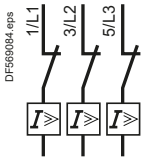



#### GVAX●●●

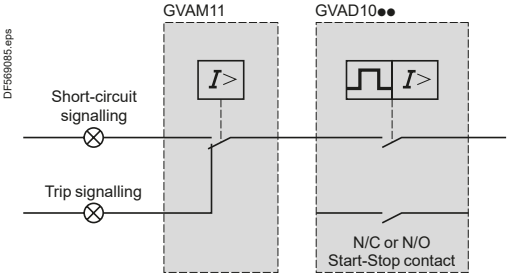



### Current limiter

#### GV1L3

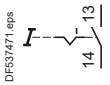



### Use of fault signalling contact and short-circuit signalling contact

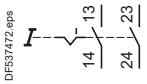



### Start-Stop signalling contact blocks

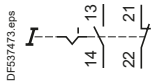
#### GK2AX10




#### GK2AX20

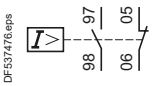



#### GK2AX50




### Fault signalling contact blocks

#### GK2AX52




References:
pages B6/26 to B6/29

Characteristics:
pages B6/102 to B6/105

Curves:
pages B6/106 to B6/111

Dimensions:
page B6/115

# TeSys Deca
# - Frame 4
## 0.25 to 55 kW - 1/2 to 60 HP

# Characteristics

## Environment

| Circuit breaker type | | | | GV4L | GV4LE | GV4P | GV4PE | GV4PEM | GV4PB |
|---|---|---|---|---|---|---|---|---|---|
| Conforming to standards | | | | IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1 | | IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1 | | | IEC/EN 60947-2, IEC/ EN 60947-4-1 |
| Product certifications | | | | CCC, EAC, BV, EU-RO MR (1), UKCA | | CCC, EAC, CSA (cCSAus), ATEX, BV, EU-RO MR (1), UKCA | | | UL 489, CSA C22.2 n°5 |
| Climatic withstand | | | | According to IACS E10 | | | | | |
| Degree of protection (front face) | Conforming to IEC 60529 | Open mounted | | IP 40 front face except on connection area.<br>Connection area:<br>- IP20 with EverLink connector<br>- IP40 with crimp lug connector and terminal shield. | | | | | |
| | | In enclosure (2) | | DRH = IP40<br>ERH = IP54 or IP65 | | | | | |
| Shock resistance | Conforming to IEC 60068-2-27 | | | 15g - 11 ms | | 15g - 11 ms | | | |
| Vibration resistance | Conforming to IEC 60068-2-6 | | | 2.0 to 13.2 Hz and amplitude ±1 mm<br>13.2 to 100 Hz acceleration 0.7 g | | | | | |
| Ambient air temperature | Storage | | °C | -50…+85 | | | | | |
| | Operation | | °C | -25…+70 | | | | | |
| Temperature compensation | | | °C | Non applicable | | -25…+60 (3) | | | |
| Flame resistance | Conforming to IEC 60695-2-11 | | °C | 960 | | | | | |
| Maximum operating altitude | | | m | 2000 without derating.<br>Up to 5000 with derating | | | | | |
| Suitable for isolation | Conforming to IEC 60947-1 § 7-1-6 | | | Yes | | | | | |
| Resistance to mechanical impact | | | J | IK07 (2J) | | | | | |
| Sensitivity to phase failure | | | | No | | Yes | | | |

## Technical characteristics

| | | | | | |
|---|---|---|---|---|---|
| Utilisation category | Conforming to IEC 60947-2 | | A | A | |
| | Conforming to IEC 60947-4-1 | | AC-3 (4) | | |
| Rated operational voltage (Ue) | Conforming to IEC 60947-2 | V | 690 | | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-2 | V | 800 | | |
| Rated voltage | Conforming to CSA C22-2 n°1, UL 60947-4-1 | V | Non applicable | 600 | |
| Rated operational frequency | Conforming to IEC 60947-4-1, UL, CSA | Hz | 50/60 | | |
| Rated impulse withstand voltage (U imp) | Conforming to IEC 60947-2 | kV | 8 | | |
| Total power dissipated per pole | | W | 6.1 | 4.6 | |
| Mechanical durability (C.O.: Closing, Opening) | | C.O. | 40000 | | |
| Electrical durability for AC-3/415V duty (C.O.: Closing, Opening) | 415 V In | C.O. | 5 000 | | |
| Duty class (maximum operating rate) | | C.O./h | 25 | | |
| Maximum conventional rated thermal current (Ith) | Conforming to IEC 60947-4-1 | A | 115 | | |
| Rated duty | Conforming to IEC 60947-4-1 | | Continuous duty | | |

*(1) Refer to chapter on page A5/88 for details on Marine Classification Societies.*

*(2) DRH = with Direct Rotary Handle*
*ERH = with Extended Rotary Handle.*

*(3) For operation up to 70 °C, please consult your regional sales office.*

*(4) Up to 100 A.*

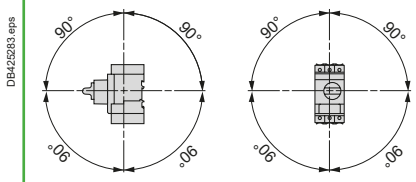
References:
pages B6/35 to B6/41

Curves:
pages B6/124 to B6/131

Dimensions, schemes:
pages B6/134 to B6/137

## Mounting characteristics

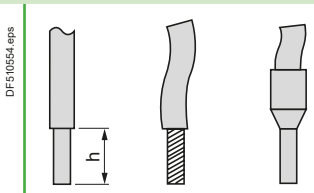
Operating position
Without derating, in relation to normal vertical mounting plane (1)




## Power connection characteristics

### Power connection by bare cables (EverLink connector)

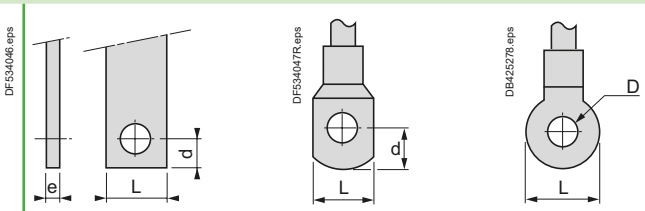
Bare cables




| | | | Min. | Max. |
|---|---|---|---|---|
| Connection to screw clamp terminals (Max. number of conductors x c.s.a.) | Solid cable | **mm²**<br>**AWG** | Cu 1 x 1.5 + 1 x 2.5<br>Cu 2 x 14 | Cu 1 x 70 + 1 x 95<br>Cu 1 x 2/0 + 1 x 3/0 |
| | Flexible cable without cable end | **mm²**<br>**AWG** | Cu 1 x 1.5 + 1 x 2.5<br>Cu 2 x 6 | Cu 1 x 50 + 1 x 70<br>Cu 1 x 1/0 + 1 x 2/0 |
| | Flexible cable with cable end | **mm²**<br>**AWG** | Cu 1 x 1.5 + 1 x 2.5<br>Cu 2 x 6 | Cu 1 x 50 + 1 x 70<br>Cu 1 x 1/0 + 1 x 2/0 |
| Tightening torque | | **N.m** | 5 ≤ 10 mm² / 8 AWG<br>9 ≥ 16 mm² / 6 AWG | |
| Stripping length (h) | Solid cable | **mm** | 20 | |

### Power connection by bars or lugs

Bars or lugs




| | | | |
|---|---|---|---|
| Pitch | Without spreaders | **mm** | 27 |
| | With spreaders | **mm** | 35 |
| Bars or cables with lugs | e | **mm** | ≤ 8 |
| | L | **mm** | ≤ 20 |
| | d | **mm** | ≤ 7 |
| | D | **mm** | 6.4 |
| M6 Screws | Tightening torque | **N.m** | 5 ≤ 10 mm² / 8 AWG<br>9 ≥ 16 mm² / 6 AWG |

*(1) When mounting on a vertical rail, fit a stop to prevent any slippage.*

References:
pages B6/35 to B6/41
Curves:
pages B6/124 to B6/131
Dimensions, schemes:
pages B6/134 to B6/137

## Characteristics

### Breaking capacity of GV4L and GV4LE

| Circuit breaker type | | | | GV4L●●●B GV4LE●●●B | | | | GV4L●●●N GV4LE●●●N | | | | | | | | GV4LE●●●S | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rating | | | A | 25 | 50 | 80 | 115 | 2 | 3.5 | 7 | 12.5 | 25 | 50 | 80 | 115 | 2 | 3.5 | 7 | 12.5 | 25 | 50 | 80 | 115 |
| Breaking capacity conforming to IEC 60947-2 | 230/240 V | Icu | kA | 50 | | | | 100 | | | | | | | | 120 | | | | | | | |
| | | Ics % (1) | | 100 | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 400/415 V | Icu | kA | 25 | | | | 50 | | | | | | | | 100 | | | | | | | |
| | | Ics % (1) | | 100 | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 440 V | Icu | kA | 20 | | | | 50 | | | | | | | | 70 | | | | | | | |
| | | Ics % (1) | | 100 | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 500 V | Icu | kA | 10 | | | | 25 | | | | | | | | 30 | | | | | | | |
| | | Ics % (1) | | 100 | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 525 V | Icu | kA | - | | | | 15 | | | | | | | | 18 | | | | | | | |
| | | Ics % (1) | | - | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 690 V | Icu | kA | - | | | | 8 | | | | | | | | 10 | | | | | | | |
| | | Ics % (1) | | - | | | | 25 | | | | | | | | 25 | | | | | | | |

*(1) As % of Icu.*

Ref.
Motor circuit breakers

## Characteristics

### Breaking capacity of GV4P, GV4PE, GV4PB●●●B

| Circuit breaker type | | | | GV4P●●●B GV4PE●●●B GV4PEM●●●B GV4PB●●●B | | | | | GV4P●●●N GV4PE●●●N GV4PEM●●●N GV4PB●●●N | | | | | | | | GV4P●●●S GV4PE●●●S GV4PEM●●●S GV4PB●●●S | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rating | | | A | 25 | 50 | 80 | 115 | | 2 | 3.5 | 7 | 12.5 | 25 | 50 | 80 | 115 | 2 | 3.5 | 7 | 12.5 | 25 | 50 | 80 | 115 |
| Breaking capacity conforming to IEC 60947-2 | 230/240 V | Icu | kA | 50 | | | | | 100 | | | | | | | | 120 | | | | | | | |
| | | Ics % (1) | | 100 | | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 400/415 V | Icu | kA | 25 | | | | | 50 | | | | | | | | 100 | | | | | | | |
| | | Ics % (1) | | 100 | | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 440 V | Icu | kA | 20 | | | | | 50 | | | | | | | | 70 | | | | | | | |
| | | Ics % (1) | | 100 | | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 500 V | Icu | kA | 10 | | | | | 25 | | | | | | | | 30 | | | | | | | |
| | | Ics % (1) | | 100 | | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 525 V | Icu | kA | - | | | | | 15 | | | | | | | | 18 | | | | | | | |
| | | Ics % (1) | | - | | | | | 100 | | | | | | | | 100 | | | | | | | |
| | 690 V | Icu | kA | - | | | | | 8 | | | | | | | | 10 | | | | | | | |
| | | Ics % (1) | | - | | | | | 25 | | | | | | | | 25 | | | | | | | |
| Breaking capacity conforming to UL 60947-4-1 and CSA 22.2 n° 60947-4-1 | 120 V | | kA | 35 | | | | | 65 | | | | | | | | 100 | | | | | | | |
| | 208 V | | kA | 35 | | | | | 65 | | | | | | | | 100 | | | | | | | |
| | 240 V | | kA | 35 | | | | | 65 | | | | | | | | 100 | | | | | | | |
| | 480Y / 277 V | | kA | 18 | | | | | 35 | | | | | | | | 65 | | | | | | | |
| | 480 V (2) | | kA | 18 | | | | | 35 | | | | | | | | 65 | | | | | | | |
| | 600Y / 347 V | | kA | 14 | | | | | 18 | | | | | | | | 25 | | | | | | | |
| | 600 V (2) | | kA | 14 | | | | | 18 | | | | | | | | 25 | | | | | | | |

*(1) As % of Icu.*
*(2) Except for MCC suitable for TAP conductor protection, in motor group installation and GV4PB.*

Ref.
Motor circuit breakers

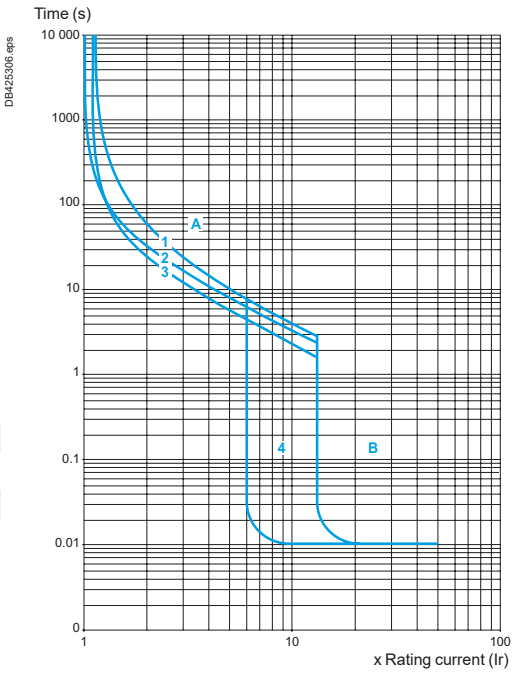
References: pages B6/37 to B6/41
Curves: pages B6/129 to B6/131
Dimensions, schemes: pages B6/134 to B6/137

# Curves

## Tripping curves for GV4L and GV4LE combined with thermal overload relay LRD or LR9

**Average operating times at 20 ° C related to multiples of the setting current**

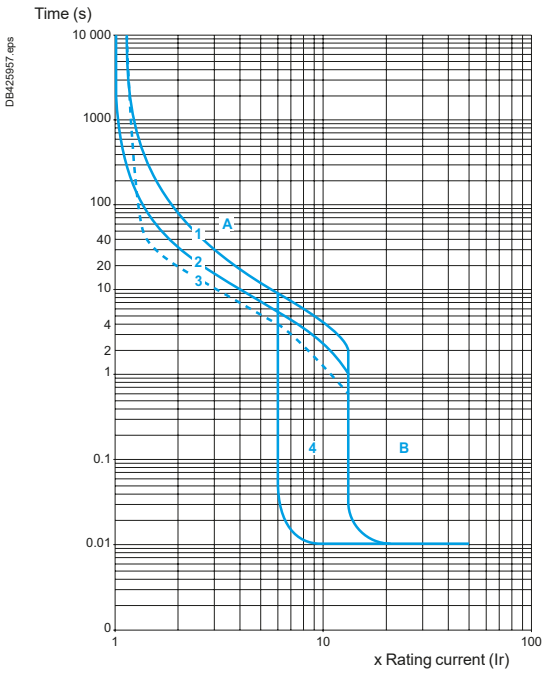
### GV4L02 and GV4LE02 to 12 with LRD05 to LRD14, GV4L80 and GV4LE80 with LRD3363




**1** 3 poles from cold state
**2** 2 poles from cold state
**3** 3 poles from hot state
**4** 6 ...14 Ir

**A** Thermal overload relay protection zone
**B** GV4L protection zone

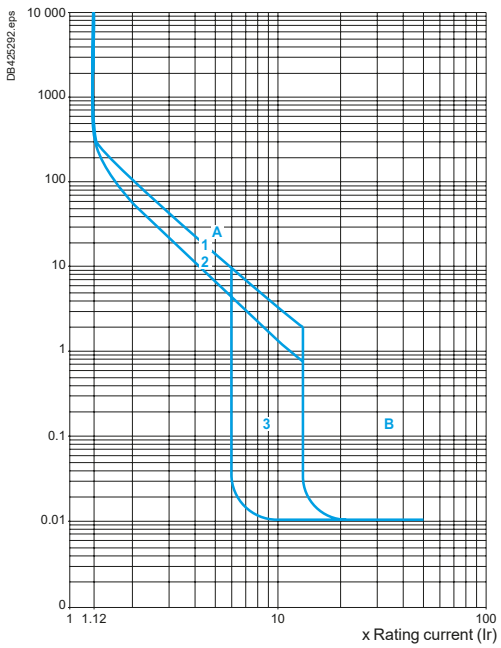
### GV4L25 AND GV4LE25 with LRD318, LRD325 GV4L50 AND GV4LE50 with LRD332, LRD340, LRD350




**1** 3 poles from cold state
**2** 2 poles from cold state
**3** 3 poles from hot state
**4** 6 ...14 Ir

**A** Thermal overload relay protection zone
**B** GV4L protection zone

### GV4L115 and GV4LE115 with class 10 LR9F5367, LR9D5369 and class 20 LR9D5567, LR9F5569




**1** Cold state curve
**2** Hot state curve
**3** 6 ...14 Ir

Ref.
Motor circuit breakers

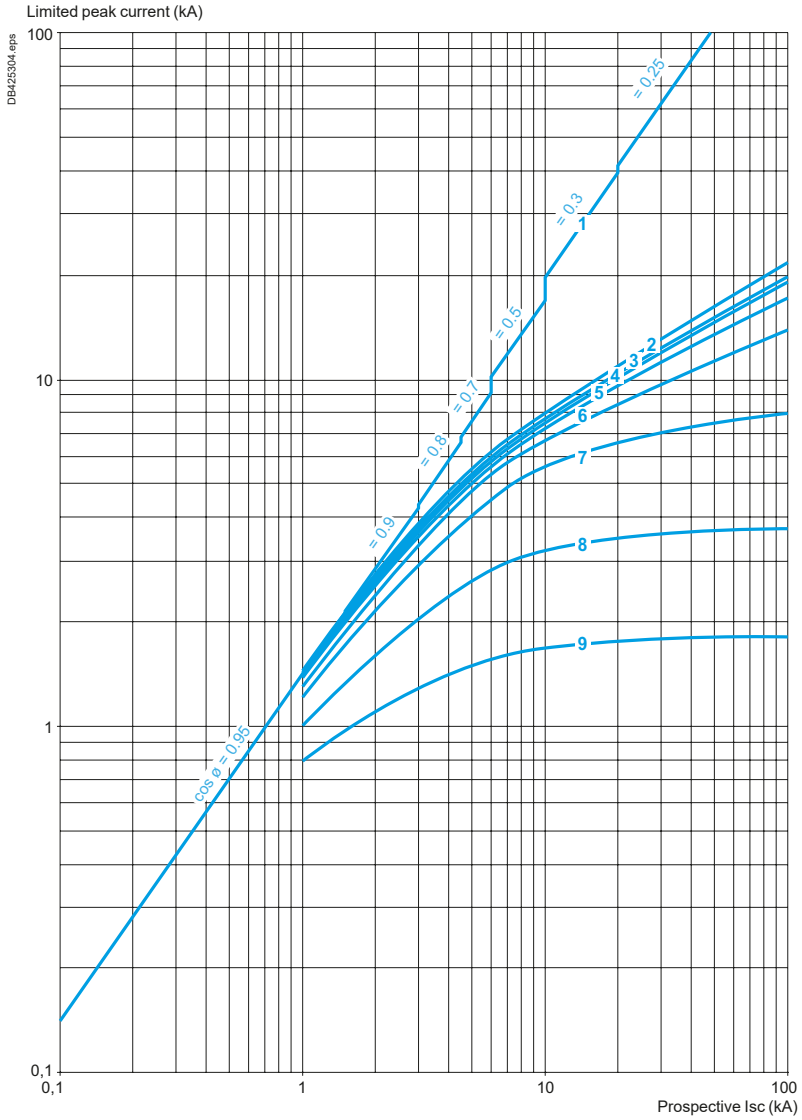

Life Is On Schneider Electric

# Curves

## Current limitation on short-circuit for GV4L, GV4LE (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




1 Maximum peak current
2 GV4L115
3 GV4L80
4 GV4L50
5 GV4L25
6 GV4L12
7 GV4L07
8 GV4L03
9 GV4L02

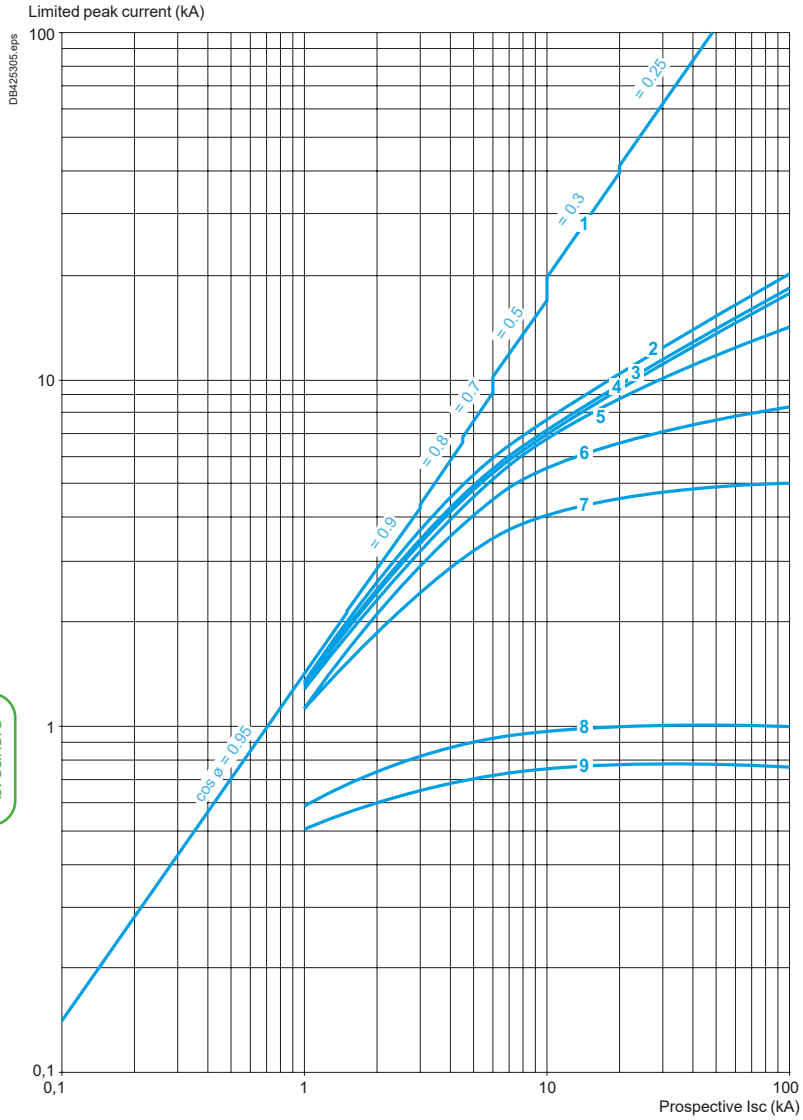
Ref.
Motor circuit breakers

# Curves

## Current limitation on short-circuit for GV4L, GV4LE + thermal overload relay LRD or LR9 (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




1 Maximum peak current
2 GV4L115 + LR9D5367 or LR9F5367
3 GV4L80 + LRD3361
4 GV4L50 + LRD340
5 GV4L25 + LRD325
6 GV4L12 + LRD313
7 GV4L07 + LRD12
8 GV4L03 + LRD07
9 GV4L02 + LRD07

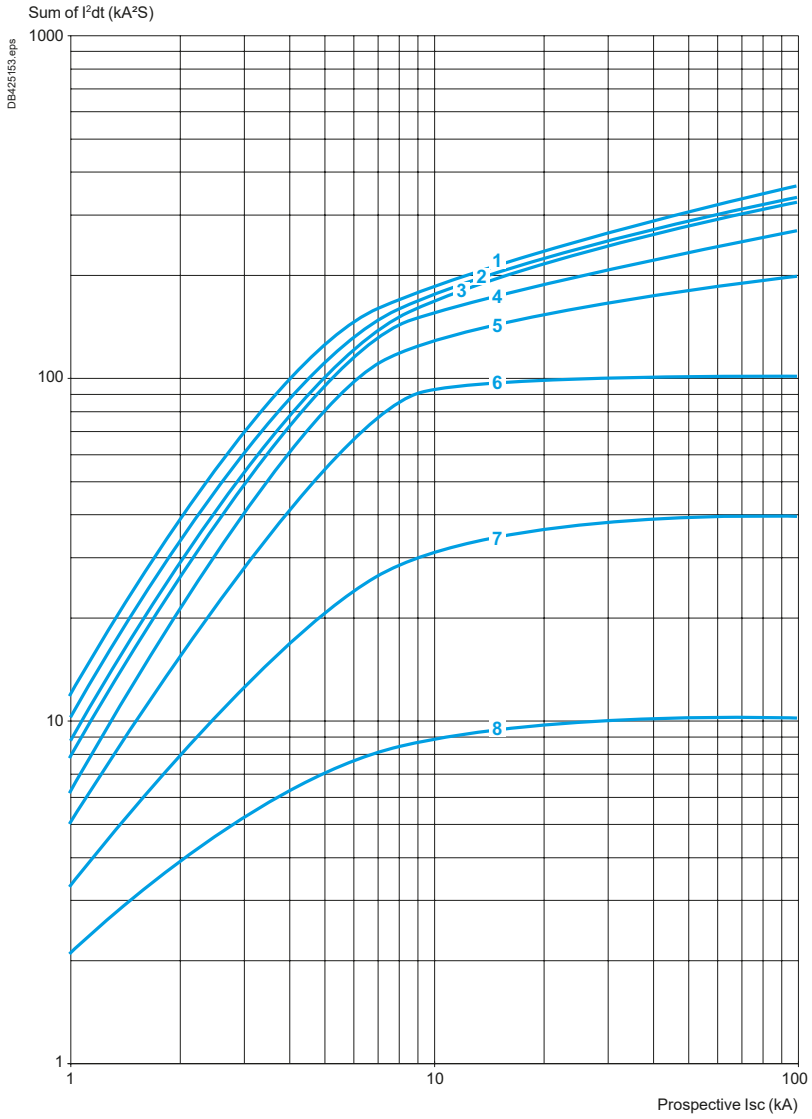
Ref.
Motor circuit breakers

# Curves

## Thermal limit on short-circuit for GV4L, GV4LE

### Thermal limit in kA²S

Sum of kA²S = f (prospective Isc) at 1.05 Ue = 435 V




1 GV4L115
2 GV4L80
3 GV4L50
4 GV4L25
5 GV4L12
6 GV4L07
7 GV4L03
8 GV4L02

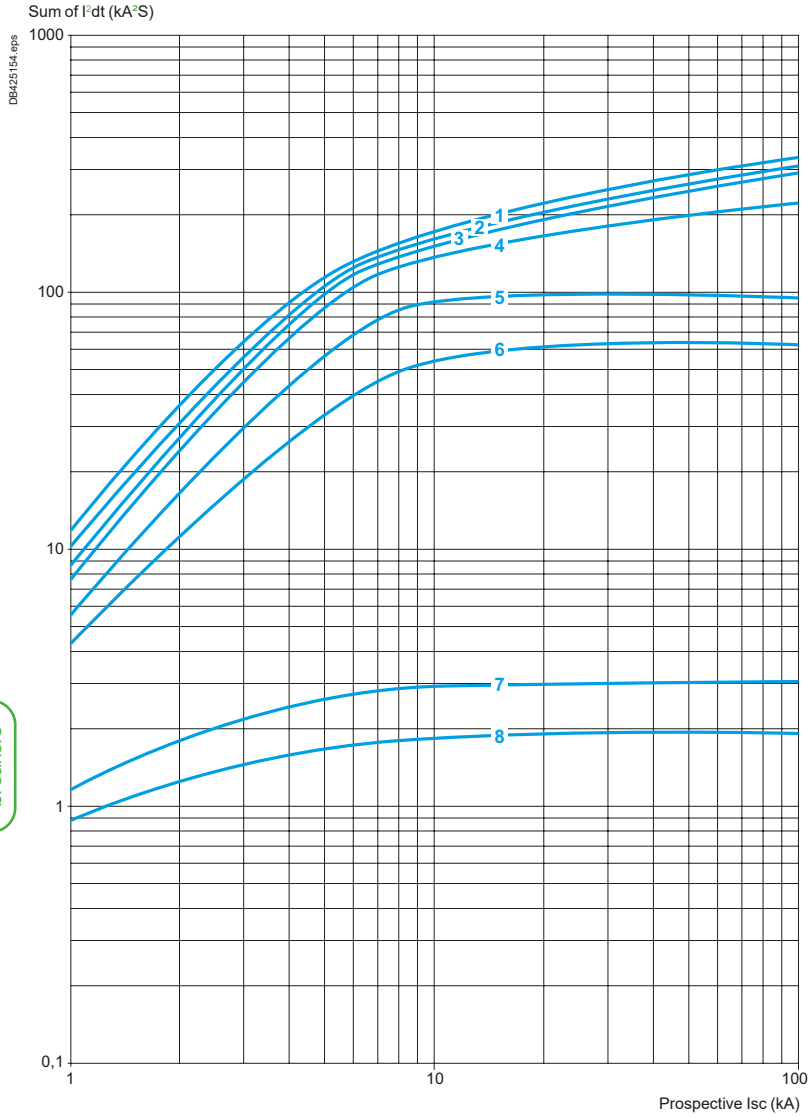
Ref.
Motor circuit breakers

# Curves

## Thermal limit on short-circuit for GV4L, GV4LE + thermal overload relay LRD or LR9

### Thermal limit in kA²S in the magnetic operating zone

Sum of kA²S = f (prospective Isc) at 1.05 Ue = 435 V




1 GV4L115 + LR9D5367 or LR9F5367
2 GV4L80 + LRD3361
3 GV4L50 + LRD340
4 GV4L25 + LRD325
5 GV4L12 + LRD313
6 GV4L07+ LRD12
7 GV4L03+ LRD07
8 GV4L02 + LRD07

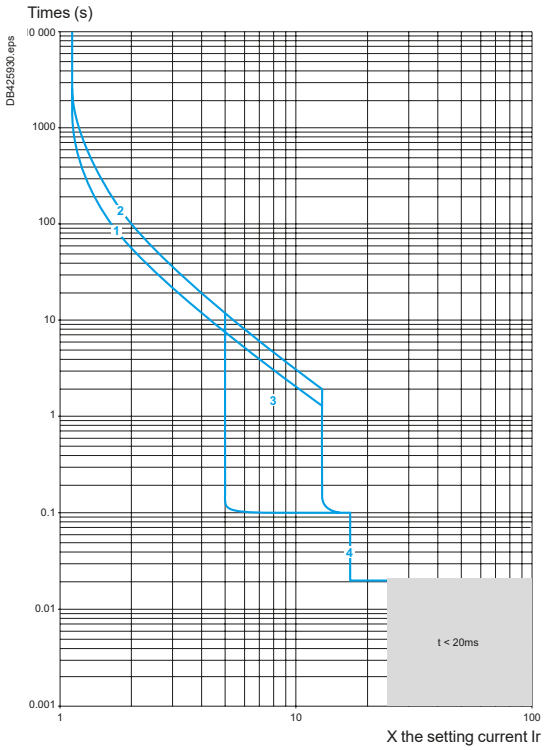
Ref.
Motor circuit breakers

# Curves

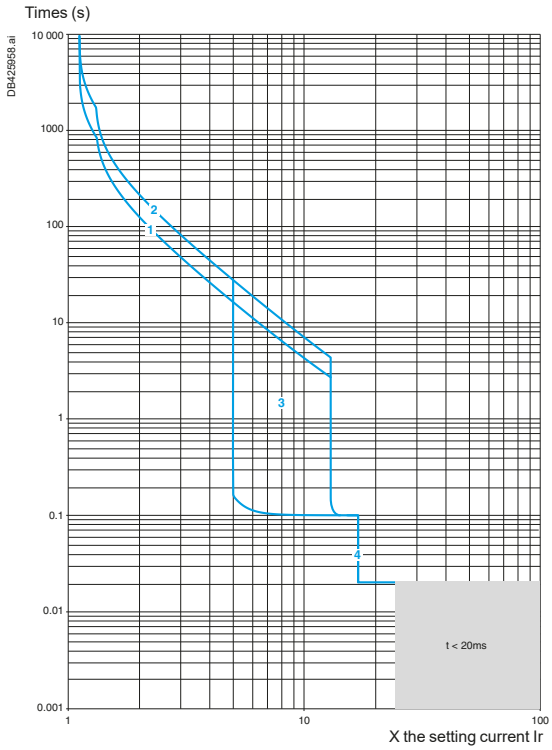
## Thermal-magnetic tripping curves for GV4P, GV4PE, GV4PEM, GV4PB

**Average operating times at 20 °C related to multiples of the setting current**

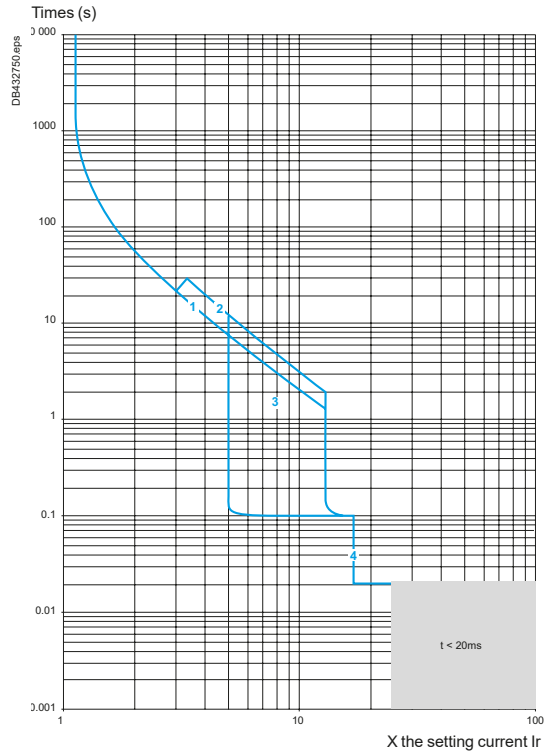
### GV4P, GV4PE, GV4PEM



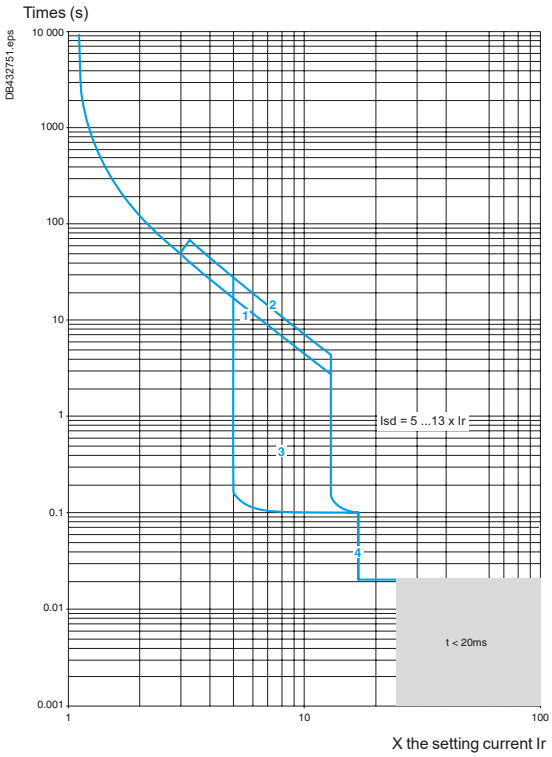

### GV4P, GV4PE, GV4PEM




### GV4PB




### GV4PB




*Hot state*

1 Class 10
2 Class 20
3 Isd = 13 x Ir (GV4P - GV4PE); Isd = 5….13 x Ir (GV4PEM - GV4PB)
4 Ii = 17 In

*Cold state*

1 Class 10
2 Class 20
3 Isd = 13 x Ir (GV4P - GV4PE); Isd = 5…. 13 x Ir (GV4PEM - GV4PB)
4 Ii = 17 In

References:
pages B6/37 to B6/41

Characteristics:
pages B6/120 to B6/123

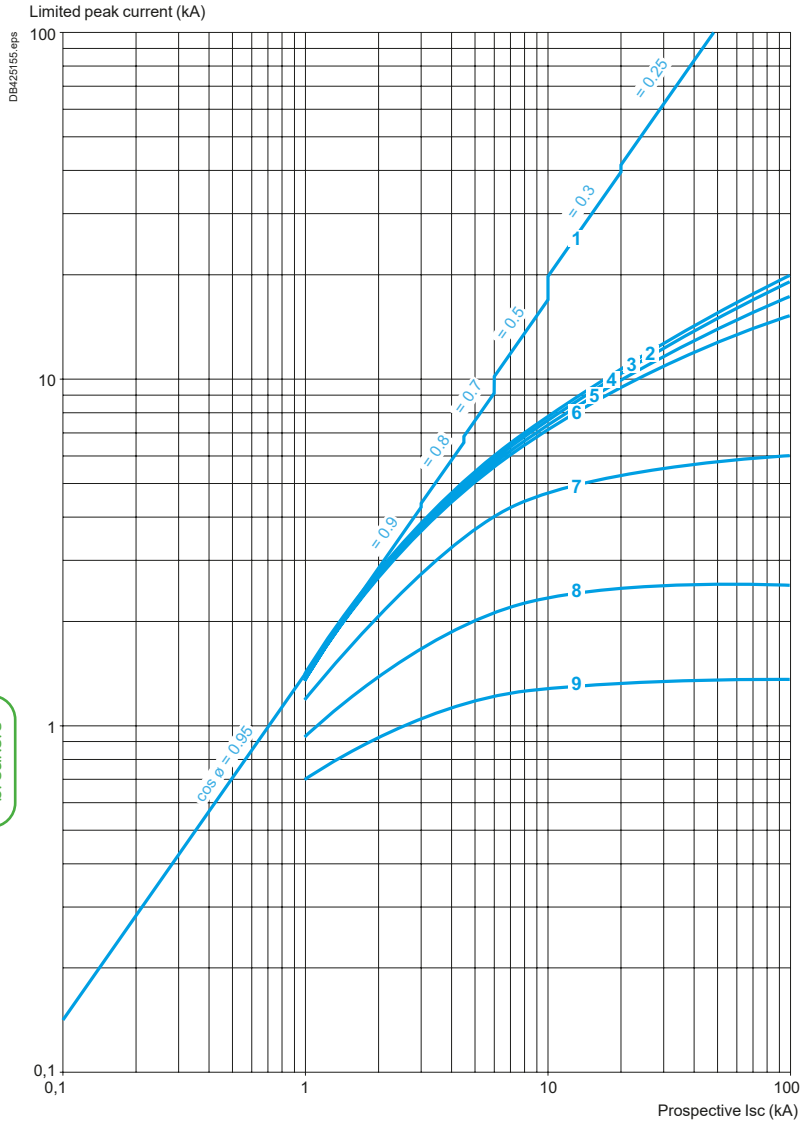
Dimensions, schemes:
pages B6/134 to B6/137

# Curves

## Current limitation on short-circuit for GV4P, GV4PE, GV4PEM, GV4PB (3-phase 400/415 V)

### Dynamic stress

I peak = f (prospective Isc) at 1.05 Ue = 435 V




1 Maximum peak current
2 GV4P115
3 GV4P80
4 GV4P50
5 GV4P25
6 GV4P12
7 GV4P07
8 GV4P03
9 GV4P02

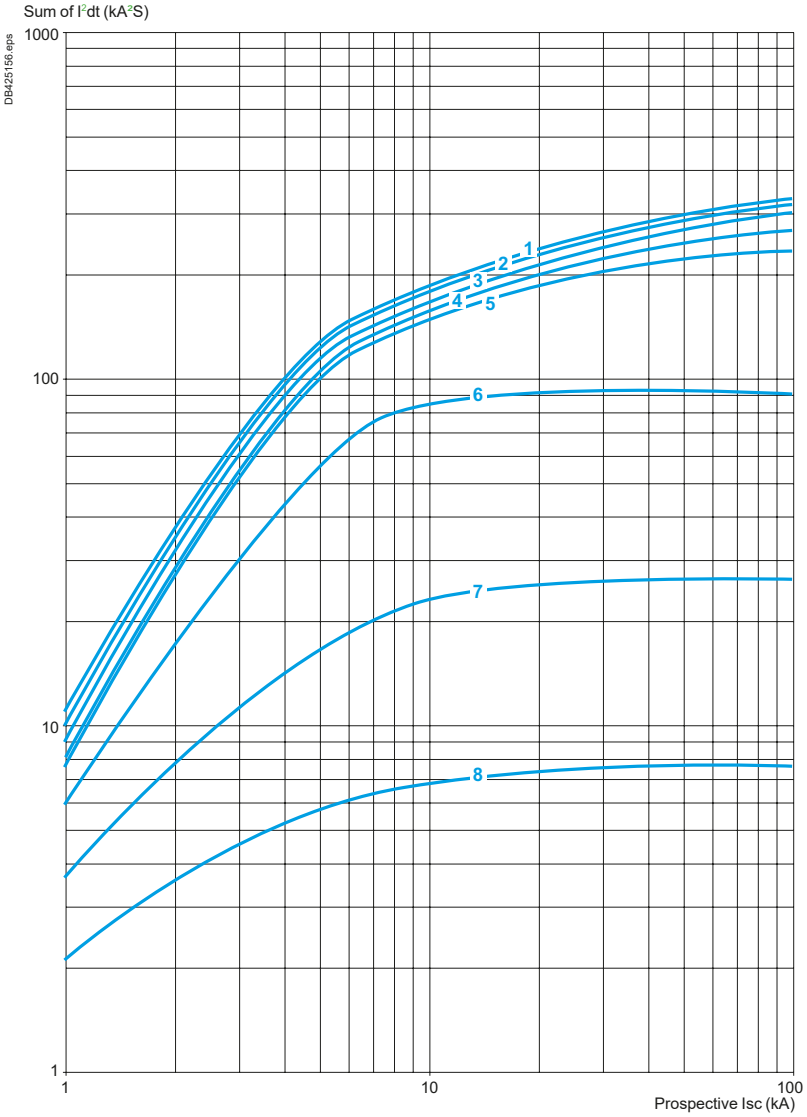
Ref.
Motor circuit breakers

# Curves

## Thermal limit on short-circuit for GV4P, GV4PE, GV4PEM, GV4PB

### Thermal limit in kA²s in the magnetic operating zone

Sum of $I^2dt$ = f (prospective Isc) at 1.05 Ue = 435 V




1 GV4P115
2 GV4P80
3 GV4P50
4 GV4P25
5 GV4P12
6 GV4P07
7 GV4P03
8 GV4P02

References:
pages B6/37 to B6/41

Characteristics:
pages B6/120 to B6/123

Dimensions, schemes:
pages B6/134 to B6/137

# Characteristics

## Characteristics of electric trips

| Type of trip | | | GV4AU●●● MN (undervoltage release) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | V | = Ue | | | | | | |
| Operational voltage (Ue) | Conforming to IEC 60947-1 | V | 24 V AC/DC | 48 V AC/DC | 110-130 V AC 125 V DC | 208-240 V 60 Hz 220-240 V 50 Hz | 277 V 60 Hz | 380-415 V 60 Hz | 440-480 V 60 Hz |
| Inrush consumption | ~ / ⎓ | VA | < 7 VA<br>< 2 W | < 7 VA<br>< 2 W | < 7 VA<br>< 2 W | < 7 VA | < 7 VA | < 7 VA | < 7 VA |
| Sealed consumption | ~ / ⎓ | VA | < 7 VA<br>< 2 W | < 7 VA<br>< 2 W | < 7 VA<br>< 2 W | < 7 VA | < 7 VA | < 7 VA | < 7 VA |
| Operating time | Conforming to IEC 60947-1 | ms | < 50 | | | | | | |
| On-load factor | | | 100 % | | | | | | |
| Cabling (spring connection) | Number of conductors | | 1 per terminal | | | | | | |
| | Solid cable | mm² | No solid cable allowed | | | | | | |
| | Flexible cable without cable end | mm²<br>AWG | Cu 0.5 mm² to 1.5 mm²<br>Cu 20AWG to 16AWG | | | | | | |
| | Flexible cable with cable end | mm² | No cable with cable end allowed | | | | | | |
| Tightening torque | | N.m | NA | | | | | | |
| Mechanical durability (C.O.: Close - Open) | | C.O. | 20000 | | | | | | |

## Characteristics of electric trips

| Type of trip | | | GV4AS●●● MX (Shunt trip) | | | | |
|---|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | V | = Ue | | | | |
| Operational voltage (Ue) | Conforming to IEC 60947-1 | V | 24 V AC/DC | 48 V AC/DC | 110-130 V AC 125 V DC | 208-240 V 60 Hz 220-240 V 50 Hz | 380-415 V 50 Hz 440-480 V 60 Hz |
| Inrush consumption | ~ / ⎓ | VA | < 6 VA<br>< 10 W | < 6 VA<br>< 10 W | < 6 VA<br>< 10 W | < 6 VA | < 6 VA |
| Sealed consumption | ~ / ⎓ | VA | < 4 VA<br>< 1 W | < 4 VA<br>< 1 W | < 4 VA<br>< 1 W | < 4 VA | < 4 VA |
| Operating time | Conforming to IEC 60947-1 | ms | < 50 | | | | |
| On-load factor | | | 100 % | | | | |
| Cabling (spring connection) | Number of conductors | | 1 per terminal | | | | |
| | Solid cable | mm² | No solid cable allowed | | | | |
| | Flexible cable without cable end | mm²<br>AWG | Cu 0.5 mm² to 1.5 mm²<br>Cu 20AWG to 16AWG | | | | |
| | Flexible cable with cable end | mm² | No cable with cable end allowed | | | | |
| Tightening torque | | N.m | NA | | | | |
| Mechanical durability (C.O.: Close - Open) | | C.O. | 20000 | | | | |



References:
page B6/43

# Characteristics

## Auxiliary contact characteristics

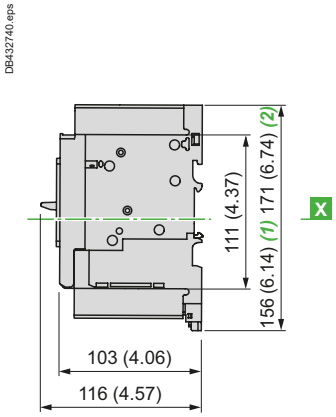
| Type of contacts | | | | Auxiliary contact block GV4AE11 | | | | | | SDx contact module for GV4PEM , GV4PB, GV4ADM1111 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated insulation voltage(Ui) | Conforming to IEC 60947-1 | | V | 690 | | | | | | 250 | | | | | |
| | Conforming to CSA C22-2 n°14 UL 508 | | V | - | | | | | | - | | | | | |
| Conventional thermal current (Ith) | Conforming to IEC 60947-5-1 | | A | 5 | | | | | | 5 | | | | | |
| | Conforming to CSA C22-2 n°14 UL 508 | | A | 5 | | | | | | 5 | | | | | |
| Mechanical durability (C.O.: Close - Open) | | | C.O. | 40 000 | | | | | | 100 000 | | | | | |
| Operational power and current conforming to IEC 60947-5-1 a.c. operation | **Rated operational voltage (Ue)** | | V | **24** | **48** | **110/ 127** | **230/ 240** | **380/ 440** | **660/ 690** | **48** | **110** | **230/ 240** | **380/ 415** | **440** | **690** |
| | Operational power (AC12) | | VA | 120 | 240 | 635 | 1200 | 2200 | 3450 | | | 400 | | | |
| | Occasional breaking and making capacities | | kVA | 1.2 | 2.4 | 6.35 | 12 | 22 | 34.5 | | | | | | |
| | Operational current (Ie) | AC-12 | A | 5 | 5 | 5 | 5 | 5 | 5 | | | | | | |
| | | AC-15 | A | 5 | 5 | 4 | 3 | 2.5 | 0.1 | | 3 | 1.5 | | | |
| Operational power and current conforming to IEC 60947-5-1 d.c. operation | **Rated operational voltage (Ue)** | | V | **24** | **48** | **110** | **250** | | | **24** | **48** | **60** | **110** | **250** | |
| | Operational power (DC12) | | W | 120 | 120 | 66 | 75 | | | 50 | | | | | |
| | Occasional breaking and making capacities | | W | 1200 | 1200 | 660 | 750 | | | | | | | | |
| | Rated operational current (Ie) | DC-12 | A | 5 | 2.5 | 0.6 | 0.3 | | | | | | | | |
| | | DC-13 | A | 2.5 | 1.2 | 0.35 | 0.05 | | | 2 | | | 0.22 | 0.11 | |
| | | DC-14 | A | 1 | 0.2 | 0.05 | 0.03 | | | | | | | | |
| Low power switching reliability of contact | | | | $10^{-6}$ at 17 V / 2 mA | | | | | | | | | | | |
| Minimum operational conditions d.c. operation | | | V | 17 | | | | | | | | | | | |
| | | | mA | 2 | | | | | | | | | | | |
| Short-circuit protection | | | | 5 A fuse gG conforming to IEC 60947-5-1 | | | | | | | | | | | |
| Spring terminals cabling | Number of conductors | | | 1 per hole | | | | | | | | | | | |
| | Solid cable | | $mm^2$ | - | | | | | | 0.2 to 1.5 | | | | | |
| | Flexible cable without cable end | | $mm^2$ | 0.5 to 1.5 | | | | | | 0.2 to 2.5 | | | | | |
| | Flexible cable with cable end | | $mm^2$ | - | | | | | | 0.25 to 1.5 | | | | | |

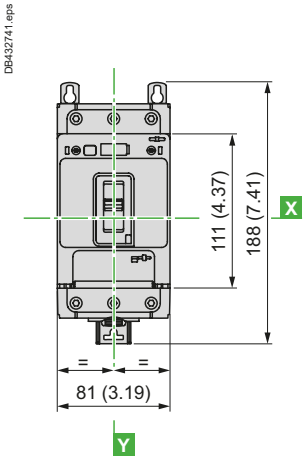
References:
page B6/42

# Dimensions and mounting

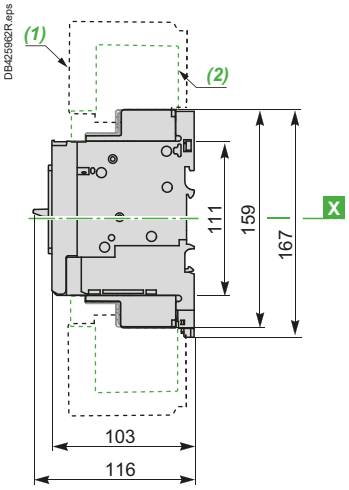
## GV4 with toggle: GV4LE, GV4PE, GV4PEM, GV4PB

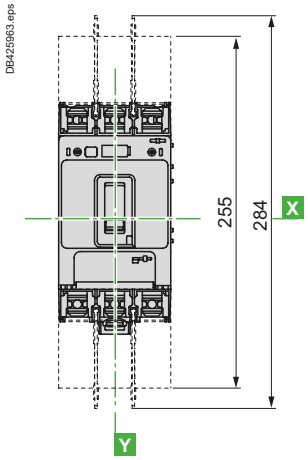
### With EverLink® connector




### With crimp lug connector



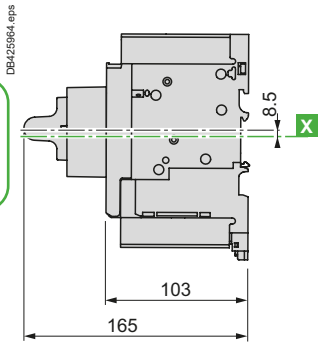



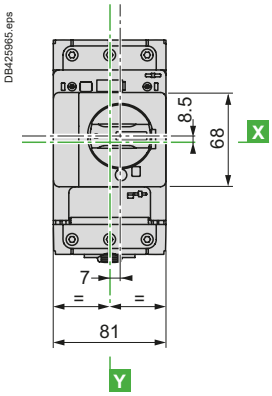

*(1)* ***GV4LE***, ***GV4PE***, ***GV4PEM***.
*(2)* ***GV4PB***.

*(1)* *Interphase barriers.*
*(2)* *Long terminal shield.*

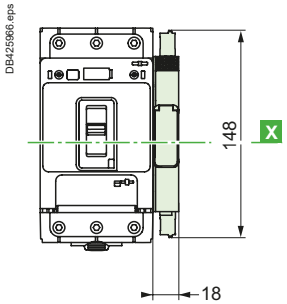
## GV4 with rotary handle: GV4L, GV4P, or GV4LE, GV4PE, GV4PEM, GV4PB with GV4ADN01, GV4ADN02 direct mounting rotary handle

### Dimensions




## SDx module



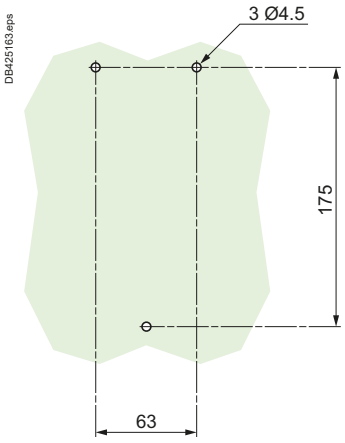

Ref.
Motor circuit breakers

# Dimensions and mounting

## GV4L, GV4P, GV4LE, GV4PE, GV4PEM, GV4PB

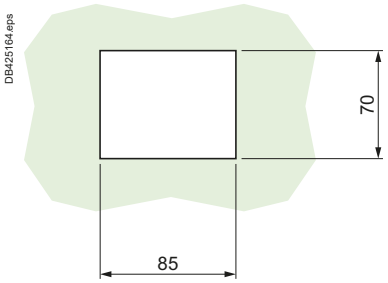
### Panel mounting with M4 screws

DB425163.eps



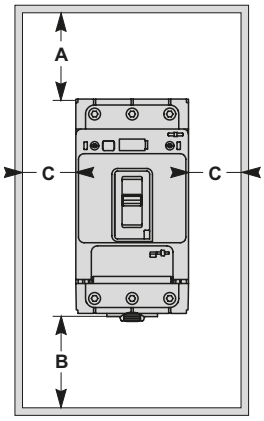

### Door cut-out for rotary handle

DB425164.eps




### Minimum safety clearance

DB425971.eps




Toggle-type, rotary handle-type: identical clearance values.

**Safety clearance (mm)**

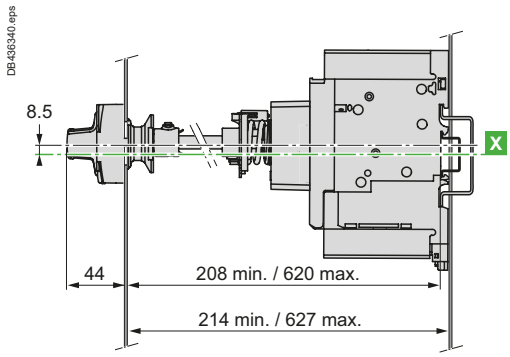
| | Painted sheet metal | | | Bare sheet metal | | |
|---|---|---|---|---|---|---|
| | A | B | C | A | B | C |
| No accessory | 30 | 0 | 0 | 40 | 0 | 5 |
| Interphase barriers | 0 | 0 | 0 | 0 | 0 | 5 |
| Long terminal shield | 0 | 0 | 0 | 0 | 0 | 5 |

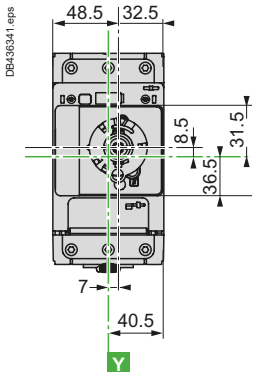
Ref.
Motor circuit breakers

# Dimensions and mounting

## GV4 with extended rotary handle

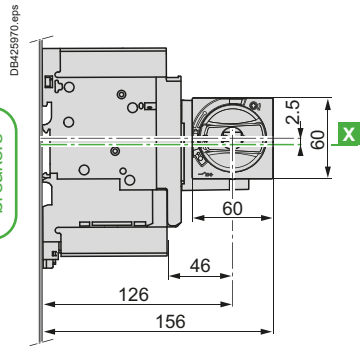
### Front extended rotary handle GV4APN01, GV4APN02, GV4APN04

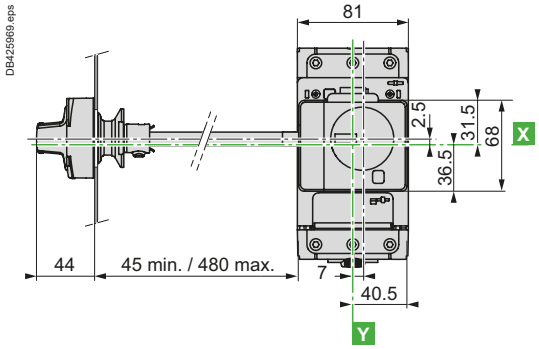



Ref.

### Side (left or right) extended rotary handle LV426935, LV426936

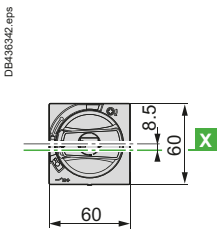


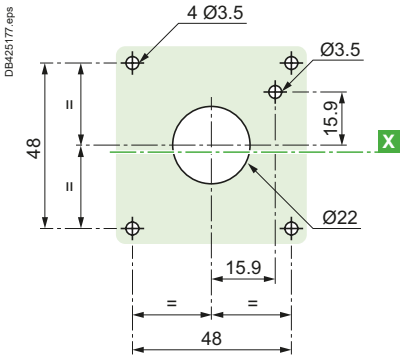

Motor circuit breakers

### Front and side extended rotary handle, door/side panel cut-out

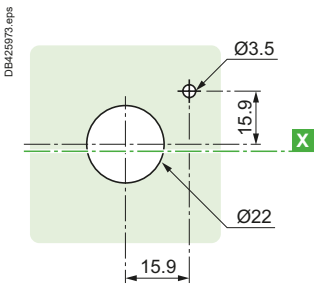
**Front and side extended rotary handle**




**IP65, door panel cut-out**




**IP54, door/side panel cut-out**

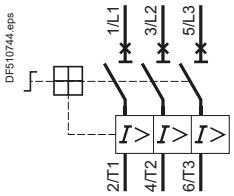



References:
pages B6/45 to B6/47

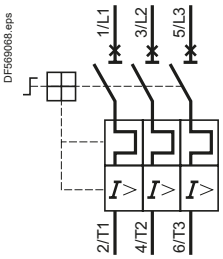
# Schemes

## Magnetic motor circuit breakers

### GV4L, GV4LE



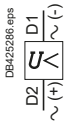

### GV4P, GV4PE, GV4PEM, GV4PB



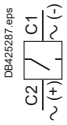

## Accessories

### Electrical trips

#### MN GV4AU●●●




#### MX GV4AS●●●

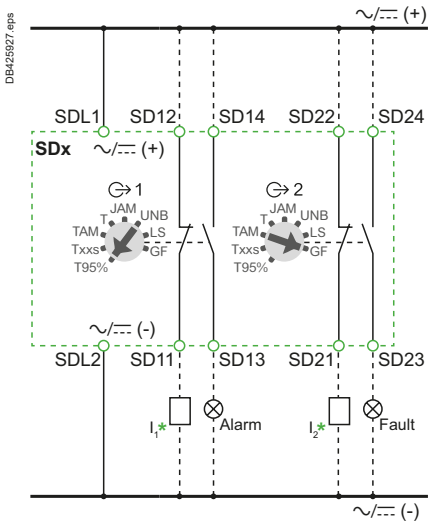



### GV4AE11 auxiliary contacts

#### Used as OF contact

#### Used as SD contact

## Side mounting add-on contact blocks
## Instantaneous auxiliary contacts and fault signalling contacts




* I1, I2: PLC digital inputs - used as alarm inputs, as an example.

Ref.
Motor circuit breakers

# TeSys Giga - Frame 5, 6

## 55 to 250 kW

# Characteristics

## Environment

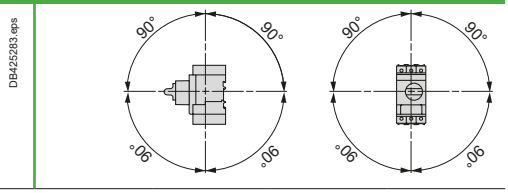
| Circuit breaker type | | | | GV5P/ GV6P |
|---|---|---|---|---|
| Conforming to standards | | | | IEC/EN 60947-4-1<br>IEC/EN 60947-2<br>UL 60947-4-1<br>CSA C22.2 n° 60947-4-1 |
| Product certifications | | | | CB, UKCA,UL, CSA, EAC, DNV-GL (1) |
| Climatic withstand | | | | According to IACS E10 |
| Degree of protection (front face) | Conforming to IEC 60529 | Bare circuit breaker with terminal shields | | IP40 with direct rotary handle |
| | | Installed in switchboard | | IP40 with direct rotary handle / IP43 with MCC conversion accessory/ IP55 with extended rotary handle |
| Shock resistance | Conforming to IEC 60068-2-27 | | | 15 gn -11 ms |
| Vibration resistance | Conforming to IEC 60068-2-6 | | | 2.5 gn (25 Hz) |
| Ambient air temperature | Storage in packing | | °C | -50…+85 |
| | Operation | Open mounted | °C | -25… +70 |
| | | In enclosure | °C | -25...+70 |
| Flame resistance | Conforming to IEC 60695-2-11 | | °C | 960 |
| Maximum operating altitude | | | m | 2000 |
| Suitable for isolation | Conforming to IEC 60947-1 § 7-1-6 | | | Yes |
| Resistance to mechanical impact | | | J | 0.5 |
| Sensitivity to phase failure | | | | Yes |

## Technical characteristics

| Circuit breaker type | | | GV5P150 | GV5P220 | GV6P320 | GV6P500 |
|---|---|---|---|---|---|---|
| Utilisation category | Conforming to IEC 60947-2 | | A | | | |
| | Conforming to IEC 60947-4-1 | | AC-3 | | | |
| Rated operational voltage (Ue) | Conforming to IEC 60947-2 | V | 690 | | | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-2 | V | 800 | | | |
| Rated voltage | Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1 | V | 600 | | | |
| Rated operational frequency | Conforming to IEC 60947-4-1 UL, CSA | Hz | 50/60 | | | |
| Rated impulse withstand voltage (U imp) | Conforming to IEC 60947-2 | kV | 8 | | | |
| Total power dissipated per pole | | W | 9.2 | 17.6 | 19.2 | 39.7 |
| Mechanical durability (C.O.: Close, Open) | | C.O. | 40 000 | 20 000 | 15 000 | 15 000 |
| Electrical durability for AC-3 duty | 400/415 V (In) | C.O. | 20 000 | 10 000 | 6 000 | 4 000 |
| Duty class (maximum operating rate) | | C.O./h | 25 | | | |
| Maximum conventional rated thermal current (Ith) | Conforming to IEC 60947-4-1 | A | 70…150 | 100...220 | 160...320 | 250...500 |
| Rated duty | Conforming to IEC 60947-4-1 | | Continuous duty | | | |

## Mounting characteristics

Operating position
Without derating, in relation to normal vertical mounting plane



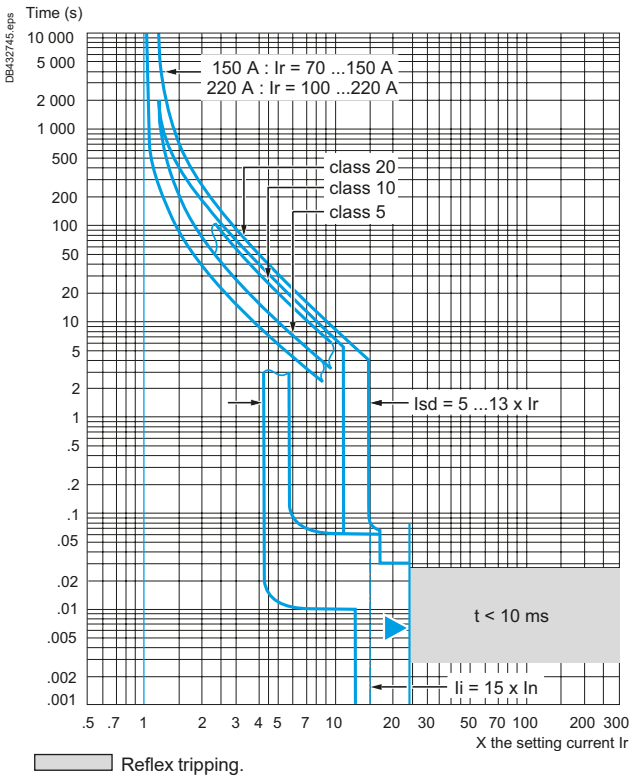

*(1)* ***EAC & DNV-GL*** *certifications are in progress. Please check with your nearest sales office for more details.*

References: page B6/51
Curves: pages B6/141 to B6/143
Dimensions: pages B6/146 to B6/151
Schemes: page B6/152

# Curves

## Thermal-magnetic tripping curves for GV5P

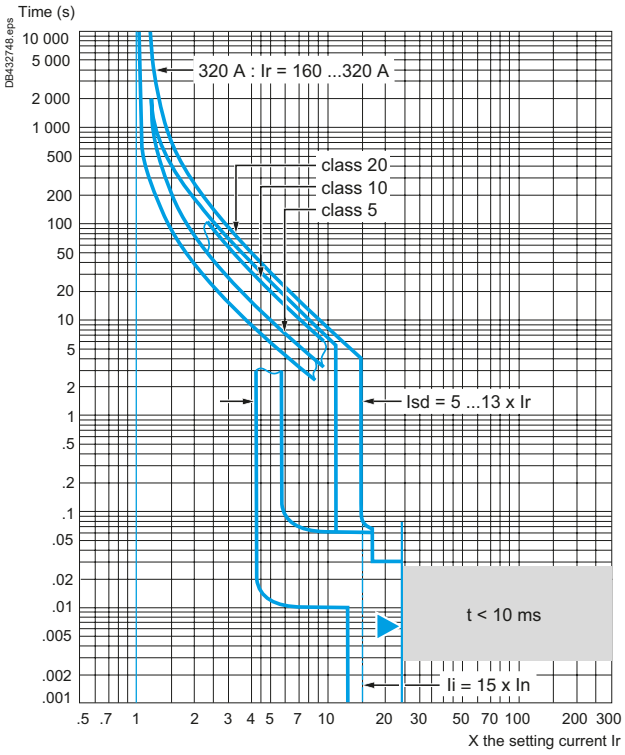
### MicroLogic 2.2 M - 150/220 A




Reflex tripping.

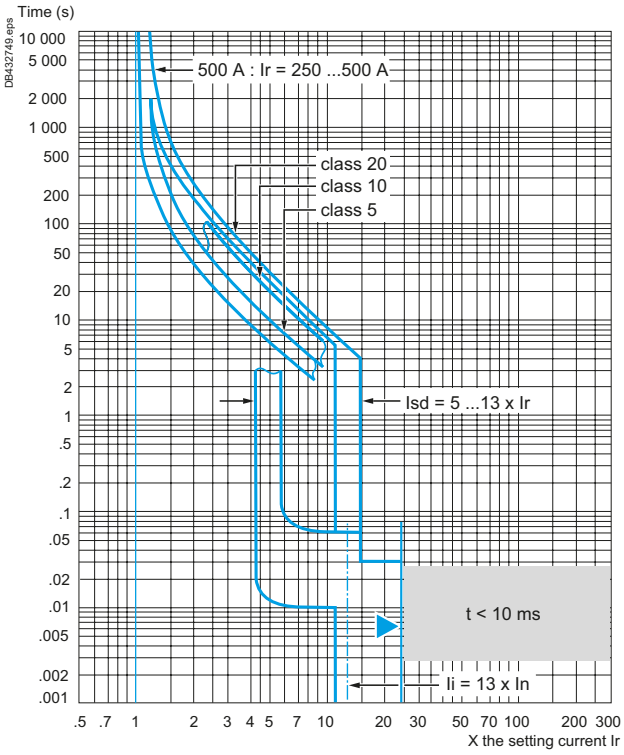
## Thermal-magnetic tripping curves for GV6P

### MicroLogic 2.3 M - 320 A




Reflex tripping.

### MicroLogic 2.3 M - 500 A




Ref.
Motor circuit breakers

References:
pages B6/51 to B6/55
Characteristics:
page B6/140
Dimensions:
pages B6/146 to B6/151
Schemes:
page B6/152

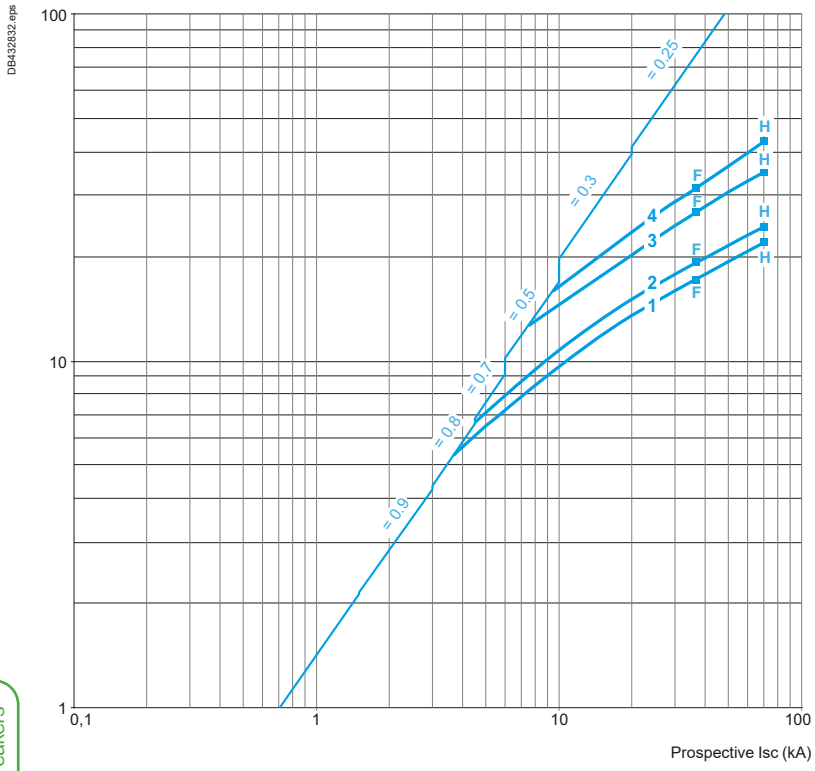
# Curves

## Current limitation on short-circuit (3-phase 400 - 415 V)

### Dynamic stress

**For GV5P/6P●●●F/H type**

Limited peak current (kA)




1 GV5P150F/H
2 GV5P220F/H
3 GV6P320F/H
4 GV6P500F/H

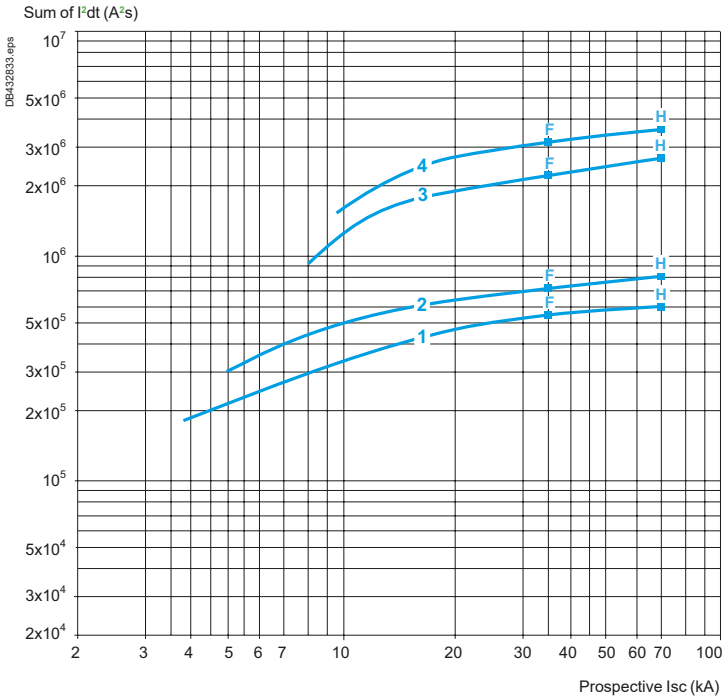
Ref.
Motor circuit breakers

# Curves

## Maximum thermal limit on short-circuit

### Thermal limit in kA²s in the magnetic operating zone

**Sum of I²dt = f (prospective Isc) at 1.05 Ue = 435 V**




1 GV5P150F/H
2 GV5P220F/H
3 GV6P320F/H
4 GV6P500F/H

Ref.
Motor circuit breakers

# Characteristics

## Characteristics of GV5P/GV6P electric trips

| Type of trip | | | LV42940● undervoltage trip | LV42938● shunt trip |
|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 690 | 690 |
| | Conforming to CSA C22-2 n°14, UL 508 | **V** | 600 | 600 |
| Operational voltage (Ue) | Conforming to IEC 60947-1 | **V** | 0.85...1.1 Uc | 0.7...1.1 Uc |
| Drop-out voltage | | **V** | 0.7...0.35 Uc | 0.7...0.35 Uc |
| Inrush consumption | ~ | **VA** | < 10 | |
| Sealed consumption | ~ | **VA** | < 5 | |
| Operating time | Conforming to IEC 60947-1 | **ms** | From the moment the voltage reaches its operational value until opening of the circuit breaker. < 50 | |
| On-load factor | | | 100 % | |
| Cabling | Number of conductors | | 1 | |
| | Solid cable | **mm²** | 1.5 | |
| | Flexible cable without cable end | **mm²** | 1.5 | |
| | Flexible cable with cable end | **mm²** | 1 | |
| Tightening torque | | **N.m** | 1.2 | |
| Mechanical durability (C.O.: Close - Open) | | **C.O.** | 50 % of the mechanical durability of the circuit breaker. | |

## Characteristics of GV5P/GV6P thermal fault module

| Type of trip | | | LV429424 (1) |
|---|---|---|---|
| Operational voltage (Ue) | Conforming to IEC 60947-1 | **V** | 24 to 415 V AC/ DC |
| Conventional thermal current (Ith) | Conforming to IEC 60947-5-1 | **A** | 80 mA max. |

*(1) **LV429424** takes the place of the AU/AS electric trip coil and an auxiliary contact.*

Ref.
Motor circuit breakers

# Characteristics

## Auxiliary contact characteristics

| **Type of contacts** | | | | **29450** | | | | | | **29452** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated insulation voltage(Ui) (associated insulation coordination) | Conforming to IEC 60947-1 | | **V** | 690 | | | | | | 690 | | | | |
| Conventional thermal current (Ith) | Conforming to IEC 60947-5-1 | | **A** | 6 | | | | | | 5 | | | | |
| Mechanical durability (C.O.: Close - Open) | | | **C.O.** | 50 000 | | | | | | 50 000 | | | | |
| Operational current conforming to IEC 60947-5-1 a.c. operation | | | | AC-12 or AC-15. 50 000 C.O. | | | | | | AC-12 or AC-15. 50 000 C.O. | | | | |
| | **Rated operational voltage (Ue)** | | **V** | **24** | **48** | **110** | **220/ 240** | **380/ 440** | **690** | **24** | **48** | **110** | **230/ 240** | **380/ 415** |
| | Rated operational current (Ie) | AC-12 | **A** | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 |
| | | AC-15 | **A** | 6 | 6 | 5 | 4 | 2 | 0.1 | 3 | 3 | 2.5 | 2 | 1.5 |
| Operational current conforming to IEC 60947-5-1 d.c. operation | | | | DC-12 or DC-14. 50 000 C.O. | | | | | | DC-12 or DC-14. 50 000 C.O. | | | | |
| | **Rated operational voltage (Ue)** | | **V** | **24** | | **48** | | **110** | **250** | **24** | | **48** | | **110** | **250** |
| | Rated operational current (Ie) | DC-12 | **A** | 6 | | 2.5 | | 0.6 | 0.3 | 5 | | 2.5 | | 0.6 | 0.3 |
| | | DC-14 | **A** | 1 | | 0.2 | | 0.05 | 0.03 | 1 | | 0.2 | | 0.05 | 0.03 |
| Minimum operational conditions d.c. operation | | | **V** | 24 | | | | | | 4 | | | | |
| | | | **mA** | 100 | | | | | | 1 | | | | |
| Short-circuit protection | | | | By **GB2CB●●** circuit breaker (rating according to operational current for Ue ≤ 415 V) or gG fuse, 10 A max. | | | | | | | | | | |
| Cabling | Solid cable | | **mm²** | 1 x 1.5 conductor | | | | | | 1 x 1.5 conductor | | | | |
| | Flexible cable without cable end | | **mm²** | 1 x 1.5 conductor | | | | | | 1 x 1.5 conductor | | | | |
| | Flexible cable with cable end | | **mm²** | 1 x 1.5 conductor | | | | | | 1 x 1.5 conductor | | | | |

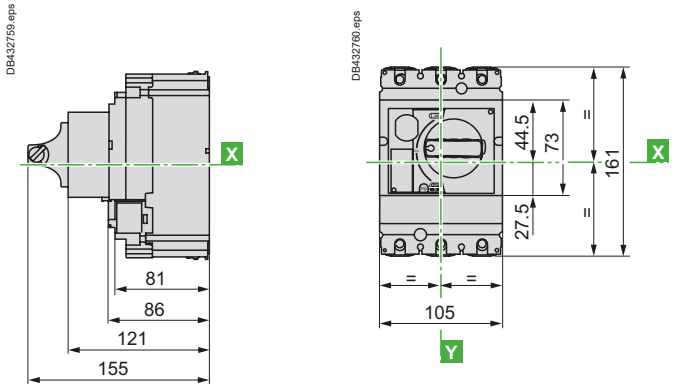
Ref.
Motor circuit breakers

References: pages B6/52 to B6/56
Characteristics: page B6/140
Dimensions: pages B6/146 to B6/151
Schemes: page B6/152

# Dimensions and mounting

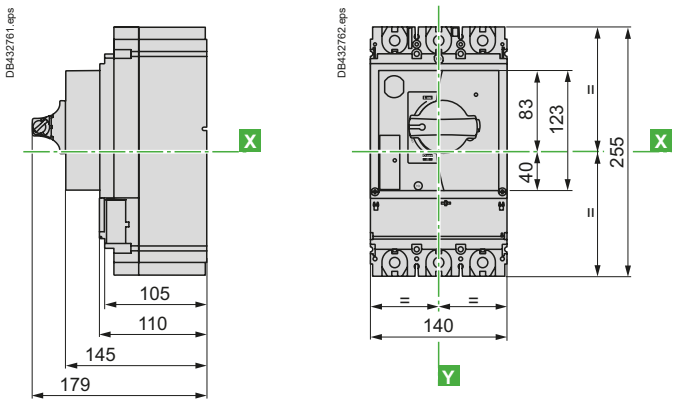
## GV5P

### Dimensions

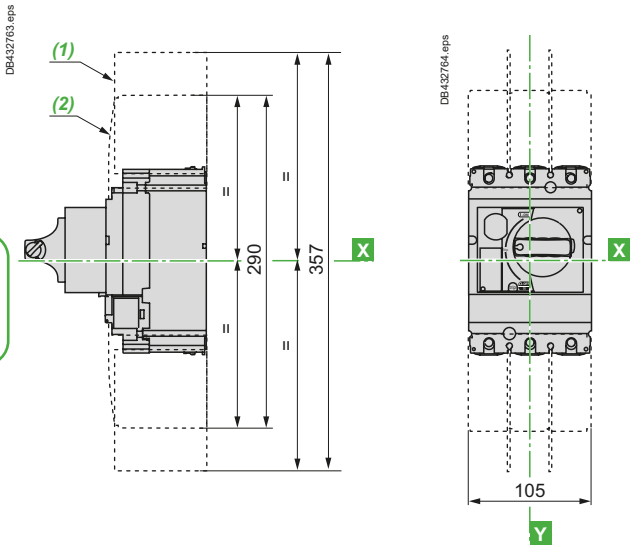



## GV6P

### Dimensions

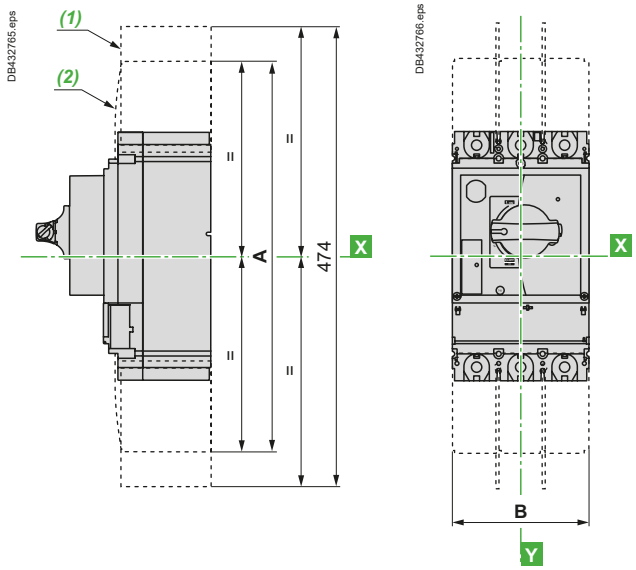



### With long terminal shields or interphase barriers
### GV5P + GV7AC04/GV7AC01




*(1) Interphase barriers:* **GV7AC04**.
*(2) Terminal shield:* **GV7AC01**.

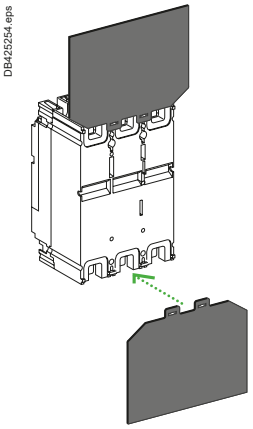
### GV6P + LV432593 / LV432595 / LV432570




*(1) Interphase barriers:* **LV432570**.
*(2) Terminal shield:* **LV432593** *(45mm)* / **LV432595** *(52.5mm)* .

| | A | B |
|---|---|---|
| **LV432593** | 400 | 140 |
| **LV432595** | 480 | 157.5 |

## Insulating screen



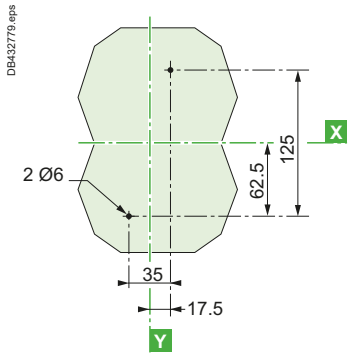

| Motor circuit breaker | | GV5P + GV7AC05 | GV6P + LV432578 |
|---|---|---|---|
| 3P | W x H x thickness (mm) | 140 x 105 x 1 | 203 x 175 x 1.5 |

References:
pages B6/51 to B6/56
Characteristics:
page B6/140
Curves:
pages B6/141 to B6/143
Schemes:
page B6/152

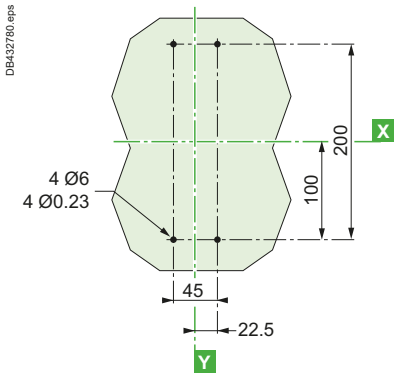
# Dimensions and mounting

## GV5P/GV6P

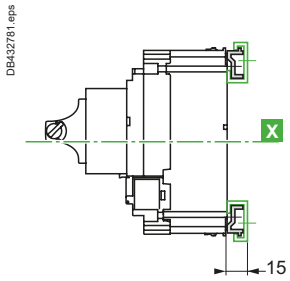
### Panel mounting - GV5P

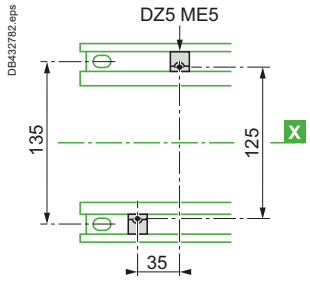



### Panel mounting - GV6P

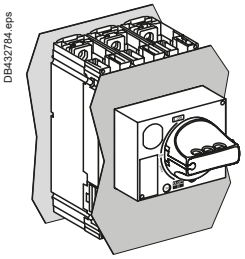


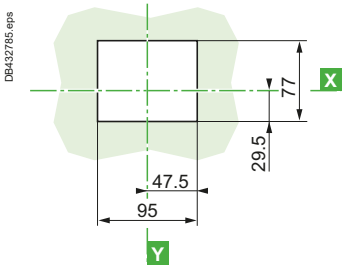

### Mounting on 2 mounting rails for GV5P only



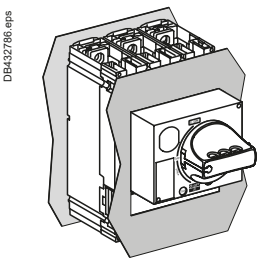



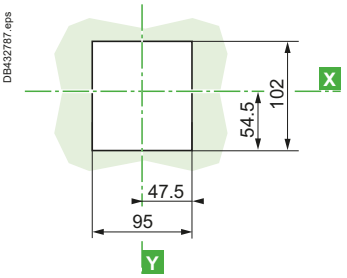

### Door cut-out mounting GV5P



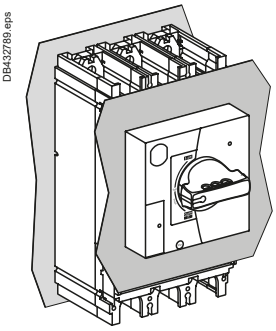



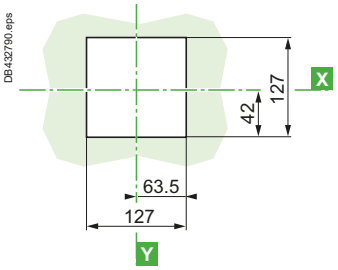

### With access to trip unit



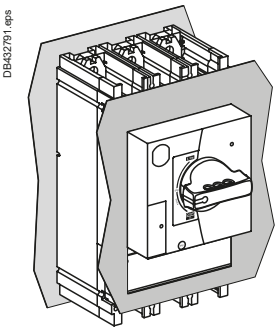



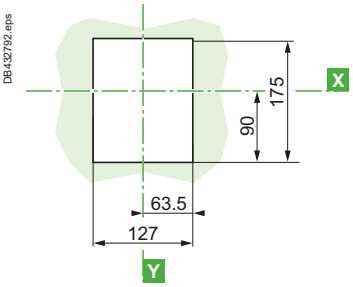

### Door cut-out mounting GV6P




### With access to trip unit

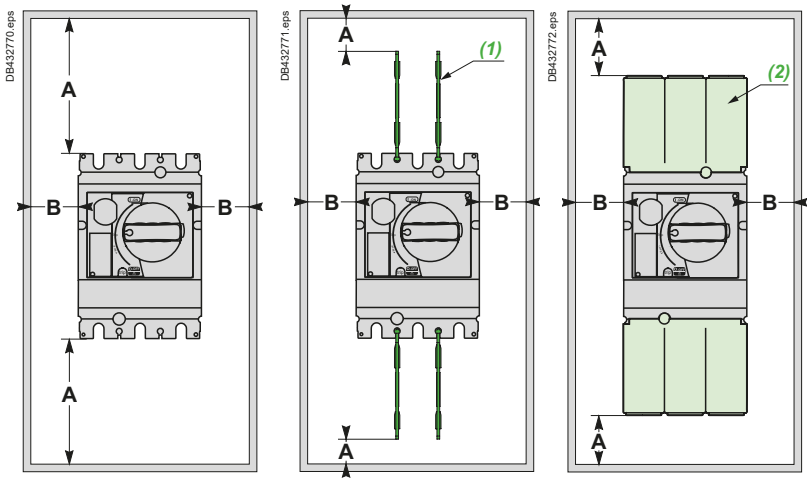



Ref.
Motor circuit breakers

## GV5P

### Minimum electrical clearance

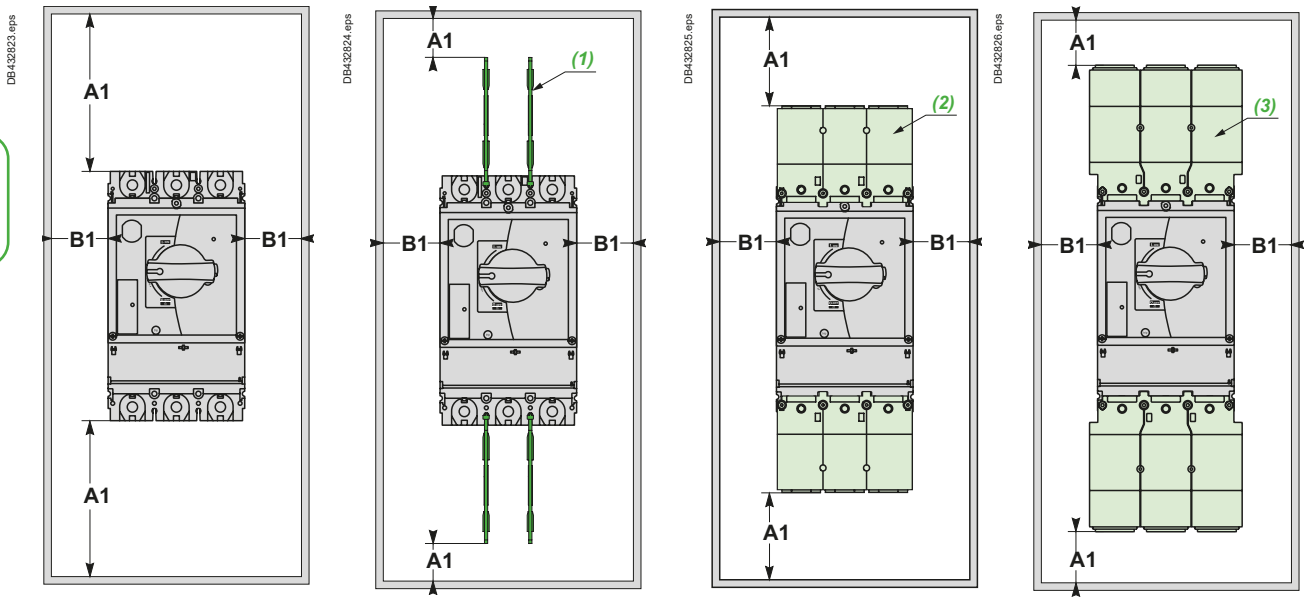



**Clearance in mm**

| | | Painted sheet metal | | Bare metal plate | |
|---|---|---|---|---|---|
| | | A | B | A | B |
| No accessories | V ≤ 500 V~ | 30 | 0 | 40 | 20 |
| | V > 500 V~ | - | - | - | - |
| Interphase barriers [1] | V ≤ 500 V~ | 0 | 0 | 10 | 20 |
| | V > 500 V~ | - | - | - | - |
| Terminal shield [2] | V ≤ 500 V~ | 0 | 0 | 10 | 10 |
| | V > 500 V~ | 30 | 10 | 40 | 20 |

## GV6P

### Minimum electrical clearance




**Clearance in mm**

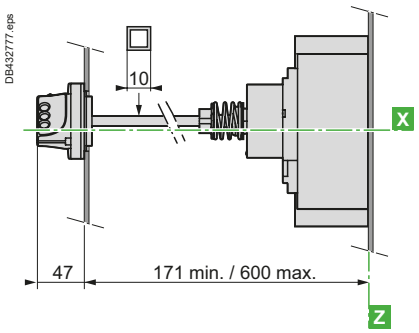
| | | Painted sheet metal | | Bare sheet metal | |
|---|---|---|---|---|---|
| | | A1 | B1 | A1 | B1 |
| No accessories | V ≤ 500 V~ | 30 | 0 | 40 | 20 |
| | V > 500 V~ | - | - | - | - |
| Interphase barriers [1] | V ≤ 500 V~ | 0 | 0 | 10 | 20 |
| | V > 500 V~ | - | - | - | - |
| Long terminal shield (LV432593) [2] | V ≤ 500 V~ | 30 | 0 | 40 | 10 |
| | V > 500 V~ | 50 | 0 | 50 | 20 |
| Long terminal shield (LV432595) [3] | V ≤ 500 V~ | 0 | 0 | 10 | 10 |
| | V > 500 V~ | 30 | 0 | 30 | 20 |

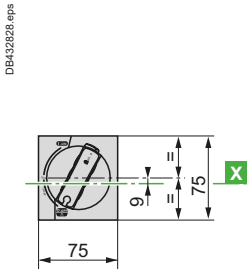
Ref.
Motor circuit breakers

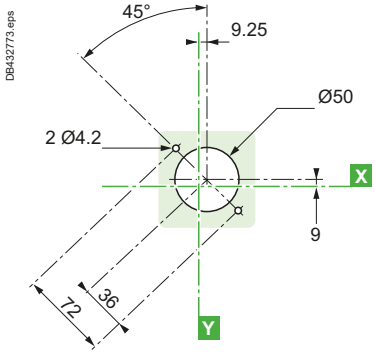
# Dimensions and mounting

## GV5P/GV6P

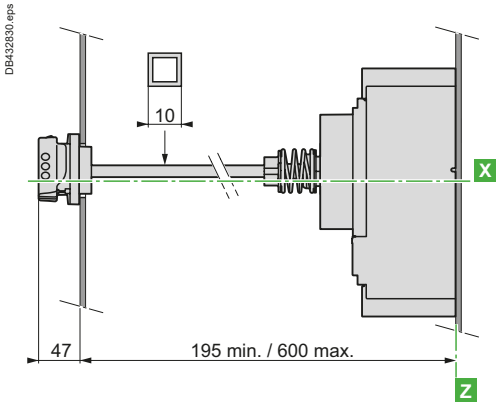
### GV5 with extended rotary handle GV7AP01/ GV7AP02

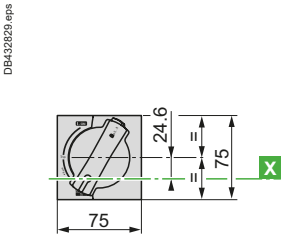


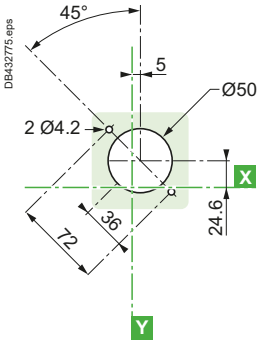




### GV6 with extended rotary handle LV432598/ LV432600

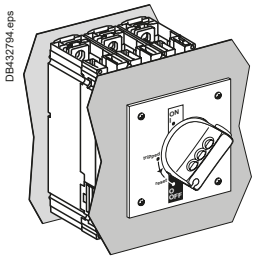


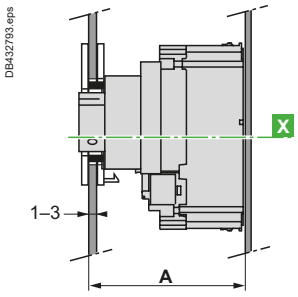



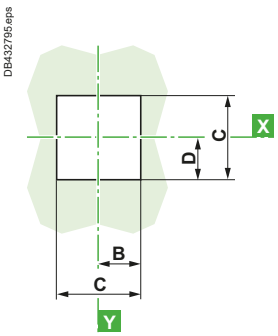




## GV5P/GV6P

### MCC type direct rotary handle




| | A | B | C | D |
|---|---|---|---|---|
| **150/220 A** | 125 ±2 | 50 | 100 | 41 |
| **320/500 A** | 149 ±2 | 72.5 | 145 | 51 |

References:
pages B6/51 to B6/56

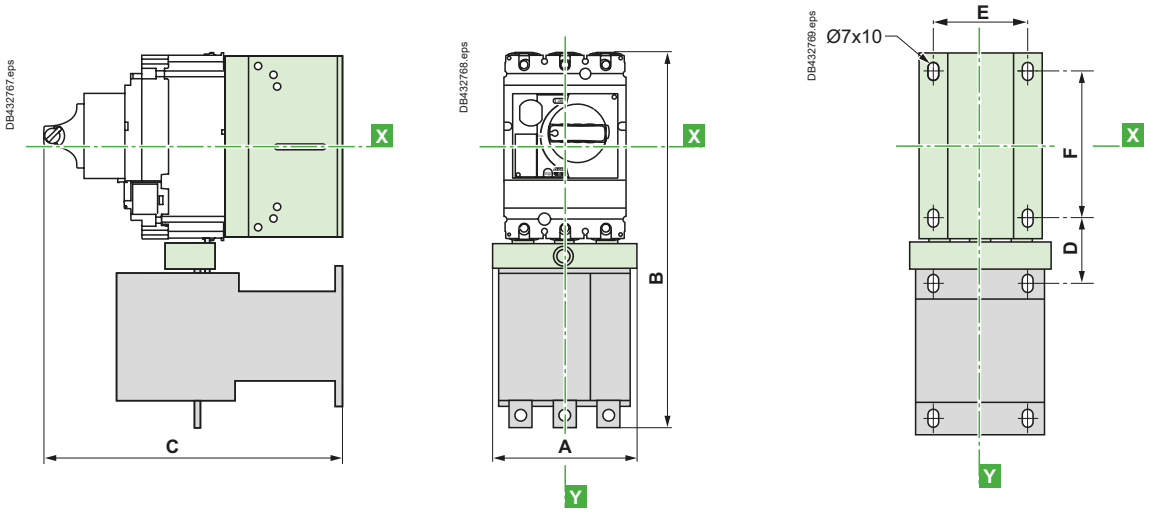
Characteristics:
page B6/140

Curves:
pages B6/141 to B6/143

Schemes:
page B6/152

## GV5P

### Combination of GV5P and contactor LC1F●●●/LC1D●●● with kit GV7AC0●



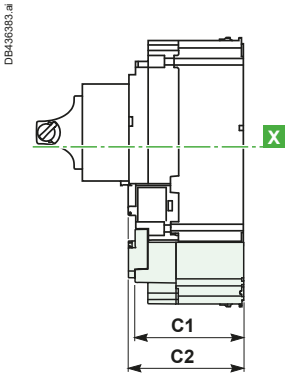

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| **GV5P + LC1F115 + GV7AC06** | 119 | 334 | 243 | 44 | 85 | 120 |
| **GV5P + LC1F150 + GV7AC06** | 119 | 334 | 243 | 46 | 85 | 120 |
| **GV5P + LC1F185 + GV7AC06** | 119 | 338 | 249 | 48 | 85 | 120 |
| **GV5P + LC1D115 + GV7AC08** | 120 | 332 | 205 | 48 | 85 | 120 |
| **GV5P + LC1D150 + GV7AC08** | 120 | 332 | 205 | 48 | 85 | 120 |

*Minimum distance between 2 circuit breakers mounted side by side = 0*



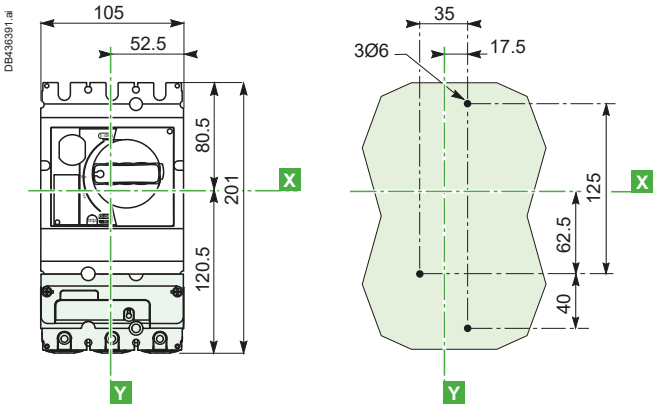
## GV5P/GV6P

### With additional PowerTag

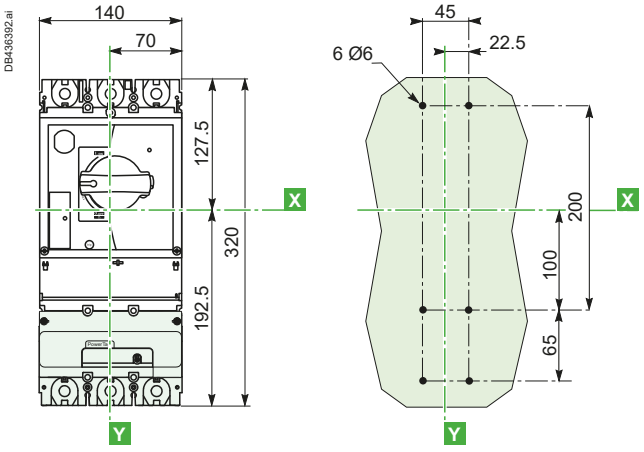



| Type | C1 | C2 |
|---|---|---|
| **GV5P** | 81 | 86 |
| **GV6P** | 95.5 | 110 |

### GV5P with LV434020 / Panel mounting



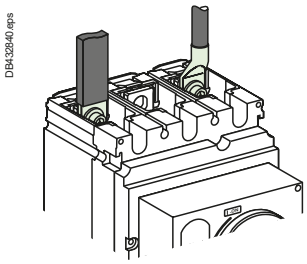

### GV6P with LV434022 / Panel mounting



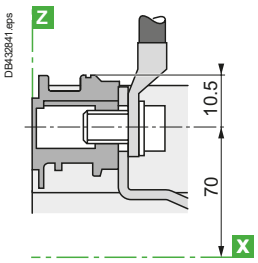
# Dimensions and mounting

## GV5P/GV6P

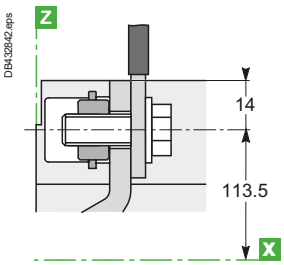
### Front connection without accessories




### GV5P
**Cables with lugs bars**

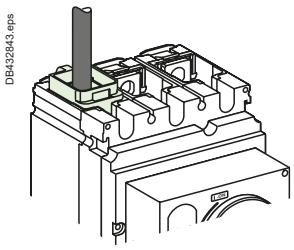



### GV6P
**Bars/cables with lugs**

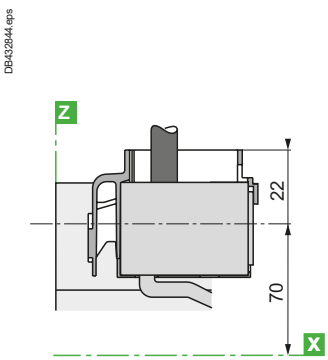



## GV5P

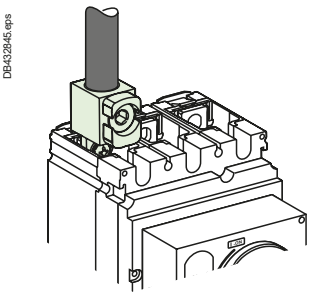
### Bare-cables connectors

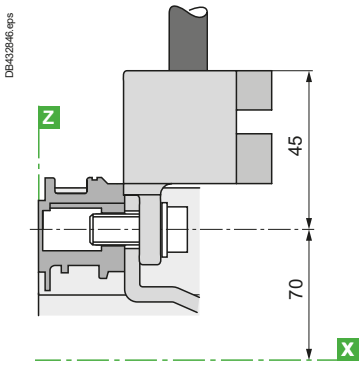



### GV7AC021/LV429227/GV7AC022



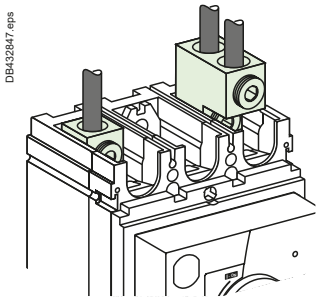

### LV429244



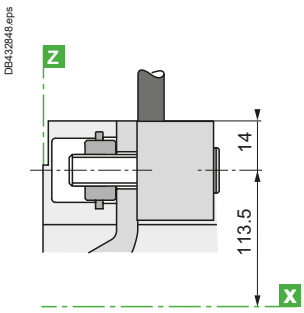




## GV6P

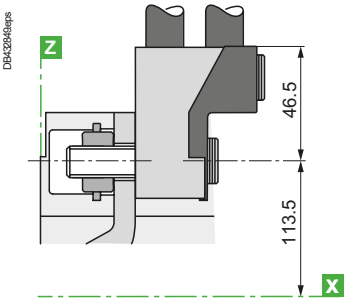
### Bare-cables connectors




### LV432479

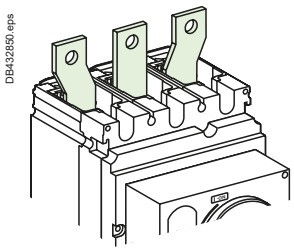


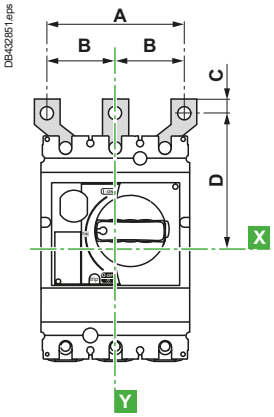

### LV432481




## GV5P/GV6P

### Spreaders



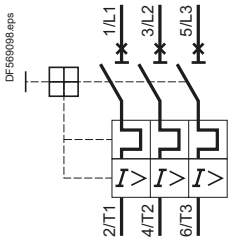




| Type | A | B | C | D |
|---|---|---|---|---|
| GV5P/ Spreaders GV7AC03 | 114 | 45 | 11 | 100 |
| GV6P/ Spreaders LV432490 | 135 | 52.5 | 15 | 152.5 |
| GV6P/ Spreaders LV432492 | 170 | 70 | 15 | 166 |

## Schemes

### Motor circuit breakers

**GV5P/ 6P**




### Add-on auxiliary contacts according to their location (1)

**29450, 29452**

| Location 1<br>C/O contact | Location 2<br>Trip indication | Location 3<br>Electrical fault indication (2) | Location 4<br>C/O contact |
|---|---|---|---|
| | | | |

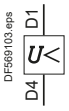


*A self-adhesive label, supplied with the contact, can be affixed to the front face of the circuit-breaker to allow personalised marking according to the function of the contact or contacts.*

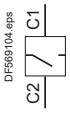
*(1) See pages B6/52 to B6/54.*
*(2) Adapter **LV429451** is mandatory for electrical trip indication in GV5.*

### Electric trips

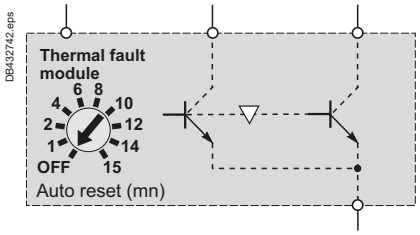
**LV42940●**



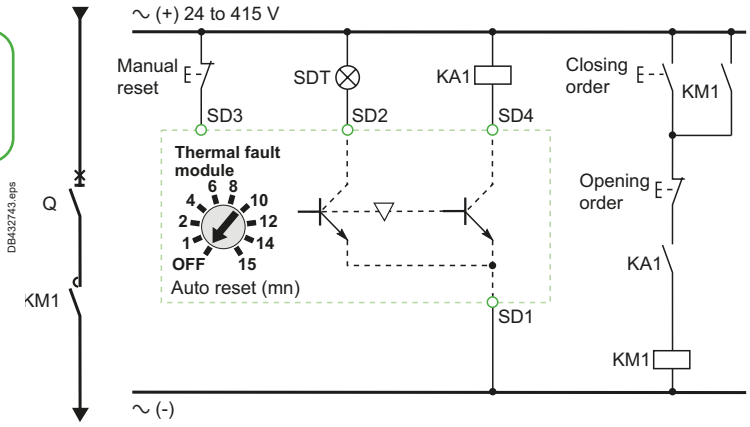

**LV42938●**




**Thermal fault module LV429424**




### Recommended application schemes for LV429424




**SD1**, **SD3:** thermal fault module input power supply
**SD2:** over-load fault signal output. This output will stay-put until reset
**SD4:** contactor control output
**SD2 and SD4:** Static outputs: 24 to 415 V AC / V DC; 80 mA max
**KM1:** LC1D or LC1F contactor
**KA1:** CA2 or CAD type control relays

Terminals shown in green **O** must be connected by customer.

Ref.
Motor circuit breakers

# PowerLogic™ Energy measurement solutions

# Characteristics

## Energy measurement – PowerLogic

**PowerTag Energy Flex 63 A (F63)**

## Main characteristics

| | | | | | |
|---|---|---|---|---|---|
| Rated voltage | 3P | Un | Phase-to-phase | **V** | 380… 415 V AC ± 20 % |
| | 3P+N | Un | Phase-to-neutral | **V** | 220… 240 V AC ± 20 % |
| | | | Phase-to-phase | **V** | 380… 415 V AC ± 20 % |
| Frequency | | | | **Hz** | 50/60 |
| Maximum current | | Imax | | **A** | 63 |
| Basic current | | Ib | | **A** | 10 |
| Saturation current | | | | **A** | 130 |
| Maximum consumption | | | 3P/3P+N | **VA** | ≤ 2 |
| Starting current | | Ist | | **mA** | 40 |

## Additional characteristics

| | | | |
|---|---|---|---|
| Operating temperature | | **°C** | -25 to +60 |
| Storage temperature | | **°C** | -40 to +85 |
| Overvoltage category | As per IEC 61010-1 | | Cat. III |
| Measuring category | As per IEC 61010-2-030 | | Cat. III |
| Pollution degree | | | 3 |
| Altitude | | **m** | ≤ 2000 |
| Degree of protection | Device only | | IP20 |
| | IK | | 05 |

## Radio-frequency communication

| | | | |
|---|---|---|---|
| ISM band 2.4 GHz | | **GHz** | 2.4 to 2.4835 |
| Channels | As per IEEE 802.15.4 | | 11 to 26 |
| Isotropic Radiated Power | Equivalent (EIRP) | **dBm** | 0 |
| Maximum transmission time | | **ms** | < 5 |
| Channel occupancy | Messages sent every | **s** | 5 minimum |

## Characteristics of measuring functions

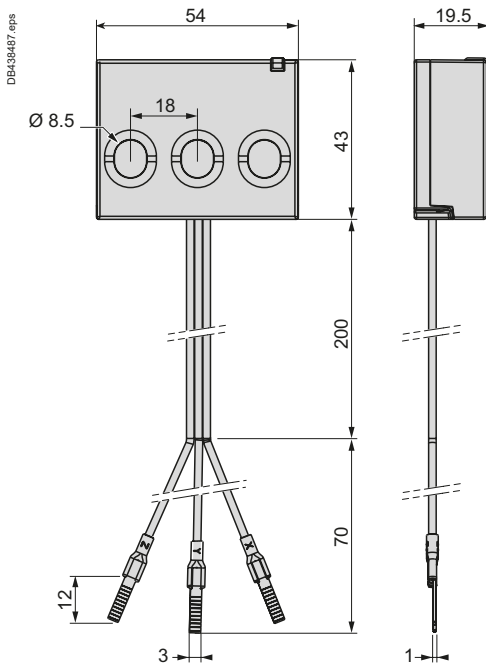
| Function | Symbol | Performance category as per IEC 61557-12 (PMD-I/DD/K55/1) | Measuring range |
|---|---|---|---|
| | | Class | |
| Active power | P | 1 | 9 W to 63 kW |
| Active energy | Ea | 1 | Total and partial 0 to 99999999.9 kWh |
| Current | I | 1 | 40 mA to 63 A |
| Voltage | U | 0.5 | Un ± 20 % |
| Power factor | PFA | 1 | 0 to 1 |

## Dimensions

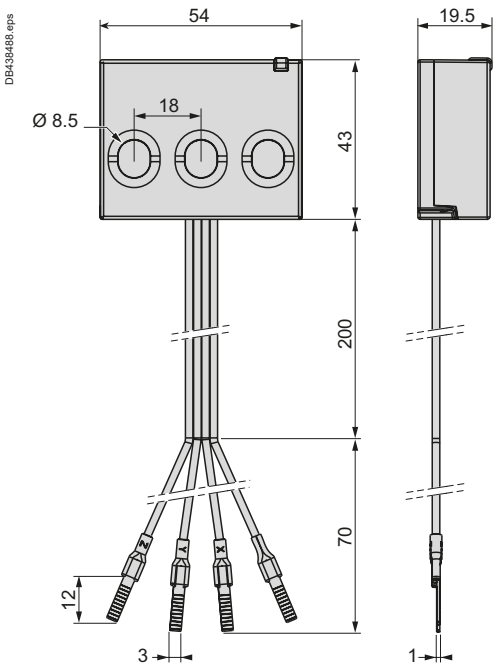
**A9MEM1573**

**A9MEM1570**

**3P**




**3P + N**




References:
page B6/59

# Characteristics

## Energy measurement – PowerLogic

**PowerTag Energy Flex 160 A (F160)**

### Main characteristics (as per IEC 61557-12)

| | | | | |
|---|---|---|---|---|
| Rated voltage | Un | Phase-to-neutral | **V** | 100...277 V AC ± 20 % |
| | | Phase-to-phase | | 173...480 V AC ± 20 % |
| Frequency | | | **Hz** | 50/60 |
| Maximum current | Imax | | **A** | 160 |
| Maximum operating current | | | | 1.2 x Imax |
| Saturation current | | | | 2 x Imax |
| Maximum consumption | | | **VA** | 3 |
| Starting current | Ist | | **mA** | 100 |
| Basic current | Ib | | **A** | 25 |

### Additional characteristic

| | | | |
|---|---|---|---|
| Operating temperature | | **°C** | -25 to +70 |
| Storage temperature | | **°C** | -40 to +85 |
| Overvoltage category | As per IEC 61010-1 | | Cat. IV |
| Measuring category | As per IEC 61010-2-030 | | Cat. IV |
| Pollution degree | | | 3 |
| Altitude | | **m** | Up to 2000 without derating (1) |
| Degree of protection device | | | IP20 |
| | | | IK05 |

### Radio-frequency communication

| | | | |
|---|---|---|---|
| ISM band 2.4 GHz | | **GHz** | 2.4 to 2.4835 |
| Channels | As per IEEE 802.15.4 | | 11 to 26 |
| Isotropic Radiated Power | Equivalent (EIRP) | **dBm** | 0 |
| Maximum transmission time | | **ms** | < 5 |
| Channel occupancy | For 1 device | **s** | messages sent every 5 |

### Characteristics of measuring functions

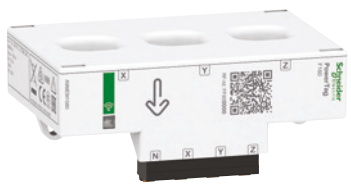
| Function | Symbol | Performance category as per IEC 61557-12 (PMD-II/DD/K70/1) | | Measuring range |
|---|---|---|---|---|
| | | Class | Measuring range | |
| Total active power (Active power per phase) | P | 1 | 2.5 to 160 A | 24 W (8 W) to 192 kW |
| Total reactive power (Reactive power per phase) | $Q_A$ | 2 | | 30 VAR (10 VAR) to 192 kVAR |
| Total apparent power (Apparent power per phase) | $S_A$ | 2 | | 38 VA (13 VA) to 192 kVA |
| Active Energy: per phase, total, partial, delivered and received | $E_a$ | 1 | | 0 to $281.10^9$ kWh |
| Reactive energy: per phase, total, partial, delivered and received | $E_{rA}$ | 2 | | 0 to $281.10^9$ kVARh |
| Apparent energy: per phase, total, partial | $E_{apA}$ | 2 | | 0 to $281.10^9$ kVAh |
| Frequency | f | 1 | 50 / 60 Hz ± 2 % | 45 to 65 Hz |
| Phase current | I | 1 | 5 to 160 A | 100 mA to 320 A |
| Neutral current | $I_{NC}$ | 2 | | |
| Voltages (Line to Line) | U | 0.5 | Un ± 20 % | 138 to 576 V AC |
| Power factor (per phase, total) | $PF_A$ | 1 | From 0.5 inductive to 0.8 capacitive | -1 to 1 |

*(1) Above 2000 m, please consult us.*

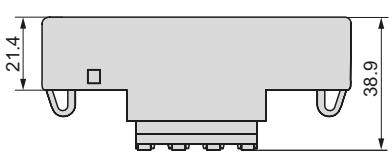
## Dimensions

**PowerTag Energy Flex 160 A**

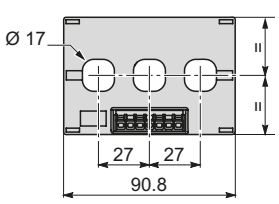
PB121658.eps



DB438489.eps




DB438490.eps




References:
page B6/60

# Characteristics

## Energy measurement – PowerLogic

**PowerTag Energy Monoconnect 250 A, 630 A**

### Main characteristics

| | | | | |
|---|---|---|---|---|
| Rated voltage | Un | Phase-to-neutral | **V** | 230 V AC ± 20 % |
| | | Phase-to-phase | **V** | 400 V AC ± 20 % |
| Frequency | | | **Hz** | 50/60 |
| Maximum current | Imax | | **A** | 250/630 |
| Maximum operating current | | | | 1.2 x Imax |
| Saturation current | | | | 2 x Imax |
| Maximum consumption | | | **VA** | 3.7 |
| Starting current | Ist | | **mA** | 160/400 |
| Basic current | Ib | | **A** | 40/100 |

### Additional characteristic

| | | | |
|---|---|---|---|
| Operating temperature | | **°C** | -25 to +70 |
| Storage temperature | | **°C** | -50 to +85 |
| Overvoltage category | As per IEC 61010-1 | | Cat. IV |
| Measuring category | As per IEC 61010-2-030 | | Cat. III |
| Pollution degree | | | 3 |
| Altitude | | | Up to 2000 m without derating (1) |
| Degree of protection device | | | IP20 |
| | | | IK07 |

### Radio-frequency communication

| | | | |
|---|---|---|---|
| ISM band 2.4 GHz | | **GHz** | 2.4 to 2.4835 |
| Channels | As per IEEE 802.15.4 | | 11 to 26 |
| Isotropic Radiated Power | Equivalent (EIRP) | **dBm** | 0 |
| Maximum transmission time | | **ms** | < 5 |
| Channel occupancy | For 1 device | **s** | messages sent every 5 |

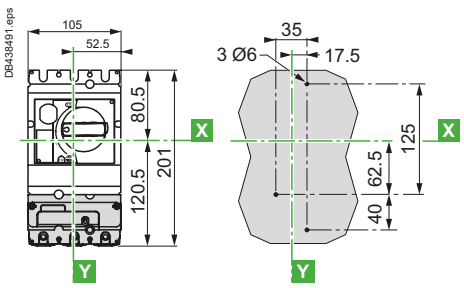
### Characteristics of measuring functions

| Function | Symbol | Performance category as per IEC 61557-12 (PMD-II/DD/K70/1) | | Measuring range (250 A / 630 A) |
|---|---|---|---|---|
| | | Class | Measuring range | |
| Total active power (Active power per phase) | P | 1 | 4 to 250 A / 10 to 630 A | 88 W (29 W) to 416 kW / 222 W (74 W) to 1048 kW |
| Total reactive power (Reactive power per phase) | $Q_A$ | 2 | | 88 VAR to 416 kVAR / 221 VAR to 1048 kVAR |
| Total apparent power (Apparent power per phase) | $S_A$ | 2 | | 88 VA to 416 kVA / 221 VA to 1048 kVA |
| Active Energy: per phase, total, partial, delivered and received | $E_a$ | 1 | | 0 to 281.109 kWh |
| Reactive energy: per phase, total, partial, delivered and received | $E_{rA}$ | 2 | | 0 to 281.109 kVARh |
| Frequency | f | 1 | 45 to 55 Hz | 45 to 65 Hz |
| Phase current | I | 1 | 8 to 250 A / 20 to 630 A | 160 mA to 500 A / 400 mA to 1260 A |
| Voltages (Line to Line) | U | 0.5 | Un ± 20 % | 320 to 480 V AC |
| Power factor | $PF_A$ | 1 | From 0.5 inductive to 0.8 capacitive | -1 to 1 |

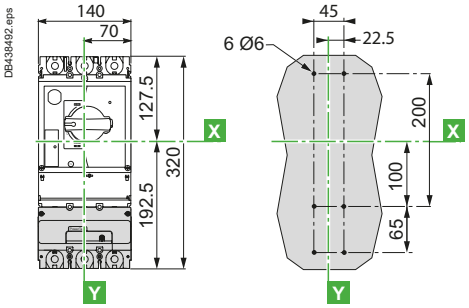
*(1) Above 2000 m, please consult us.*

## Dimensions

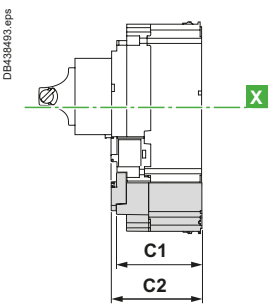
### GV5P with LV434020 / Panel mounting




### GV6P with LV434022 / Panel mounting




### With additional PowerTag




| Type | C1 | C2 |
|---|---|---|
| **GV5P** | 81 | 86 |
| **GV6P** | 95.5 | 110 |

References:
page B6/61

# Characteristics

## Energy measurement – PowerLogic

**PowerTag Link**

## Main characteristics

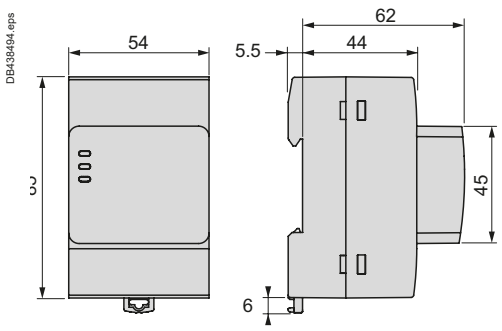
| | | | |
|---|---|---|---|
| Supply voltage | Us | **V** | 110/230 V AC ± 20 %, 2 A |
| Frequency | | **Hz** | 50/60 |
| Power consumption | | **VA** | 5 |
| Communication interface | | | Ethernet 10/100 BASE-T, Cable length ≤ 100 m Cat.6 STP |
| Wireless communication | | | Up to 20 or 100 PowerTag Energy sensors |
| Integrated connection type | | | DHCP client (Ethernet port) |
| Local indication | Product state | | Green, orange and red LED |
| | Ethernet state (LAN ST) | | Green, orange and red LED |
| Overvoltage category | | | III |
| Radio-frequency communication | ISM band 2.4 GHz | **GHz** | 2.4 to 2.4835 |
| Degree of protection (IEC 60529) | Device only | | IP20 |
| | Device in modular enclosure | | IP40<br>Insulation class II |
| Fire resistance | | | 650 °C, 30 s |
| Environment | | | In compliance with the RoHS directive<br>REACH Regulations |

## Additional characteristics

| | | | |
|---|---|---|---|
| Operating temperature | | **°C** | -25 to +60 |
| Storage temperature | | **°C** | -40 to +85 |
| Pollution degree | | | 2 |
| Tropicalization (IEC 60068-2-30) | | | Treatment 2<br>(relative humidity of 93 % at 40°C) |
| Operating altitude | | **m** | 0 to 2000 |
| Electromagnetic compatibility | Reference standards | | |
| | Immunity | | EN 55035 |
| | Emissions | | EN 55032 |
| | Electromagnetic compatibility and Radio spectrum Matters (ERM) | | EN 300328<br>EN 301489-1<br>EN 301489-17 |

## Dimensions

**PowerTag Link**




References:
page B6/62

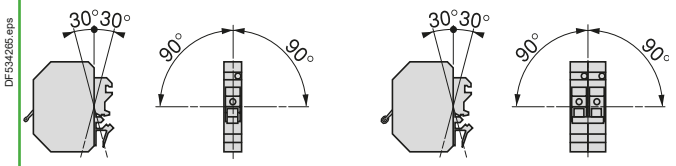
# TeSys Modular circuit breakers

## 0.5 to 20 A

(for equipment and control circuits)

# Characteristics

## Environment

| Circuit breaker type | | | GB2CB | GB2CD | GB2DB | GB2CS |
|---|---|---|---|---|---|---|
| Conforming to standards | | | IEC 60947-1, 947-2, EN 60947-1, 60947-2 | | | |
| Product certifications | | | cCSAus (1) | cCSAus (1) | – | – |
| Degree of protection | Conforming to IEC 60529 | | IP 20 | | | |
| Shock resistance | Conforming to IEC 60068-2-27 | | 22 gn for 20 ms | | | |
| Vibration resistance | Conforming to IEC 60068-2-6 | | 5 gn (5…110 Hz) | | | |
| Ambient air temperature around the device | Storage | °C | -40…+80 | | | |
| | Operation | °C | -20…+60 | | | |
| Flame resistance | Conforming to IEC 60695-2-11 | °C | 960 | | | |
| Maximum operating altitude | | m | 3000 | | | |
| Operating position | In relation to normal vertical mounting plane | |  | | | |
| | | | GB2CB,CD, CS | | GB2DB | |

| Cabling | | | Minimum c.s.a. | Maximum c.s.a. |
|---|---|---|---|---|
| | Solid cable | $mm^2$ | 1 x 0.75 | 1 x 6 or 2 x 4 |
| | Flexible cable with cable end | $mm^2$ | 1 x 0.75 | 1 x 4 or 2 x 2.5 |
| Tightening torque | | N.m | 1.2 | |

## Technical characteristics

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Utilisation category | Conforming to IEC 60947-2 | | A | | A | | A | | A | |
| Rated operational voltage (Ue) | Conforming to IEC 60947-2 | V | 250 (2) | | 250 | | 415 | | 250 (2) | |
| | Conforming to CSA C22-2 Nr 14 and UL 1077 | V | 277 | | 277 | | – | | – | |
| Rated operational frequency | Conforming to IEC 60947-2 | Hz | 50/60 | | 50/60 | | 50/60 | | 50/60 | |
| Rated impulse withstand voltage (U imp) | Conforming to IEC 60947-2 | kV | 4 | | 4 | | 4 | | 4 | |
| Total power dissipated per pole | | W | 2 | | 2 | | 2 | | 1.9 | |
| Mechanical and electrical durability | C.O.: Closing - Opening | C.O. | 8000 | | 8000 | | 8000 | | 8000 | |

| Operational current correction coefficient (a or ⎓) | According to the permissible ambient temperature | °C | -20 | -10 | 0 | +10 | +20 | +30 | +40 | +50 | +60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Correction coefficient | | 1.2 | 1.15 | 1.1 | 1.05 | 1 | 0.95 | 0.90 | 0.85 | 0.80 |

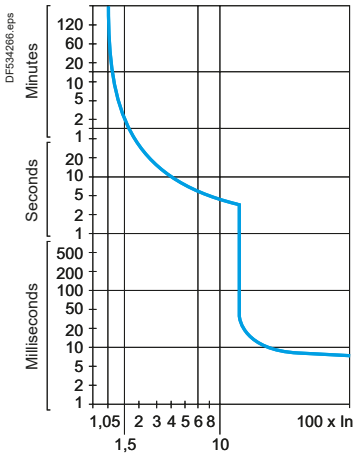
| Tripping threshold | Of the magnetic trips | | 12…16 In | 12…16 In | 12…16 In | 5…7 In |
|---|---|---|---|---|---|---|

*(1) Except for **GB2CB16**, **GB2CB22**, **GB2CD16**, **GB2CD22**.*
*(2) Ue = 415 V when a **GB2** circuit breaker is fitted on every live conductor.*

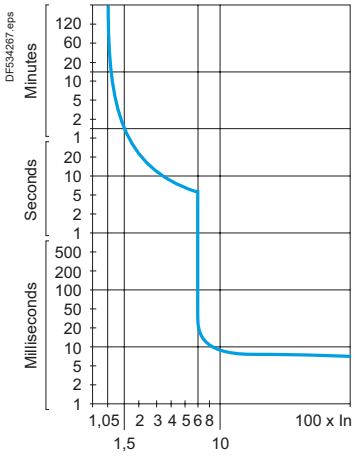
## Tripping curves

**Average operating time at 20 °C without prior current flow (cold state)**

**GB2CB, GB2CD, GB2 DB**




**GB2CS**




References:
pages B6/65 and B6/66
Dimensions:
page B6/163
Schemes:
page B6/163

## Characteristics

| Circuit breaker type | | | | GB2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CB05 | CB06 | CB07 | CB08 | CB09 | CB10 | CB12 | CB14 | CB16 | CB20 | CB21 | CB22 |
| Rating | | | A | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 |
| Breaking capacity conforming to IEC 60947-2 ∿ 50/60 Hz | 110 V | Icu | kA | 50 | 50 | 15 | 10 | 6 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Ics % (1) | | 100 | 50 | 50 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | 230/240 V | Icu | kA | 50 | 50 | 15 | 3 | 3 | 2 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | | Ics % (1) | | 25 | 25 | 25 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Associated fuses, if required if Isc > breaking capacity Icu conforming to IEC 60947-2 | 110 V | aM | A | ★ | ★ | 20 | 25 | 25 | 40 | 40 | 50 | 50 | 63 | 63 | 63 |
| | | gG | A | ★ | ★ | 25 | 32 | 32 | 50 | 50 | 63 | 63 | 80 | 80 | 80 |
| | 230/240 V | aM | A | ★ | ★ | 16 | 20 | 20 | 32 | 32 | 40 | 40 | 50 | 50 | 50 |
| | | gG | A | ★ | ★ | 25 | 32 | 32 | 40 | 40 | 50 | 50 | 63 | 63 | 63 |

| Circuit breaker type | | | | GB2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CD05 | CD06 | CD07 | CD08 | CD09 | CD10 | CD12 | CD14 | CD16 | CD20 | CD21 | CD22 |
| Rating | | | A | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 |
| Breaking capacity conforming to IEC 60947-2 ∿ 50/60 Hz | 110 V | Icu | kA | 50 | 50 | 15 | 10 | 6 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Ics % (1) | | 100 | 50 | 50 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | 230/240 V | Icu | kA | 50 | 50 | 15 | 3 | 3 | 2 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | | Ics % (1) | | 25 | 25 | 25 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Associated fuses, if required if Isc > breaking capacity Icu conforming to IEC 60947-2 | 110 V | aM | A | ★ | ★ | 20 | 25 | 25 | 40 | 40 | 50 | 50 | 63 | 63 | 63 |
| | | gG | A | ★ | ★ | 25 | 32 | 32 | 50 | 50 | 63 | 63 | 80 | 80 | 80 |
| | 230/240 V | aM | A | ★ | ★ | 16 | 20 | 20 | 32 | 32 | 40 | 40 | 50 | 50 | 50 |
| | | gG | A | ★ | ★ | 25 | 32 | 32 | 40 | 40 | 50 | 50 | 63 | 63 | 63 |

| Circuit breaker type | | | | GB2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | DB05 | DB06 | DB07 | DB08 | DB09 | DB10 | DB12 | DB14 | DB16 | DB20 | DB21 | DB22 |
| Rating | | | A | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 |
| Breaking capacity conforming to IEC 60947-2 ∿ 50/60 Hz | 110 V | Icu | kA | 50 | 50 | 15 | 10 | 6 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Ics % (1) | | 100 | 50 | 50 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | 230/240 V | Icu | kA | 50 | 50 | 15 | 3 | 3 | 2 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | | Ics % (1) | | 25 | 25 | 25 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | 400/415 V | Icu | kA | 50 | 50 | 15 | 3 | 3 | 2 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | | Ics % (1) | | 25 | 25 | 25 | 50 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Associated fuses, if required if Isc > breaking capacity Icu conforming to IEC 60947-2 | 110 V | aM | A | ★ | ★ | 20 | 25 | 25 | 40 | 40 | 50 | 50 | 63 | 63 | 63 |
| | | gG | A | ★ | ★ | 25 | 32 | 32 | 50 | 50 | 63 | 63 | 80 | 80 | 80 |
| | 230/240 V | aM | A | ★ | ★ | 16 | 20 | 20 | 32 | 32 | 40 | 40 | 50 | 50 | 50 |
| | | gG | A | ★ | ★ | 25 | 32 | 32 | 40 | 40 | 50 | 50 | 63 | 63 | 63 |
| | 400/415 V | aM | A | ★ | ★ | 16 | 20 | 20 | 32 | 32 | 40 | 40 | 50 | 50 | 50 |
| | | gG | A | ★ | ★ | 25 | 32 | 32 | 40 | 40 | 50 | 50 | 63 | 63 | 63 |

*(1) As % of Icu.*
★ *Fuse not required. Breaking capacity Icu > Isc.*

References:
pages B6/65 and B6/66
Dimensions:
page B6/163
Schemes:
page B6/163

## Characteristics

| Circuit breaker type | | | | GB2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ●●05 | ●●06 | ●●07 | ●●08 | ●●09 | ●●10 | ●●12 | ●●14 | ●●16 | ●●20 | ●●21 | ●●22 |
| Breaking capacity (Icu) conforming to IEC 60947-2 ⎓ | | 24 V | **kA** | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| | | 48 V | **kA** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | – | – | – | – |
| Operational current conforming to IEC 60947-5-1 ⎓ | DC-12 | 24 V | **A** | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 |
| | | 48 V | **A** | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 |
| | DC-13 | 24 V | **A** | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 |
| | | 48 V | **A** | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | – | – | – | – |

| Circuit breaker type | | | | GB2 | |
|---|---|---|---|---|---|
| | | | | CS05 | CS06 |
| Rating | | | **A** | 0.5 | 1 |
| Breaking capacity conforming to IEC 60947-2 ∿ 50/60 Hz | 110 V | Icu | **kA** | 50 | 50 |
| | | Ics % (1) | | 100 | 100 |
| | 230/240 V | Icu | **kA** | 50 | 50 |
| | | Ics % (1) | | 25 | 25 |
| | 400/415 V (2) | Icu | **kA** | 50 | 50 |
| | | Ics % (1) | | 25 | 25 |
| Breaking capacity (Icu) conforming to IEC 60947-2 ⎓ | | 24 V | **kA** | 1.5 | 1.5 |
| | | 48 V | **kA** | 1 | 1 |
| Operational current conforming to IEC 60947-5-1 ⎓ | DC-12 | 24 V | **A** | 0.5 | 1 |
| | | 48 V | **A** | 0.5 | 1 |
| | DC-13 | 24 V | **A** | 0.5 | 1 |
| | | 48 V | **A** | 0.5 | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Maximum permissible line length for star-delta starting (length of cable containing 2 or more conductors) | With contactors LC●D09 …D18 | Operational voltage | | **V** | **48** | **110** | **230** | **48** | **110** | **230** |
| | | C.s.a. | 0.60 mm² | **m** | (3) | 31 | 365 | 6 | 85 | 230 |
| | | | 0.75 mm² | **m** | (3) | 39 | 460 | 8 | 110 | 290 |
| | | | 1 mm² | **m** | (3) | 52 | 610 | 10 | 145 | 380 |
| | | | 1.5 mm² | **m** | (3) | 78 | 910 | 15 | 220 | 570 |
| | | | 2.5 mm² | **m** | (3) | 130 | 1520 | 26 | 360 | 950 |
| | | | 4 mm² | **m** | (3) | 200 | 2400 | 41 | 580 | 1500 |
| | With contactors LC●D25…D32 | Operational voltage | | **V** | **48** | **110** | **230** | **48** | **110** | **230** |
| | | C.s.a. | 0.60 mm² | **m** | (3) | (3) | 230 | (3) | 56 | 230 |
| | | | 0.75 mm² | **m** | (3) | (3) | 290 | (3) | 70 | 290 |
| | | | 1 mm² | **m** | (3) | (3) | 390 | (3) | 95 | 380 |
| | | | 1.5 mm² | **m** | (3) | (3) | 580 | (3) | 140 | 570 |
| | | | 2.5 mm² | **m** | (3) | (3) | 970 | (3) | 230 | 950 |
| | | | 4 mm² | **m** | (3) | (3) | 1500 | (3) | 375 | 1500 |
| | With contactors LC●D40…D80 | Operational voltage | | **V** | **48** | **110** | **230** | **48** | **110** | **230** |
| | | C.s.a. | 0.60 mm² | **m** | (3) | (3) | 46 | (3) | 13 | 100 |
| | | | 0.75 mm² | **m** | (3) | (3) | 60 | (3) | 17 | 130 |
| | | | 1 mm² | **m** | (3) | (3) | 80 | (3) | 22 | 170 |
| | | | 1.5 mm² | **m** | (3) | (3) | 120 | (3) | 34 | 250 |
| | | | 2.5 mm² | **m** | (3) | (3) | 190 | (3) | 56 | 420 |
| | | | 4 mm² | **m** | (3) | (3) | 310 | (3) | 90 | 680 |

*(1) As % of Icu.*
*(2) One **GB2CS** circuit breaker on each live conductor.*
*(3) Use relays.*

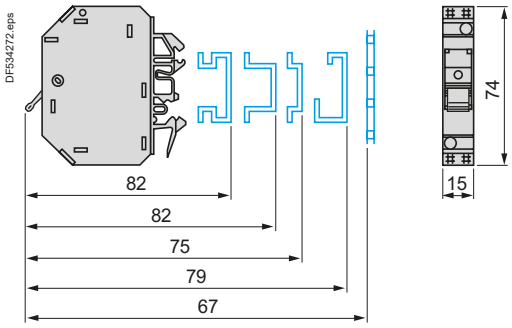
Ref.
Motor circuit breakers

References: pages B6/65 and B6/66
Dimensions: page B6/163
Schemes: page B6/163

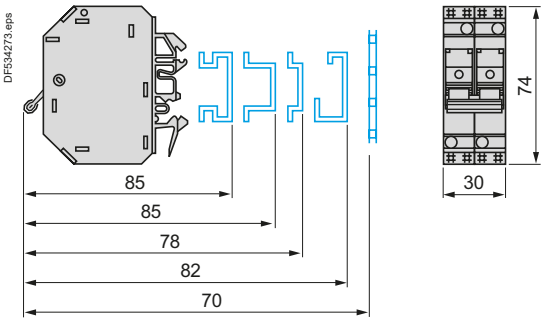
# Dimensions and schemes

## Dimensions

### GB2CB●●, GB2CD●●, GB2CS●●



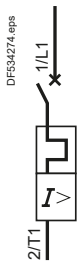

### GB2DB●●



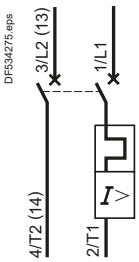

*Marking: up to twelve AB1 R clip-in markers.*

## Schemes

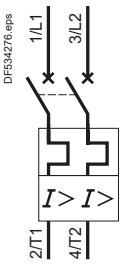
### GB2CB●●



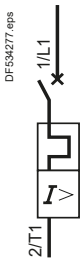

### GB2CD●●




### GB2DB●●




### GB2CS●●




References:
pages B6/65 and B6/66

Characteristics:
pages B6/160 to B6/162

# TeSys Control
# SK, K, Deca Control relays

Chapter B7

## TeSys SK, K Relays


| Product | | Pages |
|---|---|---|
| Mini relays - 2 contacts, simultaneous action<br>TeSys SK, SKE | | B7/2 |
| Relays - 4 contacts, simultaneous action<br>TeSys K | | B7/4 |
| Auxiliary contact blocks, accessories<br>TeSys K | | B7/6 |


## TeSys Deca Relays


| | | |
|---|---|---|
| Relays 5 contacts, simultaneous action | | B7/8 |
| TeSys Deca Accessories | | B7/10 |




Technical Data for Designers B7/13

PB121522.tif

*CA2SK11●●*

## Mini control relays

- Width of mini control relays 27 mm.
- Mounting on 35 mm ⎓ rail.
- Connection by screw clamp terminals.

| Control circuit supply | Auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) |
|---|---|---|---|
| **a.c. supply** | 2 | – | **CA2SK20●●** |
| | 1 | 1 | **CA2SK11●●** |
| **d.c. supply** | 2 | – | **CA3SK20●●** |
| | 1 | 1 | **CA3SK11●●** |

PB121523.eps

*CA2SKE20●●*

## Mini control relay with alternating contacts

This mini control relay with alternating contacts (see function diagram page B7/17) makes it possible to automatically split the operating time between 2 circuits of a redundant system.
By regularly energising the “safety circuits”, this device makes it possible to ensure that they are operating correctly.

- Width of mini control relay 45 mm.
- Fixing by Ø4 screws.
- Connection by screw clamp terminals..
- Cannot be fitted with front-mounted auxiliary contact block.
- Cannot be fitted with coil suppressor module.

| Control circuit supply | Auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) |
|---|---|---|---|
| **a.c. supply** | 2 | – | **CA2SKE20●●** |

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **Mini control relays CA2SK and CA2SKE** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Volts ∼ 50/60 Hz** | **24** | **48** | **110** | **120** | **220** | **230** | **240** | **380** | **400** |
| **Code** | B7 | E7 | F7 | G7 | M7 | P7 | U7 | Q7 | V7 |
| **Mini control relays CA3SK** | | | | | | | | | |
| **Volts ⎓** | **12** | **24** | **36** | **48** | **72** | | | | |
| **Code** | JD | BD | CD | ED | SD | | | | |

Control relays

# Product references

PB111639_R.eps

*LA1SK●●*

## Instantaneous auxiliary contact blocks

### Clip-on front mounting

| For use on control relays | Maximum number of blocks per contactor | Composition | | Reference |
|---|---|---|---|---|
| | | | | |
| **CA2SK20** | 1 | 2 | – | **LA1SK20** |
| | | – | 2 | **LA1SK02** |
| | | 1 | 1 | **LA1SK11** |

PB111640_R.eps

*LA4SK●1●*

## Suppressor modules

### Connection without need for tools by clipping onto right-hand side of contactor

| For use on control relays | Type | For voltages | Sold in lots of | Unit reference |
|---|---|---|---|---|
| **CA2SK** and **CA3SK** | Varistor (1) | ∿ and ⎓ 24 V…48 V | 10 | **LA4SKE1E** |
| | | ∿ and ⎓ 110 V…250 V | 10 | **LA4SKE1U** |
| | Diode (2) | ⎓ 24 V…250 V | 10 | **LA4SKC1U** |

*(1) Protection provided by limiting the transient voltage to 2 Uc max.*
*Maximum reduction of transient voltage peaks.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(2) No overvoltage or oscillating frequency.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*



Characteristics: page B7/15
Dimensions: page B7/16
Schemes: page B7/17

PB123768.eps

*CA2KN22●●*

## Control relays for a.c. control circuit

- Width of control relays: 45 mm.
- Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

| Control circuit Consumption | Auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) |
|---|---|---|---|
| **Screw clamp connections** | | | |
| 4.5 VA | 4 | – | **CA2KN40●●** |
| | 3 | 1 | **CA2KN31●●** |
| | 2 | 2 | **CA2KN22●●** |
| **Spring terminal connections** (insert "3" before the voltage code) | | | |
| 4.5 VA | 4 | – | **CA2KN403●●** |
| | 3 | 1 | **CA2KN313●●** |
| | 2 | 2 | **CA2KN223●●** |
| **Faston connectors, 1 x 6.35 or 2 x 2.8** (insert "7" before the voltage code) | | | |
| 4.5 VA | 4 | – | **CA2KN407●●** |
| | 3 | 1 | **CA2KN317●●** |
| | 2 | 2 | **CA2KN227●●** |
| **Solder pins for printed circuit boards** (insert "5" before the voltage code) | | | |
| 4.5 VA | 4 | – | **CA2KN405●●** |
| | 3 | 1 | **CA2KN315●●** |
| | 2 | 2 | **CA2KN225●●** |

PB123769.tif

*CA2KN●●5●●*

## Control relays for d.c. control circuit

- Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

| | | | |
|---|---|---|---|
| **Screw clamp connections** | | | |
| 3 W | 4 | – | **CA3KN40●●** |
| | 3 | 1 | **CA3KN31●●** |
| | 2 | 2 | **CA3KN22●●** |
| **Spring terminal connections** | | | |
| 3 W | 4 | – | **CA3KN403●●** |
| | 3 | 1 | **CA3KN313●●** |
| | 2 | 2 | **CA3KN223●●** |
| **Solder pins for printed circuit boards** | | | |
| 3 W | 4 | – | **CA3KN405●●** |
| | 3 | 1 | **CA3KN315●●** |
| | 2 | 2 | **CA3KN225●●** |

PB123770.tif

*CA3KN●●3●●*

*(1) Please check the availability of your variant in the index page B7/12. The SEARCH function of your viewer can be used.*
*Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**Control relays CA2K** (0.8...1.15 Uc) *(0.85...1.1 Uc)*

| **Volts ∼ 50/60 Hz** | **12** | **20** | **24(2)** | **36** | **42** | **48** | **110** | **115** | **127** | **220/230** | **230** | **230/240** | **380/400** | **400** | **400/415** | **440** | **500** | **660/690** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Code** | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | FC7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 | Y7 |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**

**Control relays CA3K** (0.8...1.15 Uc)

| **Volts ⎓** | **12** | **20** | **24(2)** | **36** | **48** | **60** | **72** | **100** | **110** | **125** | **200** | **220** | **230** | **240** | **250** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Code** | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

*(2) When connecting an electronic sensor or timer in series with the coil of the control relay, select a 20 V coil (∼ code Z7, ⎓ code ZD) so as to compensate for the incurred voltage drop.*

Characteristics: pages B7/18 and B7/19
Dimensions: page B7/20
Schemes: page B7/21

PB123771.eps

*CA4KN40●●●*

## Low consumption control relays d.c. control circuit

- Width of control relays: 45 mm.
- Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
- Screws in the open “ready-to-tighten” position.

| Control circuit Consumption | Auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) |
|---|---|---|---|
| **Screw clamp connections** | | | |
| 1.8 W | 4 | – | **CA4KN40●●** |
| | 3 | 1 | **CA4KN31●●** |
| | 2 | 2 | **CA4KN22●●** |
| **Spring terminal connections** (insert "3" before the voltage code) | | | |
| 1.8 W | 4 | – | **CA4KN403●●** |
| | 3 | 1 | **CA4KN313●●** |
| | 2 | 2 | **CA4KN223●●** |
| **Faston connectors, 1 x 6.35 or 2 x 2.8** (insert "7" before the voltage code) | | | |
| 1.8 W | 4 | – | **CA4KN407●●** |
| | 3 | 1 | **CA4KN317●●** |
| | 2 | 2 | **CA4KN227●●** |
| **Solder pins for printed circuit boards** (insert "5" before the voltage code) | | | |
| 1.8 W | 4 | – | **CA4KN405●●** |
| | 3 | 1 | **CA4KN315●●** |
| | 2 | 2 | **CA4KN225●●** |

*(1) Please check the availability of your variant in the index page B7/12. The SEARCH function of your viewer can be used.*

*Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

**Control relays CA4K** (Wide range coil: 0.7...1.3 Uc)

| **Volts ⎓** | **12** | **20** | **24** | **48** | **72** | **110** | **120** |
|---|---|---|---|---|---|---|---|
| **Code** | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

Control relays

Characteristics: pages B7/18 and B7/19
Dimensions: page B7/20
Schemes: page B7/21

# Product references

*LA1KN22*

*LA1KN●●3*

*LA1KN●●7*

## Instantaneous auxiliary contact blocks

### Clip-on front mounting, 1 per control relay

| Connection | Composition | | Reference |
|---|---|---|---|
| Screw clamp terminals | 2 | – | **LA1KN20** |
| | – | 2 | **LA1KN02** |
| | 1 | 1 | **LA1KN11** |
| | 4 | – | **LA1KN40** (1) |
| | 3 | 1 | **LA1KN31** (1) |
| | 2 | 2 | **LA1KN22** (1) |
| | 1 | 3 | **LA1KN13** (1) |
| | – | 4 | **LA1KN04** (1) |
| Spring terminals | 2 | – | **LA1KN203** |
| | – | 2 | **LA1KN023** |
| | 1 | 1 | **LA1KN113** |
| | 4 | – | **LA1KN403** (1) |
| | 3 | 1 | **LA1KN313** (1) |
| | 2 | 2 | **LA1KN223** (1) |
| | 1 | 3 | **LA1KN133** (1) |
| | – | 4 | **LA1KN043** (1) |
| Faston connectors 1 x 6.35 or 2 x 2.8 | 2 | – | **LA1KN207** |
| | 4 | – | **LA1KN407** (1) |
| | 3 | 1 | **LA1KN317** (1) |

## Electronic time delay contact blocks

- Relay output with common point changeover contact, ∿ or ⎓ 240 V, 2 A maximum
- Control voltage 0.85...1.1 Uc
- Maximum switching capacity 250 VA or 150 W
- Operating temperature -10...+ 60 °C
- Reset time: 1.5 s during the time delay period 0.5 s after the time delay period

### Clip-on front mounting, 1 per control relay

| Voltage | Type | Timing range | Composition | Reference |
|---|---|---|---|---|
| V | | s | | |
| ∿ or ⎓ 24...48 | On-delay | 1...30 | 1 | **LA2KT2E** |
| ∿ 110...240 | On-delay | 1...30 | 1 | **LA2KT2U** |

*LA2KT2E*

**Other versions** Electronic timers type RE4.
Please consult your Regional Sales Office.

*(1) Block of 4 contacts for use on **CA2K** and **CA3K**.*

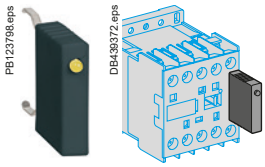
Control relays

Characteristics: page B7/19
Dimensions: page B7/20
Schemes: page B7/21



Life Is On Schneider Electric

# Product references




*LA4KC1B*

## Suppressor modules incorporating LED indicator

| Mounting and connection | Type | For voltages | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Clips onto front of relay with locating device. No tools required. | Varistor (1) | ∿ and ⎓ 12...24 V | 5 | **LA4KE1B** |
| | | ∿ and ⎓ 32...48 V | 5 | **LA4KE1E** |
| | | ∿ and ⎓ 50...129 V | 5 | **LA4KE1FC** |
| | | ∿ and ⎓ 130...250 V | 5 | **LA4KE1UG** |
| | Diode + Zener diode (2) | ⎓ 12...24 V | 5 | **LA4KC1B** |
| | | ⎓ 32...48 V | 5 | **LA4KC1E** |
| | RC (3) | ∿ 110...250 V | 5 | **LA4KA1U** |

## Mounting accessories

| Description | Application | | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Mounting plates | On 2 ⊔ rails | 110/120 mm fixing centres | 10 | **DX1AP25** |

## Marking accessories

| Description | Application | | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Marker holder | Clip-on fixing on front face | – | 100 | **LA9D90** |
| Clip-in markers | 4 maximum per relay | Strips of 10 identical numbers 0 to 9 | 25 | **AB1R●** (4) |
| | | Strips of 10 identical capital letters A to Z | 25 | **AB1G●** (4) |

*LA9D90*

*AB1R9*

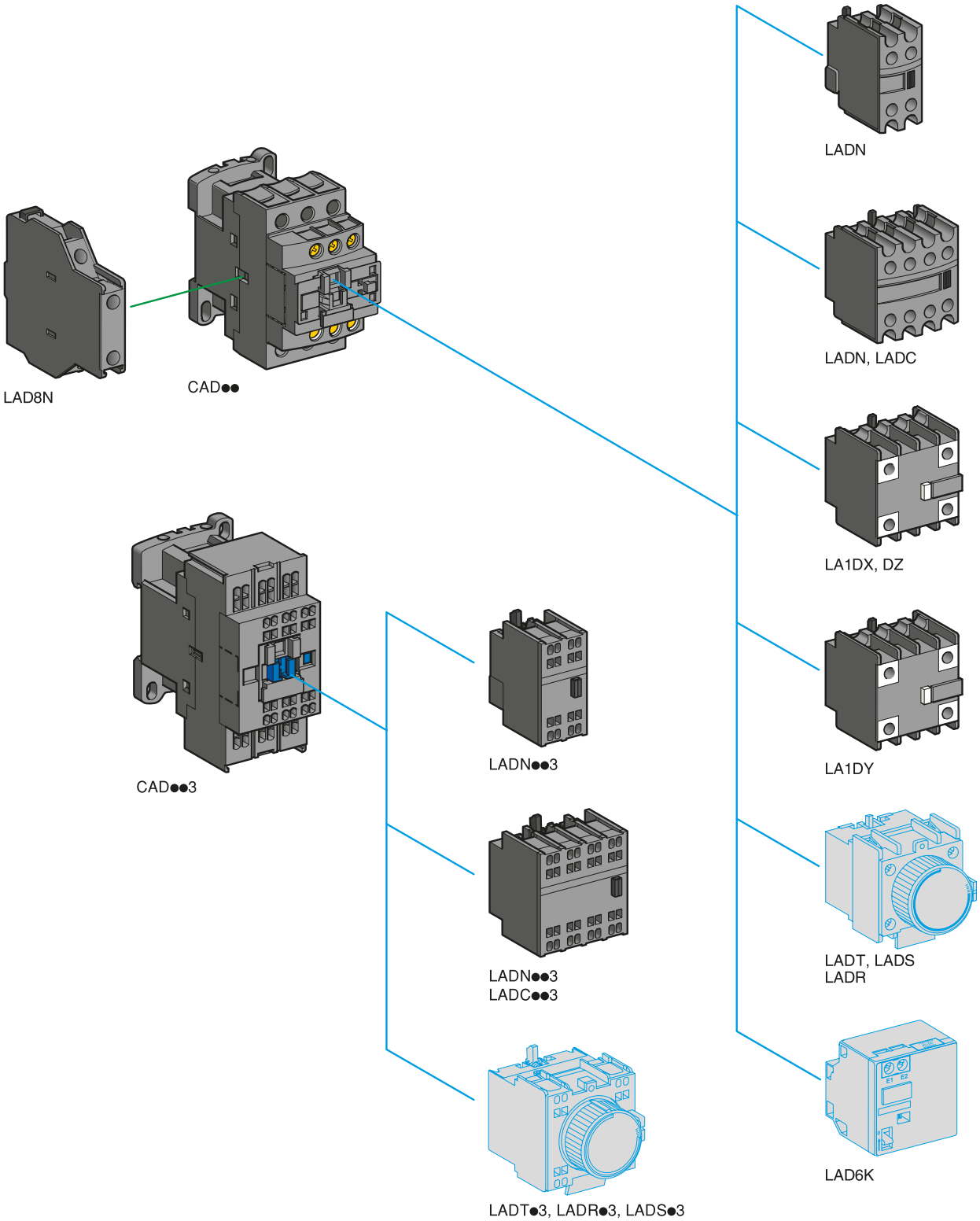
*(1) Protection provided by limiting the transient voltage to 2 Uc max.*
*Maximum reduction of transient voltage peaks.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(2) No overvoltage or oscillating frequency.*
*Polarised component.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(3) Protection by limiting the transient voltage to 3 Uc max. and limitation of the oscillating frequency.*
*Slight increase in drop-out time (1.2 to 2 times the normal time).*
*(4) Complete the reference by replacing the dot with the required character.*

Control relays

Dimensions:
page B7/20

Schemes:
page B7/21

DB439375.eps




See page opposite for mounting possibilities according to control relay type and rating



Life Is On Schneider Electric

# Product references

PB121687.eps

*CAD50●●*

PB121688.eps

*CAD503●●*

PB121689.eps

*LADN22*

PB123800.eps

*LA1DY20*

## Control relays for connection by screw clamp terminals

| Type | Number of contacts | Composition | | Basic reference, to be completed by adding the control voltage code (1) |
|---|---|---|---|---|
| Instantaneous | 5 | 5 | – | **CAD50●●** (3) |
| | | 3 | 2 | **CAD32●●** (3) |

## Control relays for connection by spring terminals

| | | | | |
|---|---|---|---|---|
| Instantaneous | 5 | 5 | – | **CAD503●●** |
| | | 3 | 2 | **CAD323●●** |

## Instantaneous auxiliary contact blocks for connection by screw clamp terminals

### For use in normal operating environments

| Number of contacts | Maximum number per relay, Clip-on mounting: front | Maximum number per relay, Clip-on mounting: side | Composition | | Reference | |
|---|---|---|---|---|---|---|
| 2 | 1 | – | 1 | 1 | **LADN11** | |
| | – | 1 on LH side | 1 | 1 | **LAD8N11** (6) | |
| | 1 | – | 2 | – | **LADN20** | |
| | – | 1 on LH side | 2 | – | **LAD8N20** (6) | |
| | 1 | – | – | 2 | **LADN02** | |
| | – | 1 on LH side | – | 2 | **LAD8N02** (6) | |
| 4 (4) | 1 | – | 2 | 2 | **LADN22** | **LADN22S** (7) |
| | | | 1 | 3 | **LADN13** | |
| | | | 4 | – | **LADN40** | |
| | | | – | 4 | **LADN04** | |
| | | | 3 | 1 | **LADN31** | |
| 4 (4) | 1 | – | 2 | 2 | **LADC22** | |

Including 1 N/O and 1 N/C make before break.

### With dust and damp protected contacts, for use in particularly harsh industrial environments

| Number of contacts | Maximum number per relay, Front mounting | Composition: protected (5) | | | Composition: not protected | | Reference |
|---|---|---|---|---|---|---|---|
| 2 | 1 | 2 | – | – | – | – | **LA1DX20** |
| | | – | 2 | – | – | – | **LA1DX02** |
| | | 2 | – | 2 | – | – | **LA1DY20** (8) |
| 4 (4) | 1 | 2 | – | – | 2 | – | **LA1DZ40** |
| | | 2 | – | – | 1 | 1 | **LA1DZ31** |

## Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for contact blocks LAD 8 and blocks with dust and damp protected contacts.
For all other instantaneous auxiliary contact blocks, add the digit **3** to the end of the references selected above.
Example: **LADN11** becomes **LADN113**.

***(1) Please check the availability of your variant in the index page B7/12. The SEARCH function of your viewer can be used.***
*Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).*

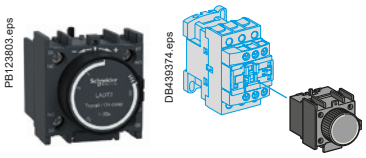
| **a.c. supply** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volts ∿ | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |

| **d.c. supply** (coils with integral suppression device fitted as standard) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volts ⎓ | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | |
| U from 0.7 to 1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | |

| **Low consumption** (coils with integral suppression device fitted as standard) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Volts ⎓ | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** |
| Code | AL | JL | ZL | BL | EL | FL | ML | UL |

*(2) LC: low consumption.*
*(3) To order control relays with connection by lugs, add the digit **6** to the end of the selected reference.*
Example: CAD50●● becomes CAD506●●.
*(4) Blocks with 4 auxiliary contacts cannot be used on low consumption control relays.*
*(5) Product fitted with 4 earth screen continuity terminals.*
*(6) These contact blocks are allowed with AC coil control relay only.*
*(7) With red front face - for safety chain indication.*
*(8) With 2 earth screen continuity poles.*

Characteristics: pages B7/22 to B7/24
Curves: page B7/25
Dimensions: page B7/26
Schemes: page B7/27




*LADT2*

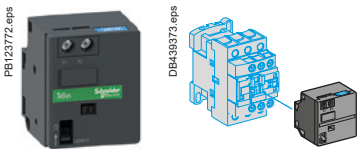
## Time delay auxiliary contact blocks for connection by screw clamp terminals (1)

| Number and type of contacts | Maximum number per relay | Time delay | | Reference |
|---|---|---|---|---|
| | Front mounting | Type | Range | |
| **1 N/C and 1 N/O** | 1 | On-delay | 0.3…3 s (2) | **LADT0** |
| | | | 1…30 s | **LADT2** |
| | | | 10…180 s | **LADT4** |
| | | | 1…30 s (3) | **LADS2** |
| | | Off-delay | 0.3…3 s (2) | **LADR0** |
| | | | 1…30 s | **LADR2** |
| | | | 10…180 s | **LADR4** |

(Sealing cover: see page B8/45)

## Time delay auxiliary contact blocks for connection by spring terminals

Add the digit **3** to the references selected above. Example: **LADT0** becomes **LADT03**.




*LAD6K10M*

## Mechanical latch blocks (4)

| Unlatching control | Maximum number per relay | Basic reference to be completed (5) |
|---|---|---|
| | Front mounting | |
| **Manual or electric** | 1 | **LAD6K10●** |

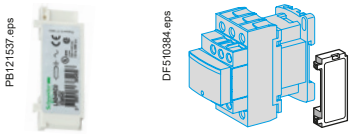
## Suppressor modules

These modules clip onto the top of the control relay and the electrical connection is instantly made. Fitting of an input module is still possible.

### RC circuits (Resistor-Capacitor)

- Effective protection for circuits highly sensitive to “high frequency” interference.
- Voltage limited to 3 Uc maximum and oscillating frequency limited to 400 Hz maximum.
- Slight time delay on drop-out (1.2 to 2 times the normal time).

| For mounting on | Operational voltage | Reference |
|---|---|---|
| **CAD ∿** | ∿ 24…48 V | **LAD4RCE** |
| | ∿ 50…127 V | **LAD4RCG** |
| | ∿ 110…250 V | **LAD4RCU** |




*LAD4RCU*

### Varistors (peak limiting)

- Protection provided by limiting the transient voltage value to 2Uc maximum.
- Maximum reduction of transient voltage peaks.
- Slight time delay on drop-out (1.1 to 1.5 times the normal time).

| | | |
|---|---|---|
| **CAD ∿** | ∿ 24…48 V | **LAD4VE** |
| | ∿ 50…127 V | **LAD4VG** |
| | ∿ 110…250 V | **LAD4VU** |

### Freewheel diode

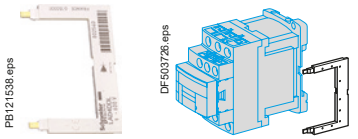
- No overvoltage or oscillating frequency.
- Increase in drop-out time (6 to 10 times the normal time).
- Polarised component.

| | | |
|---|---|---|
| **CAD ⎓** | ⎓ 5…600 V | **LAD4DDL** (6) |

### Bidirectional peak limiting diode (7)

- Protection provided by limiting the transient overvoltage value to 2Uc maximum.
- Maximum reduction of transient voltage peaks.

| | | |
|---|---|---|
| **CAD ∿** | ∿ 24 V | **LAD4TB** |
| | ∿ 72 V | **LAD4TS** |
| **CAD ⎓** | ⎓ 24 V | **LAD4TBDL** |
| | ⎓ 72 V | **LAD4TSDL** |
| | ⎓ 125 V | **LAD4TGDL** |
| | ⎓ 250 V | **LAD4TUDL** |



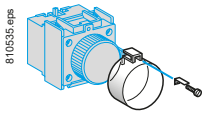

*LAD4DDL*

*(1) These contact blocks cannot be used on low consumption control relays.*
*(2) With extended scale from 0.1 to 6 s.*
*(3) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.*
*(4) Power should not be simultaneously applied or maintained to the mechanical latching block of the CADN. The duration of the control signal to the mechanical latching block and the CADN should be ⩾ 100 ms.*
*(5) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| **Volts ∿ and ⎓** | **24** | **32/36** | **42/48** | **60/72** | **100** | **110/127** | **220/240** | **256/277** | **380/415** |
|---|---|---|---|---|---|---|---|---|---|
| **Code** | B | C | E | EN | K | F | M | U | Q |

*(6) Not compatible with low consumption control relays.*
*(7) **CAD●●** ⎓ and low consumption control relays are fitted with a built-in bi-directional peak limiting diode suppressor as standard. On control relays produced after 15th July 2004, this diode is removable. It can therefore be replaced by the user (see references **LAD4T●●●** above). It can also be replaced by a freewheel diode **LAD4DDL**.*

Characteristics: pages B7/22 to B7/24 | Illustrations: page B7/8 | Curves: page B7/25 | Dimensions: page B7/26 | Schemes: page B7/27




*LA9D901*

*LAD9ET1S*

## Accessories (to be ordered separately)

| Description | For mounting on | Sold in lots of | Unit reference |
|---|---|---|---|
| **For marking** | | | |
| Sheet of 64 blank legends, self-adhesive, 8 x 33 mm | CAD, LAD (4 contacts) | 10 | **LAD21** |
| Sheet of 112 blank legends, self-adhesive, 8 x 12 mm | LAD (2 contacts), LADT | | **LAD22** |
| "SIS Label" labelling software for legends LAD21 and LAD22, supplied on CD-Rom | Multi-language version: English, French, German, Italian, Spanish | 1 | **XBY2U** |
| Legend holder, snap-in, 8 x 18 mm | LC1D09...38<br>LC1DT20...40<br>LADN (4 contacts)<br>LADT, LADR | 100 | **LAD90** |
| **For protection** | | | |
| Sealing cover | LADT, LADR | 1 | **LA9D901** |
| Safety cover preventing access to the moving contact carrier | CAD | 1 | **LAD9ET1** |
| Red cover (for safety chain indication) | CAD | 1 | **LAD9ET1S** |

## Spare parts: coils

**Specifications**

- Average consumption at 20 °C:
  - inrush (cos φ = 0.75) 50/60 Hz: 70 VA at 50 Hz,
  - sealed (cos φ = 0.3) 50/60 Hz: 8 VA at 60 Hz,
- Operating range (θ < 60 °C): 0.85 to 1.1 Uc

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | Inductance of closed circuit | Reference (1) |
|---|---|---|---|
| V | Ω | H | |
| | | | **50/60 Hz** |
| **12** | 1.33 | 0.05 | **LXD1J7** |
| **24** | 5.37 | 0.22 | **LXD1B7** |
| **32** | 10.1 | 0.39 | **LXD1C7** |
| **42** | 17 | 0.67 | **LXD1D7** |
| **48** | 21.7 | 0.87 | **LXD1E7** |
| **110** | 124.1 | 4.6 | **LXD1F7** |
| **115** | 129.8 | 5 | **LXD1FE7** |
| **120** | 150.6 | 5.4 | **LXD1G7** (2) |
| **200** | 410.7 | 15 | **LXD1L7** |
| **208** | 430.4 | 16 | **LXD1LE7** (2) |
| **220** | 515.4 | 18 | **LXD1M7** (3) |
| **230** | 538.6 | 20 | **LXD1P7** |
| **240** | 562.3 | 22 | **LXD1U7** |
| **277** | 800.7 | 29 | **LXD1W7** (2) |
| **380** | 1551 | 55 | **LXD1Q7** (4) |
| **400** | 1633 | 60 | **LXD1V7** |
| **415** | 1694 | 65 | **LXD1N7** |
| **440** | 1993 | 73 | **LXD1R7** |
| **480** | 2398 | 87 | **LXD1T7** (2) |
| **500** | 2499 | 95 | **LXD1S7** |
| **575** | 3294 | 125 | **LXD1SC7** |
| **600** | 3810 | 136 | **LXD1X7** |
| **660** | 4656 | 165 | **LXD1YC7** |
| **690** | 5020 | 180 | **LXD1Y7** |

*(1) The last 2 digits in the reference represent the voltage code.*
*(2) Coil for use only on 60 Hz.*
*(3) Suitable for use on **230 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/86 and B8/88).*
*(4) Suitable for use on **400 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/86 and B8/88).*

# Product references

CA2KN223B7
CA2KN223F7
CA2KN223P7
CA2KN223P72
CA2KN22B7
CA2KN22B72
CA2KN22D7
CA2KN22E7
CA2KN22F7
CA2KN22F72
CA2KN22FC7
CA2KN22FE7
CA2KN22G7
CA2KN22G72
CA2KN22L7
CA2KN22M7
CA2KN22M72
CA2KN22N7
CA2KN22P7
CA2KN22P72
CA2KN22Q7
CA2KN22R7
CA2KN22T7
CA2KN22U7
CA2KN22V7
CA2KN313P72
CA2KN315F7
CA2KN31B7
CA2KN31D7
CA2KN31E7
CA2KN31F7
CA2KN31G7
CA2KN31K7
CA2KN31M7
CA2KN31M72
CA2KN31P7
CA2KN31P72
CA2KN31U7
CA2KN31V7
CA2KN40B7
CA2KN40B72
CA2KN40E7
CA2KN40F7
CA2KN40FC72
CA2KN40G7
CA2KN40M7
CA2KN40N7
CA2KN40P7
CA2KN40T7
CA2KN40U7
CA2SK11B7
CA2SK11E7
CA2SK11F7
CA2SK11G7
CA2SK11M7
CA2SK11P7
CA2SK11T7
CA2SK11U7
CA2SK11UE7
CA2SK11V7
CA2SK20B7
CA2SK20D7
CA2SK20E7
CA2SK20F7
CA2SK20G7
CA2SK20M7
CA2SK20P7
CA2SK20Q7
CA2SK20T7
CA2SK20U7
CA2SK20UE7
CA2SKE20B7
CA2SKE20G7
CA2SKE20M7
CA2SKE20P7
CA2SKE20Q7
CA2SKE20T7
CA2SKE20U7
CA3KN223BD
CA3KN223BD3
CA3KN22BD
CA3KN22BD3
CA3KN22ED
CA3KN22ED3
CA3KN22FD
CA3KN22FD3
CA3KN22GD
CA3KN22GD3
CA3KN22JD
CA3KN22MD
CA3KN22MD3
CA3KN22ND
CA3KN22SD
CA3KN313BD
CA3KN313BD3
CA3KN315BD
CA3KN317SD
CA3KN31BD
CA3KN31BD3
CA3KN31ED
CA3KN31ED3
CA3KN31FD
CA3KN31FD3
CA3KN31GD
CA3KN31GD3
CA3KN31JD
CA3KN31MD
CA3KN31MD3
CA3KN31ND3
CA3KN31UD
CA3KN403BD
CA3KN403BD3
CA3KN40BD
CA3KN40BD3
CA3KN40ED
CA3KN40ED3
CA3KN40EPD
CA3KN40FD
CA3KN40FD3
CA3KN40GD
CA3KN40GD3
CA3KN40MD
CA3KN40MD3
CA3SK11BD
CA3SK20BD
CA3SK20JD
CA4KN223BW3
CA4KN22BW3
CA4KN22EW3
CA4KN22FW3
CA4KN22SW3
CA4KN313BW3
CA4KN31BW3
CA4KN31FW3
CA4KN31SW3
CA4KN403BW3
CA4KN40BW3
CA4KN40EW3
CA4KN40FW3
CAD323B7
CAD323BD
CAD323BL
CAD323E7
CAD323F7
CAD323FE7
CAD323G7
CAD323JD
CAD323P7
CAD326B7
CAD326BD
CAD326BL
CAD326CD
CAD326E7
CAD326F7
CAD326FD
CAD326G7
CAD326GD
CAD326K7
CAD326KD
CAD326L7
CAD326M7
CAD326MD
CAD326P7
CAD326Q7
CAD326R7
CAD326SD
CAD326SL
CAD326U7
CAD326V7
CAD326VD
CAD32B7
CAD32BD
CAD32BL
CAD32CD
CAD32D7
CAD32E7
CAD32ED
CAD32EL
CAD32F7
CAD32FC7
CAD32FD
CAD32FE7
CAD32FL
CAD32G7
CAD32GD
CAD32JD
CAD32JL
CAD32L7
CAD32M7
CAD32MD
CAD32N7
CAD32P7
CAD32Q7
CAD32R7
CAD32SD
CAD32T7
CAD32U7
CAD32UD
CAD32V7
CAD32X7
CAD32XD
CAD32Y7
CAD503BD
CAD503BL
CAD503FD
CAD503FE7
CAD503P7
CAD506B7
CAD506BD
CAD506ED
CAD506F7
CAD506FD
CAD506KD
CAD506M7
CAD506MD
CAD506P7
CAD506R7
CAD50B7
CAD50BD
CAD50BL
CAD50D7
CAD50E7
CAD50ED
CAD50F7
CAD50FD
CAD50FE7
CAD50G7
CAD50GD
CAD50K7
CAD50L7
CAD50M7
CAD50MD
CAD50N7
CAD50P7
CAD50Q7
CAD50R7
CAD50SD
CAD50U7
CAD50UD
CAD50Y7



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers



Contents

**TeSys** SK Mini control relays:
> characteristics ..... B7/14 and B7/15
> dimensions ..... B7/16
> schemes ..... B7/17

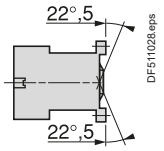
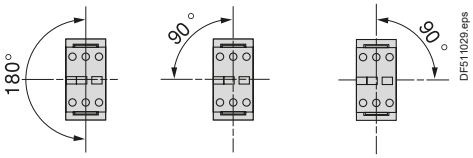
**TeSys** K Control relays:
> characteristics ..... B7/18 and B7/19
> dimensions ..... B7/20
> schemes ..... B7/21

Deca Control relays:
> characteristics ..... B7/22 to B7/24
> curves ..... B7/25
> dimensions ..... B7/26
> schemes ..... B7/27

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947, CSA 22-2 n° 14, UL 508 | **V** | 690 |
| Conforming to standards | | | IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 |
| Approvals | | | cULus, EAC, UKCA, CB certification |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP2X |
| Ambient air temperature around the device | Storage | **°C** | -50…+70 |
| | Operation | **°C** | -20…+50 |
| Maximum operating altitude | Without derating | **m** | 2000 |

| | Vertical axis | Horizontal axis |
|---|---|---|
| Operating position |  Without derating |  Without derating |

| | | | Min. | Max. |
|---|---|---|---|---|
| Connection by connectors | Solid cable | **mm²** | 1 x 1.5 or 2 x 1.5 | 1 x 6 or 2 x 4 |
| | Flexible cable without cable end | **mm²** | 1 x 0.5 or 2 x 0.35 | 1 x 6 or 2 x 2.5 |
| | Flexible cable with cable end | **mm²** | 1 x 0.35 or 2 x 0.35 | 1 x 6 or 2 x 1.5 |
| Tightening torque | Pozidriv n° 1 head | **N.m** | 0.8 | |
| Terminal referencing | Conforming to standards EN 50005 and EN 50011 | | Up to 4 contacts | |

## Control circuit characteristics

| **Control relay** | | | **CA2SK** | **CA2SKE** | **CA3SK** |
|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | **V** | ∼ 24…400 | | ⎓ 12…72 |
| Control voltage limits (≤ 50 °C) | For operation | | 0.85…1.1 Uc | | 0.85…1.1 Uc |
| | For drop-out | | ≤ 0.20 Uc | | ≤ 0.10 Uc |
| Average consumption at 20 °C and at Uc | Inrush | | 16 VA | 23 VA | 2.2 W |
| | Sealed | | 4.2 VA | 4.9 VA | 2.2 W |
| Heat dissipation | | **W** | 1.4 | 1.5 | 2.2 |
| Operating time at 20 °C and at Uc | Between coil energisation and opening of the N/C contacts | **ms** | 8…16 | | 10…18 |
| | Between coil energisation and closing of the N/O contacts | **ms** | 7…14 | | 8…12 |
| | Between coil de-energisation and opening of the N/O contacts | **ms** | 6…8 | | 4…6 |
| | Between coil de-energisation and closing of the N/C contacts | **ms** | 8…10 | | 6…8 |
| Maximum operating rate | In operating cycles per hour | | 1200 | | 1200 |
| Mechanical durability at Uc in millions of operating cycles | 50/60 Hz coil | | 10 | | – |
| | Standard ⎓ coil | | – | | 10 |

Ref.
Control relays

References: pages B7/2 and B7/3
Dimensions: page B7/16
Schemes: page B7/17

# Characteristics

## Auxiliary contact characteristics of mini control relays and instantaneous contact blocks

| | | | |
|---|---|---|---|
| Rated operational voltage (Ue) | | **V** | Up to 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 96047 | **V** | 690 |
| Conventional rated thermal current (Ith) | For ambient temperature ≤ 55 °C | **A** | 10 |
| Minimum switching capacity | Umin | **V** | 17 |
| | Imin | **mA** | 10 |
| Frequency of the operational current | | **Hz** | Up to 400 |
| Short-circuit protection | Conforming to IEC 60947, gl fuse | **A** | 10 |

## Operational power of contacts conforming to IEC 60947

**a.c. supply, category AC-15**

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | **V** | **24** | **48** | **110/ 127** | **220/ 230** | **380/ 400** | **440** |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 48 | 96 | 240 | 440 | 800 | 880 |
| 3 million operating cycles | **VA** | 17 | 34 | 86 | 158 | 288 | 317 |
| 10 million operating cycles | **VA** | 7 | 14 | 36 | 66 | 120 | 132 |
| Occasional making capacity | **VA** | 1000 | 2050 | 5000 | 10000 | 14000 | 13 000 |

**d.c. supply, category DC-13**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | **V** | **24** | **48** | **110** | **220** | **440** |
|---|---|---|---|---|---|---|
| 1 million operating cycles | **W** | 120 | 80 | 60 | 52 | 51 |
| 3 million operating cycles | **W** | 55 | 38 | 30 | 28 | 26 |
| 10 million operating cycles | **W** | 15 | 11 | 9 | 8 | 7 |
| Occasional making capacity | **W** | 720 | 600 | 400 | 300 | 230 |

Ref.
Control relays

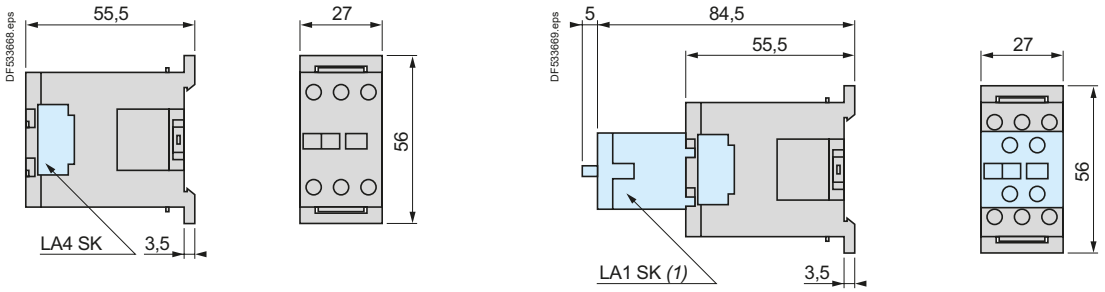
References: page B7/3
Dimensions: page B7/16
Schemes: page B7/17

# Dimensions and mounting

## Dimensions

### Mini control relays

#### CA2SK and CA3SK



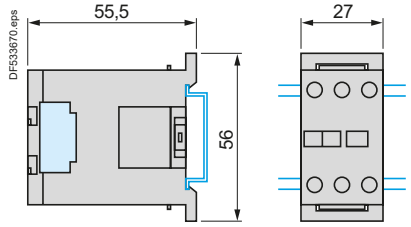

*(1) Only on CA2SK20.*

## Mounting

### Mini control relays

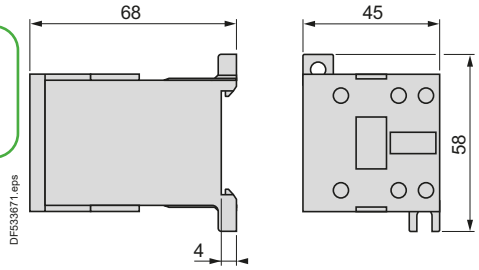
#### CA2SK and CA3SK

**On mounting rail NSYDR200BD or NSYDR200 (⎓ 35 mm)**




## Dimensions

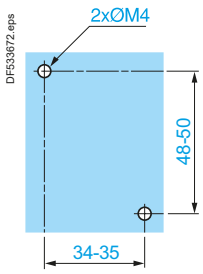
### CA2SKE



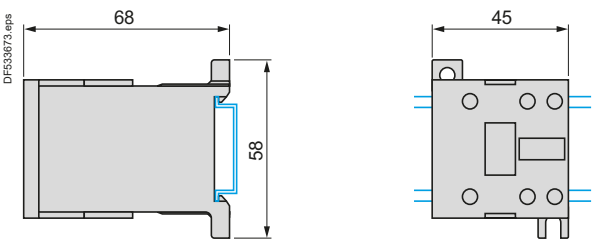

## Mounting

### CA2SKE

**On panel**




**On mounting rail NSYDR200BD or NSYDR200 (⎓ 35 mm)**




References:
pages B7/2 and B7/3

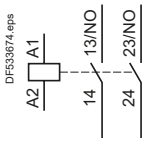
Characteristics:
pages B7/14 and B7/15

Schemes:
page B7/17

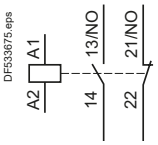
# Schemes

## Schemes

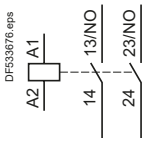
### CA2SK20, CA3SK20
**2 N/O**



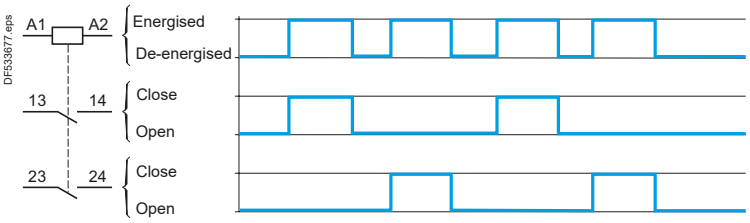

### CA2SK11, CA3SK11
**1 N/O + 1 N/C**




### CA2SKE
**2 N/O**

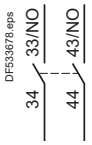



### CA2SKE
**Function diagram**

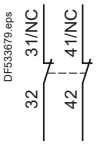



## Instantaneous auxiliary contacts

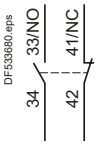
### 2 N/O
**LA1SK20**




### 2 N/C
**LA1SK02**




### 1 N/O + 1 N/C
**LA1SK11**



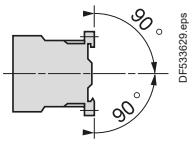
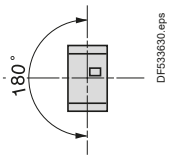
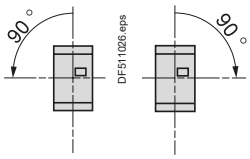

References:
pages B7/2 and B7/3

Characteristics:
pages B7/14 and B7/15

Dimensions:
page B7/16

# Characteristics

## Environment

| | | | | | |
|---|---|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 | | |
| Product certifications | | | UL, CSA, CCC, EAC, UKCA, CB certification | | |
| Operating positions | | | **Vertical axis**<br>  <br><br>Without derating | **Horizontal axis**<br>  <br><br>Without derating |  <br><br>Possible positions for **CA2K** only, with derating, please consult your Regional Sales Office. |
| Connection | | | **Min.** | **Max.** | **Max. to IEC 60947** |
| Screw clamp connections | Solid cable | **mm²** | 1 x 1.5 | 2 x 4 | 1 x 4 + 1 x 2.5 |
| | Flexible cable without cable end | **mm²** | 1 x 0.75 | 2 x 4 | 2 x 2.5 |
| | Flexible cable with cable end | **mm²** | 1 x 0.34 | 1 x 1.5 + 1 x 2.5 | 1 x 1.5 + 1 x 2.5 |
| Spring terminals | Solid cable | **mm²** | 1 x 0.75 | 1 x 1.5 | 2 x 1.5 |
| | Flexible cable without cable end | **mm²** | 1 x 0.75 | 1 x 1.5 | 2 x 1.5 |
| Faston connectors | Clip | **mm** | 2 x 2.8 or 1 x 6.35 | | |
| Solder pins for printed circuit board | With locating device between power and control circuits | | 4 mm x 35 microns | | |
| Tightening torque | Philips head n° 2 and Ø6 | **N.m** | 0.8 | | |
| Terminal referencing | Conforming to standards EN 50005 and EN 50011 | | Up to 8 contacts | | |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP2x (devices with screw clamp terminals or pins for printed circuit board) | | |
| Ambient air temperature around the device | Storage | **°C** | -50...+80 | | |
| | Operation | **°C** | -25...+50 | | |
| Maximum operating altitude | Without derating | **m** | 2000 | | |
| Vibration resistance<br>5...300 Hz<br>Conforming to IEC/EN 60068-2-27 | Control relay open | | 2 gn | | |
| | Control relay closed | | 4 gn | | |
| Flame resistance | Conforming to IEC 60695-2-11 | | 850 °C | | |
| Shock resistance<br>(1/2 sine wave, 11 ms)<br>Conforming to IEC/EN 60068-2-27 | Control relay open | | 10 gn | | |
| | Control relay closed | | 15 gn | | |

## Control circuit characteristics

| **Control relay type** | | | **CA2K** | **CA3K** | **CA4K** |
|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | **V** | ∼ 12...690 | ⎓ 12...250 | ⎓ 12...120 |
| Control voltage limits (y 50 °C) single voltage coil | For operation | | 0.8...1.15 Uc | 0.8...1.15 Uc | 0.7...1.3 Uc |
| | For drop-out | | ⩽ 0.2 Uc | ⩽ 0.1 Uc | ⩽ 0.1 Uc |
| Mechanical durability at Uc<br>In millions of operating cycles | 50/60 Hz coil | | 10 | – | – |
| | Standard ⎓ coil | | – | 20 | – |
| | Wide range, low consumption ⎓ coil | | – | – | 30 |
| Maximum operating rate | In operating cycles per hour | | 10 000 | 10 000 | 6000 |
| Average consumption at 20 °C and at Uc | Inrush | | 30 VA | 3 W | 1.8 W |
| | Sealed | | 4.5 VA | 3 W | 1.8 W |
| Heat dissipation | | **W** | 1.3 | 3 | 1.8 |
| Operating time at 20 °C and at Uc | Between coil energisation and opening of the N/C contacts | **ms** | 5...15 | 25...35 | 25...35 |
| | Between coil energisation and closing of the N/O contacts | **ms** | 10...20 | 30...40 | 30...40 |
| | Between coil de-energisation and opening of the N/O contacts | **ms** | 10...20 | 10 | 10...20 |
| | Between coil de-energisation and closing of the N/C contacts | **ms** | 15...25 | 15 | 15...25 |
| Maximum immunity to microbreaks | | **ms** | 2 | 2 | 2 |

Ref.
Control relays

References: pages B7/4 to B7/7
Dimensions: page B7/20
Schemes: page B7/21

# Characteristics

## Contact characteristics of control relays and instantaneous contact blocks

| | | | |
|---|---|---|---|
| Number of auxiliary contacts | On **CA●K** | | 4 |
| | On **LA1K** | | 2 or 4 for **CA2K** and **CA3K**, 2 for **CA4K** |
| Rated operational voltage (Ue) | Up to | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947 | **V** | 690 |
| | Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1 | **V** | 600 |
| Conventional thermal current (Ith) | For ambient temperature ≤ 50 °C | **A** | 10 |
| Frequency of the operational current | | **Hz** | Up to 400 |
| Minimum switching capacity | U min | **V** | 17 |
| | I min | **mA** | 5 |
| Short-circuit protection | Conforming to IEC 60947, gG fuse | **A** | 10 |
| Rated making capacity | Conforming to IEC 60947 | | |
| | I rms | **A** | 110 |
| Short-time rating | Permissible for | | |
| | 1 s | **A** | 80 |
| | 500 ms | **A** | 90 |
| | 100 ms | **A** | 110 |
| Insulation resistance | | **MΩ** | > 10 |
| Non-overlap distance | CA●K and LA1K: linked contacts conforming to INRS, BIA and CNA specifications | **mm** | 0.5 (see schemes page B7/21) |

## Operational power of contacts conforming to IEC 60947

**a.c. supply, category AC-15**

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4)

| | V | 24 | 48 | 110/127 | 220/230 | 380/400 | 440 | 600/690 |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 48 | 96 | 240 | 440 | 800 | 880 | 1200 |
| 3 million operating cycles | **VA** | 17 | 34 | 86 | 158 | 288 | 317 | 500 |
| 10 million operating cycles | **VA** | 7 | 14 | 36 | 66 | 120 | 132 | 200 |
| Occasional making capacity | **VA** | 1000 | 2050 | 5000 | 10000 | 14000 | 13000 | 9000 |

**d.c. supply, category DC-13**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | V | 24 | 48 | 110 | 220 | 440 | 600 |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **W** | 120 | 80 | 60 | 52 | 51 | 50 |
| 3 million operating cycles | **W** | 55 | 38 | 30 | 28 | 26 | 25 |
| 10 million operating cycles | **W** | 15 | 11 | 9 | 8 | 7 | 6 |
| Occasional making capacity | **W** | 720 | 600 | 400 | 300 | 230 | 200 |

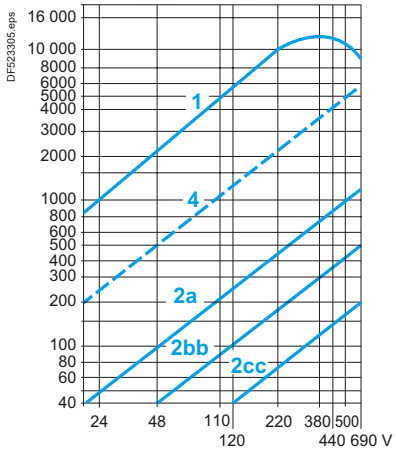
**1** Breaking limit of contacts valid for:
■ maximum of 50 operating cycles at 10 s intervals (power broken = making current x cos φ 0.7).

**2** Electrical durability of contacts for:
■ 1 million operating cycles (**2a**)
■ 3 million operating cycles (**2b**)
■ 10 million operating cycles (**2c**).

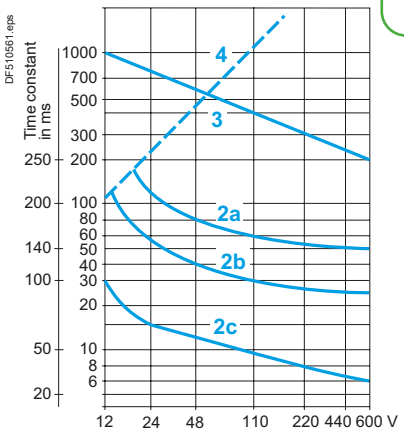
**3** Breaking limit of contacts valid for:
■ maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

**4** Thermal limit

Power broken in VA




Power broken in W



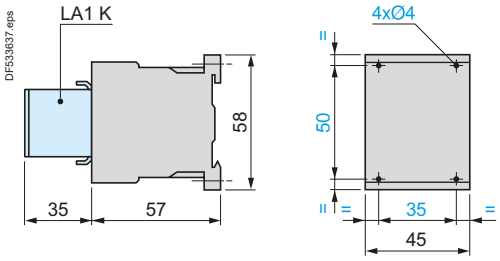

References: page B7/6
Dimensions: page B7/20
Schemes: page B7/21

# Dimensions and mounting

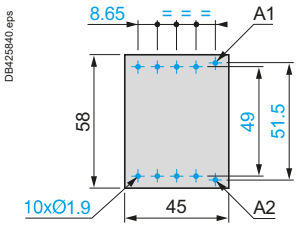
## Control relays

### CA2K, CA3K, CA4K

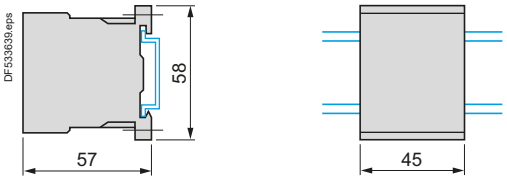
#### On panel




#### On printed circuit board

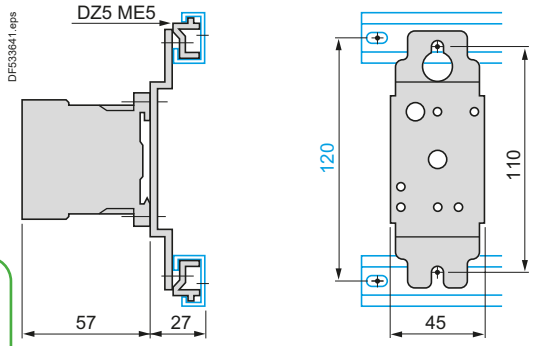



#### On mounting rail NSYDR200BD or NSYDR200 (⎓ 35 mm)




### DX1AP25

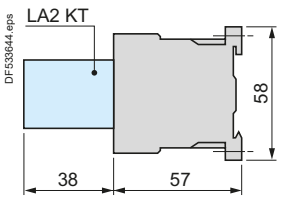
#### On asymmetrical rail with clip-on mounting plates




## Electronic time delay contact blocks

### LA2KT

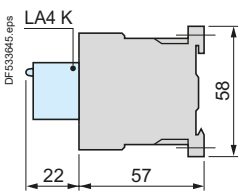
#### On control relay




## Suppressor modules

### LA4K

#### On control relay




References:
pages B7/4 to B7/7

Characteristics:
pages B7/18 and B7/19

Schemes:
page B7/21



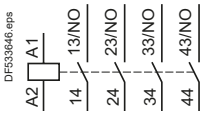
Life Is On Schneider Electric

# Schemes

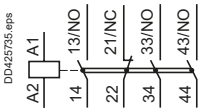
## Control relays

### CA2K, CA3K, CA4K

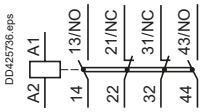
**4 N/O**




**3 N/O + 1 N/C**

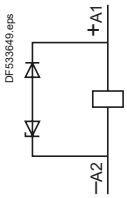



**2 N/O + 2 N/C**

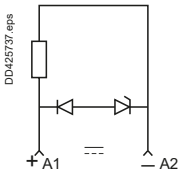



## With integral suppression device

**CA3K**




**CA4K**

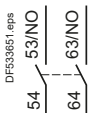



## Instantaneous auxiliary contact blocks LA1K

### For CA2K, CA3K, CA4K

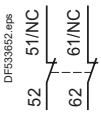
**2 N/O**

**LA1KN20, LA1 KN207**



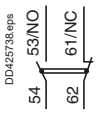

**2 N/C**

**LA1KN02, LA1 KN027**




**1 N/O + 1 N/C**

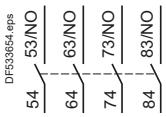
**LA1KN11, LA1 KN117**




### For CA2K, CA3K

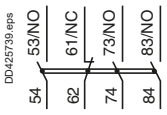
**4 N/O**

**LA1KN40, LA1 KN407**



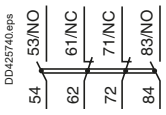

**3 N/O + 1 N/C**

**LA1KN31, LA1 KN317**



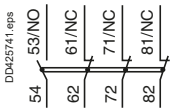

**2 N/O + 2 N/C**

**LA1KN22**



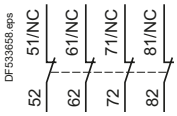

**1 N/O + 3 N/C**

**LA1KN13**




**4 N/C**

**LA1KN04**

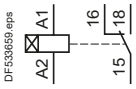



## Electronic time delay contact blocks LA2KT

### For CA2K, CA3K, CA4K

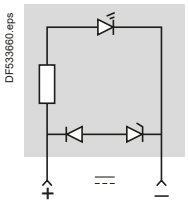
**1 C/O**

**LA2KT2**

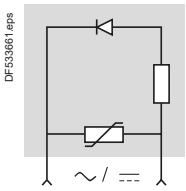



## Suppressor modules

**LA4KC**




**LA4KE**



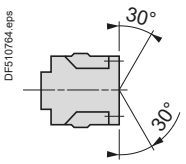
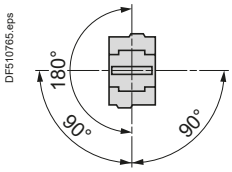
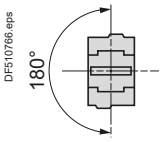
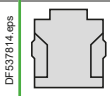
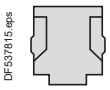

References:
pages B7/4 to B7/7

Characteristics:
pages B7/18 and B7/19

Dimensions:
page B7/20

# Characteristics

## Environment

| Control relay type | | | | CAD ∼ | CAD ⎓ | CAD ⎓ low consumption |
|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 Overvoltage category III and degree of pollution 3 | | **V** | 690 | 690 | 690 |
| | Conforming to UL, CSA | | **V** | 600 | 600 | 600 |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC 60947 | | **kV** | 6 | 6 | 6 |
| Separation of electrical circuits | Conforming to IEC 60536 | | | Reinforced insulation up to 400 V | | |
| Conforming to standards | | | | IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 | | |
| Product certifications | | | | UL, CSA, CCC, EAC, UKCA, CB certification, EU-RO-MR by DNV-GL | | |
| Degree of protection | Conforming to IEC 60529 | | | Front face protected against direct finger contact IP 2X | | Protection against direct finger contact IP 2X |
| Ambient air temperature around the device | Storage | | **°C** | -60…+80 | | |
| | Operation (1) | | **°C** | -40…+60 | | |
| | Allowed (1) | | **°C** | +60...+70 at Uc to 1,●● x Uc | | |
| Maximum operating altitude | Without derating | | **m** | 3000 | 3000 | 3000 |
| Operating positions | Without derating in the following positions | | |   |   |   |
| | Positions that are not allowed | | | |   |   |
| Shock resistance (2) half sine wave for 11ms | Control relay open | | | 10 gn | 10 gn | 10 gn |
| | Control relay closed | | | 15 gn | 15 gn | 15 gn |
| Vibration resistance (2) 5…300 Hz | Control relay open | | | 2 gn | 2 gn | 2 gn |
| | Control relay closed | | | 4 gn | 4 gn | 4 gn |
| Screw clamp connections | Flexible conductor without cable end | 1 conductor | **mm²** | 1…4 | 1…4 | 1…4 |
| | | 2 conductors | **mm²** | 1…4 | 1…4 | 1…4 |
| | Flexible conductor with cable end | 1 conductor | **mm²** | 1…4 | 1…4 | 1…4 |
| | | 2 conductors | **mm²** | 1…2.5 | 1…2.5 | 1…2.5 |
| | Solid conductor without cable end | 1 conductor | **mm²** | 1…4 | 1…4 | 1…4 |
| | | 2 conductors | **mm²** | 1…4 | 1…4 | 1…4 |
| | Tightening torque | | **N.m** | 1.7 | 1.7 | 1.7 |
| Spring terminal connections | 1 or 2 flexible or rigid conductors without cable end | | **mm²** | 1…2.5 | 1…2.5 | 1…2.5 |

*(1) As per IEC60947-1, operating time and drop out voltage given and tested for -5...+40 °C.*
*(2) In the least favourable direction, without change of contact state, with coil supplied at Uc.*

Ref.
Control relays

References: pages B7/9 to B7/11
Curves: page B7/25
Dimensions: page B7/26
Schemes: page B7/27

# Characteristics

## Control circuit characteristics

| Control relay type | | | | CAD ∼ | CAD ⎓ | CAD low consumption |
|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | | **V** | 12…690 | 12…440 | ⎓ 5…72 |
| Control voltage limits | | | | | | |
| | Operation | With coil 50/60 Hz | | 0.8…1.1 Uc at 50 Hz | – | – |
| | | | | 0.85…1.1 Uc at 60 Hz | – | – |
| | | With standard coil, wide range | | – | 0.7…1.25 Uc | 0.7…1.25 Uc |
| | Drop-out | | | 0.3…0.6 Uc | 0.1…0.25 Uc | 0.1…0.25 Uc |
| Average consumption at 20 °C and at Uc | | ∼ 50/60 Hz (at 50 Hz) | **VA** | Inrush: 70 | – | – |
| | | | | sealed: 8 | – | – |
| | | With standard coil | **W** | – | Inrush or sealed: 5.4 | Inrush or sealed: 2.4 |
| Operating time (at rated control circuit voltage and at 20 °C) | | Between coil energisation and - opening of the N/C contacts | **ms** | 4…19 | 55 ± 15 % | 67 ± 15 % |
| | | - closing of the N/O contacts | **ms** | 12…22 | 63 ± 15 % | 77 ± 15 % |
| | | Between coil de-energisation and - opening of the N/O contacts | **ms** | 4…12 | 20 ± 20 % | 27 ± 20 % |
| | | - closing of the N/C contacts | **ms** | 6…17 | 25 ± 20 % | 35 ± 20 % |
| Short supply failure | | Maximum duration without affecting hold-in of the device | **ms** | 2 | 2 | 2 |
| Maximum operating rate | | In operating cycles per second | | 3 | 3 | 3 |
| Mechanical durability In millions of operating cycles | | With coil 50/60 Hz (at 50 Hz) | | 30 | – | – |
| | | With standard coil ⎓ wide range | | – | 30 | 30 |
| Time constant L/R | | | **ms** | – | 28 | 40 |

Ref.
Control relays

References: pages B7/9 to B7/11
Curves: page B7/25
Dimensions: page B7/26
Schemes: page B7/27

# Characteristics

## Characteristics of instantaneous contacts incorporated in the control relay

| | | | | |
|---|---|---|---|---|
| Number of contacts | | | | 5 |
| Rated operational voltage (Ue) | Up to | | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 | | **V** | 690 |
| | Conforming to UL, CSA | | **V** | 600 |
| Conventional thermal current (Ith) | For ambient temperature ≤ 60 °C | | **A** | 10 |
| Frequency of the operational current | | | **Hz** | 25...400 |
| Minimum switching capacity | U min | | **V** | 17 |
| | I min | | **mA** | 5 |
| Short-circuit protection | Conforming to IEC 60947-5-1 | | | gG fuse: 10 A |
| Rated making capacity | Conforming to IEC 60947-5-1 | I rms | | ∿ 140, ⎓ 250 |
| Short-time rating | Permissible for | 1 s | **A** | 100 |
| | | 500 ms | **A** | 120 |
| | | 100 ms | **A** | 140 |
| Insulation resistance | | | **MΩ** | > 10 |
| Non-overlap time | Guaranteed between N/C and N/O contacts | | **ms** | 1.5 (on energisation and on de-energisation) |
| Tightening torque | Philips head n° 2 and Ø6 | | **N.m** | 1.7 |
| Non-overlap distance | | | | Linked contacts in association with auxiliary contacts LADN |
| Mechanically linked contacts | Conforming to IEC 60947-5-1 | | | The 3 N/O contacts and the 2 N/C contacts of CAD N32 are linked mechanically by one mobile contact carrier. |



References: pages B7/9 to B7/11
Curves: page B7/25
Dimensions: page B7/26
Schemes: page B7/27

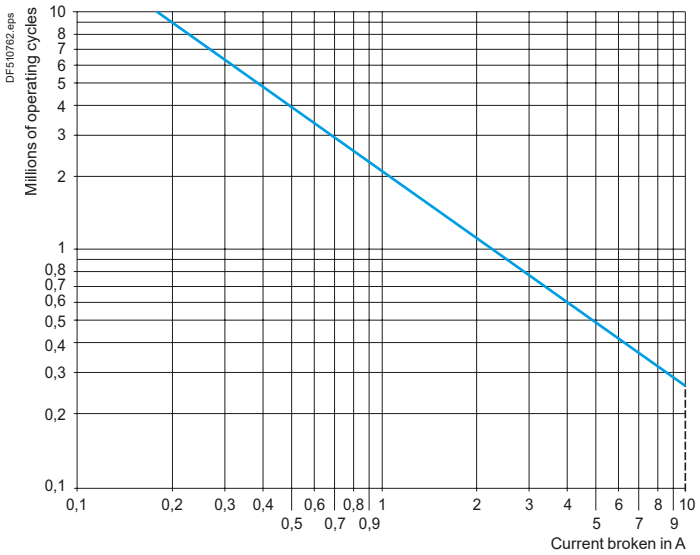
# Curves

## Rated operational power of contacts (conforming to IEC 60947-5-1)

### a.c. supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet:
making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

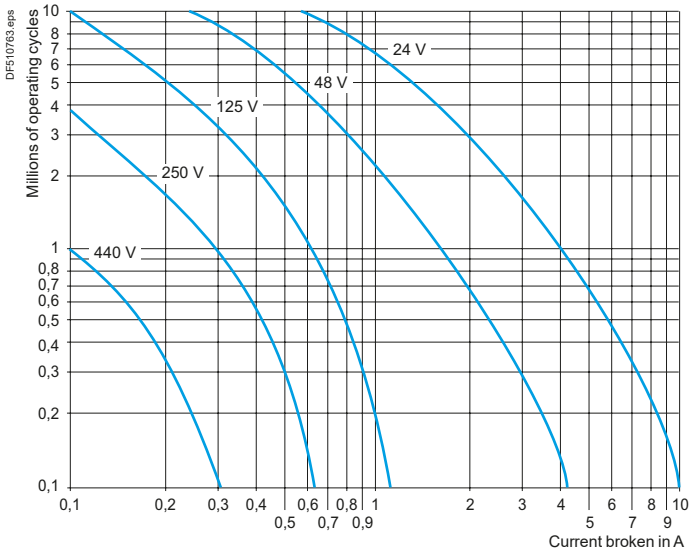
| | V | 24 | 48 | 115 | 230 | 400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million operating cycles | **VA** | 16 | 32 | 80 | 160 | 280 | 300 | 420 |
| 10 million operating cycles | **VA** | 4 | 8 | 20 | 40 | 70 | 80 | 100 |




### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

| Operating cycles | V | 24 | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|---|
| 1 million | **W** | 96 | 76 | 76 | 76 | 44 |
| 3 million | **W** | 48 | 38 | 38 | 32 | – |
| 10 million | **W** | 14 | 12 | 12 | – | – |




References:
pages B7/9 to B7/11

Characteristics:
pages B7/22 to B7/24

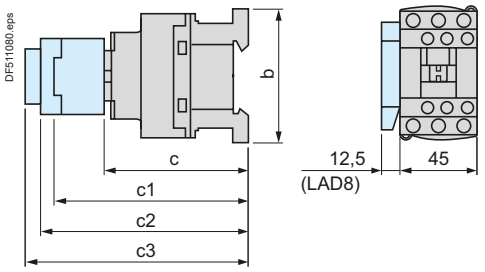
Dimensions:
page B7/26

Schemes:
page B7/27

# Dimensions and mounting

## Dimensions

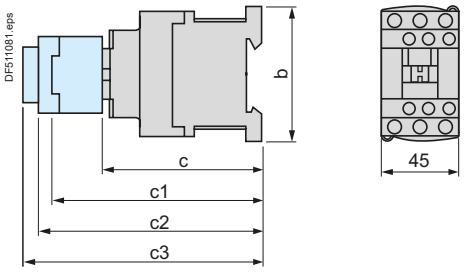
### CAD ∼




| CAD | | 32<br>50 | 323<br>503 |
|---|---|---|---|
| b | | 77 | 99 |
| c | without cover or add-on blocks | 84 | 84 |
| | with cover, without add-on blocks | 86 | 86 |
| c1 | with LADN or C (2 or 4 contacts) | 117 | 117 |
| c2 | with LAD6K10 | 129 | 129 |
| c3 | with LADT, R, S | 137 | 137 |
| | with LADT, R, S and sealing cover | 141 | 141 |

| Operating cycles | V | 24 | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|---|
| 1 million | W | 120 | 90 | 75 | 68 | 61 |
| 3 million | W | 70 | 50 | 38 | 33 | 28 |
| 10 million | W | 25 | 18 | 14 | 12 | 10 |

### CAD ⎓ or LC (low consumption)

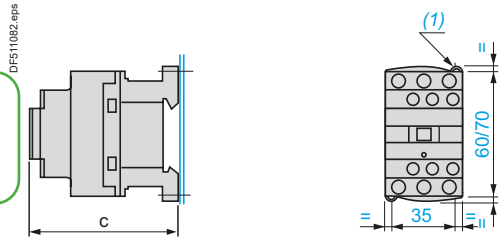



| CAD | | 32<br>50 | 323<br>503 |
|---|---|---|---|
| b | | 77 | 99 |
| c | without cover or add-on blocks | 93 | 93 |
| | with cover, without add-on blocks | 95 | 95 |
| c1 | with LADN or C (2 or 4 contacts) | 126 | 126 |
| c2 | with LAD6K10 | 138 | 138 |
| c3 | with LADT, R, S | 146 | 146 |
| | with LADT, R, S and sealing cover | 150 | 150 |

## Mounting

### CAD

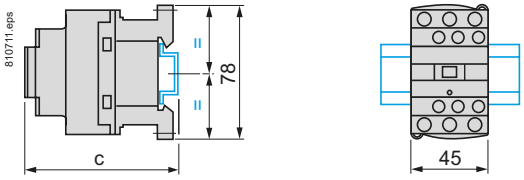
#### Panel mounted




| | | CAD ∼ | CAD ⎓ or LC |
|---|---|---|---|
| c | with cover | 86 | 95 |

*(1) 2 elongated holes 4.5 x 9.*

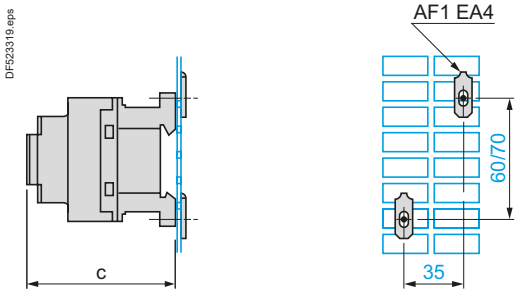
#### Mounted on rail NSYDR200BD or NSYDR200




| | | CAD ∼ | CAD ⎓ or LC |
|---|---|---|---|
| c | (NSYDR200BD) (2) | 88 | 97 |
| c | (NSYDR200BD) (2) | 96 | 105 |

*(2) With cover.*

#### Mounted on plate AM1P




| | | CAD ∼ | CAD ⎓ or LC |
|---|---|---|---|
| c | with cover | 86 | 95 |

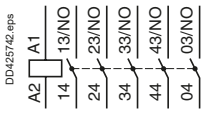
References:
pages B7/9 to B7/11
Illustration:
page B7/8
Characteristics:
pages B7/22 to B7/24
Curves:
page B7/25
Schemes:
page B7/27

# Schemes

## Instantaneous auxiliary contacts

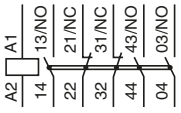
**5 N/O**

**CAD50**




**3 N/O + 2 N/C**

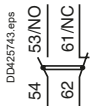
**CAD32**



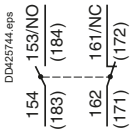

## Instantaneous auxiliary contact blocks

**1 N/O + 1 N/C**

**LADN11**



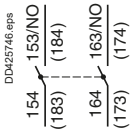

**LAD8N11** (1)




**2 N/O**

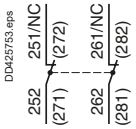
**LADN20**

**LAD8N20** (1)

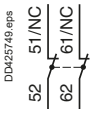



**2 N/C**

**LAD8N02**



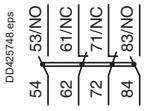

**LADN02**




*(1) The figures in brackets are for the device mounted on the RH side of the control relay.*

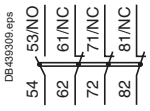
**2 N/O + 2F N/C**

**LADN22**




**1 N/O + 3 N/C**

**LADN13**

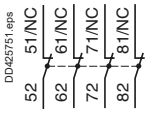



**4 N/O**

**LADN40**

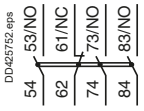
**4 N/C**

**LADN04**



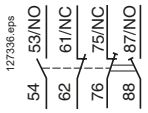

**3 N/O + 1 N/C**

**LADN31**




**2 N/O + 2 N/C including 1 N/O + 1 N/C make before break**

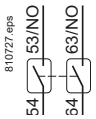
**LADC22**




**With dust and damp protected contacts**

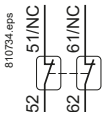
**2 N/O protected**

**LA1DX20**



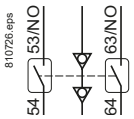

**2 N/C protected**

**LA1DX02**



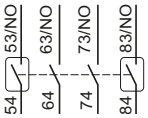

**2 N/O protected** (2) **with 2 cable screen terminals**

**LA1DY20**



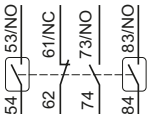

**2 N/O protected + 2 N/O non protected**

**LA1DZ40**




**2 N/O protected + 1 N/O + 1 N/C non protected**

**LA1DZ31**

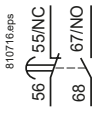



*(2) Product fitted with 4 earth screen continuity terminals.*

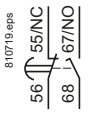
## Time delay auxiliary contact blocks

**On-delay 1 N/O + 1 N/C**

**LADT**

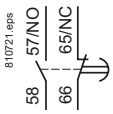



**LADS**



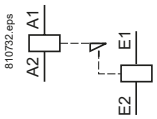

**Off-delay 1 N/O + 1 N/C**

**LADR**




## Mechanical latch blocks

**LAD6K10**




References: pages B7/9 to B7/11
Illustration: page B7/8
Characteristics: pages B7/22 to B7/24
Curves: page B7/25
Dimensions: page B7/26

# TeSys Control
## SK, K, SKGC, Deca, Modular Contactors

Chapter B8

## TeSys SK, K contactors


| Type of product | Range | Pages |
|---|---|---|
| Contactors<br>27 and 45 mm width for use in modular panels<br>TeSys SK | From 12 to 20 A | B8/2 |
| Contactors<br>TeSys K | From 6 to 16 A | B8/4 |
| Reversing pre-assembled contactors<br>TeSys K | From 6 to 16 A | B8/8 |
| Auxiliary contact blocks - accessories | | B8/13 |

TeSys K, Deca, Giga S207 series Contactors for railway applications.
Click on image to download.

TeSys S335 series contactors for electrodomestic application.
Click on image to download.

## TeSys Deca contactors


| | | |
|---|---|---|
| AC-3/AC-3e, AC-1, UL CSA applications-<br>TeSys Deca green contactors<br>(with AC/DC compatible coil) | From 9 to 80 A | B8/17 |
| AC-3/AC-3e applications -<br>3-pole, 4-pole TeSys Deca contactors | From 9 to 150 A | B8/22 |
| AC-1 applications -<br>3-pole, 4-pole TeSys Deca contactors | From 25 to 200 A | B8/23 |
| UL CSA application -<br>3-pole TeSys Deca contactors | From 25 to 200 A | B8/28 |
| Reversing, changeover pre-assembled<br>TeSys Deca contactors | From 9 to 150 A | B8/29 |
| Reversing contactors<br>TeSys Deca green contactors<br>(with AC/DC compatible coil) | From 9 to 80 A | B8/34 |
| Contactors for switching capacitor banks | From 12.5 to 60 kVAR | B8/34 |
| Auxiliary contact blocks – accessories – spare coils for TeSys Deca | | B8/36 |

## Modular contactors


| | | |
|---|---|---|
| Modular contactors | From 16 to 100 A | B8/54 |
| Modular Dual tariff contactors | 16, 25, 40 or 100 A | B8/55 |
| Modular Impulse relay | Up to 16 A | B8/56 |
| Auxiliary contact blocks - accessories | | B8/57 |
| Technical Data for Designers | | B8/65 |

# Product references

- Width of contactor 27 mm.
- Mounting on 35 mm ⎓ rail.
- Screw clamp terminals.

**LC1SK contactors can be fitted with an add-on block or auxiliary contact block, LP1SK and LC1SKGC contactors can't.**

PB111641.eps

*LC1SK0600●●*

## Mini-contactors for motor in category AC-3

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 (1) | | | Rated operational voltage in AC-3 up to 400 V | Number of poles | Instantaneous auxiliary contacts | | Basic reference. Complete with code indicating control circuit voltage (2) (3) |
|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 660 V 690 V | | | | | |
| kW | kW | kW | A | | | | |
| 1.1 | 2.2 | 2.2 | 6 | 2 | – | – | **LC1SK0600●●** |

## Mini-contactors for motor in category AC-1

| Non inductive loads maximum current (θ ⩽ 55 °C) utilisation category AC-1 | Control circuit supply | Number of poles | Instantaneous auxiliary contacts | | Basic reference. Complete with code indicating control circuit voltage (2) (3) |
|---|---|---|---|---|---|
| A | | | | | |
| 12 | a.c. | 2 | – | – | **LC1SK0600●●** |
| | d.c. | 2 | – | – | **LP1SK0600●●** |

*(1) For use in AC-3 category and 3-phase circuits, an **LA1SK●●** auxiliary contact block should be ordered separately for mounting on the contactor.*
*(2) Standard control circuit voltages (variable delivery times, please consult your Regional Sales Office):*

| Mini-contactors LC1SK | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Volts ∼ 50/60 Hz** | **24** | **48** | **110** | **120** | **220** | **230** | **240** | **380** | **400** |
| Code | B7 | E7 | F7 | G7 | M7 | P7 | U7 | Q7 | V7 |

| Mini-contactors LP1SK | | | | | |
|---|---|---|---|---|---|
| **Volts ⎓** | **12** | **24** | **36** | **48** | **72** |
| Code | JD | BD | CD | ED | SD |

*(3) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*

PB111639.eps

*LA1SK01*

## Add-on power pole (for 3-phase circuits) with aux. contact

| For use on contactor LC1SK0600●● with 1 NO power pole (6 A AC-3, 10 A AC-1) and with 1 NC aux. contact (Ith 10 A). Ue 690 V AC 50/60 Hz for both contacts | Number of poles | Instantaneous auxiliary contacts | | Reference |
|---|---|---|---|---|
| Clip-on front mounting | 1 | – | 1 | **LA1SK01** |

## Instantaneous auxiliary contact blocks

| For use on contactor LC1SK0600●● Aux. contacts: Ith 10 A. Ue: 690 V AC 50/60 Hz | Maximum number of blocks per contactor | Composition | | Reference |
|---|---|---|---|---|
| Clip-on front mounting | 1 | 2 | – | **LA1SK20** |
| | | – | 2 | **LA1SK02** |
| | | 1 | 1 | **LA1SK11** |

PB111640.eps

*LA4SK●1●*

## Coil suppressor modules

**Clip-on fixing and electrical connection on right-hand side, without use of tools**

| For use on contactors | Type | For voltages | Sold in lots of | Unit reference |
|---|---|---|---|---|
| LC1SK0600●● LP1SK0600●●, LC1SKGC●●● | Varistor (1) | ∼ and ⎓ 24 V…48 V | 10 | **LA4SKE1E** |
| | | ∼ and ⎓ 110 V…250 V | 10 | **LA4SKE1U** |
| | Diode (2) | ⎓ 24 V…250 V | 10 | **LA4SKC1U** |

*(1) Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(2) No overvoltage or oscillating frequency. Slight increase in drop-out time (1.1 to 1.5 times the normal time).*

Characteristics: pages B8/66 to B8/69
Dimensions, schemes: page B8/70
Click **HERE** for access to online contactor selector

# Product references

Mini-contactors 25 and 47 mm pitch for use in modular panels.
- Mounting on 35 mm ⎓ rail or fixing by four Ø4 screws, except for LC1SKGC200.
- Connection by connectors.
- Mini-contactor fitted with transparent, sealable protective cover to prevent front face access.

PB111643.eps

*LC1SKGC200*

## Mini-contactors, width 27 mm

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Rated operational current in AC-3 up to 400 V | Non inductive loads category AC-1 maximum current θ ≤ 50 °C | No. of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) (2) |
|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 660 V 690 V | | | | | | |
| kW | kW | kW | A | A | | | | |
| – | – | – | 5 | 20 | 2 | – | – | **LC1SKGC200●●** |

PB111644.eps

*LC1SKGC300*

## Mini-contactors, width 45 mm

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | | Rated operational current in AC-3 up to 400 V | Non inductive loads category AC-1 maximum current θ ≤ 50 °C | No. of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) (2) |
|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 660 V 690 V | | | | | | |
| kW | kW | kW | A | A | | | | |
| 1.1 | 4 | 4 | 9 | 20 | 3 | 1 | – | **LC1SKGC310●●** |
| | | | | | 3 | – | 1 | **LC1SKGC301●●** |

*(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts ~ 50/60 Hz | 24 | 48 | 110 | 120 | 220 | 230 | 240 | 380 | 400 |
|---|---|---|---|---|---|---|---|---|---|
| Code | B7 | E7 | F7 | G7 | M7 | P7 | U7 | Q7 | V7 |

***(2) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.***

Contactors

PB123779.tif

*LC1K0910●●*

PB123781.eps

*LC1K09103●●*

PB123783.eps

*LC1K09107●●*

PB123782.eps

*LC1K09105●●*

PB123786.eps

*LC7K0910●●*

Mounting on 35 mm ⊔ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3-pole contactors - Motor control 6 to 16 A in categories AC-3, AC-3e, AC-4 - a.c. coil

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e | | | Rated operational current in category AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) (2) |
|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 440 V 690 V | | | | |
| kW | kW | kW | A | | | |
| **Screw clamp connections** | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | - | **LC1K0610●●** |
| | | | | - | 1 | **LC1K0601●●** |
| 2.2 | 4 | 4 | **9** | 1 | - | **LC1K0910●●** |
| | | | | - | 1 | **LC1K0901●●** |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | - | **LC1K1210●●** |
| | | 5.5 (440) | | - | 1 | **LC1K1201●●** |
| 4 | 7.5 | 4 (> 440) | **16** | 1 | - | **LC1K1610●●** |
| | | 5.5 (440) | | - | 1 | **LC1K1601●●** |

### Spring terminal connections (3)

For 6 to 12 A ratings only, in the references selected above, insert a figure **3** before the voltage code.
Example: **LC1K0610●●** becomes **LC1K06103●●.**

### Faston connectors, 1 x 6.35 or 2 x 2.8

For 6 to 16 A ratings, in the references selected above, insert a figure **7** before the voltage code.
Example: **LC1K0610●●** becomes **LC1K06107●●**.

### Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC1K0610●●** becomes **LC1K06105●●**.

## 3-pole silent contactors

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | - | **LC7K0610●●** |
| | | | | - | 1 | **LC7K0601●●** |
| 2.2 | 4 | 4 | **9** | 1 | - | **LC7K0910●●** |
| | | | | - | 1 | **LC7K0901●●** |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | - | **LC7K1210●●** |
| | | 5.5 (440) | | - | 1 | **LC7K1201●●** |

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC7K0610●●** becomes **LC7K06107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC7K0610●●** becomes **LC7K06105●●**.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

### Coil voltage codes - a.c. (4)

**Contactors LC1K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| **Volts** | **12** | **20** | **24** (1) | **36** | **42** | **48** | **110** | **115** | **120** | **127** | **200/208** | | ***220/230*** | ***230*** | ***230/240*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 Hz (5) | | | B5 | | D5 | E5 | | | | | | | | *P5* | |
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | *M7* | *P7* | *U7* |
| **Volts** | **256** | **277** | ***380/400*** | | **400** | ***400/415*** | **440** | **480** | **500** | **575** | **600** | **660/690** | | | |
| 50/60 Hz | W7 | UE7 | Q7 | – | V7 | N7 | R7 | T7 | S7 | SC7 | X7 | Y7 | – | – | |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**.

**Contactors LC7K** (0.85…1.1 Uc)

| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230/240** |
|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | U7 |

*(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50…129 V) or **LA4KE1UG** (130…250 V), see page B8/14.*
***(2) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.***
*(3) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*
*(4) (0.8…1.15 Uc) for single voltage coil; (0.85…1.1 Uc) for dual voltage coil, example 200/208 V AC.*
*(5) Only available for 'screw clamp terminals' versions.*

Characteristics: pages B8/76 to B8/78
Dimensions: page B8/80
Schemes: page B8/81
Click **HERE** for access to online contactor selector

PB123787.eps

*LP1K0910●●*

PB123789.eps

*LP1K09103●●*

PB123790.eps

*LP1K09105●●*

PB123792.eps

*LP4K0910●●*

Contactor selection according to utilisation category, see pages A5/52 to A5/57 and A5/60 to A5/63.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3-pole contactors - Motor control 6 to 12 A in categories AC-3, AC-3e, AC-4 - d.c. coil

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e | | | Rated operational current in category AC-3/AC-3e 440 V up to | Instan-taneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) (2) |
|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 440 V 690 V | | | | |
| kW | kW | kW | A | | | |
| **Screw clamp connections** | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LP1K0610●●** |
| | | | | – | 1 | **LP1K0601●●** |
| 2.2 | 4 | 4 | **9** | 1 | – | **LP1K0910●●** |
| | | | | – | 1 | **LP1K0901●●** |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LP1K1210●●** |
| | | 5.5 (440) | | – | 1 | **LP1K1201●●** |
| **Spring terminal connections** (3) | | | | | | |
| In the references selected above, insert a figure **3** before the voltage code. Example: **LP1K0610●●** becomes **LP1K06103●●**. | | | | | | |
| **Faston connectors, 1 x 6.35 or 2 x 2.8** | | | | | | |
| In the references selected above, insert a figure **7** before the voltage code. Example: **LP1K0610●●** becomes **LP1K06107●●**. | | | | | | |
| **Solder pins for printed circuit boards** | | | | | | |
| In the references selected above, insert a figure **5** before the voltage code. Example: **LP1K0610●●** becomes **LP1K06105●●**. | | | | | | |

## 3-pole low consumption contactors

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LP4K0610●●** |
| | | | | – | 1 | **LP4K0601●●** |
| 2.2 | 4 | 4 | **9** | 1 | – | **LP4K0910●●** |
| | | | | – | 1 | **LP4K0901●●** |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LP4K1210●●** |
| | | 5.5 (440) | | – | 1 | **LP4K1201●●** |
| **Spring terminal connections** | | | | | | |
| In the references selected above, insert a figure **3** before the voltage code. Example: **LP4K0610●●** becomes **LP4K06103●●**. | | | | | | |
| **Faston connectors, 1 x 6.35 or 2 x 2.8** | | | | | | |
| In the references selected above, insert a figure **7** before the voltage code. Example: **LP4K0610●●** becomes **LP4K06107●●**. | | | | | | |
| **Solder pins for printed circuit boards** | | | | | | |
| In the references selected above, insert a figure **5** before the voltage code. Example: **LP4K0610●●** becomes **LP4K06105●●**. | | | | | | |

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

**d.c. supply** (contactors LP1K: 0.8...1.15 Uc)

| **Volts** | **12** | **20** | **24** (1) | **36** | **48** | **60** | **72** | **100** | **110** | **125** | **155** | **174** | **200** | **220** | **230** | **240** | **250** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**

**Low consumption** (contactors LP4K: 0.7...1.3 Uc)

| **Volts** | **12** | **20** | **24** | **48** | **72** | **110** | **120** |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

*(1) For **LP1K** only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*

*(2) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*

*(3) For **LC●K●●●●3** / **LP●K●●●●3** with spring terminal), Ith max = 16 A.*

Characteristics: pages B8/76 to B8/78
Dimensions: page B8/80
Schemes: page B8/81
Click HERE for access to online contactor selector

PB123780.eps

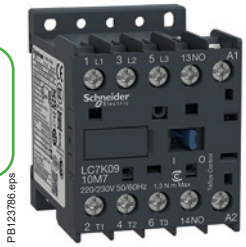
*LC1K09004●●*

PB123781.eps

*LC1K09103●●*

PB123783.eps

*LC1K09107●●*


PB123786.eps

*LC7K0910●●*

Contactor selection according to utilisation category, see pages A5/58 and A5/59.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3 or 4-pole contactors - Load control up to 20 A in category AC-1 - a.c. coil (1)

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (2) (3) |
|---|---|---|---|---|---|
| A | | | | | |
| **Screw clamp connections** | | | | | |
| 20 | 3 | – | 1 | – | **LC1K0910●●** |
| | | | | | or **LC1K1210●●** |
| | 3 | – | – | 1 | **LC1K0901●●** |
| | | | | | or **LC1K1201●●** |
| | 4 | – | – | – | **LC1K09004●●** |
| | | | | | or **LC1K12004●●** |
| | 2 | 2 | – | – | **LC1K09008●●** |

### Spring terminal connections (4)

In the references selected above, insert a figure **3** before the voltage code.
Example: **LC1K0910●●** becomes **LC1K09103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC1K0910●●** becomes **LC1K09107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC1K0910●●** becomes **LC1K09105●●**.

## 3 or 4-pole silent contactors (1)

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

| | | | | | |
|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | |
| 20 | 3 | – | 1 | – | **LC7K0910●●** |
| | | | | | or **LC7K1210●●** |
| | 3 | – | – | 1 | **LC7K0901●●** |
| | | | | | or **LC7K1201●●** |
| | 4 | – | – | – | **LC7K09004●●** |
| | | | | | or **LC7K12004●●** |
| | 2 | 2 | – | – | **LC7K09008●●** |

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC7K0910●●** becomes **LC7K09107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC7K0910●●** becomes **LC7K09105●●**.

*(1) Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/58.*

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

### Coil voltage codes - a.c. (5)

**Contactors LC1K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| **Volts** | **12** | **20** | **24** (2) | **36** | **42** | **48** | **110** | **115** | **120** | **127** | **200/208** | | ***220/230*** | **230** | ***230/240*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 Hz (6) | | | B5 | | D5 | E5 | | | | | | | | P5 | |
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | *M7* | P7 | *U7* |
| **Volts** | **256** | **277** | ***380/400*** | | **400** | ***400/415*** | | **440** | **480** | **500** | **575** | **600** | ***660/690*** | | |
| 50/60 Hz | W7 | UE7 | *Q7* | | V7 | *N7* | | R7 | T7 | S7 | SC7 | X7 | *Y7* | | |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72.**

**Contactors LC7K** (0.8…1.1 Uc)

| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230/240** |
|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | U7 |

*(2) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50…129 V) or **LA4KE1UG** (130…250 V), see page B8/14.*
*(3) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*
*(4) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*
*(5) (0.8…1.15 Uc) for single voltage coil; (0.85…1.1 Uc) for dual voltage coil, example 200/208 V AC.*
*(6) Only available for 'screw clamp terminals' versions.*

Characteristics: pages B8/76 to B8/78
Dimensions: page B8/80
Schemes: page B8/81
Click **HERE** for access to online contactor selector

# Product references

PB123788.eps

*LP1K09004●●*

PB123789.eps

*LP1K09103●●*

PB123790.eps

*LP1K09105●●*

PB123792.eps

*LP4K0910●●●*

Contactor selection according to utilisation category, see pages A5/58 and A5/59.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open “ready-to-tighten” position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3 and 4-pole contactors - Load control - 20 A in category AC-1 - d.c. coil (1)

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (2) (3) |
|---|---|---|---|---|---|
| A | | | | | |
| **Screw clamp connections** | | | | | |
| 20 | 3 | – | 1 | – | **LP1K0910●●** |
| | | | | | or **LP1K1210●●** |
| | 3 | – | – | 1 | **LP1K0901●●** |
| | | | | | or **LP1K1201●●** |
| | 4 | – | – | – | **LP1K09004●●** |
| | | | | | or **LP1K12004●●** |
| | 2 | 2 | – | – | **LP1K09008●●** |

### Spring terminal connections (4)

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP1K0910●●** becomes **LP1K09103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP1K0910●●** becomes **LP1K09107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP1K0910●●** becomes **LP1K09105●●**.

## 3 or 4-pole 20 A / AC-1 - d.c. low consumption coil (1)

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | |
|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | |
| 20 | 3 | – | 1 | – | **LP4K0910●●●** |
| | | | | | or **LP4K1210●●●** |
| | 3 | – | – | 1 | **LP4K0901●●●** |
| | | | | | or **LP4K1201●●●** |
| | 4 | – | – | – | **LP4K09004●●●** |
| | | | | | or **LP4K12004●●●** |
| | 2 | 2 | – | – | **LP4K09008●●●** |

### Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP4K0910●●** becomes **LP4K09103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP4K0910●●** becomes **LP4K09107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP4K0910●●** becomes **LP4K09105●●**.

*(1) Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/58.*

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

### Coil voltage codes - d.c. (contactors LP1K: 0.8...1.15 Uc)

| Volts ⎓ | 12 | 20 | 24 (2) | 36 | 48 | 60 | 72 | 100 | 110 | 125 | 155 | 174 | 200 | 220 | 230 | 240 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3.**

### Coil voltage codes - low consumption d.c. (contactors LP4K: 0.7...1.3 Uc)

| Volts ⎓ | 12 | 20 | 24 | 48 | 72 | 110 | 120 |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

*(2) For **LP1K** only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*

*(3) **Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.***

*(4) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*

Characteristics: pages B8/76 to B8/78
Dimensions: page B8/80
Schemes: page B8/81
Click **HERE** for access to online contactor selector

PB123784.tif

*LC2K0910●●*

PB123785.eps

*LC2K09105●●*

Reversing contactor selection according to utilisation category, see pages A5/52 to A5/57 and A5/60 to A5/63.
Integral mechanical interlock.
It is essential to link the contacts of the electrical interlock.
Pre-wired power circuit connections as standard on screw clamp versions.
Mounting on 35 mm ⊔ rail or Ø4 screw fixing. Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3-pole reversing contactors - Motor control 6 to 16 A in categories AC-3, AC-3e, AC-4 - a.c. coil

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3/AC-3e | | | Rated operational current in category AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts per contactor | | Basic reference, to be completed by adding the voltage code (1) (2) |
|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 440 V 690 V | | | | |
| kW | kW | kW | A | | | |
| **Screw clamp connections** | | | | | | |
| 1.5 | 2.2 | 3 | **6** | 1 | – | **LC2K0610●●** |
| | | | | – | 1 | **LC2K0601●●** |
| 2.2 | 4 | 4 | **9** | 1 | – | **LC2K0910●●** |
| | | | | – | 1 | **LC2K0901●●** |
| 3 | 5.5 | 4 (> 440) | **12** | 1 | – | **LC2K1210●●** |
| | | 5.5 (440) | | – | 1 | **LC2K1201●●** |
| 4 | 7.5 | 4 (> 440) | **16** | 1 | – | **LC2K1610●●** |
| | | 5.5 (440) | | – | 1 | **LC2K1601●●** |

### Spring terminal connections (3)

For 6 to 12 A ratings only, in the references selected above, insert a figure **3** before the voltage code.
Example: **LC2K0610●●** becomes **LC2K06103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

For 6 to 16 A ratings, in the references selected above, insert a figure **7** before the voltage code.
Example: **LC2K0610●●** becomes **LC2K06107●●**.

### Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC2K0610●●** becomes **LC2K06105●●**.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

### Coil voltage codes - a.c. (4)

**Reversing contactors LC2K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| **Volts** | **12** | **20** | **24** (1) | **36** | **42** | **48** | **110** | **115** | **120** | **127** | **200/208** | | ***220/230*** | **230** | ***230/240*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | *M7* | P7 | U7 |
| **Volts** | **256** | **277** | ***380/400*** | | **400** | ***400/415*** | | **440** | **480** | **500** | **575** | **600** | ***660/690*** | | |
| 50/60 Hz | W7 | UE7 | Q7 | | V7 | *N7* | | R7 | T7 | S7 | SC7 | X7 | *Y7* | | |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72.**

*(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50…129 V) or **LA4KE1UG** (130…250 V), see page B8/14.*
*(2) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*
*(3) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*
*(4) (0.8…1.15 Uc) for single voltage coil; (0.85…1.1 Uc) for dual voltage coil, example 200/208 V AC.*

Reversing contactor selection according to utilisation category, see pages A5/52 to A5/57 and A5/60 to A5/63.
Integral mechanical interlock.
It is essential to link the contacts of the electrical interlock.
Pre-wired power circuit connections as standard on screw clamp versions.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3-pole reversing contactors - Motor control 6 to 12 A in categories AC-3, AC-3e, AC-4 - d.c. coil

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e | | | Rated operational current in category AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts per contactor | | Basic reference, to be completed by adding the voltage code (1) (2) |
|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 415 V | 440 V 690 V | | | | |
| kW | kW | kW | A | | | |
| **Screw clamp connections** | | | | | | |
| 1.5 | 2.2 | 3 | 6 | 1 | – | **LP2K0610●●** |
| | | | | – | 1 | **LP2K0601●●** |
| 2.2 | 4 | 4 | 9 | 1 | – | **LP2K0910●●** |
| | | | | – | 1 | **LP2K0901●●** |
| 3 | 5.5 | 4 (> 440) | 12 | 1 | – | **LP2K1210●●** |
| | | 5.5 (440) | | – | 1 | **LP2K1201●●** |

### Spring terminal connections (3)

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP2K0610●●** becomes **LP2K06103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC2K0610●●** becomes **LC2K06107●●**.

### Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC2K0610●●** becomes **LC2K06105●●**.

## 3-pole low consumption reversing contactors

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | |
| 1.5 | 2.2 | 3 | 6 | 1 | – | **LP5K0610●●** |
| | | | | – | 1 | **LP5K0601●●** |
| 2.2 | 4 | 4 | 9 | 1 | – | **LP5K0910●●** |
| | | | | – | 1 | **LP5K0901●●** |
| 3 | 5.5 | 4 (> 440) | 12 | 1 | – | **LP5K1210●●** |
| | | 5.5 (440) | | – | 1 | **LP5K1201●●** |

### Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP5K0610●●** becomes **LP5K06103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP5K0610●●** becomes **LP5K06107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP5K0610●●** becomes **LP5K06105●●**.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

### Coil voltage codes - d.c.

**Reversing contactors LP2K** (0.8…1.15 Uc)

| Volts | 12 | 20 | 24 (1) | 36 | 48 | 60 | 72 | 100 | 110 | 125 | 155 | 174 | 200 | 220 | 230 | 240 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

### Coil voltage codes - low consumption d.c.

**Reversing contactors LP5K** (0.7…1.3 Uc)

| Volts | 12 | 20 | 24 | 48 | 72 | 110 | 120 |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

*(1) For **LP2K** only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*
*(2) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*
*(3) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*

Characteristics: pages B8/76 to B8/79
Dimensions: page B8/82
Schemes: page B8/83
Click **HERE** for access to online contactor selector

PB123784.tif

*LC2K0910●●*

PB123785.eps

*LC2K09105●●*

**Warning: reversing contactors LC2K0910●● and LC2K0901●● are pre-wired for reverse motor operation as standard.**
Reversing contactor selection according to utilisation category, see pages A5/58 and A5/59.
Integral mechanical interlock.
**It is essential to link the contacts of the electrical interlock.**
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open “ready-to-tighten” position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3 or 4-pole reversing contactors - Load control - 20 A in category AC-1 - a.c. coil (1)

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts per contactor | | | Basic reference, to be completed by adding the voltage code (2) (3) |
|---|---|---|---|---|---|---|
| | | | | | | |
| **A** | | | | | | |
| **Screw clamp connections** | | | | | | |
| 20 | 3 | – | 1 | – | | **LC2K0910●●** |
| | | | | | or | **LC2K1210●●** |
| | 3 | – | – | 1 | | **LC2K0901●●** |
| | | | | | or | **LC2K1201●●** |
| | 4 | – | – | – | | **LC2K09004●●** |
| | | | | | or | **LC2K12004●●** |

### Spring terminal connections (4)

In the references selected above, insert a figure **3** before the voltage code.
Example: **LC2K0910●●** becomes **LC2K09103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC2K0910●●** becomes **LC2K09107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC2K0910●●** becomes **LC2K09105●●**.

*(1) Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/58.*

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

### Coil voltage codes - a.c. (5)

**Reversing contactors LC2K** (0.8…1.15 Uc) *(0.85…1.1 Uc)*

| **Volts** | **12** | **20** | **24** (2) | **36** | **42** | **48** | **110** | **115** | **120** | **127** | **200/208** | | ***220/230*** | ***230*** | ***230/240*** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | J7 | Z7 | B7 | C7 | D7 | E7 | F7 | FE7 | G7 | FC7 | L7 | | *M7* | *P7* | *U7* |
| **Volts** | **256** | **277** | ***380/400*** | | **400** | ***400/415*** | | **440** | **480** | **500** | **575** | **600** | ***660/690*** | | |
| 50/60 Hz | W7 | UE7 | *Q7* | | V7 | *N7* | | R7 | T7 | S7 | SC7 | X7 | Y7 | | |

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**.

*(2) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50…129 V) or **LA4KE1UG** (130…250 V), see page B8/14.*
*(3) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*
*(4) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*
*(5) (0.8…1.15 Uc) for single voltage coil; (0.85…1.1 Uc) for dual voltage coil, example 200/208 V AC.*

Contactors

Characteristics: pages B8/76 to B8/79
Dimensions: page B8/82
Schemes: page B8/83
Click HERE for access to online contactor selector

**Warning: reversing contactors LP2K0910●● and LP2K0901●● are pre-wired for reverse motor operation as standard.**
Reversing contactor selection according to utilisation category, see pages A5/58 and A5/59.
Integral mechanical interlock.
**It is essential to link the contacts of the electrical interlock.**
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/13 to B8/15.

## 3 or 4-pole reversing contactors - Load control - 20 A in category AC-1 - d.c. coil (1)

| Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C | Number of poles | | Instantaneous auxiliary contacts per contactor | | | Basic reference, to be completed by adding the voltage code (2) (3) |
|---|---|---|---|---|---|---|
| | | | | | | |
| **A** | | | | | | |
| **Screw clamp connections** | | | | | | |
| 20 | 3 | – | 1 | – | | **LP2K0910●●** |
| | | | | | or | **LP2K1210●●** |
| | 3 | – | – | 1 | | **LP2K0901●●** |
| | | | | | or | **LP2K1201●●** |
| | 4 | – | – | – | | **LP2K09004●●** |
| | | | | | or | **LP2K12004●●** |

### Spring terminal connections (4)

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP2K0910●●** becomes **LP2K09103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP2K0910●●** becomes **LP2K09107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP2K0910●●** becomes **LP2K09105●●**.

## 3 or 4-pole reversing contactors - 20 A / AC-1 - d.c. low consumption coil (1)

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Screw clamp connections** | | | | | | |
| 20 | 3 | – | 1 | – | | **LP5K0910●●●** |
| | | | | | or | **LP5K1210●●●** |
| | 3 | – | – | 1 | | **LP5K0901●●●** |
| | | | | | or | **LP5K1201●●●** |
| | 4 | – | – | – | | **LP5K09004●●●** |
| | | | | | or | **LP5K12004●●●** |

### Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP5K0910●●** becomes **LP5K09103●●**.

### Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP5K0910●●** becomes **LP5K09107●●**.

### Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP5K0910●●** becomes **LP5K09105●●**.

*(1) Coordination tables between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/58.*

## Standard control circuit voltages (for other voltages, please consult your Regional Sales office)

### Coil voltage codes - d.c. (reversing contactors LP2K: 0.8…1.15 Uc)

| Volts ⎓ | 12 | 20 | 24 (2) | 36 | 48 | 60 | 72 | 100 | 110 | 125 | 155 | 174 | 200 | 220 | 230 | 240 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | JD | ZD | BD | CD | ED | ND | SD | KD | FD | GD | PD | QD | LD | MD | MPD | MUD | UD |

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

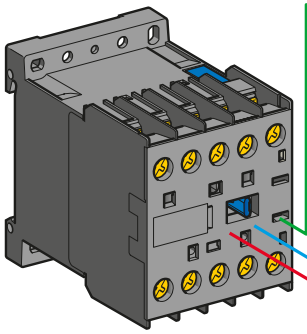
### Coil voltage codes - low consumption d.c. (reversing contactors LP5K: 0.7…1.3 Uc)

| Volts ⎓ | 12 | 20 | 24 | 48 | 72 | 110 | 120 |
|---|---|---|---|---|---|---|---|
| Code | JW3 | ZW3 | BW3 | EW3 | SW3 | FW3 | GW3 |

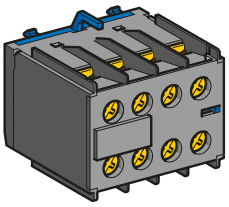
Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.
*(2) For **LP2K** only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.*
***(3) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.***
*(4) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*

Characteristics: pages B8/76 to B8/79
Dimensions: page B8/82
Schemes: page B8/83
Click **HERE** for access to online contactor selector

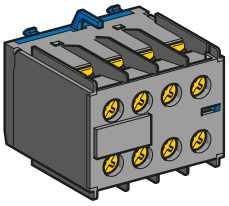
DB439406.eps



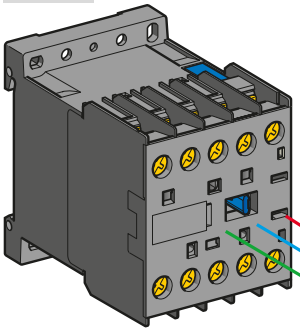
LC1, LC7, LP1K



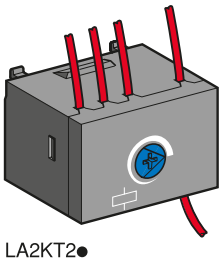
LA1KN●●M



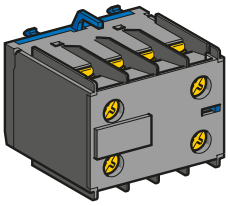
LA1KN●●



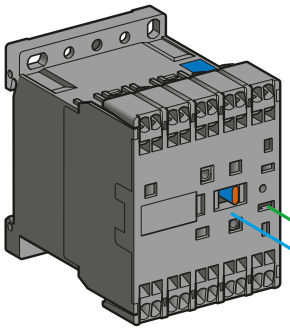
LC1, LC7, LP1K



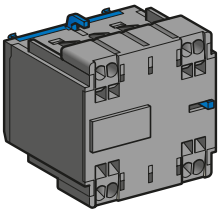
LA2KT2●



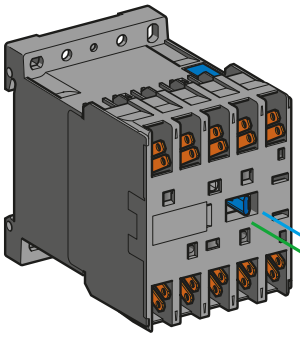
LA1KN●●P



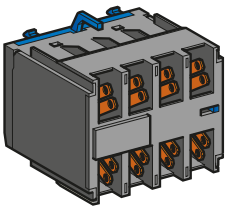
LC1, LP1K



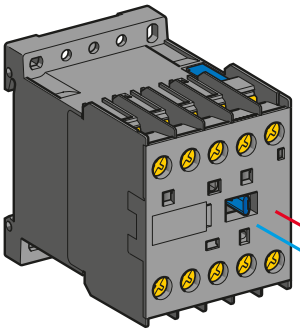
LA1KN●●3



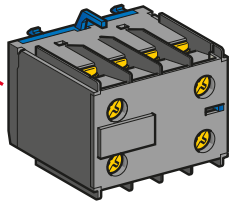
LC1, LC7, LP1K



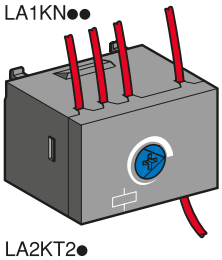
LA1KN●●7



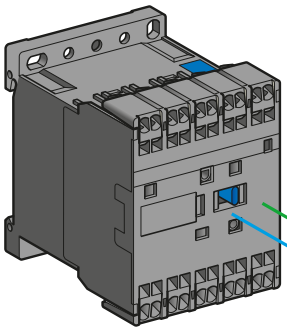
LP4



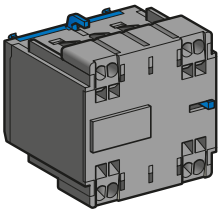
LA1KN●●



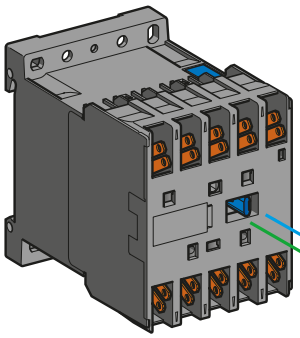
LA2KT2●



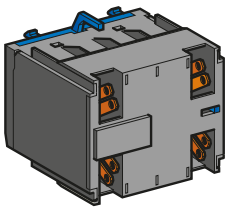
LP4



LA1KN●●3



LP4



LA1KN●●7



Life Is On Schneider Electric

# Product references

PB121750_R.tif

*LA1KN22*

PB123817.eps

*LA1KN223*

PB123818.eps

*LA1KN407*

## Instantaneous auxiliary contact blocks

**Recommended for standard applications. Clip-on front mounting, 1 block per contactor**

| Connection | For use on contactors | Composition | | Reference |
|---|---|---|---|---|
| | | | | |
| Screw clamp terminals | All products with screw clamp terminals | 2 | – | **LA1KN20** |
| | | – | 2 | **LA1KN02** |
| | | 1 | 1 | **LA1KN11** |
| | All products with screw clamp terminals except low consumption | 4 | – | **LA1KN40** |
| | | 3 | 1 | **LA1KN31** |
| | | 2 | 2 | **LA1KN22** |
| | | 1 | 3 | **LA1KN13** |
| | | – | 4 | **LA1KN04** |
| Spring terminals | All products with spring terminals | 2 | – | **LA1KN203** |
| | | – | 2 | **LA1KN023** |
| | | 1 | 1 | **LA1KN113** |
| | All products with spring terminals except low consumption | 4 | – | **LA1KN403** |
| | | 3 | 1 | **LA1KN313** |
| | | 2 | 2 | **LA1KN223** |
| | | 1 | 3 | **LA1KN133** |
| | | – | 4 | **LA1KN043** |
| Faston connectors, 1 x 6.35 or 2 x 2.8 | All products with Faston connectors | 2 | – | **LA1KN207** |
| | All products with Faston connectors except low consumption | 4 | – | **LA1KN407** |
| | | 3 | 1 | **LA1KN317** |

**With terminal referencing to standard EN 50012. Clip-on front mounting, 1 block per contactor**

| | | | | |
|---|---|---|---|---|
| Screw clamp terminals with referencing conforming to standard EN 50012 | All 3-pole + N/O products with screw clamp terminals except LP4 and LP5K12 | – | 2 | **LA1KN02M** |
| | | 1 | 1 | **LA1KN11M** |
| | All 3-pole + N/O products with screw clamp terminals except LP4 or LP5K06, K09 and K12 | 3 | 1 | **LA1KN31M** |
| | | 2 | 2 | **LA1KN22M** |

## Electronic time delay auxiliary contact blocks

Relay output with common point changeover contact, ∿ or ⎓ 240 V, 2 A maximum.
Control voltage 0.85…1.1 Uc.
Maximum switching capacity 250 VA or 150 W.
Operating temperature -10…+60 °C.
Reset time: 1.5 s during the time delay period, 0.5 s after the time delay period.

**Clip-on front mounting, 1 block per contactor**

| Voltage | Type | Timing range | Composition | Reference |
|---|---|---|---|---|
| | | | | |
| V | | s | | |
| ∿ or ⎓ 24…48 | On-delay | 1…30 | 1 | **LA2KT2E** |
| ∿ 110…240 | On-delay | 1…30 | 1 | **LA2KT2U** |

Characteristics: page B8/79
Dimensions: pages B8/80 and B8/82
Schemes: pages B8/81 and B8/83

## Product references

*LA4K●●●*

### References

| Mounting and connection | Type | For voltages | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Clip-on fixing on the front of contactors LC1 and LP1, with locating device. No tools required. | Varistor (1) | ∿ and ⎓ 12…24 V | 5 | **LA4KE1B** |
| | | ∿ and ⎓ 32…48 V | 5 | **LA4KE1E** |
| | | ∿ and ⎓ 50…129 V | 5 | **LA4KE1FC** |
| | | ∿ and ⎓ 130…250 V | 5 | **LA4KE1UG** |
| | Diode + Zener diode (2) | ⎓ 12…24 V | 5 | **LA4KC1B** |
| | | ⎓ 32…48 V | 5 | **LA4KC1E** |
| | RC (3) | ∿ 110…250 V | 5 | **LA4KA1U** |

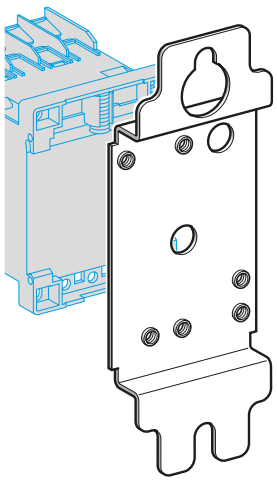
*(1) Protection provided by limiting the transient voltage to 2 Uc max.*
*Maximum reduction of transient voltage peaks.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(2) No overvoltage or oscillating frequency.*
*Polarised component.*
*Slight increase in drop-out time (1.1 to 1.5 times the normal time).*
*(3) Protection by limiting the transient voltage to 3 Uc max. and limitation of the oscillating frequency.*
*Slight increase in drop-out time (1.2 to 2 times the normal time).*



Characteristics: page B8/79
Dimensions: pages B8/80 and B8/82
Schemes: pages B8/81 and B8/83

# Product references

DF566019.eps



*DX1AP25*

PB121398.eps

*LA9E01*

## Mounting and marking accessories

| Description | Application | | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Mounting plates (1) | For fixing on 2 ⊏⊐ rails | 110/120 mm fixing centres | 10 | **DX1AP25** |
| Marker holder | Clip-on | Onto front of contactor | 100 | **LA9D90** |
| Clip-in markers | 4 maximum per contactor | Strips of 10 identical numbers 0…9 | 25 | **AB1R●** (2) |
| | | Strips of 10 identical letters A…Z | 25 | **AB1G●** (2) |

## Connection accessories

| Description | Application | | Sold in lots of | Unit preference |
|---|---|---|---|---|
| Paralleling links | For 2 poles | With screw clamps | 4 | **LA9E01** |
| | For 4 poles | With screw clamps | 2 | **LA9E02** |
| Set of 6 power connections | For 3-pole reversing contactors for motor control | For contactors with screw clamp terminals | 100 | **LA9K0969** |

*(1) Order 1 mounting plate for fixing a contactor and 2 mounting plates for fixing a reversing contactor.*
*(2) Complete the reference by replacing the dot with the required character.*

**Control Panel Technical Guide:**
Mounting and wiring accessories for TeSys K, Deca, F contactors. Star-delta, reverser, low-high speed control motor starters and changeover applications - Product references and details on all kits and wiring accessories.

> Ref. Document: CPTG011_EN

> Click on QR code to download

Dimensions:
pages B8/80 and B8/82

## Deca green, enriching Deca family

Deca conventional contactors 9 to 150 A, for motor control and other applications.

9 - 12 - 18 A

25 - 32 - 38 A

40 - 50 - 65 A

80 A

80 - 95 A

115 - 150 A

Deca green delivers a consistent low consumption range of contactors from 9 A to 80 A, covering control voltage from 24 to 250 V, with same coils for AC and DC.

9 - 12 - 18 A

25 - 32 - 38 A

40 - 50 - 65 - 80 A
Direct control by 24 V/500 mA DC I/O, with coil ref. BBE

## When implemented with other Schneider Electric products*, Deca green contactors are part of a comprehensive solution that is ideal for all types of industrial machines and processes.

### Deca Overload relay

By combining a Deca green contactor with our new Deca electronic overload relay, you will have less heat generation, and further reduce energy consumption.

* such as PLC I/O type M580, M340, M221 or M241 or extended I/O type Advantys STB range, or in association with Deca electronic overload relays or Tera Motor management system.

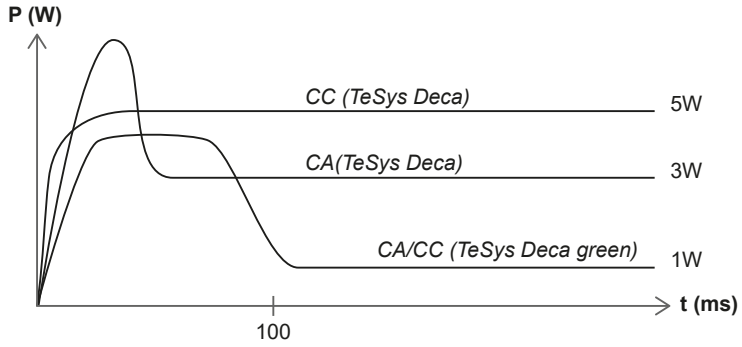
## Highly competitive coil consumption

Small changes can generate big savings. The new Deca green contactor is equipped with an innovative electronic coil. These electronic-coil contactors require **up to 80 % less energy** than electro-mechanical contactors.This innovation results in concrete values: for example, large plants can noticeably reduce their energy bills and heat dissipation in cabinet.

Available in → 09-12-18 A  25-32-38 A  40-50-65-80 A

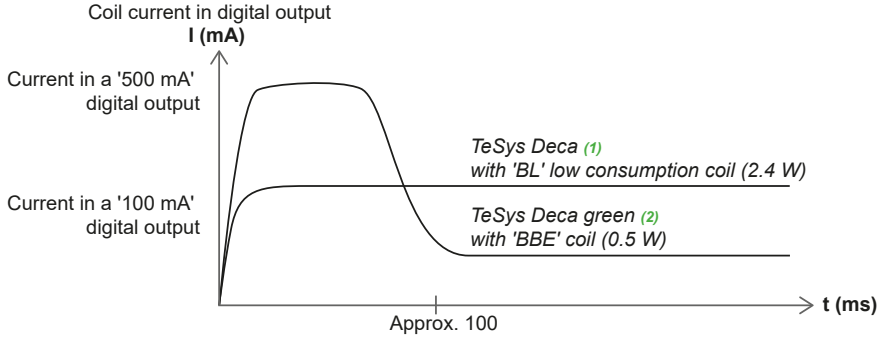
## Coil currents comparison

### Deca green contactors (AC/DC coil) vs Deca contactors (AC, DC coils)




Deca green brings a significant reduction of energy consumption.

### Deca green contactors ("BBE" coil) vs Deca contactors (low consumption "BL" coil)




*(1) Up to 38 A.*
*(2) 40 to 80 A.*

Deca green contactor is well adapted to direct control by PLC static outputs, even in its high ratings.




Life Is On Schneider Electric

PB121708.tif

*LC1D09●●●*

PB121710.tif

*LC1D40A●●●*

Deca green contactors have a dark grey casing and a 3-character code voltage.

## 3-pole contactors - Motor control up to 37 kW / 400 V - Category AC-3/AC-3e

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e (θ ≤ 60 °C) | | | | | | Rated operational current in AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code [1] | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | | | Fixing [2] | |
| kW | kW | kW | kW | kW | kW | A | | | | kg |
| **Connection by screw clamp terminals** | | | | | | | | | | |
| 2.2 | 4 | 4 | 4 | 5.5 | 5.5 | 9 | 1 | 1 | **LC1D09●●●** | 0.368 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | 12 | 1 | 1 | **LC1D12●●●** | 0.373 |
| 4 | 7.5 | 9 | 9 | 10 | 10 | 18 | 1 | 1 | **LC1D18●●●** | 0.378 |
| 5.5 | 11 | 11 | 11 | 15 | 15 | 25 | 1 | 1 | **LC1D25●●●** | 0.433 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | 32 | 1 | 1 | **LC1D32●●●** | 0.438 |
| 9 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 38 | 1 | 1 | **LC1D38●●●** | 0.442 |
| **Power connections by EverLink® BTR [3] screw connectors and control by screw clamp terminal** | | | | | | | | | | |
| 11 | 18.5 | 22 | 22 | 22 | 30 | 40 | 1 | 1 | **LC1D40A●●●** | 0.992 |
| 15 | 22 | 25 | 30 | 30 | 33 | 50 | 1 | 1 | **LC1D50A●●●** | 0.997 |
| 18.5 | 30 | 37 | 37 | 37 | 37 | 65 | 1 | 1 | **LC1D65A●●●** | 1.002 |
| 22 | 37 | 37 | 37 | 37 | 37 | 66 | 1 | 1 | **LC1D80A●●●** | 1.002 |

**Connection for lugs or bars**

For LC1D40A to LC1D80A, insert a figure 6 before the voltage code.
Example: LC1D40A●●● becomes LC1D40A6●●●

## Auxiliary contact blocks and add-on modules

See pages B8/37 to B8/45.

## Control voltage codes

**AC/DC or 24 V DC supply**

| Volts | 24 (DC only) | 24-60 | 48-130 | 100-250 |
|---|---|---|---|---|
| **LC1D09 ...D38, LC1D40A ... D80A** | | | | |
| U 0.85...1.1 Uc | | BNE | EHE | KUE |
| **LC1D09 ... D38** | | | | |
| U 0.8 ... 1.2 Uc | BNE | | | |
| **LC1D40A ... D80A** | | | | |
| U 0.8…1.2 Uc | BBE | | | |

*(1) Please check the availability of your variant in the index page B8/57.The SEARCH function of your viewer can be used.*
*(2) **LC1D09** to **D80A**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference LADALLEN4, see B8/45).*

# Product references

PB121708.tif

*LC1D09●●●*

PB121710.tif

*LC1D40A●●●*

PB121712.eps

*LC1DT60A●●●*

Deca green contactors have a dark grey casing and a 3-character code voltage.

## 3-pole contactors - Load control from 25 to 80 A - Category AC-1

| Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1 | Number of poles | Instan-taneous auxiliary contacts | | Partial reference, to be completed by adding the control voltage code (1) / Fixing (2) | Weight |
|---|---|---|---|---|---|
| A | | | | | kg |
| **Connection by screw clamp terminals** | | | | | |
| 25 | 3 | 1 | 1 | **LC1D09●●●** | 0.368 |
| | | | or | **LC1D12●●●** | 0.373 |
| 32 | 3 | 1 | 1 | **LC1D18●●●** | 0.378 |
| 40 | 3 | 1 | 1 | **LC1D25●●●** | 0.433 |
| 50 | 3 | 1 | 1 | **LC1D32●●●** | 0.438 |
| | | | or | **LC1D38●●●** | 0.442 |
| **Connection by EverLink®, BTR screw connectors (3)** | | | | | |
| 60 | 3 | 1 | 1 | **LC1D40A●●●** | 0.992 |
| 80 | 3 | 1 | 1 | **LC1D50A●●●** | 0.997 |
| | | | or | **LC1D65A●●●** (4) | 1.002 |
| | | | or | **LC1D80A●●●** (4) | 1.002 |
| **Connection for lugs or bars** | | | | | |
| For LC1D40A to LC1D80A, insert a figure 6 before the voltage code. Example: LC1D40A●●● becomes LC1D40A6●●● | | | | | |

## 4-pole contactors

| | | | | | |
|---|---|---|---|---|---|
| **Connection by EverLink®, BTR (3) screw connectors** | | | | | |
| 60 | 4 | 1 | 1 | **LC1DT60A●●●** | 1.230 |
| 80 | 4 | 1 | 1 | **LC1DT80A●●●** | 1.290 |
| **Connection for lugs or bars** | | | | | |
| For LC1DT60A to LC1DT80A, insert a figure 6 before the voltage code. Example: LC1DT60A●●● becomes LC1DT60A6●●● | | | | | |

## 4-pole changeover contactors

| | | | | | |
|---|---|---|---|---|---|
| **Connection by EverLink®, BTR (3) screw connectors** | | | | | |
| 60 | 4 | 1 | 1 | **LC2DT60A●●●** | 2.460 |
| 80 | 4 | 1 | 1 | **LC2DT80A●●●** | 2.580 |

## Control voltage codes

**AC/DC 24 V DC supply**

| Volts | 24 (DC only) | 24-60 | 48-130 | 100-250 |
|---|---|---|---|---|
| **LC1D09…D80A and LC●DT60A...DT80A** | | | | |
| U 0.85 .... 1.1 Uc | | BNE | EHE | KUE |
| **LC1D09 .... D38** | | | | |
| U 0.8 .... 1.2 Uc | BNE | | | |
| **LC1D40 to LC1D80A, LC●DT60A to LC●DT80A** | | | | |
| U 0.8…1.2 Uc | BBE | | | |

*(1) Please check the availability of your variant in the index page B8/57 The SEARCH function of your viewer can be used.*
*(2) **LC1D09** to **D80A**, **LC●DT60A** and **LC●DT80A**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*
*(4) Coordination tables according to the number of operation cycles, consult online datasheets for values.*

Contactors

Characteristics: pages B8/84 to B8/91
Curves: page B8/94
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107
Click **HERE** for access to online contactor selector



Life Is On Schneider Electric

# Product references

PB121708.tif

*LC1D09●●●*

PB121710.tif

*LC1D40A●●●*

Deca green contactors have a dark grey casing and a 3-character code voltage.

## 3-pole contactors conforming to UL and CSA standards (North American market) - 25 to 80 A

| Standard power ratings of motors 50/60 Hz | | | | | | Associated cable type 75 °C-Cu | Continuous current | Type of contactor required Partial reference, to be completed by adding the control voltage code [1] |
|---|---|---|---|---|---|---|---|---|
| Single-phase 1 Ø | | 3-phase 3 Ø | | | | | | Fixing, connection [2] |
| 115 V | 230 V 240 V | 200 V 208 V | 230 V 240 V | 460 V 480 V | 575 V 600 V | | | |
| HP | HP | HP | HP | HP | HP | | A | |
| **Connection by screw clamp terminals** | | | | | | | | |
| 1/3 | 1 | 2 | 2 | 5 | 7.5 | AWG 18 - 10 | 25 | **LC1D09●●●** |
| 0.5 | 2 | 3 | 3 | 7.5 | 10 | AWG 18 - 10 | 25 | **LC1D12●●●** |
| 1 | 3 | 5 | 5 | 10 | 15 | AWG 18 - 8 | 32 | **LC1D18●●●** |
| 2 | 3 | 7.5 | 7.5 | 15 | 20 | AWG 14 - 6 | 40 | **LC1D25●●●** |
| 2 | 5 | 10 | 10 | 20 | 25 | AWG 14 - 6 | 50 | **LC1D32●●●** |
| **Power connections by EverLink® BTR [3] screw connectors and control by spring terminals** | | | | | | | | |
| 3 | 5 | 10 | 10 | 30 | 30 | AWG 16 - 2 | 60 | **LC1D40A●●●** |
| 3 | 7.5 | 15 | 15 | 40 | 40 | AWG 16 - 2 | 70 | **LC1D50A●●●** |
| 5 | 10 | 20 | 20 | 40 | 50 | AWG 16 - 2 | 80 | **LC1D65A●●●** |
| 5 | 10 | 20 | 20 | 40 | 50 | AWG 16 - 2 | 80 | **LC1D80A●●●** |
| **Connection for lugs or bars** | | | | | | | | |

For LC1D40A to LC1D80A, insert a figure 6 before the voltage code.
Example: LC1D40A●●● becomes LC1D40A6●●●

## Applications with High-Fault Short-Circuit Current ratings

High-fault short-circuit current ratings are: 100 kA at 600 V with Class J fuses and 85 kA (D09-38), 100 kA (D40A-65A) at 480 V and 50 kA at 600 V with circuit breakers.

## Control voltage codes

### AC/DC 24 V DC supply

| Volts | 24 (DC only) | 24-60 | 48-130 | 100-250 |
|---|---|---|---|---|
| **LC1D09 ... D32, LC1D40A ... D80A** | | | | |
| U 0.85 .... 1.1 Uc | | BNE | EHE | KUE |
| **LC1D09 ... D38** | | | | |
| U 0.8 .... 1.2 Uc | BNE | | | |
| **LC1D40A ... D80A** | | | | |
| U 0.8…1.2 Uc | BBE | | | |

*(1) Please check the availability of your variant in the index page B8/57. The SEARCH function of your viewer can be used.*
*(2) **LC1D09** to **D80**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

Contactors

Characteristics: pages B8/84 to B8/91
Curves: page B8/94
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107
Click **HERE** for access to online contactor selector

Deca green contactors - Coordination with PLC output modules (static/relay/triac)

## Selection of PLC coordinated contactors

Laboratory tests have been carried out in order to validate trouble free contactor closings and openings with different PLC output modules.
The coil must be defined according to the contactor rating range and output module.
See selection table below.

| The PLC your are using | | | | >>> | Compatible contactors (1) | Coil code |
|---|---|---|---|---|---|---|
| **PLC type** | **Output type** | **Output I (A)** | **Output module commercial reference** | | | |
| **M221 / M241 / M251** | Static output: 24 V DC | 0.5 | TM3DQ8●●● and Q16●●● (T, TG, U, UG) | >>> | LC1D09●● to LC1D38●●, | BL, BNE |
| | | | | | LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●● | BBE |
| | | 0.3 (sealed) 0.8 (inrush) | TM3XTYS4 | >>> | LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●● | BBE, BD, BNE |
| | | 0.1 | TM3DQ16●● and Q32●● (TK, UK) | >>> | LC1D09●● to LC1D38●● | BL |
| | Relay output: 24 V DC / 230 V AC | 2 | TM3DQ8 and DQ16 (R,RG), TM3DM8 and DM24 (R,RG) | >>> | LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●● | Code of any DC coil up to 24 V or any AC coil up to 230 V |
| **M340 / M580** | Static output: 24 V DC | 0.5 | BMXDDO1602 and DM16022 | >>> | LC1D09●● to LC1D38●● | BL, BNE |
| | | | | | LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●● | BBE |
| | | 0.1 | BMXDDO3202, BMXDDM3202K, BMXDDO6402K | >>> | LC1D09●● to LC1D38●● | BL |
| | Relay output: 24 V DC / 230 V AC | 2 | BMXDRA0805 and DM16025 | >>> | LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●● | Code of any DC coil up to 24 V or any AC coil up to 230 V |
| | Triac output: 230 V AC | 0.6 | BMXDAO1605 | >>> | LC1D09●● to LC1D38●●, LC1D40●●● to LC1D80A●●●, LC1DT60A●●● to LC1DT80A●●● | Code of any AC coil up to 230 V (P7 code = 230 V) |
| **ADVANTYS** | Static output: 24 V DC | 0.5 | STBDDO3200 | >>> | LC1D09●● to LC1D38●● | BL, BNE |
| | | | | | LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●● | BBE |
| | Triac output: 230 V AC | 2 | STBDAO8210 | >>> | LC1D09●● to LC1D38●●, LC1D40A●●● to LC1D80A, LC1DT60A●●● to LC1DT80A●●● | Code of any AC coil up to 230 V (P7 code = 230 V AC) |

### Coils consumption characteristics

| Coil type | Uc DC - min -max | Average consumption at UC DC / 20 °C | |
|---|---|---|---|
| | | Inrush | Sealed |
| BL | 24 V - 0.8 Uc to 1.1 Uc | 2.4 W - 2.4 VA | 2.4 W - 2.4 VA |
| BNE | | 14 W - 14 VA | 0.7 W - 0.7 VA |
| BBE | | 11 W - 11 VA | 0.5 W - 0.5 VA |

*(1) Replace dot by coil code. Ex **LC1D09●●** becomes **LC1D09BL**.*

PB121681.eps

*LC1D09●●*

PB121706.tif

*LC1D25●●*

PB121707.tif

*LC1D80A●●*

PB123774.tif

*LC1D95●●*

PB123775.tif

*LC1D115●●*

## 3-pole contactors - Motor control up to 75 kW at 400 V, in category AC-3/AC-3e

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e (θ ≤ 60 °C) | | | | | | | Rated operational current in AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code [1] | Weight [3] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | | | Fixing [2] | |
| kW | kW | kW | kW | kW | kW | kW | A | | | | kg |
| **Connection by screw clamp terminals** | | | | | | | | | | | |
| 2.2 | 4 | 4 | 4 | 5.5 | 5.5 | – | 9 | 1 | 1 | **LC1D09●●** | 0.320 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | – | 12 | 1 | 1 | **LC1D12●●** | 0.325 |
| 4 | 7.5 | 9 | 9 | 10 | 10 | – | 18 | 1 | 1 | **LC1D18●●** | 0.330 |
| 5.5 | 11 | 11 | 11 | 15 | 15 | – | 25 | 1 | 1 | **LC1D25●●** | 0.370 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | – | 32 | 1 | 1 | **LC1D32●●** | 0.375 |
| 9 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | – | 38 | 1 | 1 | **LC1D38●●** | 0.380 |
| **Power connections by EverLink® BTR screw connectors [4] and control by screw clamp terminal** | | | | | | | | | | | |
| 11 | 18.5 | 22 | 22 | 22 | 30 | – | 40 | 1 | 1 | **LC1D40A●●** | 0.850 |
| 15 | 22 | 25 | 30 | 30 | 33 | – | 50 | 1 | 1 | **LC1D50A●●** | 0.855 |
| 18.5 | 30 | 37 | 37 | 37 | 37 | – | 65 | 1 | 1 | **LC1D65A●●** | 0.860 |
| 22 | 37 | 37 | 37 | 37 | 37 | – | 66 | 1 | 1 | **LC1D80A●●** | 0.860 |
| **Connection by screw clamp terminals or connectors** | | | | | | | | | | | |
| 22 | 37 | 45 | 45 | 55 | 45 | – | 80 | 1 | 1 | **LC1D80●●** | 1.590 |
| 25 | 45 | 45 | 45 | 55 | 45 | – | 95 | 1 | 1 | **LC1D95●●** | 1.610 |
| 30 | 55 | 59 | 59 | 75 | 80 | 65 | 115 | 1 | 1 | **LC1D115●●** | 2.500 |
| 40 | 75 | 80 | 80 | 90 | 100 | 75 | 150 | 1 | 1 | **LC1D150●●** | 2.500 |

### Connection by lugs or bars

In the references selected above, insert a figure **6** before the voltage code.
Example: **LC1D09●●** becomes **LC1D096●●**.

## Separate components

**Auxiliary contact blocks and add-on modules**: see pages B8/37 to B8/45.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

### a.c. supply

| Volts | 24 | 42 | 48 | 110 | 115 | 220 | 230 | 240 | 380 | 400 | 415 | 440 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09…D150** (D115 and D150 coils with built-in suppression as standard, by bi-directional peak limiting diode). | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **LC1D09…D65** (not available with "connection for lugs or bars") | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | | | | P5 | | | | | | |
| **LC1D80…D115** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |

### d.c. supply

| Volts | 12 | 24 | 36 | 48 | 60 | 72 | 110 | 125 | 220 | 250 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09…D38** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| **LC1D40A …D65A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | (5) | RD |
| **LC1D80…D95** | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – |
| **LC1D115 and D150** (coil with built-in suppression device as standard) | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD |

### Low consumption DC (for low consumption AC/DC: Deca green contactors, page B8/19)

| Volts ⎓ | 5 | 12 | 20 | 24 | 48 | 110 | 220 | 250 |
|---|---|---|---|---|---|---|---|---|
| **LC1D09…D38** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*

*(1) Please check the availability of your variant in the index page B8/57. The SEARCH function of your viewer can be used.*

*(2) LC1D09 to D80A: clip-on mounting on 35 mm ⊔ rail* NSYSDR *or screw fixing.*
*LC1D80 to D95 ∿: clip-on mounting on 35 mm ⊔ rail* NSYSDR *or 75 mm ⊔ rail AM1DL or screw fixing.*
*LC1D80 to D95 ⎓: clip-on mounting on 75 mm ⊔ rail AM1DL or screw fixing.*
*LC1D115 and D150: clip-on mounting on 2 x 35 mm ⊔ rails* NSYSDR *or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1D09** to **D38**, 0.075 kg from **LC1D40A** to **D80A** and 1 kg for **LC1D80** and **D95**.*

*(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

*(5) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Example: **LC1D40ABBE**.*

Characteristics: pages B8/84 to B8/91
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107
Click **HERE** for access to online contactor selector

# Product references

PB121713.tif

*LC1D123●●*

PB121723.eps

*LC1D80A3●●*

## 3-pole contactors - Motor control up to 30 kW at 400 V, in category AC-3/AC-3e

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e (θ ≤ 60 °C) | | | | | | | Rated operational current in AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code (1) Fixing (2) |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | | | |
| kW | kW | kW | kW | kW | kW | kW | A | | | |
| **Power and control connections by spring terminals** | | | | | | | | | | |
| 2.2 | 4 | 4 | 4 | 5.5 | 5.5 | | 9 | 1 | 1 | **LC1D093●●** |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | | 12 | 1 | 1 | **LC1D123●●** |
| 4 | 7.5 | 9 | 9 | 10 | 10 | | 18 | 1 | 1 | **LC1D183●●** |
| 5.5 | 11 | 11 | 11 | 15 | 15 | | 25 | 1 | 1 | **LC1D253●●** |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | | 32 (3) | 1 | 1 | **LC1D323●●** |
| **Power connections by EverLink® BTR screw connectors (4) and control by spring terminals** | | | | | | | | | | |
| 11 | 18.5 | 22 | 22 | 22 | 30 | | 40 | 1 | 1 | **LC1D40A3●●** |
| 15 | 22 | 25 | 30 | 30 | 33 | | 50 | 1 | 1 | **LC1D50A3●●** |
| 18.5 | 30 | 37 | 37 | 37 | 37 | | 65 | 1 | 1 | **LC1D65A3●●** |
| 22 | 37 | 37 | 37 | 37 | 37 | | 66 | 1 | 1 | **LC1D80A3●●** |

### Connection by Faston connectors

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil and auxiliary terminals.
For contactors LC1D09 and LC1D12 only, replace the figure **3** with a **9** in the references selected above.
Example: **LC1D093●●** becomes **LC1D099●●**.

## Separate components

**Auxiliary contact blocks and add-on modules**: see pages B8/37 to B8/45.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

| **a.c. supply** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** |
| **LC1D09…D80A** | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **d.c. supply** | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | |
| **LC1D09…D32** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | |
| **LC1D40A…D65A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | |
| **Low consumption** | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | |
| **LC1D09…D32** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*
*(1) Please check the availability of your variant in the index page B8/57. The SEARCH function of your viewer can be used.*
*(2) LC1D09 to D32: clip-on mounting on 35 mm ⊥ rail NSYSDR or screw fixing.*
*(3) Must be wired with 2 x 4 mm² cables in parallel on the upstream side. On the downstream side, outgoing terminal block **LAD331** may be used (Quickfit technology, see page B1/18). When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).*
*(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

PB121681.eps

*LC1D09●●*

PB121723.eps

*LC1D80A●●*

## 3-pole contactors - Load control from 25 to 200 A in category AC-1

| Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1 | Number of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code (1) / Fixing (2) | Weight (3) |
|---|---|---|---|---|---|
| **A** | | | | | **kg** |
| **Connection by screw clamp terminals** | | | | | |
| 25 | 3 | 1 | 1 | **LC1D09●●** | 0.320 |
| | | | | or **LC1D12●●** | 0.325 |
| 32 | 3 | 1 | 1 | **LC1D18●●** | 0.330 |
| 40 | 3 | 1 | 1 | **LC1D25●●** | 0.370 |
| 50 | 3 | 1 | 1 | **LC1D32●●** | 0.375 |
| | | | | or **LC1D38●●** | 0.380 |
| **Connection by EverLink®, BTR screw connectors (4)** | | | | | |
| 60 | 3 | 1 | 1 | **LC1D40A●●** | 0.850 |
| 80 | 3 | 1 | 1 | **LC1D50A●●** | 0.855 |
| | | | | or **LC1D65A●●** (5) | 0.860 |
| | | | | or **LC1D80A●●** (5) | 0.860 |
| **Connection by screw clamp terminals or connectors** | | | | | |
| 125 | 3 | 1 | 1 | **LC1D80●●** | 1.590 |
| | | | | or **LC1D95●●** (5) | 1.610 |
| 200 | 3 | 1 | 1 | **LC1D115●●** | 2.500 |
| | | | | or **LC1D150●●** (6) | 2.500 |

## 3-pole contactors for connection by lugs

In the references selected above, insert a figure **6** before the voltage code.
Example: **LC1D09●●** becomes **LC1D096●●**.

## Standard control circuit voltages
**(for other voltages, please consult your Regional Sales Office)**

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1D09...D150** ( LC1D115 and D150 coils with built-in suppression device as standard) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **LC1D09…D65** (not available with "connection for lugs or bars") | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | | | | P5 | | | | | | |
| **LC1D80...D150** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |

| **d.c. supply** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** |
| **LC1D09…D38** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| **LC1D40A …D65A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | (7) | (7) | (7) | (7) | (7) | (7) | (7) | (7) | (7) | RD |
| **LC1 or LP1D80** and **D95** | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – |
| **LC1D115** and **D150** (coils with built-in suppression device fitted as standard) | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD |

| **Low consumption** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Volts** ⎓ | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** |
| **LC1D09…D38** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*

*(1) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*

*(2) **LC1D09** to **D80A**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*__LC1D80__ and __D95__ ∿: clip-on mounting on 35 mm ⊔ rail __NSYSDR__ or 75 mm ⊔ rail __AM1DL__ or screw fixing.*
*__LC1__ or __LP1D80__ to __D95__ ⎓: clip-on mounting on 75 mm ⊔ rail __AM1DL__ or screw fixing.*
*__LC1D115__ and __D150__: clip-on mounting on 2 x 35 mm ⊔ rails __NSYSDR__ or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from __LC1D09__ to __D38__, 0.075 kg from __LC1D40A__ to __D80A__ and 1 kg for __LC1D80__ and __D95__.*

*(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference __LADALLEN4__, see page B8/45).*

*(5) Coordination tables according to the number of operating cycles, see AC-1 curve, page page A5/58.*

*(6) 32 A with 2 x 4 mm² cables connected in parallel.*

*(7) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60 V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Example: __LC1D40ABBE__.*

PB121713.tif

*LC1D123●●*

PB121723.eps

*LC1D80A3●●*

## 3-pole contactors - Load control from 16 to 80 A in category AC-1

| Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1 | Number of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the control voltage code (1) / Fixing (2) | | Weight (3) |
|---|---|---|---|---|---|---|
| A | | | | | | kg |
| **Connection by spring terminals** | | | | | | |
| 16 | 3 | 1 | 1 | | **LC1D093●●** (4) | 0.320 |
| | | | | or | **LC1D123●●** (4) | 0.325 |
| 25 | 3 | 1 | 1 | | **LC1D183●●** (5) | 0.335 |
| | | | | or | **LC1D253●●** (6) | 0.325 |
| | | | | or | **LC1D323●●** (6) | 0.325 |
| **Power connections by EverLink® BTR screw connectors (7) and control by spring terminals** | | | | | | |
| 60 | 3 | 1 | 1 | | **LC1D40A3●●** | 0.850 |
| 80 | 3 | 1 | 1 | | **LC1D50A3●●** (8) | 0.855 |
| | | | | or | **LC1D65A3●●** (8) | 0.860 |
| | | | | or | **LC1D80A3●●** (8) | 0.860 |

## 3-pole contactors for connection by Faston connectors

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals. For contactors LC1D09 and LC1D12 only, in the references selected from the previous page, insert a figure **9** before the voltage code. Example: **LC1D09●●** becomes **LC1D099●●**.

## Separate components

**Auxiliary contact blocks and add-on modules**: see pages B8/37 to B8/45.

## Standard control circuit voltages
**(for other voltages, please consult your Regional Sales Office)**

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC1D09...D80A** | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **d.c. supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC1D09…D32** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **LC1D40A…D65A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC1D09…D32** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*

*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*

*(2) **LC1D09** to **D80A**: clip-on mounting on 35 mm ⊥ rail **NSYSDR** or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1D09** to **D38** and 0.075 kg from **LC1D40A** to **D80A**.*

*(4) 20 A with 2 x 2.5 mm² cables connected in parallel.*

*(5) 32 A with 2 x 4 mm² cables connected in parallel.*

*(6) 40 A with 2 x 4 mm² cables connected in parallel.*

*(7) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

*(8) Coordination tables according to the number of operating cycles, see AC-1 curve, page A5/58.*

PB121714.tif

*LC1DT20●●*

PB121715.tif

*LC1DT80A●●*

PB123776.eps

*LC1D65008●●*

## 4-pole contactors - Load control, 20 to 200 A in category AC-1

| Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1 | Number of poles | | Instantaneous auxiliary contacts | | | Basic reference, to be completed by adding the control voltage code [1] Fixing [2] | Weight [3] |
|---|---|---|---|---|---|---|---|
| A | | | | | | | kg |
| **Connection by screw clamp terminals** | | | | | | | |
| 20 | 4 | – | 1 | 1 | | **LC1DT20●●** | 0.365 |
| | 2 | 2 | 1 | 1 | | **LC1D098●●** | 0.365 |
| 25 | 4 | – | 1 | 1 | | **LC1DT25●●** | 0.365 |
| | 2 | 2 | 1 | 1 | | **LC1D128●●** | 0.365 |
| 32 | 4 | – | 1 | 1 | | **LC1DT32●●** | 0.425 |
| | 2 | 2 | 1 | 1 | | **LC1D188●●** | 0.425 |
| 40 | 4 | – | 1 | 1 | | **LC1DT40●●** | 0.425 |
| | 2 | 2 | 1 | 1 | | **LC1D258●●** | 0.425 |
| **Connection by EverLink®, BTR screw connectors** | | | | | | | |
| 60 | 4 | – | 1 | 1 | | **LC1DT60A●●** | 1.090 |
| 80 | 4 | – | 1 | 1 | | **LC1DT80A●●** | 1.150 |
| **Connection by screw clamp terminals or connectors** | | | | | | | |
| 60 | 2 | 2 | – | – | | **LC1D40008●●** | 1.440 |
| | | | | | or | **LP1D40008●●** | 2.210 |
| 80 | 2 | 2 | – | – | | **LC1D65008●●** | 1.450 |
| | | | | | or | **LP1D65008●●** | 2.220 |
| 125 | 4 | – | – | – | | **LC1D80004●●** | 1.760 |
| | | | | | or | **LP1D80004●●** | 2.685 |
| | 2 | 2 | – | – | | **LC1D80008●●** | 1.840 |
| | | | | | or | **LP1D80008●●** | 2.910 |
| 200 | 4 | – | – | – | | **LC1D115004●●** | 2.860 |

## 4-pole contactors for connection by lugs or bars

In the references selected above, insert a figure 6 before the voltage code.
Example: **LC1DT20●●** becomes **LC1DT206●●**.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

### a.c. supply

| Volts | 24 | 42 | 48 | 110 | 115 | 220 | 230 | 240 | 380 | 400 | 415 | 440 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09...D150 and LC1DT20...DT80A** (LC1D115 and D150 coils with built-in suppression device as standard) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | – |
| **LC1D80...D115** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |

### d.c. supply

| Volts | 12 | 24 | 36 | 48 | 60 | 72 | 110 | 125 | 220 | 250 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09…D25 and LC1DT20...DT40** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| **LC1DT60A …DT80A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | (4) | (4) | (4) | (4) | (4) | (4) | (4) | (4) | (4) | RD |
| **LP1D40...D80** | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – |
| **LC1D115** (coil with built-in suppression device as standard) | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD |

### Low consumption

| Volts ⎓ | 5 | 12 | 20 | 24 | 48 | 110 | 220 | 250 |
|---|---|---|---|---|---|---|---|---|
| **LC1D09...D25 and LC1DT20...DT40** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*

*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*

*(2) **LC1D09** to **D38** and **LC1DT20** to **DT80A**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*__LC1D80__ ∿: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or 75 mm ⊔ rail **AM1DL** or screw fixing.*
*__LC1__ or __LP1D80__ ⎓: clip-on mounting on 75 mm ⊔ rail **AM1DL** or screw fixing.*
*__LC1D115__ and __D150__: clip-on mounting on 2 x 35 mm ⊔ rails **NSYSDR** or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1D09** to **D38**, 0.075 kg from **LC1DT60A** and **D80A** and 1 kg for **LC1D80**.*

*(4) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60 V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Example: **LC1DT60ABBE**.*

Characteristics: pages B8/84 to B8/91
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107
Click **HERE** for access to online contactor selector

# Product references

PB121716.tif

*LC1DT253●●*

PB121715.tif

*LC1DT80A3●●*

## 4-pole contactors - Load control, 20 to 80 A in category AC-1

| Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1 | Number of poles | | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code [1]<br>Fixing [2] | Weight [3] |
|---|---|---|---|---|---|---|
| | | | | | | |
| A | | | | | | kg |
| **Connection by spring terminals** | | | | | | |
| 20 | 4 | – | 1 | 1 | **LC1DT203●●** | 0.380 |
| | 2 | 2 | 1 | 1 | **LC1D0983●●** | 0.380 |
| 25 | 4 | – | 1 | 1 | **LC1DT253●●** | 0.380 |
| | 2 | 2 | 1 | 1 | **LC1D1283●●** | 0.380 |
| 32 | 4 | – | 1 | 1 | **LC1DT323●●** | 0.425 |
| | 2 | 2 | 1 | 1 | **LC1D1883●●** | 0.425 |
| 40 | 4 | – | 1 | 1 | **LC1DT403●●** | 0.425 |
| | 2 | 2 | 1 | 1 | **LC1D2583●●** | 0.425 |
| **Connection by EverLink®, BTR screw connectors and control circuit by spring terminals** | | | | | | |
| 60 | 4 | – | 1 | 1 | **LC1DT60A3●●** | 1.090 |
| 80 | 4 | – | 1 | 1 | **LC1DT80A3●●** | 1.150 |

## Separate components

**Auxiliary contact blocks and add-on modules**: see pages B8/37 to B8/45.

## Standard control circuit voltages
**(for other voltages, please consult your Regional Sales Office)**

### a.c. supply

| Volts | 24 | 42 | 48 | 110 | 115 | 220 | 230 | 240 | 380 | 400 | 415 | 440 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09...D25 and LC1DT20...DT80A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | – |

### d.c. supply

| Volts | 12 | 24 | 36 | 48 | 60 | 72 | 110 | 125 | 220 | 250 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09…D25 and LC1DT20... DT40** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| **LC1DT60A...80A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |

### Low consumption

| Volts ⎓ | 5 | 12 | 20 | 24 | 48 | 110 | 220 | 250 |
|---|---|---|---|---|---|---|---|---|
| **LC1D09...D25 and LC1DT20...DT40** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*

*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*

*(2) **LC1D09** to **D38** and **LC1DT20** to **DT80A**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1D09** to **D38**, 0.075 kg for **LC1DT60A** and **DT80A**.*

Contactors

Characteristics: pages B8/84 to B8/91
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107
Click **HERE** for access to online contactor selector

PB121681.eps

*LC1D09●●*

PB121706.tif

*LC1D25●●*

PB121707.tif

*LC1D80A●●*

PB123774.eps

*LC1D95●●*

## Contactors conforming to UL and CSA standards (North American market ) - 25 to 160 A

| Standard power ratings of motors 50/60 Hz | | | | | | Associated cable type 75 °C-Cu | UL continuous current | Type of contactor required Basic reference, to be completed by adding the control voltage code [1] |
|---|---|---|---|---|---|---|---|---|
| Single-phase 1 Ø | | 3-phase 3 Ø | | | | | | Fixing, connection [2] |
| 120 V | 240 V | 208 V | 240 V | 480 V | 600 V | | | |
| HP | HP | HP | HP | HP | HP | | A | |
| **Connection by screw clamp terminals** | | | | | | | | |
| 1/3 | 1 | 2 | 2 | 5 | 7.5 | AWG 18 - 10 | 25 | **LC1D09●●** |
| 0.5 | 2 | 3 | 3 | 7.5 | 10 | AWG 18 - 10 | 25 | **LC1D12●●** |
| 1 | 3 | 5 | 5 | 10 | 15 | AWG 18 - 8 | 32 | **LC1D18●●** |
| 2 | 3 | 7.5 | 7.5 | 15 | 20 | AWG 14 - 6 | 40 | **LC1D25●●** |
| 2 | 5 | 10 | 10 | 20 | 25 | AWG 14 - 6 | 50 | **LC1D32●●** [3] |
| 2 | 5 | 10 | 10 | 20 | 25 | AWG 14 - 6 | 50 | **LC1D38●●** [3] |
| **Power connections by EverLink® BTR screw connectors and control by spring terminals** | | | | | | | | |
| 3 | 5 | 10 | 10 | 30 | 30 | AWG 16 - 2 | 60 | **LC1D40A●●** |
| 3 | 7.5 | 15 | 15 | 40 | 40 | AWG 16 - 2 | 70 | **LC1D50A●●** |
| 5 | 10 | 20 | 20 | 40 | 50 | AWG 16 - 2 | 80 | **LC1D65A●●** |
| 5 | 10 | 20 | 20 | 40 | 50 | AWG 16 - 2 | 80 | **LC1D80A●●** |
| **Connection by screw clamp terminals or connectors** | | | | | | | | |
| 7.5 | 15 | 25 | 30 | 60 | 60 | AWG 10 - 2 | 110 | **LC1D80●●** |
| 7.5 | 15 | 25 | 30 | 60 | 60 | AWG 10 - 2 | 110 | **LC1D95●●** |
| – | – | 30 | 40 | 75 | 100 | AWG 8-1/0 | 160 | **LC1D115●●** |
| – | – | 40 | 50 | 100 | 125 | AWG 8-1/0 | 160 | **LC1D150●●** |

## Applications with High-Fault Short-Circuit ratings

High-fault short-circuit current ratings are: 100 kA (D09-80, D115-150) at 600 V with Class J fuses and 85 kA (D09-38), 100 kA (D40A-80, D115-150) at 480 V and 50 kA (D09-80, D115-150) at 600 V with circuit breakers.

### Application example

**For a 15 HP-230 V motor**
Select a contactor type **LC1D50A**.
Information: the contactor rating selected corresponds to “size 2”, the associated cable is type AWG3 75 °C-Cu.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

### a.c. supply

| Volts | 24 | 42 | 48 | 110 | 115 | 120 | 208 | 220 | 230 | 240 | 380 | 400 | 415 | 440 | 480 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09…D150** (D115 and D150 coils with built-in suppression device as standard) | | | | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | G7 [4] | LE7 [4] | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | T7 [4] | S7 |
| **LC1D09…D65** (not available with "connection for lugs or bars") | | | | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | | | | | | P5 | | | | | | | |
| **LC1D80…D115** | | | | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | G5 | – | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | – | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | G6 | L6 | M6 | – | U6 | Q6 | – | – | R6 | T6 | – |

### d.c. supply

| Volts | 12 | 24 | 36 | 48 | 60 | 72 | 110 | 125 | 220 | 250 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1D09…D32** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| **LC1D40A…D65A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | [5] | [5] | [5] | [5] | [5] | [5] | [5] | [5] | [5] | RD |
| **LC1D80 and D95** | | | | | | | | | | | |
| U 0.85…1.1 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| U 0.75…1.2 Uc | JW | BW | CW | EW | – | SW | FW | – | MW | – | – |
| **LC1D115 and D150** (coils with built-in suppression device as standard) | | | | | | | | | | | |
| U 0.75…1.2 Uc | – | BD | – | ED | ND | SD | FD | GD | MD | UD | RD |

### Low consumption

| Volts ⎓ | 5 | 12 | 20 | 24 | 48 | 72 | 110 | 220 | 250 |
|---|---|---|---|---|---|---|---|---|---|
| **LC1D09…D38** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | SL | FL | ML | UL |

*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*
*(2) **LC1D09** to **D65A**: clip-on mounting on 35 mm ⊥ rail **NSYSDR** or screw fixing.*
*__LC1D80__ and __LC1D95__: clip-on mounting on 35 mm ⊥ rail __NSYSDR__ or 75 mm ⊥ rail __AM1DL__ or screw fixing.*
*__LC1D115__ and __D150__: clip-on mounting on 2 x 35 mm ⊥ rails __NSYSDR__ or screw fixing.*
*(3) Versions with spring terminals __LC1D323__ and __LC1D383__ are not certified UL/CSA.*
*(4) Contactors __LC1D40A__, __50A__, __65A__, __80A__: for this coil voltage use is only on 60 Hz.*
*(5) For these coil voltages, choose from Deca green contactors. Same product ref. radical, just add BBE coil voltage code for 24 V DC, BNE for 24-60 V AC/DC, EHE for 48-130 V AC/DC, KUE for 100-250 V AC/DC. Example: __LC1D40ABBE__.*

Characteristics: pages B8/84 to B8/91
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107
Click **HERE** for access to online contactor selector

PB121717.tif

*LC2D12●●*

## 3-pole reversing contactors - Motors up to 75 kW / 400 V in category AC-3/AC-3e

**Horizontally mounted - Pre-wired power connections.**

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e (θ ≤ 60 °C) | | | | | | | Rated operational current in AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil Basic reference, to be completed by adding the control voltage code [1] / Fixing [2] | Weight [3] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | | | | |
| kW | kW | kW | kW | kW | kW | kW | A | | | | kg |
| **With mechanical interlock, without electrical interlocking, for connection by screw clamp terminals or connectors** | | | | | | | | | | | |
| 2.2 | 4 | 4 | 4 | 5.5 | 5.5 | – | 9 | 1 | 1 | **LC2D09●●** [4] | 0.687 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | – | 12 | 1 | 1 | **LC2D12●●** [4] | 0.697 |
| 4 | 7.5 | 9 | 9 | 10 | 10 | – | 18 | 1 | 1 | **LC2D18●●** [4] | 0.707 |
| 5.5 | 11 | 11 | 11 | 15 | 15 | – | 25 | 1 | 1 | **LC2D25●●** [4] | 0.787 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | – | 32 | 1 | 1 | **LC2D32●●** [4] | 0.797 |
| 9 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | – | 38 | 1 | 1 | **LC2D38●●** [4] | 0.807 |
| 11 | 18.5 | 22 | 22 | 22 | 30 | – | 40 | 1 | 1 | **LC2D40A●●** | 1.870 |
| 15 | 22 | 25 | 30 | 30 | 33 | – | 50 | 1 | 1 | **LC2D50A●●** | 1.880 |
| 18.5 | 30 | 37 | 37 | 37 | 37 | – | 65 | 1 | 1 | **LC2D65A●●** | 1.890 |
| 22 | 37 | 45 | 45 | 55 | 45 | – | 80 | 1 | 1 | **LC2D80●●** | 3.200 |
| 25 | 45 | 45 | 45 | 55 | 45 | – | 95 | 1 | 1 | **LC2D95●●** | 3.200 |
| **With mechanical interlock and electrical interlocking, for connection by screw clamp terminals or connectors** | | | | | | | | | | | |
| 30 | 55 | 59 | 59 | 75 | 80 | 65 | 115 | 1 | 1 | **LC2D115●●** | 6.350 |
| 40 | 75 | 80 | 80 | 90 | 100 | 75 | 150 | 1 | 1 | **LC2D150●●** | 6.400 |

PB121685.eps

*LC2D65A●●*

PB123819.tif

*LC2D1156●●*

### Connection by lugs or bars

For reversing contactors LC2D09 to LC2D38, LC2D115 and LC2D150, in the references selected above, insert a figure **6** before the voltage code. Example: **LC2D09●●** becomes **LC2D096●●**.
To build a 40 to 65 A reversing contactor, for connection by lugs, order 2 contactors **LC1D●●A6** and mechanical interlock **LAD4CM** (see page B8/46).

## Component parts

**Auxiliary contact blocks and add-on modules**: see pages B8/37 to B8/45.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

### a.c. supply

| Volts | 24 | 42 | 48 | 110 | 115 | 220 | 230 | 240 | 380 | 400 | 415 | 440 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC2D09…D150** (D115 and D150 coils with built-in suppression device as standard) | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **LC2D80…D115** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |

### d.c.supply

| Volts | 12 | 24 | 36 | 48 | 60 | 72 | 110 | 125 | 220 | 250 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC2D09…D38** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |
| **LC2D40A…D65A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |

### Low consumption

| Volts ⎓ | 5 | 12 | 20 | 24 | 48 | 110 | 220 | 250 |
|---|---|---|---|---|---|---|---|---|
| **LC2D09...D38** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*
*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*
*(2) LC2D09 to D65A: clip-on mounting on 35 mm ⊥ rail **NSYSDR** or screw fixing.*
*LC2D80 and D95: clip-on mounting on 35 mm ⊥ rail **NSYSDR** or 75 mm ⊥ rail **AM1DL** or screw fixing.*
*LC2D115 and D150: clip-on mounting on 35 mm ⊥ rail **NSYSDR** or screw fixing.*
*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for **LC2D09** to **D38**, 0.150 kg for **LC1D40A** to **D65A**.*
*(4) For reversing contactors with electrical interlocking pre-wired at the factory, add suffix **V** to the references selected above. Example: **LC2D09B7** becomes **LC2D09B7V**.*

***Note:** when assembling a reversing contactor, it is good practice to incorporate a 50 ms time delay.*

Characteristics: pages B8/84 to B8/91
Dimensions: pages B8/108 to B8/109
Schemes: pages B8/110 and B8/111
Click **HERE** for access to online contactor selector

PB121718.tif

*LC2D123●●*

## 3-pole reversing contactors - Motors up to 15 kW / 400 V in category AC-3/AC-3e

**Pre-wired power connections.**
Mechanical interlock without electrical interlocking.

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e (θ ≤ 60 °C) | | | | | | Rated operational current in AC-3/AC-3e 440 V up to | Instan-taneous auxiliary contacts per contactor | | Contactors supplied with coil Basic reference, to be completed by adding the voltage code [1] Fixing [2] | Weight [3] |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | | | | |
| kW | kW | kW | kW | kW | kW | A | | | | kg |
| **For connection by spring terminals** | | | | | | | | | | |
| 2.2 | 4 | 4 | 4 | 5.5 | 5.5 | 9 | 1 | 1 | **LC2D093●●** | 0.687 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | 12 | 1 | 1 | **LC2D123●●** | 0.697 |
| 4 | 7.5 | 9 | 9 | 10 | 10 | 18 | 1 | 1 | **LC2D183●●** | 0.707 |
| 5.5 | 11 | 11 | 11 | 15 | 15 | 25 | 1 | 1 | **LC2D253●●** | 0.787 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | 32 [4] | 1 | 1 | **LC2D323●●** | 0.797 |
| **Power connection by EverLink®, BTR screw connectors [5] and control by spring terminals** | | | | | | | | | | |
| 11 | 18.5 | 22 | 22 | 22 | 30 | 40 | 1 | 1 | **LC2D40A3●●** | 1.870 |
| 15 | 22 | 25 | 30 | 30 | 33 | 50 | 1 | 1 | **LC2D50A3●●** | 1.880 |
| 18.5 | 30 | 37 | 37 | 37 | 37 | 65 | 1 | 1 | **LC2D65A3●●** | 1.890 |

**For connection by Faston connectors**

**All power connections are to be made by the customer.**
These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals.
For reversing contactors LC2D09 and LC2D12 only, in the references selected above, replace the figure **3** before the voltage code with a figure **9**.
Example: **LC2D093●●** becomes **LC2D099●●**.

## Component parts

**Auxiliary contact blocks and add-on modules**: see pages B8/37 to B8/45.

## Standard control circuit voltages (for other voltages, please consult your Regional Sales Office)

| **a.c. supply** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volts** | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** | **500** |
| **LC2D09…D65A** | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | S7 |
| **d.c. supply** | | | | | | | | | | | | | |
| **Volts** | **12** | **24** | **36** | **48** | **60** | **72** | **110** | **125** | **220** | **250** | **440** | | |
| **LC2D09…D32** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **LC2D40A …D65A** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | | |
| U 0.75…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD | | |
| **Low consumption** | | | | | | | | | | | | | |
| **Volts ⎓** | **5** | **12** | **20** | **24** | **48** | **110** | **220** | **250** | | | | | |
| **LC2D09...D32** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL | | | | | |

*For other voltages between 5 and 690 V, see pages B8/48 to B8/51.*
*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*
*(2) LC2D09 to D32: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*(3) The weights indicated are for reversing contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for **LC2D09** to **D38**, 0.150 kg for **LC1D40A** to **D65A**.*
*(4) Must be wired with 2 x 4 mm² cables in parallel on the upstream side. On the downstream side, outgoing terminal block **LAD331** may be used (Quickfit technology, see page B1/18).When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).*
*(5) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

Contactors

PB121719.eps

*LC2DT20●●*

PB123820.eps

*LC2D115004●●*

## 4-pole changeover contactor pairs - 20 to 200 A in category AC-1

**Pre-assembled. Pre-wired power connections**

LC2DT20 to LC2DT40: mechanical interlock without electrical interlocking.
LC2D80004: order separately 2 auxiliary contact blocks LADN●1 to obtain electrical interlocking between the 2 contactors (see page B8/37).
For electrical interlocking incorporated in the mechanical interlock, please consult your Regional Sales Office.
LC2D115004: mechanical interlock with integral, pre-wired electrical interlocking.

### For connection by screw clamp terminals or connectors

| Utilisation category AC-1 Non-inductive loads Maximum rated operational current (θ ≤ 60 °C) | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil<br>Basic reference, to be completed by adding the voltage code (1) (2)<br>Fixing (3) | Weight |
|---|---|---|---|---|
| A | | | | kg |
| 20 | 1 | 1 | **LC2DT20●●** | 0.730 |
| 25 | 1 | 1 | **LC2DT25●●** | 0.730 |
| 32 | 1 | 1 | **LC2DT32●●** | 0.850 |
| 40 | 1 | 1 | **LC2DT40●●** | 0.850 |
| 125 | – | – | **LC2D80004●●** | 3.200 |
| 200 | – | – | **LC2D115004●●** | 7.400 |

### For connection by lugs or bars

| | | | | |
|---|---|---|---|---|
| 20 | 1 | 1 | **LC2DT206●●** | 0.730 |
| 25 | 1 | 1 | **LC2DT256●●** | 0.730 |
| 32 | 1 | 1 | **LC2DT326●●** | 0.850 |
| 40 | 1 | 1 | **LC2DT406●●** | 0.850 |

## For customer assembly

### For connection by screw clamp terminals or connectors

| | | | | |
|---|---|---|---|---|
| 60 | 1 | 1 | **LC1DT60A●●** (4) | – |
| 80 | 1 | 1 | **LC1DT80A●●** (4) | – |

### For connection by lugs or bars

| | | | | |
|---|---|---|---|---|
| 60 | 1 | 1 | **LC1DT60A6●●** (4) | – |
| 80 | 1 | 1 | **LC1DT80A6●●** (4) | – |

**Auxiliary contact blocks and add-on modules**: see pages B8/37 to B8/45.

*Note: when assembling changeover contactor pairs, it is good practice to incorporate a 50 ms time delay.*
*(1) See note (2) on next page.*
*(2) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*
*(3) **LC2DT20** to **LC2DT80**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
***LC2D80:** clip-on mounting on 35 mm ⊔ rail **NSYSDR** or 75 mm ⊔ rail **AM1DL** or screw fixing.*
***LC2D115**: clip-on mounting on 2 x 35 mm ⊔ rails **NSYSDR** or screw fixing.*
*(4) For these operational currents, order 2 identical contactors and a mechanical interlock **LAD4CM** (see page B8/46).*

Characteristics: pages B8/84 to B8/91
Dimensions: pages B8/108 to B8/109
Schemes: pages B8/110 and B8/111
Click HERE for access to online contactor selector

*Example of necessary components for customer assembly:*
*2 x LC1DT80A3●● contactors + LAD4CM mechanical interlock*

## 4-pole changeover contactor pairs for 20 to 80 A control in category AC-1

### Pre-assembled, for customer assembly

**Pre-wired power connections, for connection by spring terminals.**

| Utilisation category AC-1 Non-inductive loads Maximum rated operational current (θ ≤ 60 °C) | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil: Basic reference, to be completed by adding the control voltage code [1] / Fixing [2] |
|---|---|---|---|
| **A** | | | |
| 20 | 1 | 1 | **LC2DT203●●** |
| **Power connection by EverLink®, BTR screw connectors [3] and control by spring terminals** | | | |
| 60 | 1 | 1 | **LC1DT60A3●●** [4] |
| 80 | 1 | 1 | **LC1DT80A3●●** [4] |

### Separate components

**Auxiliary contact blocks and add-on modules**: see pages B8/19 to B8/19.

### Standard control circuit voltages
**(for other voltages, please consult your Regional Sales Office)**

**a.c. supply**

| Volts | 24 | 42 | 48 | 110 | 115 | 220 | 230 | 240 | 380 | 400 | 415 | 440 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC2DT20…DT40, LC2DT60A…DT80A** | | | | | | | | | | | | | |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 | – |
| **LC2D80004…D115004** | | | | | | | | | | | | | |
| 50 Hz | B5 | D5 | E5 | F5 | FE5 | M5 | P5 | U5 | Q5 | V5 | N5 | R5 | S5 |
| 60 Hz | B6 | – | E6 | F6 | – | M6 | – | U6 | Q6 | – | – | R6 | – |

**d.c. supply**

| Volts | 12 | 24 | 36 | 48 | 60 | 72 | 110 | 125 | 220 | 250 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC2DT20…DT40, LC1DT60…DT80** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | | | | |
| U 0.7…1.25 Uc | JD | BD | CD | ED | ND | SD | FD | GD | MD | UD | RD |

**Low consumption**

| Volts ⎓ | 5 | 12 | 20 | 24 | 48 | 110 | 220 | 250 |
|---|---|---|---|---|---|---|---|---|
| **LC2DT20...DT40** (coils with integral suppression device fitted as standard, by bi-directional peak limiting diode) | | | | | | | | |
| U 0.8…1.25 Uc | AL | JL | ZL | BL | EL | FL | ML | UL |

*For other voltages between 5 and 690 V, see pages B8/19 to B8/19.*
*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*
*(2) Clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/19).*
*(4) For these operational currents, order 2 identical contactors and a mechanical interlock **LAD4CM** (see page B8/19).*

Contactors

PB121720.tif

*LC2D09●●●*

PB121721.tif

*LC2D40A●●●*

Deca green contactors have a dark grey casing and a 3-character code voltage.

## 3-pole reversing contactors - Motors up to 37 kW / 400 V in category AC-3/AC-3e

### Pre-wired power connections

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3/AC-3e (θ ≤ 60 °C) | | | | | | Rated operational current in AC-3/AC-3e 440 V up to | Instantaneous auxiliary contacts per contactor | | Contactors supplied with coil Partial reference, to be completed by adding the control voltage code [1] | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | | | | Fixing [2] | |
| kW | kW | kW | kW | kW | kW | A | | | | kg |
| **With mechanical interlock, without electrical interlocking, for connection by screw clamp terminals or Everlink BTR screw connectors [3] [4]** | | | | | | | | | | |
| 2.2 | 4 | 4 | 4 | 5.5 | 5.5 | 9 | 1 | 1 | **LC2D09●●●** | 0.783 |
| 3 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | 12 | 1 | 1 | **LC2D12●●●** | 0.793 |
| 4 | 7.5 | 9 | 9 | 10 | 10 | 18 | 1 | 1 | **LC2D18●●●** | 0.803 |
| 5.5 | 11 | 11 | 11 | 15 | 15 | 25 | 1 | 1 | **LC2D25●●●** | 0.913 |
| 7.5 | 15 | 15 | 15 | 18.5 | 18.5 | 32 | 1 | 1 | **LC2D32●●●** | 0.923 |
| 9 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 38 | 1 | 1 | **LC2D38●●●** | 0.933 |
| 11 | 18.5 | 22 | 22 | 22 | 30 | 40 | 1 | 1 | **LC2D40A●●●** [3] | 2.154 |
| 15 | 22 | 25 | 30 | 30 | 33 | 50 | 1 | 1 | **LC2D50A●●●** [3] | 2.164 |
| 18.5 | 30 | 37 | 37 | 37 | 37 | 65 | 1 | 1 | **LC2D65A●●●** [3] | 2.174 |
| 22 | 37 | 37 | 37 | 37 | 37 | 66 | 1 | 1 | **LC2D80A●●●** [3] | 2.174 |

## Auxiliary contact blocks and add-on modules

See pages B8/37 to B8/45.

## Coil voltage codes

### AC/DC 24 V DC supply

| Volts | 24 (DC only) | 24-60 | 48-130 | 100-250 |
|---|---|---|---|---|
| **LC2D09...D32, LC2D40A ... D80A** | | | | |
| U 0.85...1.1 Uc | | BNE | EHE | KUE |
| **LC2D09...D38** | | | | |
| U 0.8...1.2 Uc | BNE | | | |
| **LC2D40A ...D80A** | | | | |
| U 0.8...1.2 Uc | BBE | | | |

*(1) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*
*(2) **LC2D09** to **D80A**: clip-on mounting on 35 mm ⊔ rail **NSYSDR** or screw fixing.*
*(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*
*(4) Electrical interlocking is recommended when 2 orders (direct and reverse) could appeared in the same time.*

PB121722.eps

*LC1DGK●●, LC1DLK●●, LC1DMK●●*

PB123777.eps

*LC1DWK12●●*

## Contactors for switching 3-phase capacitor banks (power factor correction)

Special contactors **LC1D●K** are designed for switching 3-phase, single or multiple-step capacitor banks (up to 6 steps). Over 6 steps, it is recommanded to use chokes in order to limit the inrush current and thus improve the lifetime of the installation. The contactors are conform to standards IEC 60070 and 60831, UL and CSA.

## Contactor applications

### Specification

Contactors fitted with a block of early make poles and damping resistors, limiting the value of the current on closing to 60 In max.
This current limitation increases the life of all the components of the installation, in particular that of the fuses and capacitors.

### Operating conditions

Short-circuit protection must be provided by gI type fuses rated at 1.7…2 In.
It will ensure the service continuity of the whole installation in case of a capacitor contactor end of life.

### Maximum operational power

**The power values given in the selection table below are for the following operating conditions:**

| | | | |
|---|---|---|---|
| Prospective peak current at switch-on | LC1D●K | | 200 In |
| Maximum operating rate | LC1DFK, DGK, DLK, DMK | | 240 operating cycles/hour |
| | LC1DPK, DTK, DWK | | 100 operating cycles/hour |
| Electrical durability at nominal load | All contactor ratings | 400 V | 300 000 operating cycles |
| | | 690 V | 200 000 operating cycles |

| Operational power at 50/60 Hz [1] θ ≤ 60 °C [2] | | | | Instantaneous auxiliary contacts | | Tightening torque on cable end | Basic reference, to be completed by adding the voltage code [3] [4] | Weight |
|---|---|---|---|---|---|---|---|---|
| 230 V | 400 V 415 V | 440 V | 690 V | | | | | |
| kVAR | kVAR | kVAR | kVAR | N/O | N/C | N.m | | kg |
| 7 | 12.5 | 12.5 | 21 | 1 | 2 | 1.7 | **LC1DFK●●** | 0.430 |
| 9.5 | 16.7 | 16.7 | 28.5 | 1 | 2 | 2.5 | **LC1DGK●●** | 0.450 |
| 11 | 20 | 21 | 33 | 1 | 2 | 2.5 | **LC1DLK●●** | 0.600 |
| 14 | 25 | 27 | 42 | 1 | 2 | 2.5 | **LC1DMK●●** | 0.630 |
| 17 | 30 | 32 | 50 | 1 | 2 | 5 | **LC1DPK●●** | 1.300 |
| 22 | 40 | 43 | 67 | 1 | 2 | 5 | **LC1DTK●●** | 1.300 |
| 35 | 63 | 67 | 104 | 1 | 2 | 12 | **LC1DWK12●●** | 1.650 |

**Switching of multiple-step capacitor banks** (with equal or different power ratings)

The correct contactor for each step is selected from the above table, according to the power rating of the step to be switched.
**Example:** 50 kVAR 3-step capacitor bank. Temperature: 50 °C and U = 400 V or 440 V.
One 25 kVAR step: contactor LC1DMK, one 15 kVAR step: contactor LC1DGK,
and one 10 kVAR step: contactor LC1DFK.

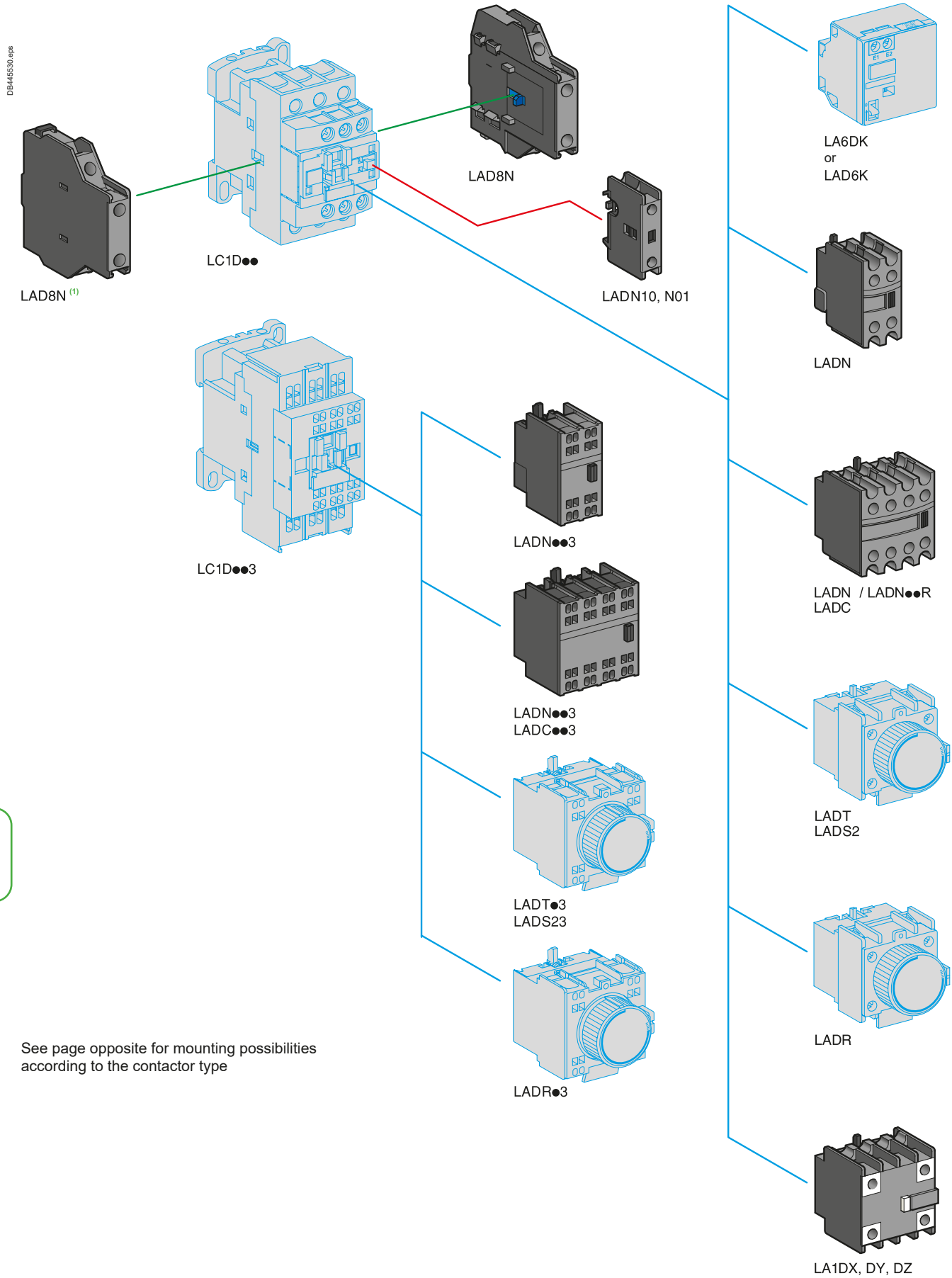
*(1) Operational power of the contactor according to the scheme on the page opposite.*
*(2) The average temperature over a 24-hour period, in accordance with standards IEC 60070 and 60831 is 45 °C.*
*(3) Standard control circuit voltages (the delivery time is variable, please consult your Regional Sales Office):*

| Volts | 24 | 48 | 110 | 120 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | B7 | E7 | F7 | G7 [5] | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |

*(4) Please check the availability of your variant in the index page B8/58. The SEARCH function of your viewer can be used.*
*(5) For PK/TK, G7 can only be used at 60 Hz.*

Dimensions, schemes:
page B8/112

Click **HERE** for access to online contactor selector




See page opposite for mounting possibilities according to the contactor type

*(1) No left side mounting on Deca green contactors.*

# Product references

*LADN22*

*LAD8N11*

*LADN22R*

*LA1DX●●, LA1DZ●●*

## Instantaneous auxiliary contact blocks for connection by screw clamp terminals

**For use in normal operating environments**

| Clip-on mounting | Number of contacts per block | Composition | | | | | Reference | |
|---|---|---|---|---|---|---|---|---|
| Front | 1 | – | – | – | 1 | – | **LADN10** | |
| | | – | – | – | – | 1 | **LADN01** | |
| | 2 | – | – | – | 1 | 1 | **LADN11** | |
| | | – | – | – | 2 | – | **LADN20** | |
| | | – | – | – | – | 2 | **LADN02** | |
| | 4 | – | – | – | 2 | 2 | **LADN22** | **LADN22S** (1) |
| | | – | – | – | 1 | 3 | **LADN13** | |
| | | – | – | – | 4 | – | **LADN40** | |
| | | – | – | – | – | 4 | **LADN04** | |
| | | – | – | – | 3 | 1 | **LADN31** | |
| | 4 incl. 1 N/O & 1 N/C make before break | – | – | – | 2 | 2 | **LADC22** | |
| Side (contact blocks compatible with AC coil and AC/DC Deca Green contactors) | 2 | – | – | – | 1 | 1 | **LAD8N11** | |
| | | – | – | – | 2 | – | **LAD8N20** | |
| | | – | – | – | – | 2 | **LAD8N02** | |
| **For use in harsh industrial environment** (6) | | | | | | | | |
| Front | 2 | – | – | – | 1 | 1 | **LADN11R** | |
| | | – | – | – | 2 | – | **LADN20R** | |
| | 4 | – | – | – | 2 | 2 | **LADN22R** | |
| | | – | – | – | 4 | – | **LADN40R** | |
| | | – | – | – | 3 | 1 | **LADN31R** | |
| **For terminal referencing conforming to EN 50012** | | | | | | | | |
| Front on 3P contactors and 4P contactors 20 to 80 A | 2 | – | – | – | 1 | 1 | **LADN11G** | |
| | 4 | – | – | – | 2 | 2 | **LADN22G** | |
| Front on 4P contactors 125 to 200 A | 2 | – | – | – | 1 | 1 | **LADN11P** | |
| | 4 | – | – | – | 2 | 2 | **LADN22P** | |
| **With dust and damp protected contacts, for use in harsh industrial environment** | | | | | | | | |
| Front | 2 | – | 2 | – | – | – | **LA1DX20** | |
| | | 1 | 1 | – | – | – | **LA1DX11** | |
| | | 2 | – | – | – | – | **LA1DX02** | |
| | | – | 2 | 2 | – | – | **LA1DY20** (2) | |
| | 4 | – | 2 | – | 2 | – | **LA1DZ40** | |
| | | – | 2 | – | 1 | 1 | **LA1DZ31** | |

## Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure **6** to the end of the references selected above. Example: **LADN11** becomes **LADN116**.

## Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for LAD8, LADN with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the figure **3** to the end of the references selected above. Example: **LADN11** becomes **LADN113**.

Maximum number of auxiliary contacts that can be fitted:

| Contactors | | | Instantaneous auxiliary contacts | | | | | | Time delay |
|---|---|---|---|---|---|---|---|---|---|
| Type | | Number of poles and size | Side mounted | | Front mounted | | | | |
| | | | | | 1 contact | | 2 contacts | 4 contacts | 1 block |
| AC | 3P | LC1D09…D38 | 1 on LH or 1 on RH side(3) | and | – | | 1 | or 1 | or 1 |
| AC/DC | | LC1D40A…D80A | 1 on LH or 1 on RH side | and | – | | 1 | or 1 | or 1 |
| | | LC1D80 and D95 (50/60 Hz) | 1 on each side | or | 2 | and | 1 | or 1 | or 1 |
| | | LC1D80 and D95 (50 or 60 Hz) | 1 on each side | and | 2 | and | 1 | or 1 | or 1 |
| | | LC1D115 and D150 | 1 on LH side | and | – | | 1 | or 1 | or 1 |
| | 4P | LC1DT20…DT40 | 1 on LH side | and | – | | 1 | or 1 | or 1 |
| | | LC1DT60A and DT80A | 1 on LH or 1 on RH side | and | – | | 1 | or 1 | or 1 |
| | | LC1D40008, D65008 and D80 | 1 on each side | or | 1 | or | 1 | or 1 | or 1 |
| | | LC1D115 | 1 on each side | and | 1 | or | 1 | or 1 | or 1 |
| DC | 3P | LC1D09…D38 | – | | – | | 1 | or 1 | or 1 |
| | | LC1D40A…D80A | – | | – | | 1 | or 1 | or 1 |
| | | LC1D80 and D95 | – | | 1 | or | 1 | or 1 | or 1 |
| | | LC1D115 and D150 | 1 on LH side | and | – | | 1 | or 1 | or 1 |
| | 4P | LC1DT20…DT40 | – | | – | | 1 | or 1 | or 1 |
| | | LC1DT60A and DT80A | – | | – | | 1 | or 1 | or 1 |
| | | LC1D40008, D65008 and D80 | – | | 2 | and | 1 | or 1 | or 1 |
| | | LC1D115 | 1 on each side | | – | and | 1 | or 1 | or 1 |
| LC (4) (5) | 3P | LC1D09…D38 | – | | – | | 1 | – | – |
| | 4P | LC1DT20…DT40 | – | | – | | 1 | – | – |

*(1) With red front face - for safety chain indication.*
*(2) Device fitted with 4 earth screen continuity terminals.*
*(3) 1 on LH side for AC coils - 1 on RH side for AC/DC coils.*
*(4) LC: low consumption.*
*(5) LA1D●●● dust & damp proof auxiliary contact blocks not allowed.*
*(6) Available only with screw clamp terminals and can be used on contactors with standard power consumption.*

Characteristics: pages B8/92 and B8/93
Curves: page B8/94
Dimensions: pages B8/99 and B8/100

# Product references

## TeSys Deca auxiliary contact blocks for use in harsh industrial environment

### Product references: coding principle

| LA | D | N | 22 | R |
|---|---|---|---|---|
| Accessory | TeSys Deca | Type: 11: 1NO + 1NC<br>20: 2NO<br>40: 4NO<br>31: 3NO + 1NC<br>22: 2NO + 2NC | | Reliability PRO |

*Note: There are differences in NO/NC position between LADN●●R and LADN●●. Please refer to page B8/106 for wiring diagram details.*
*This auxiliary module only supports the installation on contactors with standard power consumption.*

## Product core values

Dustproof, Ultra-fine grain silver contacts, Improved Reliability, 17 V/1 mA

### New upgrade, with innovative design

**20% stability increased on contacts**
Ensure contact reliability between mobile and static contacts

**Fully sealed design benefits on reduced dust access**
Comprehensive blocking of dust and external pollution

**5X granularity refinement on silver alloy**
Innovative binary alloy refinement process ensures precise conduction for each operation

**$10^{-8}$ level on reliability**
Capacity 17 V/1 mA

**Target industries and applications**

- For elevator, textile machinery and other harsh industrial applications
- For low voltage and low current high sensitive applications

## Product variants:

*LADN11R*

*LADN20R*

*LADN22R*

*LADN31R*

*LADN40R*

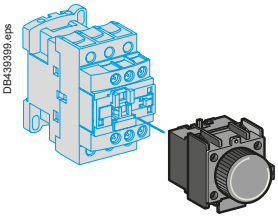
## Guideline for product upgrading

| Existing products | |
|---|---|
| **LADN•• Standard applications 17 V/5 mA** | |
| **Product type** | **Product description** |
| LADN11 | Auxiliary module 1NO+1NC, screw terminals |
| LADN20 | Auxiliary module 2NO, screw terminals |
| LADN22 | Auxiliary module 2NO + 2NC, screw terminals |
| LADN31 | Auxiliary module 3NO + 1NC, screw terminals |
| LADN40 | Auxiliary module 4NO, screw terminals |

| New products | |
|---|---|
| **LADN••R for harsh environment 17 V/1 mA** | |
| **Product type** | **Product description** |
| LADN11R | Auxiliary module 1NO +1NC, screw terminals |
| LADN20R | Auxiliary module 2NO, screw terminals |
| LADN22R | Auxiliary module 2NO + 2NC, screw terminals |
| LADN31R | Auxiliary module 3NO + 1NC, screw terminals |
| LADN40R | Auxiliary module 4NO, screw terminals |

Characteristics: pages B8/84 to B8/91
Dimensions: pages B8/103 to B8/104
Schemes: pages B8/110 and B8/111

# Product references

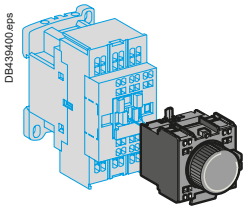



*LADT●*

## Time delay auxiliary contact blocks for connection by screw clamp terminals

Maximum number of auxiliary contact blocks that can be fitted per contactor, see page B8/37.
Sealing cover to be ordered separately, see page B8/45.
LADS2: with switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.

| Clip-on mounting | Number of contacts | Time delay | | Reference |
|---|---|---|---|---|
| | | Type | Setting range | |
| Front | 1 N/O + 1 N/C | On-delay | 0.3…3 s (5) | **LADT0** |
| | | | 1…30 s | **LADT2** |
| | | | 10…180 s | **LADT4** |
| | | | 1…30 s | **LADS2** |
| | | Off-delay | 0.3…3 s (5) | **LADR0** |
| | | | 1…30 s | **LADR2** |
| | | | 10…180 s | **LADR4** |




*LADT●3*

## Time delay auxiliary contact blocks for connection by lugs

Add the figure **6** to the end of the references selected above. Example: **LADT0** becomes **LADT06**.

## Time delay auxiliary contact blocks for connection by spring terminals

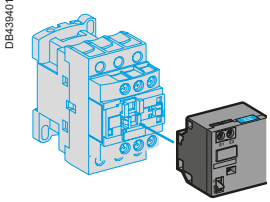
Add the figure **3** to the end of the references selected above. Example: **LADT0** becomes **LADT03.**

## Time delay auxiliary contact blocks for connection by Faston connectors

Add the figure **9** to the end of the references selected above. Example: **LADT0** becomes **LADT09**.

## Mechanical latch blocks (1)

| Clip-on mounting | Unlatching control | For use on contactor | Basic reference, to be completed by adding the control voltage code (2) (3) |
|---|---|---|---|
| Front | Manual or electric | LC1D09…D38 (∿ or ⎓) (4)<br>LC1DT20…DT40 (∿ or ⎓) | **LAD6K10●** |
| | | LC1D40A…D80A<br>(3 P ∿ or ⎓)<br>LC1DT60A and DT80A<br>(4 P ∿ or ⎓) | **LAD6K10●** |
| | | LC1D80…D150 (3 P ∿)<br>LC1D80 and D150 (3 P ⎓)<br>LC1D80 (4 P ∿)<br>LC1D80 and D115 (4 P ∿)<br>LP1D80 and LC1D115 (4 P ⎓) | **LA6DK20●** |
| | | LC1D40 and D65 (4 P ∿)<br>LP1D40 and D65 (4 P ⎓) | **LA6DK10●** |




*LAD6K10●*

*(1) The mechanical latch block must not be powered up at the same time as the contactor. The duration of the control signal for the mechanical latch block and the contactor should be:*
*⩾ 100 ms for a contactor operating on an a.c. supply,*
*⩾ 250 ms for a contactor operating on a d.c. supply.*
*Maximum impulse duration for the mechanical latch block: 10 seconds.*
*(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

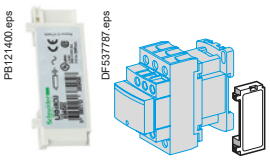
| Volts 50/60 Hz, ⎓ | 24 | 32/36 | 42/48 | 60/72 | 100 | 110/127 | 220/240 | 256/277 | 380/415 |
|---|---|---|---|---|---|---|---|---|---|
| Code | B | C | E | EN | K | F | M | U | Q |

*(3) Please check the availability of your variant in the index page B8/59. The SEARCH function of your viewer can be used.*
*(4) The DC, low consumption contactors ( coil code ●L) are not compatible with the mechanical latch blocks **LAD6K10●**.*
*(5) With extended scale from 0.1 to 6 s.*

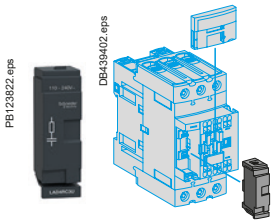
Characteristics:
pages B8/84 to B8/91

Dimensions:
pages B8/103 to B8/104

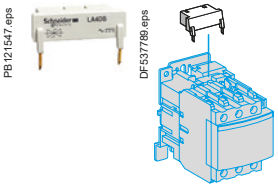
Schemes:
pages B8/110 and B8/111



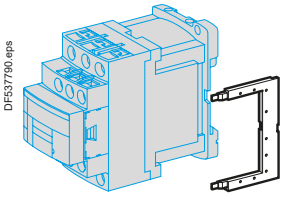

*LAD4RCU LAD4●●*




*LAD4RC3●, LAD4V3●, LAD4D3U, LAD4T3●*




*LA4DC3U*




*LAD4DDL or LAD4T●DL*

*LAD4DDL*

## RC circuits (Resistor-Capacitor)

Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal. i.e. less than 5 % total harmonic distortion. Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max. Slight increase in drop-out time (1.2 to 2 times the normal time).

| Mounting | For use with contactor (1) | | | Reference |
|---|---|---|---|---|
| | Rating | Type | | |
| | | V ∿ | V ⎓ | |
| Clip-on side mounting (2) (3) | D09…D38 (3P)<br>DT20…DT40 | 24…48 | – | **LAD4RCE** |
| | | 50…127 | – | **LAD4RCG** |
| | | 110…250 | – | **LAD4RCU** |
| Clip-on front mounting (2) (3) | D40A…D80A (3P)<br>DT60A…DT80A (4P) | 24…48 | – | **LAD4RC3E** |
| | | 50…127 | – | **LAD4RC3G** |
| | | 110…240 | – | **LAD4RC3U** |
| | | 380…415 | – | **LAD4RC3N** |
| Screw fixing (4) | D80…D150 (3P)<br>D40…D115 (4P) | 24…48 | – | **LA4DA2E** |
| | | 50…127 | – | **LA4DA2G** |
| | | 110…240 | – | **LA4DA2U** |
| | | 380…415 | – | **LA4DA2N** |

## Varistors (peak limiting)

Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

| | | | | |
|---|---|---|---|---|
| Clip-on side mounting (2) (3) | D09…D38 (3P)<br>DT20…DT40 | 24…48 | – | **LAD4VE** |
| | | 50…127 | – | **LAD4VG** |
| | | 110…250 | – | **LAD4VU** |
| Clip-on front mounting (2) (3) | D40A…D80A (3P)<br>DT60A…DT80A (4P) | 24…48 | 24…48 | **LAD4V3E** |
| | | 50…127 | 50…127 | **LAD4V3G** |
| | | 110…250 | 110…250 | **LAD4V3U** |
| Screw fixing (4) | D80…D115 (3P)<br>D80…D115 (4P) | 24…48 | – | **LA4DE2E** |
| | | 50…127 | – | **LA4DE2G** |
| | | 110…250 | – | **LA4DE2U** |
| | D80…D95 (3P)<br>D80 (4P) | – | 24…48 | **LA4DE3E** |
| | | – | 110…250 | **LA4DE3U** |

## Flywheel diodes

No overvoltage or oscillating frequency. Increase in drop-out time (6 to 10 times the normal time). Polarised component.

| | | | | |
|---|---|---|---|---|
| Clip-on side mounting (3) (5) | D09…D38 (3P), DT20…DT40 | – | 5...600 | **LAD4DDL** |
| Clip-on front mounting (3) | D40A…D65A (3P), DT60A…DT80A (4P) | – | 24…250 | **LAD4D3U** |
| Screw fixing (4) | D80 and D95 (3P), D40…D80 (4P) | – | 24…250 | **LA4DC3U** |

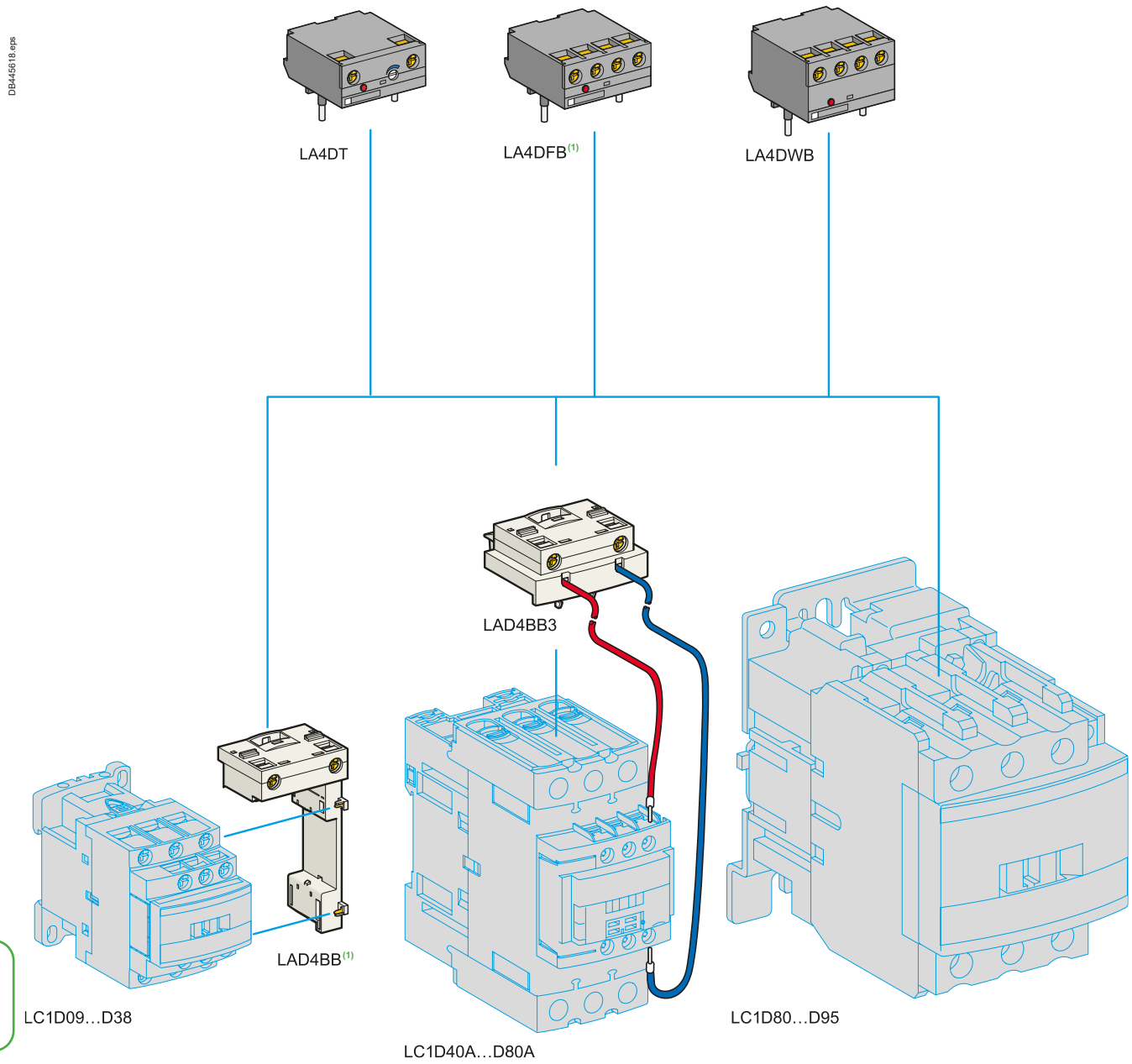
## Bidirectional peak limiting diodes

Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks.

| | | | | |
|---|---|---|---|---|
| Clip-on side mounting (2) | D09…D38 (3P)<br>DT20…DT40 (4P) (6) | 24 | – | **LAD4TB** |
| | | – | 24 | **LAD4TBDL** |
| | | 72 | – | **LAD4TS** |
| | | – | 72 | **LAD4TSDL** |
| | | – | 125 | **LAD4TGDL** |
| | | – | 250 | **LAD4TUDL** |
| Clip-on front mounting (2) | D40A…D80A (3P)<br>DT60A…DT80A (4P) (6) | 12…24 | 12…24 | **LAD4T3B** |
| | | 25…72 | 25…72 | **LAD4T3S** |
| | | 73…125 | 73…125 | **LAD4T3G** |
| | | 126…250 | 126…250 | **LAD4T3U** |
| | | 251…440 | 251…440 | **LAD4T3R** |
| Screw fixing (4) | | – | 24 | **LA4DB3B** |
| | | – | 72 | **LA4DB3S** |

*(1) For satisfactory protection, a suppressor module must be fitted across the coil of each contactor except for Deca green (●●E coil), as surge protection is already embedded.*
*(2) Clipping-on makes the electrical connection. The overall size of the contactor remains unchanged.*
*(3) In order to install these accessories, the existing suppression device must first be removed.*
*(4) Mounting at the top of the contactor on coil terminals A1 and A2.*
*(5) Not compatible with low consumption contactors.*
*(6) From **D09** to **D65A** and from **LC1DT20** to **DT80A**, d.c, low consumption are fitted with a built-in bidirectional peak limiting diode suppressor as standard. This bidirectional peak limiting diode is removable and can therefore be replaced by the user. (See reference above).*

Characteristics:
page B8/96




See opposite page for mounting possibilities according to the contactor type.

*(1) For Deca contactor with AC coil only.*

# Product references

PB124005.eps

*LA4DT●●*

PB124006.eps

*LA4DFB*

PB121550.eps

*LA4DBL*

PB121402.eps

*LAD4BBVU*

## Electronic serial timer modules (1)

■ 3-pole contactors LC1D09 to D38: mounted using adapter LAD4BB, to be ordered separately, see below.
■ 3-pole contactors LC1D40A to D65A: mounted using adapter LAD4BB3, to be ordered separately, see below.
■ 3-pole contactors LC1D80 to D150 and 4-pole contactors LC1D40 to D115: mounted directly across terminals A1 and A2 of the contactor.

### On-delay type

| Operational voltage ∿ | | Time delay | Reference |
|---|---|---|---|
| **24…250 V** | **100…250 V** | | |
| LC1D09…D80A (3P) | LC1D80…D150 (3P) | 0.1…2 s | **LA4DT0U** |
| | | 1.5…30 s | **LA4DT2U** |
| | | 25…500 s | **LA4DT4U** |

## Interface modules

■ 3-pole contactors LC1D09 to D38: mounted using adapter LAD4BB, to be ordered separately, see below.
■ 3-pole contactors LC1D40A to D80A: mounted using adapter LAD4BB3, to be ordered separately, see below.

### Relay interface

| Operational voltage ∿ | Supply voltage E1-E2 (⎓) | Reference |
|---|---|---|
| **24…250 V** | | |
| LC1D09…D150 (3P) | 24 V | **LA4DFB** |

### Static relay interface

| Operational voltage ∿ | | Supply voltage E1-E2 (⎓) | Reference |
|---|---|---|---|
| **24…250 V** | **100…250 V** | | |
| LC1D09…D80A (3P) | LC1D80…D115 (3P) | 24 V | **LA4DWB** |

## Adapter kit for low control signal

| For use on contactors | Composition | Reference |
|---|---|---|
| LC1D40A…D80A (3P) (2) | ■ 1 LAD4BB3 coil wiring adapter<br>■ 1 LA4DFB relay interface module | **LA4DBL** |

## Wiring adapters for coil retrofit of 3 pole contactors

### For adapting existing wiring to a new product

| For use on contactors | | | Reference |
|---|---|---|---|
| LC1D09…D38 | Without coil suppression | | **LAD4BB** (3) |
| | With coil suppression | ∿ 24…48 V | **LAD4BBVE** |
| | | ∿ 50…127 V | **LAD4BBVG** |
| | | ∿ 110…250 V | **LAD4BBVU** |
| LC1D40A…80A | Without coil suppression | | **LAD4BB3** |

*(1) For 24 V operation, the contactor must be fitted with a 21 V coil (code Z). See pages B8/48 to B8/51.*
*(2) The kit is compatible with a coil voltage of ∿ 24 V to ∿ 250 V (B7 to U7) and ⎓ 24 V to ⎓ 250 V (BD to UD).*
*(3) **LAD4BB** can not be used with 4 poles contactors.*

Contactors

Characteristics: page B8/97
Dimensions: page B8/99
Schemes: page B8/107

# Product references

PB121360.eps

*LA9D3260*

PB121363.eps

*LA9D11560●*

PB121361.eps

*LA9D115503*

PB121362.eps

*LAD96570*

PB121364.eps

*LA9D11570●*

PB121365.eps

*LA9D80962*

PB121366.eps

*LA9D11567*

## Accessories for main pole and control connections

| Description | | For use with contactors LC1 ~ | For use with contactors LC1 ⎓ | Sold in lots of | Unit reference |
|---|---|---|---|---|---|
| Connectors for cable, size (1 connector) | 4-pole 4...10 mm² | DT20, DT25 | DT20, DT25 | 1 | **LAD92560** |
| | 3-pole 6...25 mm² | D09…D38 | D09…D38 | 1 | **LA9D3260** |
| EverLink® terminal block | 3-pole | D40A…D80A | D40A…D80A | 1 | **LAD96560** |
| Connectors for cables (2 connectors) | 3-pole 120 mm² | D115, D150 | D115, D150 | 1 | **LA9D115603** |
| | 4-pole 120 mm² | D115 | D115 | 1 | **LA9D115604** |
| Connectors for lug type terminals (2 connectors) | 3-pole | D1156, D1506 | D1156, D1506 | 1 | **LA9D115503** |
| Protective covers for connectors for lug type terminals | 3-pole | D40A6…D80A6 | D40A6…D80A6 | 1 | **LAD96570** |
| | | D1156, D1506 | D1156, D1506 | 1 | **LA9D115703** (1) |
| | 4-pole | D60A6…D80A6 | D60A6…D80A6 | 1 | **LAD96580** |
| | | D1156, D1506 | D1156, D1506 | 1 | **LA9D115704** |
| IP 20 covers for lug type terminals (for mounting with circuit breakers GV3 P●●6 and GV3 L●●6) | 3 poles | D40A6…D80A6 | D40A6…D80A6 | 1 | **LAD96575** |
| Links for parallel connection of | 2 poles | D09…D38 | D09…D38 | 10 | **LA9D2561** |
| | | DT32, DT40 (4P) | DT32, DT40 (4P) | 10 | **LAD96061** |
| | | D40A…D80A | D40A…D80A | 1 | **LAD9P32** |
| | | D80, D95 | D80, D95 | 2 | **LA9D80961** |
| | 3 poles | D09…D38 | D09…D38 | 10 | **LAD9P3** (2) |
| | | D40A…D80A | D40A…D80A | 1 | **LAD9P33** |
| | | D80, D95 | D80, D95 | 1 | **LA9D80962** |
| | 4 poles | DT20, DT25 | DT20, DT25 | 2 | **LA9D1263** |
| | | D80 | D80 | 2 | **LA9D80963** |
| Staggered coil connection | | – | D80 | 10 | **LA9D09966** |
| Control circuit take-off from main pole | | D80, D95 | D80, D95 | 10 | **LA9D8067** |
| | | D115, D150 | D115, D150 | 10 | **LA9D11567** |
| Spreaders for increasing the pole pitch to 45 mm | | D115, D150 | D115, D150 | 3 | **GV7AC03** |

*(1) For 3-pole contactors: 1 set of 6 covers, for 4-pole contactors: 1 set of 8 covers.*
*(2) Separate connecting bar for connecting 2 poles in parallel.*

**Control Panel Technical Guide:**
Mounting and wiring accessories for TeSys K, Deca, F contactors. Star-delta, reverser, low-high speed control motor starters and changeover applications - Product references and details on all kits and wiring accessories.

> Ref. Document: CPTG011_EN

> Click on QR code to download

# Product references

*GV2G245*

*GV1G09* *GV3S*

*LAD9ET1*

*LAD9ET1S*

*LAD21...22*

*LAD90*

*LAD7X3*

## Sets of contacts and arc chambers

| Description | For contactor | | Reference |
|---|---|---|---|
| Sets of contacts | 3-pole | LC1D115 | **LA5D1158031** |
| | | LC1D150 | **LA5D150803** |
| | 4-pole | LC1D115004 | **LA5D115804** |
| Arc chambers | 3-pole | LC1D115 | **LA5D11550** |

## Power connection accessories

| | | |
|---|---|---|
| Terminal block | For supply to one or more GV2G busbar sets | **GV1G09** |
| Set of 63 A busbars for parallelling of contactors | 2 contactors LC1D09…D18 or D25…D38 | **GV2G245** |
| | 4 contactors LC1D09…D18 or D25…D38 | **GV2G445** |
| Set of 115 A busbars for parallelling of contactors | 2 contactors LC1D40A…D80A | **GV3G264** |
| | 3 contactors LC1D40A…D80A | **GV3G364** (1) |
| Set of S-shape busbars | For circuit breakers GV3P●● and GV3L●● (3) and contactors LC1D40A…D73A | **GV3S** |

## Protection accessories

| Description | Use | Sold in lots of | Reference |
|---|---|---|---|
| Sealing cover | For LADT, LADR | 1 | **LA9D901** |
| Safety cover preventing access to the moving contact carrier | LC1D09…D80A and DT20…DT80A | 1 | **LAD9ET1** |
| | Red cover (for safety chain indication) | 1 | **LAD9ET1S** |
| | Red cover (for safety chain indication) | 1 | **LAD9ET3S** |
| | LC1D115 and D150 | 1 | **LAD9ET4** |
| | Red cover (for safety chain indication) | 1 | **LAD9ET4S** |

## Marking accessories

| Description | Use | Sold in lots of | Unit reference |
|---|---|---|---|
| Sheet of 64 blank legends, self-adhesive, 8 x 33 mm (2) | Contactors (except 4P) LC1D80…D115, LADN (4 contacts), LA6DK | 10 | **LAD21** |
| Sheet of 112 blank legends, self-adhesive, 8 x 12 mm (2) | LADN (2 contacts), LADT, LADR, LRD | 10 | **LAD22** |
| Marker holder snap-in, 8 x 22 mm | 4-pole contactors, LC1D80...D115, LA6DK | 100 | **LA9D92** |
| Marker holder snap-in, 8 x 18 mm | LC1D09...D65A, LC1DT20...DT80A, LADN (4 contacts), LADT, LADR | 100 | **LAD90** |
| Bag of 300 blank legends self-adhesive, 7 x 21 mm | On holder LA9D92 | 1 | **LA9D93** |

## Mounting accessories

| | | | |
|---|---|---|---|
| Retrofit plate for screw fixing | For replacement of LC1D40 to D80 with LC1D40A to D80A | 1 | **LAD7X3** |
| Mounting plate | For replacement of LC1F115 or F150 with LC1D115 or D150 | 1 | **LA9D730** |
| Size 4 Allen key, insulated, 1000 V | For use on contactors LC1D40A to LC1D150 | 5 | **LADALLEN4** |

*(1) With this set of busbars, any one contactor can be supplied directly by its EverLink® double cage power terminal block. The other two contactors are supplied by the busbar set. The 115 A limitation is therefore applied to these two contactors. Example: 1 **LC1D65A** supplied directly + 1 contactor **LC1D65A** and 1 contactor **LC1D50A** supplied via the busbar set = 115 A. This combination is compatible with busbar set **GV3G364**.*
*(2) These legends are for sticking onto the safety cover of the contactors or add-on block, if fitted.*
*(3) With 73 A current limit for **GV3L73**, **GV3P73**.*

# Product references

PB121375.eps

*LAD9R1*

PB121376.eps

*LAD9R3*

PB121377.eps

*LA9D8069*

PB123826.eps

*LAD91217*

**Discover in video**

PB121378.eps

*LAD91218*

**Discover in video**

## For 3-pole reversing contactors for motor control

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

| Description | For contactors [1] (2 identical contactors) | Reference |
|---|---|---|
| **Kits for assembly of reversing contactors** | | |
| Kit comprising:<br>■ a mechanical interlock **LAD9V2** with electrical interlocking **LAD9V1**<br>■ a set of power connections **LAD9V5** (parallel) and **LAD9V6** (reversing). | LC1D09 to D38 | **LAD9R1V** |
| Kit comprising:<br>■ a mechanical interlock **LAD9V2** without electrical interlocking<br>■ a set of power connections **LAD9V5** (parallel) and **LAD9V6** (reversing). | LC1D09 to D38 | **LAD9R1** |
| Kit comprising:<br>■ a mechanical interlock **LAD4CM**<br>■ a set of power connections **LA9D65A69**. | LC1D40A to D80A | **LAD9R3** |
| **Mechanical interlocks** | | |
| Mechanical interlock with integral electrical interlocking | LC1D80 and D95 (~) | **LA9D4002** |
| | LC1D80 and D95 (⎓) | **LA9D8002** |
| | LC1D115 and D150 | **LA9D11502** |
| Mechanical interlock without integral electrical interlocking | LC1D09 to D38 | **LAD9V2** |
| | LC1D40A to D80A | **LAD4CM** |
| | LC1D80 and D95 (~) | **LA9D50978** |
| | LC1D80 and D95 (⎓) | **LA9D80978** |
| **Sets of power connections** | | |
| Comprising:<br>■ a set of parallel bars<br>■ a set of reverser bars. | LC1D09 to D38 with screw clamp terminals or connectors | **LAD9V5** + **LAD9V6** |
| | LC1D09…D32 with spring terminal connections | **LAD9V12** + **LAD9V13** [2] |
| | LC1D40A to D80A | **LA9D65A69** |
| | LC1D80 and D95 (~) | **LA9D8069** |
| | LC1D80 and D95 (⎓) | **LA9D8069** |
| | LC1D115 and D150 | **LA9D11569** |

## For star-delta starter

| Description | For contactors | Reference | Without timer LADS2 |
|---|---|---|---|
| Mounting kit comprising:<br>■ 1 time delay contact block **LADS2** (**LC1D09…D95**),<br>■ power circuit connections (**LC1D09…D95**),<br>■ hardware required for fixing the contactors onto the mounting plate (**LC1D80 & D95**). | LC1D09 to D38 [3] | **LAD91217** | **LAD91218** |
| | LC1D25 to D38 [4] | **LAD93217** | **LAD93218** |
| | LC1D40A to D80A | **LAD9SD3** | – |
| | LC1D50 to D80 [5] | **LA9D8017** | – |
| | LC1D80 & D95 [6] | **LA9D8018** | – |
| Equipment mounting plates | LC1D09 to D38 | **LA9D12974** | |
| | LC1D40A to D80A | – | |
| | LC1D80 | **LA9D80973** | |

*(1) To order the 2 contactors: see pages B8/24 and B8/30.*
*(2) To assemble a reversing contactor with spring terminal connections, the following components must be ordered:*
*- 1 mechanical interlock **LAD9V2**,*
*- 1 upstream power connection kit and 1 downstream power connection kit.*
*Upstream power connection kit **LAD9V10**: installed in the Quickfit system with power connection module **LAD341**.*
*(If module **LAD341** is not used, replace **LAD9V10** with **LAD9V12**).*
*Downstream power connection kit **LAD9V11**: installed in the Quickfit system with outgoing terminal block **LAD331**.*
*(If **LAD331** is not used, replace **LAD9V11** with **LAD9V13**).*
*(3) For assembly of 3 contactors of the same physical size (depth).*
*(4) For assembly of Main + Delta contactors **LC1D25** to **LC1D38** with Star contactor **LC1D09** to **LC1D18.***
*(5) For assembly of Main + Delta contactors LC1D80 with Star contactor LC1D50 or D65*
*(6) For assembly of 3 x LC1D80 or 3 x LC1D95 or with Main + Delta contactors LC1D95 with Star contactor LC1D80.*
*Note : LA9D8017 is without mechanical interlock and LA9D8018 is with mechanical interlock.*

**Control Panel Technical Guide:**
Mounting and wiring accessories for TeSys K, Deca, F contactors. Star-delta, reverser, low-high speed control motor starters and changeover applications - Product references and details on all kits and wiring accessories.

> Ref. Document: CPTG011_EN

> Click on QR code to download

Dimensions:
pages B8/103 and B8/104

Schemes:
pages B8/106 and B8/107

PB121379.eps

*LADT9R1V*

## For 4-pole changeover contactor pairs (3-phase distribution + neutral)

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

| Description | For contactors [1] (2 identical contactors) | Reference |
|---|---|---|
| **Kits for assembly of changeover contactor pairs** | | |
| Kit comprising:<br>■ a mechanical interlock LAD9V2 with electrical interlocking LAD9V1,<br>■ a set of power connections (changeover) LAD9V7. | LC1DT20 to DT40 with screw clamps or connectors | **LADT9R1V** |
| Kit comprising:<br>■ a mechanical interlock LAD9V2 without electrical interlocking,<br>■ a set of power connections (changeover) LAD9V7. | LC1DT20 to DT40 with screw clamps or connectors | **LADT9R1** |
| **Mechanical interlocks** | | |
| With integral electrical interlocking | LC1D80004 | **LA9D4002** |
| | LP1D80004 | **LA9D8002** |
| | LC1D115004 | **LA9D11502** |
| Without integral electrical interlocking | LC1DT20 to DT40 with screw clamps or connectors | **LAD9V2** [2] |
| | LC1DT203 to DT403 with spring terminals | **LAD9V2** [2] |
| | LC1DT60A and DT80A | **LAD4CM** |
| | LC1D80004 | **LA9D50978** |
| | LP1D80004 | **LA9D80978** |
| **Sets of power connections** | | |
| Comprising a set of parallel bars | LC1D80004 | **LA9D8070** |
| | LP1D80004 | **LA9D8070** |
| | LC1D115004 | **LA9D11570** |
| | LC1D80004 | **LA9D8070** [2] |
| | LP1D80004 | **LA9D8070** [2] |

PB121381.eps

*LA9D50978*

PB121380.eps

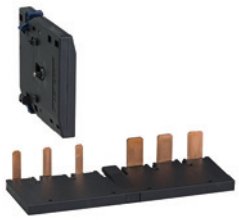
*LA9D8070*

## For 3-pole changeover contactor pairs

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

| Description | For contactors [1] (2 identical contactors) | Reference |
|---|---|---|
| **Kits for assembly of changeover contactor pairs** | | |
| Kit comprising:<br>■ a mechanical interlock LAD4CM<br>■ a set of parallel bars LA9D65A6 | LC1D40A…D80A | **LAD9R3S** |
| **Mechanical interlocks** | | |
| Without integral electrical interlocking | LC1D40A…D80A | **LAD4CM** |
| With integral electrical interlocking | LC1D115 and D150 | **LA9D11502** |
| **Sets of power connections** | | |
| Comprising a set of parallel bars | LC1D40A…D80A | **LA9D65A6** |
| | and D150 | **LA9D11571** |

PB121382.eps



*LAD9R3S*

*(1) To order the 2 contactors: see pages B8/24 and B8/30.*
*(2) Order 2 contact blocks **LADN●1** to build the electrical interlock, see page B8/37.*

**Control Panel Technical Guide:**
Mounting and wiring accessories for TeSys K, Deca, F contactors. Star-delta, reverser, low-high speed control motor starters and changeover applications - Product references and details on all kits and wiring accessories.

> Ref. Document: CPTG011_EN

> Click on QR code to download

Dimensions:
pages B8/99 and B8/100

Schemes:
pages B8/110 and B8/111

PB121383.eps

*LXD1●●*

## a.c coils for ∼ contactors LC1D09...D38 and LC1DT20…DT40

### Specifications

Average consumption at 20 °C:
- inrush (cos ϕ = 0.75) 70 VA,
- sealed (cos ϕ = 0.3) 50 Hz: 7 VA, 60 Hz: 7.5 VA.

Operating range (θ ≤ 60 °C): 50 Hz: 0.8…1.1 Uc, 60 Hz: 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | Inductance of closed circuit | Reference (1) |
|---|---|---|---|
| V | Ω | H | |
| | | | 50/60 Hz |
| 12 | 1.33 | 0.05 | **LXD1J7** |
| 24 | 5.37 | 0.22 | **LXD1B7** |
| 32 | 10.1 | 0.39 | **LXD1C7** |
| 42 | 17 | 0.67 | **LXD1D7** |
| 48 | 21.7 | 0.87 | **LXD1E7** |
| 110 | 124.1 | 4.6 | **LXD1F7** |
| 115 | 129.8 | 5 | **LXD1FE7** |
| 120 | 150.6 | 5.4 | **LXD1G7** |
| 200 | 410.7 | 15 | **LXD1L7** |
| 208 | 430.4 | 16 | **LXD1LE7** |
| 220 | 515.4 | 18 | **LXD1M7** (2) |
| 230 | 538.6 | 20 | **LXD1P7** |
| 240 | 562.3 | 22 | **LXD1U7** |
| 277 | 800.7 | 29 | **LXD1W7** |
| 380 | 1551 | 55 | **LXD1Q7** (3) |
| 400 | 1633 | 60 | **LXD1V7** |
| 415 | 1694 | 65 | **LXD1N7** |
| 440 | 1993 | 73 | **LXD1R7** |
| 480 | 2398 | 87 | **LXD1T7** |
| 500 | 2499 | 95 | **LXD1S7** |
| 575 | 3294 | 125 | **LXD1SC7** |
| 600 | 3810 | 136 | **LXD1X7** |
| 660 | 4656 | 165 | **LXD1YC7** |
| 690 | 5020 | 180 | **LXD1Y7** |

*(1) The last 2 digits in the reference represent the voltage code.*
*(2) Suitable for use on **230 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/82 and B8/84).*
*(3) Suitable for use on **400 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see pages B8/82 and B8/84).*

PB121384.eps

*LXD3●●*

## a.c coils for ∿ contactors LC1D40A…D80A, LC1DT60A and LC1DT80A

### Specifications

Average consumption at 20 °C:
- inrush (cos ϕ = 0.75) 160 VA,
- sealed (cos ϕ = 0.3) 50 Hz: 15 VA, 60 Hz: 15 VA.

Operating range (θ ≤ 60 °C): 50 Hz: 0.8…1.1 Uc, 60 Hz: 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20 °C ±10% | Inductance of closed circuit | Reference (1) |
|---|---|---|---|
| V | Ω | H | |
| | | | 50/60 Hz |
| 24 | 1.98 | 0.12 | **LXD3B7** |
| 42 | 6.18 | 0.37 | **LXD3D7** |
| 48 | 7.97 | 0.48 | **LXD3E7** |
| 110 | 42.28 | 2.50 | **LXD3F7** |
| 115 | 48.76 | 2.74 | **LXD3FE7** |
| 120 | 37.63 | 2.07 | **LXD3G7** (2) |
| 208 | 105 | 6.22 | **LXD3LE7** (2) |
| 220 | 182 | 10 | **LXD3M7** (3) |
| 230 | 192 | 10.9 | **LXD3P7** |
| 240 | 202 | 11.9 | **LXD3U7** |
| 380 | 512 | 29.9 | **LXD3Q7** (4) |
| 400 | 607 | 33.1 | **LXD3V7** |
| 415 | 635 | 35.6 | **LXD3N7** |
| 440 | 682 | 40.1 | **LXD3R7** |
| 480 | 607 | 33.1 | **LXD3T7** (2) |
| 575 | 1238 | 68.4 | **LXD3SC7** |
| 600 | 1304 | 74.5 | **LXD3X7** |

*(1) The last 2 digits in the reference represent the voltage code.*
*(2) This coil can only be used on 60 Hz.*
*(3) Suitable for use on **230 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/82 and B8/84).*
*(4) Suitable for use on **400 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/82 and B8/84).*

PB121385.eps

*LX1D6●●*

## a.c coils for 3 or 4-pole contactors LC1D40, D50, D65, D80, D95

### Specifications

Average consumption at 20 °C:
- inrush (cos ϕ = 0.75) 50 Hz: 200 VA, 60 Hz: 220 VA
- sealed (cos ϕ = 0.3) 50 Hz: 20 VA, 60 Hz: 22 VA.

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20°C ±10 % | Inductance of closed circuit | Reference (1) | Average resistance at 20 °C ±10 % | Inductance of closed circuit | Reference (1) |
|---|---|---|---|---|---|---|
| V | Ω | H | | Ω | H | |
| | | | 50 Hz | | | 60 Hz |
| 24 | 1.4 | 0.09 | **LX1D6B5** | 1.05 | 0.06 | **LX1D6B6** |
| 110 | 31 | 1.9 | **LX1D6F5** | 22 | 1.2 | |
| 115 | 31 | 1.9 | **LX1D6FE5** | – | – | – |
| 208 | – | – | **–** | 86 | 4.3 | **LX1D6L6** |
| 220 | – | – | **–** | 98 | 4.8 | **LX1D6M6** |
| 220/230 | 127 | 7.5 | **LX1D6M5** | – | – | – |
| 240 | 152 | 8.7 | **LX1D6U5** | 120 | 5.7 | **LX1D6U6** |
| 380 | – | – | **–** | 300 | 14 | **LX1D6Q6** |
| 440 | 513 | 30 | **LX1D6R5** | 392 | 19 | |
| 480 | – | – | **–** | 480 | 23 | **LX1D6T6** |

### Specifications

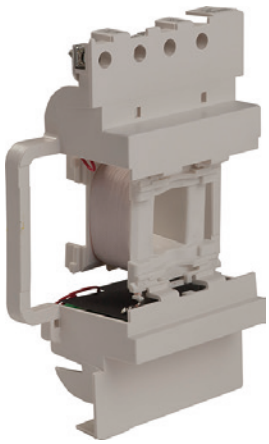
Average consumption at 20 °C:
- inrush (cos ϕ = 0.75) 50/60 Hz: 245 VA at 50 Hz
- sealed (cos ϕ= 0.3) 50/60 Hz: 26 VA at 50 Hz.

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 50/60 Hz |
| 24 | – | – | – | 1.22 | 0.08 | **LX1D6B7** |
| 48 | – | – | – | 5 | 0.32 | **LX1D6E7** |
| 110 | – | – | – | 26 | 1.7 | **LX1D6F7** |
| 120 | – | – | – | 32 | 2 | **LX1D6G7** |
| 220/230 (2) | – | – | – | 102 | 6.7 | **LX1D6M7** |
| 230 | – | – | – | 115 | 7.7 | **LX1D6P7** |
| 230/240 (3) | – | – | – | 131 | 8.3 | **LX1D6U7** |
| 380/400 (4) | – | – | – | 310 | 20 | **LX1D6Q7** |
| 400 | – | – | – | 349 | 23 | **LX1D6V7** |
| 415 | – | – | – | 390 | 24 | **LX1D6N7** |
| 440 | – | – | – | 410 | 27 | **LX1D6R7** |

*(1) The last 2 digits in the reference represent the voltage code.*
*(2) For use on **230 V** / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see page B8/82 and B8/84. This coil can be used on 240 V at 60 Hz.*
*(3) This coil can be used on 220/240 V at 50 Hz and on 240 V only at 60 Hz.*
*(4) For use on **400 V** / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see page B8/82 and B8/84.*

PB121386.eps



*LX1D8●●*

## a.c coils for 3 or 4-pole contactors LC1D115

### Specifications

Average consumption at 20 °C:
- inrush (cos ϕ = 0.8) 50 or 60 Hz: 300 VA
- sealed (cos ϕ = 0.3) 50 or 60 Hz: 22 VA.

Operating range (θ ⩽ 55 °C): 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | Inductance of closed circuit | Reference (1) | Average resistance at 20 °C ±10 % | Inductance of closed circuit | Reference (1) |
|---|---|---|---|---|---|---|
| V | Ω | H | | Ω | H | |
| | | | 50 Hz | | | 60 Hz |
| 24 | – | – | – | 0.87 | 0.07 | **LX1D8B6** |
| 32 | 2.14 | 0.17 | **LX1D8C5** | – | – | – |
| 42 | 3.91 | 0.28 | **LX1D8D5** | – | – | – |
| 48 | – | – | – | 3.91 | 0.28 | **LX1D8E6** |
| 127 | 32.75 | 2.44 | **LX1D8FC5** | – | – | – |
| 208 | – | – | – | 67.92 | 5.06 | **LX1D8L6** |
| 220 | 104.77 | 7.65 | **LX1D8M5** | – | – | – |
| 380 | 338.51 | 22.26 | **LX1D8Q5** | 243.07 | 17.04 | **LX1D8Q6** |
| 440 | 441.56 | 30.34 | **LX1D8R5** | 338.51 | 22.26 | **LX1D8R6** |
| 500 | 566.62 | 38.12 | **LX1D8S5** | – | – | – |

## a.c coils for 3 or 4-pole contactors LC1D115, LC1D150

### Specifications

Average consumption at 20 °C:
- inrush: cos ϕ = 0.9 - 280 to 350 VA
- sealed: cos ϕ = 0.9 - 2 to 18 VA.

Operating range (θ ⩽ 55 °C): 0.8…1.15 Uc.

Coils with integral suppression device fitted as standard, class B.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | Inductance of closed circuit | Reference (1) | Average resistance at 20 °C ±10 % | Inductance of closed circuit | Reference (1) |
|---|---|---|---|---|---|---|
| V | Ω | H | | Ω | H | |
| | | | | | | 50/60 Hz |
| 24 | – | – | – | 147 | 3.03 | **LX1D8B7** |
| 32 | – | – | – | 301 | 8.28 | **LX1D8C7** |
| 48 | – | – | – | 1061 | 24.19 | **LX1D8E7** |
| 110 | – | – | – | 4377 | 109.69 | **LX1D8F7** |
| 115 | – | – | – | 4377 | 109.69 | **LX1D8FE7** |
| 120 | – | – | – | 4377 | 109.69 | **LX1D8G7** |
| 208 | – | – | – | 10 895 | 260.15 | **LX1D8LE7** |
| 220 | – | – | – | 9895 | 210.72 | **LX1D8M7** |
| 230 | – | – | – | 9895 | 210.72 | **LX1D8P7** |
| 240 | – | – | – | 9895 | 210.72 | **LX1D8U7** |
| 277 | – | – | – | 21 988 | 533.17 | **LX1D8UE7** |
| 380 | – | – | – | 21 011 | 482.42 | **LX1D8Q7** |
| 400 | – | – | – | 21 011 | 482.42 | **LX1D8V7** |
| 415 | – | – | – | 21 011 | 482.42 | **LX1D8N7** |
| 440 | – | – | – | 21 501 | 507.47 | **LX1D8R7** |
| 480 | – | – | – | 32 249 | 938.41 | **LX1D8T7** |

*(1) The last 2 digits in the reference represent the voltage code.*

PB121387.eps

*LX4D7JD*

## d.c. coils for 3-pole contactors LC1D80 or 4-pole contactors LP1D80

### Specifications

Average consumption: 22 W.
Operating range: 0.85…1.1 Uc.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10% | Inductance of closed circuit | Reference (1) | Weight |
|---|---|---|---|---|
| V | Ω | H | | kg |
| 12 | 6.6 | 0.46 | **LX4D7JD** | 0.680 |
| 24 | 27 | 1.89 | **LX4D7BD** | 0.680 |

*(1) The last 2 digits in the reference represent the voltage code.*




Life Is On Schneider Electric

*LX4D8●D*

## d.c. coils for contactors LC1D115, D150

### Specifications

Consumption: inrush 270 to 365 W, sealed 2.4 to 5.1 W.
Operating range: 0.75…1.2 Uc.
Coils with integral suppression device fitted as standard, class B.

| Control circuit voltage Uc | Average resistance at 20 °C ± 10 % | Inductance of closed circuit | Reference (1) | Weight |
|---|---|---|---|---|
| V | Ω | H | | kg |
| 24 | 147 | 3.03 | **LX4D8BD** | 0.300 |
| 60 | 1673 | 38.44 | **LX4D8ND** | 0.300 |
| 220 | 9895 | 210.72 | **LX4D8MD** | 0.300 |
| 250 | 18 022 | 345.40 | **LX4D8UD** | 0.300 |

*(1) The last 2 digits in the reference represent the voltage code.*

# Product references

*GC2520M5*

*GC4040M5*

*GC10020M5*

## Modular Contactors - 17.5 mm pitch for modular panels

| No. of poles | | Number of 17.5 mm modules | Commercial reference 50 Hz coil - different voltages | | | | | Sold in lots of |
|---|---|---|---|---|---|---|---|---|
| | | | 12 V | 24 V | 48 V | 110 V | 220/240 V | |
| **Maximum current rating category AC-7a - 16 A** | | | | | | | | |
| 1 | – | 1 | – | – | GC1610E5 | – | GC1610M5 ★ | 12 |
| 1 | 1 | 1 | – | GC1611B5 | – | GC1611F5 | GC1611M5 ★ | 12 |
| 2 | – | 1 | – | GC1620B5 | – | GC1620F5 ★ | GC1620M5 ★ | 12 |
| 2 | 2 | 2 | – | – | – | GC1622F5 ★ | GC1622M5 | 6 |
| 3 | – | 2 | – | – | – | – | GC1630M5 ★ | 6 |
| 4 | – | 2 | – | – | – | GC1640F5 | GC1640M5 ★ | 6 |
| **Maximum current rating category AC-7a - 25 A** | | | | | | | | |
| – | 2 | 1 | – | GC2502B5 | GC2502E5 | ★ | GC2502M5 ★ | 12 |
| – | 4 | 2 | – | GC2504B5 | GC2504E5 | ★ | GC2504M5 ★ | 6 |
| 1 | – | 1 | – | GC2510B5 | – | – | GC2510M5 ★ | 12 |
| 1 | 1 | 1 | – | – | – | – | GC2511M5 ★ | 12 |
| 2 | – | 1 | GC2520J5 | GC2520B5 | – | – | GC2520M5 ★ | 12 |
| 2 | 2 | 2 | – | GC2522B5 | – | – | GC2522M5 ★ | 6 |
| 3 | – | 2 | – | – | – | GC2530F5 | GC2530M5 ★ | 6 |
| 3 | 1 | 2 | – | – | – | – | GC2531M5 | 6 |
| 4 | – | 2 | – | – | GC2540E5 | GC2540F5 ★ | GC2540M5 ★ | 6 |
| **Maximum current rating category AC-7a - 40 A** | | | | | | | | |
| – | 2 | 2 | – | – | – | – | GC4002M5 ★ | 6 |
| – | 4 | 3 | – | – | – | – | GC4004M5 | 4 |
| 1 | 1 | 2 | – | – | – | – | GC4011M5 ★ | 6 |
| 2 | – | 2 | – | – | – | GC4020F5 ★ | GC4020M5 ★ | 6 |
| 2 | 2 | 3 | – | – | – | – | GC4022M5 | 4 |
| 3 | – | 3 | – | – | – | – | GC4030M5 ★ | 4 |
| 4 | – | 3 | – | – | – | – | GC4040M5 ★ | 4 |
| **Maximum current rating category AC-7a - 63 A** | | | | | | | | |
| – | 2 | 2 | – | – | – | – | GC6302M5 | 6 |
| – | 4 | 3 | – | GC6304B5 | – | – | GC6304M5 | 4 |
| 2 | – | 2 | – | – | – | – | GC6320M5 | 6 |
| 3 | – | 3 | – | – | – | – | GC6330M5 ★ | 4 |
| 4 | – | 3 | | GC6340B5 | GC6340E5 | – | GC6340M5 ★ | 4 |
| **Maximum current rating category AC-7a - 100 A** | | | | | | | | |
| 2 | – | 3 | – | – | – | – | GC10020M5 | 4 |
| 4 | – | 6 | – | GC10040B5 | – | – | GC10040M5 ★ | 2 |

★ *for 60 Hz coil replace last figure 5 by 6.*



Characteristics:
pages B8/113 to B8/119

Dimensions, schemes:
pages B8/120 to B8/122



Life Is On Schneider Electric

## Product references

PB113083_13.eps

*GY2520M5*

PB113087_26.eps

*GY6340M5*

### Modular "dual tariff" contactors - 17.5 mm pitch for modular panels

| No. of poles | | Number of 17.5 mm modules | Commercial reference 50 Hz coil - different voltages | | | | | Sold in lots of |
|---|---|---|---|---|---|---|---|---|
| | | | 12 V | 24 V | 48 V | 110 V | 220/240 V | |
| **Maximum current rating category AC-7a - 16 A** | | | | | | | | |
| 2 | – | 1 | – | **GY1620B5** | | – | **GY1620M5** | 12 |
| 4 | – | 2 | – | – | – | – | **GY1640M5** | 6 |
| **Maximum current rating category AC-7a - 25 A** | | | | | | | | |
| 2 | – | 1 | – | – | – | – | **GY2520M5** ★ | 12 |
| 4 | – | 2 | – | – | – | – | **GY2540M5** | 6 |
| **Maximum current rating category AC-7a - 40 A** | | | | | | | | |
| 2 | – | 2 | – | – | – | – | **GY4020M5** | 6 |
| 4 | – | 3 | – | – | – | – | **GY4040M5** | 4 |
| **Maximum current rating category AC-7a - 63 A** | | | | | | | | |
| 2 | – | 2 | – | – | – | – | **GY6320M5** | 6 |
| 4 | – | 3 | – | **GY6340B5** | – | – | **GY6340M5** | 4 |

★ *for 60 Hz coil replace last figure 5 by 6.*

Contactors

Characteristics:
pages B8/123 to B8/125

Dimensions, schemes:
pages B8/126 and B8/127

Schemes:
page B8/127

## Product references

PB123996.eps

*GF1620U7*

### Modular impulse relays - 17.5 mm pitch for modular panels

| Maximum current rating category AC-1 | Composition | | Coil voltages ~ 50/60 Hz | Coil voltages ⎓ | Sold in lots of | Unit reference |
|---|---|---|---|---|---|---|
| A | | | V | V | | |
| 16 | 2 | – | 230/240 | 110 | 12 | **GF1620U7** |
| | 1 | 1 | 24 | 12 | 12 | **GF1611B7** |
| | | | 220 | – | 12 | **GF1611M7** |
| | | | 230/240 | 110 | 12 | **GF1611U7** |

Contactors

Characteristics:
pages B8/128 to B8/131

Dimensions, schemes:
page B8/132



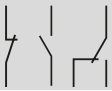
Life Is On Schneider Electric

# Product references

PB113093_13.eps

*GAP23*

## Instantaneous auxiliary contact blocks

| Number of contacts | Number of poles | | | Reference |
|---|---|---|---|---|
| |  | | | |
| 2 | 1 | 1 | – | **GAC0521** |
| | – | 2 | – | **GAC0531** |
| | – | – | 1 | **GAC0511** |

PB104483-40.eps

*GAC5*

PB104486_34.eps

*A9A15922*

PB104487_49.eps

*A9A15923*

## Accessories

| Description | For use on contactor | Number of modules | Operational voltage in V | Sold in lots of | Unit reference |
|---|---|---|---|---|---|
| Coil suppression blocks comprising 2 RC circuits | – | 1 | 12…48 | 1 | **GAP21** |
| | | | 110…240 | 1 | **GAP23** |
| Ventilation 1/2 module clips onto ⊥ rail | – | 1/2 | – | 10 | **GAC5** |
| Set of screw shields (10 top parts + 10 bottom parts) | 40 or 63 A 2 contacts | 2 | – | 1 | **A9A15922** |
| | 40 or 63 A 3 or 4 contacts | 3 | – | 1 | **A9A15923** |

Contactors

Dimensions, schemes: page B8/121
Schemes: page B8/122

# Product references

DPE09P7
DPE12P7
DPE1801P7
DPE18P7
DPE2501P7
DPE25P7
DPE32B7
DPE32P7
GAC0511
GAC0521
GAC0531
GAC5
GAP21
GAP23
GC10020M5
GC10040M5
GC1610M5
GC1611B5
GC1611F5
GC1611M5
GC1620B5
GC1620D7
GC1620F5
GC1620M5
GC1620M6
GC1622F5
GC1622M5
GC1630M5
GC1640F5
GC1640M5
GC2502B5
GC2502E5
GC2502M5
GC2504B5
GC2504M5
GC2510B5
GC2510M5
GC2511M5
GC2520B5
GC2520F6
GC2520J5
GC2520M5
GC2520M6
GC2522B5
GC2522M5
GC2530F5
GC2530M5
GC2530M6
GC2531M5
GC2540E5
GC2540M5
GC2540M6
GC4002M5
GC4004M5
GC4011M5
GC4020F5
GC4020F6
GC4020M5
GC4020M6
GC4022M5
GC4030M5
GC4040M5
GC4040M6
GC6302M5
GC6304B5
GC6304M5
GC6320M5
GC6330M5
GC6330M6
GC6340B5
GC6340M5
GF1611B7
GF1611M7
GF1611U7
GF1620B7
GF1620F7
GF1620U7
GS2AH4120F
GV1G09
GV2G05
GV2G245
GV2G254
GV2G272
GV2G345
GV2G354
GV2G445
GV2G454
GV2G472
GV2G554
GV3G264
GV3G364
GV3S
GY1620B5
GY1620M5
GY2520M5
GY2520M6
GY2540M5
GY4020M5
GY4040M5
GY6320M5
GY6340M5
LA1DX02
LA1DX11
LA1DX20
LA1DY20
LA1DZ31
LA1DZ40
LA1KN02
LA1KN023
LA1KN02M
LA1KN04
LA1KN043
LA1KN11
LA1KN113
LA1KN11M
LA1KN13
LA1KN133
LA1KN20
LA1KN203
LA1KN207
LA1KN22
LA1KN223
LA1KN22M
LA1KN31
LA1KN313
LA1KN316
LA1KN317
LA1KN31M
LA1KN40
LA1KN403
LA1KN407
LA1SK01
LA1SK02
LA1SK11
LA1SK20
LA2KT2E
LA2KT2U
LA4DA1E
LA4DA1G
LA4DA1U
LA4DA2E
LA4DA2G
LA4DA2N
LA4DA2U
LA4DB3B
LA4DB3S
LA4DBL
LA4DC1U
LA4DC3U
LA4DE1E
LA4DE1G
LA4DE1U
LA4DE2E
LA4DE2G
LA4DE2U
LA4DE3E
LA4DE3U
LA4DFB
LA4DT0U
LA4DT2U
LA4DT4U
LA4DWB
LA4KA1U
LA4KC1B
LA4KC1E
LA4KC2B
LA4KE1B
LA4KE1E
LA4KE1FC
LA4KE1UG
LA4SKC1U
LA4SKE1E
LA4SKE1U
LA5D11550
LA5D1158031
LA5D115804
LA5D150803
LA6DK10C
LA6DK10J
LA6DK10U
LA6DK20B
LA6DK20E
LA6DK20F
LA6DK20J
LA6DK20M
LA6DK20Q
LA7D902
LA9D0921
LA9D09976
LA9D09980
LA9D09981
LA9D11502
LA9D11517
LA9D115503
LA9D115603
LA9D115604
LA9D11567
LA9D11569
LA9D115691
LA9D115692
LA9D11570
LA9D115703
LA9D115704
LA9D11571
LA9D1263
LA9D1269
LA9D12974
LA9D15017
LA9D16906
LA9D1860
LA9D1869
LA9D2561
LA9D2569
LA9D3260
LA9D3269
LA9D32974
LA9D4002
LA9D40961
LA9D40963
LA9D5017
LA9D50978
LA9D511
LA9D6567
LA9D6569
LA9D65A6
LA9D65A69
LA9D730
LA9D8002
LA9D8017
LA9D8018
LA9D8067
LA9D8069
LA9D80691
LA9D8070
LA9D8079
LA9D80961
LA9D80962
LA9D80963
LA9D80973
LA9D80978
LA9D894
LA9D898
LA9D90
LA9D901
LA9D92
LA9D93
LA9D99
LA9E01
LA9E02
LA9K0969
LA9K105I
LA9K105S
LA9KNS35
LAD21
LAD22
LAD4BB
LAD4BB3
LAD4BBVE
LAD4BBVG
LAD4BBVU
LAD4CM
LAD4D3U
LAD4DDL
LAD4RC3E
LAD4RC3G
LAD4RC3N
LAD4RC3U
LAD4RCE
LAD4RCG
LAD4RCU
LAD4T3B
LAD4T3G
LAD4T3R
LAD4T3S
LAD4T3U
LAD4TB
LAD4TBDL
LAD4TGDL
LAD4TS
LAD4TSDL
LAD4TUDL
LAD4V3E
LAD4V3G
LAD4V3U
LAD4VE
LAD4VG
LAD4VU
LAD6K10B
LAD6K10E
LAD6K10F
LAD6K10J
LAD6K10K
LAD6K10M
LAD7X3
LAD8N02
LAD8N026
LAD8N11
LAD8N116
LAD8N11G
LAD8N20
LAD8N206
LAD90
LAD901
LAD9011
LAD903
LAD904
LAD91209
LAD91217
LAD91218
LAD912GV
LAD92560
LAD93217
LAD93218
LAD96061
LAD96560
LAD96566
LAD96570
LAD96575
LAD96580
LAD9722
LAD9723
LAD9744
LAD9BB18
LAD9BB32
LAD9DL3
LAD9ET1
LAD9ET1S
LAD9ET2
LAD9ET3S
LAD9ET4
LAD9ET4S
LAD9P3
LAD9P32
LAD9P33
LAD9R1
LAD9R11
LAD9R1V
LAD9R3
LAD9R3S
LAD9SD3
LAD9SD3S
LAD9V1
LAD9V10
LAD9V11
LAD9V12
LAD9V13
LAD9V14
LAD9V15
LAD9V16
LAD9V17
LAD9V2
LAD9V5
LAD9V6
LAD9VP1
LAD9VP2
LAD9VP3
LAD9VP4
LADALLEN4
LADC22
LADC223
LADC226
LADN01
LADN02
LADN023
LADN026
LADN04
LADN043
LADN046
LADN10
LADN11
LADN11R
LADN113
LADN113G
LADN113P
LADN116
LADN11G
LADN11P
LADN13
LADN133
LADN136
LADN13G
LADN13P
LADN20
LADN20R
LADN203
LADN206
LADN22
LADN22R
LADN223
LADN223G
LADN226
LADN22G
LADN22P
LADN22S
LADN31
LADN31R
LADN313
LADN313G
LADN316
LADN31G
LADN31P
LADN40
LADN40R
LADN403
LADN403G
LADN406
LADN40G
LADR0
LADR03
LADR06
LADR2
LADR23
LADR26
LADR4
LADR43
LADR46
LADS2
LADS23
LADS26
LADT0
LADT03
LADT06
LADT2
LADT23
LADT26
LADT4
LADT46
LADT9R1
LADT9R1V
LAZR90M
LAZR90Q
LAZR91F



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Product references

LC1D066BD
LC1D066F7
LC1D066M7
LC1D06P7
LC1D093B7
LC1D093BD
LC1D093BL
LC1D093E7
LC1D093ED
LC1D093F7
LC1D093FD
LC1D093FE7
LC1D093FL
LC1D093G7
LC1D093GD
LC1D093M7
LC1D093MD
LC1D093N7
LC1D093ND
LC1D093P7
LC1D093U7
LC1D096B7
LC1D096BD
LC1D096BL
LC1D096CD
LC1D096F7
LC1D096FD
LC1D096FL
LC1D096G7
LC1D096KD
LC1D096L7
LC1D096M7
LC1D096MD
LC1D096ND
LC1D096P7
LC1D096Q7
LC1D096R7
LC1D096SD
LC1D096SL
LC1D0986FD
LC1D098B7
LC1D098BD
LC1D098BL
LC1D098CD
LC1D098E7
LC1D098ED
LC1D098F7
LC1D098FD
LC1D098G7
LC1D098JD
LC1D098M7
LC1D098MD
LC1D098P7
LC1D098U7
LC1D099F7
LC1D099G7
LC1D09B5
LC1D09B7
LC1D09BD
LC1D09BL
LC1D09BNE
LC1D09C7
LC1D09CD
LC1D09D5
LC1D09D7
LC1D09E5
LC1D09E7
LC1D09ED
LC1D09EE7
LC1D09EHE
LC1D09EL

LC1D09F7
LC1D09FC7
LC1D09FD
LC1D09FE7
LC1D09FL
LC1D09G7
LC1D09GD
LC1D09JD
LC1D09JL
LC1D09K7
LC1D09KUE
LC1D09L7
LC1D09LE7
LC1D09M7
LC1D09MD
LC1D09N7
LC1D09ND
LC1D09P5
LC1D09P7
LC1D09Q7
LC1D09R7
LC1D09RD
LC1D09SD
LC1D09T7
LC1D09U7
LC1D09UD
LC1D09V7
LC1D09W7
LC1D09X7
LC1D09Y7
LC1D1150046BD
LC1D1150046F7
LC1D1150046M5
LC1D1150046M7
LC1D1150046N5
LC1D1150046P7
LC1D1150046U5
LC1D1150046U7
LC1D115004B7
LC1D115004BD
LC1D115004ED
LC1D115004F7
LC1D115004FD
LC1D115004FE7
LC1D115004G6
LC1D115004M5
LC1D115004M7
LC1D115004MD
LC1D115004P5
LC1D115004P7
LC1D115004Q5
LC1D115004RD
LC1D115004U7
LC1D115004V7
LC1D115006F7C
LC1D11500F7CS003
LC1D11500M7CS003
LC1D1156B7
LC1D1156BD
LC1D1156E7
LC1D1156F5
LC1D1156F7
LC1D1156FD
LC1D1156FE7
LC1D1156G7
LC1D1156L7
LC1D1156LE7
LC1D1156M5
LC1D1156M7
LC1D1156MD
LC1D1156N7

LC1D1156P7
LC1D1156R7
LC1D1156SD
LC1D1156U7
LC1D115B7
LC1D115BD
LC1D115D7
LC1D115E5
LC1D115E7
LC1D115ED
LC1D115F5
LC1D115F6
LC1D115F7
LC1D115FD
LC1D115FE7
LC1D115G6
LC1D115G7
LC1D115GD
LC1D115K7
LC1D115L7
LC1D115LE7
LC1D115M5
LC1D115M7
LC1D115MD
LC1D115N7
LC1D115P5
LC1D115P7
LC1D115Q7
LC1D115R7
LC1D115RD
LC1D115S7
LC1D115SD
LC1D115T6
LC1D115T7
LC1D115U5
LC1D115U7
LC1D115V7
LC1D123B7
LC1D123BD
LC1D123BL
LC1D123E7
LC1D123ED
LC1D123F7
LC1D123FD
LC1D123G7
LC1D123M7
LC1D123P7
LC1D123V7
LC1D126B7
LC1D126BD
LC1D126BL
LC1D126ED
LC1D126F7
LC1D126FD
LC1D126FL
LC1D126G7
LC1D126KD
LC1D126L7
LC1D126M7
LC1D126SD
LC1D1283V7
LC1D1286FD
LC1D1286G7
LC1D1286L7
LC1D1286LE7
LC1D1286P7
LC1D1286U7
LC1D128B7
LC1D128BD
LC1D128BL
LC1D128CD

LC1D128D7
LC1D128E7
LC1D128ED
LC1D128EL
LC1D128F7
LC1D128FD
LC1D128G7
LC1D128L7
LC1D128M7
LC1D128MD
LC1D128P7
LC1D128RD
LC1D128T7
LC1D128U7
LC1D129SD
LC1D12B5
LC1D12B7
LC1D12BD
LC1D12BL
LC1D12BNE
LC1D12C7
LC1D12CD
LC1D12D5
LC1D12D7
LC1D12E5
LC1D12E7
LC1D12ED
LC1D12EHE
LC1D12EL
LC1D12F7
LC1D12FD
LC1D12FE7
LC1D12G7
LC1D12GD
LC1D12JD
LC1D12JL
LC1D12K7
LC1D12KUE
LC1D12L7
LC1D12LE7
LC1D12M7
LC1D12MD
LC1D12N7
LC1D12ND
LC1D12P5
LC1D12P7
LC1D12Q7
LC1D12R7
LC1D12RD
LC1D12SD
LC1D12T7
LC1D12U7
LC1D12V7
LC1D12X7
LC1D12Y7
LC1D12Z7
LC1D15000F7CS003
LC1D15000M7CS003
LC1D1506B7
LC1D1506BD
LC1D1506E7
LC1D1506F7
LC1D1506FD
LC1D1506G7
LC1D1506K7
LC1D1506LE7
LC1D1506M7
LC1D1506MD
LC1D1506N7
LC1D1506P7
LC1D1506Q7

LC1D1506R7
LC1D1506SD
LC1D1506U7
LC1D150B7
LC1D150BD
LC1D150D7
LC1D150E7
LC1D150ED
LC1D150F7
LC1D150FD
LC1D150FE7
LC1D150G7
LC1D150GD
LC1D150K7
LC1D150LE7
LC1D150M7
LC1D150MD
LC1D150N7
LC1D150P7
LC1D150Q7
LC1D150R7
LC1D150SD
LC1D150T7
LC1D150U7
LC1D150V7
LC1D17000F7CS003
LC1D17000M7CS003
LC1D183B7
LC1D183BD
LC1D183BL
LC1D183E7
LC1D183ED
LC1D183F7
LC1D183FE7
LC1D183FL
LC1D183G7
LC1D183M7
LC1D183MD
LC1D183P7
LC1D183U7
LC1D186B7
LC1D186BD
LC1D186BL
LC1D186BLJP
LC1D186E7
LC1D186EL
LC1D186F7
LC1D186FD
LC1D186G7
LC1D186K7
LC1D186L7
LC1D186M7
LC1D186ND
LC1D186P7
LC1D186R7
LC1D186SD
LC1D186SL
LC1D186U7
LC1D1883P7
LC1D188B7
LC1D188BD
LC1D188BL
LC1D188D7
LC1D188E7
LC1D188ED
LC1D188F7
LC1D188FD
LC1D188G7
LC1D188M7
LC1D188MD
LC1D188P7

LC1D188U7
LC1D18B5
LC1D18B7
LC1D18BD
LC1D18BL
LC1D18BNE
LC1D18C7
LC1D18CD
LC1D18D5
LC1D18D7
LC1D18E5
LC1D18E7
LC1D18ED
LC1D18EHE
LC1D18EL
LC1D18F7
LC1D18FC7
LC1D18FD
LC1D18FE7
LC1D18FL
LC1D18G7
LC1D18GD
LC1D18J7
LC1D18JD
LC1D18JL
LC1D18K7
LC1D18KUE
LC1D18L7
LC1D18LE7
LC1D18M7
LC1D18MD
LC1D18ML
LC1D18N7
LC1D18ND
LC1D18P5
LC1D18P7
LC1D18Q7
LC1D18R7
LC1D18SC7
LC1D18SD
LC1D18T7
LC1D18U7
LC1D18V7
LC1D253B7
LC1D253BD
LC1D253BL
LC1D253E7
LC1D253F7
LC1D253FD
LC1D253M7
LC1D253MD
LC1D253P7
LC1D253R7
LC1D253V7
LC1D256B7
LC1D256BD
LC1D256BL
LC1D256F7
LC1D256FD
LC1D256G7
LC1D256K7
LC1D256KD
LC1D256L7
LC1D256M7
LC1D256P7
LC1D256U7
LC1D2583P7
LC1D2586BD
LC1D2586F7
LC1D2586FD
LC1D258B7

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Product references

LC1D258BD
LC1D258BL
LC1D258C7
LC1D258D7
LC1D258E7
LC1D258ED
LC1D258F7
LC1D258FD
LC1D258FE7
LC1D258G7
LC1D258GD
LC1D258M7
LC1D258MD
LC1D258P7
LC1D258SD
LC1D258U7
LC1D258V7
LC1D25B5
LC1D25B7
LC1D25BD
LC1D25BL
LC1D25BNE
LC1D25C7
LC1D25CD
LC1D25D5
LC1D25D7
LC1D25E5
LC1D25E7
LC1D25ED
LC1D25EHE
LC1D25EL
LC1D25F7
LC1D25FC7
LC1D25FD
LC1D25FE7
LC1D25FL
LC1D25G7
LC1D25GD
LC1D25JD
LC1D25JL
LC1D25KUE
LC1D25L7
LC1D25LE7
LC1D25M7
LC1D25MD
LC1D25N7
LC1D25ND
LC1D25P5
LC1D25P7
LC1D25Q7
LC1D25R7
LC1D25S7
LC1D25SC7
LC1D25SD
LC1D25T7
LC1D25U7
LC1D25UD
LC1D25V7
LC1D25X7
LC1D323B7
LC1D323BD
LC1D323BL
LC1D323ED
LC1D323F7
LC1D323FE7
LC1D323FL
LC1D323M7
LC1D323MD
LC1D323P7
LC1D326B7
LC1D326BD
LC1D326BL
LC1D326F7
LC1D326FD
LC1D326G7
LC1D326GD
LC1D326K7
LC1D326KD
LC1D326L7
LC1D326M7
LC1D326P7
LC1D326R7
LC1D32B5
LC1D32B7
LC1D32BD
LC1D32BL
LC1D32BNE
LC1D32C7
LC1D32D5
LC1D32D7
LC1D32E5
LC1D32E7
LC1D32ED
LC1D32EHE
LC1D32EL
LC1D32F7
LC1D32FC7
LC1D32FD
LC1D32FE7
LC1D32FL
LC1D32G7
LC1D32GD
LC1D32JD
LC1D32JL
LC1D32K7
LC1D32KUE
LC1D32L7
LC1D32LE7
LC1D32M7
LC1D32MD
LC1D32ML
LC1D32N7
LC1D32ND
LC1D32P5
LC1D32P7
LC1D32Q7
LC1D32R7
LC1D32S7
LC1D32SD
LC1D32T7
LC1D32U7
LC1D32V7
LC1D32X7
LC1D32Y7
LC1D383BL
LC1D383E7
LC1D383P7
LC1D386B7
LC1D386BD
LC1D386BL
LC1D386CD
LC1D386F7
LC1D386FD
LC1D386K7
LC1D386L7
LC1D386M7
LC1D386MD
LC1D386SL
LC1D38B5
LC1D38B7
LC1D38BD
LC1D38BL
LC1D38BNE
LC1D38D5
LC1D38D7
LC1D38E5
LC1D38E7
LC1D38ED
LC1D38EHE
LC1D38EL
LC1D38F7
LC1D38FD
LC1D38FE7
LC1D38FL
LC1D38G7
LC1D38JD
LC1D38JL
LC1D38KUE
LC1D38M7
LC1D38MD
LC1D38N7
LC1D38P5
LC1D38P7
LC1D38Q7
LC1D38R7
LC1D38SD
LC1D38U7
LC1D38V7
LC1D40004E7
LC1D40004F7
LC1D40004G6
LC1D40004M7
LC1D40004P7
LC1D40008B7
LC1D40008D7
LC1D40008E5
LC1D40008E7
LC1D40008F7
LC1D40008G6
LC1D40008G7
LC1D40008M5
LC1D40008M7
LC1D40008N7
LC1D40008P7
LC1D40008U7
LC1D406G7
LC1D40A3B7
LC1D40A3BD
LC1D40A3E7
LC1D40A3F7
LC1D40A3M7
LC1D40A3MD
LC1D40A3ND
LC1D40A3P7
LC1D40A6B7
LC1D40A6BBE
LC1D40A6BD
LC1D40A6BNE
LC1D40A6EHE
LC1D40A6FD
LC1D40A6G7
LC1D40A6GD
LC1D40A6KUE
LC1D40A6LE7
LC1D40A6M7
LC1D40A6P7
LC1D40A6T7
LC1D40A6U7
LC1D40A6UD
LC1D40AB5
LC1D40AB6
LC1D40AB7
LC1D40ABBE
LC1D40ABD
LC1D40ABNE
LC1D40AC7
LC1D40ACD
LC1D40AD5
LC1D40AD7
LC1D40AE5
LC1D40AE7
LC1D40AEHE
LC1D40AF7
LC1D40AFC7
LC1D40AFE7
LC1D40AG7
LC1D40AGD
LC1D40AJD
LC1D40AK7
LC1D40AKUE
LC1D40AL7
LC1D40ALE7
LC1D40AM7
LC1D40AN7
LC1D40AND
LC1D40AP5
LC1D40AP7
LC1D40AQ7
LC1D40AR7
LC1D40AS7
LC1D40AT7
LC1D40AU7
LC1D40AU7C
LC1D40AV7
LC1D40AX7
LC1D40B7
LC1D40BD
LC1D40D7C
LC1D40E7
LC1D40ED
LC1D40F7
LC1D40G6
LC1D40G7M
LC1D40L6
LC1D40M7
LC1D40P7
LC1D40P7C
LC1D40T6
LC1D40U7
LC1D40U7M
LC1D475E7C
LC1D506FW
LC1D50A3BD
LC1D50A3E7
LC1D50A3FD
LC1D50A3JD
LC1D50A3M7
LC1D50A3P7
LC1D50A3RD
LC1D50A6B7
LC1D50A6BBE
LC1D50A6BD
LC1D50A6BNE
LC1D50A6CD
LC1D50A6ED
LC1D50A6EHE
LC1D50A6F7
LC1D50A6FD
LC1D50A6KUE
LC1D50A6M7
LC1D50A6P7
LC1D50A6SD
LC1D50AB5
LC1D50AB6
LC1D50AB7
LC1D50ABBE
LC1D50ABD
LC1D50ABNE
LC1D50ACD
LC1D50AD5
LC1D50AD7
LC1D50AE5
LC1D50AE7
LC1D50AEHE
LC1D50AF7
LC1D50AFC7
LC1D50AFD
LC1D50AFE7
LC1D50AG7
LC1D50AGD
LC1D50AJ5
LC1D50AJD
LC1D50AK7
LC1D50AKUE
LC1D50AL7
LC1D50ALE7
LC1D50AM7
LC1D50AMD
LC1D50AN7
LC1D50AND
LC1D50AP5
LC1D50AP7
LC1D50AQ7
LC1D50AR7
LC1D50ASD
LC1D50AT7
LC1D50AU7
LC1D50AU7C
LC1D50AV7
LC1D50AX7
LC1D50B7
LC1D50BD
LC1D50E7
LC1D50ED
LC1D50F7
LC1D50G6
LC1D50G7
LC1D50L6
LC1D50LE7
LC1D50M7
LC1D50N7
LC1D50P7
LC1D50P7C
LC1D50T6
LC1D50U7
LC1D50U7C
LC1D65004F7
LC1D65004G6
LC1D65004G7
LC1D65004P7
LC1D65008B7
LC1D65008D7
LC1D65008E7
LC1D65008F7
LC1D65008FE7
LC1D65008G6
LC1D65008G7
LC1D65008L7
LC1D65008M5
LC1D65008M7
LC1D65008P7
LC1D65008R7
LC1D65008U7
LC1D65008V7
LC1D65A3B7
LC1D65A3BD
LC1D65A3E7
LC1D65A3F7
LC1D65A3FD
LC1D65A3FE7
LC1D65A3P7
LC1D65A6B7
LC1D65A6BBE
LC1D65A6BD
LC1D65A6BNE
LC1D65A6ED
LC1D65A6EHE
LC1D65A6F7
LC1D65A6FD
LC1D65A6G7
LC1D65A6K7
LC1D65A6KUE
LC1D65A6M7
LC1D65A6MD
LC1D65A6ND
LC1D65A6P7
LC1D65A6R7
LC1D65A6SD
LC1D65A6U7
LC1D65A6UD
LC1D65AB5
LC1D65AB6
LC1D65AB7
LC1D65ABBE
LC1D65ABD
LC1D65ABNE
LC1D65ACD
LC1D65AD5
LC1D65AD7
LC1D65AE5
LC1D65AE7
LC1D65AEHE
LC1D65AF7
LC1D65AFC7
LC1D65AFE7
LC1D65AG7
LC1D65AJD
LC1D65AK7
LC1D65AKUE
LC1D65AL7
LC1D65ALE7
LC1D65AM7
LC1D65AN7
LC1D65AP5
LC1D65AP7
LC1D65AQ7
LC1D65AR7
LC1D65ASD
LC1D65AT7
LC1D65AU7
LC1D65AV7
LC1D65AX7
LC1D65B7
LC1D65BD
LC1D65D7C
LC1D65E7
LC1D65ED
LC1D65F7
LC1D65FD
LC1D65G6
LC1D65L6
LC1D65M7
LC1D65N7
LC1D65P7
LC1D65T6
LC1D65U7

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.





Life Is On Schneider Electric

# Product references

LC1D800046M7
LC1D800046P7
LC1D80004B7
LC1D80004E7
LC1D80004F5
LC1D80004F7
LC1D80004FE7
LC1D80004G6
LC1D80004G7
LC1D80004M5
LC1D80004M7
LC1D80004N5
LC1D80004N7
LC1D80004P5
LC1D80004P7
LC1D80004Q7
LC1D80004U5
LC1D80004U7
LC1D80004V7
LC1D80008D7
LC1D80008E7
LC1D80008F7
LC1D80008FE7
LC1D80008G6
LC1D80008G7
LC1D80008M7
LC1D80008P7
LC1D80008Q7
LC1D80008U7
LC1D806B7
LC1D806BD
LC1D806F5
LC1D806F7
LC1D806FD
LC1D806FW
LC1D806G7
LC1D806K7
LC1D806L7
LC1D806LE7
LC1D806M7
LC1D806P7
LC1D806VD
LC1D80A3B7
LC1D80A3E7
LC1D80A3P7
LC1D80A6BBE
LC1D80A6BNE
LC1D80A6EHE
LC1D80A6KUE
LC1D80A6M7
LC1D80A6P7
LC1D80AB7
LC1D80ABBE
LC1D80ABNE
LC1D80AE7
LC1D80AEHE
LC1D80AF7
LC1D80AFE7
LC1D80AG7
LC1D80AKUE
LC1D80AM7
LC1D80AN7
LC1D80AP7
LC1D80AQ7
LC1D80AR7
LC1D80AU7
LC1D80AV7
LC1D80B5
LC1D80B7
LC1D80BD
LC1D80BW
LC1D80CW
LC1D80D7
LC1D80E5
LC1D80E7
LC1D80ED
LC1D80F5
LC1D80F7
LC1D80FD
LC1D80FE7
LC1D80FW
LC1D80G6
LC1D80G7
LC1D80G7M
LC1D80GD
LC1D80K7
LC1D80L6
LC1D80L7
LC1D80M5
LC1D80M7
LC1D80MD
LC1D80MW
LC1D80N7
LC1D80ND
LC1D80P5
LC1D80P7
LC1D80Q5
LC1D80Q7
LC1D80R7
LC1D80S5
LC1D80SD
LC1D80SW
LC1D80T6
LC1D80U5
LC1D80U7
LC1D80U7M
LC1D80V7
LC1D956BD
LC1D956F7
LC1D956K7
LC1D956M7
LC1D956P7
LC1D95B5
LC1D95B7
LC1D95BD
LC1D95BW
LC1D95D7
LC1D95E5
LC1D95E7
LC1D95ED
LC1D95F5
LC1D95F7
LC1D95FD
LC1D95FE7
LC1D95G7
LC1D95K7
LC1D95M5
LC1D95M7
LC1D95MD
LC1D95MW
LC1D95N7
LC1D95P5
LC1D95P7
LC1D95Q5
LC1D95Q7
LC1D95R7
LC1D95S5
LC1D95SD
LC1D95U5
LC1D95U7
LC1D95U7C
LC1D95V7
LC1DFKB7
LC1DFKF7
LC1DFKM7
LC1DFKP7
LC1DFKU7
LC1DFKV7
LC1DGKF7
LC1DGKM7
LC1DGKP7
LC1DGKU7
LC1DLKM7
LC1DLKP7
LC1DLKQ7
LC1DMK11F7C
LC1DMKB7
LC1DMKF7
LC1DMKG7
LC1DMKM7
LC1DMKN7
LC1DMKP7
LC1DMKU7
LC1DMKV7
LC1DPK12Q7C
LC1DPKB7C
LC1DPKF7
LC1DPKM7
LC1DPKP7
LC1DPKU7
LC1DPKV7
LC1DT203B7
LC1DT203FL
LC1DT206BD
LC1DT206BL
LC1DT206M7
LC1DT20B7
LC1DT20BD
LC1DT20BL
LC1DT20CD
LC1DT20E7
LC1DT20F7
LC1DT20FD
LC1DT20FE7
LC1DT20G7
LC1DT20GD
LC1DT20M7
LC1DT20MD
LC1DT20ML
LC1DT20N7
LC1DT20ND
LC1DT20P7
LC1DT20U7
LC1DT20UD
LC1DT253BD
LC1DT253BL
LC1DT253E7
LC1DT256BD
LC1DT256BL
LC1DT256FD
LC1DT256M7
LC1DT256P7
LC1DT25B7
LC1DT25BD
LC1DT25BL
LC1DT25CD
LC1DT25E7
LC1DT25ED
LC1DT25F7
LC1DT25FD
LC1DT25G7
LC1DT25GD
LC1DT25JD
LC1DT25LE7
LC1DT25M7
LC1DT25MD
LC1DT25P7
LC1DT25U7
LC1DT323BD
LC1DT326B7
LC1DT326BD
LC1DT326BL
LC1DT326G7
LC1DT326K7
LC1DT326L7
LC1DT326M7
LC1DT32B7
LC1DT32BD
LC1DT32BL
LC1DT32E7
LC1DT32ED
LC1DT32F7
LC1DT32G7
LC1DT32M7
LC1DT32MD
LC1DT32P7
LC1DT32U7
LC1DT403BL
LC1DT403E7
LC1DT406BD
LC1DT406BL
LC1DT406GD
LC1DT406K7
LC1DT406M7
LC1DT40B7
LC1DT40BD
LC1DT40BL
LC1DT40D7
LC1DT40E7
LC1DT40ED
LC1DT40F7
LC1DT40FD
LC1DT40FE7
LC1DT40G7
LC1DT40GD
LC1DT40JD
LC1DT40JL
LC1DT40LE7
LC1DT40M7
LC1DT40MD
LC1DT40ND
LC1DT40P7
LC1DT40SD
LC1DT40U7
LC1DT40V7
LC1DT60A3BD
LC1DT60A3E7
LC1DT60A3P7
LC1DT60A6BBE
LC1DT60A6BNE
LC1DT60A6ED
LC1DT60A6EHE
LC1DT60A6F7
LC1DT60A6GD
LC1DT60A6KUE
LC1DT60A6MD
LC1DT60A6SD
LC1DT60AB7
LC1DT60ABBE
LC1DT60ABD
LC1DT60ABNE
LC1DT60ACD
LC1DT60AD7
LC1DT60AE7
LC1DT60AEHE
LC1DT60AF7
LC1DT60AFD
LC1DT60AFE7
LC1DT60AG7
LC1DT60AK7
LC1DT60AKUE
LC1DT60AM7
LC1DT60AMD
LC1DT60AND
LC1DT60AP7
LC1DT60AU7
LC1DT60AV7
LC1DT60AW7
LC1DT80A3BD
LC1DT80A3P7
LC1DT80A6BBE
LC1DT80A6BD
LC1DT80A6BNE
LC1DT80A6ED
LC1DT80A6EHE
LC1DT80A6FD
LC1DT80A6KUE
LC1DT80A6MD
LC1DT80AB7
LC1DT80ABBE
LC1DT80ABD
LC1DT80ABNE
LC1DT80AC7
LC1DT80ACD
LC1DT80AE7
LC1DT80AEHE
LC1DT80AF7
LC1DT80AFD
LC1DT80AFE7
LC1DT80AG7
LC1DT80AJD
LC1DT80AKUE
LC1DT80ALE7
LC1DT80AM7
LC1DT80AN7
LC1DT80AND
LC1DT80AP7
LC1DT80AQ7
LC1DT80AU7
LC1DTKF7
LC1DTKM7
LC1DTKP7
LC1DTKQ7C
LC1DWK12F7
LC1DWK12G7
LC1DWK12M5
LC1DWK12M7
LC1DWK12N7
LC1DWK12P5
LC1DWK12P7
LC1DWK12Q7
LC1DWK12U7
LC1DWK12V7
LC1DWKB7C
LC1K06013FE7
LC1K06013P7
LC1K06015B7
LC1K06015F7
LC1K06015M7
LC1K06017P7
LC1K0601B5
LC1K0601B7
LC1K0601D5
LC1K0601D7
LC1K0601E5
LC1K0601E7
LC1K0601F7
LC1K0601F72
LC1K0601G7
LC1K0601M7
LC1K0601N7
LC1K0601P5
LC1K0601P7
LC1K0601P72
LC1K0601Q7
LC1K0601U7
LC1K06103B7
LC1K06103F7
LC1K06103FE7
LC1K06103P7
LC1K06103P72
LC1K06105B7
LC1K06105F7
LC1K06105M7
LC1K06105P7
LC1K06106K7
LC1K06107P7
LC1K0610B5
LC1K0610B7
LC1K0610B72
LC1K0610D5
LC1K0610D7
LC1K0610E5
LC1K0610E7
LC1K0610F7
LC1K0610F72
LC1K0610FE7
LC1K0610G7
LC1K0610K7
LC1K0610L7
LC1K0610M7
LC1K0610M72
LC1K0610N7
LC1K0610P5
LC1K0610P7
LC1K0610P72
LC1K0610Q7
LC1K0610T7
LC1K0610U7
LC1K0610V7
LC1K090043E7
LC1K090045E7
LC1K09004B7
LC1K09004B72
LC1K09004E7
LC1K09004F7
LC1K09004FE7
LC1K09004M7
LC1K09004M72
LC1K09004P7
LC1K09004Q7
LC1K09004U7
LC1K090083E7
LC1K090083P7
LC1K090085E7
LC1K090085F7
LC1K090085P7
LC1K090087P7
LC1K090087S7
LC1K09008B7
LC1K09008D7
LC1K09008E7
LC1K09008F7
LC1K09008G7
LC1K09008K7
LC1K09008M7

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Product references

LC1K09008M72
LC1K09008N7
LC1K09008P7
LC1K09008S7
LC1K09008U7
LC1K09008V7
LC1K09008W7
LC1K09008Y7
LC1K09013B7
LC1K09013P7
LC1K09015B7
LC1K09015FE7
LC1K09015M7
LC1K09016K7
LC1K09017B7
LC1K09017E7
LC1K0901B5
LC1K0901B7
LC1K0901B72
LC1K0901C7
LC1K0901D5
LC1K0901D7
LC1K0901E5
LC1K0901E7
LC1K0901F7
LC1K0901F72
LC1K0901G7
LC1K0901M7
LC1K0901N7
LC1K0901P5
LC1K0901P7
LC1K0901P72
LC1K0901Q7
LC1K0901T7
LC1K0901U7
LC1K0901V7
LC1K09103B7
LC1K09103M7
LC1K09105D7
LC1K09105E7
LC1K09105F7
LC1K09105P7
LC1K09107E7
LC1K09107F7
LC1K0910B5
LC1K0910B7
LC1K0910D5
LC1K0910E5
LC1K0910E7
LC1K0910F7
LC1K0910F72
LC1K0910G7
LC1K0910K7
LC1K0910L7
LC1K0910M7
LC1K0910M72
LC1K0910N7
LC1K0910P5
LC1K0910P7
LC1K0910P72
LC1K0910Q7
LC1K0910R7
LC1K0910S7
LC1K0910SC7
LC1K0910T7
LC1K0910U7
LC1K0910V7
LC1K12004B7
LC1K12004M7
LC1K12004P7
LC1K12004T7
LC1K120085E7
LC1K12008B7S17
LC1K12008E7S17
LC1K12008F7S17
LC1K12013F7
LC1K12015P7
LC1K1201B5
LC1K1201B7
LC1K1201D5
LC1K1201D7
LC1K1201E5
LC1K1201E7
LC1K1201F7
LC1K1201M7
LC1K1201N7
LC1K1201P5
LC1K1201P7
LC1K1201U7
LC1K1201V7
LC1K12103M7
LC1K12103P7
LC1K12105B7
LC1K12105M7
LC1K12105P7
LC1K1210B5
LC1K1210B7
LC1K1210D5
LC1K1210D72
LC1K1210E5
LC1K1210E7
LC1K1210F7
LC1K1210F72
LC1K1210FE7
LC1K1210G7
LC1K1210M7
LC1K1210P5
LC1K1210P7
LC1K1210P72
LC1K1210Q7
LC1K1210T7
LC1K1210U7
LC1K1210V7
LC1K16004F7
LC1K16015P7
LC1K1601B5
LC1K1601B7
LC1K1601D5
LC1K1601E5
LC1K1601E7
LC1K1601F7
LC1K1601M7
LC1K1601P5
LC1K1601P7
LC1K1601Q7
LC1K1601V7
LC1K16106M7
LC1K1610B5
LC1K1610B7
LC1K1610D5
LC1K1610D7
LC1K1610E5
LC1K1610F7
LC1K1610K7
LC1K1610M7
LC1K1610P5
LC1K1610P7
LC1K1610Q7
LC1K1610U7
LC1K1610V7
LC1SK0600B7
LC1SK0600E7
LC1SK0600F7
LC1SK0600M7
LC1SK0600P7
LC1SK0600U7
LC1SK0600V7
LC1SKGC200B7
LC1SKGC200E7
LC1SKGC200F7
LC1SKGC200M7
LC1SKGC200P7
LC1SKGC200U7
LC1SKGC200V7
LC1SKGC301P7
LC1SKGC310E7
LC1SKGC310M7
LC1SKGC310P7
LC1SKGC400P7
LC2D093BD
LC2D093BL
LC2D096BD
LC2D096BL
LC2D096FD
LC2D099B7
LC2D09B7
LC2D09B7V
LC2D09BD
LC2D09BDV
LC2D09BL
LC2D09BLV
LC2D09BNE
LC2D09E7
LC2D09ED
LC2D09EHE
LC2D09F7
LC2D09FE7
LC2D09G7
LC2D09G7V
LC2D09JL
LC2D09K7
LC2D09KUE
LC2D09M7
LC2D09ND
LC2D09P7
LC2D09Q7
LC2D09U7
LC2D09U7V
LC2D09V7
LC2D115004M5
LC2D115004M7
LC2D115004P5
LC2D115004P7
LC2D1156F7
LC2D1156M7
LC2D115B7
LC2D115BD
LC2D115E7
LC2D115F7
LC2D115FE7
LC2D115G7
LC2D115M5
LC2D115M7
LC2D115P7
LC2D123BD
LC2D123BL
LC2D126L7
LC2D129B7
LC2D12B7
LC2D12BD
LC2D12BDV
LC2D12BL
LC2D12BLV
LC2D12BNE
LC2D12D7
LC2D12E7
LC2D12ED
LC2D12EHE
LC2D12F7
LC2D12FD
LC2D12FE7
LC2D12G7
LC2D12G7V
LC2D12KUE
LC2D12M7
LC2D12P7
LC2D12Q7
LC2D12R7
LC2D150B7
LC2D150BD
LC2D150E7
LC2D150F7
LC2D150G7
LC2D150M7
LC2D150P7
LC2D150Q7
LC2D183BD
LC2D18B7
LC2D18B7V
LC2D18BD
LC2D18BDV
LC2D18BL
LC2D18BNE
LC2D18D7
LC2D18E7
LC2D18ED
LC2D18EHE
LC2D18F7
LC2D18FE7
LC2D18G7
LC2D18G7V
LC2D18JD
LC2D18KUE
LC2D18L7
LC2D18M7
LC2D18P7
LC2D18Q7
LC2D18V7
LC2D256BL
LC2D25B7
LC2D25B7V
LC2D25BD
LC2D25BL
LC2D25BNE
LC2D25D7
LC2D25E7
LC2D25ED
LC2D25EHE
LC2D25F7
LC2D25FE7
LC2D25G7
LC2D25G7V
LC2D25K7
LC2D25KUE
LC2D25M7
LC2D25P7
LC2D25P7V
LC2D25U7
LC2D25X7
LC2D323BD
LC2D32B7
LC2D32BD
LC2D32BDV
LC2D32BL
LC2D32BNE
LC2D32D7
LC2D32E7
LC2D32EHE
LC2D32F7
LC2D32FE7
LC2D32G7
LC2D32G7V
LC2D32KUE
LC2D32M7
LC2D32P7
LC2D32P7V
LC2D32Q7
LC2D32V7
LC2D386BL
LC2D38B7
LC2D38BD
LC2D38BL
LC2D38E7
LC2D38EHE
LC2D38F7
LC2D38KUE
LC2D38P7
LC2D40A3FE7
LC2D40AB7
LC2D40ABBE
LC2D40ABD
LC2D40ABNE
LC2D40AE7
LC2D40AEHE
LC2D40AF7
LC2D40AFE7
LC2D40AG7
LC2D40AJD
LC2D40AKUE
LC2D40AM7
LC2D40AP7
LC2D40AV7
LC2D40F7
LC2D50AB7
LC2D50ABBE
LC2D50ABD
LC2D50ABNE
LC2D50AE7
LC2D50AED
LC2D50AEHE
LC2D50AF7
LC2D50AFD
LC2D50AFE7
LC2D50AG7
LC2D50AK7
LC2D50AKUE
LC2D50AL7
LC2D50AM7
LC2D50AND
LC2D50AP7
LC2D50G7
LC2D65AB7
LC2D65ABBE
LC2D65ABD
LC2D65ABNE
LC2D65AE7
LC2D65AED
LC2D65AEHE
LC2D65AF7
LC2D65AFE7
LC2D65AG7
LC2D65AKUE
LC2D65AL7
LC2D65AM7
LC2D65AP7
LC2D65AU7
LC2D65F7
LC2D65G7
LC2D80004M5
LC2D80004M7
LC2D80004P5
LC2D80004P7
LC2D80ABBE
LC2D80ABNE
LC2D80AEHE
LC2D80AKUE
LC2D80B7
LC2D80E7
LC2D80F5
LC2D80F7
LC2D80FE7
LC2D80G7
LC2D80K7
LC2D80M7
LC2D80P7
LC2D95B7
LC2D95E7
LC2D95F7
LC2D95M7
LC2D95P7
LC2DT20P7
LC2DT25BD
LC2DT25E7
LC2DT25G7
LC2DT25P7
LC2DT32BD
LC2DT32E7
LC2DT32F7
LC2DT32G7
LC2DT32P7
LC2DT32U7
LC2DT403E7
LC2DT40BD
LC2DT40E7
LC2DT40F7
LC2DT40G7
LC2DT40GD
LC2DT40M7
LC2DT40P7
LC2K06015B7
LC2K06015M7
LC2K0601B7
LC2K0601B72
LC2K0601E7
LC2K0601F7
LC2K0601FE7
LC2K0601G7
LC2K0601K7
LC2K0601M7
LC2K0601P7
LC2K0601P72
LC2K0601U7
LC2K06103P7
LC2K06105B7
LC2K06105M7
LC2K0610B7
LC2K0610D72
LC2K0610E7
LC2K0610F7
LC2K0610FE7
LC2K0610M7
LC2K0610P7
LC2K0610P72
LC2K0610U7
LC2K0610V7
LC2K09004B7

Contactors

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

# Product references

| | | | | | |
|---|---|---|---|---|---|
| LC2K09004E7 | LC3D150M7A64 | LP1K0601BD3 | LP1K0910GD | LP4K0601SW3 | LX1D6U7 |
| LC2K09004F7 | LC3D150P7 | LP1K0601ED | LP1K0910JD | LP4K06103BW3 | LX1D6V7 |
| LC2K09004G7 | LC3D150P7A64 | LP1K0601FD | LP1K0910MD | LP4K06105BW3 | LX1D8B7 |
| LC2K09004M7 | LC3D180AB7 | LP1K0601MD | LP1K0910SD | LP4K0610BW3 | LX1D8E7 |
| LC2K09013P7 | LC3D18AB7 | LP1K0601ND | LP1K120043BD3 | LP4K0610EW3 | LX1D8F7 |
| LC2K09015D7 | LC3D18AF7 | LP1K0601SD | LP1K12004BD | LP4K0610FW3 | LX1D8FE7 |
| LC2K09015E7 | LC3D18AU7 | LP1K06103BD | LP1K12004FD | LP4K09004BW3 | LX1D8G7 |
| LC2K09015F7 | LC3D320AG7 | LP1K06103BD3 | LP1K12004JD | LP4K090085BW3 | LX1D8L7 |
| LC2K09015P7 | LC3D320AP7 | LP1K06103ED | LP1K12013BD3 | LP4K090087BW3 | LX1D8M5 |
| LC2K0901B7 | LC3D32AB7 | LP1K06105BD | LP1K12015BD | LP4K09008BW3 | LX1D8M7 |
| LC2K0901D7 | LC3D32AF7 | LP1K06106BD | LP1K12015MD | LP4K09008EW3 | LX1D8N7 |
| LC2K0901E7 | LC3D32AP7 | LP1K0610BD | LP1K12015MDS35 | LP4K09008SW3 | LX1D8P7 |
| LC2K0901F7 | LC3D80B7 | LP1K0610BD3 | LP1K1201BD | LP4K09013BW3 | LX1D8Q5 |
| LC2K0901F72 | LC3D80B7A64 | LP1K0610ED | LP1K1201BD3 | LP4K09015BW3 | LX1D8Q7 |
| LC2K0901G7 | LC3D80E7A64 | LP1K0610FD | LP1K1201ED | LP4K0901BW3 | LX1D8R7 |
| LC2K0901M7 | LC3D80F7 | LP1K0610FD3 | LP1K1201FD | LP4K0901FW3 | LX1D8T7 |
| LC2K0901P7 | LC3D80F7A64 | LP1K0610JD | LP1K1201MD | LP4K09103BW3 | LX1D8U7 |
| LC2K0901U7 | LC3D80M7 | LP1K0610MD | LP1K12103BD | LP4K09105BW3 | LX1D8V7 |
| LC2K0901V7 | LC3D80P7 | LP1K0610MPD | LP1K12103BD3 | LP4K09106BW3S16 | LX4D2UD |
| LC2K09103B7 | LC3D80P7A64 | LP1K090043BD | LP1K12105BD | LP4K09107BW3 | LX4D7BD |
| LC2K09103E7 | LC3D80U7A64 | LP1K090045BD | LP1K1210BD | LP4K0910BW3 | LX4D7JD |
| LC2K09105B7 | LC3K09P7 | LP1K090045ND | LP1K1210BD3 | LP4K0910FW3 | LX4D8BD |
| LC2K09105E7 | LC7K0601M7 | LP1K09004BD | LP1K1210ED | LP4K0910JW3 | LX4D8MD |
| LC2K09105M7 | LC7K0610M7 | LP1K09004BD3 | LP1K1210FD | LP4K12004BW3 | LXD1B7 |
| LC2K09107B7 | LC7K09004B7 | LP1K09004ED | LP1K1210JD | LP4K12015BW3 | LXD1C7 |
| LC2K0910B7 | LC7K09004M7 | LP1K09004FD | LP1K1210MD | LP4K12016BW3S16 | LXD1D7 |
| LC2K0910D7 | LC7K09015M7 | LP1K09004GD | LP1K1210SD3 | LP4K1201BW3 | LXD1E7 |
| LC2K0910D72 | LC7K0901M7 | LP1K09004JD | LP1SK0600BD | LP4K1201EW3 | LXD1F7 |
| LC2K0910E7 | LC7K0910B7 | LP1K09004MD | LP1SK0600ED | LP4K12103BW3 | LXD1FE7 |
| LC2K0910F7 | LC7K0910M7 | LP1K090085BD | LP1SK0600JD | LP4K12106BW3S16 | LXD1G7 |
| LC2K0910M7 | LC7K1201E7 | LP1K090085MD | LP2K06013BD | LP4K1210BW3 | LXD1J7 |
| LC2K0910P7 | LC7K1201F7 | LP1K090085MDS35 | LP2K06015BD | LP4K1210SW3 | LXD1L7 |
| LC2K0910U7 | LC7K1201M7 | LP1K09008BD | LP2K06015BD3 | LP5K06015BW3 | LXD1LE7 |
| LC2K12004F7 | LC7K1210F7 | LP1K09008BD3 | LP2K0601BD | LP5K0601BW3 | LXD1M7 |
| LC2K1201B7 | LP1D400086SW | LP1K09008ED | LP2K0601BD3 | LP5K0610BW3 | LXD1N7 |
| LC2K1201B72 | LP1D40008BD | LP1K09008FD | LP2K0601ED | LP5K09004BW3 | LXD1P7 |
| LC2K1201E7 | LP1D40008ED | LP1K09008JD | LP2K0601JD | LP5K09013BW3 | LXD1Q7 |
| LC2K1201F7 | LP1D40008FD | LP1K09008MD | LP2K06103BD3 | LP5K0901BW3 | LXD1R7 |
| LC2K1201G7 | LP1D40008GD | LP1K09008ND | LP2K0610BD | LP5K0910BW3 | LXD1S7 |
| LC2K1201M7 | LP1D40008MD | LP1K09013BD | LP2K0610BD3 | LP5K12004BW3 | LXD1SC7 |
| LC2K1201P7 | LP1D40008MW | LP1K09013BD3 | LP2K0610JD | LP5K12015BW3 | LXD1T7 |
| LC2K1201U7 | LP1D40008ND | LP1K09015BD | LP2K09004BD3 | LP5K1201BW3 | LXD1U7 |
| LC2K12105B7 | LP1D65008BD | LP1K09015UD | LP2K09013BD | LP5K1201SW3 | LXD1V7 |
| LC2K12105F7 | LP1D65008FD | LP1K0901BD | LP2K09015BD | LP5K1210BW3 | LXD1W7 |
| LC2K12107B7 | LP1D800046SW | LP1K0901BD3 | LP2K0901BD | LX1D6B5 | LXD1X7 |
| LC2K1210B7 | LP1D80004BD | LP1K0901ED | LP2K0901BD3 | LX1D6B6 | LXD1Y7 |
| LC2K1210D7 | LP1D80004BW | LP1K0901ED3 | LP2K0901ED | LX1D6B7 | LXD3B7 |
| LC2K1210E7 | LP1D80004ED | LP1K0901FD | LP2K0901JD | LX1D6E7 | LXD3D7 |
| LC2K1210F7 | LP1D80004FD | LP1K0901GD | LP2K0901ND | LX1D6F5 | LXD3E7 |
| LC2K1210G7 | LP1D800086SW | LP1K0901JD | LP2K09105BD | LX1D6F7 | LXD3F7 |
| LC2K1210K7 | LP1D80008BD | LP1K0901MD | LP2K0910BD | LX1D6G7 | LXD3FE7 |
| LC2K1210L7 | LP1D80008BW | LP1K0901ND | LP2K0910BD3 | LX1D6L6 | LXD3G7 |
| LC2K1210M7 | LP1D80008ED | LP1K0901SD3 | LP2K0910ED | LX1D6M5 | LXD3LE7 |
| LC2K1210P7 | LP1D80008FD | LP1K09103BD | LP2K1201BD | LX1D6M6 | LXD3M7 |
| LC2K1601K7 | LP1D80008MD | LP1K09103BD3 | LP2K1201BD3 | LX1D6M7 | LXD3N7 |
| LC2K1610B7 | LP1D80008MW | LP1K09105BD | LP2K12105BD | LX1D6N7 | LXD3P7 |
| LC2K1610F7 | LP1K06013BD | LP1K09105BD3 | LP2K1210BD | LX1D6P7 | LXD3Q7 |
| LC2K1610P7 | LP1K06013BD3 | LP1K0910BD | LP2K1210BD3 | LX1D6Q7 | LXD3R7 |
| LC3D115F7A64 | LP1K06013MD3 | LP1K0910BD3 | LP2K1210JD | LX1D6R7 | LXD3T7 |
| LC3D115M7A64 | LP1K06015BD | LP1K0910ED | LP4K06013BW3 | LX1D6T6 | LXD3U7 |
| LC3D115P7 | LP1K06016BD | LP1K0910ED3 | LP4K06016BW3S16 | LX1D6U5 | LXD3V7 |
| LC3D115P7A64 | LP1K0601BD | LP1K0910FD | LP4K0601BW3 | LX1D6U6 | LXD3X7 |

This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

TeSys SK, K, SKGC, Deca, Modular Contactors

# Technical Data for Designers



Contents

**TeSys** SK Contactors:
> characteristics.....B8/66 to B8/69
> dimensions..... B8/70

**TeSys** SKGC Contactors:
> characteristics.....B8/71 to B8/74
> dimensions.....B8/75

**TeSys** K Contactors:
> characteristics.....B8/76 to B8/79
> dimensions.....B8/80 to B8/83

Deca green, Deca contactors:
> characteristics.....B8/84 to B8/98
> dimensions.....B8/99 to B8/112

Modular Contactors:
> characteristics.....B8/113 to B8/115
> dimensions.....B8/120 and B8/121

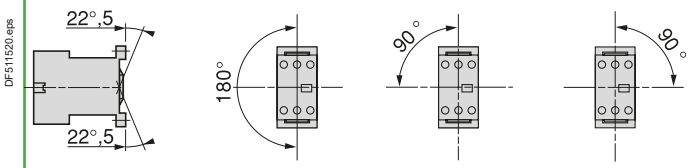
Modular Dual tariff contactors:
> characteristics.....B8/123 to B8/125
> dimensions.....B8/126 and B8/127

Modular Impulse relay:
> characteristics.....B8/128 to B8/131
> dimensions.....B8/132

Standard IEC tests - Contactors conforming to UL/CSA.....B8/133

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to 60947 | **V** | 690 |
| Conforming to standards | | | IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1 |
| Approvals | | | cULus, EAC, UKCA, CB certification |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP2x |
| Ambient air temperature around the device | Storage | **°C** | -50…+70 |
| | Operation | **°C** | -20…+50 |
| Maximum operating altitude | Without derating | **m** | 2000 |
| Operating position | | | **Vertical axis** **Horizontal axis**   Without derating Without derating |

| | | | | |
|---|---|---|---|---|
| Cabling, screw clamp terminals | | | Min | Max |
| | Solid conductor | **mm²** | 1 x 1.5 or 2 x 1.5 | 1 x 6 or 2 x 4 |
| | Flexible cable without cable end | **mm²** | 1 x 0.5 or 2 x 0.35 | 1 x 6 or 2 x 2.5 |
| | Flexible cable with cable end | **mm²** | 1 x 0.35 or 2 x 0.35 | 1 x 6 or 2 x 1.5 |
| Tightening torque | Pozidriv n° 1 head | **N.m** | 0.8 | |
| Terminal referencing | | | Conforming to standards En 50005 | |

Ref.
Contactors

## Pole characteristics

| | | | |
|---|---|---|---|
| Conventional thermal current (Ith) | For ambient temperature ⩽ 55 °C | **A** | 12 |
| Rated operational frequency | | **Hz** | 50/60 |
| Frequency limits of the operational current | | **Hz** | Up to 400 |
| Rated operational voltage (Ue) | | **V** | 690 |
| Rated making capacity | I rms conforming to IEC 60947-1 | **A** | 66 |
| Rated breaking capacity (for Ue ⩽ 400 V) | Conforming to IEC 60947-1 | **A** | 52 |
| Short time rating | In free air for a time "t" from cold state (θ ⩽ 55 °C) | **A** | 50 |
| Short-circuit protection | gl fuse U ⩽ 440 V | **A** | 16 |
| Average impedance per pole | At Ith and 50 Hz | **mΩ** | 4 |
| Maximum rated operational current | | | |
| For a temperature ⩽ 55 °C | AC-3 (1) (Ue ⩽ 400 V) | **A** | 6 |
| | AC-1 | **A** | 12 |
| Utilisation in category AC-1 resistive circuits, heating, lighting (Ue ⩽ 440 V) | Increase in operational current by paralleling of poles | **A** | 20 |

## Auxiliary contact characteristics of add-on blocks

| | | | |
|---|---|---|---|
| Rated operational voltage (Ue) | Up to | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947, IEC 60947-1 | **V** | 690 |
| Conventional thermal current (Ith) | For ambient temperature ⩽ 55 °C | **A** | 10 |
| Minimum switching capacity | Umin | **V** | 17 |
| | Imin | **mA** | 10 |
| Frequency of operational current | | **Hz** | Up to 400 |
| Short-circuit protection | Conforming to IEC 60947 and IEC 60947-1, gl fuse | **A** | 10 |

## Operational power of contacts conforming to IEC 60947

### a.c. supply, category AC-15

Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the breaking current (cos φ 0.4).

| | V | 24 | 48 | 110/ 127 | 220/ 230 | 380/ 400 | 440 |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 48 | 96 | 240 | 440 | 800 | 880 |
| 3 million operating cycles | **VA** | 17 | 34 | 86 | 158 | 288 | 317 |
| 10 million operating cycles | **VA** | 7 | 14 | 36 | 66 | 120 | 132 |
| Occasional making capacity | **VA** | 1000 | 2050 | 5000 | 10000 | 14000 | 13000 |

### d.c. supply, category DC-13

Electrical durability (valid up to 1200 operating cycles per hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | V | 24 | 48 | 110 | 220 | 440 | 440 |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **W** | 120 | 80 | 60 | 52 | 51 | 880 |
| 3 million operating cycles | **W** | 55 | 38 | 30 | 28 | 26 | 317 |
| 10 million operating cycles | **W** | 15 | 11 | 9 | 8 | 7 | 132 |
| Occasional making capacity | **W** | 720 | 600 | 400 | 300 | 230 | 13000 |

*(1) For LC1 contactors.*

References: pages B8/2 and B8/3
Curves: page B8/73
Dimensions: page B8/74
Schemes: page B8/74

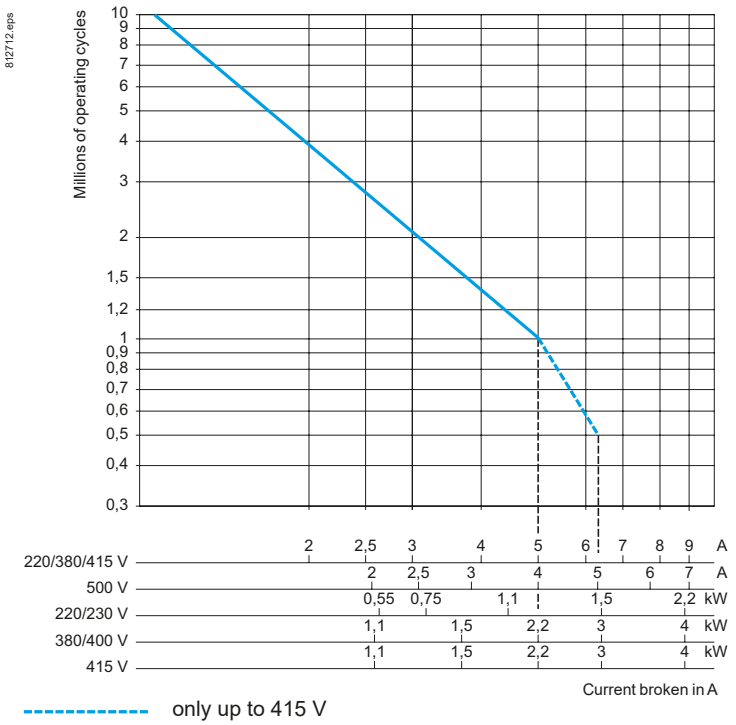
# Characteristics

## Control circuit characteristics

| Type | | | LC1SK06 | LP1SK06 |
|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | **V** | ∼ 24…400 | ⎓ 12…72 |
| Control voltage limits (q ≤ 50 °C) | For operation | | 0.85…1.1 Uc | 0.85…1.1 Uc |
| | For drop-out | | ≥ 0.20 Uc | ≥ 0.10 Uc |
| Average coil consumption at 20 °C and at Uc | Inrush | | 16 VA | 2.2 W |
| | Sealed | | 4.2 VA | 2.2 W |
| Heat dissipation | | **W** | 1.4 | 2.2 |
| Operating time at 20 °C and at Uc | | | | |
| Between coil energisation and | opening of the N/C contacts | **ms** | 8…16 | 10…18 |
| | closing of the N/O contacts | **ms** | 7…14 | 8…12 |
| Between coil de-energisation and | opening of the N/O contacts | **ms** | 6…8 | 4…6 |
| | closing of the N/C contacts | **ms** | 8…10 | 6…8 |
| Maximum operating rate | In operating cycles per hour | | 1200 | 1200 |
| Mechanical durability at Uc In millions of operating cycles | 50/60 Hz coil | | 10 | – |
| | ⎓ coil | | – | 10 |

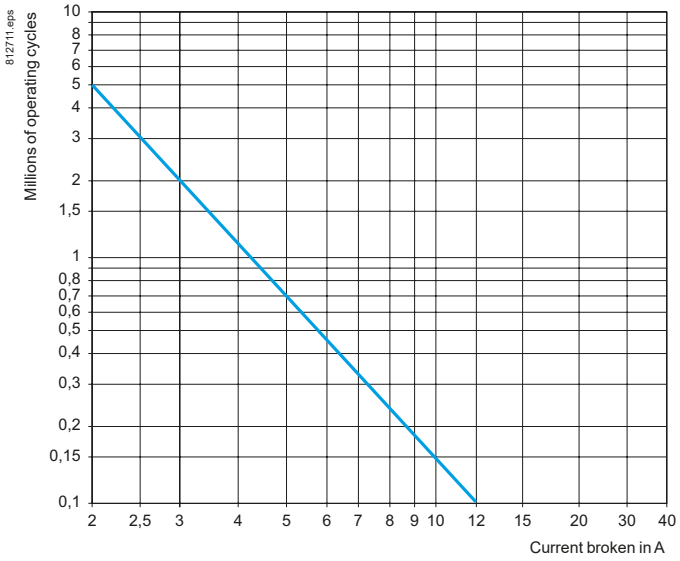
## Use in category AC-3 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.




## Use in category AC-1 (Ue ⩽ 440 V)

Control of resistive circuits (cos φ ⩾ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.



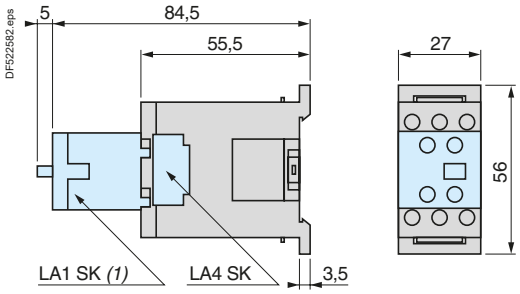

Ref.
Contactors

# Dimensions, mounting and schemes

## Dimensions

### Mini-contactors

#### LC1 and LP1SK06



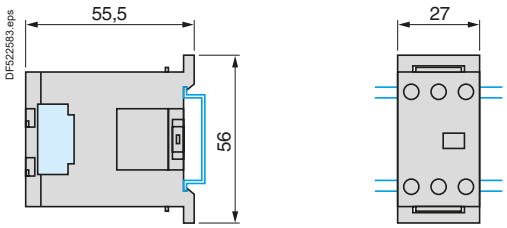

*(1) Only on **LC1SK06**.*

## Mounting

### Mini-contactors

#### LC1 and LP1SK06

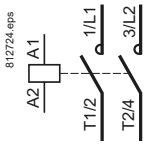
**On mounting rail NSYSDR200BD or NSYSDR200 (ـــ 35 mm)**




## Schemes

### 2-pole mini-contactors

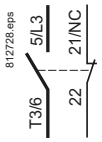
#### LC1 and LP1SK06




### Add-on power pole block

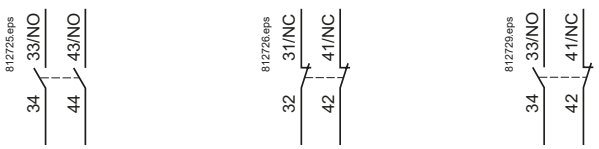
**1 pole + 1 "N/C" aux.**

**LA1SK01**




### Instantaneous auxiliary contacts

| 2 "N/O" | 2 "N/C" | 1 "N/O" + 1 "N/C" |
|---|---|---|
| **LA1SK20** | **LA1SK02** | **LA1SK11** |

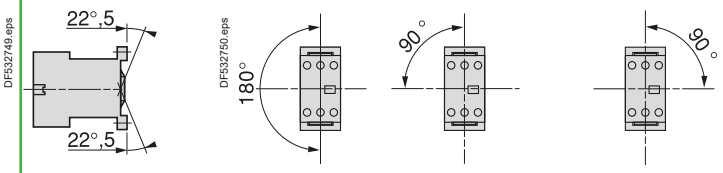



Ref.
Contactors

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947 | **V** | 690 |
| Conforming to standards | | | IEC 60947, UL 60947-4-1, CSA C22.2 n° 60947-4-1 |
| Approvals | | | cULus, UKCA |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact |
| Ambient air temperature around the device | | | |
| | Storage | **°C** | -50…+70 |
| | Operation | **°C** | -20…+50 |
| Maximum operating altitude | Without derating | **m** | 2000 |
| Operating position | | | **Vertical axis** **Horizontal axis** |




Without derating Without derating

| | | | | |
|---|---|---|---|---|
| Cabling, connectors | | | Min. | Max. |
| | Solid conductor | **mm²** | 1 x 1.5 or 2 x 1.5 | 1 x 6 or 2 x 4 |
| | Flexible cable without cable end | **mm²** | 1 x 0.5 or 2 x 0.35 | 1 x 6 or 2 x 2.5 |
| | Flexible cable with cable end | **mm²** | 1 x 0.35 or 2 x 0.35 | 1 x 6 or 2 x 1.5 |
| Tightening torque | Pozidriv n° 1 head | **N.m** | 0.8 | |
| Terminal referencing | | | Conforming to standards EN 50005 | |

Ref.
Contactors

References:
page B8/3
Dimensions, schemes:
page B8/75

## Pole characteristics

| Mini-contactor type | | | | LC1SKGC2 | LC1SKGC3 and LC1SKGC4 |
|---|---|---|---|---|---|
| Conventional thermal current (Ith) | For ambient temperature ≤ 55 °C | | **A** | 20 | 20 |
| Rated operational frequency | | | **Hz** | 50/60 | |
| Frequency limit of the operational current | | | **Hz** | up to 400 | |
| Rated operational voltage (Ue) | | | **V** | 690 | |
| Rated making capacity | I rms conforming to IEC 60947 | | **A** | 50 | 85 |
| Rated breaking capacity (for Ue ≤ 400 V) | Conforming to IEC 60947 (I rms) | | **A** | 40 | 68 |
| Permissible short time rating | In free air for a time "t" from cold state (θ ≤ 55 °C) | | **A** | 40 | 60 |
| Short-circuit protection | gl fuse U ≤ 440 V | | **A** | 20 | 20 |
| Average impedance per pole | At Ith and 50 Hz | | **mΩ** | 4 | 4 |
| Maximum rated operational current | For temperature ≤ 55 °C | AC-3 (Ue ≤ 400 V) | **A** | 5 | 9 |
| | | AC-1 | **A** | 20 | 20 |
| Use in category AC-1 resistive circuits, heating, lighting (Ue ≤ 440 V) | Increase in rated operational current by paralleling of 2 poles | | **A** | 32 | 32 |

## Auxiliary contact characteristics of mini-contactors

| | | | |
|---|---|---|---|
| Rated operational voltage (Ue) | Up to | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947 | **V** | 690 |
| Conventional thermal current (Ith) | For ambient temperature ≤ 55 °C | **A** | 10 |
| Frequency of the operational current | | **Hz** | Up to 400 |
| Short-circuit protection | Conforming to IEC 60947, gl fuse | **A** | 10 |

## Operational power of contacts conforming to IEC 60947

**a.c. supply, category AC-15**

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | V | 24 | 48 | 110/127 | 220/230 | 380/400 | 440 |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 48 | 96 | 240 | 440 | 800 | 880 |
| 3 million operating cycles | **VA** | 17 | 34 | 86 | 158 | 288 | 317 |
| 10 million operating cycles | **VA** | 7 | 14 | 36 | 66 | 120 | 132 |
| Occasional making capacity | **VA** | 1000 | 2050 | 5000 | 10000 | 14000 | 13000 |

**d.c. supply, category DC-13**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| | V | 24 | 48 | 110 | 220 | 440 | 440 |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **W** | 120 | 80 | 60 | 52 | 51 | 880 |
| 3 million operating cycles | **W** | 55 | 38 | 30 | 28 | 26 | 317 |
| 10 million operating cycles | **W** | 15 | 11 | 9 | 8 | 7 | 132 |
| Occasional making capacity | **W** | 720 | 600 | 400 | 300 | 230 | 13000 |

Ref.
Contactors
References: page B8/3
Dimensions, schemes: page B8/75

# Characteristics

## Control circuit characteristics

| Mini-contactor type | | | LC1SKGC2 | LC1SKGC3 and LC1SKGC4 |
|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | **V** | ∿ 24…400 | |
| Control voltage limits (θ ≤ 55 °C) | Operation | | 0.85…1.1 Uc | |
| | For drop-out | | ≥ 0.20 Uc | |
| Average coil consumption at 20 °C and at Uc | | | | |
| | Inrush | **VA** | 16 | 23 |
| | Sealed | **VA** | 4.2 | 4.9 |
| Heat dissipation | | **W** | 1.4 | 1.5 |
| Operating time at 20 °C and at Uc | | | | |
| Between coil energisation and | opening of the N/C contacts | **ms** | 8…16 | |
| | closing of the N/O contacts | **ms** | 7…14 | |
| Between coil de-energisation and | opening of the N/O contacts | **ms** | 6…8 | |
| | closing of the N/C contacts | **ms** | 8…10 | |
| Maximum operating rate | In operating cycles per hour | | 1200 | |
| Mechanical durability at Uc in millions of operating cycles | 50/60 Hz coil | | 10 | |

Ref.
Contactors

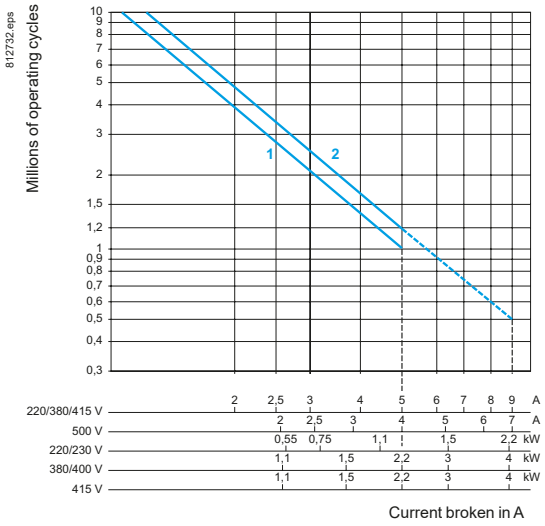
References:
page B8/3

Dimensions, schemes:
page B8/75

# Durability curves

## Use in category AC-3 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current of the motor.

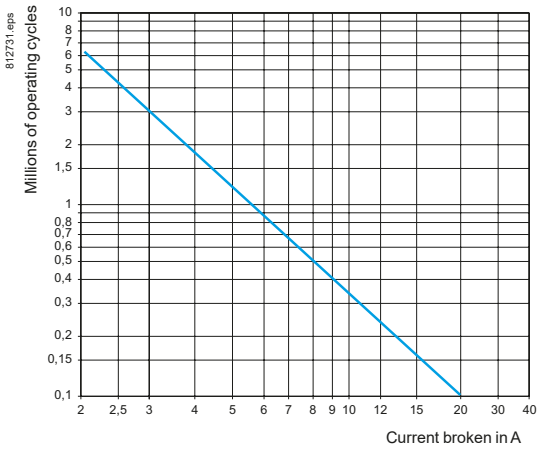



1. LC1SKGC2
2. LC1SKGC3 and SKGC4

- - - - - only up to 415 V

## Use in category AC-1 (Ue ⩽ 440 V)

Control of resistive circuits (cos φ ⩾ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

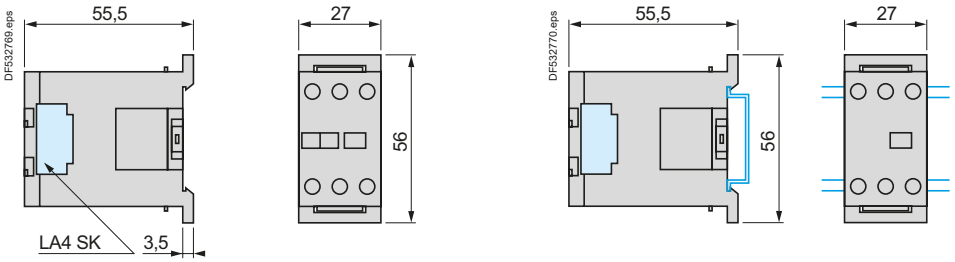



Ref.
Contactors

# Dimensions, mounting and schemes

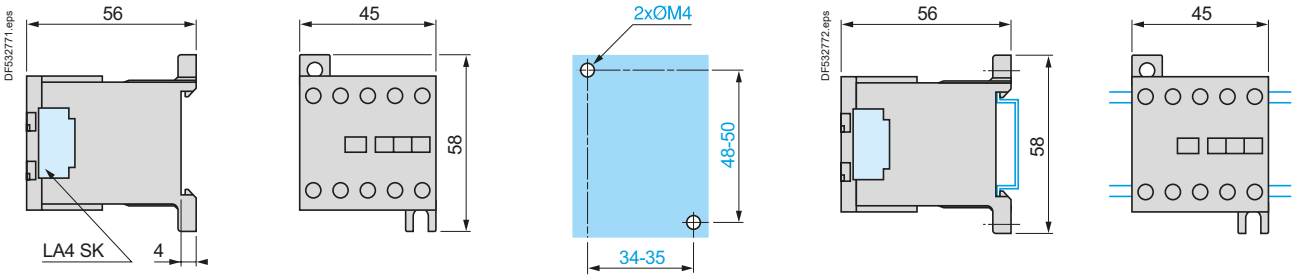
## Dimensions — Mounting

**Mini-contactors LC1SKGC2** — **On mounting rail NSYSDR200BD or NSYSDR200 (⎓ 35 mm)**



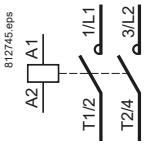

## Dimensions — Mounting

**Mini-contactors LC1SKGC3 and SKGC4** — **On panel** — **On mounting rail NSYSDR200BD or NSYSDR200 (⎓ 35 mm)**




## 2-pole mini-contactors

**LC1SKGC2**

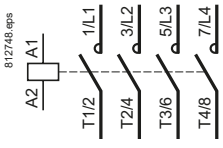



## 3-pole mini-contactors

**LC1SKGC310** — **LC1SKGC301**

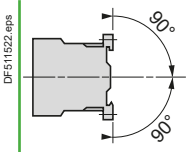
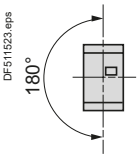
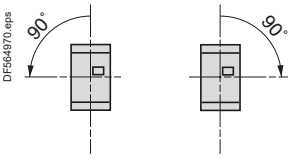
## 4-pole mini-contactors

**LC1SKGC400**




References: page B8/3
Characteristics: pages B8/71 to B8/73
Curves: page B8/74

## Environment characteristics

| | | | | | |
|---|---|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4 | | |
| Product certifications | LC● and LP●K06 to K12 | | UL, CSA, CCC, EAC, UKCA, CB certification | | |
| | LC● and LP●K16 | | UKCA, CB certification, CCC, EA | | |
| Operating positions | | | Vertical axis<br>  <br><br>*Without derating* | Horizontal axis<br>  <br><br>*Without derating* |  <br><br>*Possible positions for **LC●K** only. Contactor pull-in voltage: 0.85 Uc* |
| Connection | | | **Min.** | **Max.** | **Max. to IEC 60947** |
| | Screw clamp terminals — Solid conductor | **mm²** | 1 x 1.5 | 2 x 4 | 1 x 4 + 1 x 2.5 |
| | Screw clamp terminals — Flexible conductor without cable end | **mm²** | 1 x 0.75 | 2 x 4 | 2 x 2.5 |
| | Screw clamp terminals — Flexible conductor with cable end | **mm²** | 1 x 0.34 | 1 x 1.5 + 1 x 2.5 | 1 x 1.5 + 1 x 2.5 |
| | Spring terminals — Solid conductor | **mm²** | 1 x 0.75 | 1 x 1.5 | 2 x 1.5 |
| | Spring terminals — Flexible conductor without cable end | **mm²** | 1 x 0.75 | 1 x 1.5 | 2 x 1.5 |
| | Faston connectors — Clip | **mm** | 2 x 2.8 or 1 x 6.35 | | |
| | Solder pins for printed circuit board | | With locating device between power and control circuits pins length 5 mm<br>Recommended minimum width and thickness layer for power printed circuit board track : 4mm x 35 microns | | |
| Tightening torque | of screw-clamp terminals only Philips head n° 2 and Ø6 | **N.m** | 0.8…1.3 | | |
| Terminal referencing | Conforming to standards EN 50005 and EN 50012 | | Up to 5 contacts, depending on model | | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 | **V** | 690 | | |
| | Conforming to CSA 22-2 n° 60947-4-1, UL 60947-4-1 | **V** | 600 | | |
| Rated impulse withstand voltage (Uimp) | | **kV** | 8 | | |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP2x | | |
| Ambient air temperature around the device | Storage | **°C** | -50…+80 | | |
| | Operation | **°C** | -25…+50 in AC3, -25…+70 in AC1 | | |
| Maximum operating altitude | Without derating | **m** | 2000 | | |
| Vibration resistance 5 ... 300 Hz Conforming to IEC/EN 60068-2-27 | Contactor open | | 2 gn | | |
| | Contactor closed | | 4 gn | | |
| Flame resistance | according to IEC 60695-2-10 | **°C** | 850 | | |
| Shock resistance (1/2 sine wave, 11 ms) Conforming to IEC/EN 60068-2-6 | Contactor open | | On X axis: 6 gn<br>On Y and Z axes: 10 gn | | |
| | Contactor closed | | On X axis: 10 gn<br>On Y and Z axes: 15 gn | | |

Ref.
Contactors

References: pages B8/4 to B8/11
Dimensions: pages B8/80 and B8/82
Schemes: pages B8/81 and B8/83

# Characteristics

## Pole characteristics

| Type | | LC● or LP● | | K06 | K09 | K12 | K16 |
|---|---|---|---|---|---|---|---|
| Conventional thermal current (Ith) | For ambient temperature ≤ 60 °C | | A | 20 (1) | | | |
| Rated operational frequency | | | Hz | 50/60 | | | |
| Frequency limits of the operational current | | | Hz | Up to 400 | | | |
| Rated operational voltage (Ue) | | | V | 690 | | | |
| Rated making capacity | I rms conforming to IEC 60947 | | A | 110 | 110 | 144 | 160 |
| Rated breaking capacity | I rms conforming to IEC 60947 | 220/230 V | A | 110 | 110 | – | – |
| | | 380/400 V | A | 110 | 110 | – | – |
| | | 415 V | A | 110 | 110 | – | – |
| | | 440 V | A | 110 | 110 | 110 | 110 |
| | | 500 V | A | 80 | 80 | 80 | 80 |
| | | 660/690 V | A | 70 | 70 | 70 | 70 |
| Permissible short time rating | In free air for a time "t" from cold state (θ ≤ 50 °C) | 1 s | A | 90 | 90 | 115 | 115 |
| | | 5 s | A | 85 | 85 | 105 | 105 |
| | | 10 s | A | 80 | 80 | 100 | 100 |
| | | 30 s | A | 60 | 60 | 75 | 75 |
| | | 1 min | A | 45 | 45 | 55 | 55 |
| | | 3 min | A | 40 | 40 | 50 | 50 |
| | | ≥ 15 min | A | 20 | 20 | 25 | 25 |
| Short-circuit protection (Type-1) | gG fuse U ≤ 440 V (aM fuse, see"Product references", page B11/2) | | A | 25 | | | |
| Average impedance per pole | At Ith and 50 Hz | | mΩ | 3 | | | |
| Use in category AC-1 resistive circuits, heating, lighting (Ue ≤ 440 V) | Maximum rated operational current for a temperature ≤ 60 °C | | A | 20 | | | |
| | Maximum rated operational current for a temperature ≤ 70 °C | | A | 16 | | | |
| | Rated operational current limits in relation to the on-load factor and operating frequency | | | On-load factor | | 90 % | 60 % 30 % |
| | | | A | 300 operating cycles/hour | | 13 | 15 18 |
| | | | A | 120 operating cycles/hour | | 15 | 18 19 |
| | | | A | 30 operating cycles/hour | | 19 | 20 20 |
| | Increase in rated operational current by paralleling of poles | | | Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles | | | |
| | | | | 2 poles in parallel: K = 1.60 | | | |
| | | | | 3 poles in parallel: K = 2.25 | | | |
| | | | | 4 poles in parallel: K = 2.80 | | | |
| Use in category AC-3/AC-3e squirrel cage motors | Operational power according to the voltage. Voltage 50 or 60 Hz | 115 V single-ph. | kW | 0.37 | 0.55 | – | – |
| | | 220 V single-ph. | kW | 0.75 | 1.1 | – | – |
| | | 220/230 V 3-ph. | kW | 1.5 | 2.2 | 3 | 4 |
| | | 380/415 V 3-ph. | kW | 2.2 | 4 | 5.5 | 7.5 |
| | | 440/480 V 3-ph. | kW | 3 | 4 | 5.5/4 (480) | 5.5/4 (480) |
| | | 500/600 V 3-ph. | kW | 3 | 4 | 4 | 4 |
| | | 660/690 V 3-ph. | kW | 3 | 4 | 4 | 4 |
| | Maximum operating rate (in operating cycles/hour in relation to % of rated power) | | | Op. cycles/h | | 600 | 900 1200 |
| | | | | Power | | 100 % | 75 % 50 % |

*(1) For **LC●K●●●●3 / LP●K●●●●3** with spring terminal, Ith max = 16 A.*

References: pages B8/4 to B8/11
Dimensions: pages B8/80 and B8/82
Schemes: pages B8/81 and B8/83

# Characteristics

## Control circuit characteristics

| Type | | | LC1 | LC2 | LC7 | LC8 | LP1 | LP2 | LP4 | LP5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | **V** | ∼ 12…690 (1) | | ∼ 24…240 (1) | | ⎓ 12…250 (1) | | ⎓ 12…120 | |
| Control voltage limits (≤ 50 °C) single voltage coil | Operation | | 0.8…1.15 Uc (2) | | 0.85…1.1 Uc | | 0.8…1.15 Uc | | 0.7…1.30 Uc | |
| | Drop-out | | ≥ 0.20 Uc | | ≥ 0.10 Uc | | ≥ 0.10 Uc | | ≥ 0.10 Uc | |
| Average consumption at 20 °C and at Uc | Inrush | | 30 VA | | 3 VA | | 3 W | | 1.8 W | |
| | Sealed | | 4.5 VA | | 3 VA | | 3 W | | 1.8 W | |
| Heat dissipation | | **W** | 1.3 | | 3 | | 3 | | 1.8 | |
| Operating time at 20 °C and at Uc | | | | | | | | | | |
| Between coil energisation and: | - opening of the N/C contacts | **ms** | 5…15 | | 25…35 | | 25…35 | | 25…35 | |
| | - closing of the N/O contacts | **ms** | 10…20 | | 30…40 | | 30…40 | | 30…40 | |
| Between coil de-energisation and: | - opening of the N/O contacts | **ms** | 10…20 | | 30 | | 10 | | 10…20 | |
| | - closing of the N/C contacts | **ms** | 15…25 | | 40 | | 15 | | 15…25 | |
| Maximum immunity to microbreaks | | **ms** | 2 | | 2 | | 2 | | 2 | |
| Maximum operating rate | In operating cycles per hour | | 3600 | | 3600 | | 3600 | | 3600 | |
| Mechanical durability at Uc In millions of operating cycles | 50/60 Hz coil | | 10 | 5 | 10 | 5 | – | – | – | – |
| | ⎓ coil | | – | – | – | – | 10 | 5 | – | – |
| | Wide range coil, Low consumption | | – | – | – | – | – | – | 30 | 5 |

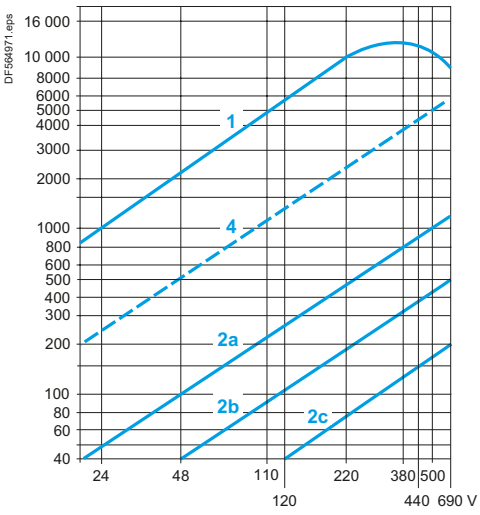
*(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50…129 V) or **LA4KE1UG** (130…250 V), see page B8/14.*
*(2) **LC1K12, LC1K16...** : 0.85…1.15 Uc.*

Ref.
Contactors

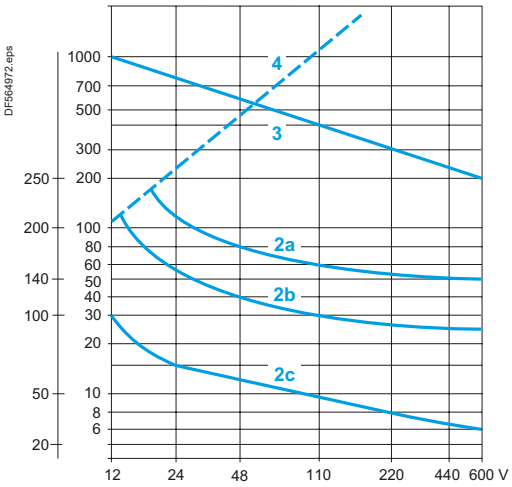
## Auxiliary contact characteristics of contactors and instantaneous contact blocks

| | | | | |
|---|---|---|---|---|
| Number of auxiliary contacts | On LC●K or LP●K 3-pole | | | 1 |
| | On LA1K | | | 2 or 4 |
| Rated operational voltage (Ue) | Up to | | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947 | | **V** | 690 |
| | Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1 | | **V** | 600 |
| Conventional thermal current (Ith) | For ambient temperature ≤ 50 °C | | **A** | 10 |
| Frequency of the operational current | | | **Hz** | Up to 400 |
| Minimum switching capacity | U min | | **V** | 17 |
| | I min | | **mA** | 5 |
| Short-circuit protection | Conforming to IEC 60947, gG fuse | | **A** | 10 |
| Rated making capacity | Conforming to IEC 60947 | I rms | **A** | 110 |
| Short-time rating | Permissible for | 1 s | **A** | 80 |
| | | 500 ms | **A** | 90 |
| | | 100 ms | **A** | 110 |
| Insulation resistance | | | **MΩ** | > 10 |
| Non-overlap distance | LA1K: linked contacts conforming to INRS, BIA and CNA specifications | | **mm** | 0.5 (see schemes pages B8/81 and B8/83) |

Power broken in VA




Power broken in W




## Operational power of contacts conforming to IEC 60947

### a.c. supply, category AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| Operating cycles | V | 24 | 48 | 110/ 127 | 220/ 230 | 380/ 400 | 440 | 600/ 690 |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **VA** | 48 | 96 | 240 | 440 | 800 | 880 | 1200 |
| 3 million operating cycles | **VA** | 17 | 34 | 86 | 158 | 288 | 317 | 500 |
| 10 million operating cycles | **VA** | 7 | 14 | 36 | 66 | 120 | 132 | 200 |
| Occasional making capacity | **VA** | 1000 | 2050 | 5000 | 10000 | 14000 | 13000 | 9000 |

### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| Operating cycles | V | 24 | 48 | 110 | 220 | 440 | 600 |
|---|---|---|---|---|---|---|---|
| 1 million operating cycles | **W** | 120 | 80 | 60 | 52 | 51 | 50 |
| 3 million operating cycles | **W** | 55 | 38 | 30 | 28 | 26 | 25 |
| 10 million operating cycles | **W** | 15 | 11 | 9 | 8 | 7 | 6 |
| Occasional making capacity | **W** | 720 | 600 | 400 | 300 | 230 | 200 |

1. Breaking limit of contacts valid for:
   - maximum of 50 operating cycles at 10 s intervals (power broken = making current x cos φ 0.7).
2. Electrical durability of contacts for:
   - 1 million operating cycles (2a)
   - 3 million operating cycles (2b)
   - 10 million operating cycles (2c).
3. Breaking limit of contacts valid for:
   - maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.
4. Thermal limit.

References:
pages B8/4 to B8/11

Dimensions:
pages B8/80 and B8/82

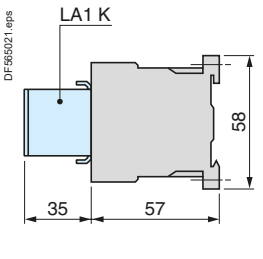
Schemes:
pages B8/81 and B8/83

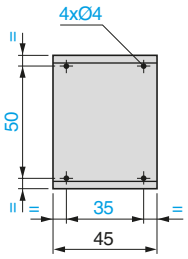
# Dimensions and mounting

## Contactors

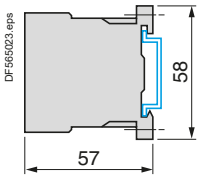
### LC1K, LC7K, LP1K, LP4K

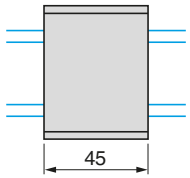
On panel



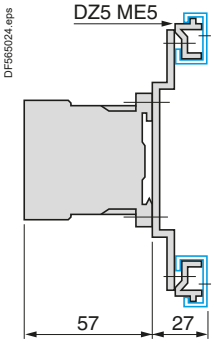



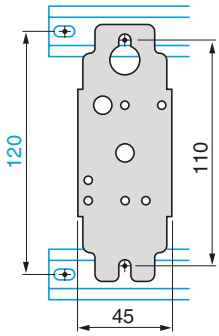

On mounting rail NSYSDR200BD or NSYSDR200 (⎓ 35 mm)



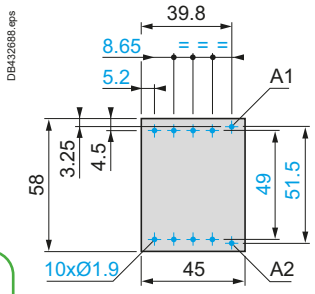




### DX1AP25



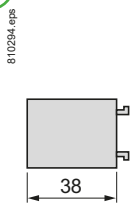



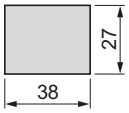

On printed circuit board



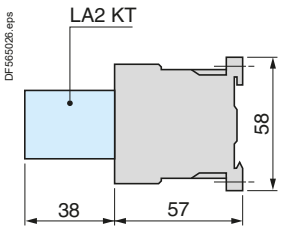

## Electronic time delay contact blocks

### LA2KT



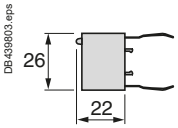




On contactor

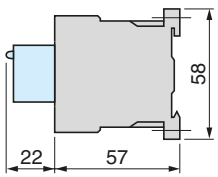



## Suppressor modules

### LA4K●



On contactor LC1K or LP1K




References:
pages B8/4 to B8/7

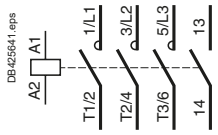
Characteristics:
pages B8/76 to B8/79

Schemes:
page B8/81

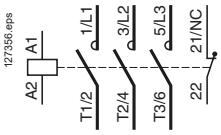
# Schemes

## 3-pole contactors

3 P + N/O

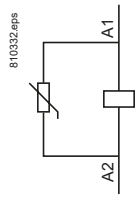



3 P + N/C

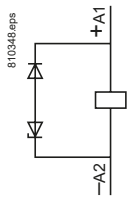



## With integral suppression device

**LC7K**

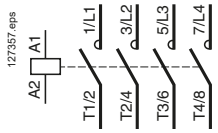



**LP4K**

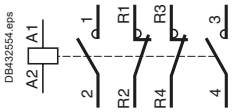



## 4-pole contactors

4 P

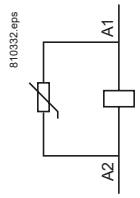



2 P N/O + 2 P N/C

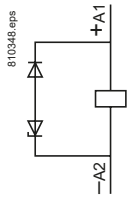



## With integral suppression device

**LC7K**



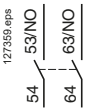

**LP4K**




## Instantaneous auxiliary contacts LA1K

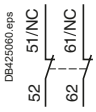
**LA1KN20, KN207, KN203**

2 N/O




**LA1KN02, KN027, KN023**

2 N/C




**LA1KN11, KN117, KN113**

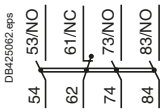
1 N/O + 1 N/C

**LA1KN40, KN407, KN403**

4 N/O

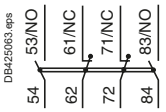
**LA1KN31, KN317, KN313**

3 N/O + 1 N/C



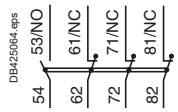

**LA1KN22, KN227, KN223**

2 N/O + 2 N/C



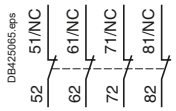

**LA1KN13, KN137, KN133**

1 N/O + 3 N/C




**LA1KN04, KN047, KN043**

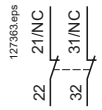
4 N/C




## Terminal referencing conforming to standard EN 50012

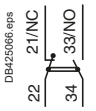
**LA1KN02M**

2 N/C



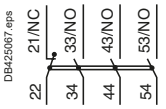

**LA1KN11M**

1 N/O + 1 N/C



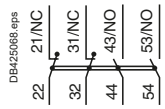

**LA1KN31M**

3 N/O + 1 N/C




**LA1KN22M**

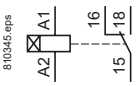
2 N/O + 2 N/C




## Electronic time delay contact blocks

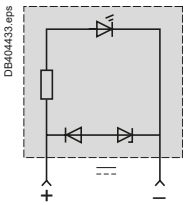
**LA2KT**

1 C/O

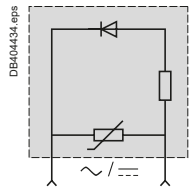



## Suppressor modules

**LA4KC**




**LA4KE**




References:
pages B8/4 to B8/7

Characteristics:
pages B8/76 to B8/79

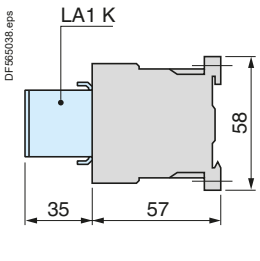
Dimensions:
page B8/80

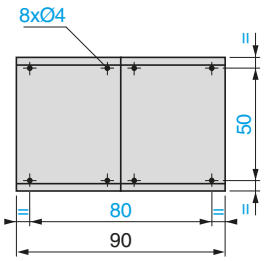
# Dimensions and mounting

## Reversing contactors

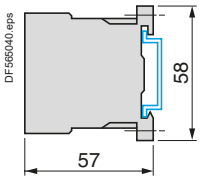
### LC2K, LC8K, LP2K, LP5K

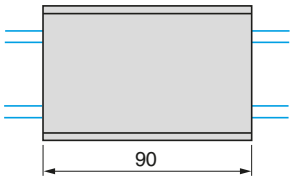
On panel



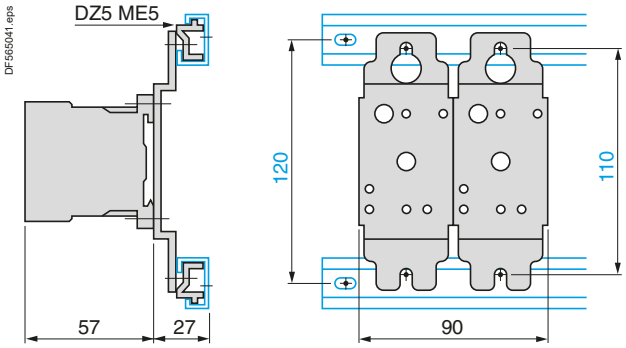

On mounting rail NSYSDR200BD or NSYSDR200 (ـــ 35 mm)



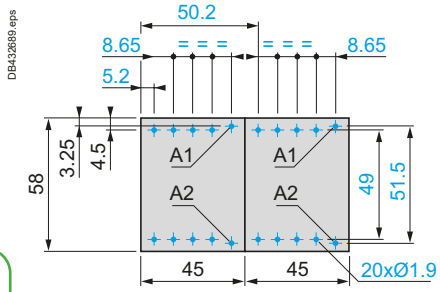




### 2 x DX1AP25

On one asymmetrical mounting rail DZ5MB on 2 mounting plates DX1AP25.



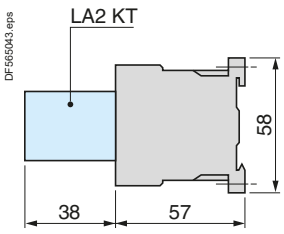

On printed circuit board for reversing contactors or 2 contactors mounted side by side.




## Electronic time delay contact blocks

### LA2KT

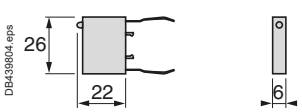
On reversing contactors

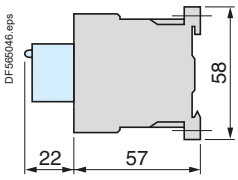



## Suppressor modules

### LA4K●

On reversing contactors LC2K or LP2 K




References:
pages B8/8 to B8/11

Characteristics:
pages B8/76 to B8/79

Schemes:
page B8/83



Life Is On Schneider Electric

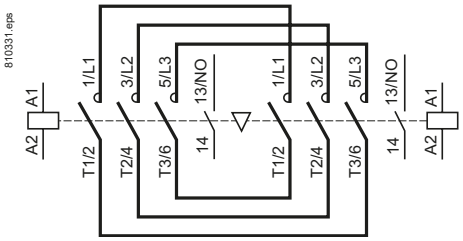
# Schemes

## 3-pole reversing contactors

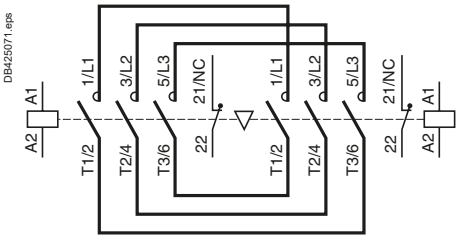
**With integral suppression device**

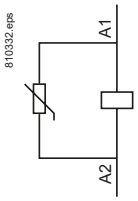
**With screw clamp connections** — **LC8K** — **LP5K**

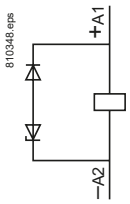
3 P + N/O




3 P + N/C

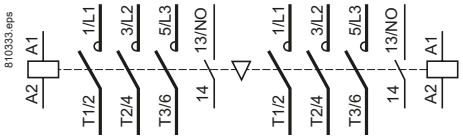


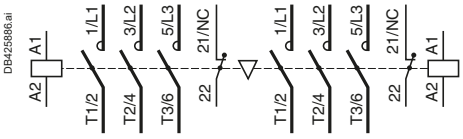




**With Faston connectors or solder pins (printed circuit board)**

3 P + N/O




3 P + N/C

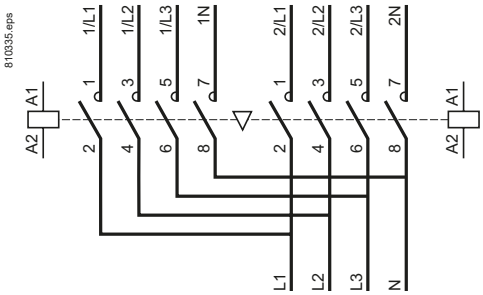



## 4-pole reversing contactors

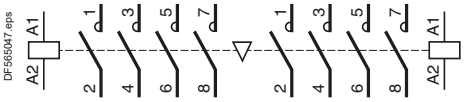
**Integral suppression device**

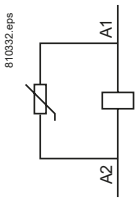
**With screw clamp connections** — **With Faston connectors or solder pins (printed circuit board)** — **LC8K** — **LP5K**

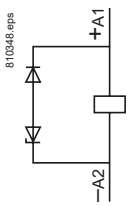
4 P




4 P



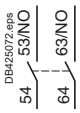



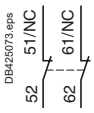



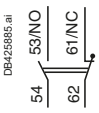

## Instantaneous auxiliary contacts LA1K

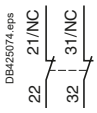
**Terminal referencing conforming to standard EN 50012**

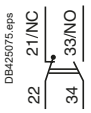
| LA1KN20, KN207, KN203 | LA1KN02, KN027, KN023 | LA1KN11, KN117, KN113 | LAKN02M | LA1KN11M |
|---|---|---|---|---|
| 2 N/O | 2 N/C | 1 N/O + 1 N/C | 2 N/C | 1 N/O + 1 N/C |



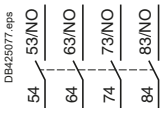



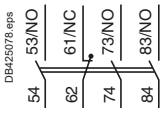



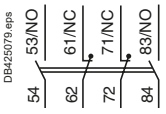



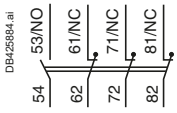



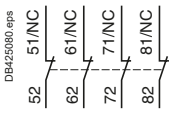

| LA1KN40, KN407, KN403 | LA1KN31, KN317, KN313 | LA1KN22, KN227, KN223 | LA1KN13, KN137, KN133 | LA1KN04, KN047, KN043 |
|---|---|---|---|---|
| 4 N/O | 3 N/O + 1 N/C | 2 N/O + 2 N/C | 1 N/O + 3 N/C | 4 N/C |



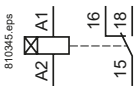




## Electronic time delay contact blocks

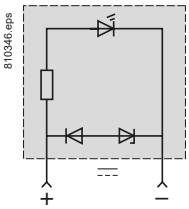
**LA2KT**

1 C/O

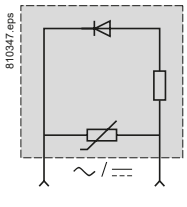



## Suppressor modules

**LA4KC**




**LA4KE**



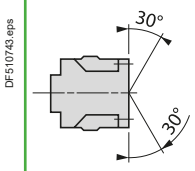
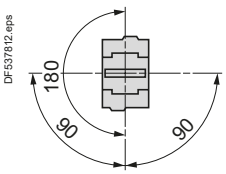
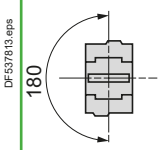
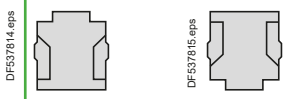

References:
pages B8/8 to B8/11

Characteristics:
pages B8/76 to B8/79

Dimensions:
page B8/82

# Characteristics

## Environment

| Contactor type LC1 | | | D09…D18 DT20 and DT25 | D25…D38 DT32 and DT40 | D40A…D80A DT60A and DT80A | D80…D95 (1) | D115 and D150 |
|---|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1, overvoltage category III, degree of pollution: 3 | V | 690 | | | 1000 | |
| | Conforming to UL, CSA | V | 600 | | | | |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC 60947 | kV | 6 | | | 8 | |
| Conforming to standards | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4 | | | | |
| Product certifications (1) | | | UL, CSA, CCC, EAC, UKCA, CB certification, EU-RO-MR by DNV-GL | | | UL, CSA, CCC, EAC, UKCA, CB certification, DNV-GL, RINA, BV, LRoS | |
| Degree of protection (2) (front face) | Conforming to IEC 60529 | | | | | | |
| | Power circuit connections | | Protection against direct finger contact IP20 | | | | |
| | Coil connection | | Protection against direct finger contact IP20 | | | | |
| Climatic withstand | | | According to IACS E10 and IEC 60947-1 Annex Q category D | | | According to IACS E10 | |
| Ambient air temperature around the device | Storage | °C | -60…+80 | | | | |
| | Operation (3) | °C | -40...+60 | | | | |
| | Allowed with derating (3) (4) | °C | +60…+70 at Uc to 1.●● x Uc | | | | |
| Maximum operating altitude | Without derating | m | 3000 | | | | |
| Operating positions (5) | Without derating in the following positions | | AC and DC coils<br>AC/DC and "BBE" coils<br>  | | AC coils<br>AC/DC and "BBE" coils<br>  | | DC coils<br>  |
| | Positions that are not allowed | | For ⎓ contactors LC1D09 to LC1D150.<br>  | | | | |
| Flame resistance | Conforming to IEC 60695-2-11 | °C | 850 | | | | |
| Shock resistance (6) 1/2 sine wave = 11 ms Conforming to IEC/EN 60068-2-27 | Contactor open | | 10 gn | 8 gn | 10 gn | 8 gn | 6 gn |
| | Contactor closed | | 15 gn | 15 gn | 15 gn | 10 gn | 15 gn |
| Vibration resistance (6) 5…300 Hz Conforming to IEC/EN 60068-2-6 | Contactor open | | 2 gn | | | | |
| | Contactor closed | | 4 gn | 4 gn | 4 gn | 3 gn | 4 gn |

*(1) Contactor **LC1D95** with d.c. coil is not UL/CSA certified.*
*(2) Protection provided for the cabling c.s.a.'s indicated on the next page and for connection by cable. For lug type: add a protective cover.*
*(3) As per IEC60947-4-1, operating time and drop out voltage given and tested for -5...+40 °C.*
*(4) Refer to operational current in AC1 (page A5/58).*
*(5) When mounting on a vertical rail, use a stop.*
*(6) Without modifying the power contact states, in the most unfavourable direction (coil energised at Ue).*
*In case of vibration, it is recommended to mount the devices separately by screws on metal plate.*

References: pages B8/19 to B8/29
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107

## Pole characteristics Deca, Deca green contactors

| Contactor type | | | LC1 | | D09 (3P) | DT20 D098 | D12 (3P) | DT25 D128 | D18 (3P) | DT32 D188 | D25 (3P) | DT40 D258 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated operational current (Ie) (Ue ≤ 440 V) | In AC-3/AC-3e, θ ≤ 60 °C | | A | | 9 | | 12 | | 18 | | 25 | |
| | In AC-1, θ ≤ 60 °C | | A | | 25 (1) | 20 | 25 (1) | 25 | 32 (1) | 32 | 40 (1) | 40 |
| Rated operational voltage (Ue) | Up to (as per IEC 60947-1) | | V | | 690 | | 690 | | 690 | | 690 | |
| Frequency limits | Of the operational current | | Hz | | 25…400 | | 25…400 | | 25…400 | | 25…400 | |
| Conventional thermal current (Ith) | θ ≤ 60 °C | | A | | 25 (1) | 20 | 25 (1) | 25 | 32 (1) | 32 | 40 (1) | 40 |
| Rated making capacity (440 V) | Conforming to IEC 60947 | | A | | 250 | | 250 | | 300 | | 450 | |
| Rated breaking capacity (440 V) | Conforming to IEC 60947 | | A | | 250 | | 250 | | 300 | | 450 | |
| Permissible short time rating No current flowing for preceding 15 minutes with θ ≤ 40 °C | For 1 s | | A | | 210 | | 210 | | 240 | | 380 | |
| | For 10 s | | A | | 105 | | 105 | | 145 | | 240 | |
| | For 1 min | | A | | 61 | | 61 | | 84 | | 120 | |
| | For 10 min | | A | | 30 | | 30 | | 40 | | 50 | |
| Fuse protection against short-circuits (U ≤ 690 V) | Without thermal overload relay, gG fuse | type 1 | A | | 25 | | 40 | | 50 | | 63 | |
| | | type 2 | A | | 20 | | 25 | | 35 | | 40 | |
| | With thermal overload relay | | A | | See pages B11/4 and B11/5, for aM or gG fuse ratings corresponding to the associated thermal overload relay | | | | | | | |
| Average impedance per pole | At Ith and 50 Hz | | mΩ | | 2.5 | | 2.5 | | 2.5 | | 2 | |
| Power dissipation per pole for the above operational currents | AC-3/AC-3e | | W | | 0.20 | | 0.36 | | 0.8 | | 1.25 | |
| | AC-1 | | W | | 1.56 | | 1.56 | | 2.5 | | 3.2 | |

## Control circuit characteristics, a.c. supply Deca contactors

| | | | | | | |
|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | 50/60 Hz | | V | 12…690 | |
| Rated operational voltage | | Conforming to IEC 60947-1 | | V | 690 | |
| | | Conforming to UL, CSA (5) | | V | 600 | |
| Control voltage limits | | | | | | |
| 50 or 60 Hz coils | | Operation | | | – | |
| | | Drop-out | | | – | |
| 50/60 Hz coils (6) | | Operation | | | 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 60 °C | |
| | | Drop-out | | | 0.3…0.6 Uc at 60 °C | |
| Average consumption at 20 °C and at Uc | ∼ 50 Hz | Inrush | 50 Hz coil | VA | – | |
| | | | Cos φ | | 0.75 | |
| | | | 50/60 Hz coil | VA | 70 | |
| | | Sealed | 50 Hz coil | VA | – | |
| | | | Cos φ | | 0.3 | |
| | | | 50/60 Hz coil | VA | 7 | |
| | ∼ 60 Hz | Inrush | 60 Hz coil | VA | – | |
| | | | Cos φ | | 0.75 | |
| | | | 50/60 Hz coil | VA | 70 | |
| | | Sealed | 60 Hz coil | VA | – | |
| | | | Cos φ | | 0.3 | |
| | | | 50/60 Hz coil | VA | 7.5 | |
| Heat dissipation | 50/60 Hz | | | W | 2…3 | |
| Operating time (2) | | Closing "C" | | ms | 12…22 | |
| | | Opening "O" | | ms | 4…19 | |
| Mechanical durability in millions of operating cycles | | 50 or 60 Hz coil | | | – | |
| | | 50/60 Hz coil on 50 Hz | | | 15 | |
| Maximum operating rate at ambient temperature ≤ 60 °C | | In operating cycles per hour | | | 3600 | |

*(1) Versions with spring terminal connections:*
*16 A for **LC1D093** and **LC1D123** (20 A possible with 2 x 2.5 mm² in parallel),*
*25 A for **LC1D183** to **LC1D323** (32 A possible for **LC1D183** connected with 2 x 4 mm² cables in parallel; 40 A possible for **LC1D253** and **LC1D323** connected with 2 x 4 mm² in parallel).*
*(2) The closing time "C" is measured from the moment the coil supply is switched on to closure of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*
*(3) The opening time is 40…75 ms for **LX1D8●7** coils and 6…20 ms for **LX1D8●5** and **LX1D8●6** coils.*
*(4) 2400 for **LX1D8●5** and **LX1D8●6** coils and 1200 for **LX1D8●7** coils (refer to page B8/128 for list of coil references).*
*(5) The **LC1D95** contactor with d.c.coil is not UL/CSA certified.*
*(6) **LXD3G7/ LXD3LE7 & LXD3T7** coils used with **LC1D40A...80A**, **LC1DT60A** and **LC1DT80A** contactors are suitable only at 50 Hz.*
*Refer to page B8/49 for details on **LXD3** type coils.*

References: pages B8/19 to B8/29
Dimensions: pages B8/99 to B8/105
Schemes: pages B8/106 and B8/107

| D32 | D38 | D40A | DT60A | D50A | D65A | D80A | DT80A | D80 | D95 | D115 | D150 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 38 | 40 | – | 50 | 65 | 66 | – | 80 | 95 | 115 | 150 |
| 50 (1) | 50 | 60 | 60 | 80 | 80 | 80 | 80 | 125 | 125 | 200 | 200 |
| 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 1000 | 1000 |
| 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 | 25…400 |
| 50 | 50 | 60 | 60 | 80 | 80 | 80 | 80 | 125 | 125 | 200 | 200 |
| 550 | 550 | 800 | 800 | 900 | 1000 | 1000 | 1000 | 1100 | 1100 | 1260 | 1660 |
| 550 | 550 | 800 | 800 | 900 | 1000 | 1000 | 1000 | 1100 | 1100 | 1100 | 1400 |
| 430 | 430 | 720 | 720 | 810 | 900 | 900 | 900 | 990 | 1100 | 1100 | 1400 |
| 260 | 310 | 320 | 320 | 400 | 640 | 640 | 640 | 640 | 800 | 950 | 1200 |
| 138 | 150 | 165 | 165 | 208 | 260 | 260 | 260 | 320 | 400 | 550 | 580 |
| 60 | 60 | 72 | 72 | 84 | 110 | 110 | 110 | 135 | 135 | 250 | 250 |
| 63 | 63 | 80 | 80 | 100 | 125 | 125 | 125 | 200 | 200 | 250 | 315 |
| 63 | 63 | 80 | 80 | 100 | 125 | 125 | 125 | 160 | 160 | 200 | 250 |
| See pages B11/4 and B11/5 for aM or gG fuse ratings corresponding to the associated thermal overload relay | | | | | | | | | | | |
| 2 | 2 | 1.5 | 1.6 | 1.5 | 1.5 | 1.5 | 1.6 | 0.8 | 0.8 | 0.6 | 0.6 |
| 2 | 3 | 2.4 | – | 3.7 | 6.3 | 6.3 | – | 5.1 | 7.2 | 7.9 | 13.5 |
| 5 | 5 | 5.4 | 5.8 | 9.6 | 9.6 | 9.6 | 10.2 | 12.5 | 12.5 | 24 | 24 |
| | | | | | | | | | | | |
| 12…690 | | 12…690 | | | | | | | | 24…500 | |
| | | | | | | | | | | 1000 | |
| | | | | | | | | | | | |
| – | | – | | | | | | 0.85…1.1 Uc at 55 °C | | | |
| – | | – | | | | | | 0.3…0.6 Uc at 55 °C | | 0.3…0.5 Uc at 55 °C | |
| 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 60 °C | | 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 60 °C | | | | | | 0.8…1.1 Uc on 50 Hz and 0.85…1.1 Uc on 60 Hz at 55 °C | | 0.8…1.15 Uc on 50/60 Hz at 55 °C | |
| 0.3…0.6 Uc at 60 °C | | 0.3…0.6 Uc at 60 °C | | | | | | 0.3…0.6 Uc at 55 °C | | 0.3…0.5 Uc at 55 °C | |
| – | | – | | | | | | 200 | | 300 | – |
| 0.75 | | 0.75 | | | | | | 0.75 | | 0.8 | 0.9 |
| 70 | | 160 | | | | | | 245 | | 280…350 | 280…350 |
| – | | – | | | | | | 20 | | 22 | – |
| 0.3 | | 0.3 | | | | | | 0.3 | | 0.3 | 0.9 |
| 7 | | 15 | | | | | | 26 | | 2…18 | 2…18 |
| – | | – | | | | | | 220 | | 300 | – |
| 0.75 | | 0.75 | | | | | | 0.75 | | 0.8 | 0.9 |
| 70 | | 140 | | | | | | 245 | | 280…350 | 280…350 |
| – | | – | | | | | | 22 | | 22 | – |
| 0.3 | | 0.3 | | | | | | 0.3 | | 0.3 | 0.9 |
| 7.5 | | 13 | | | | | | 26 | | 2…18 | 2…18 |
| 2…3 | | 4…5 | | | | | | 6…10 | | 3…8 | 3…4.5 |
| 12…22 | | 12…26 | 12…26 | 12…26 | 12…26 | 12…26 | 12…26 | 20…35 | 20…35 | 20…50 | 20…35 |
| 4…19 | | 4…19 | 4…19 | 4…19 | 4…19 | 4…19 | 4…19 | 6…20 | 6…20 | 6…20 (3) | 40…75 |
| – | | – | – | – | – | – | – | 10 | 10 | 8 | – |
| 15 | | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 4 | 8 | 8 |
| 3600 | | 3600 | 3600 | 3600 | 3600 | 3600 | 3600 | 3600 | 3600 | 2400 (4) | 1200 |

# Characteristics

## d.c. control circuit characteristics Deca contactors

| Contactor type | | | | LC1D09…D38 LC1DT20…DT40 | LC1D40A…D80A LC1DT60A and DT80A | LC1 or LP1D80 LC1D95 | LC1D115 and LC1D150 |
|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | ⎓ | | **V** | 12…440 | 12…440 | | 24…440 |
| Rated operational voltage | Conforming to IEC 60947-1 | | **V** | 690 | | | 1000 |
| | Conforming to UL, CSA [2] | | **V** | 600 | | | |
| Control voltage limits | Operation | Standard coil | | 0.7…1.25 Uc at 60 °C | 0.75…1.25 Uc at 60 °C | 0.85…1.1 Uc at 55 °C | 0.75…1.2 Uc at 55 °C |
| | | Wide range coil | | – | – | 0.75…1.2 Uc at 55 °C | – |
| | Drop-out | | | 0.1…0.25 Uc at 60 °C | 0.1…0.3 Uc at 60 °C | 0.1…0.3 Uc at 55 °C | 0.15…0.4 Uc at 55 °C |
| Average consumption at 20 °C and at Uc | ⎓ | Inrush | **W** | 5.4 | 19 | 22 | 270…365 |
| | | Sealed | **W** | 5.4 | 7.4 | 22 | 2.4…5.1 |
| Operating time [1] average at Uc | Closing | "C" | **ms** | 63 ±15 % | 50 ±15% | 95…130 | 20…35 |
| | Opening | "O" | **ms** | 20 ±20 % | 20 ±20% | 20…35 | 40…75 |
| | | | | ***Note:*** *The arcing time depends on the circuit switched by the poles. For all normal 3-phase applications, the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.* | | | |
| Time constant (L/R) | | | **ms** | 28 | 34 | 75 | 25 |
| Mechanical durability at Uc | In millions of operating cycles | | | 30 | 10 | 10 | 8 |
| Maximum operating rate at ambient temperature ⩽ 60 °C | In operating cycles per hour | | | 3600 | 3600 | 3600 | 1200 |

## Low consumption control circuit characteristics Deca contactors

| | | | | | |
|---|---|---|---|---|---|
| Rated operational voltage | Conforming to IEC 60947-1 | | **V** | 690 | – |
| | Conforming to UL, CSA | | **V** | 600 | – |
| Maximum voltage | Of the control circuit on ⎓ | | **V** | 250 | – |
| Average consumption d.c. at 20 °C and at Uc | Wide range coil (0.8…1.25 Uc) | Inrush | **W** | 2.4 | – |
| | | Sealed | **W** | 2.4 | – |
| Operating time [1] at Uc and at 20 °C | Closing | "C" | **ms** | 77 ±15 % | – |
| | Opening | "O" | **ms** | 25 ±20 % | – |
| Voltage limits (θ ⩽ 60 °C) of the control circuit | Operation | | | 0.8 to 1.25 Uc | – |
| | Drop-out | | | 0.1…0.3 Uc | – |
| Time constant (L/R) | | | **ms** | 40 | – |
| Mechanical durability | In millions of operating cycles | | | 30 | – |
| Maximum operating rate at ambient temperature ⩽ 60 °C | In operating cycles per hour | | | 3600 | – |

*(1) The operating times depend on the type of contactor electromagnet and its control mode.*
*The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.*
*The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*
*(2) The **LC1D95** contactor with d.c.coil is not UL/CSA certified.*

Ref.
Contactors

References:
pages B8/23 to B8/29
Dimensions:
pages B8/99 to B8/102
Schemes:
pages B8/106 and B8/107

# Characteristics

## Wide band Deca green contactors AC/DC coil circuit characteristics

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | | V | AC/DC 24...250 | | | | | |
| | Operation | | V | 0.85 Uc mini...1.1 Uc maxi at 60 °C in AC or DC<br>(BNE coil: 0.8 Uc mini at 24 VDC, 0.85 Uc mini in AC). | | | | | |
| | Drop-out | | V | 0.1 Uc maxi (e.g. 100 to 250 V = 25 V at 60 °C) | | | | | |
| **Contactor type** | | | | **LC1D09...D38** | | | **LC1D40A...D80A, LC1DT60A, LC1DT80A** | | |
| **Coil code** | | | | **BNE** | **EHE** | **KUE** | **BBE** | **BNE** | **EHE** | **KUE** |
| Rated control circuit voltage (Uc) | | | | 24-60 | 48-130 | 100-250 | 24 DC | 24-60 | 48-130 | 100-250 |
| Rated operational voltage | Conforming to IEC 60947-1 | | V | 690 | | | | | |
| | Conforming to UL, CSA | | V | 600 | | | | | |
| AC supply at 20°C | | Consumption inrush | VA | 15 | 25 | 25 | - | 15 | 23 | 18 |
| | | Consumption sealed | VA | 0.9 | 1.3 | 1.6 | - | 1 | 1.4 | 1.8 |
| | | Consumption sealed | mA | 28 | 15 | 9 | - | 35 | 17 | 9.5 |
| | | Heat dissipation | W | 0.6 | 0.8 | 1.1 | - | 0.8 | 0.9 | 1.3 |
| DC supply at 20°C | | Consumption inrush | W | 14 | 24 | 18 | 11 | 16 | 19 | 14 |
| | | Consumption sealed | mA | 23 | 13 | 7 | 20 | 30 | 15 | 7.7 |
| | | Heat dissipation | W | 0.6 | 0.8 | 1.1 | 0.5 | 0.7 | 0.9 | 1.2 |
| Max operating time (2) | | Closing "C" | ms | 50 ±5 ms | | | 60 ±5 ms | | | |
| | | Opening "O" | ms | 20...90 ms | | | 20...80 ms | | | |
| EMC immunity | | | | Meets IEC 60947-4-1 standard, table 12 | | | | | | |
| EMC emission | | IEC 60947-4-1 §9.4.3 | | Environment A (1) | | | | | | |
| Maximum operating rate at ambient temperature ⩽ 60°C | | | cycle/h | 3600 | | | | | | |
| Mechanical durability at Uc In millions of operating cycles | | | | 15 | | | 6 | | | |

*(1) Use of this product in EMC environment B may require mitigation measures to avoid unwanted disturbance.*
*(2) The closing time "C" is measured from the moment the coil supply is switched on to closure of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separates.*

Ref.
Contactors

References:
pages B8/19 to B8/22
Dimensions:
pages B8/103 to B8/105
Schemes:
pages B8/106 and B8/107

# Characteristics

## Power circuit connections

### Screw clamp terminal connections Deca, Deca green contactors

| Contactor type | | LC1 | D09 and D12 DT20 and DT25 | D18 (3P) | D25 (3P) | D32 | D38 | D18 and D25 (4P) DT32 and DT40 | D40A to D80A DT60A and DT80A (1) | D80 and D95 | D115 and D150 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tightening | | | Screw clamp terminals | | | | | Connector 2 inputs | Screw clamp terminals | Connector 1 input | Connector 2 inputs |
| Flexible cable without cable end | 1 conductor | mm² | 1…4 | 1.5…6 | 2.5…10 | | | 2.5…10 | 1…35 | 4…50 | 10…120 |
| | 2 conductors | mm² | 1…4 | 1.5…6 | 2.5…10 | | | 2.5…10 | 1…25 and 1…35 | 4…25 | 10…120 + 10…50 |
| Flexible cable with cable end | 1 conductor | mm² | 1…4 | 1…6 | 1…10 | | | 2.5…10 | 1…35 | 4…50 | 10…120 |
| | 2 conductors | mm² | 1…2.5 | 1…4 | 1.5…6 | | | 2.5…10 | 1…25 and 1…35 | 4…16 | 10…120 + 10…50 |
| Solid cable without cable end | 1 conductor | mm² | 1…4 | 1.5…6 | 1.5…10 | | | 2.5…16 | 1…35 | 4…50 | 10…120 |
| | 2 conductors | mm² | 1…4 | 1.5…6 | 2.5…10 | | | 2.5…16 | 1…25 and 1…35 | 6…25 | 10…120 + 10…50 |
| Screwdriver | Philips / Pozidriv | | N° 2 | N° 2 | N° 2 | | | N° 2 | – | – | – |
| | Flat screwdriver Ø | | Ø6 | Ø6 | Ø6 | | | Ø6 | – | Ø6…Ø8 | – |
| Hexagonal key | | | – | – | – | | | – | 4 | 4 | 4 |
| Tightening torque | | N.m | 1.7 | 1.7 | 2.5 | | | 1.8 | 5: ⩽ 25 mm² 8: 35 mm² | 12 (3) | 12 |

### Spring terminal connections (2) Deca contactors

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Flexible cable without cable end | 1 conductor | mm² | 2.5 (4: DT25) | 4 | 4 | 4 | – | 10 | – | – | |
| | 2 conductors | mm² | 2.5 (except DT25) | 4 | 4 | 4 | – | – | – | – | |

### Connection by bars or lugs Deca contactors

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bar c.s.a. | | | – | – | – | – | | – | – | 3 x 16 | 5 x 25 |
| Lug external Ø | | mm | 8 | 8 | 10 | 10 | | 8 | 16.5 | 17 | 25 |
| Ø of screw | | mm | M3.5 | M3.5 | M4 | M4 | | M3.5 | M6 | M6 | M8 |
| Screwdriver | Philips / Pozidriv | | N° 2 | N° 2 | N° 2 | N° 2 | | N° 2 | – | – | – |
| | Flat screwdriver Ø | | Ø6 | Ø6 | Ø6 | Ø6 | | Ø6 | – | Ø8 | – |
| Key for hexagonal headed screw | | | – | – | – | – | | – | 10 | 10 | 13 |
| Tightening torque | | N.m | 1.7 | 1.7 | 2.5 | 2.5 | | 1.8 | 6 | 9 | 12 |

## Control circuit connections

### Connection by cable (tightening via screw clamps) Deca, Deca green contactors

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Flexible cable without cable end | 1 conductor | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| | 2 conductors | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| Flexible cable with cable end | 1 conductor | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…2.5 | 1…2.5 |
| | 2 conductors | mm² | 1…2.5 | 1…2.5 | 1…2.5 | 1…2.5 | | 1…2.5 | 1…2.5 | 1…2.5 | 1…2.5 |
| Solid cable without cable end | 1 conductor | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| | 2 conductors | mm² | 1…4 | 1…4 | 1…4 | 1…4 | | 1…4 | 1…4 | 1…4 | 1…2.5 |
| Screwdriver | Philips / Pozidriv | | N° 2 | N° 2 | N° 2 | N° 2 | | N° 2 | N° 2 | N° 2 | N° 2 |
| | Flat screwdriver Ø | | Ø6 | Ø6 | Ø6 | Ø6 | | Ø6 | Ø6 | Ø6 | Ø6 |
| Tightening torque | | N.m | 1.7 | 1.7 | 1.7 | 1.7 | | 1.7 | 1.7 | 1.2 | 1.2 |

### Spring terminal connections (2) Deca contactors

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Flexible cable without cable end | 1 conductor | mm² | 2.5 | 2.5 | 2.5 | 2.5 | – | 2.5 | 0.75…2.5 | – | – |
| | 2 conductors | mm² | 2.5 | 2.5 | 2.5 | 2.5 | – | 2.5 | 0.75…2.5 | – | – |

### Connection by bars or lugs Deca contactors

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lug external Ø | | mm | 8 | 8 | 8 | 8 | | 8 | 8 | 8 | 8 |
| Ø of screw | | mm | M3.5 | M3.5 | M3.5 | M3.5 | | M3.5 | M3.5 | M3.5 | M3.5 |
| Screwdriver | Philips / Pozidriv | | N° 2 | N° 2 | N° 2 | N° 2 | | N° 2 | N° 2 | N° 2 | N° 2 |
| | Flat screwdriver Ø | | Ø6 | Ø6 | Ø6 | Ø6 | | Ø6 | Ø6 | Ø6 | Ø6 |
| Tightening torque | | N.m | 1.7 | 1.7 | 1.7 | 1.7 | | 1.7 | 1.7 | 1.2 | 1.2 |

*(1) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/121).*
*(2) If cable ends are used, choose the next size down (example: for 2.5 mm², use 1.5 mm²) and square crimp the cable ends using a special tool.*
*(3) Tightening torque for D80/ D95 (S207 Railway offers) is 5 N.m. Refer to LVCATRAIL_EN Catalogue for complete details on contactors for railway applications.*

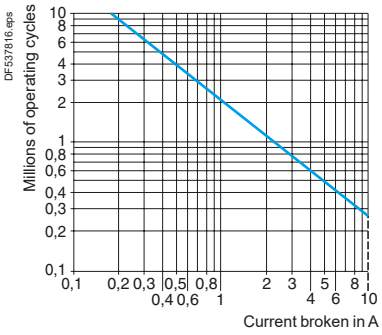
References:
pages B8/19 to B8/29

Dimensions:
pages B8/99 to B8/105

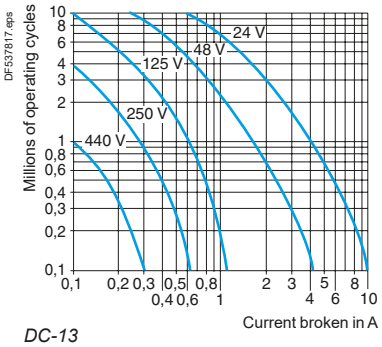
Schemes:
pages B8/106 and B8/107

## Characteristics of auxiliary contacts incorporated in the contactor

| | | | | |
|---|---|---|---|---|
| Mechanically linked contacts | Conforming to IEC 60947-5-1 | | | Each contactor has 2 N/O and N/C contacts mechanically linked on the same movable contact holder |
| Mirror contact | Conforming to IEC 60947-4-1 | | | The N/C contact on each contactor represents the state of the power contacts and can be connected to a PREVENTA safety module |
| Rated operational voltage (Ue) | Up to | | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | | **V** | 690 |
| | Conforming to UL, CSA | | **V** | 600 |
| Conventional thermal current (Ith) | For ambient temperature ≤ 60 °C | | **A** | 10 |
| Frequency of the operational current | | | **Hz** | 25…400 |
| Minimum switching capacity λ = $10^{-8}$ | U min | | **V** | 17 |
| | I min | | **mA** | 5 |
| Short-circuit protection | Conforming to IEC 60947-5-1 | | | gG fuse: 10 A |
| Rated making capacity | Conforming to IEC 60947-5-1, I rms | | **A** | ∼: 140, ⎓: 250 |
| Short-time rating | Permissible for | 1 s | **A** | 100 |
| | | 500 ms | **A** | 120 |
| | | 100 ms | **A** | 140 |
| Insulation resistance | | | **MΩ** | > 10 |
| Non-overlap time | Guaranteed between N/C and N/O contacts | | **ms** | 1.5 (on energisation and on de-energisation) |
| Tightening torque | Pozidriv / Philips head n° 2 and Ø6 | | **N.m** | 1.7 |




*AC-15*




*DC-13*

## Operational power of contacts conforming to IEC 60947-5-1

### a.c. supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| Operating cycles | V | 24 | 48 | 115 | 230 | 400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|
| 1 million | **VA** | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million | **VA** | 16 | 32 | 80 | 160 | 280 | 300 | 420 |
| 10 million | **VA** | 4 | 8 | 20 | 40 | 70 | 80 | 100 |

### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| Operating cycles | V | 24 | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|---|
| 1 million | **W** | 96 | 76 | 76 | 76 | 44 |
| 3 million | **W** | 48 | 38 | 38 | 32 | – |
| 10 million | **W** | 14 | 12 | 12 | – | – |

Ref.
Contactors

References:
pages B8/19 to B8/29
Dimensions:
pages B8/99 to B8/105
Schemes:
pages B8/106 and B8/107

# Characteristics

## Environment

| Contact block type (not dust/damp protected) | | | | LADN or LADC | LADT and LADS | LADR | LAD8 | LADN●●R |
|---|---|---|---|---|---|---|---|---|
| Conforming to standards | | | | IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 | | | | |
| Product certifications | | | | UL, CSA, CCC, EAC, UKCA, CB certification | | | | |
| Degree of protection | Conforming to IEC 60529 | | | Protection against direct finger contact IP 2X | | | | |
| Ambient air temperature around the device | Storage | | °C | -60…+80 | | | | |
| | Operation | | °C | -5…+60 | | | | -25…+70 (1) |
| Maximum operating altitude | Without derating | | m | 3000 | | | | |
| Connection by cable | Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end | | mm² | Min: 1 x 1; Max: 2 x 2.5 | | | | Max: 2 x 2.5 |
| Tightening torque | | | N.m | 1.7 | | | | |
| Spring terminal connections | Flexible or solid cable without cable end | | mm² | Max: 2 x 2.5 | | | | |

## Instantaneous and time delay contact characteristics

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Number of contacts | | | | 1, 2 or 4 | 2 | 2 | 2 | 2 or 4 |
| Rated operational voltage (Ue) | Up to | | V | 690 | | | | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 | | V | 690 | | | | |
| | Conforming to UL, CSA | | V | 600 | | | | |
| Conventional thermal current (Ith) | For ambient temperature ≤ 60 °C | | A | 10 | | | | |
| Frequency of the operational current | | | Hz | 25…400 | | | | |
| Minimum switching capacity | | U min | V | 17 | | | | |
| | | I min | mA | 5 | | | | 1 |
| Short-circuit protection | Conforming to IEC 60947-5-1 gG fuse | | A | 10 | | | | |
| Rated making capacity | Conforming to IEC 60947-5-1 | I rms | A | ∼: 140; ⎓: 250 | | | | |
| Short-time rating | Permissible for | 1 s | A | 100 | | | | |
| | | 500 ms | A | 120 | | | | |
| | | 100 ms | A | 140 | | | | |
| Insulation resistance | | | MΩ | > 10 | | | | |
| Non-overlap time | Guaranteed between N/C and N/O contacts | | ms | 1.5 (on energisation and on de-energisation) | | | | |
| Overlap time | Guaranteed between N/C and N/O contacts on LADC22 | | ms | 1.5 | – | – | – | – |
| Time delay (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the front face | Ambient air temperature for operation | | °C | – | -40…+70 | -40…+70 | – | – |
| | Repeat accuracy | | | – | ±2 % | ±2 % | – | – |
| | Drift up to 0.5 million operating cycles | | | – | +15 % | +15 % | – | – |
| | Drift depending on ambient air temperature | | | – | 0.25 % per °C | 0.25 % per °C | – | – |
| Mechanical durability | In millions of operating cycles | | | 30 | 5 | 5 | 30 | 30 |
| Operational power of contacts | | | | See page B8/94 | | | | See page B8/95 |
| Degree of pollution | | | | IP20 | | | | IP50 (2) |

*(1) NC on-delay up to 200 ms under extreme low temperature: -40 to -25 °C.*
*(2) IP50 for the contacts only, after installed on contactor.*

References: page B8/116
Dimensions: pages B8/99 and B8/100
Schemes: pages B8/106 and B8/107

# Characteristics

## Environment

| Contact block type (dust/damp protected) | | | LA1DX | LA1DZ (4 contacts: 2 protected + 2 non protected) | | LA1DY |
|---|---|---|---|---|---|---|
| | | | Protected | Protected | Non protected | Protected |
| Conforming to standards | | | IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 | | | |
| Product certifications | | | UL, CSA, CCC, EAC, UKCA, CB certification | | | |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP 2X | | | |
| Ambient air temperature | Storage and operation | **°C** | -25…+70 | | | |
| Cabling | Phillips n° 2 and Ø6 mm<br>Flexible or solid conductor with or without cable end | **mm²** | Min: 1 x 1; max: 2 x 2.5 | | | |
| Tightening torque | | **N.m** | 1.7 | | | |
| Number of contacts | | | 2 | 2 | 2 | 2 |

## Contact characteristics

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Rated operational voltage (Ue) | Up to | | **Vac** | 125 | 125 | 690 | 125 |
| | | | **Vdc** | 30 | 30 | | 30 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 | | **V** | 250 | 250 | 690 | 250 |
| | Conforming to UL, CSA | | **V** | – | – | 600 | – |
| Conventional thermal current (Ith) | For ambient temperature ≤ 40 °C | | **A** | – | – | 10 | – |
| Maximum operational current (Ie) | | | **mA** | 100 | 100 | – | 100 |
| Frequency of the operational current | | | **Hz** | – | – | 25…400 | – |
| Minimum switching capacity | | U min | **V** | 5 | 5 | 17 | 5 |
| | | I min | **mA** | 1 | 1 | 5 | 1 |
| Short-circuit protection | Conforming to IEC 609475-1 gG fuse | | **A** | – | – | 10 | – |
| Rated making capacity | Conforming to IEC 609475-1 | I rms | **A** | – | – | ∿:140; ⎓: 250 | – |
| Short-time rating | Permissible for | 1 s | **A** | – | – | 100 | – |
| | | 500 ms | **A** | – | – | 120 | – |
| | | 100 ms | **A** | – | – | 140 | – |
| Insulation resistance | | | **MΩ** | > 10 | > 10 | > 10 | > 10 |
| Mechanical durability | In millions of operating cycles | | | 5 | 5 | 30 | 5 |
| Materials and technology used for dust and damp protected contacts | | | | Gold alloy - Single break | Gold alloy - Single break | – | Gold alloy - Single break with crossed bars |

Ref.
Contactors

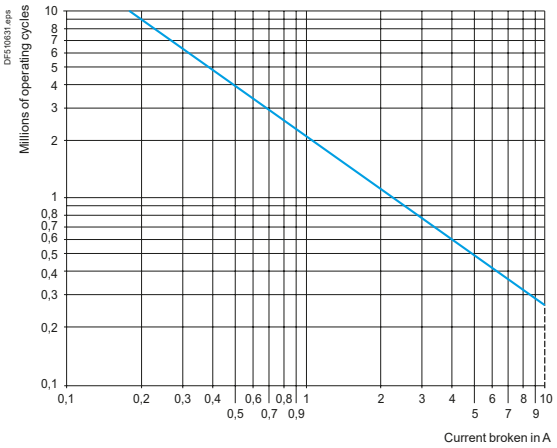
References: page B8/116
Dimensions: pages B8/99 and B8/100
Schemes: pages B8/106 and B8/107

## Rated operational power of not dust/damp protected contacts (conforming to IEC 60947-5-1)

### a.c. supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

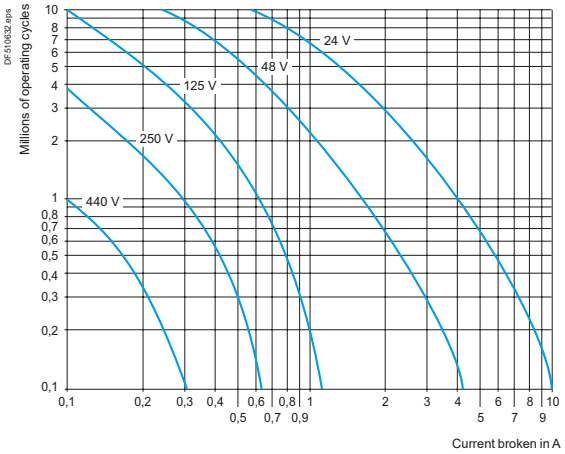
| Operating cycles | V | 24 | 48 | 115 | 230 | 400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|
| 1 million | **VA** | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million | **VA** | 16 | 32 | 80 | 160 | 280 | 300 | 420 |
| 10 million | **VA** | 4 | 8 | 20 | 40 | 70 | 80 | 100 |




### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| Operating cycles | V | 24 | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|---|
| 1 million | **W** | 96 | 76 | 76 | 76 | 44 |
| 3 million | **W** | 48 | 38 | 38 | 32 | – |
| 10 million | **W** | 14 | 12 | 12 | – | – |



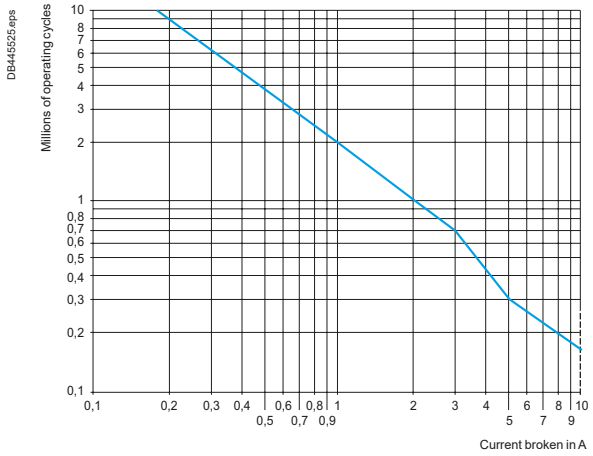

Ref.
Contactors

## LADN...R Rated operational power of not dust/damp protected contacts (conforming to IEC 60947-5-1)

### a.c. supply, categories AC-14 and AC-15

Electrical durability (valid for up to 3600 operating cycles/hour when current less than 1A, up to 1800 operation cycles/hour when current more than 1A) on an inductive load such as the coil of an electromagnet: making current (cos ϕ 0.7) = 10 times the power broken (cos ϕ 0.4) same with LADN

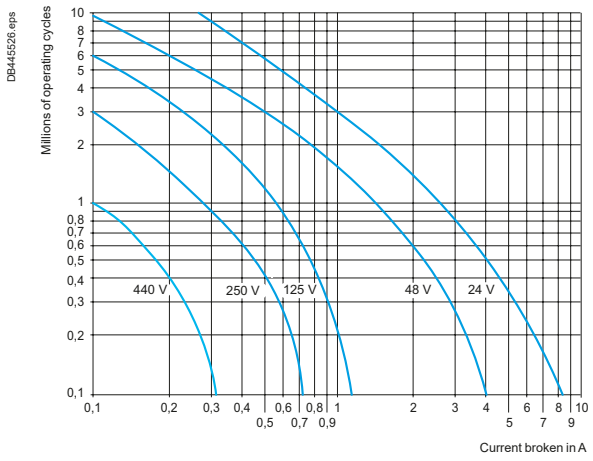
| Operating cycles | V | 24 | 48 | 115 | 230 | 400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|
| 1 million | **VA** | 60 | 120 | 280 | 560 | 800 | 880 | 1200 |
| 2 million | **VA** | 20 | 40 | 92 | 184 | 320 | 352 | 480 |
| 3 million | **VA** | 16 | 32 | 80 | 160 | 280 | 300 | 420 |




### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| Operating cycles | V | 24 | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|---|
| 0.5 million | **W** | 96 | 100 | 95 | 110 | 70 |
| 1 million | **W** | 54 | 60 | 60 | 60 | 44 |
| 2 million | **W** | 34 | 36 | 38 | 38 | – |
| 3 million | **W** | 24 | 24 | 25 | 25 | – |




Ref.
Contactors

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 |
| Product certifications | | | UL, CSA |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP 2X |
| Ambient air temperature around the device | Storage | °C | -40…+80 |
| | Operation | °C | -25…+55 |
| | Permissible for operation at Uc | °C | -25…+70 |

## Suppressor modules Deca contactors

| Module type | | | LA4DA, LAD4RC, LAD4RC3 | LA4DB, LAD4T, LAD4T3 | LA4DC, LAD4D3 | LA4DE, LAD4V, LAD4V3 |
|---|---|---|---|---|---|---|
| Type of protection | | | RC circuit | Bidirectional peak limiting diode | Diode | Varistor |
| Rated control circuit voltage (Uc) | | V | ∿ 24…415 | ∿ or ⎓ 24…440 | ⎓ 12…250 | ∿ or ⎓ 24…250 |
| Maximum peak voltage | | | 3 Uc | 2 Uc | Uc | 2 Uc |
| Natural RC frequency | 24/48 V | Hz | 400 | – | – | – |
| | 50/127 V | Hz | 200 | – | – | – |
| | 110/240 V | Hz | 100 | – | – | – |
| | 380/415 V | Hz | 150 | – | – | – |

## Mechanical latch blocks (1) Deca, Deca green contactors

| Mechanical latch block type | | | | LAD6K10 (2) | LA6DK20 |
|---|---|---|---|---|---|
| For use on contactor | | | | LC1D09…D80A DT20…DT80A | LC1D80…D150 LP1D80 and LC1D115 |
| Product certifications | | | | UL, CSA | UL, CSA |
| Rated insulation voltage | Conforming to IEC 60947-5-1 | | V | 690 | 690 |
| Rated control circuit voltage | ∿ 50/60 Hz and ⎓ | | V | 24…415 | 24…415 |
| Power required | For unlatching | ∿ | VA | 25 | 25 |
| | | ⎓ | W | 30 | 30 |
| Maximum operating rate | In operating cycles/hour | | | 1200 | 1200 |
| On-load factor | | | | 10 % | 10 % |
| Mechanical durability at Uc | In millions of operating cycles | | | 0.5 | 0.5 |

*(1) Unlatching can be manually operated or electrically controlled (pulsed).*
*The **LA6DK** or **LAD6K** latch coil and the **LC1D** operating coil must not be energised simultaneously.*
*The duration of the **LA6DK** or **LAD6K** and **LC1D** control signals must be ⩾ 100 ms.*
*(2) LAD8N side mounted auxiliary contact blocks cannot be used with Deca Green contactors (LC1D40A....LC1D80A), when mounted with LAD6K mechanical latch block.*

Ref.
Contactors

References:
pages B8/117 and B8/119
Dimensions:
pages B8/99 and B8/100
Schemes:
page B8/107

# Characteristics

## Environment Deca, Deca green contactors

| **Module type** | | | **LA4DT** (On-delay) |
|---|---|---|---|
| Conforming to standards | | | IEC 60255-5 |
| Product certifications | | | UL, CSA |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP 2X |
| Ambient air temperature around the device | Storage | **°C** | -40…+80 |
| | Operation | **°C** | -25…+55 |
| | For operation at Uc | **°C** | -25…+70 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1 | **V** | 250 |
| Cabling | Phillips n° 2 and Ø6 mm Flexible or solid conductor with or without cable end | **mm²** | Min: 1 x 1; max: 2 x 2.5 |
| Tightening torque | | **N.m** | 1.7 |

## Control circuit characteristics

| | | | |
|---|---|---|---|
| Built-in protection | Of the input | | By varistor |
| | Contactor coil suppression | | By varistor |
| Rated control circuit voltage (Uc) | | **V** | ∼ or ⎓: 24…250 |
| Permissible variation | | | 0.8…1.1 Uc |
| Type of control | | | By mechanical contact only |

## Timing characteristics

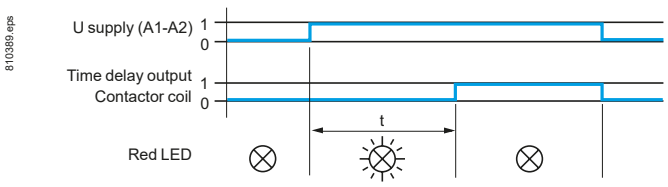
| | | | |
|---|---|---|---|
| Timing ranges | | **s** | 0.1…2; 1.5…30; 25…500 |
| Repeat accuracy | 0…40 °C | | ±3 % (10 ms minimum) |
| Reset time | During time delay period | **ms** | 150 |
| | After time delay period | **ms** | 50 |
| Immunity to microbreaks | During time delay period | **ms** | 10 |
| | After time delay period | **ms** | 2 |
| Minimum control pulse duration | | **ms** | – |
| Time delay signalling | By LED | | Illuminates during time delay period |

## Switching characteristics (solid state type)

| | | | |
|---|---|---|---|
| Maximum power dissipated | | **W** | 2 |
| Leakage current | | **mA** | < 5 |
| Residual voltage | | **V** | 3.3 |
| Overvoltage protection | | | 3 kV; 0.5 joule |
| Electrical durability | In millions of operating cycles | | 30 |

## Function diagram

**Electronic on-delay timer LA4DT**




References:
page B8/115

Dimensions:
pages B8/99 and B8/100

Schemes:
pages B8/106 and B8/107

# Characteristics

## Environment Deca, Deca green contactors

| | | | |
|---|---|---|---|
| Conforming to standards | | | IEC 60255-5 |
| Product certifications | | | UL, CSA |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP 2X |
| Ambient air temperature around the device | Storage | **°C** | -40…+80 |
| | Operation | **°C** | -25…+55 |
| | Permissible for operation at Uc | **°C** | -25…+70 |

## Other characteristics

| **Module type** | | | | **LA4DFB for Deca contactors** With relay | **LA4DWB for Deca, Deca green contactors** Solid state |
|---|---|---|---|---|---|
| Conventional thermal current (Ith) | For ambient temperature ≤ 50 °C | | **A** | 8 | |
| Rated insulation voltage | Conforming to IEC 60947-5-1 | | **V** | 250 | |
| Rated operational voltage | Conforming to IEC 60947-5-1 | | **V** | 250 | |
| Indication of input state | | | | By integral LED which illuminates when the contactor coil is energised | |
| Input signals | Control voltage (E1-E2) | | **V** | ⎓ 24 | ⎓ 24 |
| | Permissible variation | | **V** | 17…30 | 5…30 |
| | Current consumption at 20 °C | | **mA** | 25 | 8.5 for 5 V<br>15 for 24 V |
| | State “0” guaranteed for | U | **V** | < 2.4 | < 2.4 |
| | | I | **mA** | < 2 | < 2 |
| | State “1” guaranteed for | U | **V** | 17 | 5 |
| Built-in protection | Against reversed polarity | | | By diode | By diode |
| | Of the input | | | By diode | By diode |
| Electrical durability at 220 A/240 V | In millions of operating cycles | | | 10 | 20 |
| Maximum immunity to microbreaks | | | **ms** | 4 | 1 |
| Power dissipated | At 20 °C | | **W** | 0.6 | 0.4 |
| Direct mounting on contactor | With coil | ∿ 24…250 V | | **LC1D80…D150** | – |
| | | ∿ 100…250 V | | – | **LC1D80…D115** |
| | | ∿ 380…415 V | | – | – |
| Mounting with cabling adapter LAD4BB | With coil | ∿ 24…250 V | | **LC1D09…D38, LC1DT20…DT40** | **LC1D09…D38, LC1DT20…DT40** |
| | | ∿ 380…415 V | | – | – |
| Mounting with cabling adapter LAD4BB3 | With coil | ∿ 24…250 V | | **LC1D40A…D80A** | **LC1D40A…D80A** |
| | | ∿ 380…415 V | | **LC1D40A…D80A** | **LC1D40A…D80A** |

Total operating time at Uc (of the contactor)

The operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

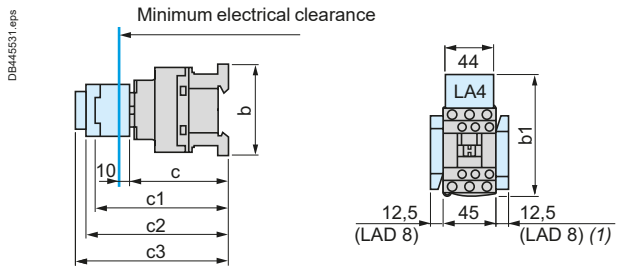
| | | | | **LC1D09… D38, LC1DT20… DT40** | **LC1D40A… D80A** | **LC1D80 and D95** | **LC1D115** | **LC1D150** |
|---|---|---|---|---|---|---|---|---|
| With **LA4DFB** | | "C" | **ms** | 20…30 | 28…34 | 28…43 | 28...58 | 28...43 |
| | | “O” | **ms** | 16…24 | 20…24 | 18…32 | 18...32 | 52...87 |

| | | | |
|---|---|---|---|
| Cabling | Phillips n° 2 and Ø6 mm<br>Flexible or solid cable<br>with or without cable end | **mm²** | Min: 1 x 1; max: 2 x 2.5 |
| Tightening torque | | **N.m** | 1.7 |

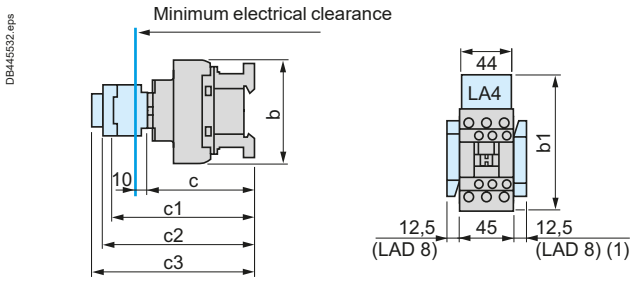
References: page B8/115
Dimensions: pages B8/99 and B8/100
Schemes: pages B8/106 and B8/107

# Dimensions

## **LC1D09…D18** (3-pole)



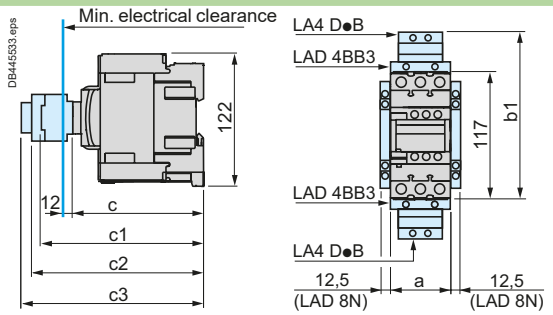

## **LC1D25…D38** (3-pole), **LC1DT20…DT40** (4-pole)



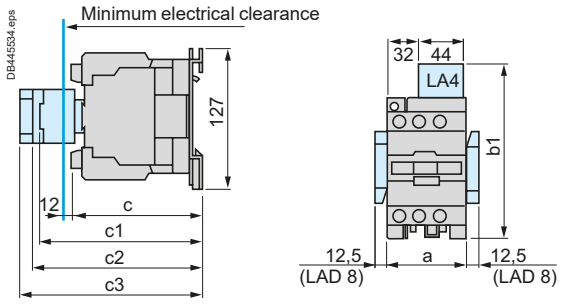

| LC1 | | D09…D18 | D093… D123 | D099… D129 | D25… D38 | D183… D323 | D098, D128, DT20 and DT25 | DT203 and DT253 | DT32 and DT40 D188...D258 | D1883, D2583, DT323 and DT403 |
|---|---|---|---|---|---|---|---|---|---|---|
| b | without add-on blocks | 77 | 99 | 80 | 85 | 99 | 85 | 99 | 91 | 105 |
| b1 | with LAD4BB | 94 | 107 | 95,5 | 98 | 107 | 98 | – | – | – |
| | with LA4D●2 | 110 (1) | 123 (1) | 111.5 (1) | 114 (1) | 123 (1) | 114 | – | – | – |
| | with LA4DF, DT | 119 (1) | 132 (1) | 120.5 (1) | 123 (1) | 132 (1) | 129 | – | – | – |
| | with LA4DW, DL | 126 (1) | 139 (1) | 127.5 (1) | 130 (1) | 139 (1) | 190 | – | – | – |
| c | without cover or add-on blocks | 84 | 84 | 84 | 90 | 90 | 90 | 90 | 97 | 97 |
| | with cover, without add-on blocks | 86 | 86 | 86 | 92 | 92 | 92 | 92 | 99 | 99 |
| c1 | with LADN or C (2 or 4 contacts) | 117 | 117 | 117 | 123 | 123 | 123 | 123 | 131 | 131 |
| c2 | with LAD6K10 | 129 | 129 | 129 | 135 | 135 | 135 | 135 | 143 | 143 |
| c3 | with LADT, R, S | 137 | 137 | 137 | 143 | 143 | 143 | 143 | 151 | 151 |
| | with LADT, R, S and sealing cover | 141 | 141 | 141 | 147 | 147 | 147 | 147 | 155 | 155 |
| | with LADN●●R (2 or 4 contacts) | 120 | 120 | 120 | 126 | 126 | 126 | 126 | 134 | 134 |

*(1) Including **LAD4BB**.*

## **LC1D40A…D80A** (3-pole), **LC1DT60A…DT80A** (4-pole)



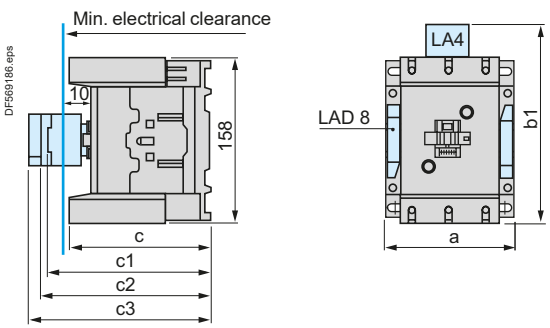

## **LC1D80** and **D95** (3-pole), **LC1D80004** and **D80008** (4-pole), **D40008** and **D65008** (4-pole)




| LC1 | | D40A…D80A | DT60A…DT80A | D40008 | D80 | D95, D65008 | D80004 | D80008 |
|---|---|---|---|---|---|---|---|---|
| a | | 55 | 70 | 85 | 85 | 85 | 96 | 96 |
| b1 | with LA4D●2 | – | – | 135 | 135 | 135 | 135 | 135 |
| | with LA4DB3 or LAD4BB3 | 136 | – | – | 135 | – | – | – |
| | with LA4DF, DT | 157 | – | 142 | 142 | 142 | 142 | 142 |
| | with LA4DM, DW, DL | 166 | – | 150 | 150 | 150 | 150 | 150 |
| c | without cover or add-on blocks | 118 | 118 | 125 | 125 | 125 | 125 | 140 |
| | with cover, without add-on blocks | 120 | 120 | – | 130 | 130 | – | – |
| c1 | with LADN (1 contact) | – | – | 139 | 150 | 150 | 150 | 150 |
| | with LADN or C (2 or 4 contacts) | 150 | 150 | 147 | 158 | 158 | 158 | 158 |
| c2 | with LAD6K10 or LA6DK | 163 | 163 | 159 | 170 | 170 | 170 | 170 |
| c3 | with LADT, R, S | 171 | 171 | 167 | 178 | 178 | 178 | 178 |
| | with LADT, R, S and sealing cover | 175 | 175 | 171 | 182 | 182 | 182 | 182 |
| | with LADN●●R (2 or 4 contacts) | 153 | 153 | 150 | 161 | 161 | 161 | 161 |

## **LC1D115** and **D150** (3-pole), **LC1D115004** (4-pole)

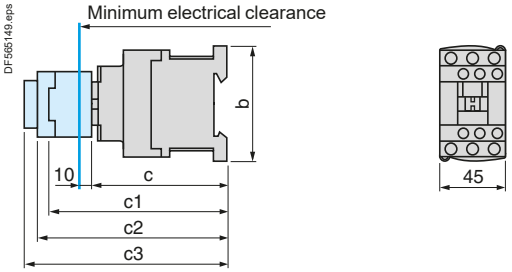
| LC1 | | D115, D150 | D115004 | D1150046 |
|---|---|---|---|---|
| a | | 120 | 150 | 155 |
| b1 | with LA4DA2 | 174 | 174 | 174 |
| | with LA4DF, DT | 185 | 185 | 185 |
| | with LA4DM, DL | 188 | 188 | 188 |
| | with LA4DW | 188 | 188 | 188 |
| c | without cover or add-on blocks | 132 | 132 | 115 |
| | with cover, without add-on blocks | 136 | – | – |
| c1 | with LADN or C (2 or 4 contacts) | 150 | 150 | 150 |
| c2 | with LA6DK20 | 155 | 155 | 155 |
| c3 | with LADT, R, S | 168 | 168 | 168 |
| | with LADT, R, S and sealing cover | 172 | 172 | 172 |
| | with LADN●●R (2 or 4 contacts) | 153 | 153 | 153 |



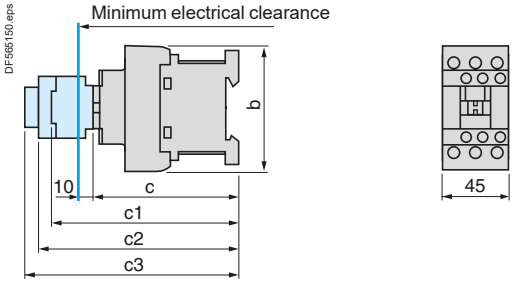

References:
pages B8/23 to B8/29
Characteristics:
pages B8/84 to B8/91
Schemes:
pages B8/106 and B8/107

# Dimensions

## **LC1D09…D18** (3-pole)

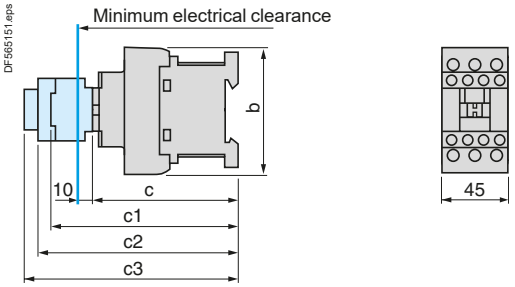



## **LC1D25…D38** (3-pole)



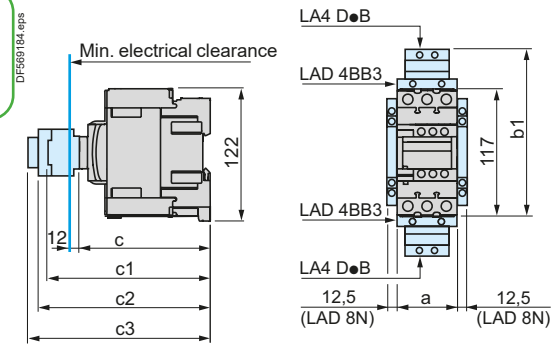

| **LC1** | | **D09…D18** | **D093…D123** | **D099…D129** | **D25…D38** | **D183…D323** |
|---|---|---|---|---|---|---|
| b | | 77 | 99 | 80 | 85 | 99 |
| c | without cover or add-on blocks | 93 | 93 | 93 | 99 | 99 |
| | with cover, without add-on blocks | 95 | 95 | 95 | 101 | 101 |
| c1 | with LADN or C (2 or 4 contacts) | 126 | 126 | 126 | 132 | 132 |
| c2 | with LAD6K10 | 138 | 138 | 138 | 144 | 144 |
| c3 | with LADT, R, S | 146 | 146 | 146 | 152 | 152 |
| | with LADT, R, S and sealing cover | 150 | 150 | 150 | 156 | 156 |

## **LC1DT20…DT40** (4-pole)

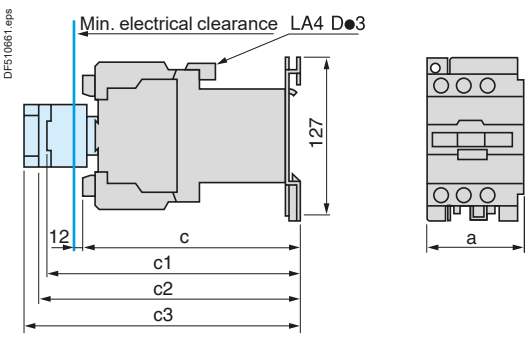



| **LC1** | | **DT20** and **DT25**<br>**D098** and **D128** | **DT203** and **DT253**<br>**D0983** and **D1283** | **DT32** and **DT40**<br>**D188…D258** | **DT323** and **DT403**<br>**D1883** and **D2583** |
|---|---|---|---|---|---|
| b | | 85 | 99 | 91 | 105 |
| c | with cover | 102 | 102 | 107 | 107 |
| c1 | with LADN or C (2 or 4 contacts) | 133 | 133 | 138 | 138 |
| c2 | with LAD6K10 | 145 | 145 | 150 | 150 |
| c3 | with LADT, R, S | 153 | 153 | 158 | 158 |
| | with LADT, R, S and sealing cover | 157 | 157 | 162 | 162 |

## **LC1D40A…D80A** (3-pole), **LC1DT60A…DT80A** (4-pole)




## **LC1D80** and **D95** (3-pole), **LP1D80004, LP1D80008** (4-pole), **LP1D40008** and **D65008** (4-pole)




| | | **LC1D40A … D80A** | **LC1 DT60A…DT80A** | **LP1D40008** and **D65008** | **LC1 D80** and **D95** | **LP1D80004** | **LP1D80008** |
|---|---|---|---|---|---|---|---|
| a | | 55 | 72 | 85 | 85 | 96 | 96 |
| b1 | with LAD4BB3 | 136 | 136 | – | – | – | – |
| | with LA4DF, DT | 157 | 157 | – | – | – | – |
| c | without cover or add-on blocks | 118 | 118 | 182 | 181 | 181 | 196 |
| | with cover, without add-on blocks | 120 | 120 | – | 186 | – | – |
| c1 | with LADN (1 contact) | – | – | 196 | 204 | 204 | 204 |
| | with LADN or C (2 or 4 contacts) | 150 | 150 | 202 | 210 | 210 | 210 |
| c2 | with LAD6K10 or LA6DK20 | 163 | 163 | 213 | 221 | 221 | 221 |
| c3 | with LADT, R, S | 171 | 171 | 221 | 229 | 229 | 229 |
| | with LADT, R, S and sealing cover | 175 | 175 | 225 | 233 | 233 | 233 |

**LC1D115●●●** and **LC1D150●●●** with ⎓ coil: see page B8/99.

References:
pages B8/23 to B8/29

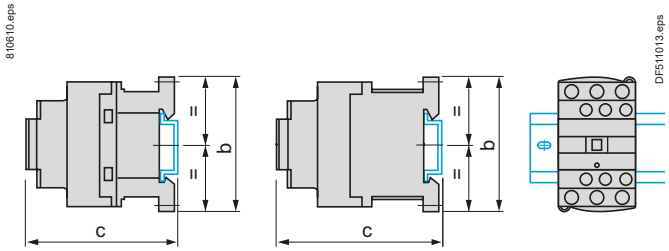
Characteristics:
pages B8/84 to B8/91

Schemes:
pages B8/106 and B8/107

# Mounting

## LC1D09…D38, DT20…DT40

**On mounting rail NSYSDR200B, NSYSDR200BD or NSYSDR200** (width 35 mm)




**Control circuit: a.c.**

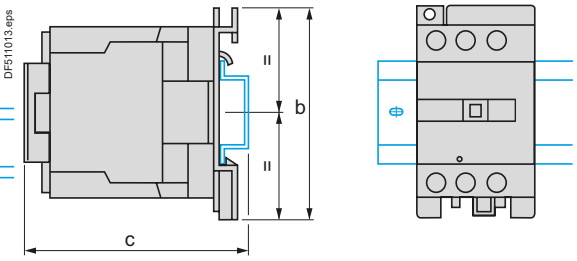
| LC1 | D09… D18 | D25… D38 | DT20 and DT25 | DT32 and DT40 |
|---|---|---|---|---|
| b | 77 | 85 | 85 | 100 |
| c (NSYSDR200B or NSYSDR200BD) (1) | 88 | 94 | 94 | 101 |
| c (NSYSDR200) (1) | 96 | 102 | 102 | 109 |

**Control circuit: d.c.**

| LC1 | D09… D18 | D25… D38 | DT20 and DT25 | DT32 and DT40 |
|---|---|---|---|---|
| b | 77 | 85 | 85 | 109 |
| c (NSYSDR200B or NSYSDR200BD) (1) | 97 | 103 | 104 | 118 |
| c (NSYSDR200) (1) | 105 | 110 | 111 | 126 |

## LC1D40A…D80A, LC1DT60A and DT80A, LC1D80 and D95, LC1D40008 and D65008

**On mounting rail AM1DL201** (width 75 mm) (2)
**On mounting rail NSSDPR●● or NSYSDR200** (width 35 mm)




**Control circuit: a.c.**

| LC1 | D40A…D80A DT60A…DT80A | D80 and D95 | D40008 and D65008 |
|---|---|---|---|
| b | 122 | 127 | 127 |
| c | – | 147 | 143 |
| c (AM1DL201) (1) | – | 137 | 133 |
| c (NSSDPR●● or NSYSDR200 (1) | 128 | 137 | 133 |

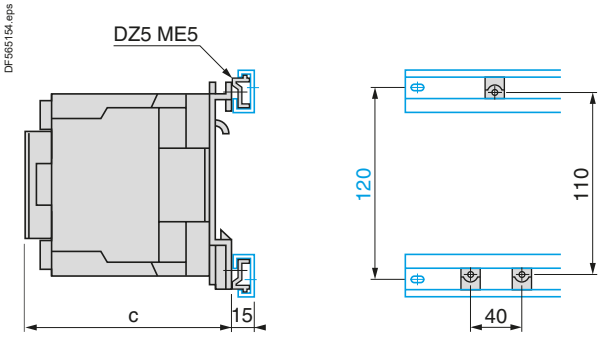
**Control circuit: d.c.**

| LC1 | D40A…D80A DT60A…DT80A | D80 and D95 | D40008 and D65008 |
|---|---|---|---|
| c | – | 205 | 200 |
| c (AM1DL201) (1) | – | 195 | 190 |
| c (NSSDPR●● or NSYSDR200) (1) | 128 | – | 190 |

*(1) With safety cover.*
*(2) Except for **LC1D40A**…**D80A**, **LC1DT60A** and **DT80A**.*

## LC1D80 and D95, LP1D80

**On 2 mounting rails DZ5MB on 120 mm centres**




**Control circuit: a.c.**

| LC1 | D80 and D95 |
|---|---|
| c with cover | 130 |

**Control circuit: d.c.** (3)

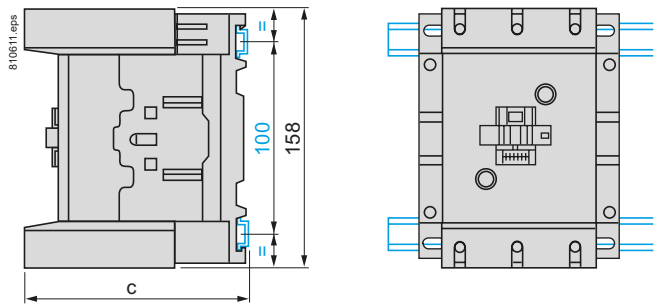
| LC1 | D80 and D95 |
|---|---|
| c with cover | 186 |

| LP1 | D80 |
|---|---|
| c | 181 |

*(3) Leave a 9 mm gap between 2 contactors if left on for more than 4 hours.*

## LC1D115, D150

**On 2 mounting rails DZ5MB on 120 mm centres**




**Control circuit: a.c. or d.c.**

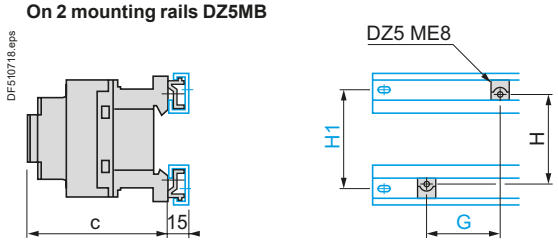
| LC1 | D115 and D150 | D1156 and D1506 |
|---|---|---|
| c (NSYSDR200B or NSYSDR200BD) | 134.5 | 117.5 |
| c (NSYSDR200 or ED●●●) | 142.5 | 125.5 |

References: pages B8/23 to B8/29
Characteristics: pages B8/84 to B8/91
Schemes: pages B8/106 and B8/107

# Mounting

## LC1D09…D38 and LC1DT20…DT40

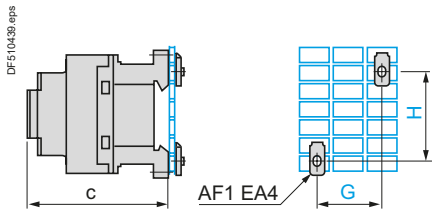
**On 2 mounting rails DZ5MB**




| Control circuit: | a.c. | | d.c. | |
|---|---|---|---|---|
| **LC1** | **D09…D18** | **D25…D38** | **D09…D18** | **D25…D38** |
| c with cover | 86 | 92 | 95 | 101 |
| G | 35 | 35 | 35 | 35 |
| H | 60 | 60 | 70 | 70 |
| H1 | 70 | 70 | 70 | 70 |
| **4-pole contactors** | | | | |
| **LC1** | **DT20 and DT25** | **DT32 and DT40** | **DT20 and DT25** | **DT32 and DT40** |
| c | 92 | 99 | 102 | 107 |
| G | 35 | 35 | 35 | 35 |
| H | 60 | 60 | 70 | 70 |
| H1 | 70 | 70 | 70 | 70 |

## LC1D09…D38 and LC1DT20…DT40

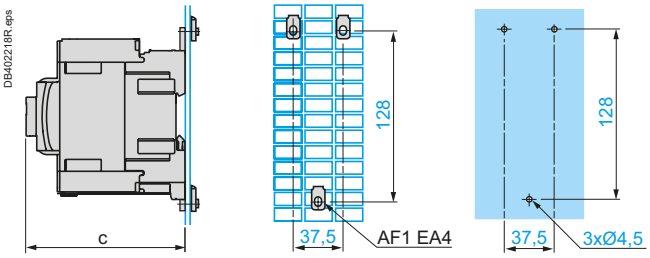
**On pre-slotted mounting plate AM1 PA, PB, PC**




| Control circuit: | a.c | | d.c | |
|---|---|---|---|---|
| **LC1** | **D09…D18** | **D25…D38** | **D09…D18** | **D25…D38** |
| c with cover | 86 | 92 | 95 | 101 |
| G | 35 | 35 | 35 | 35 |
| H | 60/70 | 60/70 | 70 | 70 |
| **LC1** | **DT20 and DT25** | **DT32 and DT40** | **DT20 and DT25** | **DT32 and DT40** |
| c with cover | 92 | 99 | 102 | 107 |
| G | 35 | 35 | 35 | 35 |
| H | 60 | 60 | 70 | 70 |

## LC1D40A…D80A, LC1DT60A…DT80A

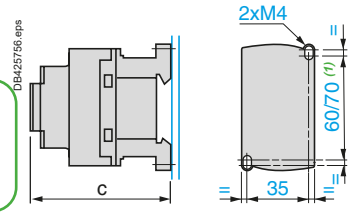
**On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted**




| Control circuit: | a.c | d.c. |
|---|---|---|
| **LC1** | **D40A…D80A , DT60A…DT80A** | **D40A…65A , DT60A…DT80A** |
| c with cover | 120 | 120 |

## LC1D09…D38, LC1DT20…DT40

**Panel mounted**

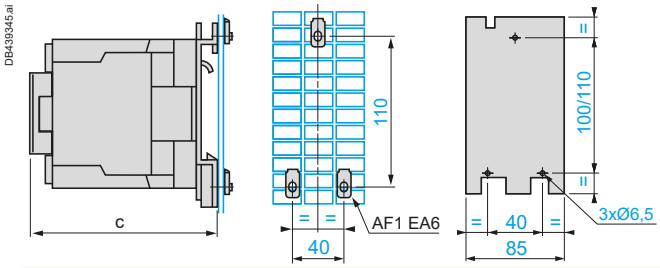



*(1) for DC coil: 70 mm only.*

| Control circuit: | a.c | | d.c | |
|---|---|---|---|---|
| **LC1** | **D09…D18** | **D25…D38** | **D09…D18** | **D25…D38** |
| c with cover | 86 | 92 | 95 | 101 |
| **4-pole contactors** | | | | |
| **LC1** | **DT20 and DT25** | **DT32 and DT40** | **DT20 and DT25** | **DT32 and DT40** |
| c with cover | 92 | 99 | 102 | 107 |

## LC1D80 and D95, LC1D40008 and D65008, LP1D80

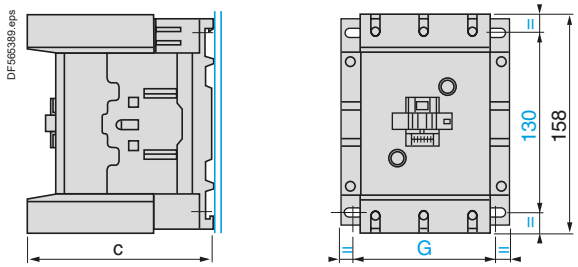
**On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted**




| Control circuit: | a.c | | d.c. |
|---|---|---|---|
| **LC1** | **D80 and D95, D40008 and D65008** | | **D80 and D95 D40008 and D65008** |
| c with cover | 130 | | 186 |
| **LP1** | – | – | **D80** |
| c without cover | – | – | 181 |

## LC1D115, D150

**Panel mounted**




| LC1 | D115 | D1156 | D150 | D1506 |
|---|---|---|---|---|
| c | 132 | 115 | 132 | 115 |
| G (3-pole) | 96/110 | 96/110 | 96/110 | 96/110 |
| G (4-pole) | 130/144 | 130/144 | – | – |

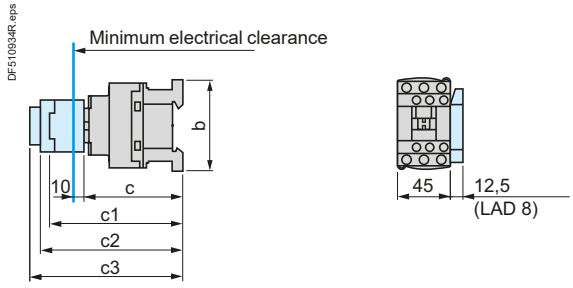
References:
pages B8/23 to B8/29

Characteristics:
pages B8/84 to B8/91

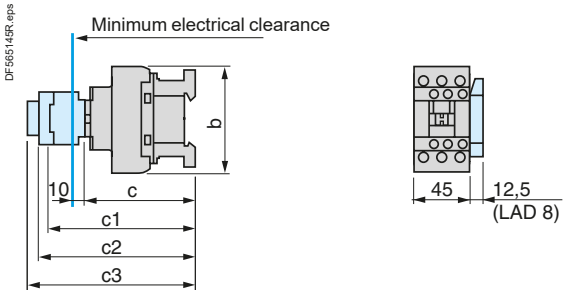
Schemes:
pages B8/106 and B8/107

# Dimensions

## **LC1D09…D18** (3-pole), with AC/DC compatible coil

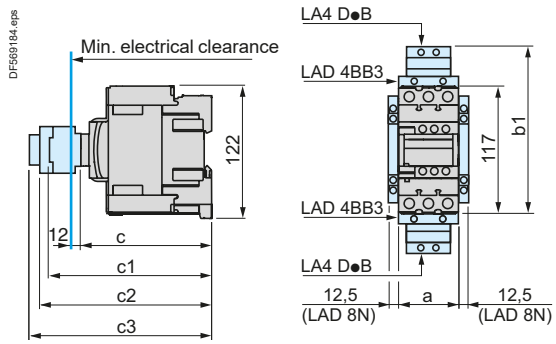



## **LC1D25…D38** (3-pole), with AC/DC compatible coil




| LC1 | | D09…D18 | D25…D38 |
|---|---|---|---|
| b | without add-on blocks | 77 | 85 |
| c | without cover or add-on blocks | 84 | 90 |
| | with cover, without add-on blocks | 86 | 92 |
| c1 | with LADN or C (2 or 4 contacts) | 117 | 123 |
| c2 | with LAD6K10 | 129 | 135 |
| c3 | with LADT, R, S | 137 | 143 |
| | with LADT, R, S and sealing cover | 141 | 147 |

## **LC1D40A…D80A** (3-pole), **LC1DT60A…DT80A** (4-pole), with AC/DC compatible coil




| LC1 | | D40A…D80A | DT60A…DT80A |
|---|---|---|---|
| a | | 55 | 70 |
| b1 | LAD4BB3 | 136 | – |
| | with LAD4DWB | 166 | – |
| c | without cover or add-on blocks | 118 | 118 |
| | with cover, without add-on blocks | 120 | 120 |
| c1 | with LADN (1 contact) | – | – |
| | with LADN or C (2 or 4 contacts) | 150 | 150 |
| c2 | with LAD6K10 | 163 | 163 |
| c3 | with LADT, R, S | 171 | 171 |
| | with LADT, R, S and sealing cover | 175 | 175 |

References:
pages B8/19 to B8/22

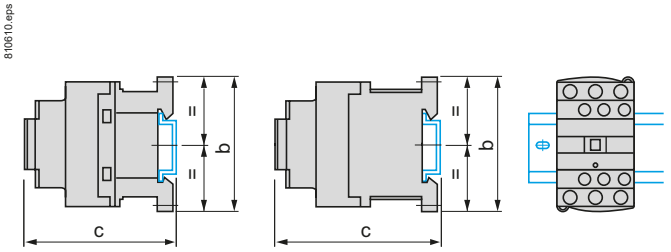
Characteristics:
pages B8/84 to B8/91

Schemes:
pages B8/106 and B8/107

# Mounting

## **LC1D09…D38** (3-pole), with AC/DC compatible coil

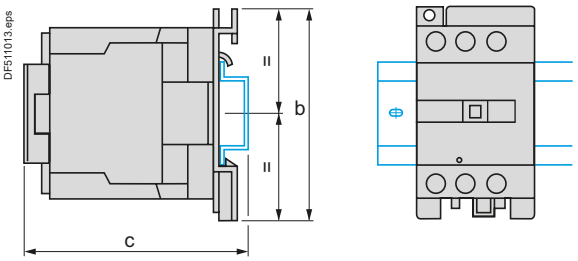
**On mounting rail NSYSDR200B, NSYSDR200BD or NSYSDR200** (width 35 mm)




| LC1 | D09…D18 | D25…D38 |
|---|---|---|
| b | 77 | 85 |
| c (NSYSDR200B or NSYSDR200BD) | 88 | 94 |
| c (NSYSDR200) | 96 | 102 |

## **LC1D40A…D80A** (3-pole), **LC1DT60A** and **DT80A** (4-pole), with AC/DC compatible coil

**On mounting rail AM1DL201** (width 75 mm) (2)
**On mounting rail NSSDPR●● or NSYSDR200** (width 35 mm)




| LC1 | D40A…D80A DT60A…DT80A |
|---|---|
| b | 122 |
| c | – |
| c (AM1DL201) | – |
| c (NSSDPR●● or NSYSDR200) | 128 |

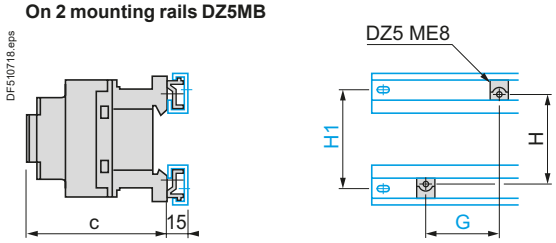
Ref.
Contactors


Life Is On Schneider Electric

# Mounting

## **LC1D09…D38** (3-pole), with AC/DC compatible coil

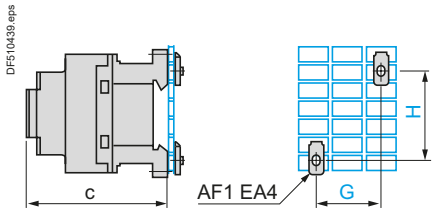
**On 2 mounting rails DZ5MB**




| LC1 | D09…D18 | D25…D38 |
|---|---|---|
| c with cover | 86 | 92 |
| G | 35 | 35 |
| H | 60 | 60 |
| H1 | 70 | 70 |

## **LC1D09…D38** (3-pole), with AC/DC compatible coil

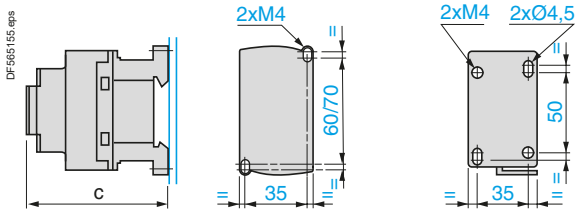
**On pre-slotted mounting plate AM1PA, PB, PC**




| LC1 | D09…D18 | D25…D38 |
|---|---|---|
| c with cover | 86 | 92 |
| G | 35 | 35 |
| H | 60/70 | 60/70 |

## **LC1D09…D38** (3-pole), with AC/DC compatible coil

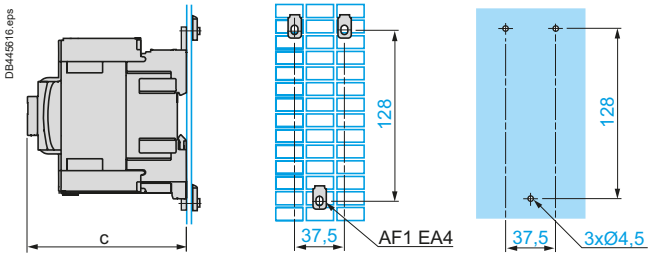
**Panel mounted**




| LC1 | D09…D18 | D25…D38 |
|---|---|---|
| c with cover | 86 | 92 |

## **LC1D40A…D80A** (3-pole), **LC1DT60A…DT80A** (4-pole), with AC/DC compatible coil

**On pre-slotted mounting plate AM1PA, PB, PC and panel mounted**




| LC1 | D40A…D80A , DT60A…DT80A |
|---|---|
| c with cover | 120 |

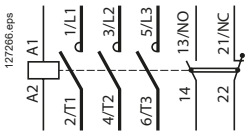
Ref.
Contactors

# Schemes

## Contactors

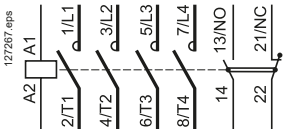
### Deca, Deca green 3-pole contactors (References: pages B8/23 to B8/26)

**LC1D09 to D150**

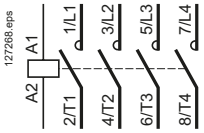



### Deca 4-pole contactors (References: pages B8/27 and B8/28)

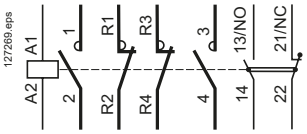
**LC1DT20 to DT80A**



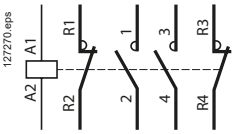

**LC1D115004**




**LC1D098 to D258**



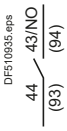

**LC1 and LP1D40008 to D80008**



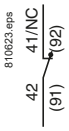

## Front mounting add-on contact blocks

### Instantaneous auxiliary contacts for Deca, Deca green contactors (References: page B8/37)

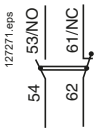
**1 N/O LADN10 (1)**



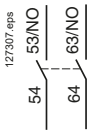

**1 N/C LADN01 (1)**



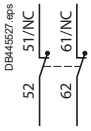

**1 N/O + 1 N/C LADN11, LADN11R**



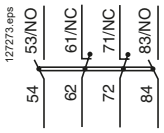

**2 N/O LADN20, LADN20R**



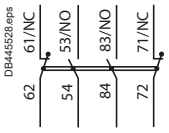

**2 N/C LADN02**



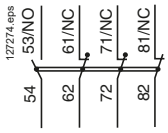

**2 N/O + 2 N/C LADN22**



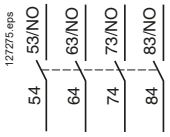

**2 N/O + 2 N/C LADN22R**



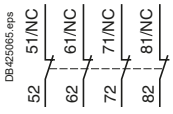

**1 N/O + 3 N/C LADN13**



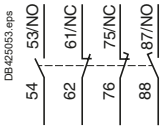

**4 N/O LADN40, LADN40R**



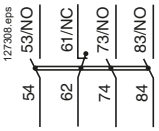

**4 N/C LADN04**



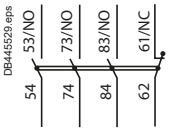

**2 N/O + 2 N/C including 1 N/O + 1 N/C make before break LADC22**




**3 N/O + 1 N/C LADN31**

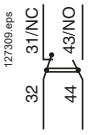



**3 N/O + 1 N/C LADN31R**

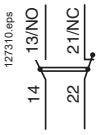



### Instantaneous auxiliary contacts conforming to standard EN 50012 for Deca, Deca green contactors (References: page B8/37)

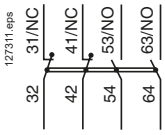
**1 N/O + 1 N/C LADN11G**



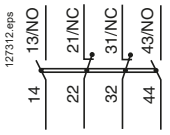

**1 N/O + 1 N/C LADN11P**



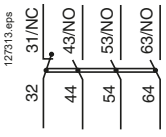

**2 N/O + 2 N/C LADN22G**



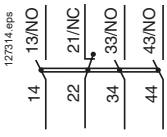

**2 N/O + 2 N/C LADN22P**



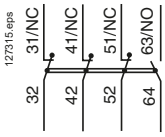

**3 N/O + 1 N/C LADN31G**



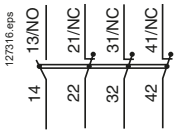

**3 N/O + 1 N/C LADN31P**




**1 N/O + 3 N/C LADN13G**




**1 N/O + 3 N/C LADN13P**




*(1) Items in brackets refer to blocks mounted on right-hand side of contactor.*

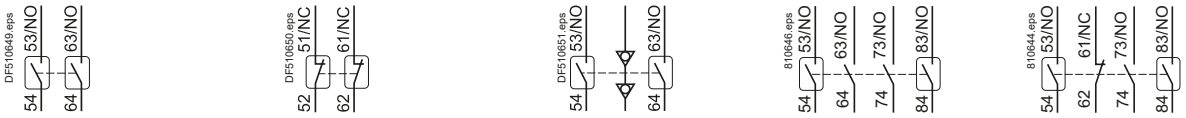
References:
pages B8/23 to B8/40
Characteristics:
pages B8/84 to B8/98
Dimensions:
pages B8/99 to B8/105

# Schemes

## Front mounting add-on contact blocks for Deca, Deca green contactors

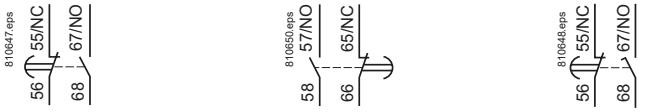
**Dust and damp protected instantaneous auxiliary contacts** (References: page B8/37)

| 2 N/O (24-50 V)<br>LA1DX20 | 2 N/C (24-50 V)<br>LA1DX02 | 2 N/O (5-24V) with 2 cable screen terminals<br>LA1DY20 | 2 N/O protected (24-50 V)<br>2 N/O standard<br>LA1DZ40 | 2 N/O protected (24-50 V)<br>+ 1 N/O + 1 N/C standard<br>LA1DZ31 |
|---|---|---|---|---|



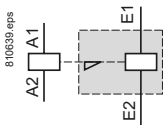

**Time delay auxiliary contacts** (References: page B8/39)

| On-delay 1 N/O + 1 N/C<br>LADT | Off-delay 1 N/O + 1 N/C<br>LADR | On-delay 1 N/C + 1 N/O break before make<br>LADS |
|---|---|---|




## Mechanical latch blocks for Deca, Deca green contactors (References: page B8/39)

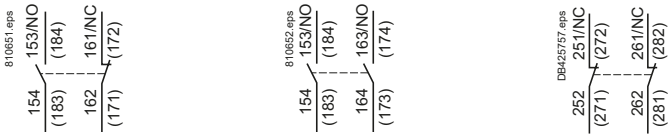
**LAD6K10 and LA6DK20**




## Side mounting add-on contact blocks for Deca, Deca green contactors

**Instantaneous auxiliary contacts** (References: page B8/37)

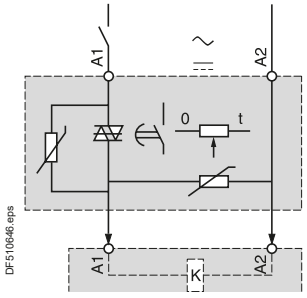
| 1 N/O + 1 N/C LAD8N11 (1) | 2 N/O LAD8N20 (1) | 2 N/C LAD8N02 (1) |
|---|---|---|




*(1) Items in brackets refer to blocks mounted on right-hand side of contactor.*

## Electronic serial timer modules for Deca, Deca green contactors

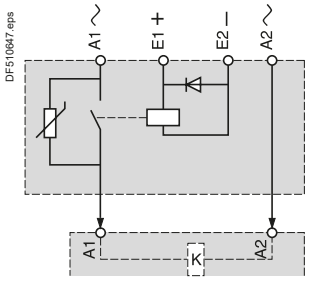
**On-delay LA4DT●U**




## Interface modules

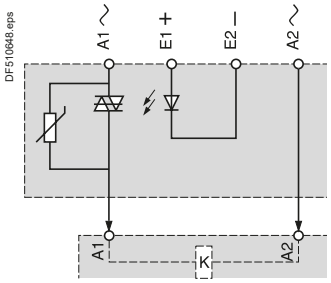
**Relay output for Deca contactors**

**LA4DFB**




**Solid state for Deca, Deca green contactors**

**LA4DWB**




References: page B8/43.

References:
pages B8/37 to B8/40

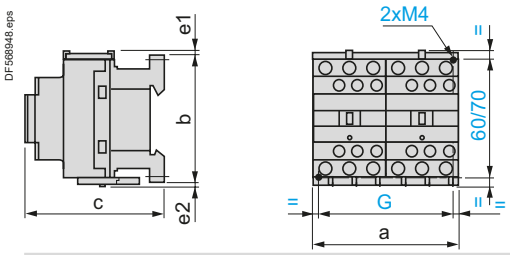
Characteristics:
pages B8/92 to B8/97

Dimensions:
pages B8/99 and B8/100, B8/103

# Dimensions

## LC2D09 to D38 Deca, Deca green contactors

2 x **LC1D09 to D38**



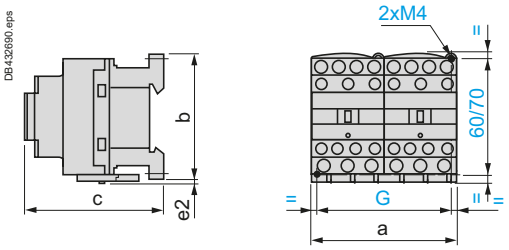

| **LC2** or 2 x **LC1** | **a** | **b** | **c** (1) | **e1** | **e2** | **G** |
|---|---|---|---|---|---|---|
| **D09 to D18 AC, AC/DC** | 90 | 77 | 86 | 4 | 1.5 | **80** |
| **D093 to D123 AC** | 90 | 99 | 86 | – | – | **80** |
| **D09 to D18 DC** | 90 | 77 | 95 | 4 | 1.5 | **80** |
| **D093 to D123 DC** | 90 | 99 | 95 | – | – | **80** |
| **D25 to D38 AC, AC/DC** | 90 | 85 | 92 | 9 | 5 | **80** |
| **D183 to D383 AC** | 90 | 99 | 92 | – | – | **80** |
| **D25 to D32 DC** | 90 | 85 | 101 | 9 | 5 | **80** |
| **D183 to D383 DC** | 90 | 99 | 101 | – | – | **80** |

e1 and e2: including cabling.

*(1) With safety cover, without add-on block.*

## LC2DT20 to DT40 Deca contactors

2 x **LC1DT20 to DT40**

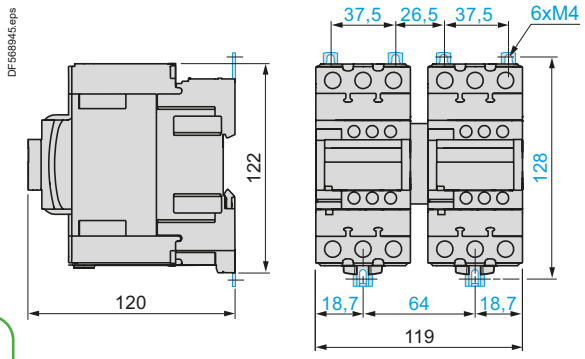



| **LC2** or 2 x **LC1** | **a** | **b** | **c** | **G** | **e2** |
|---|---|---|---|---|---|
| **DT20 and DT25 AC** | 90 | 85 | 92 | **80** | 20 |
| **DT32 and DT40 AC** | 90 | 91 | 99 | **80** | 22 |
| **DT20 and DT25 DC** | 90 | 85 | 102 | **80** | 20 |
| **DT32 and DT40 DC** | 90 | 91 | 109 | **80** | 22 |

c, e: including cabling.

## LC2D40A to D80A for Deca, Deca green contactors

2 x **LC1D40A to D80A**

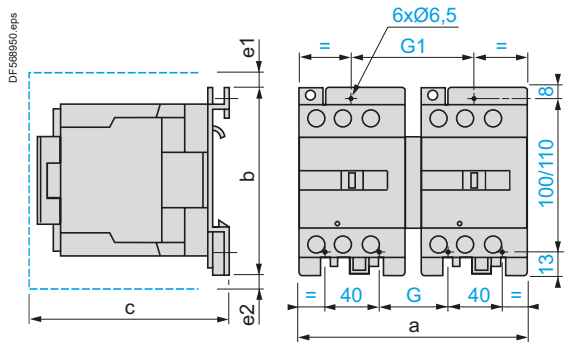



Ref.
Contactors

# Dimensions

## LC2D80 and D95

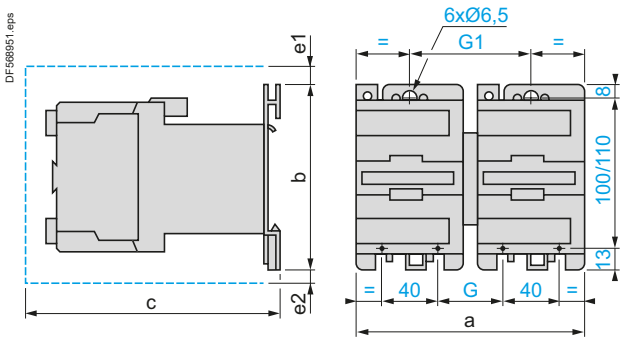
### 2 x **LC1D80 and D95** ∿




| **LC2** or 2 x **LC1** | **a** | **b** | **c** | **e1** | **e2** | **G** | **G1** |
|---|---|---|---|---|---|---|---|
| **D80 and D95** ∿ | 182 | 127 | 158 | 13 | – | **56** | **96** |
| **D80004** ∿ | 207 | 127 | 158 | – | 20 | **71** | **111** |

c, e1 and e2: including cabling.

### 2 x **LC1D80 and D95** ⎓

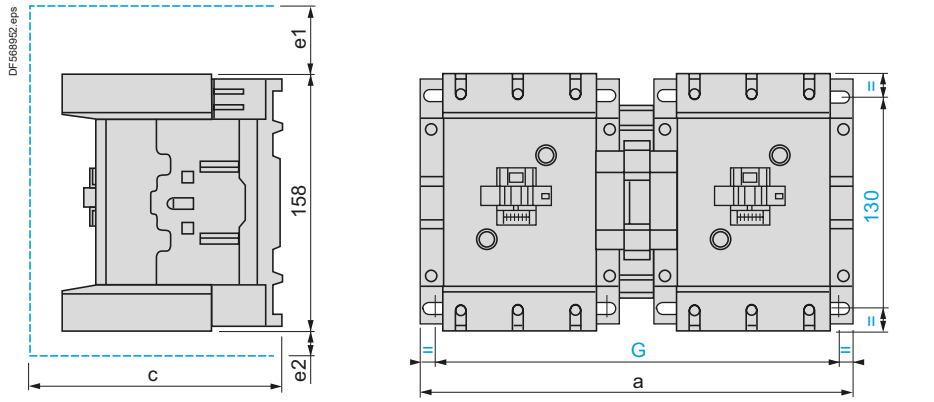



| 2 x **LC1** | **a** | **b** | **c** | **e1** | **e2** | **G** | **G1** |
|---|---|---|---|---|---|---|---|
| **D80 and D95** | 182 | 127 | 215 | 13 | 20 | **56** | **96** |

c, e1 and e2: including cabling.

## LC2D115 and D150

### 2 x **LC1D115 and D150**




| **LC2** or 2 x **LC1** | **a** | **c** | **e1** | **e2** | **G** |
|---|---|---|---|---|---|
| **D115 and D150** | 266 | 148 | 56 | 18 | **242/256** |
| **D115004** | 334 | 148 | – | 60 | **310/324** |

c, e1 and e2: including cabling.

Ref.
Contactors

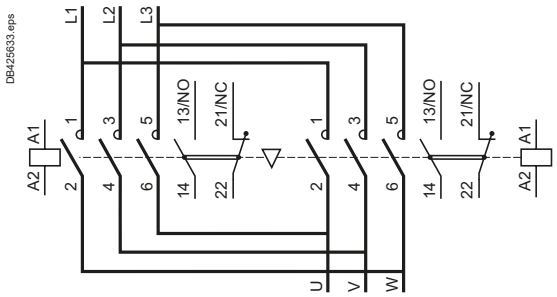
References:
pages B8/30 to B8/33
Characteristics:
pages B8/84 to B8/91
Schemes:
pages B8/110 to B8/111

## Schemes

### Reversing contactors for motor control

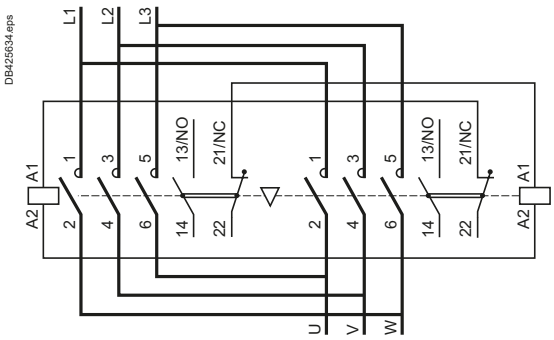
**LC2D09...D80A Deca, Deca green contactors LC2D80...D150 Deca contactor**

Horizontally mounted




**LAD9R1V D, Deca green contactors**

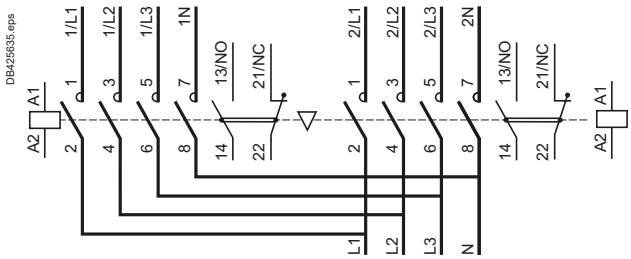
With integral electrical interlocking




### Changeover contactor pairs Deca contactors

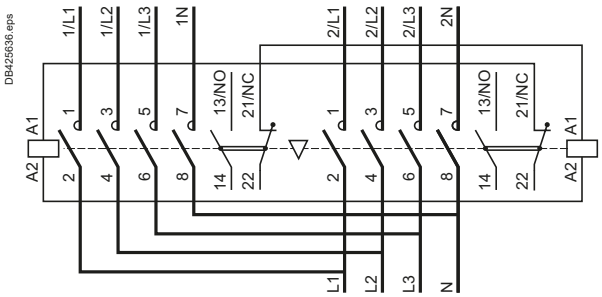
**LC2DT20...DT40**

Horizontally mounted




**LADT9R1V**

With integral electrical interlocking

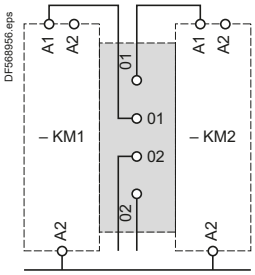



Ref.
Contactors

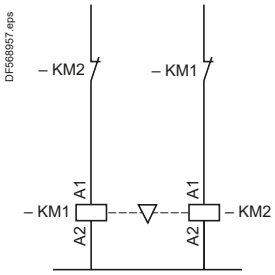
## Schemes

### Electrical interlocking of Deca, Deca green reversing contactors fitted with:

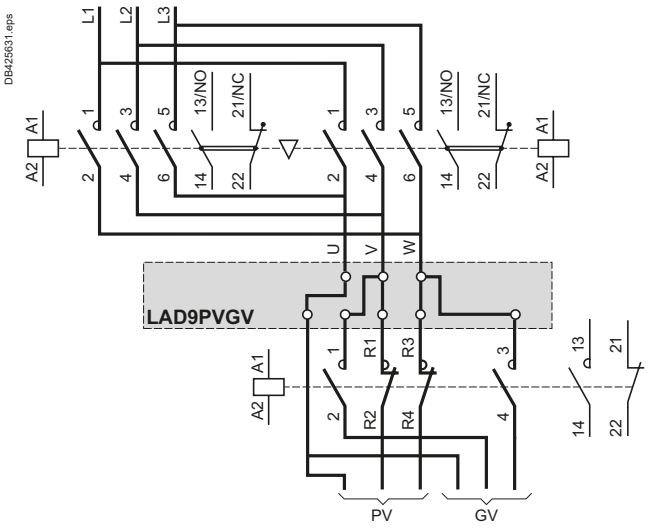
**Mechanical interlock with integral electrical contacts**
**LA9D4002, LA9D8002 and LA9D11502**



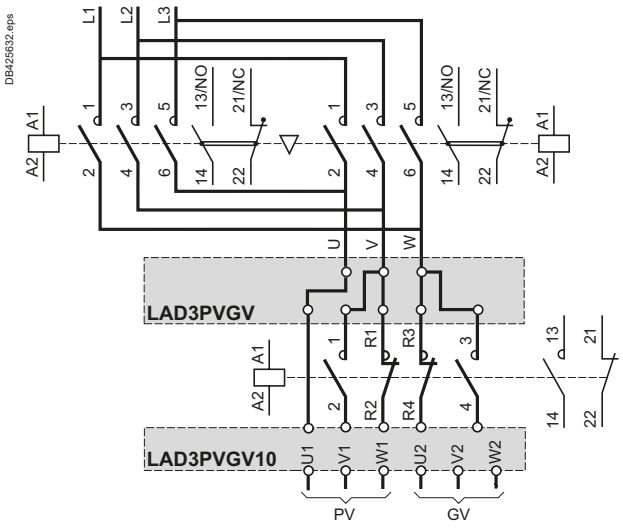

**Mechanical interlock without integral electrical contacts**
**LAD9V2, LAD4CM, LA9D50978 and LA9D80978**




### Low speed - High speed cabling kit, screw clamp terminals for LC1D09... D38 contactors (Deca, Deca green)




### Low speed - High speed cabling kit, spring terminals for LC1D09... D38 contactors (Deca)



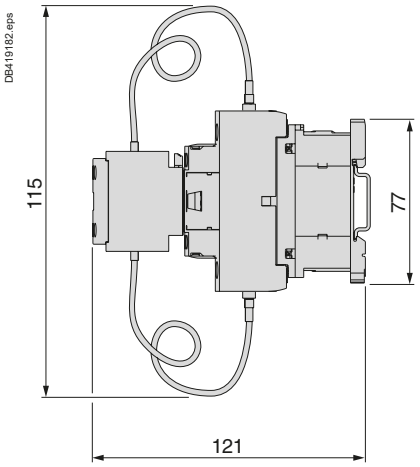

Ref.
Contactors

References:
pages B8/30 to B8/33
Characteristics:
pages B8/84 to B8/91
Dimensions:
pages B8/108 to B8/109

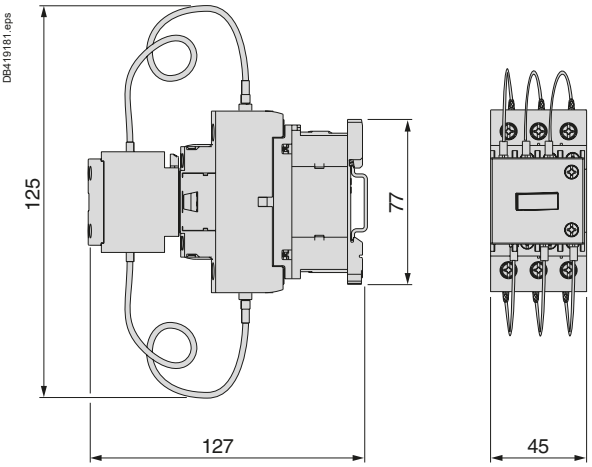
# Dimensions and scheme

## Dimensions

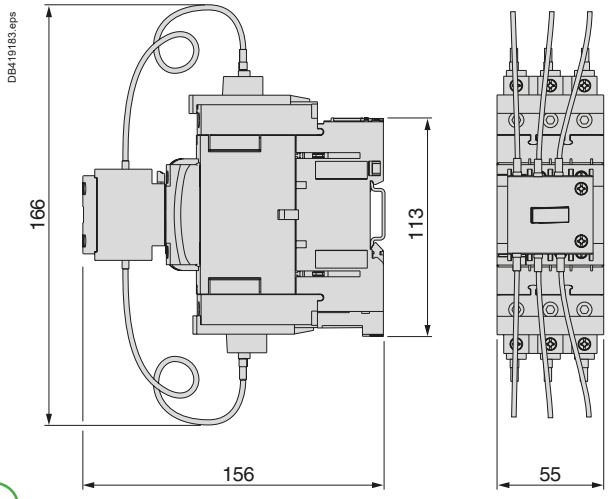
### LC1DFK



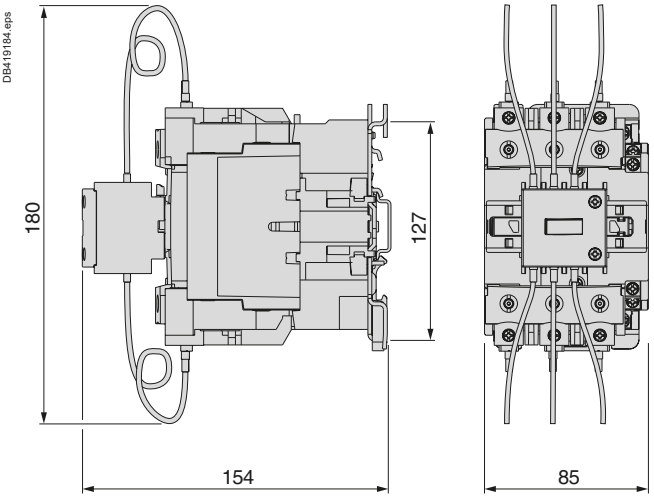

### LC1DGK, DLK, DMK




### LC1DPK, DTK

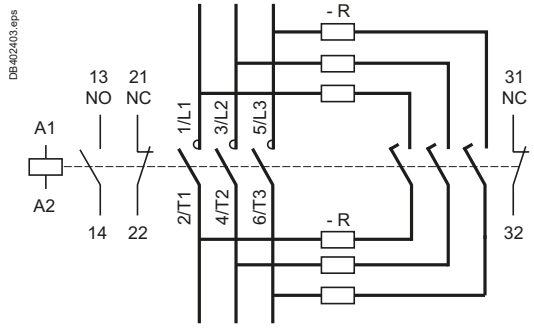



### LC1DWK




## Scheme

### LC1D●K




R = Pre-wired resistor connections.

Ref.
Contactors

References:
page B8/113

# Characteristics

*GC25*

**Modular contactors are designed for use in modular panels and enclosures.**
These contactors feature:

■ **Easy installation:**
□ quick clip-on fixing and locking onto 35 mm omega rail
□ easy connection by means of ready-to-tighten, captive, pozidrive screw terminals.
■ **Compact size:**
All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

■ **User safety:**
□ use of materials conforming to strictest fire safety standards
□ live parts protected against direct finger contact
□ completely safe operation
□ state indication on front panel.

## Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.
This standard is specific to “Electromagnetic contactors for domestic and similar use”.
It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in “premises and areas accessible to the public”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

## Applications

Modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 100 A.

## Power switching

These contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:
■ lighting
■ heating
■ ventilation
■ motorised shutters or gates.



References:
page B8/54

Dimensions, schemes:
pages B8/120 to B8/122

# Characteristics

## Environment

| Contactor type | | | GC16 | GC25 | GC40 | GC63 | GC100 |
|---|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 61095 | V | 500 | | | | |
| | Conforming to VDE 0110 | V | 500 | | | | |
| Rated impulse withstand voltage (Uimp) | | kV | 4 in enclosure | | | | |
| Conforming to standards | | | IEC 61095 and IEC 60947-5-1 for auxiliary contacts | | | | |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact (IP 20 open, IP 40 in enclosure) | | | | |
| Ambient air temperature around the device | Storage | °C | -40…+70 | | | | |
| | Operation | °C | -5…+50 (0.85…1.1 Uc) | | | | |
| Maximum operating altitude | Without derating | m | 3000 | | | | |
| Operating positions | Without derating | | ±30° in relation to normal vertical mounting plane | | | | |
| Shock resistance 1/2 sine wave = 10 ms Conforming to IEC/EN 60068-2-27 | Contactor open | | 10 gn | | | | |
| | Contactor closed | | 15 gn | | | | |
| Vibration resistance 5…300 Hz Conforming to IEC/EN 60068-2-6 | Contactor open | | 2 gn | | | | |
| | Contactor closed | | 3 gn | | | | |
| Flame resistance | | | Conforming to IEC 61095 | | | | |

## Pole characteristics

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Number of poles | | | 2, 3 or 4 | | | | |
| Rated operational current (Ie) (Ue ≤ 440 V) | In AC-7a (heating) | A | 16 | 25 | 40 | 63 | 100 |
| | In AC-7b (motor control) | A | 5 | 8.5 | 15 | 25 | – |
| Contactor rating | 40 °C | A | 16 | 25 | 40 | 63 | 100 |
| | 50 °C | A | 14 | 22 | 36 | 57 | 87 |
| | 60 °C (1) | A | 13 | 20 | 32 | 50 | 80 |
| Rated operational voltage (Ue) | Up to | V | 250 two-pole contactors, 415 three and four-pole contactors | | | | |
| Frequency limits | Of the operating current | Hz | 400 | | | | |
| Conventional thermal current (Ith) | θ ≤ 50 °C | A | 16 | 25 | 40 | 63 | 100 |
| Rated breaking and making capacity | Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase | A | 40 | 68 | 120 | 200 | – |
| Permissible short time rating no current flowing for preceding 15 minutes with q ≤ 40 °C | For 10 s | A | 128 | 200 | 320 | 504 | 800 |
| | For 30 s | A | 40 | 62 | 100 | 157 | 250 |
| Short-circuit protection by fuse or circuit breaker U ≤ 440 V | gl fuse | A | 16 | 25 | 40 | 63 | 100 |
| | Circuit breaker $I^2t$ (at 3 kA rms prospective) 230 V | $A^2s$ | 5000 | 10000 | 16000 | 18000 | – |
| | Circuit breaker $I^2t$ (at 3 kA rms prospective) 400 V | $A^2s$ | 9000 | 14000 | 17500 | 20000 | – |
| Electrical durability in operating cycles | AC-7a, AC-7b | | 100000 | 100000 | 100000 | 100000 | 30000 |
| Average impedance per pole | At Ith and 50 Hz | mΩ | 2.5 | 2.5 | 2 | 2 | 1 |
| Power dissipated per pole | For the above operational currents | W | 0.65 | 1.6 | 3.2 | 8 | 10 |
| Maximum cabling c.s.a. Flexible cable without cable end | 1 conductor | $mm^2$ | 6 | 6 | 25 | 25 | 35 |
| | 2 conductors | $mm^2$ | 4 | 4 | 16 | 16 | – |
| Flexible cable with cable end | 1 conductor | $mm^2$ | 6 | 6 | 16 | 16 | 35 |
| | 2 conductors | $mm^2$ | 1.5 | 1.5 | 4 | 4 | – |
| Solid cable without cable end | 1 conductor | $mm^2$ | 6 | 6 | 25 | 25 | 35 |
| | 2 conductors | $mm^2$ | 4 | 4 | 6 | 6 | 10 |
| Tightening torque | Power circuit connections | N.m | 0.8 | 0.8 | 3.5 | 3.5 | 3.5 |

*(1) Ventilation 1/2 module must be fitted.*

References: page B8/54
Dimensions, schemes: pages B8/120 to B8/122

# Characteristics

## Control circuit characteristics

| Contactor type | | | | GC16, GC25 single or 2-pole | GC16, GC25 3 or 4-pole **GC40, GC63** 2-pole | GC40, GC63 3 or 4-pole **GC100** 2-pole | GC100 4-pole |
|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | 50 or 60 Hz | **V** | 12…240 V, for other voltages, please consult your Regional Sales Office | | | |
| Control voltage limits (θ ≤ 50 °C) | 50 Hz coils | Operational | | 0.85…1.1 Uc | | | |
| | | Drop-out | | 0.2…0.75 Uc | | | |
| Average coil consumption at 20 °C and at Uc | ∼ 50 Hz | Inrush | **VA** | 15 | 34 | 53 | 106 |
| | | Sealed | **VA** | 3.8 | 4.6 | 6.5 | 13 |
| Maximum heat dissipation | | 50/60 Hz | **W** | 1.3 | 1.6 | 2.1 | 4.2 |
| Operating time | | Closing “C” | **ms** | 10…30 | | | |
| | | Opening “O” | **ms** | 10…25 | | | |
| Mechanical durability | | In operating cycles | | $10^6$ | | | |
| Maximum operating rate at ambient temperature ≤ 50 °C | | In operating cycles per hour | | 300 | | | |
| Maximum cabling c.s.a. | Flexible cable without cable end | 1 or 2 conductors | **mm²** | 2.5 | | | |
| | Flexible cable with cable end | 1 conductor | **mm²** | 2.5 | | | |
| | | 2 conductors | **mm²** | 1.5 | | | |
| | Solid cable without cable end | 1 or 2 conductors | **mm²** | 1.5 | | | |
| Tightening torque | | | **N.m** | 0.8 | | | |

## Instantaneous auxiliary contact characteristics

| | | | |
|---|---|---|---|
| Rated operational voltage (Ue) | Up to | **V** | 250 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5 | **V** | 500 |
| | Conforming to VDE 0110 | **V** | 500 |
| Conventional thermal current (Ith) | For ambient θ ≤ 50 °C | **A** | 5 |
| Mechanical durability | Operating cycles | | $10^6$ |
| Maximum cabling c.s.a. | Flexible or solid conductor | **mm²** | 2.5 |
| Tightening torque | | **N.m** | 0.8 |

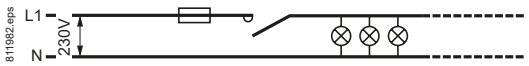
Ref.
Contactors

References: page B8/54
Dimensions, schemes: pages B8/120 to B8/122

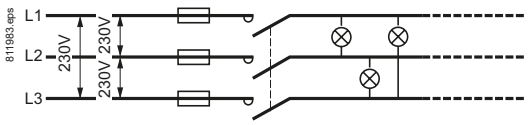
# Characteristics in lighting applications

## Lighting (Maximum number of lamps depending on the power of each unit) Introduction of installations according to type of supply

■ Single-phase circuit, 230 V

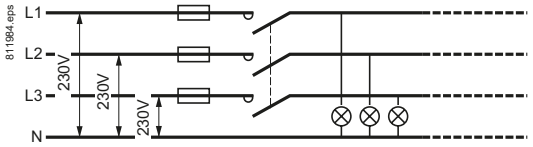



■ 3-phase circuit, 230 V




The maximum number of lamps which can be operated per phase is equal to the number of lamps in the "single phase 230 V" table divided by $\sqrt{3}$.

■ 3-phase circuit, 400 V (with neutral)




The maximum number of lamps which can be operated per phase is equal to the total number of lamps in the "single-phase 230 V" table.

### Contactor rating for a single-phase 230 V circuit (single-pole)

**Fluorescent lamps with starter**

| Single fitting | Non corrected | | | | | With parallel correction | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P (W) | 20 | 40 | 50 | 80 | 110 | 20 | 40 | 58 | 80 | 110 | – |
| $I_B$ (A) | 0.39 | 0.43 | 0.70 | 0.80 | 1.2 | 0.19 | 0.29 | 0.46 | 0.57 | 0.79 | – |
| C (µF) | – | – | – | – | – | 5 | 5 | 7 | 7 | 16 | – |
| Maximum number of lamps | 22 | 20 | 13 | 10 | 7 | 15 | 15 | 10 | 10 | 5 | **16 A** |
| | 30 | 28 | 17 | 15 | 10 | 20 | 20 | 15 | 15 | 7 | **25 A** |
| | 70 | 60 | 35 | 30 | 20 | 40 | 40 | 30 | 30 | 14 | **40 A** |
| | 100 | 90 | 56 | 48 | 32 | 60 | 60 | 43 | 43 | 20 | **63 A** |
| **Twin fitting** | **Non corrected** | | | | | **With series correction** | | | | | **Contactor rating** |
| P (W) | 2 x 18 | 2 x 36 | 2 x 58 | 2 x 80 | 2 x 140 | 2 x 18 | 2 x 36 | 2 x 58 | 2 x 80 | 2 x 140 | – |
| $I_B$ (A) | 0.44 | 0.82 | 1.34 | 1.64 | 2.2 | 0.26 | 0.48 | 0.78 | 0.96 | 1.3 | – |
| C (µF) | – | – | – | – | – | 3.5 | 4.5 | 7 | 9 | 18 | – |
| Maximum number of lamps | 20 | 11 | 7 | 5 | 4 | 30 | 17 | 10 | 9 | 6 | **16 A** |
| | 30 | 16 | 10 | 8 | 6 | 46 | 25 | 16 | 13 | 10 | **25 A** |
| | 50 | 26 | 16 | 13 | 10 | 80 | 43 | 27 | 22 | 16 | **40 A** |
| | 75 | 42 | 25 | 21 | 16 | 123 | 67 | 42 | 34 | 25 | **63 A** |

**High pressure mercury vapour lamps**

| | Non corrected | | | | | | With parallel correction | | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P (W) | 50 | 80 | 125 | 250 | 400 | 700 | 50 | 80 | 125 | 250 | 400 | 700 | 1000 | – |
| $I_B$ (A) | 0.6 | 0.8 | 1.15 | 2.15 | 3.25 | 5.4 | 0.35 | 0.50 | 0.7 | 1.5 | 2.4 | 4 | 5.7 | – |
| C (µF) | – | – | – | – | – | – | 7 | 8 | 10 | 18 | 25 | 40 | 60 | – |
| Maximum number of lamps | 15 | 10 | 8 | 4 | 2 | 1 | 10 | 9 | 9 | 4 | 3 | 2 | – | **16 A** |
| | 20 | 15 | 10 | 6 | 4 | 2 | 15 | 13 | 10 | 6 | 4 | 2 | 1 | **25 A** |
| | 34 | 27 | 20 | 10 | 6 | 4 | 28 | 25 | 20 | 11 | 8 | 5 | 3 | **40 A** |
| | 53 | 40 | 28 | 15 | 10 | 6 | 43 | 38 | 30 | 17 | 12 | 7 | 5 | **63 A** |

$I_B$: *value of current drawn by each lamp at its rated voltage.*
***C****: unit capacitance for each lamp.*
$I_B$ *and* ***C*** *correspond to values normally quoted by lamp manufacturers*

Ref.
Contactors

# Characteristics in lighting applications

## Contactor rating for a single-phase 230 V circuit (single-pole) (continued)

### Low pressure sodium vapour lamps

| | Non corrected | | | | | | With parallel correction | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P (W) | 18 | 35 | 55 | 90 | 135 | 180 | 18 | 35 | 55 | 90 | 135 | 180 | – |
| $I_B$ (A) | 0.35 | 1.4 | 1.4 | 2.1 | 3.1 | 3.1 | 0.35 | 0.6 | 0.6 | 0.9 | 0.9 | 0.9 | – |
| C (µF) | – | – | – | – | – | – | 5 | 20 | 20 | 26 | 45 | 40 | – |
| Maximum number of lamps | 18 | 4 | 5 | 3 | 2 | 2 | 14 | 3 | 3 | 2 | 1 | 1 | **16 A** |
| | 34 | 9 | 9 | 6 | 4 | 4 | 21 | 5 | 5 | 4 | 2 | 2 | **25 A** |
| | 57 | 14 | 14 | 9 | 6 | 6 | 40 | 10 | 10 | 8 | 4 | 5 | **40 A** |
| | 91 | 24 | 24 | 19 | 10 | 10 | 60 | 15 | 15 | 11 | 6 | 7 | **63 A** |

### High pressure sodium vapour lamps

| | Non corrected | | | | | With parallel correction | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P (W) | 70 | 150 | 250 | 400 | 1000 | 70 | 150 | 250 | 400 | 1000 | – |
| $I_B$ (A) | 1 | 1.8 | 3 | 4.4 | 10.3 | 0.6 | 0.7 | 1.5 | 2.5 | 6 | – |
| C (µF) | – | – | – | – | – | 12 | 20 | 32 | 45 | 100 | – |
| Maximum number of lamps | 8 | 4 | 2 | 1 | – | 6 | 6 | 2 | 2 | 1 | **16 A** |
| | 12 | 7 | 4 | 3 | 1 | 9 | 9 | 3 | 4 | 2 | **25 A** |
| | 20 | 13 | 8 | 5 | 2 | 18 | 18 | 6 | 8 | 4 | **40 A** |
| | 32 | 18 | 11 | 8 | 3 | 25 | 25 | 9 | 12 | 6 | **63 A** |

### Metal iodine or halogen vapour lamps

| | Non corrected | | | | | | With parallel correction | | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P (W) | 35 | 70 | 150 | 250 | 400 | 1000 | 39 | 70 | 150 | 250 | 400 | 1000 | 2000 | – |
| $I_B$ (A) | 0.3 | 0.5 | 1 | 1.5 | 2.5 | 6 | 0.3 | 0.5 | 1 | 1.5 | 2.5 | 6 | 5.5 | – |
| C (µF) | – | – | – | – | – | – | 6 | 12 | 20 | 32 | 45 | 85 | 60 | – |
| Maximum number of lamps | 27 | 16 | 8 | 5 | 3 | 1 | 12 | 6 | 4 | 3 | 2 | – | 1 | **16 A** |
| | 40 | 24 | 12 | 8 | 5 | 2 | 18 | 9 | 6 | 4 | 3 | 1 | 2 | **25 A** |
| | 68 | 42 | 20 | 14 | 8 | 4 | 31 | 16 | 10 | 7 | 5 | 3 | 3 | **40 A** |
| | 106 | 64 | 32 | 21 | 13 | 5 | 50 | 25 | 15 | 10 | 7 | 4 | 5 | **63 A** |

### Incandescent and halogen lamps

| | | | | | | | | | Contactor rating |
|---|---|---|---|---|---|---|---|---|---|
| P (W) | 60 | 75 | 100 | 150 | 200 | 300 | 500 | 1000 | – |
| $I_B$ (A) | 0.26 | 0.32 | 0.44 | 0.65 | 0.87 | 1.3 | 2.17 | 4.4 | – |
| Maximum number of lamps | 30 | 25 | 19 | 12 | 10 | 7 | 4 | 2 | **16 A** |
| | 45 | 38 | 28 | 18 | 14 | 10 | 6 | 3 | **25 A** |
| | 85 | 70 | 50 | 35 | 26 | 18 | 10 | 6 | **40 A** |
| | 125 | 100 | 73 | 50 | 37 | 25 | 15 | 8 | **63 A** |

### Halogen lamps used with transformer

| | | | | | Contactor rating |
|---|---|---|---|---|---|
| P (W) | 60 | 80 | 105 | 150 | – |
| $I_B$ (A) | 0.26 | 0.35 | 0.45 | 0.65 | – |
| Maximum of lamps | 9 | 8 | 6 | 4 | **16 A** |
| | 14 | 12 | 9 | 6 | **25 A** |
| | 27 | 23 | 18 | 13 | **40 A** |
| | 40 | 35 | 27 | 19 | **63 A** |

$I_B$: *value of current drawn by each lamp at its rated voltage.*
***C****: unit capacitance for each lamp.*
$I_B$ *and* ***C*** *correspond to values normally quoted by lamp manufacturers*

Ref.
Contactors

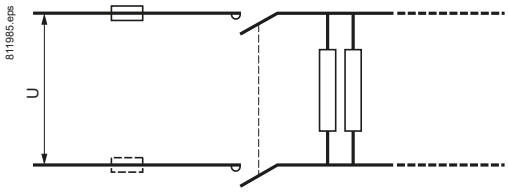
References:
page B8/54

Dimensions, schemes:
pages B8/120 to B8/122

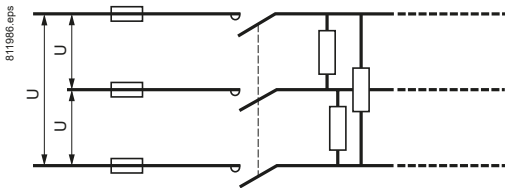
# Characteristics in heating applications

## Heating (AC-7a)

### Single-phase, 2-pole switching




### 3-phase switching




Heating by resistive elements or by infra-red radiators, convectors or radiators, heating ducts, industrial furnaces. The current peak between the hot and cold states must not exceed 2 to 3 In at the moment of switch-on.

**Contactor selection according to power and required electrical life**

| Electrical durability (in operating cycles) | Maximum power (kW) | | | | | Contactor rating |
|---|---|---|---|---|---|---|
| | $100 \times 10^3$ | $150 \times 10^3$ | $200 \times 10^3$ | $500 \times 10^3$ | $10^6$ | |
| Single-phase switching 230 V (2-pole) | 3.5 | 3 | 2.2 | 1 | 0.8 | **16 A** |
| | 5.4 | 4.6 | 3.5 | 1.6 | 1.2 | **25 A** |
| | 8.6 | 7.4 | 5.6 | 2.6 | 1.9 | **40 A** |
| | 13.6 | 11.6 | 8.8 | 4 | 3 | **63 A** |
| | 21.6 | 18.4 | 14 | 6.4 | 4.8 | **100 A** |
| 3-phase switching 400 V (3-pole) | 10 | 9 | 6.5 | 3.2 | 2.2 | **16 A** |
| | 16 | 14 | 10 | 5 | 3.5 | **25 A** |
| | 26 | 22 | 17 | 7.5 | 6 | **40 A** |
| | 41 | 35 | 26.5 | 12 | 9 | **63 A** |
| | 64.8 | 55.2 | 42 | 19.2 | 14.4 | **100 A** |

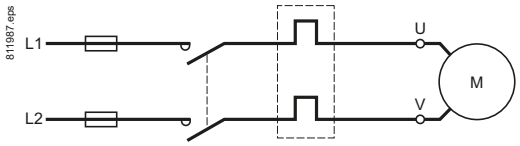


References:
page B8/54
Dimensions, schemes:
pages B8/120 to B8/122

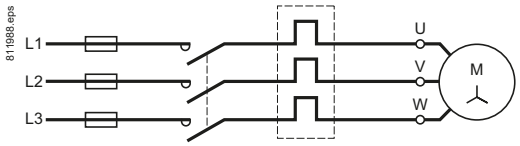
# Characteristics in motor control applications

## Motor control (AC-7b)

### Single-phase circuit, 230 V




### 3-phase circuit, 400 V




### Contactor selection according to maximum power in kW

| **230 V single-phase capacitor motor** (2-pole) | **400 V 3-phase motor** | **Contactor rating** (Ith) |
|---|---|---|
| 0.55 | 2.2 | **16 A** |
| 1.1 | 4 | **25 A** |
| 2.2 | 7.5 | **40 A** |
| 4 | 11 | **63 A** |

Ref.
Contactors

References:
page B8/54

Dimensions, schemes:
pages B8/120 to B8/122

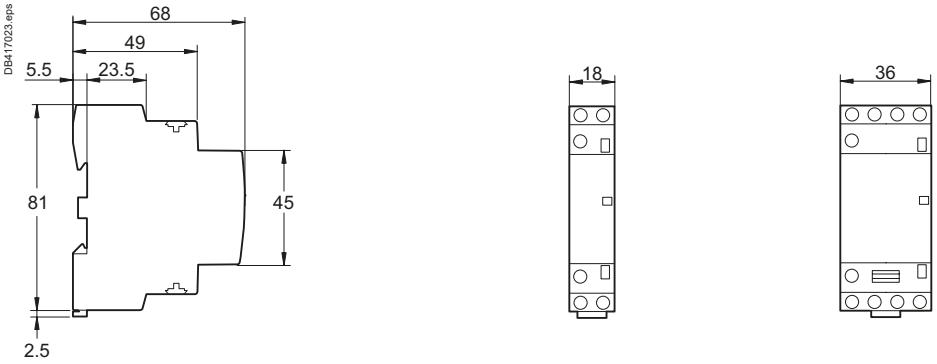
# Dimensions

## Dimensions

### Contactors

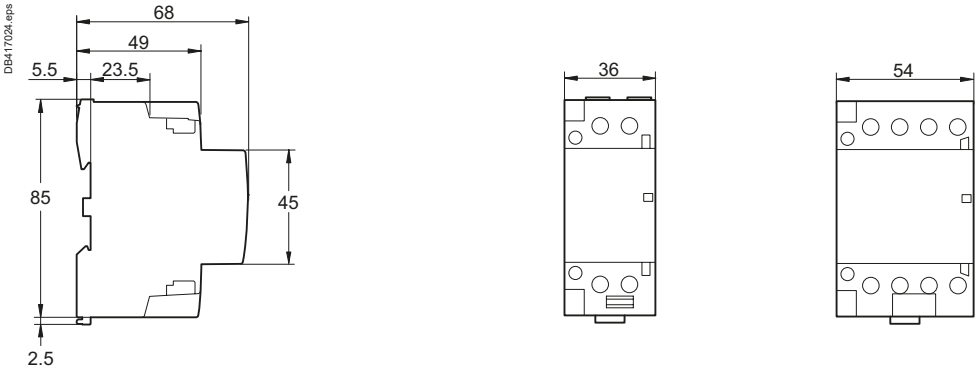
| Common side view | GC1610, 1611, 1620<br>GC2502, 2510, 2511, 2520 | GC1622, 1640<br>GC2504, 2522, 2530, 2540 |
|---|---|---|
| | 1 module | 2 modules |

DB417023.eps



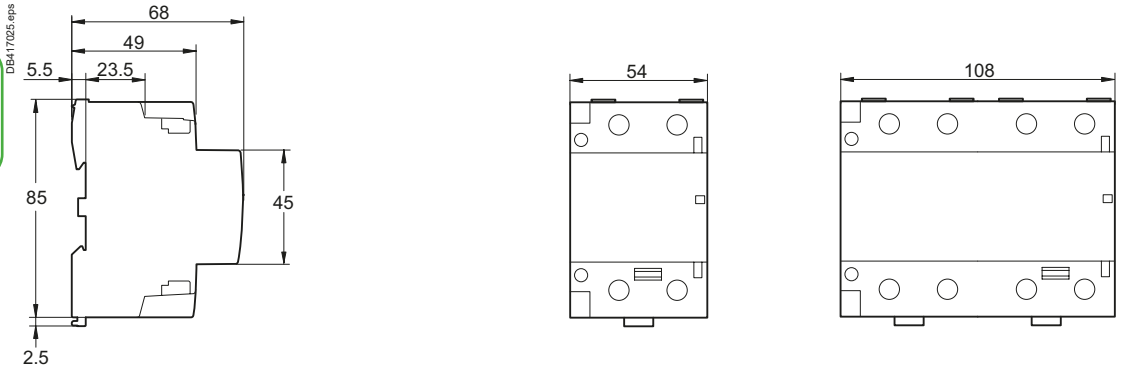

| Common side view | GC4002, 4011, 4020<br>GC6302, 6311, 6320 | GC4004, 4022, 4030, 4040<br>GC6304, 6322, 6330, 6340 |
|---|---|---|
| | 2 modules | 3 modules |

DB417024.eps




| Common side view | GC10020 | GC10040 |
|---|---|---|
| | 3 modules | 6 modules |

DB417025.eps

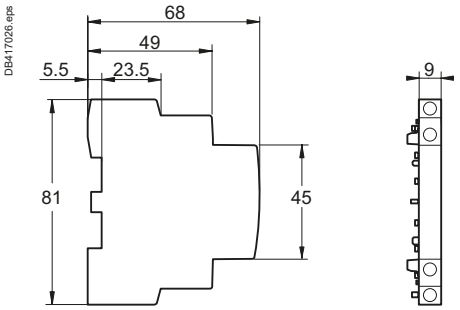



Ref.
Contactors

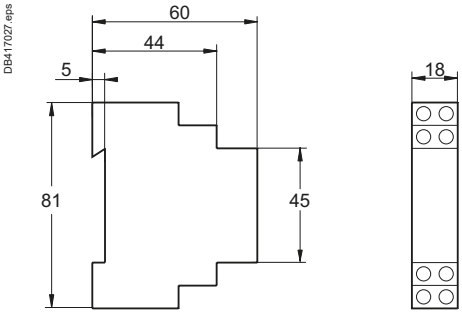
# Dimensions and mounting

## Dimensions

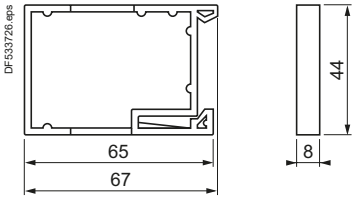
### Auxiliary contacts
**GAC0511, 0531 and 0521**




### Coil suppression blocks
**GAP21 and 23**



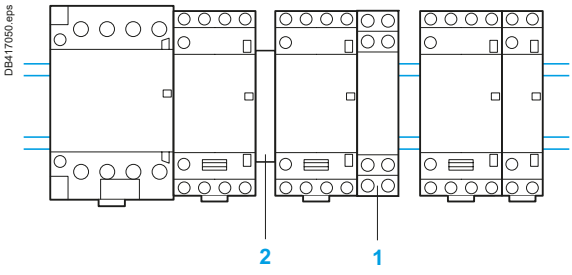

### Clip-on ventilation 1/2 module
**GAC5**



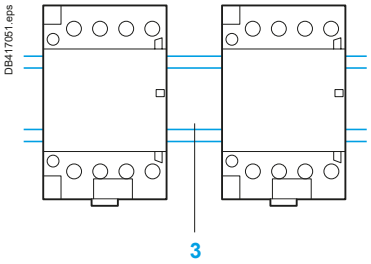

## Mounting

### Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block **1** (GAP21 or 23) across the coil terminals y 250 V. When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module **2** must be fitted every 2 contactors.




It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space **3** equal to one module, or by 2 ventilation 1/2 modules (GAC 5).




References:
page B8/54

Characteristics:
pages B8/113 to B8/119

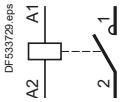
Schemes:
page B8/122

# Schemes

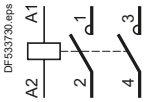
## Schemes

### Contactors

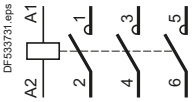
**GC●●10**



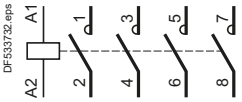

**GC●●20**



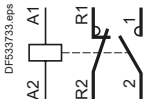

**GC●●30**



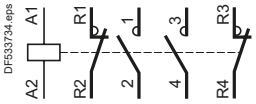

**GC●●40**



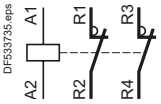

**GC●●11**



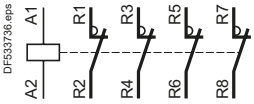

**GC●●22**




**GC●●02**

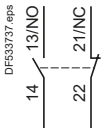



**GC●●04**

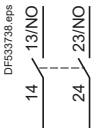



### Auxiliary contacts

**GAC0521**




**GAC0531**




**GAC0511**

Ref.
Contactors

# Characteristics

PB113083_13.eps

*GY25*

**Modular "dual tariff" contactors are designed for use in modular panels and enclosures.**
These contactors feature:
■ **Easy installation:**
□ quick clip-on fixing and locking onto 35 mm omega rail
□ easy connection by means of ready-to-tighten captive, pozidrive screw terminals.
■ **Compact size**
All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).
■ **User safety:**
□ use of materials conforming to strictest fire safety standards
□ live parts protected against direct finger contact
□ completely safe operation
□ state indication on front panel.
"Dual tariff" contactors are designed for use with Electricity Supply Authority dual tariffs.
They have a 4-position selector switch on the front panel:

| | |
|---|---|
| **"Stop" (O)** | For switching off the load, e.g. for prolonged periods of absence. |
| **"Off peak" Automatic start (A)** | The contactor switches automatically during "off peak" hours as set by the Supply Authority remote control and thus supplies the load, (washing machine, dishwasher, convector heater, water heater) during this period, at an economy rate to the user. |
| **"Peak time" Manual start (I)** | In this position, the contactor supplies the load to cater for additional requirements for hot water, heating, etc., but at the standard rate. The contactor returns automatically to the "off-peak" position at the start of the "off-peak" period. |
| **"Peak time" Manual override with lock** | Facility for setting the contactor to continuous manual operation, ignoring the automation system and the Supply Authority control; setting and locking is achieved by means of a tool, with manual return to the "AUTO" position. |

## Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.
This standard is specific to "Electromagnetic contactors for domestic and similar use".
It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in "premises and areas accessible to the public".
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

"Dual tariff" modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 63 A.

Modular contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:
■ lighting,
■ heating, ventilation,
■ motorised shutters or gates.



References:
page B8/55
Dimensions and schemes:
pages B8/126 and B8/127

# Characteristics

## Environment

| Type | | | GY16 | GY25 | GY40 | GY63 |
|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 61095 | V | 500 | | | |
| | Conforming to VDE 0110 | V | 500 | | | |
| Rated impulse withstand voltage (Uimp) | | kV | 4 in enclosure | | | |
| Conforming to standards | | | IEC 61095 and IEC 60947-5-1 for auxiliary contacts | | | |
| Product certifications | | | NF-USE, VDE, CEBEC, ÖVE | | | |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP 20 open, IP 40 in enclosure | | | |
| Ambient air temperature around the device | Storage | °C | -40…+70 | | | |
| | Operation | °C | -5…+50 (0.85…1.1 Uc) | | | |
| Maximum operating altitude | Without derating | m | 3000 | | | |
| Operating positions | Without derating | | ±30° in relation to normal vertical mounting plane | | | |
| Shock resistance 1/2 sine wave = 11 ms Conforming to IEC/EN 60068-2-27 | Contactor open | | 10 gn | | | |
| | Contactor closed | | 15 gn | | | |
| Vibration resistance 5…300 Hz Conforming to IEC/EN 60068-2-6 | Contactor open | | 2 gn | | | |
| | Contactor closed | | 3 gn | | | |
| Flame resistance | | | Conforming to IEC 61095 | | | |

## Pole characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| Number of poles | | | 2, 3 or 4 | | | |
| Rated operational current (Ie) (Ue ≤ 440 V) | In AC-7a (heating) | A | 16 | 25 | 40 | 63 |
| | In AC-7b (motor control) | A | 5 | 8.5 | 15 | 25 |
| Contactor rating | 40 °C | | 16 | 25 | 40 | 63 |
| | 50 °C | | 14 | 22 | 36 | 57 |
| | 60 °C (1) | | 13 | 20 | 32 | 50 |
| Rated operational voltage (Ue) | Up to | V | 250 - 2-pole contactors, 415 - 3 and 4-pole contactors | | | |
| Frequency limits | Of the operating current | Hz | 400 | | | |
| Conventional thermal current (Ith) | θ ≤ 50 °C | A | 16 | 25 | 40 | 63 |
| Rated breaking and making capacity | Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase | A | 40 | 68 | 120 | 200 |
| Short time rating with no current flow for the previous previous 15 minutes with θ ≤ 40 °C | For 10 s | A | 128 | 200 | 320 | 504 |
| | For 30 s | A | 40 | 62 | 100 | 157 |
| Short-circuit protection by fuse or circuit breaker U ≤ 440 V | | | | | | |
| gI fuse | | A | 16 | 25 | 40 | 63 |
| Circuit breaker I²t (at 3 kA rms prospective) | 230V | A²s | 5000 | 10000 | 16000 | 18000 |
| | 400V | A²s | 9000 | 14000 | 17500 | 20000 |
| Electrical durability in operating cycles | AC-7a, AC-7b | | 100000 | 100000 | 100000 | 100000 |
| Average impedance per pole | At Ith and 50 Hz | mΩ | 2.5 | 2.5 | 2 | 2 |
| Power dissipated per pole | For the above operational currents | W | 0.65 | 1.6 | 3.2 | 8 |
| Maximum cabling c.s.a. | | | | | | |
| Flexible cable without cable end | 1 conductor | mm² | 6 | 6 | 25 | 25 |
| | 2 conductors | mm² | 4 | 4 | 16 | 16 |
| Flexible cable with cable end | 1 conductor | mm² | 6 | 6 | 16 | 16 |
| | 2 conductors | mm² | 1.5 | 1.5 | 4 | 4 |
| Solid cable without cable end | 1 conductor | mm² | 6 | 6 | 25 | 25 |
| | 2 conductors | mm² | 4 | 4 | 6 | 6 |
| Tightening torque | Power circuit connections | N.m | 0.8 | 0.8 | 3.5 | 3.5 |

*(1) Ventilation 1/2 module must be fitted.*

References: page B8/55
Dimensions and schemes: pages B8/126 and B8/127

# Characteristics

## Control circuit characteristics

| Type | | | GY16, GY25 single or 2-pole | GY16, GY25 3 or 4-pole / GY40, GY63 2-pole | GY40, GY63 3 or 4-pole |
|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | 50 or 60 Hz | V | 12…240 V, for other voltages, please consult your Regional Sales Office | | |
| Control voltage limits (θ ≤ 50 °C) | | | | | |
| 50 Hz coils | Operational | | 0.85…1.1 Uc | | |
| | Drop-out | | 0.2…0.75 Uc | | |
| Average consumption at 20 °C and at Uc | | | | | |
| ∼ 50 Hz | Inrush | VA | 15 | 34 | 53 |
| | Sealed | VA | 3.8 | 4.6 | 6.5 |
| Heat dissipation | 50/60 Hz | W | 1.3 | 1.6 | 2.1 |
| Operating time | Closing "C" | ms | 10 ... 30 | | |
| | Opening "O" | ms | 10 ... 25 | | |
| Mechanical durability | In operating cycles | | $10^6$ | | |
| Maximum operating rate at ambient temperature ≤ 50 °C | In operating cycles per hour | | 300 | | |
| Maximum cabling c.s.a. | | | | | |
| Flexible cable without cable end | 1 or 2 conductors | $mm^2$ | 2.5 | | |
| Flexible cable with cable end | 1 conductor | $mm^2$ | 2.5 | | |
| | 2 conductors | $mm^2$ | 1.5 | | |
| Solid cable without cable end | 1 or 2 conductors | $mm^2$ | 1.5 | | |
| Tightening torque | | N.m | 0.8 | | |

## Instantaneous auxiliary contact characteristics

| | | | |
|---|---|---|---|
| Rated operational voltage (Ue) | Up to | V | 250 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5 | V | 500 |
| | Conforming to VDE 0110 | V | 500 |
| Conventional thermal current (Ith) | For ambient θ ≤ 50 °C | A | 5 |
| Mechanical durability | In operating cycles | | $10^6$ |
| Maximum cabling c.s.a. | Flexible or solid conductor | $mm^2$ | 2.5 |
| Tightening torque | | N.m | 0.8 |

Ref.
Contactors

References:
page B8/55

Dimensions and schemes:
pages B8/126 and B8/127

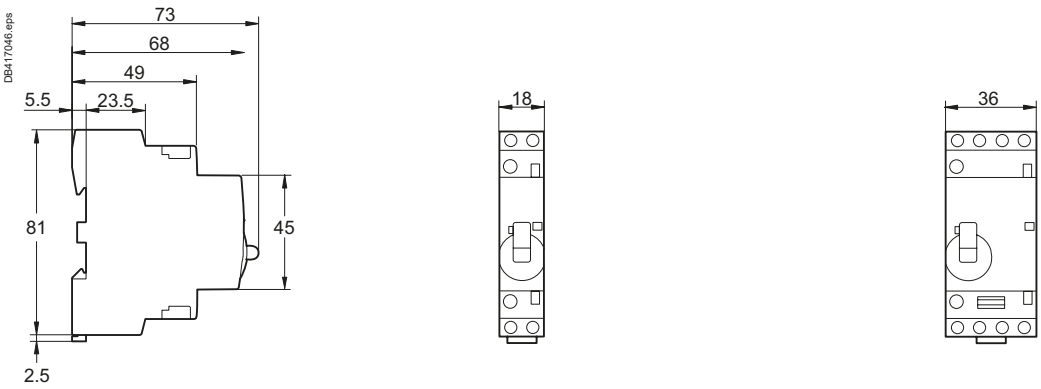
# Dimensions

## Dimensions

### "Dual tariff" contactors

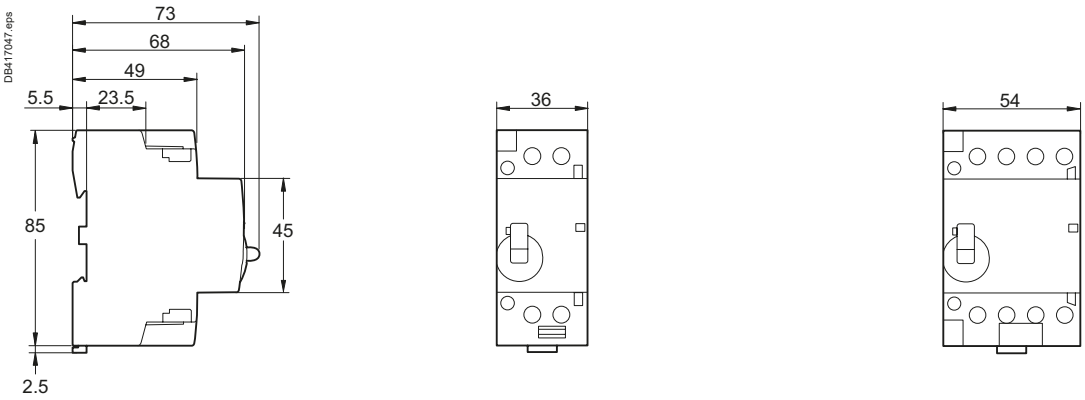
| Common side view | GY1620<br>GY2520 | GY2530, 2540 |
|---|---|---|
| | 1 module | 2 modules |

DB417046.eps




| Common side view | GY4020<br>GY6320 | GY4030, 4040<br>GY6330, 6340 |
|---|---|---|
| | 2 modules | 3 modules |

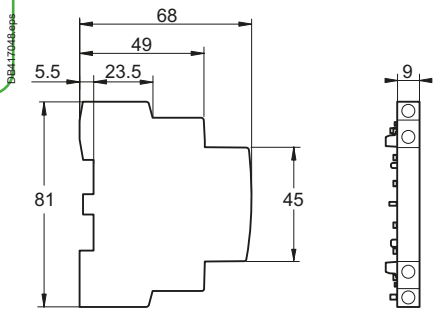
DB417047.eps




### Auxiliary contacts

**GAC0511, 0531 and 0521**

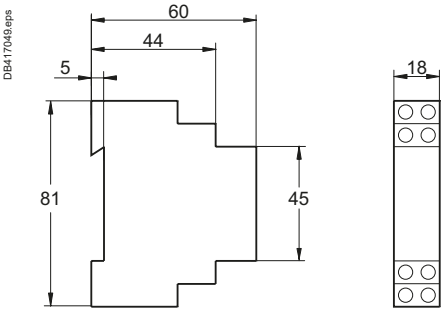
DB417048.eps




### Coil suppression block

**GAP21 and 23**

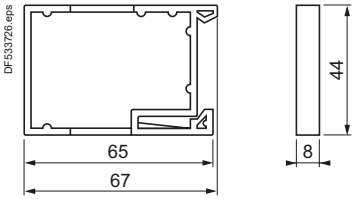
DB417049.eps




### Clip-on ventilation 1/2 module

**GAC5**

DF533726.eps




References:
page B8/55

Characteristics:
pages B8/123 to B8/125



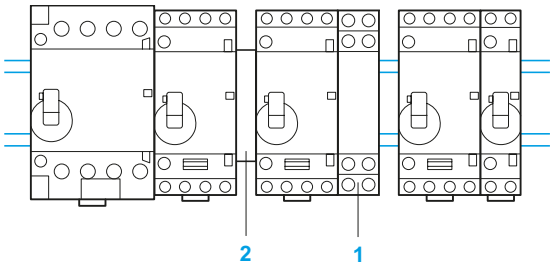
Life Is On Schneider Electric

## Mounting

### Setting-up precautions

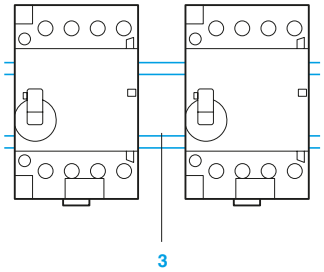
The contactor controls must be bounce free. If not, connect a coil suppression block 1 (GAP 21 or 23) across the coil terminals ⩽ 250 V.
When several contactors which operate at the same time are mounted side by side, a GAC5 ventilation 1/2 module 2 must be fitted every 2 contactors.

DB417052.eps




It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space equal to one module 3 or by 2 ventilation 1/2 modules GAC5.

DB417053.eps

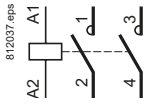



## Schemes

### Contactors

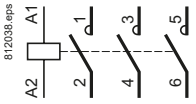
**GY●●20**

812037.eps



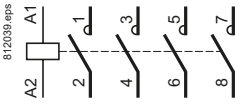

**GY●●30**

812038.eps



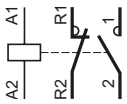

**GY●●40**

812039.eps




**GY●●11**

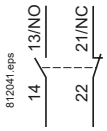
812040.eps




### Auxiliary contacts

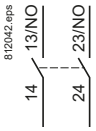
**GAC0521**

812041.eps



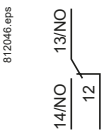

**GAC0531**

812042.eps




**GAC0511**

812046.eps




References:
page B8/55

Characteristics:
pages B8/123 to B8/125

# Characteristics

PF526284R.eps

*GF1611M7*

**Modular impulse relays are designed for use in modular enclosures.**
They feature:
■ **Easy installation:**
□ quick clip-on fixing and locking onto 35 mm omega rail
□ easy connection by means of ready-to-tighten captive, pozidrive screw terminals.
■ **Compact size**
Units have a common depth of 60 mm and width of 18 mm.
■ **User safety:**
□ live parts protected against direct finger contact
□ completely safe operation
□ state indication on front panel.

## Standards

This range of modular impulse relays has been designed taking into account the requirements of international standard IEC 60669-2.
This standard is specific to “Impulse relays”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

## Functions

Modular impulse relays are designed for opening and closing of circuits which are remotely controlled by impulses. The position is mechanically maintained.
These impulse relays are used in lighting circuits when there are more than two switching points.

## Power switching

Modular impulse relays have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific lighting supply is required.



References:
page B8/56
Dimensions, schemes:
page B8/132

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-1-5 | **V** | 400 |
| | Conforming to VDE 0110 | **V** | 400 |
| Rated impulse withstand voltage (Uimp) | | **kV** | 4 in enclosure |
| Conforming to standards | | | IEC 60669-1 and 60669-2 |
| Product certifications | | | NF-USE, CEBEC, ASE, KEMA, N, S, D, FI, VDE |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP 20 open, IP 40 in enclosure |
| Ambient air temperature around the device | Storage | **°C** | -40…+80 |
| | Operation | **°C** | -20…+50 |
| Maximum operating altitude | Without derating | **m** | 2000 |
| Operating positions | Without derating | | ±90° in relation to normal vertical mounting plane |
| Shock resistance 1/2 sine wave = 10 ms Conforming to IEC/EN 60068-2-27 | Impulse relay open | | Please consult your Regional Sales Office |
| | Impulse relay closed | | Please consult your Regional Sales Office |
| Vibration resistance 5…300 Hz Conforming to IEC/EN 60068-2-6 | Impulse relay open | | 4 gn |
| | Impulse relay closed | | 4 gn |

## Pole characteristics

| | | | | | |
|---|---|---|---|---|---|
| Number of poles | | | | 1 or 2 | |
| Rated operational current (Ie) (Ue ≤ 250 V) | In AC-7a (heating) | | **A** | 16 | |
| Rated operational voltage | | | **V** | 250 | |
| Conventional thermal current (Ith) | θ ≤ 50 °C | | **A** | 16 | |
| Permissible short time rating no current flowing for preceding 15 minutes with θ ≤ 40 °C | For 1 s | | **A** | 320 | |
| | For 10 s | | **A** | 96 | |
| | For 30 s | | **A** | 48 | |
| Short-circuit protection by fuse or circuit breaker | gI fuse | | **A** | 16 | |
| | Circuit breaker $I^2t$ (at 3 kA rms prospective) | | **$A^2s$** | 5000 | |
| Average impedance per pole | At Ith and 50 Hz | | **mΩ** | 4 | |
| Power dissipated per pole | | | **W** | 1 | |
| Maximum cabling c.s.a. | | | | **Min.** | **Max.** |
| | Flexible cable without cable end | 1 conductor | **$mm^2$** | 0.5 | 6 |
| | | 2 conductors | **$mm^2$** | 0.5 | 4 |
| | Flexible cable with cable end | 1 conductor | **$mm^2$** | 0.5 | 6 |
| | | 2 conductors | **$mm^2$** | 0.5 | 4 |
| | Solid cable without cable end | 1 conductor | **$mm^2$** | 0.5 | 6 |
| | | 2 conductors | **$mm^2$** | 0.5 | 4 |
| Tightening torque | Power circuit connections | | **N.m** | 0.8 | |

References: page B8/56
Dimensions, schemes: page B8/132

# Characteristics

## Control circuit characteristics

| | | | | |
|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | | **V** | 12…240 V, for other voltages, please consult your Regional Sales Office |
| Control voltage limits (θ < 50 °C) | | Operating threshold, dual frequency 50/60 Hz | **V** | 0.85…1.1 Uc |
| Average consumption at 20 °C and at Uc | | Inrush at 50 Hz | **VA** | 19 |
| Operating time | | Closing “C” | **ms** | 70 |
| | | Opening “O” | **ms** | 70 |
| Minimum impulse time | | | **ms** | 70 |
| Mechanical durability | | | | $10^6$ operating cycles |
| Electrical durability | | | | |
| | | AC-21 | | 200000 operating cycles |
| | | AC-22 | | 100000 operating cycles |
| Maximum operating rate | | Operating cycles per hour | | 900 |
| Maximum cabling c.s.a. | | | | |
| | Flexible cable without cable end | 1 or 2 conductors | **$mm^2$** | 2.5 |
| | Flexible cable with cable end | 1 conductor | **$mm^2$** | 2.5 |
| | | 2 conductors | **$mm^2$** | 1.5 |
| | Solid cable without cable end | 1 or 2 conductors | **$mm^2$** | 1.5 |
| Tightening torque | | | **N.m** | 0.8 |

Ref.
Contactors

References:
page B8/56
Dimensions, schemes:
page B8/132

# Characteristics in lighting and heating applications

## Lighting circuits

### Fluorescent lamps with starter

| Single fitting | Non corrected | | | With parallel correction | | |
|---|---|---|---|---|---|---|
| Power in W | 18 | 36 | 58 | 18 | 36 | 58 |
| Number of lamps | 70 | 35 | 21 | 50 | 25 | 16 |

| Twin fitting | With series correction | | |
|---|---|---|---|
| Power in W | 2 x 18 | 2 x 36 | 2 x 58 |
| Number of lamps | 56 | 28 | 17 |

### Incandescent lamps: filament lamps

| Power in W | 40 | 60 | 75 | 100 | 200 |
|---|---|---|---|---|---|
| Number of lamps | 40 | 25 | 20 | 16 | 8 |

### Incandescent lamps: halogen lamps

| Power in W | 300 | 500 | 1000 | 1500 |
|---|---|---|---|---|
| Number of lamps | 5 | 3 | 1 | 1 |

### Incandescent lamps: very low voltage halogen lamps

| Power in W | 20 | 50 | 75 | 100 |
|---|---|---|---|---|
| Number of lamps | 70 | 28 | 19 | 4 |

### Low pressure sodium vapour lamps

| | Non corrected | | | |
|---|---|---|---|---|
| Power in W | 55 | 90 | 135 | 180 |
| Number of lamps | 24 | 15 | 10 | 7 |

### High pressure sodium vapour lamps

| | Non corrected | | |
|---|---|---|---|
| Power in W | 250 | 400 | 1000 |
| Number of lamps | 5 | 3 | 1 |

## Heating circuits

### Single-phase 230 V, 2-pole

| Power in kW | 3.6 |
|---|---|

Ref.
Contactors

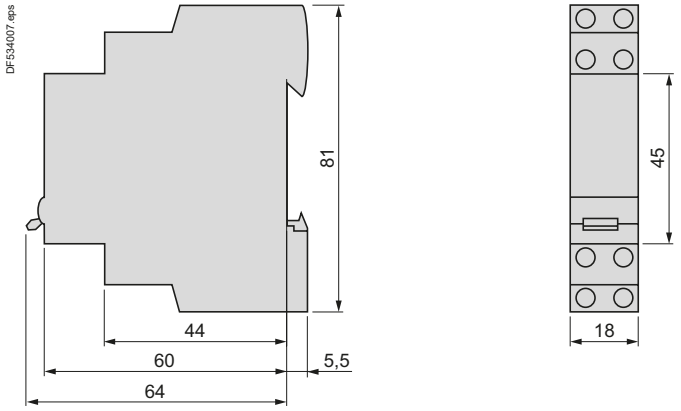
References:
page B8/56

Dimensions, schemes:
page B8/132

# Dimensions and schemes

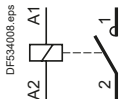
## Dimensions

### GF1610, GF1611, GF1620

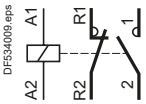



## Schemes

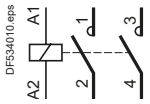
### GF1610




### GF1611




### GF1620




Ref.
Contactors

# Test conditions according to IEC utilization categories

Contactor characteristics are established following tests and utilization categories whose are conforming IEC 60947-4-1 and 5-1 standards.

## Contactors

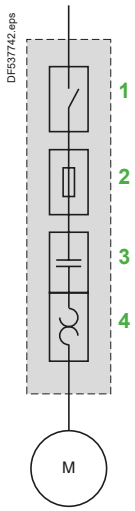
| | | Electrical durability: making and breaking conditions | | | | | | Occasional duty: making and breaking conditions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **a.c. supply** | | | | | | | | | | | | | |
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** |
| Resistors, non inductive or slightly inductive loads | **AC-1** | Ie | Ue | 0.95 | Ie | Ue | 0.95 | 1.5 Ie | 1.05 Ue | 0.8 | 1.5 Ie | 1.05 Ue | 0.8 |
| **Motors** | | | | | | | | | | | | | |
| Slip ring motors: starting, breaking. | **AC-2** | 2.5 Ie | Ue | 0.65 | 2.5 Ie | Ue | 0.65 | 4 Ie | 1.05 Ue | 0.65 | 4 Ie | 1.05 Ue | 0.65 |
| Squirrel cage motors: starting, breaking whilst motor running. | **AC-3** | | | | | | | | | | | | |
| | Ie ≤ (1) | 6 Ie | Ue | 0.65 | 1 Ie | 0.17 Ue | 0.65 | 10 Ie | 1.05 Ue | 0.45 | 8 Ie | 1.05 Ue | 0.45 |
| | Ie > (2) | 6 Ie | Ue | 0.35 | 1 Ie | 0.17 Ue | 0.35 | 10 Ie | 1.05 Ue | 0.35 | 8 Ie | 1.05 Ue | 0.35 |
| Squirrel cage motors: starting, breaking whilst motor running. | **AC-3e** | | | | | | | | | | | | |
| | Ie ≤ (1) | 6 Ie | Ue | 0.65 | 1 Ie | 0.17Ue | 0.65 | 13 Ie | 1.05 Ue | 0.45 (4) | 8.5 Ie | 1.05 Ue | 0.45 (4) |
| | Ie > (2) | 6 Ie | Ue | 0.35 | 1 Ie | 0.17Ue | 0.35 | 13 Ie | 1.05 Ue | 0.35 (5) | 8.5 Ie | 1.05 Ue | 0.35 (5) |
| Squirrel cage motors: starting, reversing, inching | **AC-4** | | | | | | | | | | | | |
| | Ie ≤ (1) | 6 Ie | Ue | 0.65 | 6 Ie | Ue | 0.65 | 12 Ie | 1.05 Ue | 0.45 | 10 Ie | 1.05 Ue | 0.45 |
| | Ie > (2) | 6 Ie | Ue | 0.35 | 6 Ie | Ue | 0.35 | 12 Ie | 1.05 Ue | 0.35 | 10 Ie | 1.05 Ue | 0.35 |
| **d.c. supply** | | | | | | | | | | | | | |
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) |
| Resistors, non inductive or slightly inductive loads | **DC-1** | Ie | Ue | 1 | Ie | Ue | 1 | 1.5 Ie | 1.05 Ue | 1 | 1.5 Ie | 1.05 Ue | 1 |
| Shunt wound motors: starting, reversing, inching | **DC-3** | 2.5 Ie | Ue | 2 | 2.5 Ie | Ue | 2 | 4 Ie | 1.05 Ue | 2.5 | 4 Ie | 1.05 Ue | 2.5 |
| Series wound motors: starting, reversing, inching | **DC-5** | 2.5 Ie | Ue | 7.5 | 2.5 Ie | Ue | 7.5 | 4 Ie | 1.05 Ue | 15 | 4 Ie | 1.05 Ue | 15 |

## Control relays and auxiliary contacts

| | | Electrical durability: making and breaking conditions | | | | | | Occasional duty: making and breaking conditions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **a.c. supply** | | | | | | | | | | | | | |
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** | **I** | **U** | **cos φ** |
| **Electromagnets** | | | | | | | | | | | | | |
| ≤ 72 VA | **AC-14** | - | - | - | - | - | - | 6 Ie | 1.1 Ue | 0.7 | 6 Ie | 1.1 Ue | 0.7 |
| > 72 VA | **AC-15** | 10 Ie | Ue | 0.7 | Ie | Ue | 0.4 | 10 Ie | 1.1 Ue | 0.3 | 10 Ie | 1.1 Ue | 0.3 |
| **d.c. supply** | | | | | | | | | | | | | |
| **Typical applications** | **Utilisation category** | **Making** | | | **Breaking** | | | **Making** | | | **Breaking** | | |
| | | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) | **I** | **U** | **L/R** (ms) |
| Electromagnets | **DC-13** | Ie | Ue | 6 P (3) | Ie | Ue | 6 P (3) | 1.1 Ie | 1.1 Ue | 6 P (3) | 1.1 Ie | 1.1 Ue | 6 P (3) |

*(1) Ie ≤ 17 A for electrical durability, Ie ≤ 100 A for occasional duty.*
*(2) Ie > 17 A for electrical durability, Ie > 100 A for occasional duty.*
*(3) The value 6 P (in watts) is based on practical observations and is considered to represent the majority of d.c. magnetic loads up to the maximum limit of P = 50 W i.e. 6 P = 300 ms = L/R.*
*Above this, the loads are made up of smaller loads in parallel. The value 300 ms is therefore a maximum limit whatever the value of current drawn.*
*(4) Ie ≤ 100A*
*(5) Ie > 100A*

# North American market - UL CSA classification of motor starter applications




1 Motor Disconnect (Disconnect switch)
2 Motor Branch Circuit Protection (Short-circuit protection)
3 Motor Controller (Contactor)
4 Motor Overload Protection (Thermal overload relay)

## Starters for the North American market

In recent years, the North American market has started to harmonise UL, CSA and ANCE standards, as well as the industrial installation codes provided by national regulations (NEC for the United States, CEC for Canada and MEC for Mexico). (1)
Major improvements, carried out by the Canena (2) are aimed at harmonising product requirements based on IEC (3) standards.
However, the North American codes use specific terminology for defining the functions of a starter.
These functions can be fulfilled by standard IEC products, accompanied by appropriate certifications.

## Combination Starters

Combination Starters are the most common type of packaged motor starter. They are called "Combination" because of their structure and their combined functions. The figure opposite shows the four combined functions that constitute a complete motor starter circuit, defined as a “Motor branch circuit” by the NEC (US National Electric Code) in article 430. Standard UL508 currently gives different types of combination starter that meet the requirements of a "Motor branch circuit".

**Type E**, called “**self-protected combination starter**”, covers all these functions and can be controlled manually (thermal-magnetic circuit breaker) or remotely (starter-controller). Type E starters withstand faults within their declared nominal rating without sustaining damage, after which they can be put back into service. In addition, they can withstand more severe short-circuit and durability performance tests without welding or excessive wear of the contact tips.

**Type F,** called “**Combination motor starter**”, consists of a type E manual starter (thermal-magnetic circuit breaker) combined with a contactor.
These starters are evaluated by means of basic short-circuit tests, but are not considered as “self-protected”.

For this combination, the type E starter must be marked “Combination Motor Controller when used with ...”, followed by the reference of the load side contactor.



*(1)* ***UL****: Underwriters Laboratories,* ***CSA****: Canadian Standards Association,* ***ACNE****: Association of Standardization and Certification,* ***NEC****: National Electric Code,* ***CEC****: Canadian Electrical Code,* ***MEC****: Mexican Electrical Code.*
*(2)* ***Canena****: Council for Harmonization of Electrotechnical Standardization of North America.*
*(3)* ***IEC****: International Electrotechnical Commission.*

## Control panels

To help users properly coordinate their motor control equipment with their distribution system in the event of a fault, article 409 of the 2005 NEC requires panel builders to list the short-circuit withstand rating of their motor control panels.
According to standard UL508A, manufacturers must use the short-circuit withstand value of the lowest rated device as the nominal withstand rating of the panel, unless the devices have been tested together for a higher coordinated rating.
The minimum "**short-circuit current rating**" (SCCR), on motor control components for horsepower ratings of 50 hp or below is 5000 A.

Using a **type E** or **type F** combination starter eliminates the coordination problems of using individual components for the "motor branch circuit protection", "motor controller" and "motor overload protection" functions.
The panel builder uses the declared short-circuit current rating for the combination starter. This value is generally higher than 5000 A.
This makes it easier to list the short-circuit current ratings and to check the compatibility of a UL508A motor control panel within a given distribution system.

## Group protection

Article 430.53 of the NEC allows a single short-circuit protection device to be used for more than one motor circuit if the components used are marked and listed for such use.
Components suitable for use in group protection, known as "**motor group installations**", can be marked in one of the following two ways:

### Case n° 1

The contactor and the motor overload relay are both listed as suitable for group installation.
An inverse time circuit breaker can be used as the short-circuit protection device if it is also listed as suitable for group installation.
The panel builder must therefore make sure that the short-circuit protection device selected (fuses or inverse time circuit breaker) does not exceed the value allowed by article 430.40 for the smallest overload relay used in the circuit.
Once these conditions have been met, the panel builder can reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one third of the size of the upstream circuit conductor supplying the protection device.
The panel builder must limit the length of the motor starter conductor (connecting the short-circuit protection device to the motor contactor/overload relay) to a maximum of 7.6 m (25 feet).

### Case n° 2

The motor contactor and overload relay are listed as suitable for "**tap conductor protection**" in group installations.
This category allows the panel designer to reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one tenth of the size of the upstream circuit conductor supplying the protection device.
The designer must limit the length of this conductor to a maximum of 3.05 m (10 feet).
In both cases, the supply circuits must not be less than 125 % of the connected motor FLA (Full Load Amps) rating.
For panel builders, using **type F** combination starters in group installations simplifies group motor considerations.
Each starter is a fully coordinated motor branch circuit.
The panel builder follows the same NEC requirements for sizing the supply conductors as those required for single motor branch circuits.
The size of the supply conductors can be reduced in accordance with the specifications of article 430.28.
This allows the same flexibility in conductor sizing as that offered in article 430.53 (D), without a requirement to check the short-circuit protection rating marked on the components and the overload relay limit.
A UL508A panel does not need a short-circuit protection device when each motor starter installed is a **type F**.
The upstream short-circuit protection device supplying the starter protects the panel. The panel builder only has to consider the panel/enclosure disconnect requirements specified by the NEC or local codes.

# TeSys Control
# Giga High power contactors

Chapter B9


**Introduction** B9/4

**TeSys Giga High power contactors**

| Type of product | Range | | Pages |
|---|---|---|---|
| TeSys Giga High power contactors<br>Advanced version - 3 and 4-poles | 3-pole from 115 to 800 A – AC-3<br>3-pole and 4-pole from 250 to 1050 A – AC-1 | | B9/10 |
| TeSys Giga High power contactors<br>Standard version - 3 and 4-poles | 3-pole from 115 to 800 A – AC-3<br>3-pole and 4-pole from 250 to 1050 A – AC-1 | | B9/12 |
| Auxiliary modules, Accessories, Retrofit kits<br>for TeSys Giga High power contactors | | | B9/14 |
| Spare parts<br>for TeSys Giga High power contactors | | | B9/20 |

Technical Data for Designers B9/23

# On-line tools to configure your **motor starters**

## EcoStruxure™ Motor Control Configurator

Scan or click on the QR code

### Build your starter configuration

- Build your motor starter configuration with different solutions
- Complete offer base suited for different countries.

### Enhanced customer's journey

- Easy selection, replacing complex paper catalogs
- Covert into Bill of Materials (BoM) by adding the products to the cart.

### Answers to customer needs

- Option to save and re-work your configurations
- Direct access to products documentation in one place
- Possibility with unique configurations ID and share.

## Product Selector for **TeSys** Giga

Scan or click on the QR code

### Offer selection

- Easy selection of **TeSys** Giga Contactor or Overload Relays
- Intuitive tool to configure the devices to suit your needs
- Helps to select the right devices for your application.

### Configure your motor starter components

- Options to select auxiliaries and accessories
- Configure reversers and changeover contactors with ease
- Get the extensive bill of material, export it in standard format (PDF, XLS), or drop it into the product cart
- Access to technical information and documentations for every item.



## EcoStruxure Motor Management Design

Scan or click on the QR code

### Electrical design calculations for high-power motors

Easily perform basic calculations related to transformer size, short-circuit current and voltage drop, comparing direct-on-line, star-delta, soft-starter, and variable speed drive. Verify starting feasibility from mechanical standpoint and ensure power quality objectives are met, for power factor or harmonic levels. Check energy saving potential of using a variable speed drive for centrifugal pumps and fans.

### Offer selection and report

Select among latest compatible offers to build a complete motor management solution: circuit breakers, contactors, MCC panels, drives, protection relays, power factor capacitors, active filters, power quality monitoring and services.
Get a summary report with calculations and recommended offers.

# Product references – coding principle

## > TeSys Giga High power contactors

| LC1 | G | 185 | 4 | EHE | N |
|---|---|---|---|---|---|
| Contactor | TeSys Giga series | **Contactor rating**<br>115: 115 A<br>150: 150 A<br>185: 185 A<br>225: 225 A<br>265: 265 A<br>330: 330 A<br>400: 400 A<br>500: 500 A<br>630: 630 A<br>800: 800 A | **Poles**<br>Blank: 3-pole<br>4: 4-pole | **Control voltage (AC/DC)**<br>**Advanced version (A)**<br>BEE: 24…48 V (1)<br>EHE : 48...130 V<br>LSE: 200…500 V<br>**Standard version (N)**<br>EHE: 48…130 V<br>KUE: 100…250 V | **Offer type**<br>A: Advanced version<br>N: Standard version |

**Example:**

LC1G400LSEA TeSys Giga Contactor Advanced version 400 A, 3-pole, 200...500 V AC/DC coil, with PLC control.

LC1G1854EHEN TeSys Giga Contactor Standard version 185 A, 4-pole, 48...130 V AC/DC coil, without PLC control.

*(1) 24...48 V AC/DC control voltage option is available for LC1G115...LC1G500 ratings.*

# > Quality and Performance as high priority

## **TeSys** Giga
## A new Generation series with digital innovation

Over more than 4 decades, the **TeSys F** range of contactors has built a high reputation for performance, reliability, and quality. The **TeSys F** range set the industrial standard for high power contactors with an installed base of millions of products. **TeSys F** contactors were the first choice of many OEMs, control panel builders and industrial users.

But industry requirements have evolved to demand process performance monitoring through data networks and online expert services.

TeSys Giga is Schneider Electric's new range of contactors that answer these evolving needs. TeSys Giga High power contactors support the evolution of processes and offer new services to reduce non-production time to a minimum. Replacing **TeSys F** Contactors, TeSys Giga High power contactors address a wide range of demanding applications with built-in advanced features and functionalities.

## Futuristic ready…

TeSys Giga High power contactors are designed to work with components and accessories with advanced performance. The characteristics of robustness and longevity are maintained, both in the connectors and in the switching.

Continuous local and remote monitoring of contact wear optimizes predictive maintenance by allowing you to replace contacts only when necessary, facilitated by diagnostic visual indicator.

Every customer will benefit from the innovative design and feature, including the compact size, wideband electronic coils, embedded auxiliary contact blocks, ergonomic design, or flexibility in connections.

## > Applications

AC-3/AC-3e utilization category

AC-1 utilization category

- TeSys Giga High power contactors provide robust control solutions for AC-3/AC-3e applications up to 800 A and AC-1 applications up to 1050 A.
- TeSys Giga High power contactors can be part of a direct-on-line motor starter, reversing motor starter or a star-delta motor starter and power switching application.
- TeSys Giga High power contactors provide contact wear diagnostic and wideband AC/DC control.
- Suitable for type 2 coordination as per IEC60947-4-1.

## > Right choice for a wide range of demanding applications

TeSys Giga High power contactors ' unique design meets the common requirements of demanding high power applications:

- Conform to multi standards to suit global needs
- Long life expectancy in harsh environments
- Suitable for high efficiency motors
- Very good resistance to vibrations
- High uptime thanks to predictive maintenance
- Optimized installation and maintainability.

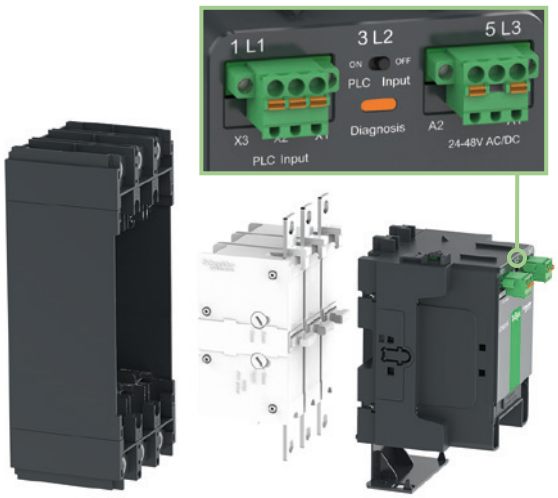
# > Intelligent design for greater advantages

- Interlock location, with knock-out cover
- On/Off switch for PLC input
- Push-in type control terminals enabling quick wiring and assembly
- Diagnosis LED for contact wear & voltage abnormality
- Built-in 1 NO + 1 NC auxiliary contact block
- Unique QR code providing quick access to complete product data
- Mechanical indicator for contactor open and closed status

## Higher flexibility

TeSys Giga High power contactors can be mounted in different orientation without derating, providing high flexibility of your panel design.

Control wiring, auxiliary contacts and control module are accessible from the front.




## Contact wear diagnostic and predictive maintenance

Contact wear is monitored by a dedicated module and shown in the front panel through LED, therefore the, predictive maintenance can be planned for replacing the complete set of switching modules, thus avoiding break-down maintenance. Switching modules (1) can be replaced quickly and easily thanks to their Plug and Play design.

*(1) Refer to page B9/21 for details on switching modules.*

# > Key features

## Advanced contactor control

- The electronic control module provides wideband AC/DC coil control voltage, from 24 V to 500 V, allowing quick adaptation of existing industrial processes as well as new projects.
- The low power consumption of the coils could lead to significant savings on automation equipment. It's now possible to use interface relays with a lower rating, resulting in lower heat emission in the panel.
- The low power consumption of the coils also takes up less space in the panel and simplifies the diagrams by connecting these coils directly to the output cards of the PLCs.

## Simplified wiring

- The pole pitch of the power terminals allows direct mounting and connection to TeSys Giga Electronic Overload Relays. Standardization of panel mounting and assembly reduces costs and assembly time.
- Push-in connection for control terminals provides flexibility, ease of connections, and reduced assembly and installation time.

## Enhanced durability

- Durability is a top priority. TeSys Giga High power contactors are designed to offer uncompromising robustness and maintenance accessibility to site technicians. The duration of production down-time is reduced, resulting in improved profitability on your investment.

## Advanced diagnostic features

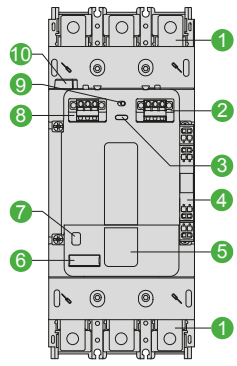
- On-board diagnostics is a new feature in our latest generation of high power contactors. Counting the number of operations as well as monitoring duration of use and pole condition provides numerous benefits for the customer and improves reliability and maintenance planning.

## Compact size

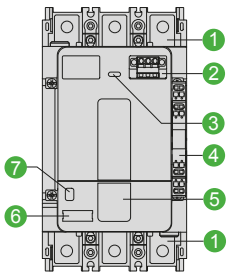
- Compact size provides easy access to power connections for connecting cables and busbars.

## Easy maintenance

- The poles are designed as replaceable switching modules, so the performance of a used contactor can be fully restored. The modular design allows a quick and long-lasting replacement.
- Coils are accessible from the front and maintained with very low down times.




Advanced (*A) version




Standard (*N) version

1. Power connection (cable memory kit provided with Advanced version contactor)
2. A1-A2 coil terminal
3. Contact wear diagnosis LED
4. 1 NO + 1 NC auxiliary contact
5. QR code
6. Label holder
7. Status indicator
8. PLC control terminal
9. PLC control ON/OFF switch
10. Connector for Remote Wear Diagnostic (RWD) module

*: contactor references finishing by A or by N.

A comprehensive range of TeSys Giga High power contactors that are available in 'Advanced' and 'Standard' versions, in 3 sizes, covering several ratings.
A common range of auxiliary contacts and accessories, enabling high flexibility and simplicity.

## > **TeSys** Giga High power contactors – Advanced version

115…225 A

265…500 A

630…800 A

**Power & control**
- 3 or 4 power poles
- 115 to 800 A (AC-3)
- 250 to 1050 A (AC-1)
- Embedded 1 NO + 1 NC auxiliary contacts
- Push-in type terminals for coils & control

**Remote control**
- 24-48 V, 48-130 V, 200-500 V AC/DC coils
- Low consumption coils
- Wide voltage range coils (direct coil control)
- Digital control input (PLC output digital coil control)
- Embedded surge suppressor

**Diagnostic**
- Embedded wear diagnostic
- Embedded control voltages diagnostic
- Self diagnosis function
- Local alarm signaling (LED)
- Remote wear diagnostic signaling kit (accessory)

**Mounting**
- 'Cable memory' adapter enables maintenance without removing power cables and busbar connections.

**Standards and Certifications**
- Multiple standards
- International certifications

## > **TeSys** Giga High power contactors – Standard version

115…225 A

265…500 A

630…800 A

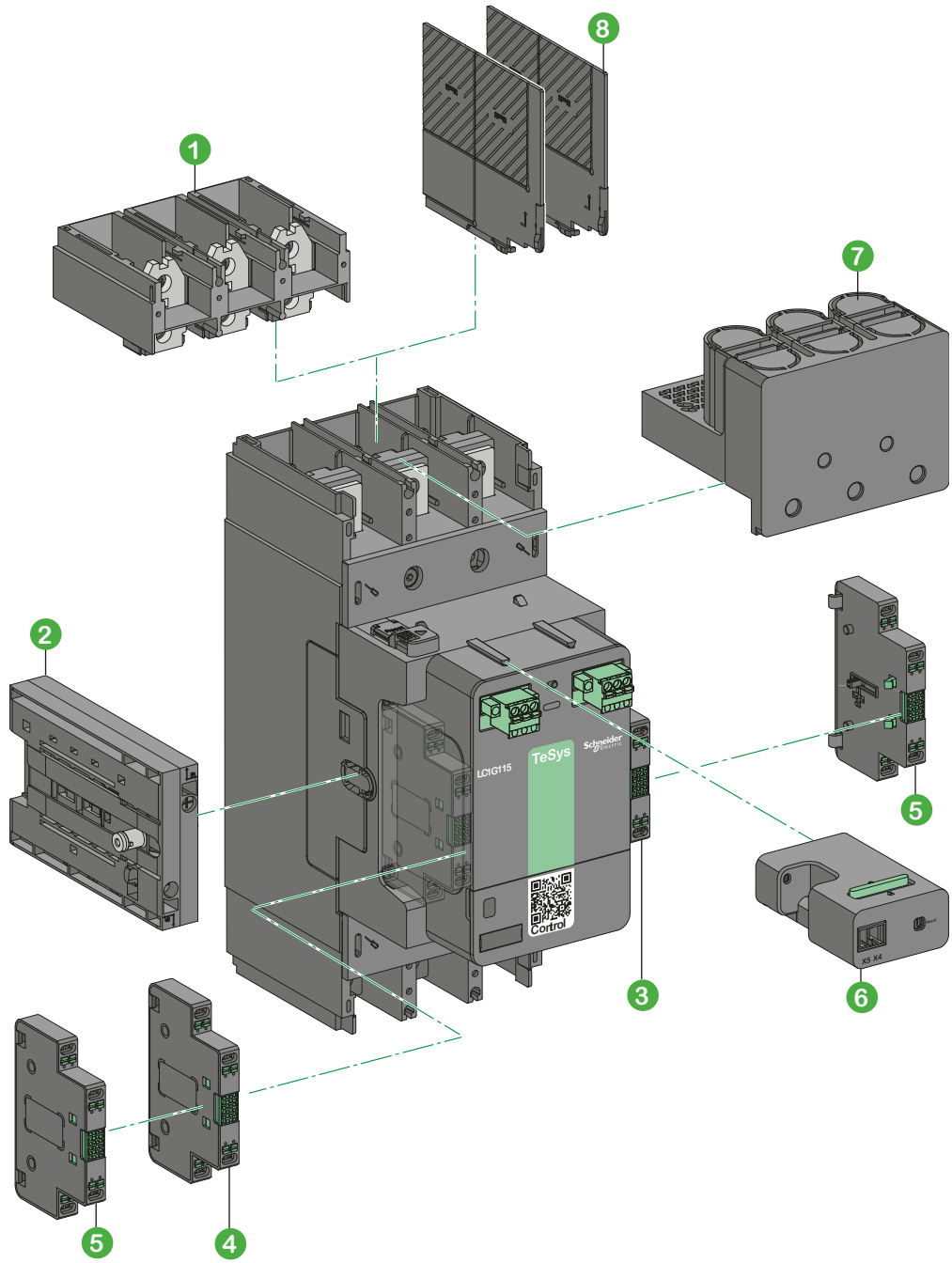
**Power & control**
- 3 or 4 power poles
- 115 to 800 A (AC-3)
- 250 to 1050 A (AC-1)
- Embedded 1 NO + 1 NC auxiliary contacts
- Push-in type terminals for coils & control

**Remote control**
- 48-130 V, 100-250 V AC/DC coils
- Wide voltage range coils (direct coil control)
- Embedded surge-suppressor

**Diagnostic**
- Embedded wear diagnostic
- Embedded control voltages diagnostic
- Self diagnosis function
- Local alarm signaling (LED)

**Certifications**
- Multiple standards
- International certifications

DB438441.ai




1 Cable memory kit **LA9G3102,** is always supplied along with Advanced version, and it's an optional accessory for Standard version.
2 Mechanical interlock **LA9G970**, can be installed on either side of the contactor.
3 Auxiliary contact module **LAG8N113P** (1 NO + 1 NC) supplied with LC1G contactor.
4 Auxiliary contact modules **LAG8N113P/ LAG8N203P,** can be installed on the contactor lateral faces (1)
5 Auxiliary contact modules **LAG8N113 / LAG8N203**, can be installed on either side as 2nd set of contacts.
6 Remote Wear Diagnostic (RWD) Module **LA9GRD01/ LA9GRD10**, can be installed and used only in Advanced version.
7 IP 20 terminal shroud **LA9G3701.**
8 Phase separators **LA9G3801**, please refer to pages B9/14 to B9/18 for complete details of available accessories.

***Note:*** *a maximum of 2 auxiliary contact modules can be mounted on each side of the contactor.*
*(1) Does not increase the contactor dimensions when fitted on both sides.*

## TeSys Giga 3-pole Advanced contactors – For motor control (115 to 800 A)

| Motor ratings (kW) θ ≤ 60 °C<br>IEC | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AC-3 | | | | | | | AC-3e (1) | | | | | | | AC-4 | | | | | | | | |
| 230 V | 400 V | 415 V | 440 V | 500 V | 690 V | 1000 V | 230 V | 400 V | 415 V | 440 V | 500 V | 690 V | 1000 V | 230 V | 400 V | 415 V | 440 V | 500 V | 690 V | 1000 V | | |
| kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | | |
| 30 | 55 | 55 | 75 | 75 | 75 | - | 30 | 55 | 55 | 75 | 75 | 75 | - | 30 | 55 | 55 | 65 | 65 | 75 | - | | |
| 37 | 75 | 75 | 90 | 90 | 90 | 75 | 37 | 75 | 75 | 90 | 90 | 90 | 75 | 37 | 75 | 75 | 80 | 90 | 90 | 75 | | |
| 55 | 90 | 90 | 110 | 110 | 110 | 75 | 55 | 90 | 90 | 110 | 110 | 110 | 75 | 55 | 90 | 90 | 100 | 110 | 110 | 75 | | |
| 55 | 110 | 110 | 132 | 132 | 160 | 132 | 55 | 110 | 110 | 132 | 132 | 160 | 132 | 55 | 110 | 110 | 129 | 132 | 132 | 110 | | |
| 75 | 132 | 132 | 160 | 160 | 200 | 160 | 75 | 132 | 132 | 160 | 160 | 200 | 160 | 75 | 132 | 132 | 150 | 160 | 160 | 160 | | |
| 90 | 160 | 160 | 200 | 200 | 220 | 185 | 90 | 160 | 160 | 185 | 200 | 220 | 185 | 90 | 160 | 160 | 185 | 200 | 220 | 185 | | |
| 110 | 200 | 200 | 250 | 250 | 315 | 220 | 110 | 200 | 200 | 250 | 250 | 315 | 220 | 110 | 200 | 200 | 220 | 250 | 315 | 220 | | |
| 160 | 250 | 250 | 315 | 355 | 355 | 335 | 147 | 250 | 250 | 280 | 315 | 355 | 335 | 150 | 250 | 250 | 295 | 295 | 355 | 280 | | |
| 200 | 335 | 375 | 400 | 400 | 500 | 450 | 180 | 315 | 335 | 355 | 375 | 500 | 450 | 180 | 315 | 335 | 355 | 375 | 450 | 355 | | |
| 250 | 450 | 450 | 450 | 500 | 560 | 450 | 200 | 335 | 355 | 375 | 425 | 560 | 450 | 200 | 375 | 355 | 375 | 400 | 475 | 400 | | |

Double Page Table

## TeSys Giga 3-pole and 4-pole Advanced contactors for load control only (non motor) – (250 to 1050 A)

| Maximum current (A) (θ ≤ 40 °C) | General purpose continuous current (A) | Reference<br>Advanced version contactors<br>AC/DC coil voltage | | | | | |
|---|---|---|---|---|---|---|---|
| | | 3-pole | | | 4-pole | | |
| IEC<br>AC-1 | UL | 24…48 V | 48…130 V | 200…500 V | 24…48 V | 48…130 V | 200…500 V |
| 250 | 210 | LC1G115BEEA | LC1G115EHEA | LC1G115LSEA | LC1G1154BEEA | LC1G1154EHEA | LC1G1154LSEA |
| 275 | 230 | LC1G150BEEA | LC1G150EHEA | LC1G150LSEA | LC1G1504BEEA | LC1G1504EHEA | LC1G1504LSEA |
| 305 | 250 | LC1G185BEEA | LC1G185EHEA | LC1G185LSEA | LC1G1854BEEA | LC1G1854EHEA | LC1G1854LSEA |
| 330 | 290 | LC1G225BEEA | LC1G225EHEA | LC1G225LSEA | LC1G2254BEEA | LC1G2254EHEA | LC1G2254LSEA |
| 385 | 340 | LC1G265BEEA | LC1G265EHEA | LC1G265LSEA | LC1G2654BEEA | LC1G2654EHEA | LC1G2654LSEA |
| 440 | 390 | LC1G330BEEA | LC1G330EHEA | LC1G330LSEA | LC1G3304BEEA | LC1G3304EHEA | LC1G3304LSEA |
| 550 | 490 | LC1G400BEEA | LC1G400EHEA | LC1G400LSEA | LC1G4004BEEA | LC1G4004EHEA | LC1G4004LSEA |
| 700 | 630 | LC1G500BEEA | LC1G500EHEA | LC1G500LSEA | LC1G5004BEEA | LC1G5004EHEA | LC1G5004LSEA |
| 1050 | 850 | - | LC1G630EHEA | LC1G630LSEA | - | LC1G6304EHEA | LC1G6304LSEA |
| 1050 | 900 | - | LC1G800EHEA | LC1G800LSEA | - | LC1G8004EHEA | LC1G8004LSEA |

*(1) Switching of IE3/IE4 high efficiency squirrel-cage motors.*

Coordination tables: pages A5/7 to A5/42
Characteristics: pages B9/25 to B9/29
Dimensions: pages B9/30 to B9/32
Diagrams: page B9/34

## Product references

| Motor ratings (HP) UL- 3phase | | | | Reference Advanced version contactors AC/DC coil voltage 3-pole | | |
|---|---|---|---|---|---|---|
| 200/208 V | 230/240 V | 460/480 V | 575/600 V | 24-48 V | 48-130 V | 200-500 V |
| 30 | 40 | 75 | 100 | **LC1G115BEEA** | **LC1G115EHEA** | **LC1G115LSEA** |
| 40 | 50 | 100 | 125 | **LC1G150BEEA** | **LC1G150EHEA** | **LC1G150LSEA** |
| 50 | 60 | 125 | 150 | **LC1G185BEEA** | **LC1G185EHEA** | **LC1G185LSEA** |
| 60 | 75 | 150 | 150 | **LC1G225BEEA** | **LC1G225EHEA** | **LC1G225LSEA** |
| 75 | 100 | 200 | 200 | **LC1G265BEEA** | **LC1G265EHEA** | **LC1G265LSEA** |
| 100 | 125 | 250 | 300 | **LC1G330BEEA** | **LC1G330EHEA** | **LC1G330LSEA** |
| 125 | 150 | 300 | 400 | **LC1G400BEEA** | **LC1G400EHEA** | **LC1G400LSEA** |
| 150 | 200 | 400 | 450 | **LC1G500BEEA** | **LC1G500EHEA** | **LC1G500LSEA** |
| 250 | 300 | 600 | 700 | - | **LC1G630EHEA** | **LC1G630LSEA** |
| 300 | 350 | 700 | 800 | - | **LC1G800EHEA** | **LC1G800LSEA** |



Coordination tables: pages A5/7 to A5/42
Characteristics: pages B9/25 to B9/28
Dimensions: pages B9/30 to B9/32
Diagrams: page B9/34

## TeSys Giga 3-pole Standard contactors – For motor control – (115 to 800 A)

| Motor ratings (kW) θ ≤ 60 °C<br>IEC | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AC-3 | | | | | | | AC-3e [1] | | | | | | | AC-4 | | | | | | | | |
| 230 V | 400 V | 415 V | 440 V | 500 V | 690 V | 1000 V | 230 V | 400 V | 415 V | 440 V | 500 V | 690 V | 1000 V | 230 V | 400 V | 415 V | 440 V | 500 V | 690 V | 1000 V | | |
| kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | kW | | |
| 30 | 55 | 55 | 75 | 75 | 75 | - | 30 | 55 | 55 | 75 | 75 | 75 | - | 30 | 55 | 55 | 65 | 65 | 75 | - | | |
| 37 | 75 | 75 | 90 | 90 | 90 | 75 | 37 | 75 | 75 | 90 | 90 | 90 | 75 | 37 | 75 | 75 | 80 | 90 | 90 | 75 | | |
| 55 | 90 | 90 | 110 | 110 | 110 | 75 | 55 | 90 | 90 | 110 | 110 | 110 | 75 | 55 | 90 | 90 | 100 | 110 | 110 | 75 | | |
| 55 | 110 | 110 | 132 | 132 | 160 | 132 | 55 | 110 | 110 | 132 | 132 | 160 | 132 | 55 | 110 | 110 | 129 | 132 | 132 | 110 | | |
| 75 | 132 | 132 | 160 | 160 | 200 | 160 | 75 | 132 | 132 | 160 | 160 | 200 | 160 | 75 | 132 | 132 | 150 | 160 | 160 | 160 | | |
| 90 | 160 | 160 | 200 | 200 | 220 | 185 | 90 | 160 | 160 | 185 | 200 | 220 | 185 | 90 | 160 | 160 | 185 | 200 | 220 | 185 | | |
| 110 | 200 | 200 | 250 | 250 | 315 | 220 | 110 | 200 | 200 | 250 | 250 | 315 | 220 | 110 | 200 | 200 | 220 | 250 | 315 | 220 | | |
| 160 | 250 | 250 | 315 | 355 | 355 | 335 | 147 | 250 | 250 | 280 | 315 | 355 | 335 | 150 | 250 | 250 | 295 | 295 | 355 | 280 | | |
| 200 | 335 | 375 | 400 | 400 | 500 | 450 | 180 | 315 | 335 | 355 | 375 | 500 | 450 | 180 | 315 | 335 | 355 | 375 | 450 | 355 | | |
| 250 | 450 | 450 | 450 | 500 | 560 | 450 | 200 | 335 | 355 | 375 | 425 | 560 | 450 | 200 | 375 | 355 | 375 | 400 | 475 | 400 | | |

Double Page Table

## TeSys Giga 3-pole and 4-pole Standard contactors for load control only (non motor) – (250 to 1050 A)

| Maximum current (A) (θ ≤ 40 °C) | General purpose continuous current (A) | Reference<br>Standard version contactors<br>AC/DC coil voltage | | | |
|---|---|---|---|---|---|
| | | 3-pole | | 4-pole | |
| IEC<br>AC-1 | UL | 48…130 V | 100…250 V | 48…130 V | 100…250 V |
| 250 | 210 | LC1G115EHEN | LC1G115KUEN | LC1G1154EHEN | LC1G1154KUEN |
| 275 | 230 | LC1G150EHEN | LC1G150KUEN | LC1G1504EHEN | LC1G1504KUEN |
| 305 | 250 | LC1G185EHEN | LC1G185KUEN | LC1G1854EHEN | LC1G1854KUEN |
| 330 | 290 | LC1G225EHEN | LC1G225KUEN | LC1G2254EHEN | LC1G2254KUEN |
| 385 | 340 | LC1G265EHEN | LC1G265KUEN | LC1G2654EHEN | LC1G2654KUEN |
| 440 | 390 | LC1G330EHEN | LC1G330KUEN | LC1G3304EHEN | LC1G3304KUEN |
| 550 | 490 | LC1G400EHEN | LC1G400KUEN | LC1G4004EHEN | LC1G4004KUEN |
| 700 | 630 | LC1G500EHEN | LC1G500KUEN | LC1G5004EHEN | LC1G5004KUEN |
| 1050 | 850 | LC1G630EHEN | LC1G630KUEN | LC1G6304EHEN | LC1G6304KUEN |
| 1050 | 900 | LC1G800EHEN | LC1G800KUEN | LC1G8004EHEN | LC1G8004KUEN |

*(1) Switching of IE3/IE4 high efficiency squirrel-cage motors.*

Coordination tables: pages A5/7 to A5/42
Characteristics: pages B9/25 to B9/29
Dimensions: pages B9/30 to B9/32
Diagrams: page B9/34

## Product references

| Motor ratings (HP) UL- 3phase | | | | Reference Standard version contactors AC/DC coil voltage 3-pole | |
|---|---|---|---|---|---|
| 200/208 V | 230/240 V | 460/480 V | 575/600 V | 48-130 V | 100-250 V |
| 30 | 40 | 75 | 100 | **LC1G115EHEN** | **LC1G115KUEN** |
| 40 | 50 | 100 | 125 | **LC1G150EHEN** | **LC1G150KUEN** |
| 50 | 60 | 125 | 150 | **LC1G185EHEN** | **LC1G185KUEN** |
| 60 | 75 | 150 | 150 | **LC1G225EHEN** | **LC1G225KUEN** |
| 75 | 100 | 200 | 200 | **LC1G265EHEN** | **LC1G265KUEN** |
| 100 | 125 | 250 | 300 | **LC1G330EHEN** | **LC1G330KUEN** |
| 125 | 150 | 300 | 400 | **LC1G400EHEN** | **LC1G400KUEN** |
| 150 | 200 | 400 | 450 | **LC1G500EHEN** | **LC1G500KUEN** |
| 250 | 300 | 600 | 700 | **LC1G630EHEN** | **LC1G630KUEN** |
| 300 | 350 | 700 | 800 | **LC1G800EHEN** | **LC1G800KUEN** |

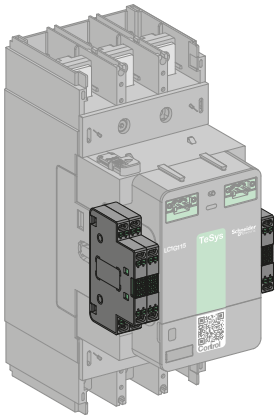


Coordination tables: pages A5/7 to A5/42
Characteristics: pages B9/25 to B9/27 and B9/29
Dimensions: pages B9/30 to B9/32
Diagrams: page B9/34

PB121650.eps

*LAG8N113*

DB438480.ai



*Side mounting – maximum 2 per side*

## Auxiliary contact modules

Auxiliary contacts give an indication of the contactor status.
They can be used for remote visual signaling, alarming, electrical locking, relay activation, etc...

Each contactor is equipped with 1 NO + 1 NC auxiliary contact block as standard.
■ Mechanically linked mirror contacts
The NC contact of the auxiliary contact block is mirror contact in conformity to IEC 60947-4-1 and it is mechanically linked to reliably represent the state of the main power contacts and wherever auxiliary contact state reliability is essential.
The main power contacts and the NC of the auxiliary contact can't be closed at the same time.

Types of connections:
■ Push-in type.

### Wide contactor compatibility

TeSys Giga auxiliary contact module is compatible with the whole range of TeSys Giga High power contactors .
Each TeSys Giga Contactor can be equipped with up to 4 auxiliary contact modules.

### Electrical characteristics

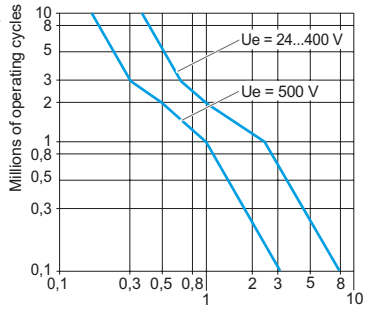
| Characteristics | |
|---|---|
| Rated thermal current (A) | 10 |
| Minimum load | 1 mA at 17 V DC |
| Contact reliability | Failure rate $<10^{-8}$ |

### Operational power of contacts conforming to IEC 60947-5-1 - Electrical durability

**category AC-15**

| Operating cycles | V | 24 | 48 | 115 | 230 | 400 | 500 |
|---|---|---|---|---|---|---|---|
| 1 million | VA | 60 | 120 | 280 | 560 | 800 | 500 |
| 2 million | VA | 24 | 48 | 115 | 230 | 400 | 250 |
| 3 million | VA | 16 | 32 | 80 | 160 | 280 | 150 |

DB439339.eps

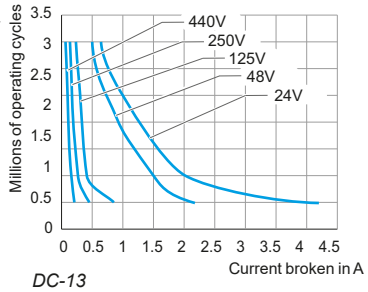



*AC-15*

**category DC-13**

| Operating cycles | V | 24 | 48 | 125 | 250 | 440 |
|---|---|---|---|---|---|---|
| 0.5 million | W | 100 | 100 | 105 | 110 | 88 |
| 1 million | W | 48 | 72 | 54 | 54 | 55 |
| 2 million | W | 24 | 36 | 38 | 38 | 39 |
| 3 million | W | 16 | 24 | 25 | 25 | 33 |

DF537817-R.eps




*DC-13*

| Connector characteristics | | | | |
|---|---|---|---|---|
| Push-in connection - Dual input | | | | Min/max c.s.a. |
| Flexible cable per input | 1 conductor with cable end | mm² | | 0.75...2.5 |
| | 2 conductors with Dual Sleeve | mm² | | 0.75...2.5 |
| | Stripping length | mm² | | 10 |
| Solid cable per input | 1 conductor | mm² | | 0.75...2.5 |
| | Stripping length | mm | | 12 |

## Auxiliary contact modules

| Description | Terminal type | Position | Type of contacts | Sold in lots of | Reference |
|---|---|---|---|---|---|
| **Auxiliary contact module** | Push-in | 1st left or right | 1 NO + 1 NC | 1 | **LAG8N113P** (1) |
| | | | 2 NO | 1 | **LAG8N203P** |
| | | 2nd left or right | 1 NO + 1 NC | 1 | **LAG8N113** |
| | | | 2 NO | 1 | **LAG8N203** |

*(1) Always supplied with* TeSys Giga *LC1G contactors, fitted to the right side lateral face.*

Coordination tables: pages A5/7 to A5/42
Diagrams: page B9/34

# Power terminals

## 'Cable Memory' connection blocks

Cables or busbars can be connected to the contactor by means of the optional cable memory connection blocks. When the contactor is removed for maintenance, the cables or busbars remain connected to these connection blocks, making reinstallation faster and easier.

PB121730.eps

*LA9G3101*

### Cable memory (1)

| Description | Compatible with contactors | Quantity Set of | Reference |
|---|---|---|---|
| 'Cable memory' for 3-pole contactors – for holding cables in place | LC1G115...LC1G225 | 2 | **LA9G3101** |
| | LC1G265...LC1G500 | 2 | **LA9G3102** |
| | LC1G630...LC1G800 | 2 | **LA9G3103** |
| 'Cable memory' for 4-pole contactors – for holding cables in place | LC1G115...LC1G225 | 2 | **LA9G4101** |
| | LC1G265...LC1G500 | 2 | **LA9G4102** |
| | LC1G630...LC1G800 | 2 | **LA9G4103** |

*(1) 'Cable memory' connection blocks are always supplied with Advanced contactor version.*

## Flexible terminal extensions

Flexible connecting bars to connect TeSys Giga High power contactors with MCCBs mounted in the same plane and orientation. These bars can be used along with Advanced or Standard version contactors. They help to get a quick and easy connection between contactor and MCCB with saving in installation time.

PB121735.eps

*LA9G3111*

### 'Flexible terminal extensions' for MCCBs

| Description | Compatible with contactors | To connect with NSX/NS MCCBs | Quantity Set of | Reference |
|---|---|---|---|---|
| Flexible terminal extensions 3-pole | LC1G115…LC1G225 | **NSX100...NSX250** | 3 | **LA9G3111** |
| | LC1G265…LC1G500 | **NSX400…NSX630** | 3 | **LA9G3112** |
| | LC1G630…LC1G800 | **NS800…NS1250** | 3 | **LA9G3113** |
| Flexible terminal extensions 4-pole | LC1G115…LC1G225 | **NSX100...NSX250** | 4 | **LA9G4111** |
| | LC1G265…LC1G500 | **NSX400…NSX630** | 4 | **LA9G4112** |
| | LC1G630…LC1G800 | **NS800…NS1250** | 4 | **LA9G4113** |

PB121576.eps

*LA9G3601*

### Straight terminal extensions

| Description | Suitable for | Compatible with contactors | Quantity Set of | Reference |
|---|---|---|---|---|
| Straight terminal extension | 3P | LC1G115...LC1G225 | 3 | **LA9G3601** |
| | | LC1G265...LC1G500 | 3 | **LA9G3602** |
| | | LC1G630...LC1G800 | 3 | **LA9G3603** |
| | 4P | LC1G115...LC1G225 | 4 | **LA9G4601** |
| | | LC1G265...LC1G500 | 4 | **LA9G4602** |
| | | LC1G630...LC1G800 | 4 | **LA9G4603** |

### Right angled terminal extensions

| Description | Suitable for | Compatible with contactors | Quantity Set of | Reference |
|---|---|---|---|---|
| Right angled side terminal extension | 3P | LC1G115...LC1G225 | 3 | **LA9G3661** |
| | | LC1G265...LC1G500 | 3 | **LA9G3662** |
| | | LC1G630...LC1G800 | 3 | **LA9G3663** |
| Right angled large terminal extension | 3P | LC1G115...LC1G225 | 3 | **LA9G3671** |
| | | LC1G265...LC1G500 | 3 | **LA9G3672** |
| | | LC1G630...LC1G800 | 3 | **LA9G3673** |
| Right angled rear terminal extension | 3P | LC1G115...LC1G225 | 3 | **LA9G3681** |
| | | LC1G265...LC1G500 | 3 | **LA9G3682** |
| | | LC1G630...LC1G800 | 3 | **LA9G3683** |

PB121620.eps

*LA9G3682*

### Edgewise terminal extensions

| Description | Suitable for | Compatible with contactors | Quantity Set of | Reference |
|---|---|---|---|---|
| Edgewise terminal extension | 3P | LC1G115...LC1G225 | 3 | **LA9G3631** |
| | | LC1G265...LC1G500 | 3 | **LA9G3632** |
| | | LC1G630...LC1G800 | 3 | **LA9G3633** |
| | 4P | LC1G115...LC1G225 | 4 | **LA9G4631** |
| | | LC1G265...LC1G500 | 4 | **LA9G4632** |
| | | LC1G630...LC1G800 | 4 | **LA9G4633** |

PB121577.eps

*LA9G3631*

# Power terminals

PB121578.eps

*LA9G3611*

## Spreader kits

| Description | Suitable for | Compatible with contactors | Increase of Pole pitch | Quantity Set of | Reference |
|---|---|---|---|---|---|
| Spreader kits | 3P | LC1G115...LC1G225 | 35 to 45 mm | 3 | **LA9G3611** |
| | | LC1G265...LC1G500 | 45 to 70 mm | 3 | **LA9G3612** |
| | 4P | LC1G115...LC1G225 | 35 to 45 mm | 4 | **LA9G4611** |
| | | LC1G265...LC1G500 | 45 to 70 mm | 4 | **LA9G4612** |

PB121648.eps

*LA9G3613*

## Terminal extensions for larger power connections

| Description | Suitable for | Compatible with contactors | Power connection size | Quantity Set of | Reference |
|---|---|---|---|---|---|
| Terminal connections | 3P | LC1G400...LC1G500 | 50 mm width | 3 | **LA9G3613** |
| | | LC1G630...LC1G800 | 80 mm width | 3 | **LA9G3614** |
| | 4P | LC1G400...LC1G500 | 50 mm width | 4 | **LA9G4613** |
| | | LC1G630...LC1G800 | 80 mm width | 4 | **LA9G4614** |

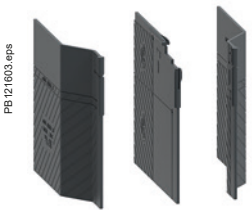
PB121651.eps

*LA9G4711*

## Spreader kits suitable for box type connectors

| Description | Suitable for | Compatible with contactors | Increase of Pole pitch | Suitable for box connectors | Quantity Set of | Reference |
|---|---|---|---|---|---|---|
| Spreader kits for box connectors | 3P | LC1G115...LC1G225 | 35 to 45 mm | DZ2FJ1/FH1 & AL400 | 3 | **LA9G3711** |
| | | LC1G265...LC1G500 | 45 to 70 mm | DZ2FJ1/FK1 & AL400/AL600 | 3 | **LA9G3712** |
| | | LC1G630...LC1G800 | 70 to 80 mm | DZ2FL1/FK1 & Type S/AL600 | 3 | **LA9G3714** |
| | 4P | LC1G115...LC1G225 | 35 to 45 mm | DZ2FJ1/FH1 & AL400 | 4 | **LA9G4711** |
| | | LC1G265...LC1G500 | 45 to 70 mm | DZ2FJ1/FK1 & AL400/AL600 | 4 | **LA9G4712** |
| | | LC1G630...LC1G800 | 70 to 80 mm | DZ2FL1/FK1 & Type S/AL600 | 4 | **LA9G4714** |

## Power terminal accessories



*LA9G4803*

### Phase separators

| Description | Suitable for | Compatible with contactors | Quantity Set of | Reference |
|---|---|---|---|---|
| Phase separators (1) | 3P | LC1G115...LC1G800 | 2 | **LA9G3801** |
| | 4P | LC1G115...LC1G800 | 3 | **LA9G4801** |
| | 3P – with 50/80 mm spreaders | LC1G400...LC1G800 | 2 | **LA9G3803** (2) |
| | 4P – with 50/80 mm spreaders | LC1G400...LC1G800 | 3 | **LA9G4803** (3) |

*LA9G4701*

### Terminal shrouds

| Description | Compatible with contactors | Quantity Set of | Reference | |
|---|---|---|---|---|
| | | | 3P | 4P |
| IP 20 Terminal shrouds (1) | LC1G115...LC1G225 | 1 | **LA9G3701** | **LA9G4701** |
| | LC1G265...LC1G500 | 1 | **LA9G3702** | **LA9G4702** |
| | LC1G630...LC1G800 | 1 | **LA9G3703** | **LA9G4703** |

*LA9G4707*

## IP20 Lug cover for connection kits (4)

Lug covers are used along with IP 20 terminal shrouds and star-delta, reverser and changeover connection kit assemblies to improve insulation of the coupling bars and achieve IP 20 for the complete assembly.

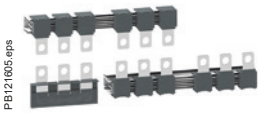
### IP20 Lug cover for connection kits

| Description | Suitable for | Compatible with contactors | Quantity Set of | Reference |
|---|---|---|---|---|
| IP 20 Lug cover | 3P | LC1G115...LC1G800 (4) | 6 | **LA9G3707** |
| | 4P | LC1G115...LC1G800 (4) | 8 | **LA9G4707** |

*LV429252*

### Lugs for cable set

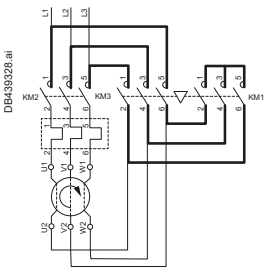
| Description | Compatible with contactors | Cable section | Reference | |
|---|---|---|---|---|
| | | | Set of 3 for 3P | Set of 4 for 4P |
| Lugs for cable | LC1G115...LC1G225 | 120 mm² | **LV429252** | **LV429256** |
| | LC1G115...LC1G225 | 150 mm² | **LV429253** | **LV429257** |
| | LC1G115...LC1G225 | 185 mm² | **LV429254** | **LV429258** |
| | LC1G265...LC1G500 | 240 mm² | **LV432500** | **LV432501** |
| | LC1G265...LC1G500 | 300 mm² | **LV432502** | **LV432503** |



*LA9GQQ330*

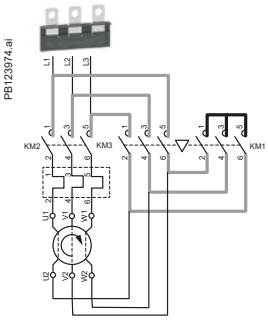
### Star-Delta (Wye-Delta) connection kits (5)

| Description | Suitable for | for Line (KM2) and Delta (KM3) contactor | + Star contactor (KM1) | Reference |
|---|---|---|---|---|
| Connection kit: bars for Line-Delta-Star contactor assembly | 3P | LC1G115...LC1G225 | LC1G115...LC1G225 | **LA9GQQ330** |
| | | LC1G265...LC1G500 | LC1G115...LC1G225 | **LA9GSQ330** |
| | | LC1G265...LC1G500 | LC1G265...LC1G500 | **LA9GSS330** |
| | | LC1G630...LC1G800 | LC1G265...LC1G500 | **LA9GTS330** |
| | | LC1G630...LC1G800 | LC1G630...LC1G800 | **LA9GTT330** |
| | with cable memory kit 3P | LC1G265...LC1G500 | LC1G115...LC1G225 | **LA9GSQ331** |
| | | LC1G630...LC1G800 | LC1G265...LC1G500 | **LA9GTS331** |




### Star (Wye) connection kits (5)

| Description | Suitable for | Star contactor (KM1) | Reference |
|---|---|---|---|
| Connection kit for star contactor | 3P | LC1G115...LC1G225 | **LA9GQW601** |
| | | LC1G265...LC1G500 | **LA9GSW601** |
| | | LC1G630...LC1G800 | **LA9GTW601** |



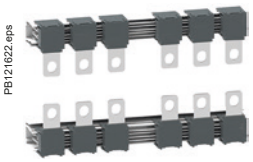

*Note: **RE17RMMWS** timer to be used for Star-Delta starter application.*

*(1) Either phase separators or terminal shrouds can only be mounted. Phase separators or terminal shrouds are mandatory for operational voltage, Ue ≥ 690 V.*
*(2) To be used with **LA9G3613** and **LA9G3614**.*
*(3) To be used with **LA9G4613** and **LA9G4614**.*
*(4) **LC1G630** & **LC1G800** contactors need 2 pcs. of IP20 covers per pole. So **2 x LA9G3707** or **2 x LA9G4707** need to be ordered for these contactor assemblies. Please contact your technical support for more details.*
*(5) UL listed.*
*(6) Maximum 3 auxiliary contacts can be installed between 2 contactors with mechanical interlock kit.*

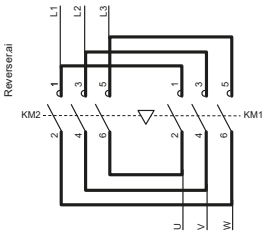
*LA9G970*

## Mechanical interlock

| Description | Suitable for | Compatible with contactors | | Reference |
|---|---|---|---|---|
| | | Contactor 1 | Contactor 2 | |
| Mechanical interlock between contactors (6) | 3P and 4P | LC1G115...225 | LC1G115...225 | **LA9G970** |
| | | LC1G265...500 | LC1G265...500 | **LA9G970** |
| | | LC1G265...500 | LC1G115...225 | **LA9G971** |
| | 3P | LC1G630...800 | LC1G265...500 | **LA9G972** |
| | | LC1G630...800 | LC1G630...800 | **LA9G973** |



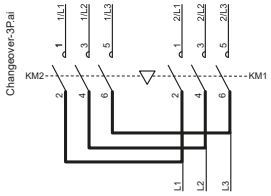
*LA9G3760*

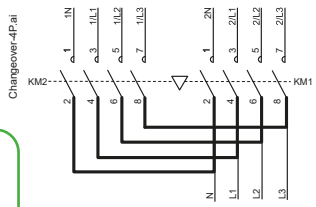



## Reverser connection kits

| Description | Suitable for | Compatible with contactors | Reference |
|---|---|---|---|
| Connection kit: bars for reverser contactor assembly | 3P | LC1G115...LC1G225 | **LA9G3760** |
| | | LC1G265...LC1G500 | **LA9G3761** |
| | | LC1G630...LC1G800 | **LA9G3762** |

*LA9G3750*




## Changeover connection kits

| Description | Suitable for | Compatible with contactors | Reference |
|---|---|---|---|
| Connection kit: bars for changeover contactor assembly | 3P | LC1G115...LC1G225 | **LA9G3750** |
| | | LC1G265...LC1G500 | **LA9G3751** |
| | | LC1G630...LC1G800 | **LA9G3752** |
| | 4P | LC1G115...LC1G225 | **LA9G4750** |
| | | LC1G265...LC1G500 | **LA9G4751** |
| | | LC1G630...LC1G800 | **LA9G4752** |

*RE17RMMWS*

## Modular timer relay for star-delta starters

- 8 A, 1 CO, multifunction with spring terminals, 12...240 V AC/DC
- 17.5 mm width same size as a 1-pole circuit breaker
- Covers 0.1 s to 100 h timing
- Transparent cover to protect settings from being tampered
- Multi functional gives flexibility in maintenance

## Modular timer relay for star-delta starters

| Description | Suitable for | Compatible with contactors | Reference |
|---|---|---|---|
| Harmony, Modular timing relay | 3P | LC1G115...LC1G800 | **RE17RMMWS** |

PB121741.eps

*LA9GRFB1*

PB121742.eps

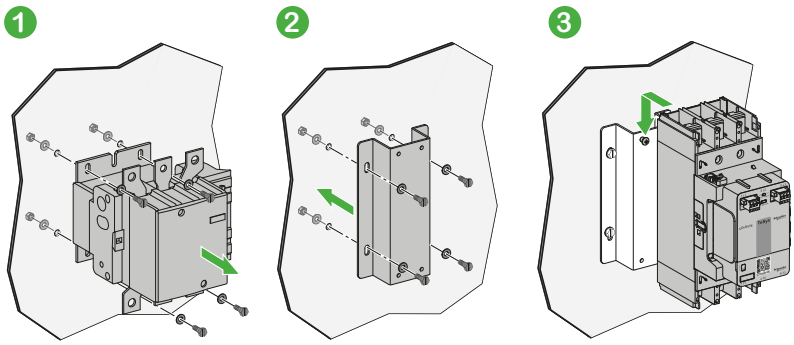
*LA9GRFB2*

PB121743.eps

*LA9GRFB3*

## Retrofit bases

- Suitable for 3 pole contactors
- Retrofit bases to replace similar ratings of TeSys F contactors with TeSys Giga High power contactors
- Enables quick and simple replacement in the existing installation
- 3 references to cover ranges from LC1F115 to F800




Remove
TeSys F contactor

Install
Retrofit base

Mount TeSys Giga Contactor
on Retrofit base

TeSys Giga retrofit bases are designed for integrating new TeSys Giga High power contactors into installations using TeSys F contactors. The retrofit bases help reduce replacement and reinstallation time when you upgrade your system with the new range of contactors. The bases come in two frame sizes.

### Retrofit bases

| Description | | Reference |
|---|---|---|
| Accessory used to replace TeSys F contactors | LC1F115-225 replaced by LC1G115-225 | **LA9GRFB1** |
| | LC1F265-500 replaced by LC1G265-500 | **LA9GRFB2** |
| | LC1F630-800 replaced by LC1G630-800 | **LA9GRFB3** |

High power contactors

Dimensions/mounting:
page B9/33

PB121644.eps

*LX1G3QLSEA*

## Control module

**Wide band electronic control**
**24 V…500 V 50/60 Hz or DC control input**
**Advanced and standard versions**
**Accessible from the front for easy and quick replacement**

The control module is needed for the operation of the contactor.
It performs the following functions:
- proper functioning of contactor based on the input control voltage
- monitoring and diagnostics of the pole condition
- generation of signaling commands.

The range of control modules is organized:
- per contactor size and for each rating,
- per control voltage range.

Each module has connectors for connecting:
- the coil control A1, A2 circuit & PLC output control (advanced version)
- pole status and diagnostic signaling circuits.

PB121744.eps

*Control module replacement on a 3-pole contactor*

### Control modules

| Description | | For contactors | References per voltage range (V AC/DC) | | |
|---|---|---|---|---|---|
| | | | 24 - 48 | 48 - 130 | 200 - 500 |
| Control modules for Advanced contactors | 3-pole | LC1G115...LC1G225 | **LX1G3QBEEA** | **LX1G3QEHEA** | **LX1G3QLSEA** |
| | | LC1G265...LC1G330 | **LX1G3RBEEA** | **LX1G3REHEA** | **LX1G3RLSEA** |
| | | LC1G400...LC1G500 | **LX1G3SBEEA** | **LX1G3SEHEA** | **LX1G3SLSEA** |
| | | LC1G630...LC1G800 | - | **LX1G3TEHEA** | **LX1G3TLSEA** |
| | 4-pole | LC1G115...LC1G225 | **LX1G4QBEEA** | **LX1G4QEHEA** | **LX1G4QLSEA** |
| | | LC1G265...LC1G330 | **LX1G4RBEEA** | **LX1G4REHEA** | **LX1G4RLSEA** |
| | | LC1G400...LC1G500 | **LX1G4SBEEA** | **LX1G4SEHEA** | **LX1G4SLSEA** |
| | | LC1G630...LC1G800 | - | **LX1G4TEHEA** | **LX1G4TLSEA** |
| | | | 48 - 130 | 100 - 250 | |
| Control modules for Standard contactors | 3-pole | LC1G115...LC1G225 | **LX1G3QEHEN** | **LX1G3QKUEN** | |
| | | LC1G265...LC1G330 | **LX1G3REHEN** | **LX1G3RKUEN** | |
| | | LC1G400...LC1G500 | **LX1G3SEHEN** | **LX1G3SKUEN** | |
| | | LC1G630...LC1G800 | **LX1G3TEHEN** | **LX1G3TKUEN** | |
| | 4-pole | LC1G115...LC1G225 | **LX1G4QEHEN** | **LX1G4QKUEN** | |
| | | LC1G265...LC1G330 | **LX1G4REHEN** | **LX1G4RKUEN** | |
| | | LC1G400...LC1G500 | **LX1G4SEHEN** | **LX1G4SKUEN** | |
| | | LC1G630...LC1G800 | **LX1G4TEHEN** | **LX1G4TKUEN** | |

LA9G81_ISO.eps

*LA9G81*

### Connector for control module

| Description | Reference |
|---|---|
| Push-in terminal connector for control module | **LA9G81** |

LA9GRDK_ISO.eps

*LA9GRD10*

### Remote wear diagnostic (RWD) module

| Description | Reference |
|---|---|
| Remote wear diagnostic module for TeSys Giga Contactor - 1 NO | **LA9GRD10** (1) |
| Remote wear diagnostic module for TeSys Giga Contactor - 1 NC | **LA9GRD01** (1) |

*(1) Remote Wear Diagnostic (RWD) Module, can be installed and used only on Advanced version.*

PB121588.eps

*Switching module kits*

## Replaceable switching modules

- Innovative contact switching modules for TeSys Giga High power contactors
- Replace worn-out poles with a new switching module in minutes, without having to disassemble the whole product
- No special tools are needed for the replacement.

**TeSys Giga - Switching modules for TeSys Giga High power contactors , Advanced and Standard versions**

| Description | For contactors | | Quantity Set of | Reference |
|---|---|---|---|---|
| 3 or 4 switching module kits | 3-pole | LC1G115...LC1G225 | 3 | **LA9G3QA** |
| | | LC1G265...LC1G330 | 3 | **LA9G3RA** |
| | | LC1G400...LC1G500 | 3 | **LA9G3SA** |
| | | LC1G630...LC1G800 | 3 | **LA9G3TA** |
| | 4-pole | LC1G115...LC1G225 | 4 | **LA9G4QA** |
| | | LC1G265...LC1G330 | 4 | **LA9G4RA** |
| | | LC1G400...LC1G500 | 4 | **LA9G4SA** |
| | | LC1G630...LC1G800 | 4 | **LA9G4TA** |

***Note:*** *In the event of replacement, replace all switching modules. After replacement, change the position of RESET button on the control module from A to B or B to A.*

## Product references

| | | | | |
|---|---|---|---|---|
| LA9G3101 | LA9G3TA | LA9GTT330 | LC1G265BEEA | LC1G800LSEA |
| LA9G3102 | LA9G4101 | LAG8N113 | LC1G265EHEA | LV429252 |
| LA9G3103 | LA9G4102 | LAG8N113P | LC1G265EHEN | LV429253 |
| LA9G3111 | LA9G4103 | LAG8N203 | LC1G265KUEN | LV429254 |
| LA9G3112 | LA9G4111 | LAG8N203P | LC1G265LSEA | LV429256 |
| LA9G3113 | LA9G4112 | LC1G1154BEEA | LC1G3304BEEA | LV429257 |
| LA9G3601 | LA9G4113 | LC1G1154EHEA | LC1G3304EHEA | LV429258 |
| LA9G3602 | LA9G4601 | LC1G1154EHEN | LC1G3304EHEN | LV432500 |
| LA9G3603 | LA9G4602 | LC1G1154KUEN | LC1G3304KUEN | LV432501 |
| LA9G3611 | LA9G4603 | LC1G1154LSEA | LC1G3304LSEA | LV432502 |
| LA9G3612 | LA9G4611 | LC1G115BEEA | LC1G330BEEA | LV432503 |
| LA9G3613 | LA9G4612 | LC1G115EHEA | LC1G330EHEA | LX1G3QBEEA |
| LA9G3614 | LA9G4613 | LC1G115EHEN | LC1G330EHEN | LX1G3QEHEA |
| LA9G3631 | LA9G4614 | LC1G115KUEN | LC1G330KUEN | LX1G3QEHEN |
| LA9G3632 | LA9G4631 | LC1G115LSEA | LC1G330LSEA | LX1G3QKUEN |
| LA9G3633 | LA9G4632 | LC1G1504BEEA | LC1G4004BEEA | LX1G3QLSEA |
| LA9G3650 | LA9G4633 | LC1G1504EHEA | LC1G4004EHEA | LX1G3RBEEA |
| LA9G3651 | LA9G4701 | LC1G1504EHEN | LC1G4004EHEN | LX1G3REHEA |
| LA9G3652 | LA9G4702 | LC1G1504KUEN | LC1G4004KUEN | LX1G3REHEN |
| LA9G3653 | LA9G4703 | LC1G1504LSEA | LC1G4004LSEA | LX1G3RKUEN |
| LA9G3661 | LA9G4707 | LC1G150BEEA | LC1G400BEEA | LX1G3RLSEA |
| LA9G3662 | LA9G4711 | LC1G150EHEA | LC1G400EHEA | LX1G3SBEEA |
| LA9G3663 | LA9G4712 | LC1G150EHEN | LC1G400EHEN | LX1G3SEHEA |
| LA9G3671 | LA9G4714 | LC1G150KUEN | LC1G400KUEN | LX1G3SEHEN |
| LA9G3672 | LA9G4750 | LC1G150LSEA | LC1G400LSEA | LX1G3SKUEN |
| LA9G3673 | LA9G4751 | LC1G1854BEEA | LC1G5004BEEA | LX1G3SLSEA |
| LA9G3681 | LA9G4752 | LC1G1854EHEA | LC1G5004EHEA | LX1G3TEHEA |
| LA9G3682 | LA9G4801 | LC1G1854EHEN | LC1G5004EHEN | LX1G3TEHEN |
| LA9G3683 | LA9G4803 | LC1G1854KUEN | LC1G5004KUEN | LX1G3TKUEN |
| LA9G3701 | LA9G4QA | LC1G1854LSEA | LC1G5004LSEA | LX1G3TLSEA |
| LA9G3702 | LA9G4RA | LC1G185BEEA | LC1G500BEEA | LX1G4QBEEA |
| LA9G3703 | LA9G4SA | LC1G185EHEA | LC1G500EHEA | LX1G4QEHEA |
| LA9G3704 | LA9G4TA | LC1G185EHEN | LC1G500EHEN | LX1G4QEHEN |
| LA9G3705 | LA9G81 | LC1G185KUEN | LC1G500KUEN | LX1G4QKUEN |
| LA9G3706 | LA9G82 | LC1G185LSEA | LC1G500LSEA | LX1G4QLSEA |
| LA9G3707 | LA9G970 | LC1G2254BEEA | LC1G6304EHEA | LX1G4RBEEA |
| LA9G3711 | LA9G971 | LC1G2254EHEA | LC1G6304EHEN | LX1G4REHEA |
| LA9G3712 | LA9G972 | LC1G2254EHEN | LC1G6304KUEN | LX1G4REHEN |
| LA9G3714 | LA9G973 | LC1G2254KUEN | LC1G6304LSEA | LX1G4RKUEN |
| LA9G3750 | LA9GQQ330 | LC1G2254LSEA | LC1G630EHEA | LX1G4RLSEA |
| LA9G3751 | LA9GRD01 | LC1G225BEEA | LC1G630EHEN | LX1G4SBEEA |
| LA9G3752 | LA9GRD10 | LC1G225EHEA | LC1G630KUEN | LX1G4SEHEA |
| LA9G3760 | LA9GRFB1 | LC1G225EHEN | LC1G630LSEA | LX1G4SEHEN |
| LA9G3761 | LA9GRFB2 | LC1G225KUEN | LC1G8004EHEA | LX1G4SKUEN |
| LA9G3762 | LA9GRFB3 | LC1G225LSEA | LC1G8004EHEN | LX1G4SLSEA |
| LA9G3801 | LA9GSQ330 | LC1G2654BEEA | LC1G8004KUEN | LX1G4TEHEA |
| LA9G3803 | LA9GSQ331 | LC1G2654EHEA | LC1G8004LSEA | LX1G4TEHEN |
| LA9G3QA | LA9GSS330 | LC1G2654EHEN | LC1G800EHEA | LX1G4TKUEN |
| LA9G3RA | LA9GTS330 | LC1G2654KUEN | LC1G800EHEN | LX1G4TLSEA |
| LA9G3SA | LA9GTS331 | LC1G2654LSEA | LC1G800KUEN | |



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

TeSys Control - Giga

# Technical Data for Designers



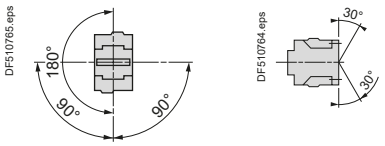
Contents

TeSys Giga High power contactors:


> Characteristics ..... B9/25 to B9/29
> Dimensions ..... B9/30 to B9/33
> Diagrams ..... B9/34

# Characteristics

## Environment

| Contactor type | | | | LC1G115… 225 | LC1G265… 500 | LC1G630… 800 |
|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1. Over-voltage category III, degree of pollution: 3 | | **V** | 1000 | 1000 | 1000 |
| Rated impulse withstand voltage (Uimp) | Coil not connected to the power circuit | | **kV** | 8 | 8 | 8 |
| Conforming to standards | | | | IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, JIS C 8201-4-1, GB/T 14048.4, IEC 60721-3-3 3C3 | | |
| Product certifications | | | | CB scheme, CCC, cULus, UKCA, EAC, EU-RO-MR by DNV | | |
| Electromagnetic compatibility | | | | IEC 60947-4-1 | | |
| Immunity | | | | Following IEC 60947-4-1 Table 16 | | |
| Emission | | | | Environment A according to IEC 60947-4-1 | | |
| Immunity to radiated electromagnetic interference | | | | 20V/m according to IEC/EN 61000-4-3 | | |
| Voltage sag immunity (in complete product as well) | | | | Conforming to SEMI-F47 | | |
| Degree of protection | Conforming to IEC 60529 / VDE 0106 | | | IP2x with terminal shrouds LA9G37●●/ LA9G47●● | | |
| Climatic withstand | | | | According to IACS E10 | | |
| Ambient air temperature around the device | Storage | | **°C** | -60…+80 | | |
| | Operation | | **°C** | -25…+60 | | |
| | Permissible at Uc | | **°C** | -40…+70 | | |
| Net weight | Standard | 3P | **kg** | 3.6 | 7.5 | 14.2 |
| | | 4P | **kg** | 4.4 | 8.2 | 18 |
| | Advanced | 3P | **kg** | 4.1 | 8.2 | 17.3 |
| | | 4P | **kg** | 5.1 | 8.7 | 22 |
| Maximum operating altitude | Without derating | | **m** | 3000 | | |
| Operating positions | Without derating | | |   | | |
| | With derating (1) | | | | | |
| Shock resistance 1/2 sine wave = 11 ms Conforming to IEC 60068-2-27 | Contactor open | | | 10 gn | 10 gn | 10 gn |
| | Contactor closed | | | 15 gn | 15 gn | 15 gn |
| Vibration resistance 5…300 Hz Conforming to IEC 60068-2-6 | Contactor open | | | 2 gn | 2 gn | 2 gn |
| | Contactor closed | | | 4 gn | 4 gn | 4 gn |

*(1) For derating details, please contact technical support.*

COORD.
Ref.
High power contactors

# Characteristics

## Pole characteristics

| Contactor type | | | | | LC1G115 | LC1G150 | LC1G185 | LC1G225 |
|---|---|---|---|---|---|---|---|---|
| Number of poles | | | | | 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 |
| Rated operational current (Ie) | Ue ≤ 440 V | 3P | In AC-3 / AC-3e, θ ≤ 60 °C | A | 115 / 115 | 150 / 145 | 185 / 177 | 225 / 209 |
| | Ue ≤ 1000 V | 3P & 4P | In AC-1, θ ≤ 40 °C | A | 250 | 275 | 305 | 330 |
| Rated operational voltage (Ue) | | Up to | | V | 1000 (1) | 1000 | 1000 | 1000 |
| Rated frequency (f) (2) | | | | Hz | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 |
| Frequency operating limits | | With derating (3) | | Hz | 16 2/3 …400 | 16 2/3 …400 | 16 2/3 …400 | 16 2/3 …400 |
| Conventional thermal current | | θ ≤ 40 °C | | A | 250 | 275 | 305 | 330 |
| Rated making capacity | | I rms conforming to IEC 60947-4-1 | | A | Making current: 10 x I in AC-3 or 12 x I in AC-4<br>Making current: 13 x I in AC-3e | | | |
| Rated breaking capacity | | I rms conforming to IEC 60947-4-1 | | A | Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4<br>Making and breaking current: 8.5 x I in AC-3e | | | |
| Maximum permissible current No current flowing for previous 60 minutes, at θ ≤ 40 °C | | For 10 s | | A | 1100 | 1200 | 1500 | 1800 |
| | | For 30 s | | A | 640 | 700 | 920 | 1000 |
| | | For 1 min | | A | 520 | 600 | 740 | 850 |
| | | For 3 min | | A | 400 | 450 | 500 | 560 |
| | | For 10 min | | A | 320 | 350 | 400 | 440 |
| Short-circuit protection by fuses | | Fuses for motor: type aM - Ue ≤ 440 V | | A | 125 | 160 | 200 | 250 |
| | | Fuses for motor: type aM - Ue ≤ 690 V | | A | 125 | 160 | 160 | 200 |
| | | Fuses for general application: type gG - Ue ≤ 690 V | | A | 315 | 315 | 315 | 400 |
| Average impedance per pole | | At Ith and 50 Hz | | mΩ | 0.18 | 0.18 | 0.17 | 0.15 |
| Power dissipation per pole for the above operational currents | | AC-3 / AC-3e | | W | 3 | 5 | 6 | 8 |
| | | AC-1 | | W | 10 | 10 | 20 | 20 |
| Connection | | | | | Maximum c.s.a. | | | |
| | | Bar | Number of bars | | 2 | 2 | 2 | 2 |
| | | | Bar | mm | 25 x 6 | 25 x 6 | 25 x 6 | 25 x 6 |
| | | Cable with lug | | mm² | 185 | 185 | 185 | 185 |
| | | Cable with connector | | mm² | 185 | 185 | 185 | 185 |
| | | Bolt diameter | | mm | Ø8.5 | Ø8.5 | Ø8.5 | Ø8.5 |
| Tightening torque | | Power circuit connections | | N.m | 18 | 18 | 18 | 18 |

*(1) Ue ≤ 1000 V for AC-1 / Ue ≤ 690 V for AC-3 / AC-3e / AC-4.*
*(2) Please consult your technical support team for application with frequencies other than 50/60 Hz.*
*(3) For derating details, please contact technical support.*

COORD.
Ref.
High power contactors

# Characteristics

## Pole characteristics

| LC1G265 | LC1G330 | LC1G400 | LC1G500 | LC1G630 | LC1G800 |
|---|---|---|---|---|---|
| 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 | 3 or 4 |
| 265 / 255 | 330 / 294 | 400 / 391 | 500 / 437 | 630 / 555 | 800 / 587 |
| 385 | 440 | 550 | 700 | 1050 | 1050 |
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 | 50 / 60 |
| 16 2/3…400 | 16 2/3…400 | 16 2/3…400 | 16 2/3…400 | 16 2/3…400 | 16 2/3…400 |
| 385 | 440 | 550 | 700 | 1050 | 1050 |
| Making current: 10 x I in AC-3 or 12 x I in AC-4<br>Making current: 13 x I in AC-3e | | | | | |
| Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4<br>Making and breaking current: 8.5 x I in AC-3e | | | | | |
| 2200 | 2650 | 3600 | 4000 | 5050 | 5500 |
| 1230 | 1800 | 2400 | 2800 | 4400 | 4600 |
| 950 | 1300 | 1700 | 2200 | 3400 | 3600 |
| 620 | 900 | 1200 | 1500 | 2200 | 2600 |
| 480 | 750 | 1000 | 1200 | 1600 | 1700 |
| 315 | 400 | 500 | 500 | 630 | 800 |
| 250 | 250 | 315 | 400 | 500 | 630 |
| 400 | 500 | 630 | 800 | 1250 | 1250 |
| 0.144 | 0.144 | 0.1 | 0.08 | 0.065 | 0.065 |
| 11 | 16 | 16 | 20 | 26 | 42 |
| 20 | 30 | 30 | 40 | 70 | 70 |
| Maximum c.s.a. | | | | | |
| 2 | 2 | 2 | 2 | 2 | 2 |
| 30 x 10 | 30 x 10 | 30 x 10 | 30 x 10 | 50 x 10 | 50 x 10 |
| 240 | 2 x 150 | 2 x 185 | 2 x 240 | - | - |
| 240 | - | - | - | - | - |
| Ø10.6 | Ø10.6 | Ø10.6 | Ø10.6 | Ø13 | Ø13 |
| 35 | 35 | 35 | 35 | 58 | 58 |

COORD.
Ref.
High power contactors

# Characteristics

## TeSys Giga High power contactors - Advanced version - Control circuit characteristics with AC/DC coils

| Contactor type | | | | | LC1G115…225 | LC1G265…330 | LC1G400…500 | LC1G630…800 |
|---|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | | | **V** | 24...48 AC/DC, 48...130 AC/DC, 200...500 AC/DC (1) | | | |
| Control voltage limits (θ ≤ 60 °C) | AC input (50/60 Hz) /DC input | Operation | | | 0.8 Uc Min...1.1 Uc Max | | | |
| | | Drop-out | | | 0.1 Uc Max...0.45 Uc Min | | | |
| Inputs compatibility PLC digital output 24 V DC Type 3 IEC61131-2 | | Off-state | | **V DC** | 0…5 | | | |
| | | On-state | | **V DC** | 11…30 | | | |
| Average consumption at 20 °C and at Uc (3 and 4-pole contactors) | 24…48 V AC/DC coil (BEE) | Inrush | 50/60 Hz coil | **VA** | 290 | 540 | 490 | - |
| | | | DC | **W** | 220 | 380 | 350 | - |
| | | Sealed | 50/60 Hz coil | **VA** | 10 | 17.9 | 17.9 | - |
| | | | DC | **W** | 5.7 | 6.4 | 6 | - |
| | 48...130 V AC/DC coil (EHE) | Inrush | 50/60 Hz coil | **VA** | 260 | 430 | 450 | 560 |
| | | | DC | **W** | 190 | 360 | 360 | 440 |
| | | Sealed | 50/60 Hz coil | **VA** | 8.9 | 11.7 | 11.7 | 12 |
| | | | DC | **W** | 5 | 9 | 8.3 | 8.8 |
| | 200…500 V AC/DC coil (LSE) | Inrush | 50/60 Hz coil | **VA** | 295 | 530 | 535 | 670 |
| | | | DC | **W** | 215 | 300 | 300 | 390 |
| | | Sealed | 50/60 Hz coil | **VA** | 13 | 16.1 | 15.4 | 17 |
| | | | DC | **W** | 8 | 9 | 8.6 | 11 |
| Heat dissipation | | | | **W** | 4…5 | 5…6 | 5…6 | 5…6 |
| Operating time | Closing "C" | | | **ms** | 40...70 | 40...70 | 40...70 | 40...70 |
| | Opening "O" | | | **ms** | 15...50 | 15...50 | 15...50 | 15...50 |
| Mechanical durability at Uc | In millions of operating cycles (max) | | | | 8 | 8 | 8 | 5 |
| Maximum operating rate at ambient temperature ≤ 60 °C | In operating cycles per hour | | AC-1 | | 300 | 300 | 300 | 300 |
| | | | AC-3/AC-3e | | 600 | 600 | 600 | 600 |
| | | | AC-4 | | 150 | 150 | 60 | 60 |
| Coil control and PLC input connection (Push-in type) | | | | | Min/max c.s.a. | | | |
| Flexible cable | 1 conductor with cable end | | | **mm²** | 0.25...2.5 | 0.25...2.5 | 0.25...2.5 | 0.25...2.5 |
| | 2 conductors with Dual Sleeve | | | **mm²** | 0.5...1 | 0.5...1 | 0.5...1 | 0.5...1 |
| Solid cable | 1 conductor | | | **mm²** | 0.2...2.5 | 0.2...2.5 | 0.2...2.5 | 0.2...2.5 |
| | Stripping length | | | **mm** | 12 | 12 | 12 | 12 |

*(1) 24...48 V AC/DC control voltage option is available for LC1G115...LC1G500 ratings.*

COORD.
Ref.
High power contactors

## TeSys Giga High power contactors - Standard version control circuit characteristics with AC/DC coils

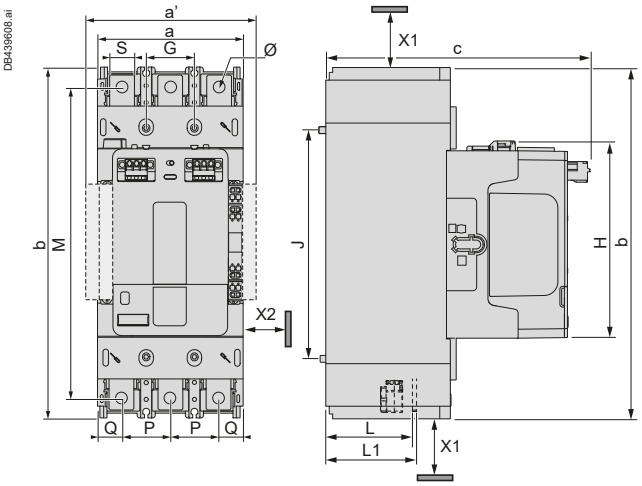
| Contactor type | | | | | LC1G115…225 | LC1G265…330 | LC1G400…500 | LC1G630…800 |
|---|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | | | V | 48...130 AC/DC, 100...250 AC/DC | | | |
| Control voltage limits (θ ≤ 60 °C) | AC input (50/60 Hz) /DC input | Operation | | | 0.8 Uc Min...1.1 Uc Max (1) | | | |
| | | Drop-out | | | 0.1 Uc Max...0.45 Uc Min | | | |
| Average consumption at 20 °C and at Uc (3 and 4-pole contactors) | 48...130 V AC/DC coil (EHE) | Inrush | 50/60 Hz coil | VA | 640 | 780 | 965 | 990 |
| | | | DC | W | 445 | 695 | 760 | 790 |
| | | Sealed | 50/60 Hz coil | VA | 18.7 | 17.6 | 17.6 | 18.7 |
| | | | DC | W | 7.8 | 7.8 | 7.8 | 9.5 |
| | 100...250 V AC/DC coil (KUE) | Inrush | 50/60 Hz coil | VA | 540 | 700 | 750 | 800 |
| | | | DC | W | 380 | 645 | 660 | 680 |
| | | Sealed | 50/60 Hz coil | VA | 12.4 | 15 | 15.5 | 15 |
| | | | DC | W | 7.8 | 9.1 | 9.3 | 9.5 |
| Heat dissipation | | | | W | 5…6 | 6…7 | 6…7 | 6…7 |
| Operating time | Closing "C" | | | ms | 40...70 | 40...70 | 40...70 | 40...70 |
| | Opening "O" | | | ms | 15...50 | 15...50 | 15...50 | 15...50 |
| Mechanical durability at Uc | In millions of operating cycles (max) | | | | 8 | 8 | 8 | 5 |
| Maximum operating rate at ambient temperature ≤ 60 °C | In operating cycles per hour | AC-1 | | | 300 | 300 | 300 | 300 |
| | | AC-3/AC-3e | | | 600 | 600 | 600 | 600 |
| | | AC-4 | | | 150 | 150 | 60 | 60 |
| Coil control connection (Push-in type) | | | | | Min/max c.s.a. | | | |
| Flexible cable | 1 conductor with cable end | | | mm² | 0.25...2.5 | 0.25...2.5 | 0.25...2.5 | 0.25...2.5 |
| | 2 conductors with Dual Sleeve | | | mm² | 0.5...1 | 0.5...1 | 0.5...1 | 0.5...1 |
| Solid cable | 1 conductor | | | mm² | 0.2...2.5 | 0.2...2.5 | 0.2...2.5 | 0.2...2.5 |
| | Stripping length | | | mm | 12 | 12 | 12 | 12 |

*(1) 0.7 Uc Min for 110 V DC input (with KUE coil).*

# Dimensions

## Advanced LC1G115...225 TeSys Giga High power contactors

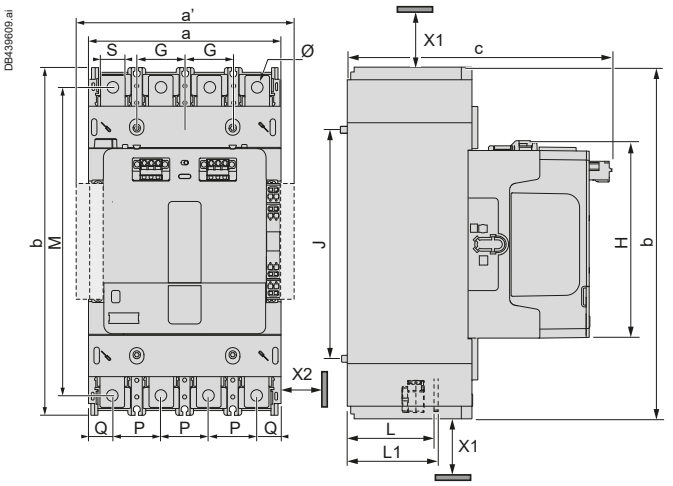
### 3-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107.7 | 254.7 | 192.9 | 35 | 166 | 225.7 | 144.1 | 63.9 | 66.9 | 35 | 18.9 | 18 | 8.5 |

### 4-pole




All dimensions are in mm.

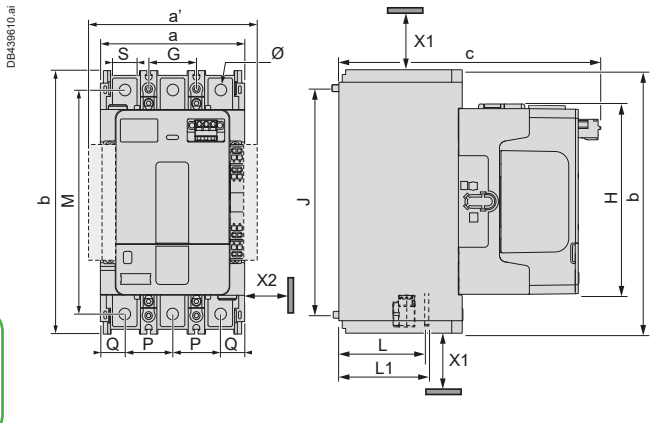
| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 142.7 | 254.7 | 192.9 | 35 | 166 | 225.7 | 144.1 | 63.9 | 66.9 | 35 | 18.9 | 18 | 8.5 |

X1 (mm) = Minimum electrical clearance.
LC1G115…800, up to 1000 V: 40 mm
X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.
LC1G115…800: 5 mm.

a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

## Standard LC1G115...225 TeSys Giga High power contactors

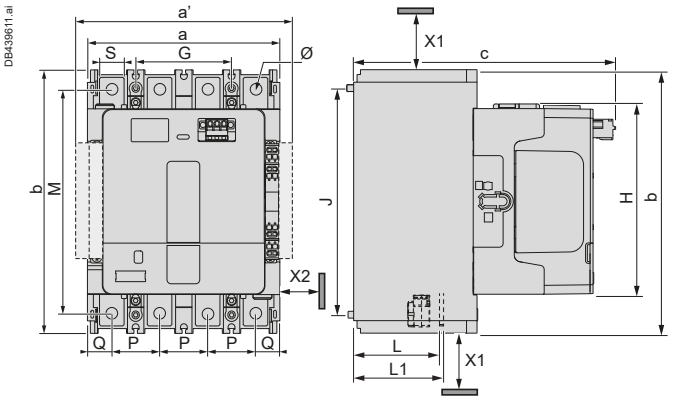
### 3-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107.7 | 193 | 192.9 | 35 | 166 | 164.1 | 139.4 | 66.9 | 69.9 | 35 | 18.9 | 18 | 8.5 |

### 4-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 142.7 | 193 | 192.9 | 35 | 166 | 164.1 | 139.4 | 66.9 | 69.9 | 35 | 18.9 | 18 | 8.5 |

X1 (mm) = Minimum electrical clearance.
LC1G115…800, up to 1000 V: 40 mm
X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.
LC1G115…800: 5 mm.

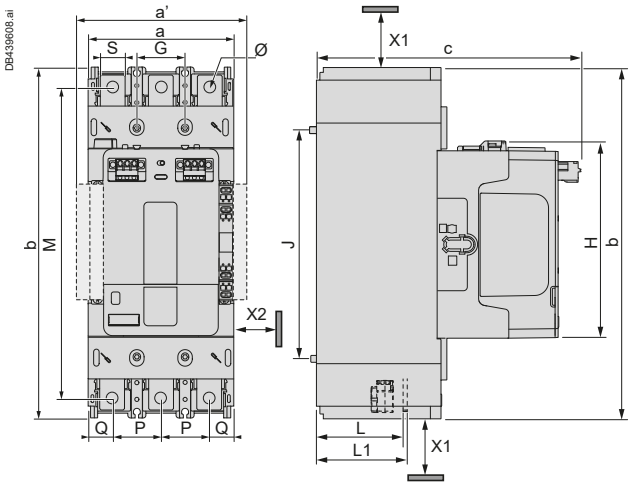
a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

Ref.
High power contactors

# Dimensions

## Advanced LC1G265...500 TeSys Giga High power contactors

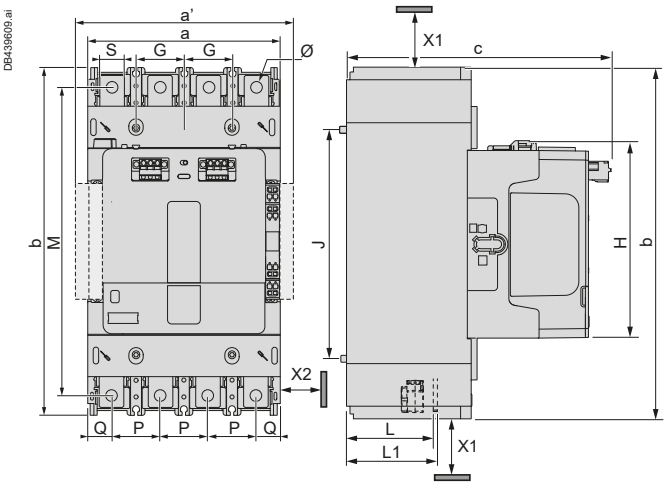
### 3-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 140 | 290 | 225.5 | 45 | 187 | 261.6 | 166.7 | 72.8 | 78.8 | 45 | 25 | 30 | 10.6 |

### 4-pole




All dimensions are in mm.

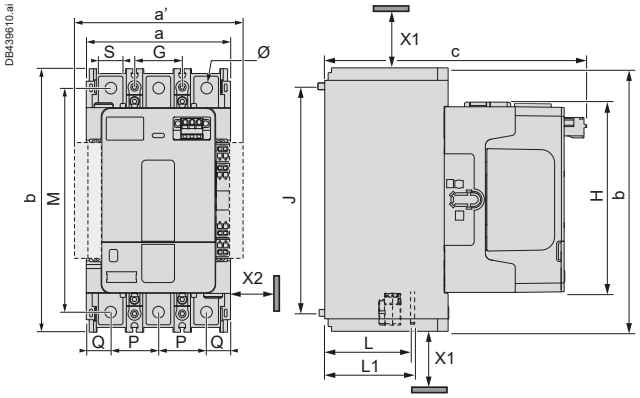
| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 185 | 290 | 225.5 | 45 | 187 | 261.6 | 166.7 | 72.8 | 78.8 | 45 | 25 | 30 | 10.6 |

X1 (mm) = Minimum electrical clearance.
LC1G115…800, up to 1000 V: 40 mm.
X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.
LC1G115…800: 5 mm.

a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

## Standard LC1G265...500 TeSys Giga High power contactors

### 3-pole

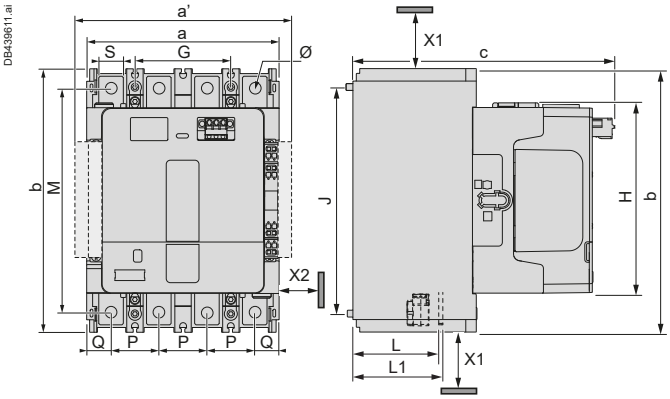



All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 |
|---|---|---|---|---|---|---|---|---|
| 140 | 225 | 225.5 | 45 | 187 | 197 | 161.8 | 78.8 | LC1G265-330: 81.8<br>LC1G400: 82.8<br>LC1G500: 83.8 |

| P | Q | S | Ø |
|---|---|---|---|
| 45 | 25 | 30 | 10.6 |

### 4-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 |
|---|---|---|---|---|---|---|---|---|
| 185 | 225 | 225.5 | 45 | 187 | 197 | 161.8 | 78.8 | LC1G265-330: 81.8<br>LC1G400: 82.8<br>LC1G500: 83.8 |

| P | Q | S | Ø |
|---|---|---|---|
| 45 | 25 | 30 | 10.6 |

X1 (mm) = Minimum electrical clearance.
LC1G115…800, up to 1000 V: 40 mm.
X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.
LC1G115…800: 5 mm.

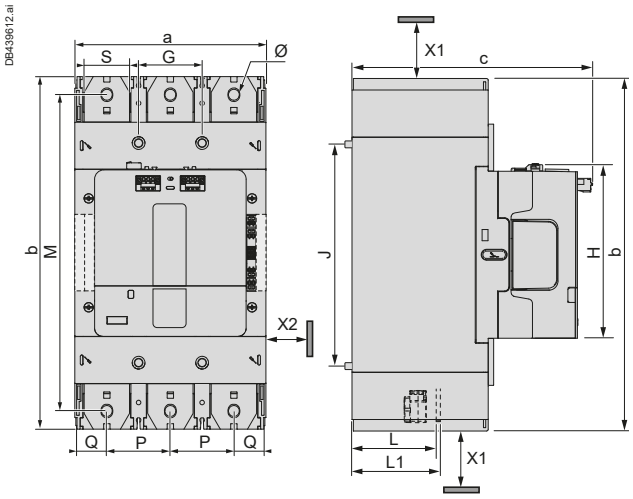
a' = a + 20 mm with additional auxiliary contact blocks on both sides (externally).

References:
pages B9/10 to B9/21
Characteristics:
pages B9/25 to B9/29
Diagrams:
page B9/34

# Dimensions

## Advanced LC1G630...800 TeSys Giga High power contactors

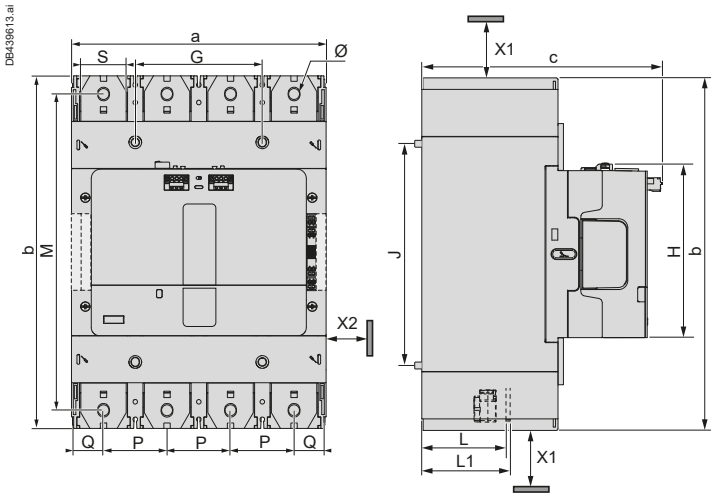
### 3-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 210.6 | 388.5 | 265.6 | 70 | 242 | 348.5 | 192.1 | 99 | 107 | 70 | 35.3 | 48 | 13 |

### 4-pole



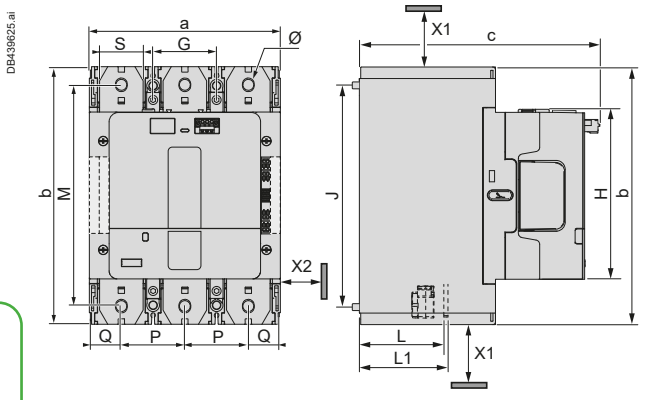

All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 280.6 | 388.5 | 265.6 | 70 | 242 | 348.5 | 192.1 | 99 | 107 | 70 | 35.3 | 48 | 13 |

X1 (mm) = Minimum electrical clearance.
LC1G115…800, up to 1000 V: 40 mm.
X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.
LC1G115…800: 5 mm.

## Standard LC1G630...800 TeSys Giga High power contactors

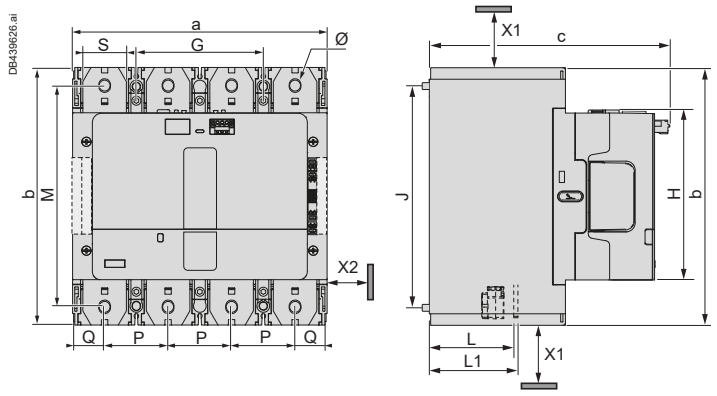
### 3-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 210.6 | 284 | 265.6 | 70 | 242 | 244 | 187.4 | 107 | 113 | 70 | 35.3 | 48 | 13 |

### 4-pole




All dimensions are in mm.

| a | b | c | G | J | M | H | L | L1 | P | Q | S | Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 280.6 | 284 | 265.6 | 70 | 242 | 244 | 187.4 | 107 | 113 | 70 | 35.3 | 48 | 13 |

X1 (mm) = Minimum electrical clearance.
LC1G115…800, up to 1000 V: 40 mm.
X2 (mm) = Minimum electrical clearance according to operating voltage inside metallic cabinets / adjacent installation of contactors.
LC1G115…800: 5 mm.

Ref.
High power contactors

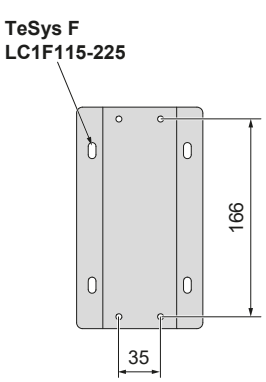
## Dimensions/mounting

### Dimensions

**LA9GRFB1**

**For replacement of F115-225**

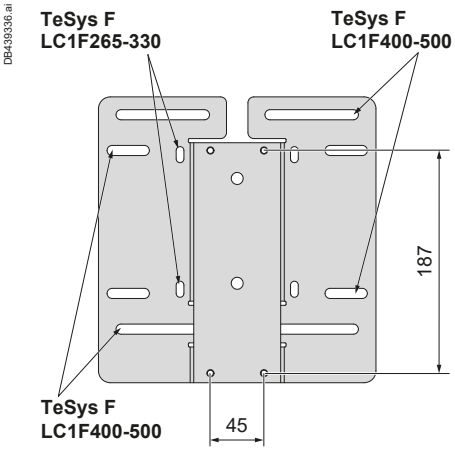
DB438635.ai




**LA9GRFB2**

**For replacement of F265-500**

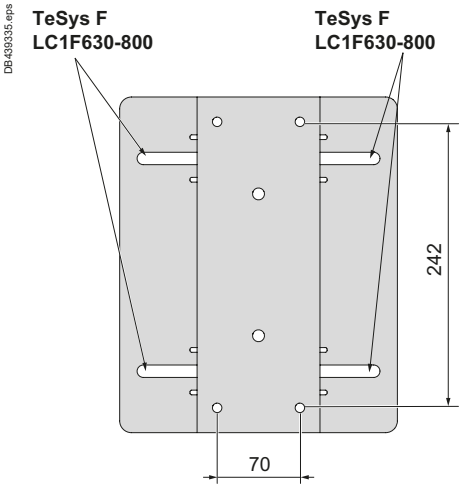
DB439336.ai




**LA9GRFB3**

**For replacement of F630 and F800**

DB439335.eps




***Note:*** *All dimensions are in mm.*

Ref.

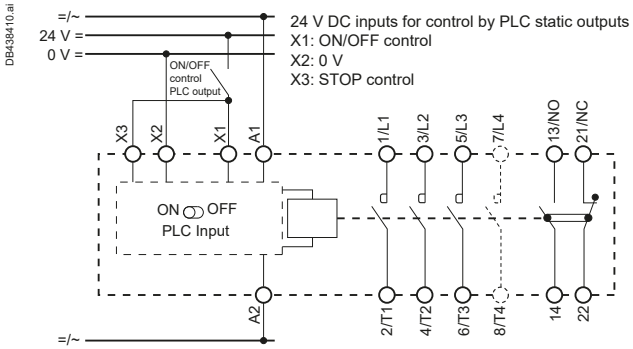
High power contactors

References:
page B9/19

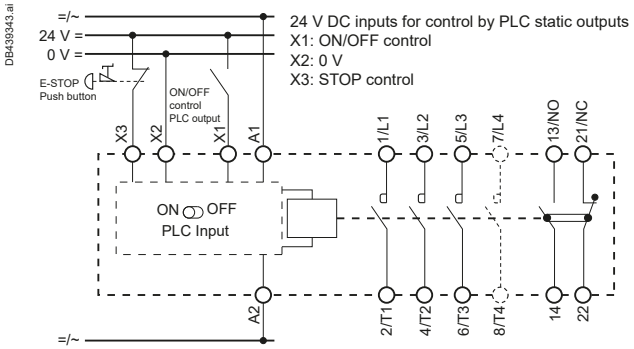
# Diagrams

## TeSys Giga High power contactors

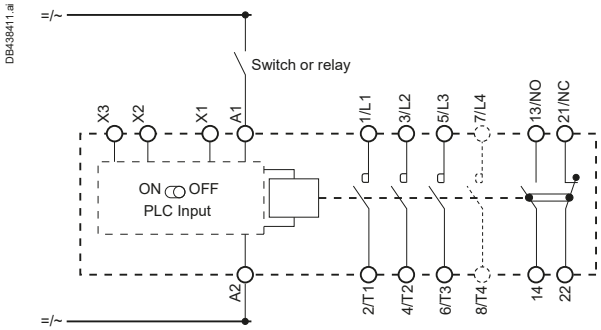
### Advanced version - ON/OFF control by PLC



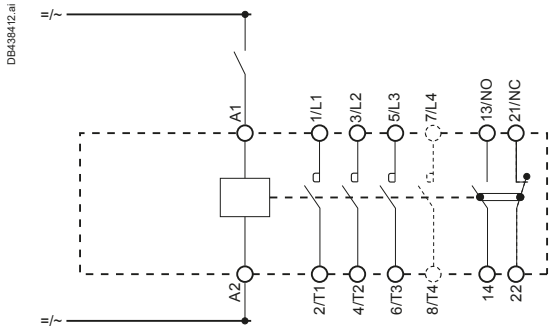

### Advanced version - ON/OFF control by PLC in safety application




### Advanced version - Control by switch

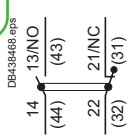
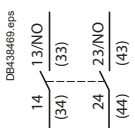
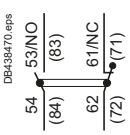
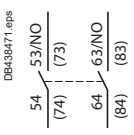



### Standard version




## Add-on blocks

### Instantaneous auxiliary contacts

| 1 N/O + 1 N/C | 2 N/O | 1 N/O + 1 N/C | 2 N/O |
|---|---|---|---|
| **LAG8N113P**<br>**mirror contacts** | **LAG8N203P** | **LAG8N113**<br>**mirror contacts** | **LAG8N203** |
|  |  |  |  |









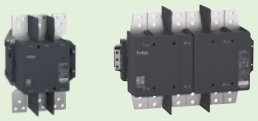
*(1) Terminal numbers in brackets refer to blocks when mounted upside down, on left-hand side of contactor.*

Ref.
High power contactors

# TeSys Control
# F High power contactors

Chapter B10

## TeSys F, FG, CR1F, V Contactors


| Type of product | Range | | Pages |
|---|---|---|---|
| TeSys F Contactors for AC-3 applications | 780 and 1000 A | | B10/2 |
| TeSys F Contactors for AC-1 applications | From 1200 A to 2600 A |  | B10/3 |
| TeSys FG Shockproof contactors (to be discontinued) | From 150 to 630 A - AC-3 | | B10/4 |
| TeSys CR1F Magnetic latching contactors | From 150 to 630 A - AC-3 | | B10/5 |
| TeSys F Auxiliary contact blocks, accessories, spare parts, delayed opening devices | | | B10/6 |
| TeSys F Coils | | | B10/11 |
| Accessories, coils for shockproof and magnetic latching contactors TeSys FG (to be discontinued), TeSys CR1F | | | B10/15 |
| TeSys V Vacuum contactors – 1500 V | From 160 to 610 A - AC-3<br>From 160 to 630 A - AC-1 | | B10/22 |


Technical Data for Designers B10/25

# Product references

PB112306.eps

*LC1F780*

PB123973.png

*LC1F1000*

## 3-pole contactors - Motors 780 to 1000 A / 440 V
## Category AC-3 - a.c. or d.c. coils

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | Rated operational current in AC-3 | Basic reference, to be completed by adding the voltage code (1) | Weight |
|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | 440 V up to | Screw fixing, cabling | |
| kW | kW | kW | kW | kW | kW | kW | A | | kg |
| 220 | 400 | 425 | 425 | 450 | 475 | 450 | 780 | **LC1F780●●** | 39.500 |
| 315 | 560 | 630 | 670 | – | – | – | 1000 | **LC1F1000●●** | 31.000 |

*Note: auxiliary contact blocks, modules and accessories: see pages B10/6 to B10/15.*

*(1) Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.*

| Volts ∼ | 24 | 48 | 110 | 115 | 120 | 208 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1F780** | | | | | | | | | | | | | |
| 40…400 Hz (coil LX1) | – | – | F7 | FE7 | F7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1F1000** | | | | | | | | | | | | | |
| 40...400 Hz (coil LX1F) | – | – | F7 | – | G7 | – | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |

| Volts ⎓ | 24 | 48 | 110 | 125 | 220 | 230 | 250 | 400 | 440 |
|---|---|---|---|---|---|---|---|---|---|
| **LC1F780, LC1F1000** | | | | | | | | | |
| (coil LX4F) | – | – | FD | GD | MD | – | UD | – | RD |





Life Is On Schneider Electric

# Product references

PB124008.eps

*LC1F1250*

PB124009.eps

*LC1F1700...2100*

PB124010.eps

*LC1F2600*

## 3 or 4-pole contactors - Loads 1200 to 2600 A / 440 V
## Category AC-1 - a.c. or d.c. coils

| Maximum current in AC-1 ($\theta \leq 40$ °C) | Number of poles | Basic reference, to be completed by adding the voltage code (1) / Screw fixing, cabling | Weight |
|---|---|---|---|
| A | | | kg |
| 1200 | 3 | **LC1SF1200KUE** | 13.400 |
| 1260 | 3 | **LC1F1250●●** | 19.000 |
| 1400 | 3 | **LC1F1400●●** | 29.000 |
| 1600 | 3 | **LC1F780●●** | 39.500 |
| | 4 | **LC1F7804●●** | 48.000 |
| 1700 | 3 | **LC1F1700●●** | 30.000 |
| 2100 (2) | 3 | **LC1F2100●●** | 31.000 |
| 2600 (3) | 3 | **LC1F2600●●** | 36.000 |

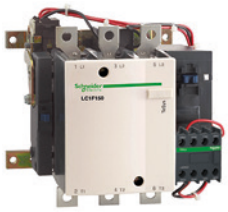
*Note: auxiliary contact blocks, modules and accessories: see pages B10/6 to B10/15.*
*(1) Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.*
*(2) With set of right-angled connectors **LA9F2100** (see page B10/9).*
*(3) With set of right-angled connectors **LA9F2600** (see page B10/9).*

| Volts ∼ | 24 | 48 | 110 | 115 | 120 | 208 | 220 | 230 | 240 | 380 | 400 | 415 | 440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LC1F1250** 40…400 Hz (coil LX1) | _ | E7 | F7 | FE7 | G7 | L7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **LC1F1400, F1700, F2100,F2600** 40…400 Hz (coil LX1F) | _ | _ | F7 | _ | G7 | _ | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |
| **Volts ⎓** | **24** | **48** | **110** | **125** | **220** | **230** | **250** | **400** | **440** | | | | |
| **LC1F1250** (coil LX4F) | _ | ED | FD | GD | MD | _ | UD | _ | RD | | | | |
| **LC1F1400, F1700, F2100, F2600** (coil LX4F) | _ | _ | FD | GD | MD | _ | UD | _ | RD | | | | |
| **Volts ∼/⎓** | **100…250** | | | | | | | | | | | | |
| **LC1SF1200, LC1F1250, F2600** (coil LXE + ECM LA4EM) | KUE | | | | | | | | | | | | |

Characteristics: pages B10/26 to B10/31
Dimensions: pages B10/32 to B10/35
Schemes: pages B10/36 and B10/37

## Product references

PB123832.eps



*LC1FG150*

PB123833.eps

*LC1FG185*

PB123834.eps

*LC1FG265*

**Important notice: LC1FG range is planned for discontinuation without replacement.**
**Before ordering, please consult your regional sales office for availability.**

### 3-pole shockproof contactors - Motors 150 to 630 A / 440 V AC-3, loads 250 to 1000 A / 440 V / AC-1 - a.c. coil

| Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 | | | | | | | Rated operational current in cat. AC-3, 440 V/AC-1 up to | Basic reference, to be completed by adding the voltage code (1) | Weight |
|---|---|---|---|---|---|---|---|---|---|
| 220 V 230 V | 380 V 400 V | 415 V | 440 V | 500 V | 660 V 690 V | 1000 V | | Screw fixing, cabling (2) | |
| kW | kW | kW | kW | kW | kW | kW | A | | kg |
| 40 | 75 | 80 | 80 | 90 | 100 | 65 | 150/250 | **LC1FG150●●** | 3.430 |
| 55 | 90 | 100 | 100 | 110 | 110 | 100 | 185/275 | **LC1FG185●●** | 4.650 |
| 75 | 132 | 140 | 140 | 160 | 160 | 147 | 265/350 | **LC1FG265●●** | 7.440 |
| 110 | 200 | 220 | 250 | 257 | 280 | 185 | 400/500 | **LC1FG400●●** | 9.100 |
| 147 | 250 | 280 | 295 | 355 | 335 | 335 | 500/700 | **LC1FG500●●** | 11.350 |
| 200 | 335 | 375 | 400 | 400 | 450 | 450 | 630/1000 | **LC1FG630●●** | 18.600 |

*Note: these contactors have instantaneous auxiliary contact blocks with 2 N/O contacts, 1 N/C contact and one coil maintaining contact.*

*(1) Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.*

*(2) Power terminals can, if required, be protected against direct finger contact by the addition of shrouds, to be ordered separately.*



Characteristics: pages B10/38 to B10/51
Dimensions, schemes: pages B10/54 and B10/55

## Product references

PB108372.eps

*CR1F1854*

PB108370.eps

*CR1F500*

### 3, 4 pole - Motors 150 to 630 A / 440 V / AC-3, loads 250 to 1000 A / 440 V AC-1 - a.c. or d.c. coils

| Maximum thermal current in category AC-1 40 °C | Rated operational current in category AC-3 (440 V max) | Number of poles | Instantaneous auxiliary contacts | | Basic reference, to be completed by adding the voltage code (1) | Weight |
|---|---|---|---|---|---|---|
| A | A | | | | | kg |
| 250 | 150 | 3 | – | – | **CR1F150●●** | 3.500 |
| | | 4 | – | – | **CR1F1504●●** | 3.800 |
| 275 | 185 | 3 | – | – | **CR1F185●●** | 4.600 |
| | | 4 | – | – | **CR1F1854●●** | 5.400 |
| 350 | 265 | 3 | – | – | **CR1F265●●** | 7.400 |
| | | 4 | – | – | **CR1F2654●●** | 8.500 |
| 500 | 400 | 3 | – | – | **CR1F400●●** | 9.100 |
| | | 4 | – | – | **CR1F4004●●** | 10.200 |
| 700 | 500 | 3 | – | – | **CR1F500●●** | 11.300 |
| | | 4 | – | – | **CR1F5004●●** | 12.900 |
| 1000 | 630 | 3 | – | – | **CR1F630●●** | 18.600 |
| | | 4 | – | – | **CR1F6304●●** | 21.500 |

***Note:*** *accessories, replacement parts and spare coils, see pages B10/19 to B10/21.*

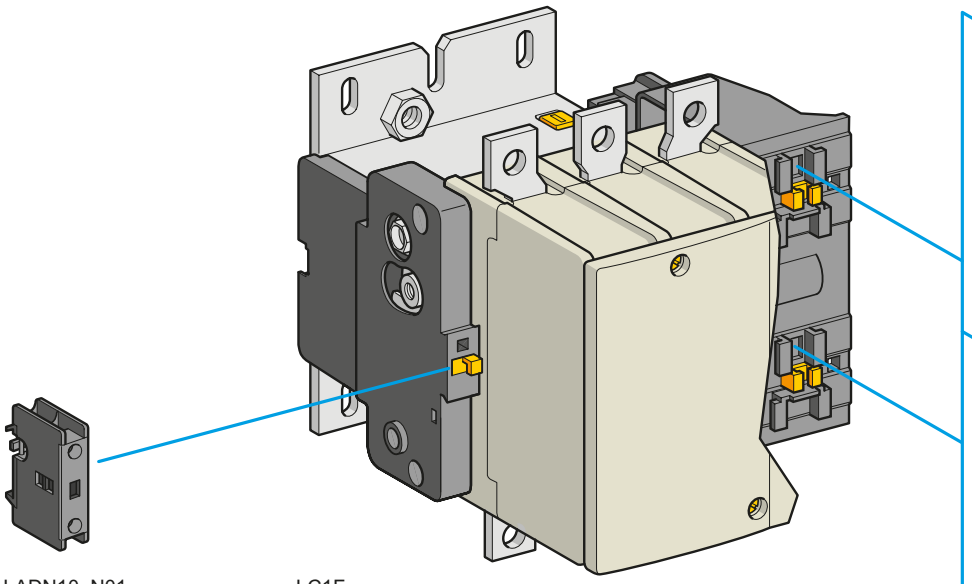
*(1) Standard control circuit voltages: see page B10/20.* ***Please check the availability of your variant in the index page B10/24. The SEARCH function of your viewer can be used.***



Characteristics:
pages B10/56 to B10/65

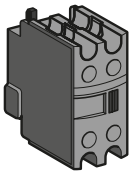
Dimensions:
pages B10/66 to B10/69

DB439378.eps

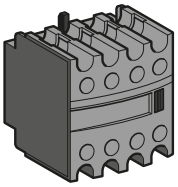


LADN10, N01

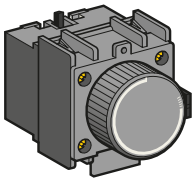
LC1F



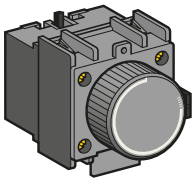
LADN



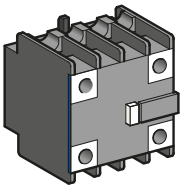
LADN, LADC



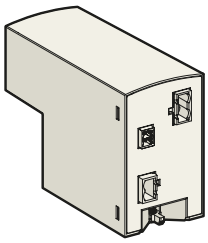
LADT, LADS



LADR



LA1DX, DY, DZ



LA4EM250●●

## Instantaneous auxiliary contact blocks

### For use in normal operating environments

| Number of contacts | Maximum number of blocks per contactor<br>Clip-on mounting | Composition | | | | Reference |
|---|---|---|---|---|---|---|
| 1 | 1 | – | – | 1 | – | **LADN10** |
| | | – | – | – | 1 | **LADN01** |
| 2 | 2 | – | – | 1 | 1 | **LADN11** |
| | | – | – | 2 | – | **LADN20** |
| | | – | – | – | 2 | **LADN02** |
| 4 | 2 | – | – | 2 | 2 | **LADN22** |
| | | – | – | 1 | 3 | **LADN13** |
| | | – | – | 4 | – | **LADN40** |
| | | – | – | – | 4 | **LADN04** |
| | | – | – | 3 | 1 | **LADN31** |
| | | – | – | 2 | 2 (1) | **LADC22** |

### With terminal referencing conforming to EN 50012

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | 2 | – | – | 1 | 1 | **LADN11P** |
| | | – | – | 1 | 1 | **LADN11G** |
| 4 | 2 | – | – | 2 | 2 | **LADN22P** |
| | | – | – | 2 | 2 | **LADN22G** |

## Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure **6** to the end of the references selected above. Example: **LADN11** becomes **LADN116**.

## Instantaneous auxiliary contact blocks with dust and damp protected contacts

### Recommended for use in particularly harsh industrial environments

| Number of contacts | Maximum number of blocks per contactor<br>Clip-on mounting | Composition | | | | Reference |
|---|---|---|---|---|---|---|
| 2 | 2 | 2 | – | – | – | **LA1DX20** |
| | | 2 | 2 (2) | – | – | **LA1DY20** |
| 4 | 2 | 2 | – | 2 | – | **LA1DZ40** |
| | | 2 | – | 1 | 1 | **LA1DZ31** |

## Time delay auxiliary contact blocks

| Number of contacts | Maximum number of blocks per contactor<br>Clip-on mounting | Time delay<br>Type | Range<br>s | Reference |
|---|---|---|---|---|
| 1 N/O<br>+<br>1 N/C | 2 | On-delay | 0.3...3 (3) | **LADT0** |
| | | | 1…30 | **LADT2** |
| | | | 10…180 | **LADT4** |
| | | | 1…30 (4) | **LADS2** |
| | | Off-delay | 0.3...3 (3) | **LADR0** |
| | | | 1…30 | **LADR2** |
| | | | 10…180 | **LADR4** |

*(1) Including 1 N/O + 1 N/C make before break.*
*(2) Device fitted with 4 earth screen continuity terminals.*
*(3) With extended scale from 0.1 to 6 s.*
*(4) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.*

High power contactors

## Product references

PB111612.eps

*LA9D09981*

PB123967.tif

*LA4F●●●*

### Suppressor blocks (1)

#### RC circuits (resistor-capacitor)

■ Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal, i.e. less than 5 % total harmonic distortion.
■ Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max.
■ Slight increase in drop-out time (1.1 to 1.3 times the normal time).

| Mounting | Uc | | Reference |
|---|---|---|---|
| Clip-on mounting on all ratings and all a.c. coils. | ~ | 24…48 V | **LA4FRCE** |
| | | 50…110 V | **LA4FRCF** |
| | | 127…240 V | **LA4FRCP** |
| | | 265…415 V | **LA4FRCV** |
| Suppressor block bracket | | | **LA9D09981** |

#### Varistors (peak limiting)

■ Protection provided by limiting the transient voltage to 2 Uc max.
■ Maximum reduction of transient voltage peaks.

| | | | |
|---|---|---|---|
| Clip-on mounting on all ratings and all coils. | ~ or ⎓ | 24…48 V | **LA4FVE** |
| | | 50…110 V | **LA4FVF** |
| | | 127…240 V | **LA4FVP** |
| | | 265…415 V | **LA4FVV** |

#### Diodes

■ No overvoltage or oscillating frequencies.
■ Increase in drop-out time (3 to 4 times the normal time).
■ Polarised component.

| | | | |
|---|---|---|---|
| Clip-on mounting on all ratings and all d.c. coils. | ⎓ | 24…48 V | **LA4FDE** |
| | | 55…110 V | **LA4FDF** |
| | | 280…440 V | **LA4FDV** |

#### Bidirectional peak limiting diodes (transil)

■ Protection provided by limiting the transient voltage to between 2 and 2.5 times Uc max.
■ Maximum reduction of transient voltage peaks.

| | | | |
|---|---|---|---|
| Clip-on mounting on all ratings and all coils. | ~ or ⎓ | 24…48 V | **LA4FTE** |
| | | 50…110 V | **LA4FTF** |
| | | 127…240 V | **LA4FTP** |
| | | 265…415 V | **LA4FTV** |

*(1) Order 2 x **LA4F●●●** for **F780**, **F1000**, **F1400**, **F1700**, **F2100** & **F2600** contactors and connect one suppressor block across each coil.*

High power contactors

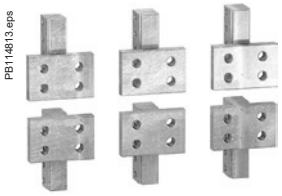
Dimensions:
page B10/34

## Product references

PB107578.eps

*LA9F2100 (set of 6)*

PB114813.eps



*LA9F2600 (set of 6)*

### Right-angled connectors

**For contactors or thermal overload relays**

| For use with | With connector plates | | Set of 6 connectors | |
|---|---|---|---|---|
| Contactors | | | Set reference | Weight |
| | Width | Type | | kg |
| LC1F1000, F1400, F1700, F2100 | 60 mm | Rear | **LA9F2100** | 9.550 |
| LC1F2600 | 100 mm | Rear | **LA9F2600** | 4.380 |

Dimensions:
page B10/34

# Product references

PB121430.eps

*LA9F801*

## Phase separators

| For use on 3-pole contactors | No. of barriers per set | Set reference |
|---|---|---|
| LC1F1400, F1700 F2100 and F2600 | 4 | **LA9F801** |

PB123968.tif

*LA4EM250FK*

## Electronic Control Module (ECM) (1)

| For use on 3 and 4-pole contactors | With coil reference | ECM reference |
|---|---|---|
| LC1SF1200 | **LXEFK250** | **LA4EM250FK** |
| LC1F1250 | **LXEFL250** | **LA4EM250FL** |
| LC1F2600 | **LXEFL2502** | **LA4EM250FL2** |

*(1) ECM enables wider coil operating voltage for the F range of contactors.*

***Note:*** *Refer to page number B10/31 for detailed technical information.*

## Sets of contacts

Per pole: 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.

| For contactor | Type | Replacement for | Reference | Weight kg |
|---|---|---|---|---|
| 3-pole | LC1F780 | 1 pole | **LA5F780801** (1) | 4.700 |
| | | 3 poles | **LA5F780803** | 13.200 |
| 4-pole | LC1F7804 | 1 pole | **LA5F780801** (1) | 4.700 |
| | | 4 poles | **LA5F780804** | 17.300 |

*(1) Comprising 2 identical items per pole.*

High power contactors

**Control Panel Technical Guide:**
Description and product reference of all mounting kits and wiring accessories for D, K, F - Star Delta, reverser, low-high speed control motor starters and changeover applications.

> Ref. Document: CPTG011_EN

> Click on QR code to download

PB121426.eps

*LXEFK250*

## Coils for a.c./ d.c. wide band control voltage

Operates on AC or DC voltage inputs.
Low sealed consumption.
High tolerance to inrush voltage drops.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Voltage code | Reference |
|---|---|---|---|---|
| | Inrush | Sealed | | |
| V | Ω | Ω | | |
| **For contactor LC1SF1200** | | | | |
| 100...250 | 8 | 8 | KUE | **LXEFK250** |

**Specifications**
Average consumption at 20 °C; 50 Hz/ 60 Hz; cos ϕ = 0.5-0.6:
- inrush: 550 VA max
- sealed: 8 VA max.

Heat dissipation: 5.5 W max.
Operating time at Uc: closing = 40...80 ms, opening = 6…54 ms.
Operating cycles/hour (θ ≤ 55 °C): 1200.
Embedded PLC input according IEC 61131-2 type 2:
- Off state: 0...5 V DC
- On state: 11...30 V DC.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Voltage code | Reference |
|---|---|---|---|---|
| | Inrush | Sealed | | |
| V | Ω | Ω | | |
| **For contactor LC1F1250** | | | | |
| 100...250 | 4.78 | 4.78 | KUE | **LXEFL250** |

**Specifications**
Average consumption at 20 °C; 50 Hz/ 60 Hz; cos ϕ = 0.5-0.6:
- inrush: 680 VA max
- sealed: 10 VA max.

Heat dissipation: 5.5 W max.
Operating time at Uc: closing = 40...80 ms, opening = 6...54 ms.
Operating cycles/hour (θ ≤ 55 °C): 1200.
Embedded PLC input according IEC 61131-2 type 2:
- Off state: 0...5 V DC
- On state: 11...30 V DC.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Voltage code | Reference |
|---|---|---|---|---|
| | Inrush | Sealed | | |
| V | Ω | Ω | | |
| **For contactor LC1F2600** | | | | |
| 100...250 | 2.27 | 2.27 | KUE | **LXEFL2502** |

**Specifications**
Average consumption at 20 °C; 50 Hz/ 60 Hz; cos ϕ = 0.5-0.6:
- inrush: 2400 VA max
- sealed: 24.5 VA max.

Heat dissipation: 5.5 W max.
Operating time at Uc: closing = 54...88 ms, opening = 20...28 ms.
Operating cycles/hour (θ ≤ 55 °C): 600.
Embedded PLC input according IEC 61131-2 type 2:
- Off state: 0...5 V DC
- On state: 11...30 V DC.

PB121423.eps

*LX1FK●●●*

PB121424.eps

*LX1FL●●●*

## Coils for a.c., 40...400 Hz control voltage

Low sealed consumption.
Operate on networks with harmonic numbers ≤ 7.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactor LC1SF1200** | | | | | | |
| 220 | 35.5 | 915 | 4.55 | M7 | **LX1FK220** | 1.150 |
| 230 | 35.5 | 915 | 4.55 | P7 | **LX1FK220** | 1.150 |

**Specifications**
Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
■ inrush: 1050…1150 VA,
■ sealed: 16…20 VA.
Operating cycles/hour (θ ≤ 55 °C): ≤ 2400.
Heat dissipation: 18 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170 ms.

| | | | | | | |
|---|---|---|---|---|---|---|
| **For contactor LC1F1250** | | | | | | |
| 110/120 | 6.45 | 165 | 1.85 | F7 | **LX1FL110** | 1.500 |
| 115 | 6.45 | 165 | 1.85 | FE7 | **LX1FL110** | 1.500 |
| 200/208 | 20.5 | 605 | 2.65 | L7 | **LX1FL200** | 1.500 |
| 220 | 25.5 | 730 | 3.35 | M7 | **LX1FL220** | 1.500 |
| 230 | 25.5 | 730 | 3.35 | P7 | **LX1FL220** | 1.500 |
| 240 | 25.5 | 730 | 3.35 | U7 | **LX1FL220** | 1.500 |
| 265/277 | 31 | 900 | 4.1 | W7 | **LX1FL260** | 1.500 |
| 380 | 78 | 2360 | 10.5 | Q7 | **LX1FL380** | 1.500 |
| 400 | 78 | 2360 | 10.5 | V7 | **LX1FL380** | 1.500 |
| 415 | 96 | 2960 | 13 | N7 | **LX1FL415** | 1.500 |
| 440 | 96 | 2960 | 13 | R7 | **LX1FL415** | 1.500 |

**Specifications**
Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
■ inrush: 1500…1730 VA,
■ sealed: 20…25 VA.
Operating cycles/hour (θ ≤ 55 °C): 1200.
Heat dissipation: 20 W.
Operating time at Uc: closing = 40…80 ms, opening = 100…200 ms.

PB112321.eps

*LX1FX●●●*

## Coils for a.c., 40...400 Hz control voltage

Low sealed consumption.
Operate on networks with harmonic numbers ⩽ 7.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactor LC1F780** | | | | | | |
| 110/120 | 4.95 (2) | 230 (2) | 0.21 | F7 | **LX1FX110** (1) | 3.000 |
| 115 | 4.95 (2) | 230 (2) | 0.21 | FE7 | **LX1FX110** (1) | 3.000 |
| 220 | 19.5 (2) | 920 (2) | 0.82 | M7 | **LX1FX220** (1) | 3.000 |
| 230 | 19.5 (2) | 920 (2) | 0.82 | P7 | **LX1FX220** (1) | 3.000 |
| 240 | 19.5 (2) | 920 (2) | 0.82 | U7 | **LX1FX220** (1) | 3.000 |
| 265/277 | 29.8 (2) | 1330 (2) | 1.25 | W7 | **LX1FX280** (1) | 3.000 |
| 415/480 | 74.3 (2) | 3340 (2) | 2.8 | N7 | **LX1FX415** (1) | 3.000 |
| 440 | 74.3 (2) | 3340 (2) | 2.8 | R7 | **LX1FX415** (1) | 3.000 |

**Specifications**
Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
■ inrush: 1900…2300 VA, sealed: 44…55 VA.
Operating cycles/hour (θ ⩽ 55 °C): 600.
Heat dissipation: 2 x 22 W.
Operating time at Uc: closing = 40…80 ms, opening = 130…230 ms.

PB121422.eps

*LX1FK●●●*

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactor LC1F1000** | | | | | | |
| 110 | 4.718 | 98.4 | 0.63 | F7 | **LX1FK055** (3) | 1.150 |
| **For contactors LC1F1400, LC1F1700 and LC1F2100** | | | | | | |
| 120 | 5.92 | 106 | 0.72 | G7 | **LX1FK070** (3) | 1.150 |
| **For contactors LC1F1000, LC1F1400, LC1F1700 and LC1F2100** | | | | | | |
| 220 | 9.55 | 260 | 1.25 | M7 | **LX1FK110** (3) | 1.150 |
| 230 | 9.55 | 260 | 1.25 | P7 | **LX1FK110** (3) | 1.150 |
| 277 | 16.5 | 420 | 2.25 | W7 | **LX1FK140** (3) | 1.150 |
| 415 | 35.5 | 915 | 4.55 | N7 | **LX1FK220** (3) | 1.150 |
| 440 | 35.5 | 915 | 4.55 | R7 | **LX1FK220** (3) | 1.150 |
| 500 | 44.5 | 1160 | 5.75 | S7 | **LX1FK240** (3) | 1.150 |

**Specifications**
Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
■ inrush: 1600…2400 VA, sealed: 29…37 VA.
Operating cycles/hour (θ ⩽ 55 °C): 600.
Heat dissipation: 2 x 18 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170 ms.

PB121421.eps

*LX1FL●●●*

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactors LC1F2600** | | | | | | |
| 110 | 2.05 | 41 | 0.18 | F7 | **LX1FL065** (3) | 1.150 |
| 120 | 2.05 | 41 | 0.18 | G7 | **LX1FL065** (3) | 1.150 |
| 220 | 6.45 | 165 | 0.76 | M7 | **LX1FL110** (3) | 1.150 |
| 230 | 6.45 | 165 | 0.76 | P7 | **LX1FL110** (3) | 1.150 |
| 277 | 10.2 | 317 | 1.45 | W7 | **LX1FL140** (3) | 1.150 |
| 380 | 20.5 | 605 | 2.65 | Q7 | **LX1FL200** (3) | 1.150 |
| 400 | 20.5 | 605 | 2.65 | V7 | **LX1FL200** (3) | 1.150 |
| 415 | 25.5 | 730 | 3.35 | N7 | **LX1FL220** (3) | 1.150 |
| 440 | 25.5 | 730 | 3.35 | R7 | **LX1FL220** (3) | 1.150 |
| 500 | 30.8 | 901 | 4.13 | S7 | **LX1FL260** (3) | 1.150 |

**Specifications**
Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
■ inrush: 2200…2700 VA, sealed: 37.4…50.6 VA.
Operating cycles/hour (θ ⩽ 55 °C): 600.
Heat dissipation: 2 x 25 W.
Operating time at Uc: closing = 40…80 ms, opening = 100…200 ms.

*(1) Reference of set of 2 identical coils, to be connected in series.*
*(2) Value for the 2 coils in series.*
*(3) Order 2 coils and connect them in series.*

PB112328_40.eps

*LX4FK●●●*

**LX4FK specifications**
Average consumption:
- inrush: 990…1220 W,
- sealed: 4.54…8 W.

Operating cycles/hour (θ ≤ 55 °C): 2400.
Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

**LXE specifications**
Average consumption:
- inrush 50/60 Hz: 280...730 VA rms
  DC: 270...680 W,
- sealed: 50/60 Hz: 4.5...10 VA rms
  DC: 2.5..5.5 W.

Heat Dissipation: 2.5..5.5 W
Operating cycles/hour (θ ≤ 55 °C): < 2400.
Operating time at Uc: closing = 40…80 ms, opening = 6…54 ms.
Embedded PLC input according IEC 61131-2 type 2:
- Off state: 0...5 V DC
- On state: 11...30 V DC.

**LX4FL specifications**
Average consumption:
- inrush: 1420…1920 W,
- sealed: 6.5…12.5 W.

Operating cycles/hour (θ ≤ 55 °C): 1200.
Operating time at Uc: closing = 60…70 ms, opening = 40…50 ms.

**LX4FX specifications**
Average consumption:
- inrush: 1960…2420 W
- sealed: 42…52 W.

Operating cycles/hour (θ ≤ 55 °C): 600.
Operating time at Uc: closing = 70…80 ms, opening = 100…130 ms.

**LX4FK specifications with LC1F1000,1400,1700, 2100**
Average consumption:
- inrush: 2000…2200 W,
- sealed: 8…10 W.

Operating cycles/hour (θ ≤ 55 °C): 600.
Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

**LX4FL specifications with LC1F2600**
Average consumption:
- inrush: 2130…2880 W
- sealed: 13…25 W.

Operating cycles/hour (θ ≤ 55 °C): 600.
Operating time at Uc: closing = 60…70 ms, opening = 40…50 ms.

## Coils for d.c. control voltage

Low sealed consumption.

| Control circuit voltage Uc | Average resistance at 20 °C ±10 % | | Inductance of closed circuit | Voltage code | Reference | Weight |
|---|---|---|---|---|---|---|
| | Inrush | Sealed | | | | |
| V | Ω | Ω | H | | | kg |
| **For contactor LC1SF1200** | | | | | | |
| 110 | 11.5 | 2450 | 280 | FD | **LX4FK110** | 1.080 |
| 220 | 44 | 8150 | 1080 | MD | **LX4FK220** | 1.080 |
| **For contactor LC1F1250 (1)** | | | | | | |
| **For contactors LC1F115 and LC1F150** | | | | | | |
| 100...380 ⎓ | | | | | | |
| **For contactor LC1SF1200** | | | | | | |
| 100...250 ∿<br>110 and 220 ⎓ | 8 | – | – | KUE | **LXEFK250** | 1.100 |
| **For contactor LC1F1250** | | | | | | |
| 100...250 ∿<br>100...380 ⎓ | 4.78 | – | – | KUE | **LXEFL250** | 1.100 |
| **For contactor LC1F1250** | | | | | | |
| 110 | 8.1 | 1680 | 180 | FD | **LX4FL110** | 1.450 |
| 220 | 31 | 5160 | 650 | MD | **LX4FL220** | 1.450 |
| **For contactor LC1F780** | | | | | | |
| 110 | 6.1 (3) | 280 (3) | 0.26 | FD | **LX4FX110** (2) | 3.000 |
| 125 | 7.7 (3) | 410 (3) | 0.33 | GD | **LX4FX125** (2) | 3.000 |
| 250 | 29.8 (3) | 1330 (3) | 1.25 | UD | **LX4FX250** (2) | 3.000 |
| 440 | 92 (3) | 4180 (3) | 3.5 | RD | **LX4FX440** (2) | 3.000 |
| **For contactors LC1F1000, LC1F1400, LC1F1700 and LC1F2100** | | | | | | |
| 125 | 3.73 | 916 | 122 | GD | **LX4FK065** (4) | 1.080 |
| 220 | 11.5 | 2450 | 280 | MD | **LX4FK110** (4) | 1.080 |
| 440 | 44 | 8150 | 1080 | RD | **LX4FK220** (4) | 1.080 |
| **For contactor LC1F2600** | | | | | | |
| 110 | 2.05 | 481 | 64 | FD | **LX4FL055** (4) | 1.080 |
| 125 | 2.53 | 603 | 80 | GD | **LX4FL065** (4) | 1.080 |
| 220 | 11.5 | 2450 | 280 | MD | **LX4FL110** (4) | 1.080 |
| 250 | 15 | 2930 | 400 | UD | **LX4FL125** (4) | 1.080 |
| 440 | 44 | 8150 | 1080 | RD | **LX4FL220** (4) | 1.080 |

*(1) LXE coil to be used along with suitable Electronic Control Module (ECM) Ref. **LA4EM●●●●●**. For details, please refer to page B10/10.*
*(2) Reference of set of 2 identical coils, to be connected in series.*
*(3) Value for the 2 coils in series.*
*(4) Order 2 coils and connect them in series.*

PB121689.eps

*LADN●●*

## Auxiliary contact blocks for LC1FG 3-pole shockproof contactors

### Instantaneous auxiliary contact blocks

**For use in normal operating environments**

| Number of contacts | Max. number of blocks per contactor Clip-on mounting | Composition | Reference | |
|---|---|---|---|---|
| **1** | 1 | – – 1 – | **LADN10** | (1) |
| | | – – – 1 | **LADN01** | (1) |
| **4** | 1 | – – 2 2 | **LADN22** | (1) |
| | | – – 4 – | **LADN40** | (1) |
| | | – – – 4 | **LADN04** | (1) |
| | | – – 3 1 | **LADN31** | (1) |

PB123803.eps

*LADT●*

### Time delay auxiliary contact blocks

| Number of contacts | Max. number of blocks per contactor Clip-on mounting | Time delay Type | Range | Reference | |
|---|---|---|---|---|---|
| | | | s | | |
| **1 N/O + 1 N/C** | 1 | On-delay | 0.3...3 (2) | **LADT0** | |
| | | | 1…30 | **LADT2** | (1) |
| | | | 10…180 | **LADT4** | |
| | | | 1…30 (3) | **LADS2** | |
| | | Off-delay | 0.3...3 (2) | **LADR0** | |
| | | | 1…30 | **LADR2** | (1) |
| | | | 10…180 | **LADR4** | |

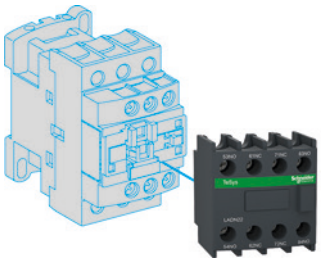
*(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.*
*(2) With extended scale from 0.1 to 6 s.*
*(3) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.*

Characteristics:
pages B10/52 and B10/53

Schemes:
page B10/55

## Product references

PB121695.eps



*LADN*

PB111617.eps

*LA9F103*

PB111592.eps

*LA9F70●*

### Accessories for contactors CR1F

| Description | Number of contacts or shrouds | For use on | Reference |
|---|---|---|---|
| Instantaneous auxiliary contacts | (1) | CR1F | **LADN●●, LADX●●, LADY●●, LADZ●●** (1) |
| Time delay auxiliary contacts | (1) | CR1F | **LADT●, LADS●, LADR●** (1) |
| Contact blocks with protected terminals for 3-pole contactors (for mounting on contactors with closed arc chamber) | Set of 2 blocks | CR1F150 and CR1F185 | **LA9F103** |
| Power terminal protection shrouds | Set of 6 shrouds for 3-pole contactors | CR1F150 and CR1F185 | **LA9F702** |
| | | CR1F265 to CR1F500 | **LA9F703** |
| | | CR1F630 | **LA9F704** |
| | Set of 8 shrouds for 4-pole contactors | CR1F1504 and CR1F1854 | **LA9F707** |
| | | CR1F2654 to CR1F5004 | **LA9F708** |
| | | CR1F6304 | **LA9F709** |

| Description | Application | Reference |
|---|---|---|
| Mechanical interlock and power connections | For assembly of reversing contactors and changeover contactor pairs | See pages B10/17 and B10/18 |

*(1) For maximum number per contactor and complete reference, see page B10/7.*

**Control Panel Technical Guide:**
Description and product reference of all mounting kits and wiring accessories for D, K, F - Star Delta, reverser, low-high speed control motor starters and changeover applications.

> Ref. Document: CPTG011_EN

> Click on QR code to download

Dimensions:
pages B10/66 to B10/69

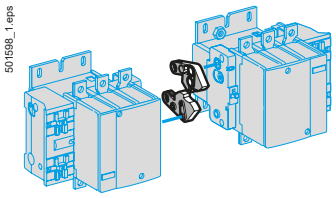
# Reversing and changeover assemblies with CR1F magnetic latching contactors

## Horizontally mounted

### Mechanical interlocks

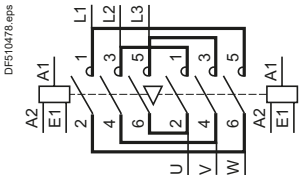
Reversers assembled using 2 contactors of identical rating, type:
**CR1F150**
**CR1F185**
**CR1F265**
**CR1F400**
**CR1F500**
**CR1F630**

LA9F●970

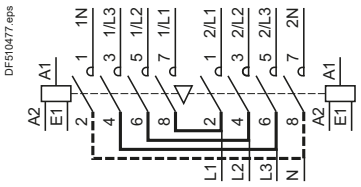



### Sets of power connections

Reversing contactors
LA9F●976



3 or 4-pole changeover contactor pairs
LA9F●977 or LA9F●982

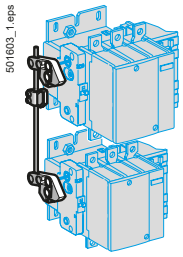


## Vertically mounted

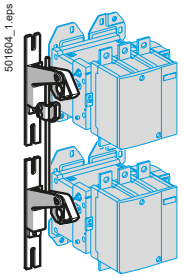
### Mechanical interlocks

Reversers assembled using 2 contactors of identical rating, type:
**CR1F150**
**CR1F185**
**CR1F265**
**CR1F400**
**CR1F500**
**CR1F630**

LA9FF4F
LA9FG4G
Assembly A

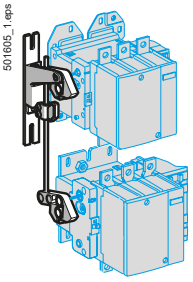



LA9FH4H
LA9FJ4J
LA9FL4L
Assembly C

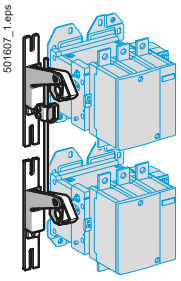



Reversers assembled using 2 contactors of different ratings, type:
**CR1F150**
**CR1F185**
**CR1F265**
**CR1F400**
**CR1F500**
**CR1F630**

LA9FH4F
LA9FJ4F
LA9FH4G
LA9FJ4G
LA9FL4G
Assembly B

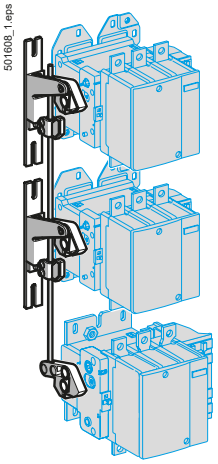


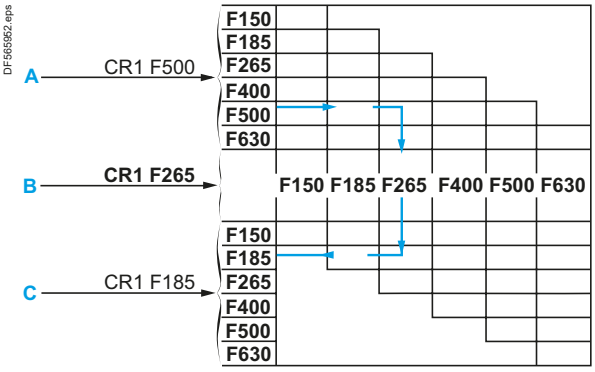

LA9FJ4H
LA9FK4H
LA9FL4H
LA9FK4J
LA9FL4J
Assembly C




Reversers assembled using 3 contactors of identical or different ratings

LA9F●4●4●




**Warning**: the contactor ratings must be in decreasing size from top to bottom.

## Product references

Reversing and changeover assemblies with CR1F magnetic latching contactors.

### Reversers assembled using 2 contactors of identical rating

| Contactor type | Set of power connections | | Mechanical interlock | |
|---|---|---|---|---|
| | 3-pole Reference | Weight kg | Kit reference | Weight kg |
| **For assembly of 3-pole reversing contactors for motor control (1)** | | | | |
| **Horizontally mounted** | | | | |
| CR1F150 | **LA9FF976** | 0.600 | **LA9FF970** | 0.060 |
| CR1F185 | **LA9FG976** | 0.780 | **LA9FG970** | 0.060 |
| CR1F265 | **LA9FH976** | 1.500 | **LA9FJ970** | 0.140 |
| CR1F400 | **LA9FJ976** | 2.100 | **LA9FJ970** | 0.140 |
| CR1F500 | **LA9FK976** | 2.350 | **LA9FJ970** | 0.140 |
| CR1F630 | **LA9FL976** | 3.800 | **LA9FL970** | 0.150 |
| **Vertically mounted** | | | | |
| CR1F150 | (2) | – | **LA9FF4F** | 0.345 |
| CR1F185 | (2) | – | **LA9FG4G** | 0.350 |
| CR1F265 | (2) | – | **LA9FH4H** | 1.060 |
| CR1F400 | (2) | – | **LA9FJ4J** | 1.200 |
| CR1F630 | (2) | – | **LA9FL4L** | 1.220 |
| **For assembly of 4-pole changeover contactor pairs** | | | | |
| **Horizontally mounted** | | | | |
| CR1F2654 | **LA9FH982** | 1.200 | **LA9FJ970** | 0.140 |
| CR1F4004 | **LA9FJ982** | 1.800 | **LA9FJ970** | 0.140 |
| CR1F5004 | **LA9FK982** | 2.300 | **LA9FJ970** | 0.140 |
| **Vertically mounted** | | | | |
| CR1F1504 | (2) | – | **LA9FF4F** | 0.345 |
| CR1F1854 | (2) | – | **LA9FG4G** | 0.350 |
| CR1F2654 | (2) | – | **LA9FH4H** | 1.060 |
| CR1F4004 | (2) | – | **LA9FJ4J** | 1.200 |
| CR1F6304 | (2) | – | **LA9FL4L** | 1.220 |

### Reversers assembled using 2 contactors of different ratings

| Contactor type | | Mechanical interlock | |
|---|---|---|---|
| At bottom | At top | Kit reference | Weight kg |
| **For assembly of 3 or 4-pole changeover contactor pairs** | | | |
| **Vertically mounted (3)** | | | |
| CR1F150 or F1504 | CR1F265 or F2654 | **LA9FH4F** | 0.870 |
| | CR1F400 or F4004 | **LA9FJ4F** | 0.930 |
| CR1F185 or F1854 | CR1F265 or F2654 | **LA9FH4G** | 0.860 |
| | CR1F400 or F4004 | **LA9FJ4G** | 0.940 |
| | CR1F630 or F6304 | **LA9FL4G** | 0.950 |
| CR1F265 or F2654 | CR1F400 or F4004 | **LA9FJ4H** | 1.130 |
| | CR1F500 or F5004 | **LA9FK4H** | 1.130 |
| | CR1F630 or F6304 | **LA9FL4H** | 1.140 |
| CR1F400 or F4004 | CR1F500 or F5004 | **LA9FK4J** | 1.200 |
| | CR1F630 or F6304 | **LA9FL4J** | 1.210 |

### For assembly of 3 or 4-pole reversing contactors (4)

| Using 3 contactors (vertically mounted) of identical or different ratings | Mechanical interlock Kit reference (5) |
|---|---|
| The contactor ratings must be in decreasing size from top to bottom. | **LA9F●4●4●** |

| Contactors | CR1F150 | CR1F185 | CR1F265 | CR1F400 | CR1F500 | CR1F630 |
|---|---|---|---|---|---|---|
| Code | F | G | H | J | K | L |

**Example**: mechanical interlock for reversing contactor made up of 3 different contactors: CR1F500 top, CR1F265 middle and CR1F185 bottom: **LA9FK4H4G**.

*(1) A 3-pole reversing contactor for motor control can be converted into a 3-pole changeover contactor pair by removing the upper connecting links.*
*(2) All power connections are to be made by the customer.*
*(3) With identical or different number of poles. Power connections to be made by the customer.*
*(4) Closing of one of the 3 contactors prevents closing of the other 2 contactors.*
*(5) Complete the reference by replacing the first dot with the code for the upper contactor, the second dot with the code for the middle contactor and the third dot with the code for the bottom contactor.*



Illustrations: page B10/17
Dimensions: pages B10/66 to B10/69

## Product references

PB121414.eps

*LA5FG431*

### References

| Description | For contactor | | Reference | Weight kg |
|---|---|---|---|---|
| Complete sets of contacts for 3 or 4 poles (1) | 3-pole | CR1F150 | **LA5FF431** | 0.270 |
| | | CR1F185 | **LA5FG431** | 0.350 |
| | | CR1F265 | **LA5FH431** | 0.660 |
| | | CR1F400 | **LA5F400803** | 0.660 |
| | | CR1F500 | **LA5F500803** | 0.660 |
| | | CR1F630 | **LA5F630803** | 0.660 |
| | 4-pole | CR1F1504 | **LA5FF441** | 0.360 |
| | | CR1F1854 | **LA5FG441** | 0.465 |
| | | CR1F2654 | **LA5FH441** | 0.880 |
| | | CR1F4004 | **LA5F400804** | 0.465 |
| | | CR1F5004 | **LA5F500804** | 0.465 |
| | | CR1F6304 | **LA5F630804** | 0.465 |

*(1) Set containing the following (per pole): 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.*

## Product references

PB121413.eps

*LXF0FH007*

PB121412.eps

*LX0FK007*

| Standard coils for a.c. or d.c. control voltage | | | | | | |
|---|---|---|---|---|---|---|
| Usual voltages | | Resistance of winding at θ = 20 °C | | Reference | Voltage code | Weight |
| 50…400 Hz or ⎓ | 50 Hz, 60 Hz | Latching | Unlatching | | | |
| V | V | Ω | Ω | | | kg |
| **For contactors CR1F150** | | | | | | |
| 48 | – | 1.98 | 230.8 | **LX0FF005** | E7 | 0.440 |
| 127 | – | 11.61 | 1788 | **LX0FF007** | G7 | 0.440 |
| – | 415 | 139.50 | 16 717 | **LX0FF011** | N7 | 0.440 |
| **For contactors CR1F185** | | | | | | |
| 48 | – | 1.42 | 220 | **LX0FG005** | E7 | 0.560 |
| 208 | – | 21.30 | 3169 | **LX0FG020** | L7 | 0.560 |
| – | 415 | 102.30 | 14 305 | **LX0FG011** | N7 | 0.560 |
| **For contactors CR1F265** | | | | | | |
| 48 | – | 1.34 | 183.4 | **LX0FH005** | E7 | 0.780 |
| 127 | – | 8.56 | 1325 | **LX0FH007** | G7 | 0.780 |
| 208 | – | 20.20 | 2654 | **LX0FH020** | L7 | 0.780 |
| – | 380/400 | 78.39 | 11 803 | **LX0FH010** | Q7 | 0.780 |
| – | 415 | 102.9 | 15 006 | **LX0FH011** | N7 | 0.780 |
| **For contactors CR1F400** | | | | | | |
| 208 | – | 24.40 | 2643 | **LX0FJ020** | L7 | 1.120 |
| – | 380/400 | 94.80 | 9380 | **LX0FJ010** | Q7 | 1.120 |
| – | 415 | 121.10 | 11 763 | **LX0FJ011** | N7 | 1.120 |
| **For contactors CR1F500** | | | | | | |
| 48 | – | 1.57 | 166 | **LX0FK005** | E7 | 1.220 |
| 127 | – | 9.56 | 1159 | **LX0FK007** | G7 | 1.220 |
| 208 | – | 23.60 | 2981 | **LX0FK020** | L7 | 1.220 |
| – | 415 | 112.06 | 13 256 | **LX0FK011** | N7 | 1.220 |
| **For contactors CR1F630** | | | | | | |
| 48 | – | 0.87 | 204 | **LX0FL005** | E7 | 1.460 |
| 127 | – | 6.45 | 1830 | **LX0FL007** | G7 | 1.460 |
| 208 | – | 20.20 | 2961 | **LX0FL020** | L7 | 1.460 |
| – | 415 | 77.97 | 13 003 | **LX0FL011** | N7 | 1.460 |

## Product references

PB121483.eps

*LX0FG●●●*

### Special coils for a.c. or d.c. control voltage

Coils with two windings with common point, allowing the use of two separate power sources for latching and unlatching.

| Coil voltages at 50 Hz, 60 Hz, 400 Hz or ⎓ | | Resistance of winding at θ = 20 °C | | Reference | Voltage code | Weight |
|---|---|---|---|---|---|---|
| Latching | Unlatching | Latching | Unlatching | | | |
| V | V | Ω | Ω | | | kg |
| **For contactors CR1F150** | | | | | | |
| 220 | 24 | 29.5 | 39.5 | **LX0FF224** | MB7 | 0.440 |
| **For contactors CR1F185** | | | | | | |
| 220 | 24 | 26.5 | 19 | **LX0FG224** | MB7 | 0.560 |
| **For contactors CR1F265** | | | | | | |
| 220 | 24 | 26 | 29.5 | **LX0FH224** | MB7 | 0.780 |
| **For contactors CR1F400** | | | | | | |
| 220 | 24 | 30 | 23 | **LX0FJ224** | MB7 | 1.120 |
| **For contactors CR1F500** | | | | | | |
| 220 | 24 | 29 | 26 | **LX0FK224** | MB7 | 1.220 |
| **For contactors CR1F630** | | | | | | |
| 220 | 24 | 26 | 41 | **LX0FL224** | MB7 | 1.460 |

### Coils with low inrush consumption for d.c. control voltage

| Usual voltages ⎓ | Resistance of winding at θ = 20 °C | | Reference | Voltage code | Weight |
|---|---|---|---|---|---|
| | Latching | Unlatching | | | |
| V | Ω | Ω | | | kg |
| **For contactors CR1F150** | | | | | |
| 48 | 4.56 | 140.56 | **LX0FF055** | EZ7 | 0.440 |
| 220 | 89.85 | 3342.51 | **LX0FF058** | MZ7 | 0.440 |
| **For contactors CR1F185** | | | | | |
| 48 | 5.19 | 106.54 | **LX0FG055** | EZ7 | 0.570 |
| 127 | 32.75 | 732.64 | **LX0FG057** | GZ7 | 0.570 |
| **For contactors CR1F265** | | | | | |
| 110 | 25 | 364.61 | **LX0FH056** | FZ7 | 0.800 |
| 220 | 97.89 | 1344.46 | **LX0FH058** | MZ7 | 0.800 |
| **For contactors CR1F400** | | | | | |
| 127 | 31.86 | 221.20 | **LX0FJ057** | GZ7 | 1.150 |
| 220 | 98.19 | 648.79 | **LX0FJ058** | MZ7 | 1.150 |
| **For contactors CR1F630** | | | | | |
| 48 | 3.94 | 59.17 | **LX0FL055** | EZ7 | 1.500 |
| 110 | 19.36 | 365.33 | **LX0FL056** | FZ7 | 1.500 |

## Product references

PB121411.eps

*LC1V320*

### Vacuum contactors - Motors 160 to 610 A / 400 V - a.c. coils

| Standard power ratings 50/60 Hz in category AC-3 | | | | | Rated operational current Ie | | Instantaneous auxiliary contacts | | Control circuit voltage (50/60 Hz) | Basic reference (1) | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 230 V | 400 V | 525 V | 690 V | 1000 V | AC-3 400 V up to | AC-1 | | | | | |
| kW | kW | kW | kW | kW | A | A | | | | | kg |
| 45 | 75 | 110 | 150 | 200 | 160 | 160 | 2 | 1 | (1) | **LC1V160P7** | 3.800 |
| 90 | 160 | 220 | 280 | 400 | 320 | 320 | 1 | 1 | (1) | **LC1V320P7** | 10.500 |
| 160 | 300 | 400 | 560 | 800 | 610 | 630 | 1 | 1 | (1) | **LC1V610P7** | 13.000 |

High power contactors

Characteristics:
pages B10/70 and B10/71

Dimensions:
pages B10/72

Schemes:
pages B10/72



Life Is On Schneider Electric

## Product references

PB121408.eps

*LA1VN11X*

### Instantaneous auxiliary contact blocks (1)

| Number of contacts | Maximum number of blocks per contactor | Auxiliary contacts | | Reference |
|---|---|---|---|---|
| 2 | 4 | 2 | – | **LA1VN20** |
| | | 1 | 1 | **LA1VN11X** (2) |

*(1)* ***LC1V160****: auxiliary contact blocks mounted at the top of the contactor, with no change to the overall dimensions.*
***LC1V320*** *or* ***LC1V610****: 2 auxiliary contact blocks mounted on the RH and LH side of the contactor, with no change to the overall dimensions.*
*(2) For* ***LC1V160****: 1 N/C contact for the coil + 1 N/O contact.*

## Product references

| | | | | |
|---|---|---|---|---|
| CR1F150F7 | LA4EM250FL2 | LA9F704 | LA9FL4G | LC1F780M7 |
| CR1F150M7 | LA4FDE | LA9F705 | LA9FL4H | LC1F780P7 |
| CR1F150U7 | LA4FDF | LA9F706 | LA9FL4J | LC1F780Q7 |
| CR1F185F7 | LA4FRCE | LA9F707 | LA9FL4L | LC1FG265R7 |
| CR1F185G7 | LA4FRCF | LA9F708 | LA9FL970 | LC1FG500N7 |
| CR1F185M7 | LA4FRCP | LA9F709 | LA9FL976 | LC1SF1200KUE |
| CR1F185Q7 | LA4FRCV | LA9F801 | LA9FL980 | LC1SF1200M7 |
| CR1F185U7 | LA4FTE | LA9F980 | LA9FX990M | LC1SF1200P7 |
| CR1F2654F7 | LA4FTF | LA9FF4F | LA9FX991F | LC1V160P7 |
| CR1F265F7 | LA4FTP | LA9FF601 | LA9FX991Q | LC1V320P7 |
| CR1F265G7 | LA4FVE | LA9FF970 | LC1D115004L6 | LC1V610P7 |
| CR1F265GD31S003 | LA4FVF | LA9FF976 | LC1F1250 | LX1D8FE7 |
| CR1F265M7 | LA4FVP | LA9FF981 | LC1F1250F7 | LX1D8L7 |
| CR1F265U7 | LA4FVV | LA9FG4F4F | LC1F1250KUE | LX1D8N7 |
| CR1F4004MZ7 | LA5D11550 | LA9FG4G | LC1F1250M7 | LX1D8R7 |
| CR1F400F7 | LA5F400802 | LA9FG601 | LC1F1250MD | LX1D8V7 |
| CR1F400FZ7 | LA5F400803 | LA9FG610 | LC1F1250P7 | LX1FK220 |
| CR1F400M7 | LA5F400804 | LA9FG970 | LC1F1250Y | LX1FL110 |
| CR1F400Q7 | LA5F500803 | LA9FG976 | LC1F1400 | LX1FL200 |
| CR1F500F7 | LA5F500804 | LA9FG979 | LC1F1400MD | LX1FL220 |
| CR1F500GD31S003 | LA5F630803 | LA9FG980 | LC1F1400P7 | LX1FL2206 |
| CR1F500M7 | LA5F630804 | LA9FH4F | LC1F1700 | LX1FL260 |
| CR1F500Q7 | LA5F780801 | LA9FH4G | LC1F1700F7 | LX1FL380 |
| CR1F630F7 | LA5F780803 | LA9FH4H | LC1F1700M7 | LX1FL415 |
| CR1F630M7 | LA5F780804 | LA9FH4H4F | LC1F1700MD | LX1FX110 |
| CR1F630MZ7 | LA5F800803 | LA9FH4H4H | LC1F1700P7 | LX1FX220 |
| DR5TE4S | LA5FF431 | LA9FH601 | LC1F2100 | LX1FX415 |
| DR5TE4U | LA5FF441 | LA9FH602 | LC1F2100F7 | LX4D8MD |
| DR5TF4V | LA5FG431 | LA9FH610 | LC1F2100LD | LX4FK110 |
| DZ2FF1 | LA5FG441 | LA9FH976 | LC1F2100LDBR | LX4FK220 |
| DZ2FF6 | LA5FH431 | LA9FH982 | LC1F2100M7 | LX4FL110 |
| DZ2FG1 | LA5FH441 | LA9FJ4G | LC1F2100MD | LX4FL125 |
| DZ2FG6 | LA5FJ431 | LA9FJ4H | LC1F2100P7 | LX4FL220 |
| DZ2FJ1 | LA5FK431 | LA9FJ4J | LC1F2100V7 | LX4FX110 |
| DZ2FJ6 | LA5FL431 | LA9FJ4J4J | LC1F2600 | LXEFF250 |
| DZ2FK1 | LA9D11517 | LA9FJ610 | LC1F2600KUE | LXEFG250 |
| DZ2FK6 | LA9D115604 | LA9FJ970 | LC1F2600MD | LXEFH250 |
| DZ2FL1 | LA9D115692 | LA9FJ974 | LC1F2600P7 | LXEFJ250 |
| DZ2FL2 | LA9D11570 | LA9FJ976 | LC1F780 | LXEFK250 |
| DZ2FL3 | LA9D115704 | LA9FJ980 | LC1F7804 | LXEFL250 |
| DZ2FL6 | LA9D730 | LA9FJ982 | LC1F7804F7 | LXEFL2502 |
| DZ2FR1 | LA9F103 | LA9FK4H | LC1F7804M7 | |
| DZ2FX1 | LA9F2100 | LA9FK4J | LC1F7804MD | |
| DZ2FX6 | LA9F2600 | LA9FK4K | LC1F7804P7 | |
| LA1VN11X | LA9F701 | LA9FK4K4K | LC1F780F7 | |
| LA1VN20 | LA9F702 | LA9FK976 | LC1F780FE7 | |
| LA4EM250FK | LA9F703 | LA9FK982 | LC1F780G7 | |



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

F High power contactors

# Technical Data for Designers

## Contents


F contactors:
- > characteristics ..... B10/26 to B10/31
- > dimensions ..... B10/32 to B10/35
- > schemes ..... B10/36 and B10/37

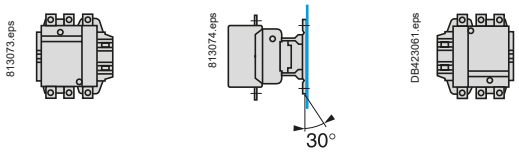
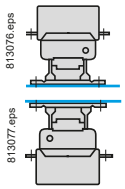
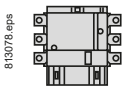
FG shockproof contactors:
- > characteristics ..... B10/38 to B10/53
- > dimensions and schemes ..... B10/54 and B10/55

CR1F magnetic latching contactors:
- > characteristics ..... B10/56 to B10/65
- > dimensions ..... B10/66 to B10/69

V vacuum contactors:
- > characteristics ..... B10/70 and B10/71
- > dimensions ..... B10/72
- > schemes ..... B10/72

# Characteristics

## Environment

| Contactor type | | | LC1F780 |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1. Overvoltage category III, degree of pollution: 3 | **V** | 1000 |
| Rated impulse withstand voltage (Uimp) | Coil not connected to the power circuit | **kV** | 8 |
| Conforming to standards | | | IEC 60947-4-1, GB/T14048.4, UL 60947-4-1, CAN/CSA-C22.2 No. 60947-4-1, IACS E10, JIS C 8201-4-1 |
| Product certifications | | | CB scheme, UL, CSA, CQC, EAC, ABS, BV , DNV , LRoS, RINA, CE marking, UKCA marking, CCC mark |
| Degree of protection | Conforming to IEC 60529 | | IP 20 front face with shrouds LA9F |
| Climatic withstand | | | According to IACS E10 |
| Ambient air temperature around the device | Storage | **°C** | -60…+80 |
| | Operation | **°C** | -5…+55 |
| | Permissible at Uc | **°C** | -40…+70 |
| Maximum operating altitude | Without derating | **m** | 3000 |
| Operating positions | Without derating | |  (not to be used for LC1F780, F1000, F1400, F1700, F2100 and F2600) |
| | With derating | |  Apply the following derating coefficients: 0.75 on the pull-in voltage, 0.9 on the drop-out voltage and 0.8 on the operational current in AC-1.<br>Apply the following derating coefficients: 1.15 on the pull-in voltage, 1.1 on the drop-out voltage and 0.8 on the operational current in AC-1.<br>In either case: neither the making and breaking capacities nor the electrical and mechanical durabilities can be assured. |
| | Not to be used | |  |
| Shock resistance (1)<br>1/2 sine wave = 11 ms<br>Conforming to IEC/EN 60068-2-27 | Contactor open | | 5 gn |
| | Contactor closed (2) | | 15 gn |
| Vibration resistance (1)<br>5…300 Hz<br>Conforming to IEC/EN 60068-2-6 | Contactor open | | 2.5 gn |
| | Contactor closed | | 5.5 gn |

*(1) In the least favourable direction, without change of contact state (coil at Uc). Where higher resistance to mechanical shock is required, select shock-proof contactors. Please consult your Regional Sales Office.*

*(2) 12 gn for F780-F1250 contactors when used with Electronic control module (LA4EM) & LXE coils.*

References:
pages B10/2 and B10/3

Dimensions:
pages B10/32 and B10/33

Schemes:
pages B10/36 and B10/37

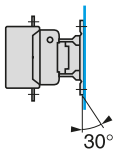


Life Is On Schneider Electric

## Characteristics

| LC1F1000 | LC1SF1200 | LC1F1250 | LC1F1400 | LC1F1700 | LC1F2100 | LC1F2600 |
|---|---|---|---|---|---|---|
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| IEC 60947-4-1, GB/T14048.4, UL 60947-4-1, CAN/CSA-C22.2 No. 60947-4-1, JIS C 8201-4-1 | IEC 60947-4-1, GB/T14048.4 | IEC 60947-4-1, GB/T14048.4, UL 60947-4-1, CAN/CSA-C22.2 No. 60947-4-1, JIS C 8201-4-1 | | | | |
| CB scheme, UL, CSA, CQC, CE marking, UKCA marking, CCC mark | CB scheme, CQC, CE marking, UKCA marking, CCC mark | CB scheme, UL, CSA, CQC, CE marking, UKCA marking, CCC mark | | | | |
| – | – | – | | | | |
| | | | | | | |
| -60…+80 | | | | | | |
| -5…+40 | -5…+60 | -5…+40 | | | | |
| -40…+60 | -40…+70 | -40…+60 | | | | |
| 3000 | | | | | | |

813073.eps

813074.eps 


DB423061.eps

813075.eps

(not to be used for LC1F780, F1000, F1400, F1700, F2100 and F2600)

| | | | | | | |
|---|---|---|---|---|---|---|
| Not to be used | Possible positions with derating (see corresponding paragraph on left, same line) | Not to be used | | | | |

813078.eps

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 gn | 6 gn | 6 gn | 6 gn | 6 gn | 6 gn | 6 gn |
| 15 gn | 15 gn | 15 gn | 15 gn | 15 gn | 15 gn | 15 gn |
| 2 gn | 2 gn | 2 gn | 2 gn | 2 gn | 2 gn | 2 gn |
| 4 gn | 4 gn (3) | 4 gn | 4 gn | 4 gn | 4 gn | 4 gn |

*(3) Vibration resistance 5...30 Hz, when used with Electronic Control Module (ECM).*

# Characteristics

## Pole characteristics

| Contactor type | | | LC1F780 | LC1F1000 | LC1SF1200 | LC1F1250 | LC1F1400 | LC1F1700 | LC1F2100 | LC1F2600 |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of poles | | | 3 or 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Rated operational current (Ie) (Ue ≤ 440 V) | In AC-3, θ ≤ 55 °C | A | 780 | 1000 | - | - | - | - | - | - |
| | In AC-1, θ ≤ 40 °C | A | 1600 | 1250 | 1200 | 1260 | 1400 | 1700 | 2100 (2) | 2600 (4) |
| Rated operational voltage (Ue) | Up to | V | 1000 | 440 | 690 | 690 | 1000 | 1000 | 1000 (5) | 1000 |
| Frequency limits | Of the operational current (1) | Hz | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 | $16^{2/3}$…200 |
| Conventional thermal current | θ ≤ 40 °C | A | 1600 | 1250 | 1200 | 1260 | 1400 | 1700 | 2100 (2) | 2600 (4) |
| Rated making capacity | I rms conforming to IEC 60947-4-1 | A | Making current: 10 x I in AC-3 or 12 x I in AC-4 | 10 x I in AC-3 | Making current: 1.5 x I in AC-1 | | | | | |
| Rated breaking capacity | I rms conforming to IEC 60947-4-1 | A | Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4 | 8 x I in AC-3 | Making and breaking current: 1.5 x I in AC-1 | | | | | |
| Maximum permissible current No current flowing for previous 60 minutes, at θ ≤ 40 °C | For 10 s | A | 6250 | 10000 | 8000 | 8000 | 8000 | 10000 | 10000 | 12000 |
| | For 30 s | A | 5600 | 7500 | 5200 | 5200 | 6000 | 7500 | 7500 | 9000 |
| | For 1 min | A | 4600 | 5500 | 4000 | 4000 | 4500 | 5500 | 5500 | 7000 |
| | For 3 min | A | 3000 | 4200 | 3000 | 3000 | 4000 | 4200 | 4200 | 6000 |
| | For 10 min | A | 2200 | 3000 | 2000 | 2000 | 2600 | 3000 | 3000 | 4000 |
| Short-circuit protection by fuses U ≤ 440 V | Motor circuit (type aM) | A | 800 | 1000 | – | – | – | – | – | – |
| | With thermal overload relay (type gG) | A | 1000 | 1000 | – | – | – | – | – | – |
| | gG fuses | A | 2 x 800 (3) | 1000 | 1400 | 1400 | 2 x 800 (3) | 2 x 800 (3) | 2 x 1000 (3) | 2 x 1250 (3) |
| Average impedance per pole | At Ith and 50 Hz | mΩ | 0.10 | 0.12 | 0.10 | 0.12 | 0.10 | 0.10 | 0.10 | 0.10 |
| Power dissipation per pole for the above operational currents | AC-3 | W | 60 | 100 | – | – | – | – | – | – |
| | AC-1 | W | 250 | 120 | 120 | 120 | 150 | 200 | 200 | 250 |
| Connection | | | | | | | | | | |
| Bar | Number of bars | | 2 | 3 | 2 | 2 | 2 | 3 | 4 | 3 |
| | Bar | mm | 100 x 5 | 100 x 5 | 50x8 | 100 x 5 | 100 x 5 | 100 x 5 | 100 x 5 | 100 x 10 |
| Cable with lug | | $mm^2$ | – | – | – | – | – | – | – | – |
| Cable with connector | | $mm^2$ | – | – | – | – | – | – | – | – |
| Bolt diameter | | mm | 2 x Ø12 | 4 x Ø12 (Ø11.5 with set of right-angled connectors LA9F2100) | 3 x Ø12 | 3 x Ø12 | 4 x Ø12 (Ø11.5 with set of right-angled connectors LA9F2100) | | | 4 x Ø12 (Ø11.5 with set of right-angled connectors LA9F2600) |
| Tightening torque | Power circuit connections | N.m | 58 | 58 (35 with set of right-angled connectors LA9F2100) | 58 | 58 | 58 (35 with set of right-angled connectors LA9F2100) | | | 58 (35 with set of right-angled connectors LA9F2600) |

*(1) Sine wave without interference. Above these values, contactors can be used only for AC-1 application.*
*(2) With set of right-angled connectors **LA9F2100** (see page B10/9).*
*(3) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.*
*(4) θ ≤ 60 °C with set of right-angled connectors **LA9F2600** (see page B10/9).*
*(5) Ue =1000 V, with set of right angled connectors **LA9F2100** (see page B10/9).*

Ref.
High power contactors

References: pages B10/2 and B10/3
Dimensions: pages B10/32 and B10/33
Schemes: pages B10/36 and B10/37

# Characteristics

## a.c. control circuit characteristics with LX1 coil

| Contactor type | | | | LC1 F780 (1) | LC1 F1000 (1) | LC1 SF1200 | LC1 F1250 | LC1 F1400 (1) | LC1 F1700 | LC1 F2100 (1) | LC1 F2600 (1) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | | **V** | 110…500 | 110...500 | 220...230 | 110...600 | 110...500 | 110…500 | 110…500 | 110…500 |
| Control voltage limits ($\theta \leq 55$ °C) | 40…400 Hz coils | Operation | | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85...1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc |
| | | Drop-out | | 0.2…0.4 Uc | 0.3…0.5 Uc | 0.25...0.5 Uc | 0.25...0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc |
| Average consumption at 20 °C and at Uc | Inrush | 40…400 Hz coil | **VA** | 1900... 2300 | 1600... 2400 | 1050... 1150 | 1500... 1730 | 1600... 2400 | 1600... 2400 | 1600... 2400 | 2200... 2700 |
| | | Cos φ | | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| | Sealed | 40…400 Hz coil | **VA** | 44...55 | 29...37 | 16...20 | 20...25 | 29...37 | 29...37 | 29...37 | 37.4...50.6 |
| | | Cos φ | | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Heat dissipation | | | **W** | 2 x 22 | 2 x 18 | 18 | 20 | 2 x 18 | 2 x 18 | 2 x 18 | 2 x 25 |
| Operating time (2) | Closing "C" | | **ms** | 40…80 | 40…75 | 40...75 | 40…80 | 40…75 | 40…75 | 40…75 | 40…80 |
| | Opening "O" | | **ms** | 130…230 | 100...170 | 100...170 | 100...200 | 100...170 | 100…170 | 100…170 | 100…200 |
| Mechanical durability at Uc | In millions of operating cycles | | | 5 | 0.5 | 10 | 1 | 0.5 | 0.5 | 0.5 | 0.5 |
| Maximum operating rate at ambient temperature ≤ 55 °C | In operating cycles per hour | | | 600 | 600 | 2400 | 1200 | 600 | 600 | 600 | 600 |
| Connection | | | | Min/max c.s.a. | | | | | | | |
| Flexible cable without cable end | 1 or 2 conductors | | **mm²** | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| Flexible cable with cable end | 1 conductor | | **mm²** | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| | 2 conductors | | **mm²** | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 |
| Solid cable without cable end | 1 or 2 conductors | | **mm²** | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| Tightening torque | | | **N.m** | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Mechanical latching | | | | Mechanical latch blocks LA6DK must not be fitted on LC1F contactors.<br>For similar type of operation, use magnetic latching contactors CR1F.<br>See pages B10/16 to B10/21. | | | | | | | |

*(1) Equipped with 2 coils.*

*(2) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

Ref.
High power contactors

References:
pages B10/2 and B10/3

Dimensions:
pages B10/32 and B10/33

Schemes:
pages B10/36 and B10/37

# Characteristics

## d.c. control circuit characteristics with LX4 coil

| Contactor type | | | | LC1 F780 | LC1 F1000 | LC1 SF1200 (1) | LC1 F1250 | LC1 F1400 | LC1 F1700 | LC1 F2100 | LC1F 2600 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) ⎓ | | | V | 110…440 | 110…440 | 48…440 | 48…250 | 110…440 | 110…440 | 110…440 | 110…440 |
| Control voltage limits (θ ≤ 55 °C) | Operation | | | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc |
| | Drop-out | | | 0.2…0.4 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc | 0.2…0.35 Uc |
| Average consumption at 20 °C and at Uc | ⎓ | Inrush | W | 1960... 2420 | 2000... 2200 | 990... 1220 | 1420... 1920 | 2000... 2200 | 2000... 2200 | 2000... 2200 | 2130... 2880 |
| | | Sealed | W | 42...52 | 8...10 | 4.54...8 | 6.5...12.5 | 8...10 | 8...10 | 8...10 | 13...25 |
| Average operating time at Uc (2) | Closing "C" | | ms | 70…80 | 50…60 | 50…60 | 60…70 | 50…60 | 50…60 | 50…60 | 60…70 |
| | Opening "O" | | ms | 100…130 | 45…60 | 45…60 | 40…50 | 45…60 | 45…60 | 45…60 | 40…50 |
| | | | | *Note: the arcing time depends on the circuit switched by the poles. For all normal 3-phase applications. the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.* | | | | | | | |
| Mechanical durability at Uc | In millions of operating cycles | | | 5 | 0.5 | 1 | 1 | 0.5 | 0.5 | 0.5 | 0.5 |
| Maximum operating rate at ambient temperature ≤ 55 °C | In operating cycles per hour | | | 600 | 600 | 1200 | 1200 | 600 | 600 | 600 | 600 |
| Cabling | | | | Min/max c.s.a. | | | | | | | |
| Flexible cable without cable end | 1 conductor | | mm² | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| | 2 conductors | | mm² | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| Flexible cable with cable end | 1 conductor | | mm² | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| | 2 conductors | | mm² | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 |
| Solid cable without cable end | 1 conductor | | mm² | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| | 2 conductors | | mm² | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 | 1/4 |
| Tightening torque | | | N.m | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Mechanical latching | | | | Mechanical latch blocks LA6DK must not be fitted on LC1F contactors.<br>For similar type of operation, use magnetic latching contactors CR1F.<br>See pages B10/16 to B10/21. | | | | | | | |

*(1) LC1SF1200KUE, LC1SF1200MD are available.*

*(2) The operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

Ref.
High power contactors


Life Is On Schneider Electric

# Characteristics

## a.c. or d.c. control circuit characteristics with LXE coil (1)

| Contactor type | | | | LC1SF1200 (3) | LC1F1250 (4) | LC1F2600 (5) |
|---|---|---|---|---|---|---|
| ECM (2) reference | | | | LA4EM250FK | LA4EM250FL | LA4EM250FL2 |
| Coil reference | | | | LXEFK250 | LXEFL250 | LXEFL2502 |
| Rated control circuit voltage (Uc) | 50/60 Hz | | V | 100…250 | | |
| | ⎓ | | V | 100…380 | | 100…250 |
| Control voltage limits (< 55 °C) 50/60 Hz | Operation | | V | 85…275 | | |
| | Drop-out | | V | < 60 | | < 65 |
| ⎓ | Operation | | V | 85…418 | | 85…275 |
| | Drop-out | | V | < 45 | | < 51 |
| Average consumption at 20 °C and at Uc | Inrush | 50/60 Hz | VA rms | 360…550 | 460…730 | 1100...2300 |
| | | Cos φ | | 0.5…0.6 | | |
| | | ⎓ | W | 410…500 | 500…680 | 1300...2400 |
| | Sealed | 50/60 Hz | VA | 5.0…8.0 | 7…10 | 21.1...24.5 |
| | | Cos φ | | 0.5…0.6 | | |
| | | ⎓ | | 2.7…5.0 | 4.0…5.5 | 14...18 |
| Embedded PLC (6) input according IEC 61131-2 type 2 | Off state | | V DC | 0…5 | | |
| | On state | | | 11…30 | | |
| Heat dissipation | | | W | 2.2...5.5 | | 16...20 |
| Operating time | Closing “C” | | ms | 40…80 | | 54...88 |
| | Opening “O” | | ms | 6…54 | | 20...28 |
| Mechanical durability at Uc | In millions of operating cycles | | | 1 | | 0.5 |
| Maximum operating rate at ambient temperature ⩽ 55 °C | In operating cycles per hour | | | 1200 | | 600 |
| Connection (7) | | | | | | |
| Flexible cable without cable end | 1 conductor | | | 0.2/2.5 | | |
| Flexible cable with cable end | 1 conductor | | | 0.25/2.5 | | |
| Solid cable without cable end | 1 conductor | | | 0.2/2.5 | | |
| Tightening torque | | | N.m | 0.6 | | |

*(1) LXE coil shall be always used along with Electronic Control Module (ECM) **LA4EM250●●**.*

*(2) Electronic Control Module enables wider coil operating voltage for the F range of contactors. ECM **LA4EM250●●** shall be always used along with suitable type of **LXE●●250** coils.*

*(3) **LC1SF1200KUE** is supplied with **LA4EM250FK** & **LXEFK250**.*

*(4) **LC1F1250KUE** is supplied with **LA4EM250FL** & **LXEFL250**.*

*(5) **LC1F2600KUE** is supplied with **LA4EM250FL2** & **LXEFL2502**.*

*(6) PLC control connectors shall be provided by customer (Type MC 1.5/2-ST-3.81).*

*(7) Connection input is made to Electronic control module (ECM).*

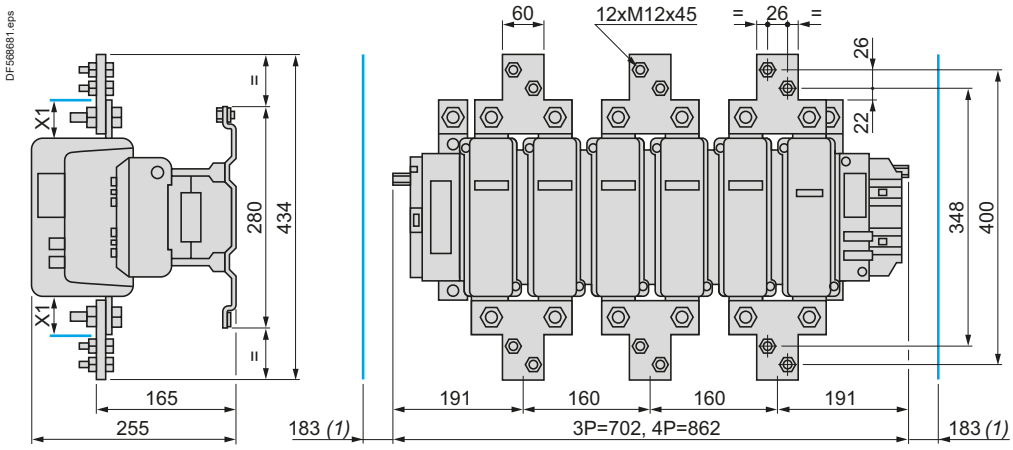
References:
pages B10/2 and B10/3

Dimensions:
pages B10/32 and B10/33

Schemes:
pages B10/36 and B10/37

# Dimensions

## LC1F780

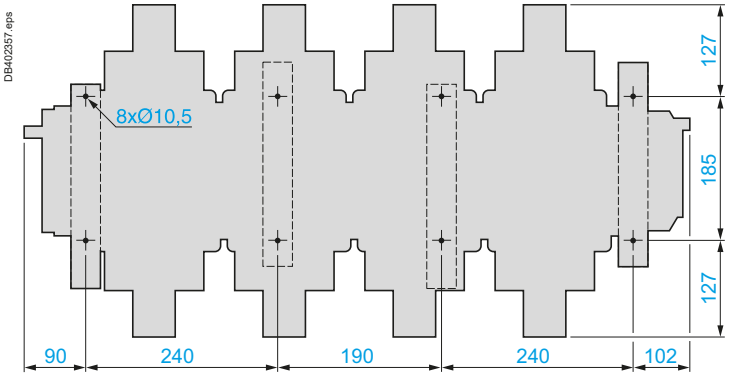



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

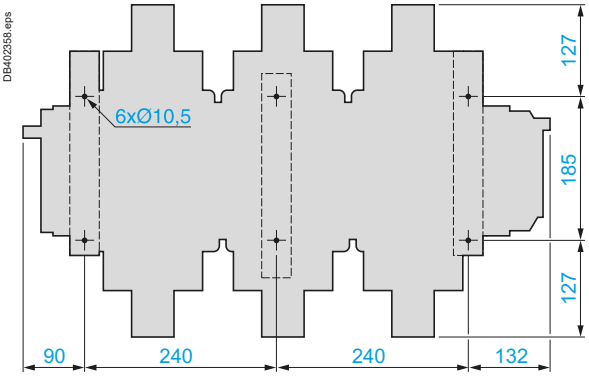
| Voltage | 200…500 V | 690…1000 V |
|---|---|---|
| X1 (mm) | 30 | 35 |

*(1) Minimum distance required for coil removal.*

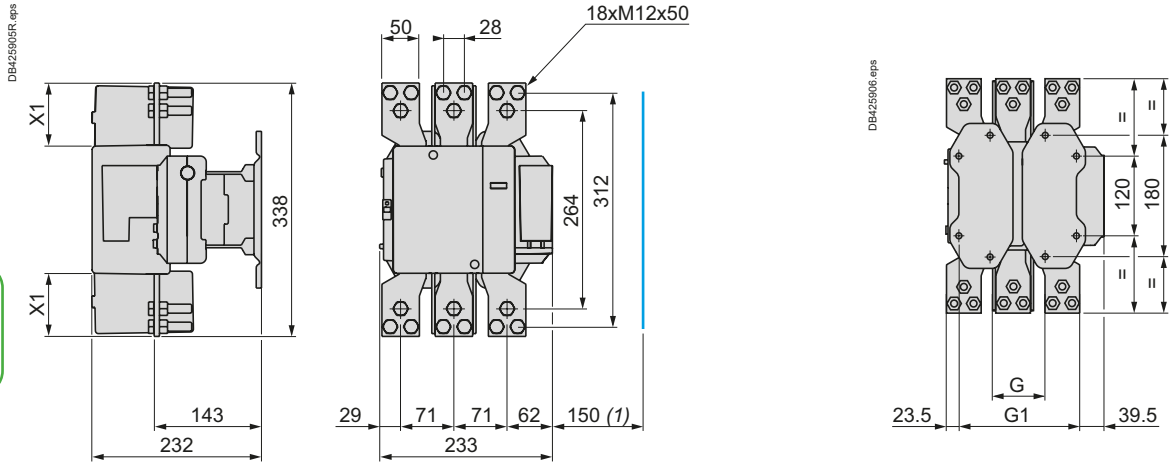
## Fixing centres of LC1F7804




## Fixing centres of LC1F780




## LC1SF1200







*(1) Minimum distance required for coil removal.*

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| Voltage | 200...500 V | ≤ 690 V |
|---|---|---|
| X1 (mm) | 20 | 30 |

| G (2) | Gmin | Gmax | G1 (2) | Gmin | Gmax |
|---|---|---|---|---|---|
| 80 | 66 | 120 | 170 | 156 | 210 |

*(2) Factory setting.*

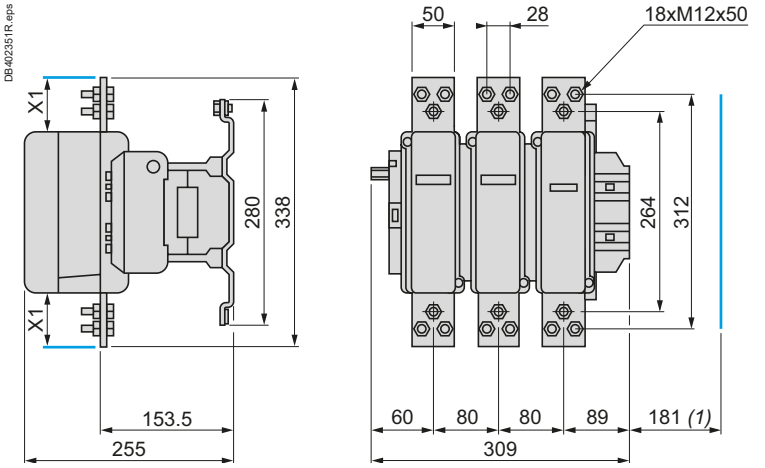
References:
pages B10/2 and B10/3

Characteristics:
pages B10/26 to B10/30

Schemes:
page B10/37

# Dimensions

## LC1F1250

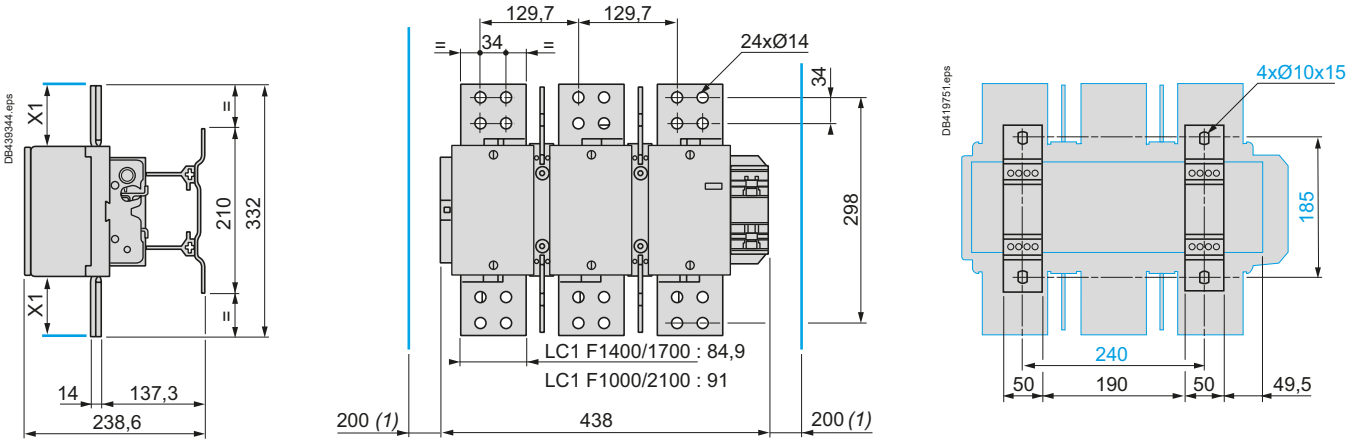



*(1) Minimum distance required for coil removal.*

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| Voltage | 200…500 V | 690…1000 V |
|---|---|---|
| X1 (mm) | 20 | 30 |

## LC1F1000, LC1F1400, LC1F1700 and LC1F2100

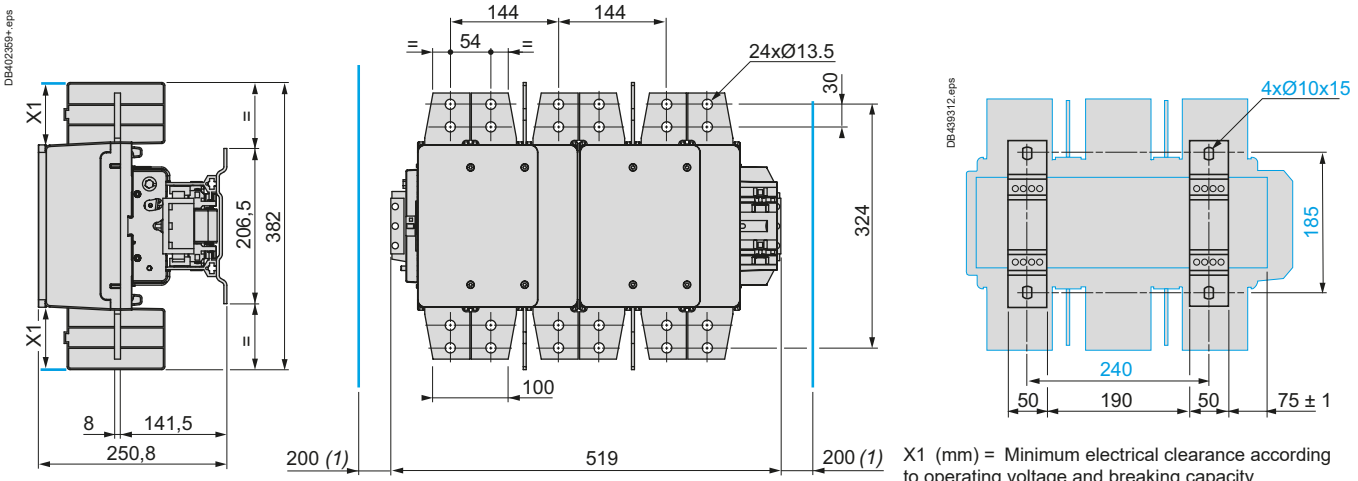



*(1) Minimum distance required for coil removal.*

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| Voltage | 200…500 V | 690…1000 V |
|---|---|---|
| X1 (mm) | 90 | 100 |

## LC1F2600




*(1) Minimum distance required for coil removal.*

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| Voltage | 200…500 V | 690…1000 V |
|---|---|---|
| X1 (mm) | 90 | 100 |

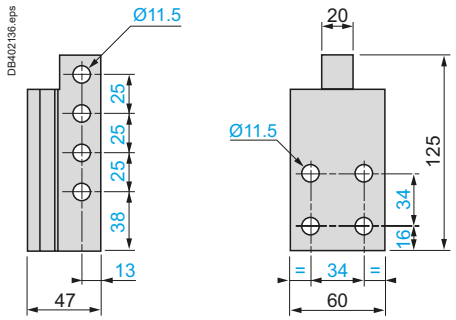
References:
pages B10/2 and B10/3

Characteristics:
pages B10/26 to B10/30

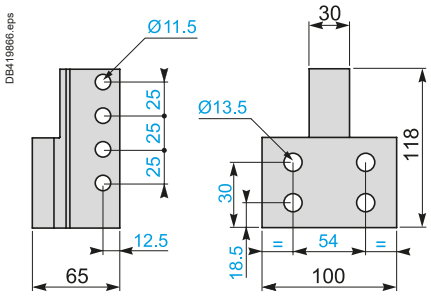
Schemes:
page B10/37

# Dimensions

## Right-angled connectors LA9F2100
(set of 6) for rear connection

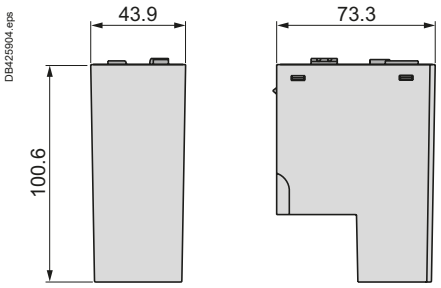



## Right-angled connectors LA9F2600
(set of 6) for rear connection




## Electronic Control Module for LXE●●250 coils / LXE●●2502 coils

**LA4EM250●● / LA4EM250●●2**



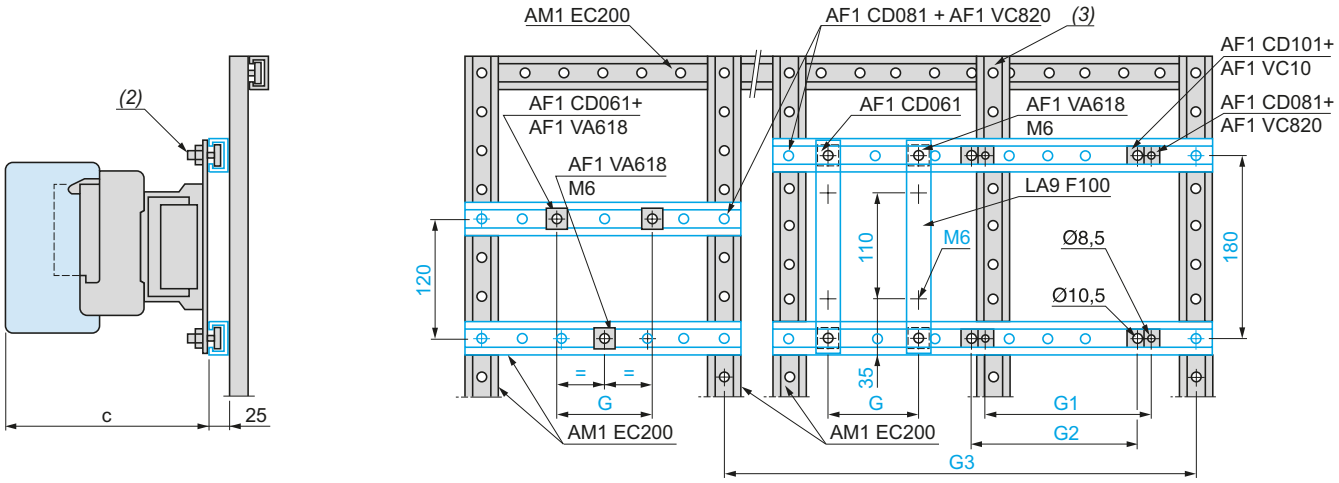

Ref.

High power contactors

## LC1F780

**On 2 notched rails AM1EC●●●**

DB439477.eps




| LC1 | | F780 |
|---|---|---|
| c (1) | 3P | 255 |
| | 4P | 255 |
| G (M6) | 3P | – |
| | 4P | – |
| G1 (∅ 8.5) | 3P | – |
| | 4P | – |
| G2 (∅ 10.5) | 3P | See page B10/32 |
| | 4P | See page B10/32 |

*(1) See X1 (minimum electrical clearance) page B10/32.*
*(2) **AF1CD●●●** and **AF1VA●●●**.*
*(3) This **AM1EC200** upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).*

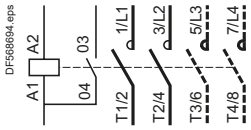
Ref.
High power contactors

# Schemes

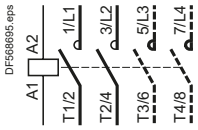
## Contactors

### 3 and 4-pole contactors

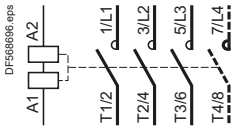
**LC1F1250 (coil LX1F ∿)**



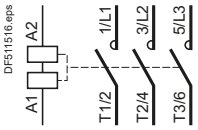

**LC1F1250 (coil LX4F ⎓)**




**LC1F780 ∿ or ⎓**



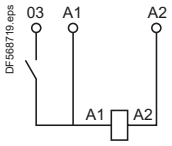

**LC1F1000**
**LC1F1400 ∿ or ⎓ , LC1F1700 ∿ or ⎓**
**LC1F2100 ∿ or ⎓ , LC1F2600 ∿ or ⎓**



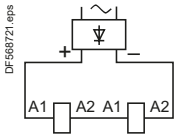

## Coils

### Standard ∿ coils

**LX1FK●●●/ LX1FL●●●**

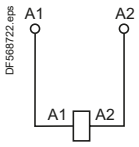



**LX1FX**
Rectifier supplied and fixed on the contactor




### Standard ⎓ coils

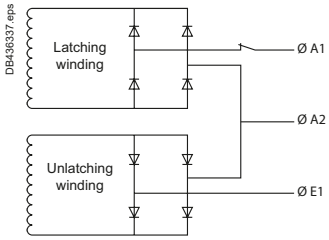
**LX4FK, FL, FX** (1)



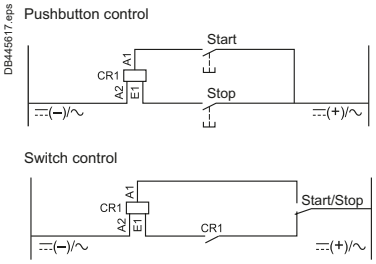

*(1) 2 coils in series.*

### Specific wiring diagrams for CR1F contactors

**Internal latching/unlatching diagram**

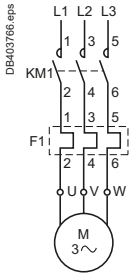


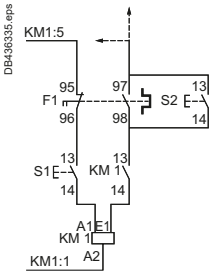

**Control diagrams**




*Warning: terminal A2 is common to both windings in all cases.*

**Contactors CR1F with thermal overload relay**



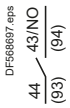

Ref.
High power contactors

# Schemes

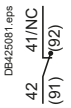
## Add-on blocks

### Instantaneous auxiliary contacts

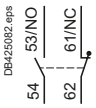
**1 N/O LADN10** (1)



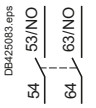

**1 N/C LADN01** (1)



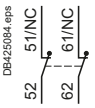

**1 N/O + 1 N/C LADN11**



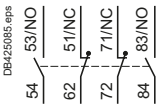

**2 N/O LADN20**



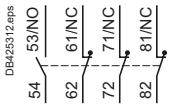

**2 N/C LADN02**




**2 N/O + 2 N/C LADN22**

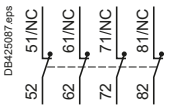



**1 N/O + 3 N/C LADN13**

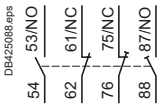



**4 N/O LADN40**

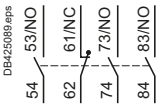
**4 N/C LADN04**




**2 N/O + 2 N/C** (2) **LADC22**




**3 N/O + 1 N/C LADN31**

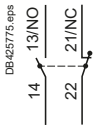



*(1) Items in brackets: See "D contactors".*

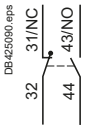
*(2) 1 N/O + 1 N/C make before break.*

### Instantaneous auxiliary contacts with terminal referencing conforming to standard EN 50012 (References: pages B10/6 and B10/7)

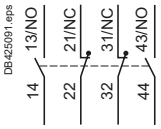
**1 N/O + 1 N/C**
**LADN11P**



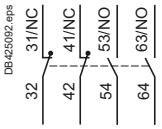

**1 N/O + 1 N/C**
**LADN11G**




**2 N/O + 2 N/C**
**LADN22P**

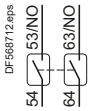



**2 N/O + 2 N/C**
**LADN22G**

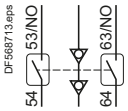



### Dust and damp protected instantaneous auxiliary contacts

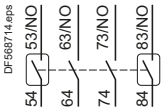
**2 N/O (24-50 V)**
**LA1DX20**



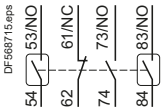

**2 N/O (5-24 V) with 2 earth terminals for screened cables**
**LA1DY20**




**2 N/O protected (24-50 V) + 2 N/O standard**
**LA1DZ40**

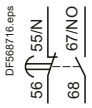



**2 N/O protected (24-50 V) + 1 N/O + 1 N/C standard**
**LA1DZ31**

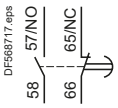



### Time delay auxiliary contacts

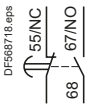
**On-delay 1 N/O +1 N/C LADT●**




**Off-delay 1 N/O + 1 N/C LAD R●**




**On-delay 1 N/C + 1 N/O break before make LAD S●**




Ref.

High power contactors

References:
pages B10/2 and B10/3

Characteristics:
pages B10/26 to B10/30

PB123835.eps

*LC1FG150*

PB123836.eps

*LC1FG265*

## Shockproof contactor specificity

In an environment subject to severe mechanical shocks, unwanted closing of a contactor's poles and the serious consequences of this, is not permissible.

Shockproof contactors **LC1FG150** to **FG630** are equipped with an auxiliary electromechanical device which ensures that the contactor is mechanically locked in the “open” position when it’s main electromagnet is not energised.

If the contactor is subjected to mechanical impact, from back to front or from front to back, accidental closing of the poles is then impossible.

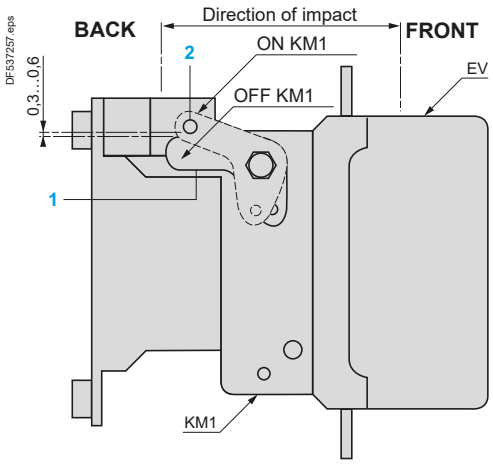
In addition, accidental opening of the poles (when the contactor is in the “on” position), is virtually impossible due to the significant pull-in force characteristic of these contactors.

## Applications

- **Marine:** on-board equipment, windlasses, capstans, winches, etc…
- **Military equipment:** land, sea, launching silos.
- **Heavy mechanical handling systems:** travelling cranes, cranes, gantries.
- **Conveying and handling:** lifts, hoists, conveyors.
- **Equipment for power stations.**
- **Distribution boards.**

## Description of shockproof device

Shockproof contactors **LC1FG●●●** are equipped with:
- a lever **1** that is rotated by the core of the contactor's electromagnet.
- an auxiliary electromagnet (EV) for the locking function.
- an RC circuit (Resistor-Capacitor) to limit overvoltage.

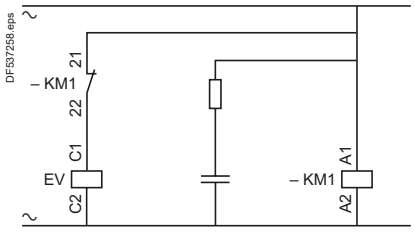



## Operation

- In the 'off' position (contactor open and not energised) the core **2** of the electromagnet (EV) locks the lever **1** and therefore the contactor.
- The coils (KM1) and (EV) are energised simultaneously, the core **2** releases the lever **1** and allows the contactor to close.
- De-energisation of the locking electromagnet (EV) is achieved by an auxiliary contact within the contactor.

The core **2** rests freely in lever **1**.
- On de-energisation of coil KM1, the moving contact drops out.

Core **2**, under spring pressure, once again locks lever **1**.




Ref.
High power contactors

References:
page B10/4
Dimensions, schemes:
pages B10/54 and B10/55

# Characteristics - Durability (AC)

## Use in category AC-3 (Ue ≤ 440 V)

### Operational current and power (θ ≤ 55 °C)

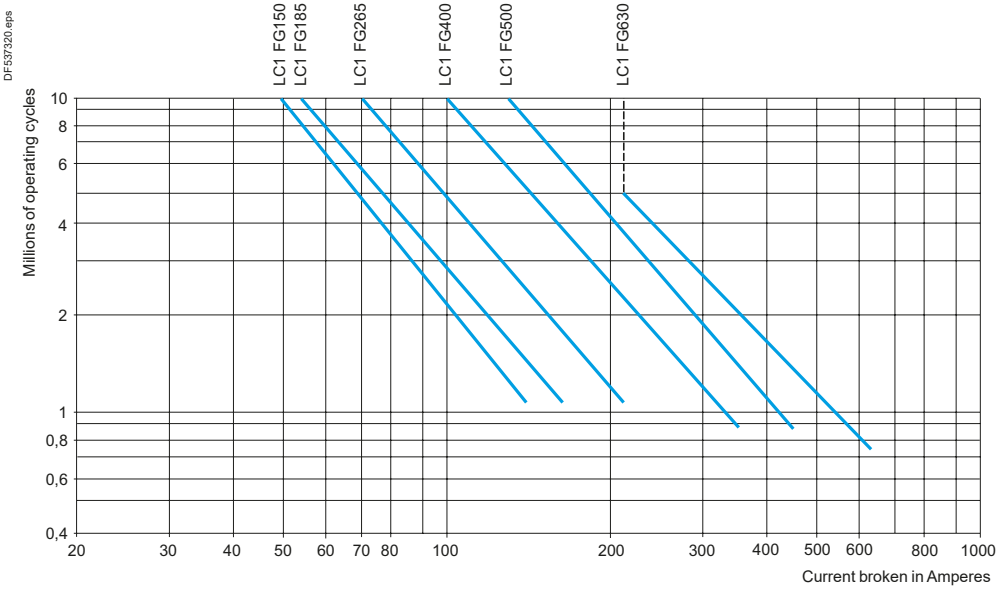
| Contactors | | | LC1FG150 | LC1FG185 | LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|---|---|---|---|---|
| Operational current | | **A** | 150 | 185 | 265 | 400 | 500 | 630 |
| Operational power Standard power ratings of motors) | 220/230 V | **kW** | 40 | 55 | 75 | 110 | 147 | 200 |
| | | *hp* | *54* | *75* | *100* | *150* | *200* | *270* |
| | 380/400 V | **kW** | 75 | 90 | 132 | 200 | 250 | 335 |
| | | *hp* | *100* | *185* | *180* | *270* | *340* | *450* |
| | 415 V | **kW** | 80 | 100 | 140 | 220 | 280 | 375 |
| | | *hp* | *110* | *136* | *180* | *300* | *380* | *500* |
| | 440 V | **kW** | 80 | 100 | 140 | 250 | 295 | 400 |
| | | *hp* | *110* | *136* | *190* | *340* | *400* | *545* |
| | 500 V | **kW** | 90 | 110 | 160 | 257 | 355 | 400 |
| | | *hp* | *125* | *150* | *220* | *350* | *480* | *545* |
| | 660/690 V | **kW** | 100 | 110 | 160 | 280 | 335 | 450 |
| | | *hp* | *136* | *150* | *220* | *380* | *450* | *600* |
| | 1000 V | **kW** | 65 | 100 | 147 | 185 | 335 | 450 |
| | | *hp* | *85* | *136* | *200* | *250* | *450* | *610* |

### Maximum operating rate (operating cycles/hour) (1)

| On-load factor | Operational power | LC1FG150 | LC1FG185 | LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|---|---|---|---|
| ≤ 85 % | P | 750 | 750 | 750 | 500 | 500 | 500 |
| ≤ 85 % | 0.5 P | 2000 | 2000 | 2000 | 1200 | 1200 | 1200 |
| ≤ 25 % | P | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 |

*(1) Depending on the operational power and the on-load factor (θ ≤ 55 °C).*

## Electrical durability in utilisation category AC-3 (Ue ≤ 440 V)




Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ie) in category AC-3 is equal to the rated operational current of the motor.
**Example:**
Asynchronous motor with P = 55 kW - Ue = 380 V - Ie = 105 A
4 million operating cycles required.
The above selection curves show the contactor rating needed: **LC1FG265**.

References:
page B10/4

Dimensions, schemes:
pages B10/54 and B10/55

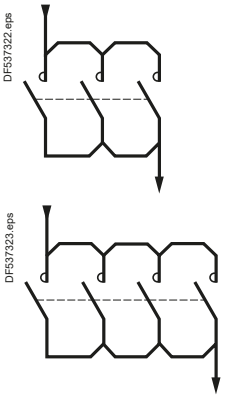
# Characteristics - Durability (AC)

## Use in category AC-1 (Ue ≤ 440 V)

| Contactors | | | | LC1FG150 | LC1FG185 | LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|---|---|---|---|---|---|
| Connection | Cable | C.s.a. | mm² | 120 | 150 | 240 | – | – | – |
| | Bar | Number | | – | – | – | 2 | 2 | 2 |
| | | C.s.a. | mm | – | – | – | 30 x 5 | 40 x 5 | 60 x 5 |
| Maximum operating rate in operating cycles/hour | | | | 600 | 600 | 600 | 600 | 600 | 600 |
| Operational current AC-1 | | ≤ 40 °C | A | 250 | 270 | 350 | 500 | 700 | 1000 |
| | | ≤ 55 °C | A | 220 | 240 | 300 | 430 | 580 | 850 |
| | | ≤ 70 °C (1) | A | 170 | 180 | 250 | 340 | 500 | 700 |

*(1) Only for operation with coil supplied at Uc.*

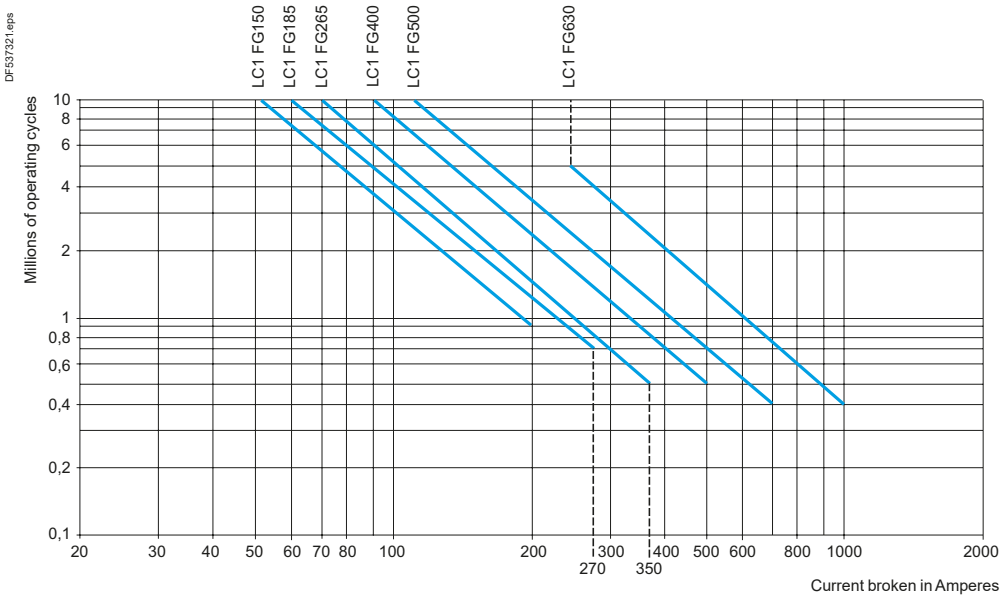
## Increase in operational current by parallel connection of poles




Apply the following multiplying factors to the current values given above.
The factors take into account the often unbalanced current distribution between the 2 poles:
- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8.

Recommended connection scheme to equalise the currents in each pole (see opposite).

## Electrical durability in utilisation category AC-1 (Ue ≤ 440 V)




**Example:**
Control of resistive circuits (cos φ ≥ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.
Ue = 220 V - Ic = Ie = 300 A - θ = 40 °C.
1 million operating cycles required.
The above selection curves show the contactor rating needed: **LC1FG400**.

References:
page B10/4

Dimensions, schemes:
pages B10/54 and B10/55

# Characteristics - Durability (AC)

## Thermal limits in utilisation categories AC-2/AC-4

| Contactors | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
|---|---|---|---|---|---|---|---|
| **Thermal limit zone** | **Operating cycles/hour (1) and on-load factor** | **Maximum current broken according to the duty requirements** (thermal limit, ambient temperature ⩽ 55 °C) | | | | | |
| A | From 150 and 15 % to 300 and 10 % | 310 | 380 | 560 | 780 | 1100 | 1400 |
| B | From 150 and 20 % to 600 and 10 % | 280 | 350 | 500 | 700 | 950 | 1250 |
| C | From 150 and 30 % to 1200 and 10 % | 240 | 300 | 400 | 600 | 750 | 950 |
| D | From 150 and 55 % to 2400 and 10 % | 190 | 240 | 320 | 450 | 600 | 720 |
| E | From 150 and 85 % to 3600 and 10 % | 145 | 170 | 230 | 350 | 500 | 660 |

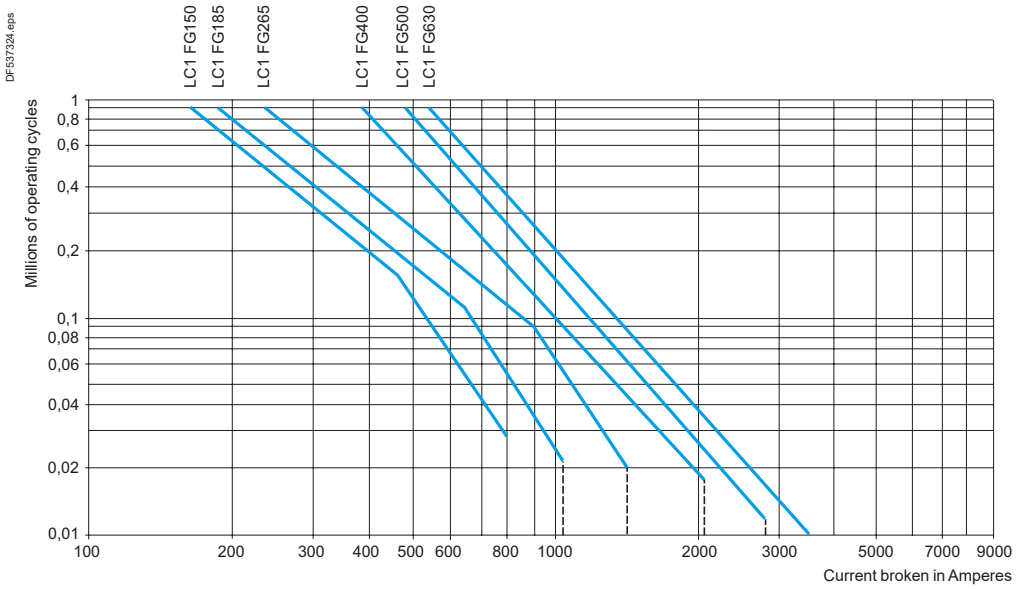
*(1) Do not exceed the maximum limit for the mechanical operating cycles.*

### Counter current braking (plugging)

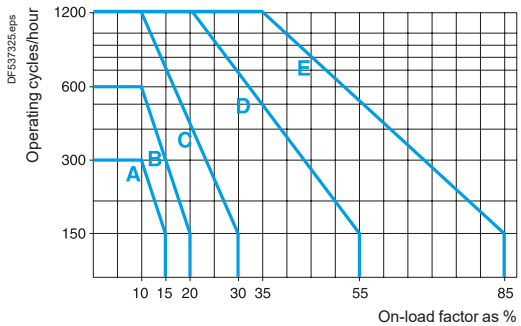
The current varies from the maximum plug-braking current to the rated motor current.
The current made must be compatible with the making and breaking capacities of the contactor.

In most cases, breaking occurs at a current value close to the locked rotor current and contactor selection can therefore be made using the criteria for utilisation categories AC-2 and AC-4.

## Electrical durability in utilisation categories AC-2/AC-4 (Ue ⩽ 440 V)




**Example: Contactor selection**




For an on-load factor of 10 % at 400 operating cycles per hour, the curve on the left indicates zone B. If the current broken is 600 A, the above table leads to selection of an **LC1FG400** contactor. Referring to the electrical durability curves, it can be seen that the contactor will be able to perform 350 000 operating cycles. Where a higher value of electrical durability is required, 1 million operating cycles for example, an **LC1FG630** contactor would be recommended.

Ref.
High power contactors

## Switching 3-phase capacitors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz).
The contactors are used for direct switching. The values of peak current at switch-on must not exceed the values indicated below.

An inductor or an early break resistor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. This must be done when switching multiple step capacitor banks.
Inductance values are determined according to the selected operating temperature: please refer to our “Motor starter solutions - Control and protection components” catalogue.

In addition, in accordance with standards IEC 60070, NF C 54 100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched. The rated operational powers given in table the below take this overload into account.

Short-circuit protection is normally provided by g1 fuses rated at 1.3 to 1.6 In.

## Maximum operational power of contactors

Maximum operating rate: 120 operating cycles/hour.
Electrical durability at maximum load: 100 000 operations.
With choke inductors connected, where necessary.

| Operational power at 50/60 Hz | | | | | | Maximum peak current | Contactor to be used |
|---|---|---|---|---|---|---|---|
| $\theta \leq 40$ °C | | | $\theta \leq 55$ °C | | | | |
| 220 V 240 V | 400 V 440 V | 600 V 660 V | 220 V 240 V | 400 V 440 V | 600 V 660 V | | |
| kvar | kvar | kvar | kvar | kvar | kvar | A | |
| 60 | 100 | 135 | 40 | 85 | 90 | 3200 | **LC1FG150** |
| 70 | 125 | 160 | 50 | 100 | 100 | 3500 | **LC1FG185** |
| 90 | 160 | 225 | 75 | 125 | 125 | 5000 | **LC1FG265** |
| 125 | 220 | 300 | 100 | 160 | 200 | 8000 | **LC1FG400** |
| 180 | 300 | 400 | 125 | 220 | 300 | 10 000 | **LC1FG500** |
| 250 | 400 | 600 | 190 | 350 | 500 | 12 000 | **LC1FG630** |

## Switching the primaries of 3-phase transformers (LV/LV)

When a transformer is switched on, there is generally an initial current surge which can reach 20 to 40 times the rated current for the power ratings shown below.
This current reaches its peak value almost instantaneously and then decreases in a largely exponential manner, quickly dropping back down to its steady state value.

## Contactor selection

Operating rate less than 120 operating cycles/hour.
Maximum operational voltages: 690/1000 V 50/60 Hz (2).
The value of the peak magnetising current must be lower than the values indicated below.
Maximum ambient temperature: 55 °C.

| Contactor | | | LC1FG150 | LC1FG185 | LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|---|---|---|---|---|
| Maximum permissible current peak at switch-on | | **A** | 1700 | 2800 | 3500 | 5500 | 6800 | 9000 |
| Maximum operational power (1) | 220 V | **kVA** | 25 | 40 | 50 | 75 | 100 | 140 |
| | 380 V | **kVA** | 50 | 75 | 90 | 130 | 170 | 225 |
| | 415/440 V | **kVA** | 55 | 80 | 100 | 140 | 190 | 250 |
| | 500 V | **kVA** | 65 | 95 | 110 | 170 | 225 | 280 |
| | 660 V | **kVA** | 80 | 120 | 140 | 200 | 270 | 315 |
| | 1000 V | **kVA** | 100 | 150 | 200 | 250 | 375 | 470 |

*(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.*
*(2) Refer to page B10/48 and B10/49 for details on operational voltage.*

References: page B10/4
Dimensions, schemes: pages B10/54 and B10/55

## Characteristics (DC)

### Use in category DC-1 (resistive loads; time constant L/R ⩽ 1 ms)

**Rated operational current Ie**

| Operational voltage (Ue) | Number of poles to be wired in series | Contactors | | | | | |
|---|---|---|---|---|---|---|---|
| | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
| V | | A | A | A | A | A | A |
| 24 | 1 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 2 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 3 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 4 | 160 | 220 | 300 | 400 | 600 | 850 |
| 48/75 | 1 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 2 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 3 | 160 | 220 | 300 | 400 | 600 | 850 |
| | 4 | 160 | 220 | 300 | 400 | 600 | 850 |
| 125 | 1 | – | – | – | – | – | – |
| | 2 | 130 | 170 | 300 | 400 | 550 | 850 |
| | 3 | 130 | 170 | 300 | 400 | 600 | 850 |
| | 4 | 130 | 170 | 300 | 400 | 600 | 850 |
| 225 | 1 | – | – | – | – | – | – |
| | 2 | 100 | 150 | 250 | 350 | 450 | 700 |
| | 3 | 130 | 170 | 300 | 400 | 600 | 850 |
| | 4 | 130 | 170 | 300 | 400 | 600 | 850 |
| 300 | 3 | 100 | 150 | 250 | 350 | 450 | 700 |
| | 4 | 130 | 170 | 300 | 400 | 600 | 850 |
| 460 | 4 | 100 | 150 | 250 | 350 | 450 | 700 |

### Use in category DC-2 to DC-5 (inductive loads; time constant L/R ⩽ 15 ms)

**Rated operational current Ie**

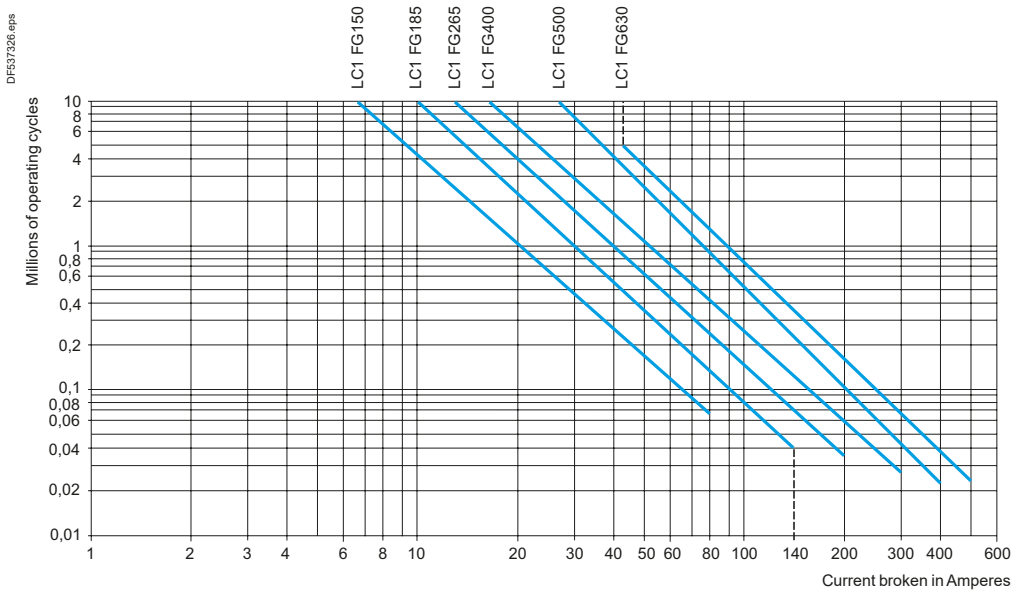
| Operational voltage (Ue) | Number of poles to be wired in series | Contactors | | | | | |
|---|---|---|---|---|---|---|---|
| | | LC1 FG150 | LC1 FG185 | LC1 FG265 | LC1 FG400 | LC1 FG500 | LC1 FG630 |
| V | | A | A | A | A | A | A |
| 24 | 1 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 2 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 3 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 4 | 140 | 180 | 280 | 350 | 550 | 850 |
| 48/75 | 1 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 2 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 3 | 140 | 180 | 280 | 350 | 550 | 850 |
| | 4 | 140 | 180 | 280 | 350 | 550 | 850 |
| 125 | 1 | – | – | – | – | – | – |
| | 2 | 100 | 140 | 250 | 350 | 550 | 850 |
| | 3 | 120 | 160 | 280 | 350 | 550 | 850 |
| | 4 | 120 | 160 | 280 | 350 | 550 | 850 |
| 225 | 1 | – | – | – | – | – | – |
| | 2 | 80 | 100 | 200 | 280 | 450 | 700 |
| | 3 | 100 | 140 | 250 | 350 | 550 | 850 |
| | 4 | 120 | 160 | 280 | 350 | 550 | 850 |
| 300 | 3 | 80 | 100 | 200 | 280 | 450 | 700 |
| | 4 | 120 | 160 | 280 | 350 | 550 | 850 |
| 460 | 4 | 80 | 100 | 200 | 280 | 450 | 700 |

Ref.
High power contactors

References: page B10/4
Dimensions, schemes: pages B10/54 and B10/55

## Electrical durability

**Utilisation categories DC-1 to DC-5**




## Determining the electrical durability

The electrical durability can be read directly from the curve above, having previously calculated the power broken Pc. The following table gives, for each utilisation category, the value of Pc according to the operational current Ie and the operational voltage Ue.

| **Utilisation categories** | | **Pc** (Power broken) |
|---|---|---|
| **DC-1** | Non-inductive loads | Pc = Ue x Ie |
| **DC-2** | Shunt motors, breaking whilst running | Pc = 0.1 Ue x Ie |
| **DC-3** | Shunt motors, reversing | Pc = Ue x 2.5 Ie |
| **DC-4** | Series wound motors, breaking whilst running | Pc = 0.3 Ue x Ie |
| **DC-5** | Series wound motors, reversing | Pc = Ue x 2.5 Ie |
| **Counter current braking (plugging)** | | Pc = 1.5 Ue x 1.5 Ie |

**Example:**
Series wound motor, breaking whilst motor running, category DC-4.
P = 50 kW, Ue = 200 V, Ie = 250 A.
Select contactor **LC1FG265** with 3 poles in series.
The power broken is: Pc = 0.3 Ue x Ie = 0.3 x 200 x 250 = 15 kW.
The electrical durability read from the curve is 8 million operating cycles.

## Maximum operating rate

The following operating rate used at Ie must not be exceeded: 120 operating cycles/hour.

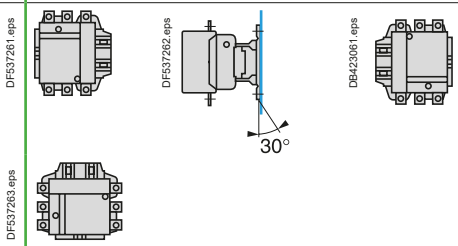
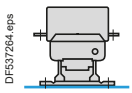
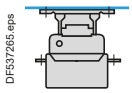
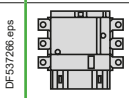
## Use of poles in parallel

The electrical durability is equal to the number of operating cycles performed by a pole, multiplied by the number of poles in parallel, multiplied by a coefficient of 0.70.

Ref.
High power contactors

## Characteristics

### Environment

| Contactor type | | | LC1FG150 | LC1FG185 |
|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 | **V** | 1000 | |
| Rated impulse withstand voltage (Uimp) | Coil not connected to the power circuit | **kV** | 8 | |
| Conforming to standards | | | IEC/EN 60947-4-1 | |
| Product certifications | | | N.A.T.O. | |
| Degree of protection | Conforming to IEC 60529 | | IP 20 front face with shrouds LA9F | |
| Ambient air temperature around the device | Storage | **°C** | -60…+80 | |
| | Operation | **°C** | -5…+55 | |
| | Permissible at Uc (1) | **°C** | -40…+70 | |
| Maximum operating altitude | Without derating | **m** | 3000 | |
| Operating positions | Without derating | |   | |
| | With derating (3) | | **Fixing A**   **Fixing B**   | |
| | Not to be used | |   | |
| Shock resistance (2) Conforming to IEC/EN 60068-2-27 | | | 12 g, 50 ms on the three axes: X, Y, Z | |
| | | | 15 g, 11 ms on the three axes: X, Y, Z | |

*(1) In these conditions, it is recommended that coils LX9F be used for contactor sizes **FG150** to **FG265**.*
*(2) In the least favourable direction, without change of contact state (coil at Uc).*
*(3) Horizontal fixing:*
*- the operational current AC-1 is equivalent to 80 % of the value indicated in the catalogue*
*- breaking and making capacities not guaranteed*
*- mechanical and electrical durabilities not guaranteed.*

### Derating of pull-in and drop-out voltage

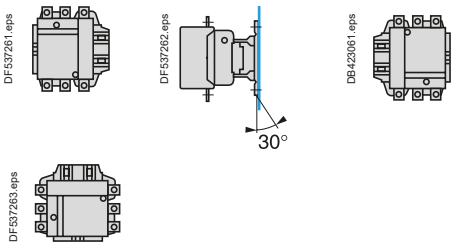
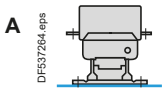
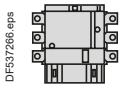
| Contactors LC1 | | FG150 | FG185 | FG265 | FG400 | FG500 | FG630 |
|---|---|---|---|---|---|---|---|
| Fixing A | Pull-in | 75 % | 75 % | 75 % | 80 % | 80 % | 80 % |
| | Drop-out | 105 % | 105 % | 105 % | 110 % | 110 % | 110 % |
| Fixing B | Pull-in | 115 % | 115 % | 115 % | 120 % | 120 % | 120 % |
| | Drop-out | 90 % | 90 % | 90 % | 95 % | 95 % | 95 % |

Ref.
High power contactors

References: page B10/4
Dimensions, schemes: pages B10/54 and B10/55


Life Is On Schneider Electric

## Characteristics

| LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|
| 1000 | | | |
| 8 | | | |
| IEC/EN 60947-4-1 | | | |
| N.A.T.O. | | | |
| IP 20 front face with shrouds LA9F | | | |
| -60…+80 | | | |
| -5…+55 | | | |
| -40…+70 | | | |
| 3000 | | | |
|  | | | |
|  | | | |
|  | | | |
| 12 g, 50 ms on the three axes: X, Y, Z | | | |
| 15 g, 11 ms on the three axes: X, Y, Z | | | |

## Characteristics

### Pole characteristics

| Contactor type | | | | LC1FG150 | LC1FG185 |
|---|---|---|---|---|---|
| Number of poles | | | | 3 | 3 |
| Rated operational current (Ie) (Ue ≤ 440 V) | In AC-3, θ ≤ 55 °C | θ ≤ 70 °C | A | 150/150 | 185/180 |
| | In AC-1, θ ≤ 55 °C | θ ≤ 70 °C | A | 220/170 | 240/180 |
| Rated operational voltage (Ue) | Up to | | V | 690 | 690 |
| Frequency limits | Of the operational current (1) | | Hz | 25 to 200 | 25 to 200 |
| Conventional thermal current | θ ≤ 40 | | °C | 250 | 275 |
| Rated making capacity | I rms conforming to IEC 60947-4-1 | | A | Making current: 10 x I in AC-3 | |
| Rated breaking capacity | I rms conforming to IEC 60947-4-1 | | A | Making and breaking current: 8 x I in cat. AC-3 | |
| Permissible short time rating No current flowing for preceding 60 minutes with θ ≤ 40 °C | For 1.5 or 10 s | | A | 1200 | 1500 |
| | For 30 s | | A | 700 | 920 |
| | For 1 mn | | A | 600 | 740 |
| | For 3 mn | | A | 450 | 500 |
| | For 10 mn | | A | 350 | 400 |
| Fuse protection against short-circuits (U ≤ 440 V) | Motor circuit (type aM) | | A | 160 | 200 |
| | With thermal overload relay (type gG) | | A | 200 | 315 |
| | gG fuses | | A | 250 | 315 |
| Average impedance per pole | At Ith and 50 Hz | | mΩ | 0.35 | 0.33 |
| Power dissipation per pole for the above operational currents | AC-3 | | W | 8 | 12 |
| | AC-1 | | W | 22 | 25 |
| Cabling Minimum c.s.a. | Bar | No. of bars | | 2 | 2 |
| | | Bar | mm | 25 x 3 | 25 x 3 |
| | Cable with lug | | mm² | 120 | 150 |
| | Cable with connector | | mm² | 120 | 150 |
| | Bolt diameter | | mm | Ø8 | Ø8 |
| Tightening torque | Power circuit connections | | N.m | 18 | 18 |

*(1) Sine wave without interference. Above these values, please consult your Regional Sales Office.*
*(2) Ue ≤ 690 V in AC-3; Ue ≤ 1000 V in AC-1.*

Ref.
High power contactors

References: page B10/4
Dimensions, schemes: pages B10/54 and B10/55

## Characteristics

| LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|
| 3 | 3 | 3 | 3 |
| 265/250 | 400/340 | 500/500 | 630/630 |
| 300/250 | 430/340 | 580/500 | 850/700 |
| 1000 (2) | 1000 | 1000 (2) | 1000 |
| 25 to 200 | 25 to 200 | 25 to 200 | 25 to 200 |
| 350 | 500 | 700 | 1000 |
| Making current: 10 x I in AC-3 | | | |
| Making and breaking current: 8 x I in AC-3 | | | |
| 2200 | 3600 | 4200 | 5050 |
| 1230 | 2400 | 3200 | 4400 |
| 950 | 1700 | 2400 | 3400 |
| 620 | 1200 | 1500 | 2200 |
| 480 | 1000 | 1200 | 1600 |
| 315 | 400 | 500 | 630 |
| 500 | 630 | 800 | 800 |
| 400 | 500 | 800 | 1000 |
| 0.3 | 0.26 | 0.18 | 0.12 |
| 21 | 42 | 45 | 48 |
| 37 | 65 | 88 | 120 |
| 2 | 2 | 2 | 2 |
| 32 x 4 | 30 x 5 | 40 x 5 | 60 x 5 |
| 240 | 2 x 150 | 2 x 240 | – |
| 240 | – | – | – |
| Ø10 | Ø10 | Ø10 | Ø12 |
| 35 | 35 | 35 | 58 |

# Characteristics

## a.c. control circuit characteristics with LX1 coil

| Contactor type | | | | | LC1FG150 | LC1FG185 |
|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | | 50 or 60 Hz | | V | 48…440 | |
| Control voltage limits (θ ≤ 55 °C) | 40…400 Hz coils | Operation | | | 0.85...1.1 Uc | |
| | | Drop-out | | | 0.20...0.55 Uc | |
| Average consumption at 20 °C and at Uc | ∼ 50 Hz | Inrush | 40…400 Hz coil | VA | 690...855 | 950...1180 |
| | | | Cos φ | | 0.9 | 0.9 |
| | | Sealed | 40…400 Hz coil | VA | 6.6...8.1 | 8.9...10.9 |
| | | | Cos φ | | 0.9 | 0.9 |
| Heat dissipation | | | | W | 5.9...7.2 | 8...9.8 |
| Operating time [1] | | Closing "C" | | ms | 35 | 35 |
| | | Opening "O" | | ms | 130 | 130 |
| Mechanical durability at Uc | | In millions of operating cycles | | | 10 | 10 |
| Maximum operating rate at ambient temperature ≤ 55 °C | | In operating cycles per hour | | | 2400 | 2400 |
| Cabling Min/max c.s.a. | Flexible cable without cable end | | 1 or 2 conductors | $mm^2$ | 1/4 | 1/4 |
| | Flexible cable with cable end | | 1 conductor | $mm^2$ | 1/4 | 1/4 |
| | | | 2 conductors | $mm^2$ | 1/2.5 | 1/2.5 |
| | Solid cable without cable end | | 1 or 2 conductors | $mm^2$ | 1/4 | 1/4 |
| Tightening torque | | | | N.m | 1.2 | 1.2 |

## Characteristics of the locking electromagnet (shockproof device)

| Contactor type | | LC1FG150 | LC1FG185 |
|---|---|---|---|
| Control circuit voltage 40...400 Hz | V | 48…440 | 48…440 |
| Inrush consumption | VA | 100 | 100 |
| Maximum energisation time at Uc | ms | 20 | 20 |
| Maximum operating rate | In operating cycles per hour | 2400 | 2400 |
| Mechanical durability at Uc | In millions of operating cycles | $1 \times 10^6$ | $1 \times 10^6$ |

*(1) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.*
*The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

Ref.
High power contactors

References: page B10/4
Dimensions, schemes: pages B10/54 and B10/55

## Characteristics

| LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|
| 48…440 | 110…440 | 110…440 | 110…440 |
| 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc | 0.85…1.1 Uc |
| 0.35…0.55 Uc | 0.3…0.5 Uc | 0.3…0.5 Uc | 0.25…0.5 Uc |
| 650 | 1075 | 1100 | 1650 |
| 0.9 | 0.9 | 0.9 | 0.9 |
| 10 | 15 | 18 | 22 |
| 0.9 | 0.9 | 0.9 | 0.9 |
| 8 | 14 | 18 | 20 |
| 40…65 | 40…75 | 40…75 | 40…80 |
| 100…170 | 100…170 | 100…170 | 100…200 |
| 10 | 10 | 10 | 10 |
| 2400 | 2400 | 2400 | 1200 |
| 1/4 | 1/4 | 1/4 | 1/4 |
| 1/4 | 1/4 | 1/4 | 1/4 |
| 1/2.5 | 1/2.5 | 1/2.5 | 1/2.5 |
| 1/4 | 1/4 | 1/4 | 1/4 |
| 1.2 | 1.2 | 1.2 | 1.2 |

| LC1FG265 | LC1FG400 | LC1FG500 | LC1FG630 |
|---|---|---|---|
| 48…440 | 110…440 | 110…440 | 110…440 |
| 100 | 100 | 100 | 100 |
| 20 | 20 | 20 | 20 |
| 2400 | 2400 | 2400 | 1200 |
| $1 \times 10^6$ | $1 \times 10^6$ | $1 \times 10^6$ | $1 \times 10^6$ |

## Characteristics

| Environment | | | | | |
|---|---|---|---|---|---|
| **Contact block type** | | | **LADN** | **LADT and LADS** | **LADR** |
| Conforming to standards | | | IEC 60947-5-1, EN 60947-5-1 | | |
| Product certifications | | | UL, CSA | | |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact IP2X | | |
| Ambient air temperature around the device | Storage | **°C** | -60…+80 | | |
| | Operation | **°C** | -5…+60 | | |
| | Permissible for operation at Uc | **°C** | -40…+70 | | |
| Maximum operating altitude | Without derating | **m** | 3000 | | |
| Cabling | Phillips n° 2 and Ø6 mm. Flexible or solid cable with or without cable end | **mm²** | Min: 1 x 1; max: 2 x 2.5 | | |



References:
page B10/15

Dimensions and schemes:
page B10/55



Life Is On Schneider Electric

## Characteristics

### Instantaneous and time delay contact characteristics

| Contact block type | | | | LADN | LADT and LADS | LADR |
|---|---|---|---|---|---|---|
| Number of contacts | | | | 1 or 4 | 2 | 2 |
| Rated operational voltage (Ue) | Up to | | V | 660 | | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 | | V | 690 | | |
| | Conforming to UL, CSA | | V | 600 | | |
| Conventional thermal current (Ith) | For ambient temperature ≤ 60 °C | | A | 10 | | |
| Frequency of the operational current | | | Hz | 25…400 | | |
| Minimum switching capacity | U min | | V | 17 | | |
| | I min | | mA | 5 | | |
| Short-circuit protection | Conforming to IEC 60947-5-1 and VDE 0660. gG fuse | | A | 10 | | |
| Rated making capacity | Conforming to IEC 60947-5-1, I rms | | A | ∼ 140; ⎓ 250 | | |
| Short-time rating | Permissible for | 1 s | A | 100 | | |
| | | 500 ms | A | 120 | | |
| | | 100 ms | A | 140 | | |
| Insulation resistance | | | MΩ | > 10 | | |
| Non-overlap time | Guaranteed between N/C and N/O contacts | | ms | 1.5 (on energisation and on de-energisation) | | |
| Time delay (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the front face | Ambient air temperature for operation | | °C | – | -40…+70 | -40…+70 |
| | Repeat accuracy | | | – | ±2 % | ±2 % |
| | Drift up to 0.5 million operating cycles | | | – | +15 % | +15 % |
| | Drift depending on ambient air temperature | | | – | 0.25 % per °C | 0.25 % per °C |
| Mechanical durability | In millions of operating cycles | | | 30 | 5 | 5 |

| Rated operational power of contacts Conforming to IEC 60947-5-1 | | | 24 | 48 | 110/127 | 220/230 | 380/400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|---|
| | 1 million operating cycles | VA | 150 | 300 | 400 | 480 | 500 | 500 | 500 |
| | 3 million operating cycles | VA | 80 | 170 | 250 | 290 | 320 | 320 | 320 |
| | 10 million operating cycles | VA | 30 | 65 | 90 | 120 | 130 | 130 | 130 |
| | Occasional making capacity | VA | 1200 | 2600 | 7000 | 13 000 | 15 000 | 13 000 | 9000 |

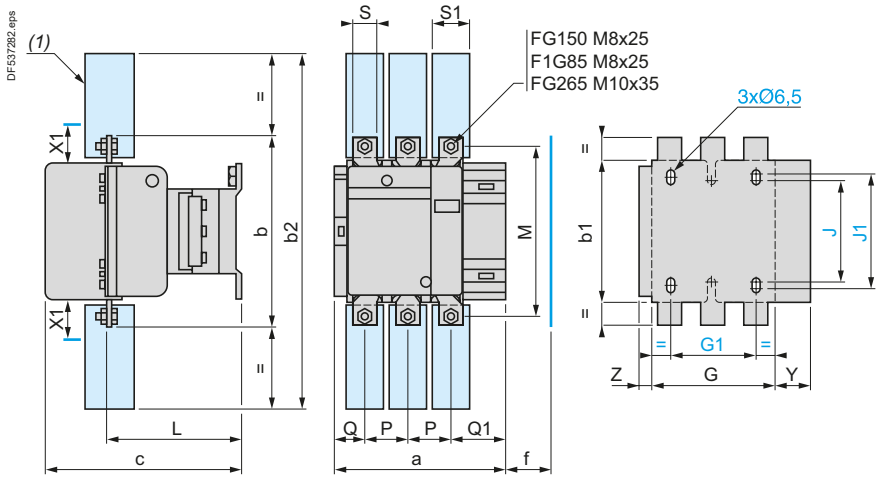
Ref.
High power contactors

References: page B10/15
Dimensions and schemes: page B10/55

# Dimensions

## Dimensions

### LC1FG150, FG185 and FG265




X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

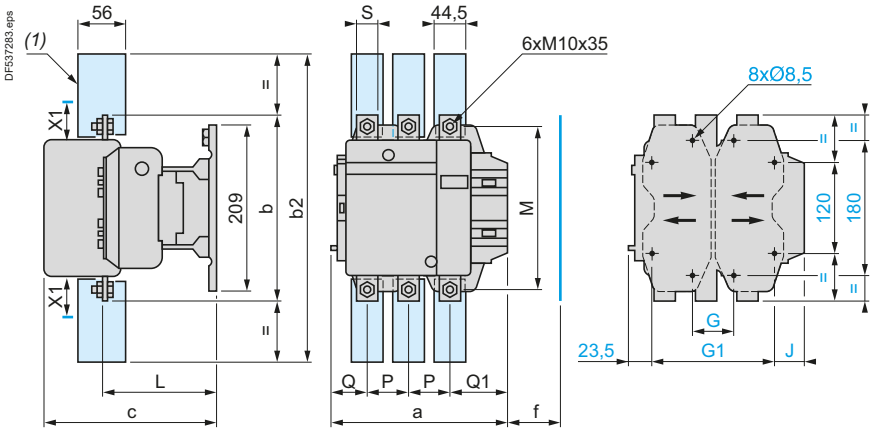
| LC1 | 200…500 V | 600…1000 V |
|---|---|---|
| FG150 | 10 | 15 |
| FG185 | 10 | 15 |
| FG265 | 10 | 15 |

*(1) Power terminal protection shroud (see page B10/10).*

| LC1 | a | b | b1 | b2 | c | f | G | G1 | J | J1 | L | M | P | Q | Q1 | S | S1 | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FG150 | 181 | 170 | 137 | 301 | 180 | 131 | 106 | 80 | 106 | 120 | 116 | 150 | 40 | 26 | 57.5 | 20 | 34 | 44 | 13.5 |
| FG185 | 183.5 | 174 | 137 | 305 | 190 | 130 | 111 | 80 | 106 | 120 | 122.5 | 154 | 40 | 29 | 59.5 | 20 | 34 | 44 | 13.5 |
| FG265 | 217.5 | 203 | 145 | 375 | 222 | 147 | 142 | 96 | 106 | 120 | 150 | 178 | 48 | 39 | 66.5 | 25 | 44.5 | 38 | 21.5 |

f = minimum distance required for coil removal.

### LC1FG400 and FG500




X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 600…1000 V |
|---|---|---|
| FG400 | 15 | 20 |
| FG500 | 15 | 20 |

*(1) Power terminal protection shroud (see page B10/10).*

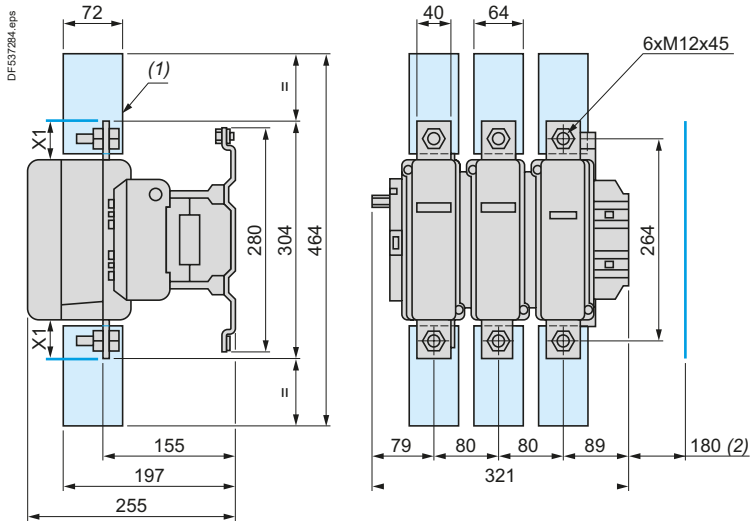
| LC1 | a | b | b2 | c | f | G supplied | G min. | G max. | G1 supplied | G1 min. | G1 max. | J | L | M | P | Q | Q1 | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FG400 | 237 | 206 | 375 | 234 | 146 | 80 | 66 | 102 | 223 | 156 | 192 | 19.5 | 160 | 181 | 48 | 75 | 74 | 25 |
| FG500 | 257 | 238 | 400 | 247 | 150 | 80 | 66 | 120 | 223 | 156 | 210 | 39.5 | 181 | 208 | 55 | 78 | 77 | 30 |

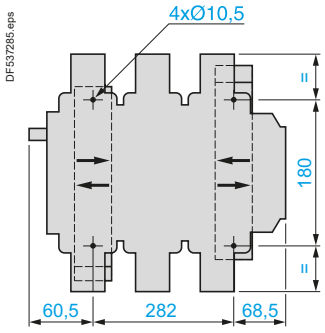
f = minimum distance required for coil removal.

Ref.
High power contactors

## Dimensions

### LC1FG630



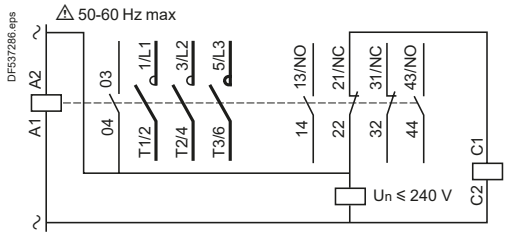

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

| LC1 | 200…500 V | 690…1000 V |
|---|---|---|
| FG630 | 20 | 30 |

*(1) Power terminal protection shroud (see page B10/10).*
*(2) Minimum distance required for coil removal.*

## Schemes

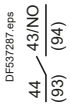
### Contactors LC1-FG150 to FG630



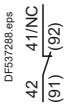

### Add-on blocks

#### Instantaneous auxiliary contacts

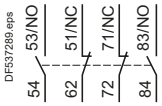
**1 N/O LADN10**



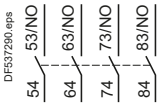

**1 N/C LADN01**



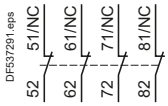

**2 N/O + 2 N/C LADN22**



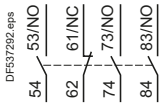

**4 N/O LADN40**




**4 N/C LADN04**

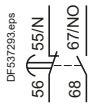



**3 N/O + 1 N/C LADN31**

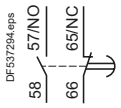



#### Time delay auxiliary contacts

**On-delay 1 N/O + 1 N/C LADT●**

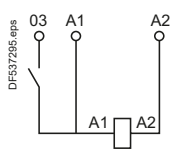



**Off-delay 1 N/O + 1 N/C LADR●**




### Coils ∿

**LX1FH, FJ, FK and FL**




References:
pages B10/4, B10/16 and B10/17
Characteristics:
pages B10/38 to B10/53

PB108370.eps

*CR1F500*

## Magnetic latching contactors

Magnetic latching contactors of both block and bar mounted types are fitted with a special electromagnet which enables them to remain in the “On” position when the coil is no longer energised.

### Applications

The special properties of magnetic latching contactors make them suitable for a large number of applications.

**Properties**

- Retention of the sequence memory in automatic control equipment in the event of loss of control voltage.
- Energy saving, since the source of supply to the coil does not need to supply current when the contactor is latched in the closed state.
- Change of state from “Closed” to “Open” by current signal through the coil.
- Unaffected by mains interference.
- Utilisation of contactors beyond their breaking capacity, as operations are performed off-load.
- Contactors are silent in the latched position.

**Applications**

- Refineries, power stations, excitation circuits.
- Contactors remaining in the closed state for long periods.

Examples: refineries, power supplies, low voltage distribution.

- Selective opening control.
- No unwanted opening and closing of the main power poles.
- Current carrying at voltages up to 1000 Volts.

### Operation of the electromagnet

**CR1F block contactors**

CR1F magnetic latching contactors are fitted with a double coil with 3 terminals comprising a latching winding and an unlatching winding. The 2 windings have a common point which can necessitate special wiring precautions when the latching supply is separate from the unlatching supply.

The power supplies may be a.c. or d.c. For d.c. operation, the polarities indicated must be complied with.

Operating precautions:

- the 2 windings must not be supplied simultaneously
- a winding must not be supplied continuously
- supply to the coils must be via pulsed contacts.

Manual opening:
if the control voltage is not present, the contactor can be unlatched manually.

Latching is obtained by direct supply of the coil in one direction of current flow.

Unlatching is obtained by a reverse current, adjusted by resistors.

Ref.

High power contactors

References:
pages B10/5, B10/16 to B10/21

Dimensions:
pages B10/66 to B10/69



Life Is On Schneider Electric

# Characteristics - Squirrel cage motor

## CR1F selection - Squirrel cage motor Direct On Line starter

### Continuous or intermittent duty up to 30 operating cycles/hour

| Motor (1) 220 V 230 V | | | 380 V 400 V | | | 415 V | | | 440 V | | | 3-pole contactor | 3-pole differential thermal overload relay | | 3 fuses Type | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | (2) | Reference | Setting range | aM | BS-88 |
| P | | In | P | | In | P | | In | P | | In | Reference | | | Rating | |
| kW | *HP* | A | kW | *HP* | A | kW | *HP* | A | kW | *HP* | A | | | A | A | A |
| **25** | *35* | 85 | **–** | – | – | **–** | – | – | **–** | – | – | **CR1F150** | **LR9F5367** | 60…100 | 100 | 125 |
| **30** | *40* | 103 | **51** | *70* | 98 | **55** | *75* | 100 | **59** | 80 | 97 | **CR1F150** | **LR9F5369** | 90…150 | 100 | 160 |
| **33** | *45* | 113 | **55** | *75* | 105 | **–** | – | – | | | | | | | | |
| **–** | – | – | **59** | *80* | 112 | **59** | *80* | 105 | **63** | *85* | 109 | **CR1F150** | **LR9F5369** | 90…150 | 125 | 160 |
| **–** | – | – | **63** | *85* | 117 | **63** | *85* | 115 | **–** | – | – | | | | | |
| **37** | *50* | 126 | **75** | *100* | 138 | **75** | *100* | 135 | **75** | *100* | 125 | **CR1F150** | **LR9F5369** | 90…150 | 160 | 200 |
| **40** | *54* | 134 | **–** | – | – | **–** | – | – | **80** | *110* | 131 | | | | | |
| **45** | *60* | 150 | **80** | *110* | 147 | **80** | *110* | 138 | **90** | *125* | 146 | **CR1F185** | **LR9F5369** | 90…150 | 160 | 200 |
| **51** | *70* | 170 | **90** | *125* | 170 | **90** | *125* | 165 | **100** | *136* | 162 | **CR1F185** | **LR9F5371** | 132…220 | 200 | 250 |
| **55** | *75* | 182 | **–** | – | – | **100** | *136* | 182 | **–** | – | – | | | | | |
| **59** | *80* | 195 | **100** | *138* | 188 | **110** | *150* | 200 | **110** | *150* | 178 | **CR1F265** | **LR9F5371** | 132…220 | 250 | 315 |
| **63** | *85* | 203 | **110** | *150* | 205 | **–** | – | – | **129** | *175* | 209 | | | | | |
| **75** | *100* | 240 | **129** | *175* | 242 | **129** | *175* | 230 | **132** | *180* | 215 | **CR1F265** | **LR9F7375** | 200…330 | 250 | 315 |
| **–** | – | – | **132** | *180* | 245 | **132** | *180* | 240 | **–** | – | – | | | | | |
| **–** | – | – | **–** | – | – | **140** | *190* | 250 | **140** | *190* | 227 | **CR1F265** | **LR9F7375** | 200…330 | 315 | 400 |
| **80** | *110* | 260 | **140** | *190* | 260 | **147** | *200* | 260 | **147** | *200* | 236 | **CR1F400** | **LR9F7375** | 200…330 | 315 | 400 |
| **–** | – | – | **147** | *200* | 273 | **150** | *205* | 270 | **150** | *205* | 246 | | | | | |
| **–** | – | – | **150** | *205* | 280 | **160** | *220* | 280 | **160** | *220* | 256 | | | | | |
| **90** | *125* | 295 | **160** | *220* | 300 | **–** | – | – | **180** | *245* | 289 | **CR1F400** | **LR9F7375** | 200…330 | 315 | 400 |
| **–** | – | – | **–** | – | – | | | | **185** | *250* | 295 | | | | | |
| **100** | *136* | 325 | **180** | *245* | 333 | **180** | *245* | 320 | **200** | *270* | 321 | **CR1F400** | **LR9F7379** | 300…500 | 400 | 500 |
| **110** | *150* | 356 | **185** | *250* | 342 | **185** | *250* | 325 | **220** | *300* | 353 | | | | | |
| **–** | – | – | **200** | *270* | 370 | **200** | *270* | 340 | **250** | *340* | 401 | **CR1F400** | **LR9F7379** | 300…500 | 400 | 500 |
| | | | | | | **220** | *300* | 385 | **–** | – | – | | | | | |
| **129** | *175* | 420 | **220** | *300* | 408 | **–** | – | – | **257** | *350* | 412 | **CR1F500** | **LR9F7379** | 300…500 | 500 | 630 |
| **132** | *180* | 425 | **250** | *340* | 460 | **250** | *340* | 425 | **280** | *380* | 450 | **CR1F500** | **LR9F7381** | 380…630 | 500 | 630 |
| **140** | *190* | 450 | **–** | – | – | **257** | *350* | 450 | **–** | – | – | | | | | |
| **147** | *200* | 472 | **–** | – | – | **–** | – | – | **295** | *400* | 473 | **CR1F500** | **LR9F7381** | 380…630 | 500 | 630 |
| **–** | – | – | **257** | *350* | 475 | **280** | *380* | 475 | **300** | *410* | 481 | **CR1F630** | **LR9F7381** | 380…630 | 500 | 630 |
| | | | **–** | – | – | **295** | *400* | 500 | **–** | – | – | | | | | |
| **150** | *205* | 483 | **280** | *380* | 510 | **300** | *410* | 510 | **315** | *430* | 505 | **CR1F630** | **LR9F7381** | 380…630 | 630 | 800 |
| **160** | *220* | 520 | **295** | *400* | 546 | **315** | *430* | 535 | **335** | *450* | 518 | | | | | |
| **180** | *245* | 578 | **300** | *410* | 565 | **335** | *450* | 550 | **355** | *480* | 549 | **CR1F630** | **LR9F7381** | 380…630 | 630 | 800 |
| **185** | *250* | 595 | **315** | *430* | 584 | **355** | *480* | 580 | **375** | *500* | 575 | | | | | |
| **200** | *270* | 626 | **335** | *450* | 620 | **375** | *500* | 610 | **400** | *454* | 611 | **CR1F630** | **LR9F7381** | 380…630 | 800 | 1000 |
| **220** | ★ | 700 | **355** | ★ | 635 | **400** | ★ | 650 | **425** | ★ | 650 | **CR1BL33** | | 500…800 | 800 | 1000 |
| | | | **375** | ★ | 670 | **425** | ★ | 690 | **445** | ★ | 680 | | | | | |
| | | | **400** | ★ | 710 | **445** | ★ | 730 | **450** | ★ | 690 | | | | | |
| | | | **–** | | – | **450** | ★ | 740 | **475** | ★ | 730 | | | | | |
| **250** | ★ | 800 | **425** | ★ | 760 | **475** | ★ | 780 | **500** | ★ | 780 | **CR1BM33** | | 500…800 | 800 | 1000 |
| **257** | ★ | 826 | **445** | ★ | 790 | **500** | ★ | 820 | **530** | ★ | 825 | **CR1BM33** | | 630…1000 | 1000 | 1250 |
| **280** | ★ | 900 | **450** | ★ | 800 | **530** | ★ | 870 | **560** | ★ | 870 | | | | | |
| **295** | ★ | 948 | **475** | ★ | 850 | **560** | ★ | 920 | **600** | ★ | 920 | | | | | |
| **300** | ★ | 980 | **500** | ★ | 900 | **600** | ★ | 978 | **630** | ★ | 965 | | | | | |
| **315** | ★ | 990 | **530** | ★ | 950 | | | | | | | | | | | |

*(1) The ratings are for standard 220/230 V, 380/400 V, 415 or 440 V motors. The overload relays should preferably be set to the motor full-load current shown on the motor rating plate. For other power ratings, select the overload relay with the appropriate range; the associated contactor and fuses must have ratings equal to or immediately greater than In.*

*(2) Reference to be completed, see page B10/47.*

★ There are no standard power ratings for these motors.

References:
pages B10/5, B10/16 to B10/21

Dimensions:
pages B10/66 to B10/69

## Characteristics - AC

| Rated operational current in AC-3 (θ ≤ 55 °C) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Contactor size** | | **CR1F 150** | **CR1 F185** | **CR1F 265** | **CR1F 400** | **CR1 F500** | **CR1F 630** | **CR1 BL** | **CR1 BM** | **CR1 BP** | **CR1 BR** |
| 440 V | **A** | 150 | 185 | 265 | 400 | 500 | 630 | 750 | 1000 | 1500 | 1800 |
| 500 V | **A** | 135 | 175 | 245 | 385 | 500 | 540 | 750 | 900 | 1200 | 1500 |
| 660/690 V | **A** | 130 | 140 | 230 | 365 | 435 | 470 | 700 | 800 | 900 | 1100 |
| 1000 V | **A** | 47 | 73 | 95 | 135 | 270 | 330 | 400 | 400 | 500 | 600 |
| **Rated operational power** (standard motor power ratings) | | | | | | | | | | | |
| 220…240 V | **kW** | 40 | 55 | 75 | 110 | 147 | 200 | 220 | 280 | 425 | 500 |
| | ***HP*** | *54* | *75* | *100* | *150* | *200* | *270* | *300* | *380* | *580* | *680* |
| 380…400 V | **kW** | 75 | 90 | 132 | 200 | 250 | 335 | 400 | 500 | 750 | 900 |
| | ***HP*** | *100* | *185* | *180* | *270* | *340* | *450* | *545* | *680* | *1000* | *1220* |
| 415 V | **kW** | 80 | 100 | 140 | 220 | 280 | 375 | 425 | 530 | 800 | 900 |
| | ***HP*** | *110* | *136* | *180* | *300* | *380* | *500* | *580* | *720* | *1100* | *1220* |
| 440 V | **kW** | 80 | 100 | 140 | 250 | 295 | 400 | 450 | 560 | 800 | 900 |
| | ***HP*** | *110* | *136* | *190* | *340* | *400* | *545* | *610* | *760* | *1100* | *1220* |
| 500 V | **kW** | 90 | 110 | 160 | 257 | 355 | 400 | 500 | 600 | 750 | 900 |
| | ***HP*** | *125* | *150* | *220* | *350* | *480* | *545* | *680* | *810* | *1000* | *1220* |
| 660/690 V | **kW** | 100 | 110 | 160 | 280 | 335 | 450 | 560 | 670 | 750 | 900 |
| | ***HP*** | – | – | – | – | – | *610* | *760* | *910* | *1000* | *1220* |
| 1000 V | **kW** | 65 | 100 | 147 | 185 | 335 | 450 | 530 | 530 | 670 | 750 |
| | ***HP*** | – | *136* | *200* | *250* | – | *610* | *720* | *720* | *910* | *1000* |

Maximum operating rate in operating cycles/hour, at rated operational power with an on-load factor = 85 %: 750 for CR1F150 to F265, 500 for CR1F400 to F630 and 120 for CR1 B.

Ref.

High power contactors

References:
pages B10/5, B10/16 to B10/21

Dimensions:
pages B10/66 to B10/69

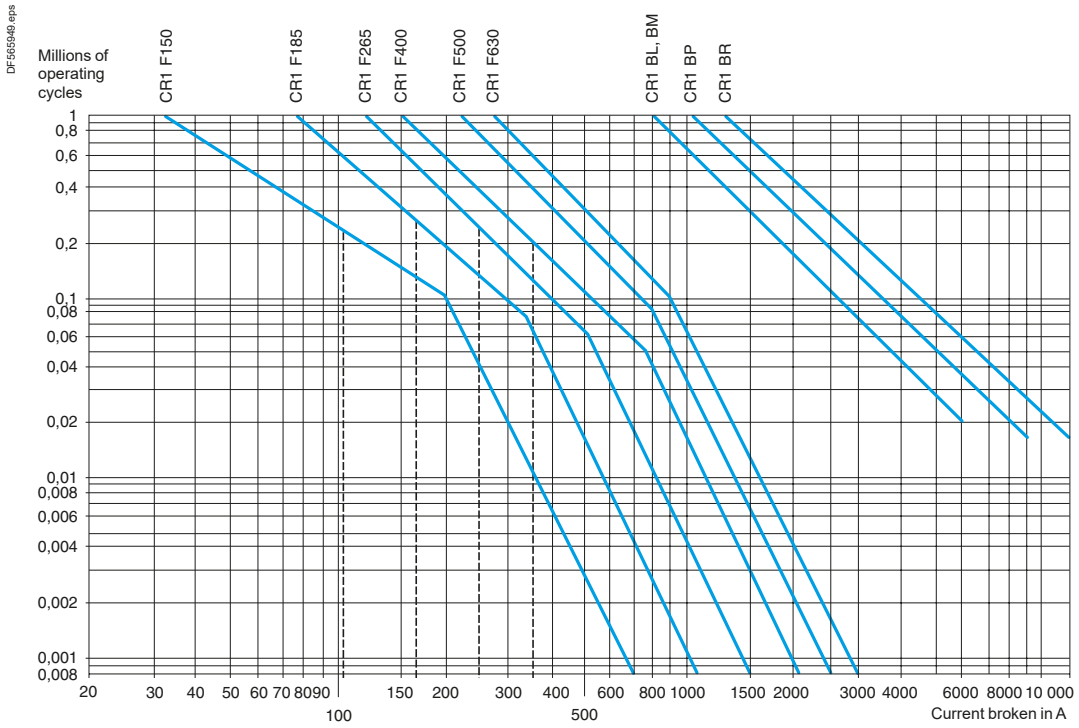


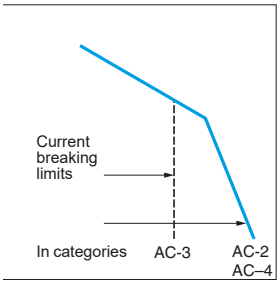
Life Is On Schneider Electric

# Characteristics - Durability (AC)

## Use in category AC-3 (Ue ≤ 440 V) (1) (θ ≤ 55 °C)

The current (Ic) in AC-3 is equal to the rated operational current (Ie) drawn by the motor.




**Example:**
Asynchronous motor with P = 50 kW, Ue = 380 V, Ie = 100 A, Ic = Ie = 100 A, or asynchronous motor with P = 55 kW, Ue = 415 V, Ie = 100 A, Ic = Ie = 100 A.
600000 operating cycles required.
The above selection curves show the contactor rating needed, CR1F185.

*(1) For 660 V, multiply the number of operating cycles by 0.8.*

Ref.
High power contactors

References:
pages B10/5, B10/16 to B10/21
Dimensions:
pages B10/66 to B10/69

# Characteristics - Durability (AC)

## Maximum operational current (on-load factor ≥ 0.95)

**Maximum operating rate: 120 operating cycles/hour**

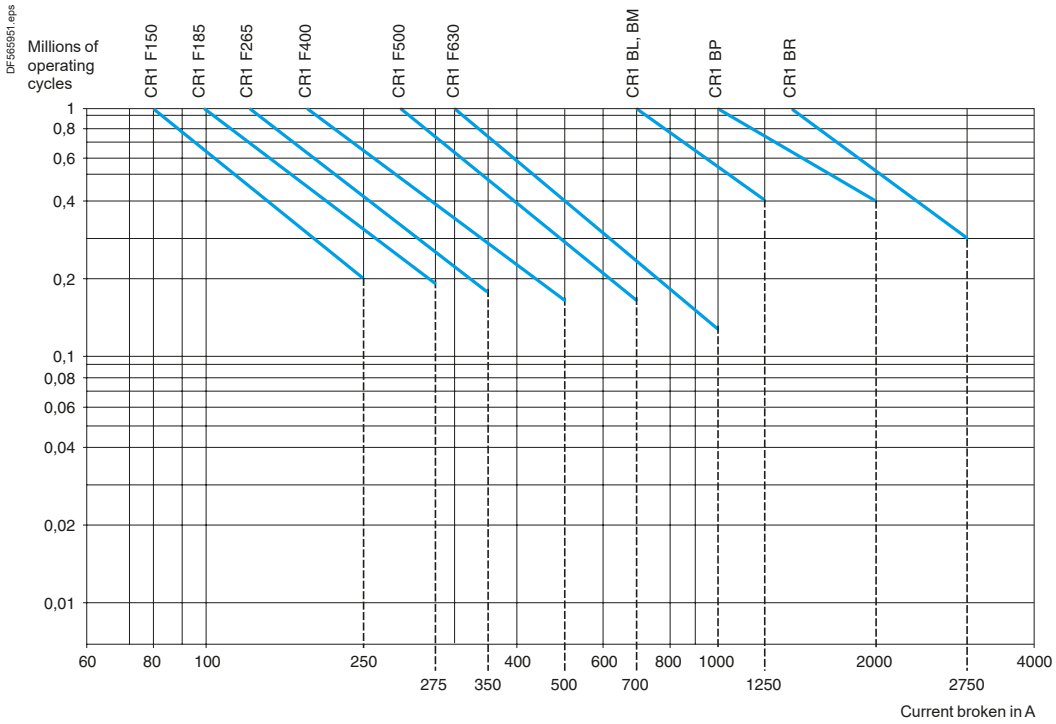
| Contactor size | | | CR1 F150 | CR1 F185 | CR1 F265 | CR1 F400 | CR1 F500 | CR1 F630 | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable c.s.a. | | mm² | 120 | 150 | 185 | – | – | – | – | – | – | – |
| Number of bars | | | – | – | – | 2 | 2 | 2 | 2 | 2 | 3 | 4 |
| Bar c.s.a. | | mm | – | – | – | 30 x 5 | 40 x 5 | 60 x 5 | 50 x 5 | 80 x 5 | 100 x 5 | 100 x 5 |
| Operational current in category AC-1 at ambient temperature | ≤ 40 °C | A | 250 | 275 | 350 | 500 | 700 | 1000 | 800 | 1250 | 2000 | 2750 |
| | ≤ 55 °C | A | 250 | 275 | 300 | 430 | 580 | 850 | 700 | 1100 | 1750 | 2400 |
| | ≤ 70 °C | A | 170 | 180 | 250 | 340 | 500 | 700 | 600 | 900 | 1500 | 2000 |

**Increase in operational current by parallel connection of poles**

Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8.

## Electrical durability (Ue ≤ 440 V) (1)




**Example:**
Ue = 220 V - Ie = 200 A - θ = 40 °C - Ic = Ie = 200 A
600000 operating cycles required.
The above selection curves show the contactor rating needed, CR1F400.

*(1) For 660 V, multiply the number of operating cycles by 0.8.*

Ref.
High power contactors

## 3-phase transformer primaries switching

**Operating conditions**

Maximum ambient temperature: 55 °C.
Maximum operational voltage: 1000 V, 50…60 Hz.

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:
- the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, size of the windings, ...)
- the performance of the magnetic laminations used (residual induction and saturation inductance),
- the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The peak current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer.

The peak magnetising current of the transformer must be lower than the values given in the tables below.

### Contactor selection

**Maximum operating rate: 120 operating cycles/hour**

| Contactor size | | | CR1 F150 | CR1 F185 | CR1 F265 | CR1 F400 | CR1 F500 | CR1 F630 | CR1 BL | CR1 BM | CR1 BP | CR1 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum permissible current peak at switch-on | | **A** | 1700 | 2800 | 3500 | 5500 | 6800 | 9000 | 18 000 | 18 000 | 24 000 | 30 000 |
| Maximum operational power (1) | 220…230 V | **kVA** | 25 | 40 | 50 | 75 | 100 | 140 | 230 | 230 | 300 | 380 |
| | 380…400 V | **kVA** | 50 | 75 | 90 | 130 | 170 | 225 | 400 | 400 | 530 | 660 |
| | 415…440 V | **kVA** | 55 | 80 | 100 | 140 | 190 | 250 | 450 | 450 | 560 | 700 |
| | 500 V | **kVA** | 65 | 95 | 110 | 170 | 225 | 280 | 480 | 480 | 600 | 750 |
| | 660 V | **kVA** | 80 | 120 | 140 | 200 | 270 | 315 | 600 | 600 | 800 | 950 |
| | 1000 V | **kVA** | 100 | 150 | 200 | 250 | 375 | 470 | 700 | 700 | 1000 | 1200 |

*(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.*



References:
pages B10/5, B10/16 to B10/21
Dimensions:
pages B10/66 to B10/69

# Characteristics

## Environment

| Contactor type | | | CR1F150 | CR1F185 | CR1F265 |
|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 | V | 1000 | 1000 | 1000 |
| Rated impulse withstand voltage (Uimp) | Coil not connected to the power circuit | kV | 8 | | |
| Conforming to standards | | | IEC/EN 60947-1, IEC/EN 60947-4-1, JIS C8201-4-1, UL 60947-4-1, CSA C22.2 No. 60947-4-1 | | |
| Product certifications | | | CB scheme, UL, CSA, EAC, CE marking, UKCA marking | | |
| Ambient air temperature around the device | Storage | °C | -60…+80 | | |
| | For operation at Uc | °C | -15…+70 | | |
| Maximum operating altitude | Without derating | m | 3000 | | |
| Operating positions | Without derating | | ±5 ° in relation to normal vertical mounting plane | | |

## Pole characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| Number of poles | | | | 3 or 4 | 3 or 4 | 3 or 4 |
| Rated operational current (Ie) (Ue ≤ 440 V) | In AC-3, θ ≤ 40 °C | | A | 150 | 185 | 265 |
| | In AC-1, θ ≤ 40 °C | | A | 250 | 275 | 350 |
| | In AC-4, θ ≤ 40 °C | | A | 138 | 170 | 245 |
| Rated operational voltage (Ue) | Up to | | V | 1000 | 1000 | 1000 |
| Frequency limits (sine wave) | Of the operational current | | Hz | 25…200 | 25…200 | 25…200 |
| Rated making capacity | I rms | | A | 1700 | 2100 | 2940 |
| Rated breaking capacity | I rms | 220…440 V | A | 1500 | 1800 | 2450 |
| | | 500 V | A | 1200 | 1600 | 2200 |
| | | 660/690 V | A | 1100 | 1200 | 1700 |
| | | 1000 V | A | 450 | 600 | 800 |
| Permissible short time rating from cold state, with no current flowing for previous 60 minutes at θ ≤ 40 °C | For 1 s | | A | 1200 | 1500 | 2200 |
| | For 5 s | | A | 1200 | 1500 | 2200 |
| | For 10 s | | A | 1200 | 1500 | 2200 |
| | For 30 s | | A | 700 | 920 | 1230 |
| | For 1 min | | A | 600 | 740 | 950 |
| | For 3 min | | A | 450 | 500 | 620 |
| | For 10 min | | A | 350 | 400 | 480 |
| Short-circuit protection by fuses θ ≤ 440 V | Motor circuit AC-3 (type aM) | | A | 160 | 200 | 315 |
| | AC-1 circuit (type gG, BS 88) | | A | 250 | 315 | 400 |
| Average impedance per pole | At Ith and 50 Hz | | mΩ | 0.45 | 0.36 | 0.32 |
| Power dissipated per pole for the above operational currents | AC-3 | | W | 6 | 12 | 22 |
| | AC-1 | | W | 18 | 26 | 39 |
| Connection | Number of conductors | | | 1 | 1 | 1 |
| | Cable with lugs | | mm² | 120 | 150 | 240 |
| | Cable with connector | | mm² | 120 | 150 | 240 |
| | Number of bars | | | 2 | 2 | 2 |
| | Bar c.s.a. | | mm | 25 x 3 | 25 x 3 | 32 x 4 |
| | Bolt diameter | | | Ø8 | Ø8 | Ø10 |
| | Tightening torque | | N.m | 18 | 18 | 35 |

Ref.
High power contactors

References:
pages B10/5, B10/16 to B10/21
Dimensions:
pages B10/66 to B10/69

## Characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| **CR1F400** | **CR1F500** | **CR1F630** | **CR1BL** | **CR1BM** | **CR1BP** | **CR1BR** |
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 8 | | | | | | |
| IEC/EN 60947-1, IEC/EN 60947-4-1, JIS C8201-4-1, UL 60947-4-1, CSA C22.2 No. 60947-4-1 | | | | | | |
| CB scheme, UL, CSA, EAC, CE marking, UKCA marking | | | | | | |
| -60…+80 | | | -60…+80 | | | |
| -15…+70 | | | -15…+60 | | | |
| 3000 | | | 3000 | | | |
| ±5 ° in relation to normal vertical mounting plane | | | ±5 ° in relation to normal vertical mounting plane | | | |
| 3 or 4 | 3 or 4 | 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 | 1, 2, 3 or 4 |
| 400 | 500 | 630 | 750 | 1000 | 1500 | 1800 |
| 500 | 700 | 1000 | 800 | 1250 | 2000 | 2750 |
| 370 | 460 | 560 | 700 | 800 | 1250 | 1500 |
| 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 25…200 | 25…200 | 25…200 | 50…60 | 50…60 | 50…60 | 50…60 |
| 4500 | 5000 | 6740 | 10 000 | 10 000 | 15 000 | 18 000 |
| 4000 | 5000 | 6300 | 10 000 | 10 000 | 15 000 | 18 000 |
| 3500 | 4500 | 5400 | 9000 | 9000 | 12 000 | 15 000 |
| 3000 | 3560 | 4600 | 8000 | 8000 | 9000 | 11 000 |
| 1200 | 2500 | 3200 | 4000 | 4000 | 5000 | 6000 |
| 3600 | 4200 | 5050 | 9600 | 9600 | 12 000 | 15 000 |
| 3600 | 4200 | 5050 | 9600 | 9600 | 12 000 | 15 000 |
| 3600 | 4200 | 5050 | 7000 | 8000 | 9600 | 12 000 |
| 2400 | 3200 | 4400 | 4800 | 5200 | 6400 | 8000 |
| 1700 | 2400 | 3400 | 3500 | 3800 | 5200 | 6300 |
| 1200 | 1500 | 2200 | 2100 | 2400 | 3600 | 4400 |
| 1000 | 1200 | 1600 | 1200 | 1800 | 2800 | 3600 |
| 400 | 500 | 630 | 800 | 1200 | 800 x 2 (1) | 1000 x 2 (1) |
| 500 | 800 | 1000 | 800 | 1200 | 1000 x 2 (1) | 1200 x 2 (1) |
| 0.28 | 0.18 | 0.12 | 0.18 | 0.18 | 0.13 | 0.09 |
| 45 | 45 | 48 | 88 | 180 | 290 | 360 |
| 70 | 88 | 120 | 115 | 280 | 520 | 680 |
| 2 | 2 | – | – | – | – | – |
| 150 | 240 | – | – | – | – | – |
| – | – | – | – | – | – | – |
| 2 | 2 | 2 | 2 | 2 | 3 | 4 |
| 30 x 5 | 40 x 5 | 60 x 5 | 50 x 5 | 80 x 5 | 100 x 5 | 100 x 10 |
| Ø10 | Ø10 | Ø12 | 4 x Ø8 | 4 x Ø10 | 4 x Ø10 | 4 x Ø10 |
| 35 | 35 | 58 | 21 | 35 | 35 | 35 |

*(1) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.*

# Characteristics

## a.c. and d.c. control circuit characteristics

| Contactor type | | | | | CR1F150 | CR1F185 | CR1F265 |
|---|---|---|---|---|---|---|---|
| Rated control circuit voltage (Uc) | ∿ 50 or 60 Hz | | | V | 48…415 | | |
| | ∿ 400 Hz | | | V | 48…220 | | |
| | ⎓ | | | V | 48…220 | | |
| | ⎓ low consumption | | | V | 48…220 | | |
| Control voltage limits ∿ and ⎓ | Latching | | | | 0.85…1.1 Uc | | |
| | Unlatching | | | | 0.85…1.1 Uc | | |
| Maximum operating rate at ambient temperature ≤ 40 °C | In operating cycles per hour | | | | 120 | | |
| Mechanical durability | In millions of operating cycles | | | | 1 | | |
| Average consumption | Latching | 1-pole | | VA | – | – | – |
| 50/60 Hz | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 1100 | 1600 | 1650 |
| | | 4-pole | | VA | 100 | 1600 | 1650 |
| | Unlatching | 1-pole | | VA | – | – | – |
| | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 7.3 | 8 | 9 |
| | | 4-pole | | VA | 7.3 | 8 | 9 |
| 400 Hz and ⎓ | Latching | 1-pole | | VA | – | – | – |
| | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 1260 | 1750 | 1800 |
| | | 4-pole | | VA | 1260 | 1750 | 1800 |
| | Unlatching | 1-pole | | VA | – | – | – |
| | | 2-pole | | VA | – | – | – |
| | | 3-pole | | VA | 10 | 11 | 12 |
| | | 4-pole | | VA | 10 | 11 | 12 |
| ⎓ low consumption | Latching | 3/4-pole | | W | 500 | 500 | 500 |
| | Unlatching | 3/4-pole | | W | 15 | 20 | 40 |
| Average operating time at Uc (1) | Latching | | | ms | 35…40 | 35…40 | 45…50 |
| | Unlatching | | | ms | 50…100 | 50…100 | 50…100 |

*(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.*

***Note:*** *the arcing time depends on the circuit switched by the main poles. For 3-phase applications the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.*

## Auxiliary contact characteristics

| Type of contacts | | | LADN for contactors CR1F |
|---|---|---|---|
| Conventional thermal current | | A | 10 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 | V | 690 |
| Connection | Flexible or solid conductor with or without cable end | mm² | 1 x 1 min; 2 x 2.5 max |

Operational power of contacts LADN for contactors CR1F

**a.c. supply**

Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | V | 48 | 115 | 230 | 400 | 600 |
|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 120 | 280 | 560 | 960 | 1440 |
| Occasional making capacity | VA | 2600 | 7000 | 13 000 | 15 000 | 9000 |

**d.c. supply**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| V | 48 | 125 | 250 | 440 |
|---|---|---|---|---|
| W | 90 | 75 | 68 | 61 |
| W | 700 | 400 | 260 | 220 |

Ref.
High power contactors

References:
pages B10/5, B10/16 to B10/21
Dimensions:
pages B10/66 to B10/69

## Characteristics

| CR1F400 | CR1F500 | CR1F630 | CR1BL | CR1BM | CR1BP | CR1BR |
|---|---|---|---|---|---|---|
| 48…415 | | | 110…500 | | | |
| 48…220 | | | 110…500 | | | |
| 48…220 | | | 110…500 | | | |
| 48…220 | | | – | | | |
| 0.85…1.1 Uc | | | 0.85…1.1 Uc | | | |
| 0.85…1.1 Uc | | | 0.85…1.1 Uc | | | |
| 120 | | | 120 | | | |
| 1 | | | 1 | | | |
| – | – | – | 650 | 650 | 650 | 650 |
| – | – | – | 1100 | 1100 | 1100 | 1100 |
| 1450 | 1650 | 2100 | 1650 | 1650 | 1650 | 1650 |
| 1450 | 1650 | 2100 | 1850 | 1850 | 1850 | 1850 |
| – | – | – | 110 | 110 | 110 | 110 |
| – | – | – | 125 | 125 | 125 | 125 |
| 12 | 9.5 | 8 | 165 | 165 | 165 | 165 |
| 12 | 9.5 | 8 | 175 | 175 | 175 | 175 |
| – | – | – | 600 | 600 | 600 | 600 |
| – | – | – | 1000 | 1000 | 1000 | 1000 |
| 1600 | 1800 | 2300 | 1500 | 1500 | 1500 | 1500 |
| 1600 | 1800 | 2300 | 1700 | 1700 | 1700 | 1700 |
| – | – | – | 100 | 100 | 100 | 100 |
| – | – | – | 115 | 115 | 115 | 115 |
| 16 | 13 | 11 | 150 | 150 | 150 | 150 |
| 16 | 13 | 11 | 160 | 160 | 160 | 160 |
| 500 | 550 | 620 | – | – | – | – |
| 70 | 60 | 45 | – | – | – | – |
| 40…75 | 40…80 | 40…80 | 100…150 | 100…150 | 100…150 | 100…150 |
| 50…100 | 50…100 | 50…100 | 20…40 | 20…40 | 20…40 | 20…40 |

*(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.*

***Note:*** *the arcing time depends on the circuit switched by the main poles. For 3-phase applications the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.*

| LADN for contactors CR1F | ZC4GM for contactors CR1B |
|---|---|
| 10 | 20 |
| 690 | 660 |
| 1 x 1 min; 2 x 2.5 max | 2 min; 4 max |

Operational power of contacts ZC4GM for contactors CR1 B

**a.c. supply**

Electrical durability (valid for up to 2400 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

| | V | 110 127 | 220 | 380 | 415 440 | 500 |
|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 2000 | 4000 | 4000 | 4000 | 3500 |
| Occasional making capacity | VA | 14000 | 23000 | 35000 | 45000 | 35000 |

**d.c. supply**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

| V | 110 | 120 | 440 | 500 |
|---|---|---|---|---|
| W | 250 | 250 | 230 | 200 |
| W | 1600 | 800 | 400 | 360 |

Ref.
High power contactors

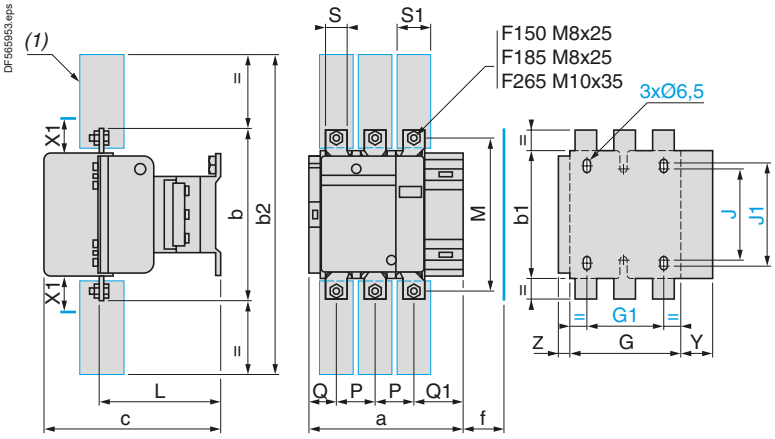
References:
pages B10/5, B10/16 to B10/21
Dimensions:
pages B10/66 to B10/69

# Dimensions

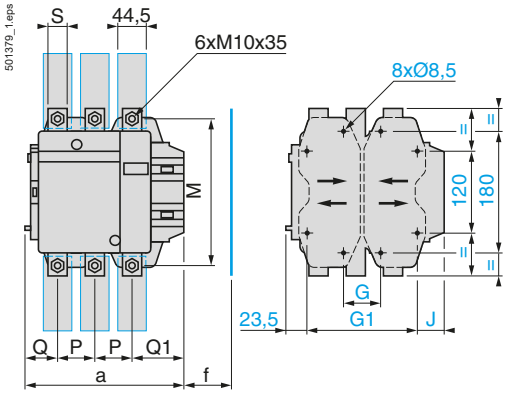
## CR1F150 to F500

Common side view

CR1F150, F185, F265




CR1F400, F500




| CR1 | F150 | | F185 | | F265 | |
|---|---|---|---|---|---|---|
| | 3P | 4P | 3P | 4P | 3P | 4P |
| a | 163.5 | 201.5 | 168.5 | 208.5 | 201.5 | 244.5 |
| b | 170 | 170 | 174 | 174 | 203 | 203 |
| b1 | 137 | 137 | 137 | 137 | 145 | 145 |
| b2 | 301 | 301 | 305 | 305 | 370 | 370 |
| c | 171 | 171 | 181 | 181 | 213 | 213 |
| f | 131 | 131 | 130 | 130 | 147 | 147 |
| G | 106 | 143 | 111 | 151 | 142 | 190 |
| G1 | 80 | 80 | 80 | 80 | 96 | 96 |
| J | 106 | 106 | 106 | 106 | 106 | 106 |
| J1 | 120 | 120 | 120 | 120 | 120 | 120 |
| L | 107 | 107 | 113.5 | 113.5 | 141 | 141 |
| M | 150 | 150 | 154 | 154 | 178 | 178 |
| P | 40 | 40 | 40 | 40 | 48 | 48 |
| Q | 26 | 26 | 29 | 29 | 39 | 34 |
| Q1 | 57.5 | 55.5 | 59.5 | 59.5 | 66.5 | 66.5 |
| S | 20 | 20 | 20 | 20 | 25 | 25 |
| S1 | 27 | 27 | 34 | 34 | 38 | 38 |
| Y | 44 | 44 | 38.5 | 30.5 | 30.5 | 21.5 |
| Z | 13.5 | 13.5 | 13.5 | 13.5 | 15.5 | 15.5 |

f = minimum distance required for coil removal.

X1: Minimum electrical clearance according to operational voltage and breaking capacity.

| Voltage in V | 200…500 | 660…1000 |
|---|---|---|
| CR1F150 | 10 | 15 |
| CR1F185 | 10 | 15 |
| CR1F265 | 10 | 15 |

| CR1 | F400 | | F500 | |
|---|---|---|---|---|
| | 3P | 4P | 3P | 4P |
| a | 213 | 261 | 233 | 288 |
| G min. | 66 | 66 | 66 | 66 |
| b | 206 | 206 | 238 | 238 |
| b2 | 375 | 375 | 400 | 400 |
| c | 219 | 219 | 232 | 232 |
| f | 146 | 146 | 150 | 150 |
| G supplied | 80 | 80 | 80 | 140 |
| G max. | 102 | 150 | 120 | 175 |
| G1 supplied | 170 | 170 | 170 | 230 |
| G1 min. | 156 | 156 | 156 | 156 |
| G1 max. | 192 | 240 | 210 | 265 |
| J | 12 | 60 | 32 | 27 |
| L | 145 | 145 | 146 | 146 |
| M | 181 | 181 | 208 | 208 |
| P | 48 | 48 | 55 | 55 |
| Q | 43 | 43 | 47 | 47 |
| Q1 | 74 | 74 | 77 | 77 |
| S | 25 | 25 | 30 | 30 |

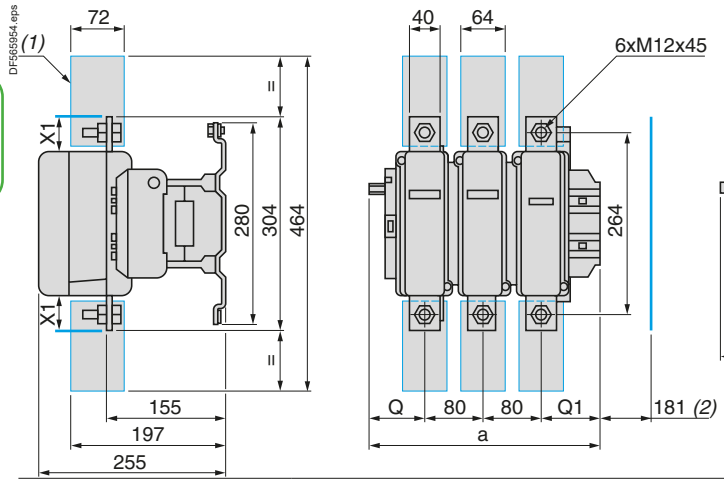
f = minimum distance required for coil removal.

X1: Minimum electrical clearance according to operational voltage and breaking capacity.

| Voltage in V | 200…500 | 660…1000 |
|---|---|---|
| CR1F400 | 15 | 20 |
| CR1F500 | 15 | 20 |

*(1) Power terminal protection shroud (see page B10/10).*

## CR1F630




| CR1F630 | 3P | 4P |
|---|---|---|
| a | 309 | 389 |
| G supplied | 180 | 240 |
| G min. | 100 | 150 |
| G max. | 195 | 275 |
| J1 | 61 | 81 |
| Q | 60 | 60 |
| Q1 | 89 | 89 |

X1: Min. electrical clearance according to operational voltage and breaking capacity.

| Voltage in V | X1 |
|---|---|
| 200…500 | 20 |
| 690…1000 | 30 |

*(1) Power terminal protection shroud.*
*(2) Minimum distance required for coil removal.*

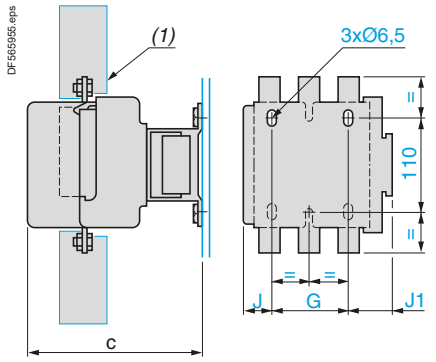
References:
pages B10/5, B10/16 to B10/21

Characteristics:
pages B10/56 to B10/65

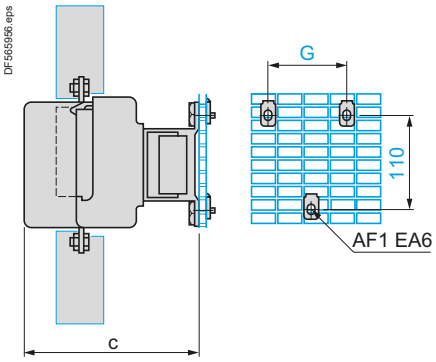
# Mounting

## CR1F150…F265

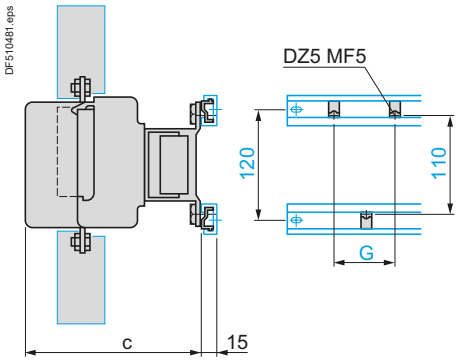
Panel mounted




On pre-slotted mounting plate AM1PA, PB, PC




On rails DZ5MB on 120 mm centres




| CR1 | | F150 | F185 | F265 |
|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 |
| | 4P | 171 | 181 | 213 |
| G | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |
| J | 3P | 26.5 | 29 | 44.5 |
| | 4P | 45 | 49 | 68.5 |
| J1 | 3P | 57 | 59.5 | 61.5 |
| | 4P | 75.5 | 79.5 | 85.5 |

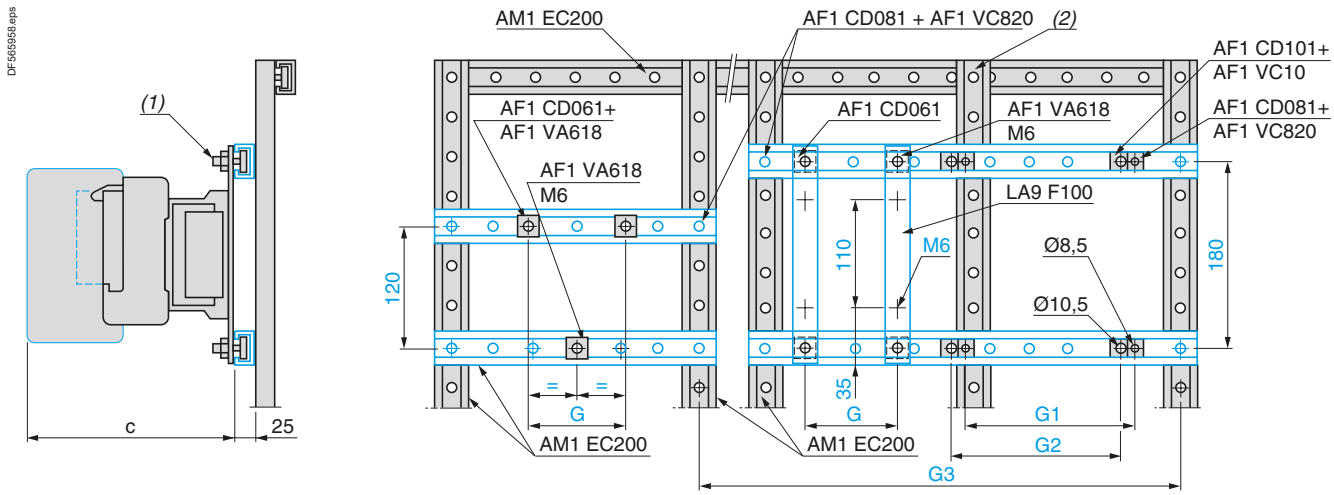
| CR1 | | F150 | F185 | F265 |
|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 |
| | 4P | 171 | 181 | 213 |
| G | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |

| CR1 | | F150 | F185 | F265 |
|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 |
| | 4P | 171 | 181 | 213 |
| G | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |

*(1) Power terminal protection shroud (see page B10/10).*

## CR1F150…F650

On 2 notched uprights AM1EC●●●




| CR1 | | F150 | F185 | F265 | F400 | F500 | F630 |
|---|---|---|---|---|---|---|---|
| c | 3P | 171 | 181 | 213 | 213 | 226 | 250 |
| | 4P | 171 | 181 | 213 | 213 | 226 | 250 |
| G (M6) | 3P | 80 | 80 | 96 | – | – | – |
| | 4P | 80 | 80 | 96 | – | – | – |
| G1 (Ø8,5) | 3P | – | – | – | 80 | 80 | – |
| | 4P | – | – | – | 80 | 140 | – |
| G2 (Ø10,5) | 3P | – | – | – | – | – | 180 |
| | 4P | – | – | – | – | – | 240 |

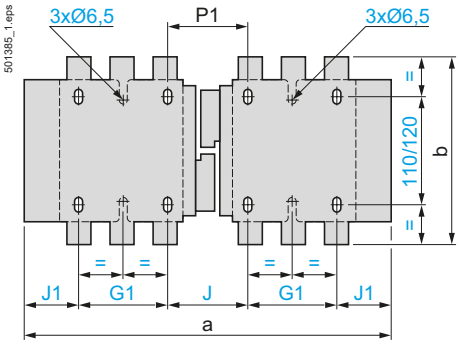
*(1) AF1CD●●● or AF1VA●●●.*
*(2) This AM1EC200 upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).*

References:
pages B10/5, B10/16 to B10/21
Characteristics:
pages B10/56 to B10/65

# Mounting

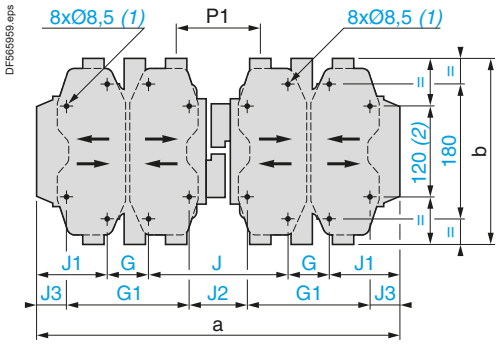
## Reversing contactors 2 x CR1F150…F265

Horizontally mounted




| 2 x **CR1** | | **F150** | **F185** | **F265** |
|---|---|---|---|---|
| a | 3P | 345 | 357 | 425 |
| | 4P | 422 | 437 | 521 |
| b | 3P | 170 | 174 | 203 |
| | 4P | 170 | 174 | 203 |
| G1 | 3P | 80 | 80 | 96 |
| | 4P | 80 | 80 | 96 |
| J | 3P | 71 | 78 | 109 |
| | 4P | 111 | 118 | 157 |
| J1 | 3P | 57 | 59.5 | 61.5 |
| | 4P | 75.5 | 79.5 | 85.5 |
| P1 | 3P | 71 | 78 | 100 |
| | 4P | 71 | 78 | 100 |

## Reversing contactors 2 x CR1F400…F630




| 2 x **CR1** | | **F400** | **F500** | **F630** |
|---|---|---|---|---|
| a | 3P | 446 | 485 | 636 |
| | 4P | 542 | 595 | 796 |
| b | 3P | 206 | 238 | 304 |
| | 4P | 206 | 238 | 304 |
| G | 3P | 80 | 80 | 180 |
| | 4P | 80 | 140 | 240 |
| G1 | 3P | 170 | 170 | – |
| | 4P | 170 | 230 | – |
| J | 3P | 157 | 156 | 139 |
| | 4P | 157 | 156 | 139 |
| J1 | 3P | 64.5 | 84.5 | 68.5 |
| | 4P | 112.5 | 79.5 | 68.5 |
| J2 | 3P | 67 | 66 | – |
| | 4P | 67 | 66 | – |
| J3 | 3P | 19.5 | 39.5 | – |
| | 4P | 67.5 | 34.5 | – |
| P1 | 3P | 107 | 112 | 137 |
| | 4P | 107 | 112 | 137 |

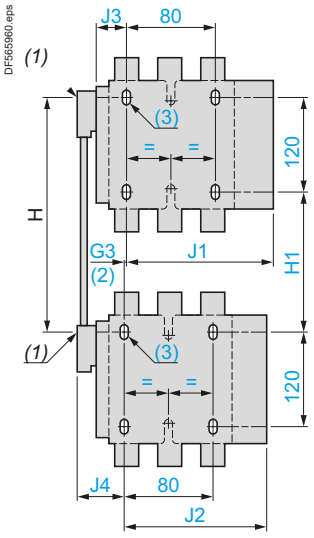
*(1) Except F630: 4 x Ø 10.5.*
*(2) Except F630: 180.*

Ref.
High power contactors

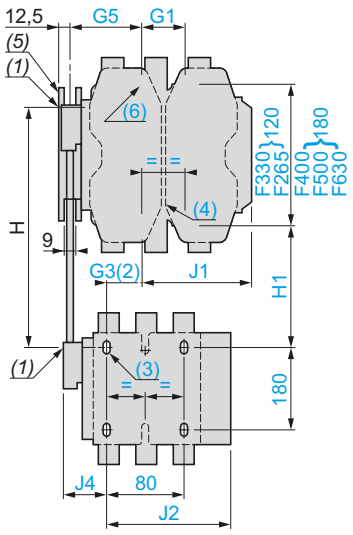
## Reversing contactors

Vertically mounted with mechanical interlock **LA9F●●●**.
2 contactors **CR1F** of identical or different ratings (CR1F150…F630), see page B10/49.

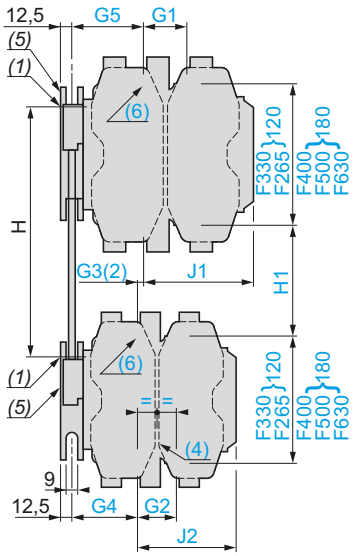
Assembly A




Assembly B




Assembly C




*(1) Mechanical interlock shaft.*
*(2) For assembly of contactors of different ratings only.*
*(3) 3 x Ø6.5 mm for CR1F150…F265.*
*(4) 3 x Ø6.5 mm for CR1F265.*
*(5) Mechanical interlock guide bracket.*
*(6) 4 x Ø8.5 mm for CR1F400, F500 or 4 x Ø10.5 mm.*

| Assembly type LA9F | | A | | | B | | | | | | | | C | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F4F | G4F | G4G | H4F | J4F | K4F | L4F | H4G | J4G | K4G | L4G | H4H | J4H | K4H | L4H | J4J | K4J | L4J | K4K | L4K | L4L |
| G1 | 3P | – | – | – | 96 | 80 | 80 | 180 | 96 | 80 | 80 | 180 | 96 | 80 | 80 | 180 | 80 | 80 | 180 | 80 | 180 | 180 |
| | 4P | – | – | – | 96 | 80 | 140 | 240 | 96 | 80 | 140 | 240 | 96 | 80 | 140 | 240 | 80 | 140 | 240 | 140 | 240 | 240 |
| G2 | 3P | – | – | – | – | – | – | – | – | – | – | – | 96 | 96 | 96 | 96 | 80 | 80 | 80 | 80 | 80 | 180 |
| | 4P | – | – | – | – | – | – | – | – | – | – | – | 96 | 96 | 96 | 96 | 80 | 80 | 80 | 140 | 140 | 240 |
| G3 | 3P | 0 | 3 | 0 | 21 | 45 | 45 | 35 | 19 | 42 | 42 | 33 | 0 | 23 | 23 | 14 | 0 | 0 | 9 (7) | 0 | 9 (7) | 0 |
| | 4P | 0 | 4 | 0 | 27 | 26 | 26 | 17 | 23 | 22 | 22 | 13 | 0 | 0 | 0 | 9 (7) | 0 | 0 | 9 (7) | 0 | 9 (7) | 0 |
| G4 | 3P | – | – | – | – | – | – | – | – | – | – | – | 60 | 60 | 60 | 60 | 83 | 83 | 83 | 83 | 83 | 74 |
| | 4P | – | – | – | – | – | – | – | – | – | – | – | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 74 |
| G5 | 3P | – | – | – | 60 | 83 | 83 | 74 | 60 | 83 | 83 | 74 | 60 | 83 | 83 | 74 | 83 | 83 | 74 | 83 | 74 | 74 |
| | 4P | – | – | – | 83 | 83 | 83 | 74 | 83 | 83 | 83 | 74 | 83 | 83 | 83 | 74 | 83 | 83 | 74 | 83 | 74 | 74 |
| H | min. | 200 | 210 | 220 | 240 | 250 | 270 | 310 | 250 | 250 | 270 | 310 | 250 | 260 | 280 | 330 | 260 | 280 | 325 | 300 | 345 | 380 |
| | max. | 310 | 300 | 310 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 |
| H1 | min. | 80 | 90 | 100 | 110 | 80 | 100 | 140 | 120 | 90 | 110 | 150 | 130 | 110 | 130 | 170 | 60 | 100 | 140 | 120 | 160 | 200 |
| | max. | 190 | 180 | 190 | 250 | 210 | 210 | 210 | 250 | 220 | 220 | 220 | 260 | 230 | 230 | 220 | 200 | 200 | 195 | 200 | 195 | 200 |
| J1 | 3P | 133 | 134 | 134 | 149.5 | 137 | 157 | 241 | 149.5 | 137 | 157 | 241 | 149.5 | 137 | 157 | 24 | 137 | 157 | 241 | 157 | 244 | 241 |
| | 4P | 145 | 146 | 146 | 164.5 | 185 | 212 | 321 | 164.5 | 185 | 212 | 321 | 164.5 | 185 | 212 | 321 | 185 | 212 | 321 | 212 | 321 | 321 |
| J2 | 3P | 133 | 133 | 134 | 183 | 133 | 183 | 133 | 134 | 134 | 134 | 134 | 142.5 | 149.5 | 149.5 | 149.5 | 137 | 137 | 137 | 157 | 157 | 241 |
| | 4P | 145 | 145 | 146 | 145 | 145 | 145 | 145 | 146 | 146 | 146 | 146 | 164.5 | 164.5 | 164.5 | 164.5 | 185 | 185 | 185 | 212 | 212 | 312 |
| J3 | 3P | 48.5 | 53 | 53 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 4P | 67 | 73 | 73 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| J4 | 3P | 48.5 | 54 | 53 | 48.5 | 48.5 | 48.5 | 48.5 | 53 | 53 | 53 | 53 | – | – | – | – | – | – | – | – | – | – |
| | 4P | 67 | 69 | 73 | 67 | 67 | 67 | 67 | 73 | 73 | 73 | 73 | – | – | – | – | – | – | – | – | – | – |

*(7) In this case, G4 is greater than G5.*

References:
pages B10/5, B10/16 to B10/21
Characteristics:
pages B10/56 to B10/65

# Characteristics

## Selection

| Contactor size | | | LC1V160 | LC1V320 | LC1V610 |
|---|---|---|---|---|---|
| **For utilisation category AC-3** | | | | | |
| Maximum operational current in AC-3 | | **A** | 160 | 320 | 610 |
| Rated operational power P (standard power ratings of motors) | 230 V | **kW** | 45 | 90 | 160 |
| | 400 V | **kW** | 75 | 160 | 300 |
| | 525 V | **kW** | 110 | 220 | 400 |
| | 690 V | **kW** | 150 | 280 | 560 |
| | 1000 V | **kW** | 200 | 400 | 800 |
| | 1500 V | **kW** | 280 | 600 | 930 |
| **For 3-phase motors conforming to CSA standards** | | | | | |
| Rated operational power P (standard power ratings of 3-phase CSA motors) | 200 V | **hp** | 50 | 100 | 150 |
| | 240 V | **hp** | 60 | 125 | 200 |
| | 380 V | **hp** | 100 | 200 | 300 |
| | 480 V | **hp** | 125 | 250 | 400 |
| | 600 V | **hp** | 150 | 300 | 500 |
| | 800 V | **hp** | 200 | 400 | 700 |
| | 1000 V | **hp** | 250 | 500 | 1000 |
| | 1500 V | **hp** | 400 | 800 | 1300 |
| **For switching 3-phase capacitors** | | | | | |
| Rated operational power P | 240 V | **kVAR** | 47 | 94 | 176 |
| | 480 V | **kVAR** | 95 | 190 | 356 |
| | 600 V | **kVAR** | 100 | 200 | 400 |
| | 1500 V | **kVAR** | 250 | 500 | 1000 |
| **For switching the primaries of 3-phase transformers (LV/LV)** | | | | | |
| Rated operational power P | 208 V | **kVA** | 20 | 41 | 81 |
| | 240 V | **kVA** | 23 | 47 | 94 |
| | 480 V | **kVA** | 47 | 94 | 188 |
| | 600 V | **kVA** | 59 | 117 | 234 |

## Environment characteristics

| Contactor type | | | | LC1V160 | LC1V320 | LC1V610 |
|---|---|---|---|---|---|---|
| Shock resistance(1/2 sine wave = 11 ms) Conforming to IEC/EN 60068-2-27 | | Contacts closed | | 10 gn | 10 gn | 10 gn |
| | | Contacts open | | 10 gn | 10 gn | 10 gn |
| Vibration resistance Conforming to IEC/EN 60068-2-6 | | 10…500 Hz | | 2 gn | 2 gn | 2 gn |
| Operating altitude | Above sea level | Maximum | **m** | 3600 | 3600 | 3600 |
| | Below sea level | Minimum | **m** | 2500 | 4500 | 4500 |
| Ambient air temperature around the device | | Storage | **°C** | -40…+80 | -40…+80 | -40…+80 |
| | | Operation 0.8… 1.1 Uc | **°C** | -5…+55 | -5…+55 | -5…+55 |
| | | Permissible for operation at Uc | **°C** | -10…+75 | -10…+75 | -10…+75 |
| Degree of protection | | Conforming to IEC 60529 | | IP 00 | IP 00 | IP 00 |
| Operating position | | | | Any | Any | Any |
| Cabling | | Cable c.s.a. | **mm²** | 70 | 185 | 2 x 185 |
| | | Key for hex. screws | **mm** | Allen 4 | 20 | 20 |
| | | Tightening torque | **N.m** | 14 | 39 | 39 |

## Control circuit characteristics

| | | | | | |
|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | To earth | **V** | 2000 | 2000 | 2000 |
| Consumption | Inrush | **VA** | 300 | 600 | 1700 |
| | Sealed | **VA** | 30 | 20 | 28 |
| Permissible control circuit voltage | | | 0.8…1.1 Uc | 0.8…1.1 Uc | 0.8…1.1 Uc |
| Closing time (1) | | **ms** | 18...22 | 24...32 | 24...32 |
| Opening time (1) | | **ms** | 95...115 | 95...115 | 95...115 |

*(1) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.*

References: page B10/22
Dimensions: pages B10/72 and B10/73
Schemes: pages B10/72 to B10/75

# Characteristics

## Main pole characteristics

| Contactor type | | | LC1V160 | LC1V320 | LC1V610 |
|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | | **V** | 1500 | 1500 | 1500 |
| Rated impulse withstand voltage (Uimp) | | **kV** | 8 | 8 | 8 |
| Conforming to standards | | | EN 60947-4-1 - IEC 60947-4-1 | | |
| Conventional rated thermal current (Ith) | | **A** | 160 | 320 | 630 |
| Rated operational current (Ie) | θ ≤ 40 °C AC-1 | **A** | 160 | 320 | 630 |
| | θ ≤ 55 °C AC-3 | **A** | 160 | 320 | 610 |
| | θ ≤ 55 °C AC-4 | **A** | 130 | 270 | 540 |
| Electrical durability in millions of operating cycles (400 V at I max) | AC-1 | | 1.2 | 1 | 1 |
| | AC-3 | | 1.6 | 1.5 | 1.5 |
| | AC-4 | | 0.18 | 0.15 | 0.12 |
| Mechanical durability | In millions of operating cycles | | 5 | 2.5 | 2 |
| Maximum operating rate in operating cycles per hour | Mechanical | | 1200 | 1200 | 1200 |
| | AC-1 | | 900 | 900 | 900 |
| | AC-3 | | 900 | 900 | 900 |
| | AC-4 | | 450 | 450 | 450 |
| Maximum making capacity (Irms) | Ue = 1500 V To IEC 60947 | **A** | 1900 | 3800 | 7300 |
| Maximum breaking capacity (Irms) | Ue = 1500 V To IEC 60947 | **A** | 1600 | 3200 | 6100 |
| Maximum permissible current | For 1 s | **A** | 2400 | 4500 | 9000 |
| | For 2 s | **A** | 2000 | 3750 | 7580 |
| | For 10 s | **A** | 1600 | 3200 | 6100 |
| | For 30 s | **A** | 960 | 1920 | 3600 |
| Short-circuit protection at Ie in cat. AC-3 max. | aM fuse | **A** | 160 | 400 | 630 |

## Auxiliary contact characteristics

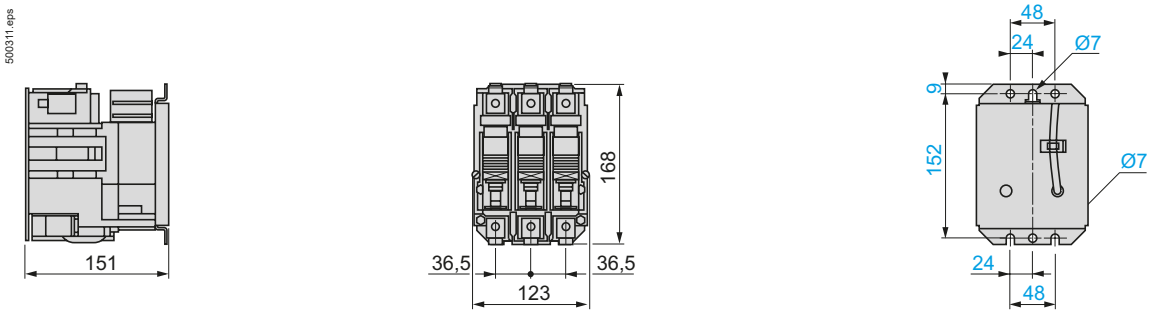
| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) | | **V** | 690 |
| Conventional rated thermal current (Ith) | | **A** | 10 |
| Rated operational current (Ie) | AC-15, 230 V | **A** | 0.78 |
| | AC-15, 400 V | **A** | 0.45 |
| | AC-15, 500 V | **A** | 0.35 |
| | DC-13, 24 V | **A** | 1.1 |
| | DC-13, 110 V | **A** | 0.24 |
| | DC-13, 220 V | **A** | 0.12 |
| Cabling | Cable c.s.a. | **mm²** | 2.5 |
| Short-circuit protection | gG fuse | **A** | 10 |
| Operating time (1) (at 100 % of Uc) | "C" | **ms** | ±5 |
| | "O" | **ms** | ±5 |

*(1) Operating time in relation to the main contacts.*

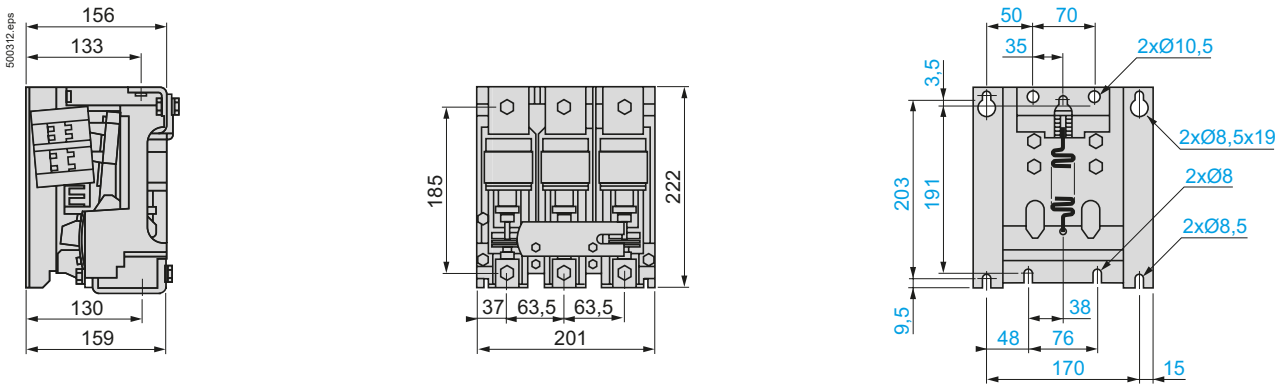
Ref.
High power contactors

## Dimensions, mounting

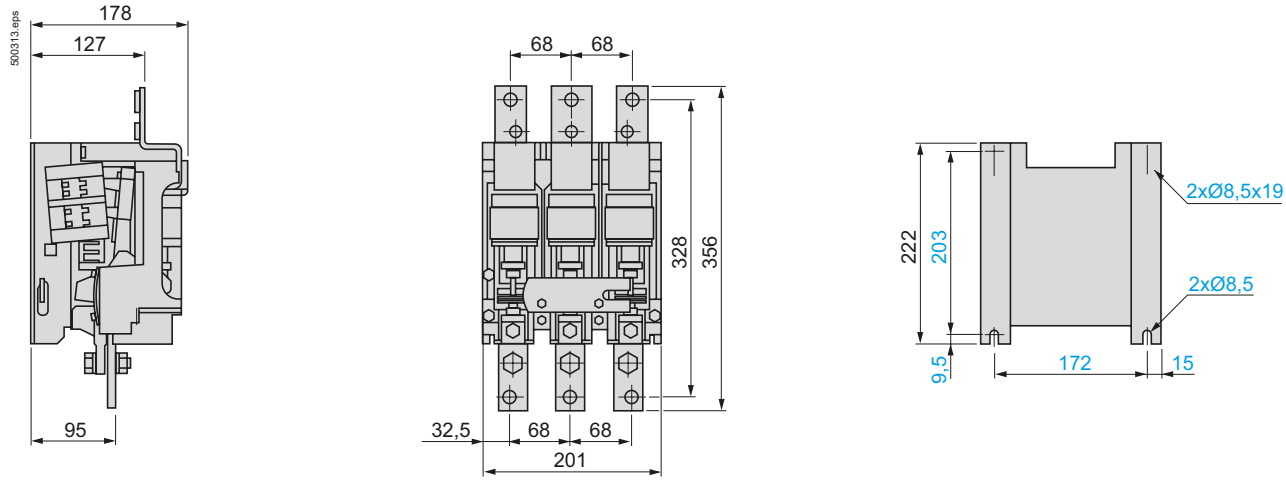
### LC1V160




### LC1V320

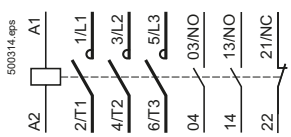



### LC1V610

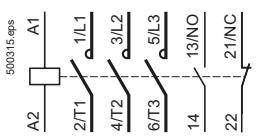



## Schemes

### LC1V160

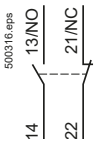



### LC1V320, V610

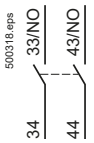



### Auxiliary contact blocks

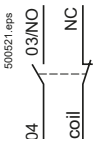
**LA1VN11 1 N/O & 1 N/C**




**LA1VN20 2 N/O**




**LA1VN11X 1 N/O**




References:
page B10/22



Ref.

High power contactors

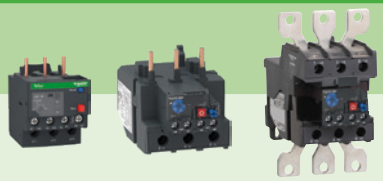
# TeSys Protect
# LRK, Deca, Giga Overload relays

Chapter B11

## Thermal overload relays - For use with **TeSys** K contactors

| Type of product | Range | | Pages |
|---|---|---|---|
| Adjustable thermal overload relays<br>For motors<br>TeSys LRK | From 0.16 to 16 A | | B11/2 |
| Adjustable thermal overload relays<br>For unbalanced loads<br>TeSys LRK | From 0.8 to 16 A | | B11/3 |

## Thermal overload relays Class 10 A - For use with **TeSys** Deca contactors

| | | | |
|---|---|---|---|
| TeSys Deca adjustable thermal overload relays<br>For motors | From 0.16 to 140 A |  | B11/4 |
| TeSys Deca adjustable thermal overload relays<br>For unbalanced loads | From 0.16 to 140 A | | B11/4 |

## Thermal overload relays Class 20 - For use with **TeSys** Deca contactors

| | | | |
|---|---|---|---|
| TeSys Deca adjustable thermal overload relays<br>For motors | From 0.63 to 80 A | | B11/6 |
| TeSys Deca adjustable thermal overload relays<br>For unbalanced loads | From 0.63 to 32 A | | B11/6 |

## Electronic thermal overload relays - For use with **TeSys** Deca contactors

| | | | |
|---|---|---|---|
| TeSys Deca adjustable electronic overload relay,<br>Multi-class, multi-scale | From 0.1 to 150 A | | B11/10 |

## Electronic overload relays - For use with **TeSys** Giga contactors

| | | | |
|---|---|---|---|
| TeSys LR9G electronic overload relays<br>To protect against overload, phase imbalance, phase loss and ground fault | From 28 to 630 A | | B11/11 |

## Electronic over current relays - For machine protection

| | | | |
|---|---|---|---|
| Predefined or adjustable starting times,<br>Manual reset | From 1.5 to 34 A | | B11/15 |
| Automatic, electric or manual reset | From 0.5 to 50 A | | B11/15 |

# Product references

PB123793.tif

*LR2K0307*

## 3-pole thermal overload relays for TeSys K contactors

These overload relays are designed for the protection of motors. They are compensated and phase failure sensitive. Resetting can either be manual or automatic.
Direct mounting: under the contactor for versions with screw clamp terminals only; pre-wired terminals, see pages B11/24 and B11/26.
Separate mounting: using terminal block LA7K0064 (see below).
On the front face of the overload relay:
- selection of reset mode: Manual (marked H) or Automatic (marked A),
- red pushbutton: Trip Test function,
- blue pushbutton: Stop and manual Reset,
- yellow trip flag indicator: overload relay tripped.

Protection by magnetic circuit breaker GV2LE, see pages coordination tables chapter A6.

**Class 10 A (the standard specifies a tripping time of between 2 and 10 seconds at 7.2 In)**

| Relay setting range | Fuses to be used with selected relay Maximum rating Type | | | Reference |
|---|---|---|---|---|
| | aM | gG | BS88 | |
| A | A | A | A | |
| 0.11…0.16 | 0.25 | 0.5 | – | **LR2K0301** |
| 0.16…0.23 | 0.25 | 0.5 | – | **LR2K0302** |
| 0.23…0.36 | 0.5 | 1 | – | **LR2K0303** |
| 0.36…0.54 | 1 | 1.6 | – | **LR2K0304** |
| 0.54…0.8 | 1 | 2 | – | **LR2K0305** |
| 0.8…1.2 | 2 | 4 | 6 | **LR2K0306** |
| 1.2…1.8 | 2 | 6 | 6 | **LR2K0307** |
| 1.8…2.6 | 4 | 8 | 10 | **LR2K0308** |
| 2.6…3.7 | 4 | 10 | 16 | **LR2K0310** |
| 3.7…5.5 | 6 | 16 | 16 | **LR2K0312** |
| 5.5…8 | 8 | 20 | 20 | **LR2K0314** |
| 8…11.5 | 10 | 25 | 20 | **LR2K0316** |
| 10…14 | 16 | 32 | 25 | **LR2K0321** |
| 12…16 | 20 | 40 | 32 | **LR2K0322** |

## Overload relays for unbalanced loads

**Class 10 A**: to order, replace the prefix **LR2** by **LR7** in the references selected from above (only applicable to overload relays **LR2K0305** to **LR2K0322**).
Example: **LR7K0308**.



Characteristics: pages B11/24 and B11/25
Dimensions: page B11/26
Schemes: page B11/26

## Product references

PB121488.eps

*LA7K0064*

| Accessory for TeSys LRK Thermal overload relay | | |
|---|---|---|
| **Description** | **Type of connection** | **Reference** |
| Terminal block for separate clip-on mounting of the overload relay on 35 mm ⎓ rail | Screw clamp | **LA7K0064** |

# Product references

## 3-pole differential thermal overload relays for Deca contactors - Class 10A

- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

PB121694.tif

*LRD●●*

| Relay setting range (A) | Fuses to be used with selected relay aM (A) | gG (A) | BS88 (A) | For use with contactor LC1 | Reference | Weight kg |
|---|---|---|---|---|---|---|
| **Class 10 A (1) for connection by screw clamp terminals or connectors** | | | | | | |
| 0.10…0.16 | 0.25 | 2 | – | D09…D38 | **LRD01** | 0.124 |
| 0.16…0.25 | 0.5 | 2 | – | D09…D38 | **LRD02** | 0.124 |
| 0.25…0.40 | 1 | 2 | – | D09…D38 | **LRD03** | 0.124 |
| 0.40…0.63 | 1 | 2 | – | D09…D38 | **LRD04** | 0.124 |
| 0.63…1 | 2 | 4 | – | D09…D38 | **LRD05** | 0.124 |
| 1…1.6 | 2 | 4 | 6 | D09…D38 | **LRD06** | 0.124 |
| 1.6…2.5 | 4 | 6 | 10 | D09…D38 | **LRD07** | 0.124 |
| 2.5…4 | 6 | 10 | 16 | D09…D38 | **LRD08** | 0.124 |
| 4…6 | 8 | 16 | 16 | D09…D38 | **LRD10** | 0.124 |
| 5.5…8 | 12 | 20 | 20 | D09…D38 | **LRD12** | 0.124 |
| 7…10 | 12 | 20 | 20 | D09…D38 | **LRD14** | 0.124 |
| 9…13 | 16 | 25 | 25 | D12…D38 | **LRD16** | 0.124 |
| 12…18 | 20 | 35 | 32 | D18…D38 | **LRD21** | 0.124 |
| 16…24 | 25 | 50 | 50 | D25…D38 | **LRD22** | 0.124 |
| 23…32 | 40 | 63 | 63 | D25…D38 | **LRD32** | 0.124 |
| 30…38 | 40 | 80 | 80 | D32 and D38 | **LRD35** | 0.124 |
| **Class 10 A (1) for connection by EverLink® BTR screw connectors (2)** | | | | | | |
| 9…13 | 16 | 25 | 25 | D40A…D65A | **LRD313** | 0.375 |
| 12…18 | 20 | 32 | 35 | D40A…D65A | **LRD318** | 0.375 |
| 17…25 | 25 | 50 | 50 | D40A…D65A | **LRD325** | 0.375 |
| 23…32 | 40 | 63 | 63 | D40A…D65A | **LRD332** | 0.375 |
| 30…40 | 40 | 80 | 80 | D40A…D65A | **LRD340** | 0.375 |
| 37…50 | 63 | 100 | 100 | D40A…D65A | **LRD350** | 0.375 |
| 48…65 | 63 | 100 | 100 | D50A and D65A | **LRD365** | 0.375 |
| 62...80 | 80 | 125 | 125 | D80A | **LRD380** | 0.375 |
| **Class 10 A (1) for connection by screw clamp terminals or connectors** | | | | | | |
| 17…25 | 25 | 50 | 50 | D80 and D95 | **LRD3322** | 0.510 |
| 23…32 | 40 | 63 | 63 | D80 and D95 | **LRD3353** | 0.510 |
| 30…40 | 40 | 100 | 80 | D80 and D95 | **LRD3355** | 0.510 |
| 37…50 | 63 | 100 | 100 | D80 and D95 | **LRD3357** | 0.510 |
| 48…65 | 63 | 100 | 100 | D80 and D95 | **LRD3359** | 0.510 |
| 55…70 | 80 | 125 | 125 | D80 and D95 | **LRD3361** | 0.510 |
| 63…80 | 80 | 125 | 125 | D80 and D95 | **LRD3363** | 0.510 |
| 80…104 | 100 | 160 | 160 | D80 and D95 | **LRD3365** | 0.510 |
| 80…104 | 125 | 200 | 160 | D115 and D150 | **LRD4365** | 0.900 |
| 95…120 | 125 | 200 | 200 | D115 and D150 | **LRD4367** | 0.900 |
| 110…140 | 160 | 250 | 200 | D150 | **LRD4369** | 0.900 |
| 80…104 | 100 | 160 | 160 | (3) | **LRD33656** | 1.000 |
| 95…120 | 125 | 200 | 200 | (3) | **LRD33676** | 1.000 |
| 110…140 | 160 | 250 | 200 | (3) | **LRD33696** | 1.000 |

PB123837.tif

*LRD33●●*

PB123839.eps

*LRD43●●*

### Class 10 A (1) for connection by lugs

Select the appropriate overload relay with screw clamp terminals or connectors from the table above and add one of the following suffixes:

- figure **6** for relays LRD01 to LRD35 and relays LRD313 to LRD380.
- **A66** for relays LRD3322 to LRD3363.

Relays LRD43●● are suitable, as standard, for use with lug-clamps.

## Thermal overload relays for use with unbalanced loads

### Class 10 A (1) for connection by screw clamp terminals or lugs

In the references selected above, change the prefix **LRD** (except **LRD43●●**) to **LR3D**.
Example: **LRD02** becomes **LR3D02**.
Example with **Ever**Link®connectors: **LRD340** becomes **LR3D340**.
Example with lugs: **LRD3806** becomes **LR3D3806.**

PB123840.eps

*LRD3●●6*

*(1) Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current $I_R$: class 10 A: between 2 and 10 seconds.*
*(2) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*
*(3) Independent mounting of the contactor.*
***Please check the availability of your variant in the index page B11/16. The SEARCH function of your viewer can be used.***

Overload relays

Characteristics: pages B11/27 to B11/30
Dimensions: pages B11/31 to B11/33
Schemes: page B11/33

# Product references

PB121704.eps

*LRD●●3*

## 3-pole differential thermal overload relays for Deca contactors - Class 10 A

- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

| Relay setting range (A) | Fuses to be used with selected relay | | | For use with contactor LC1 | Reference |
|---|---|---|---|---|---|
| | aM (A) | gG (A) | BS88 (A) | | |
| **Classes 10 A (1) for connection by spring terminals (only for direct mounting beneath the contactor)** | | | | | |
| 1…1.6 | 2 | 4 | 6 | D09…D38 | **LRD063** |
| 1.6…2.5 | 4 | 6 | 10 | D09…D38 | **LRD073** |
| 2.5…4 | 6 | 10 | 16 | D09…D38 | **LRD083** |
| 4…6 | 8 | 16 | 16 | D09…D38 | **LRD103** |
| 5.5…8 | 12 | 20 | 20 | D09…D38 | **LRD123** |
| 7…10 | 12 | 20 | 20 | D09…D38 | **LRD143** |
| 9…13 | 16 | 25 | 25 | D12…D38 | **LRD163** |
| 12…18 | 20 | 35 | 32 | D18…D38 | **LRD213** |
| 16…24 | 25 | 50 | 50 | D25…D38 | **LRD223** |
| **Class 10 A with connection by EverLink® BTR screw connectors (2) and control by spring terminals** | | | | | |
| 23…32 | 40 | 63 | 63 | D40A…D65A | **LRD3323** |
| 37…50 | 63 | 100 | 100 | D40A…D65A | **LRD3503** |
| 48…65 | 63 | 100 | 100 | D50A and D65A | **LRD3653** |
| 62...80 | 80 | 125 | 125 | D80A | **LRD3803** |

## Thermal overload relays for use with unbalanced loads

**Classes 10 A (1) for connection by BTR screw connectors (2) and control by spring terminals**

In the references selected above, replace **LRD3** with **LR3D3**.
Example: **LRD3803** becomes **LR3D3803**.

## Thermal overload relays for use on 1000 V supplies

**Classes 10 A (1) for connection by screw clamp terminals**

For relays LRD06 to LRD35 only, for an operating voltage of 1000 V, and only for independent mounting, the reference becomes **LRD33●●A66**.
Order an **LA7D3064** terminal block separately, see page B11/9.

| Standard relay | Relay for 1000 V network |
|---|---|
| LRD32 | LRD3353A66 |

*(1) Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current $I_R$: class 10 A: between 2 and 10 seconds.*
*(2) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

***Please check the availability of your variant in the index page B11/16. The SEARCH function of your viewer can be used.***

Overload relays

## 3-pole differential thermal overload relays for Deca contactors - Class 20

- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

PB121670_R.eps

*LRD05L...LRD32L*

| Relay setting range (A) | Fuses to be used with selected relay aM (A) | gG (A) | BS88 (A) | For use with contactor LC1 | Reference |
|---|---|---|---|---|---|
| **Classes 20 (1) for connection by screw clamp terminals** | | | | | |
| 0.63...1 | 2 | 4 | - | D09…D38 | **LRD05L** |
| 1...1.6 | 2 | 4 | 6 | D09…D38 | **LRD06L** |
| 1.6...2.5 | 4 | 6 | 10 | D09…D38 | **LRD07L** |
| 2.5...4 | 6 | 10 | 16 | D09…D38 | **LRD08L** |
| 4...6 | 8 | 16 | 16 | D09…D38 | **LRD10L** |
| 5.5...8 | 12 | 20 | 20 | D09…D38 | **LRD12L** |
| 7...10 | 12 | 20 | 20 | D09…D38 | **LRD14L** |
| 9...13 | 16 | 25 | 25 | D12…D38 | **LRD16L** |
| 12...18 | 20 | 35 | 32 | D18…D38 | **LRD21L** |
| 17...24 | 25 | 50 | 50 | D25…D38 | **LRD22L** |
| 23...32 | 40 | 63 | 63 | D25…D38 | **LRD32L** |
| **Class 20 (1) for connection by EverLink® BTR screw connectors (2)** | | | | | |
| 9…13 | 20 | 32 | 35 | D40A…D65A | **LRD313L** |
| 12…18 | 25 | 40 | 40 | D40A…D65A | **LRD318L** |
| 17…25 | 32 | 50 | 50 | D40A…D65A | **LRD325L** |
| 23…32 | 40 | 63 | 63 | D40A…D65A | **LRD332L** |
| 30…40 | 50 | 80 | 80 | D40A…D65A | **LRD340L** |
| 37…50 | 63 | 100 | 100 | D40A…D65A | **LRD350L** |
| 48…65 | 80 | 125 | 125 | D50A and D65A | **LRD365L** |

PB123838.tif

*LR2D35●●*

| | | | | | |
|---|---|---|---|---|---|
| **Classes 20 (1) for connection by screw clamp terminals** | | | | | |
| 17…25 | 32 | 50 | 50 | D80 and D95 | **LR2D3522** |
| 23…32 | 40 | 63 | 63 | D80 and D95 | **LR2D3553** |
| 30…40 | 40 | 100 | 80 | D80 and D95 | **LR2D3555** |
| 37…50 | 63 | 100 | 100 | D80 and D95 | **LR2D3557** |
| 48…65 | 80 | 125 | 100 | D80 and D95 | **LR2D3559** |
| 55…70 | 100 | 125 | 125 | D80 and D95 | **LR2D3561** |
| 63…80 | 100 | 160 | 125 | D80 and D95 | **LR2D3563** |

### Class 20 (1) for connection by lugs

For relays LRD05L to LRD32L and relays LRD313L to LRD365L, select the appropriate overload relay with screw clamp terminals or connectors from the table above and add the suffix **6**.
Example: **LRD05L** becomes **LRD05L6**.

## Thermal overload relays for use with unbalanced loads

### Class 20 (1) for connection by screw clamp terminals or lugs

For relays LRD05L to LRD32L and relays LR2D3522 to LR2D3563, select the appropriate overload relay with screw clamp terminals or connectors from the table above and change the prefix LRD or LR2D to **LR3D**.
Example: **LRD05L** becomes **LR3D05L**.

*(1) Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current $I_R$:*
*class 20: between 6 and 20 seconds*
*(2) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

***Please check the availability of your variant in the index page B11/16. The SEARCH function of your viewer can be used.***

Overload relays

## 3-pole differential thermal overload relays for Deca contactors - Class 20

- for use with fuses or magnetic circuit breakers ref. GV2L and GV3L
- compensated relays with manual or automatic reset
- with relay trip indicator
- for a.c. or d.c.

| Relay setting range (A) | Fuses to be used with selected relay | | | For mounting beneath contactor | Reference |
|---|---|---|---|---|---|
| | aM (A) | gG (A) | BS88 (A) | LC1 | |
| **Class 20 (1) with connection by EverLink® BTR screw connectors (2) and control by spring terminals** | | | | | |
| 9…13 | 20 | 32 | 35 | D40A…D65A | **LRD313L3** |

*(1) Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current $I_R$:*
*class 10: between 4 and 10 seconds,*
*class 10 A: between 2 and 10 seconds,*
*class 20: between 6 and 20 seconds.*
*(2) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B8/45).*

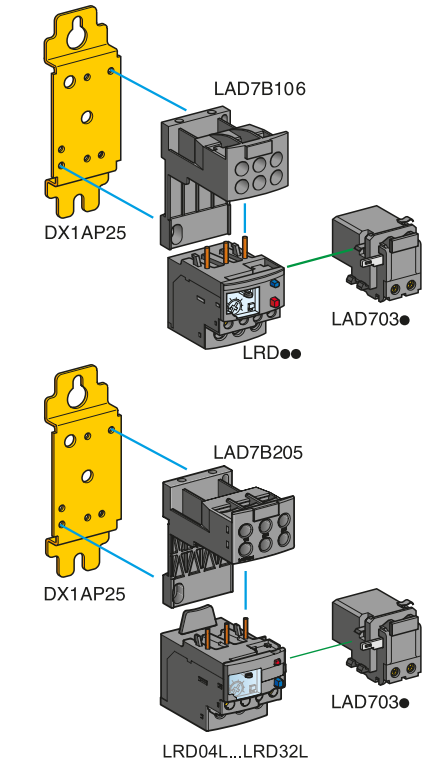


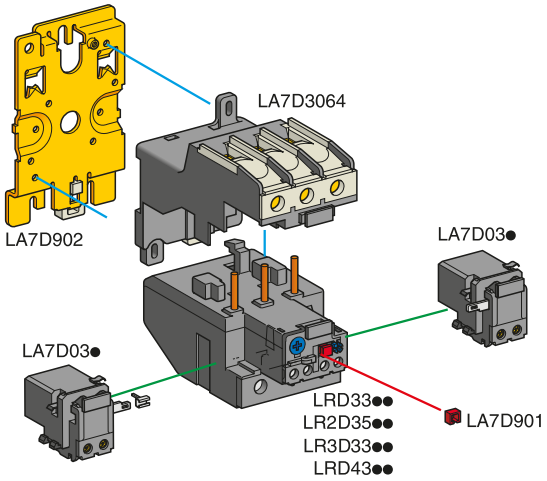
Characteristics:
pages B11/27 to B11/30,
pages B11/34 to B11/37

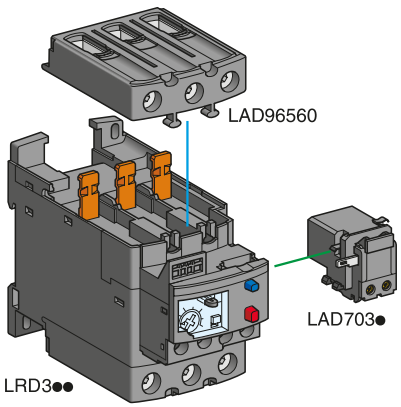
Dimensions:
pages B11/31 to B11/33
and B11/38

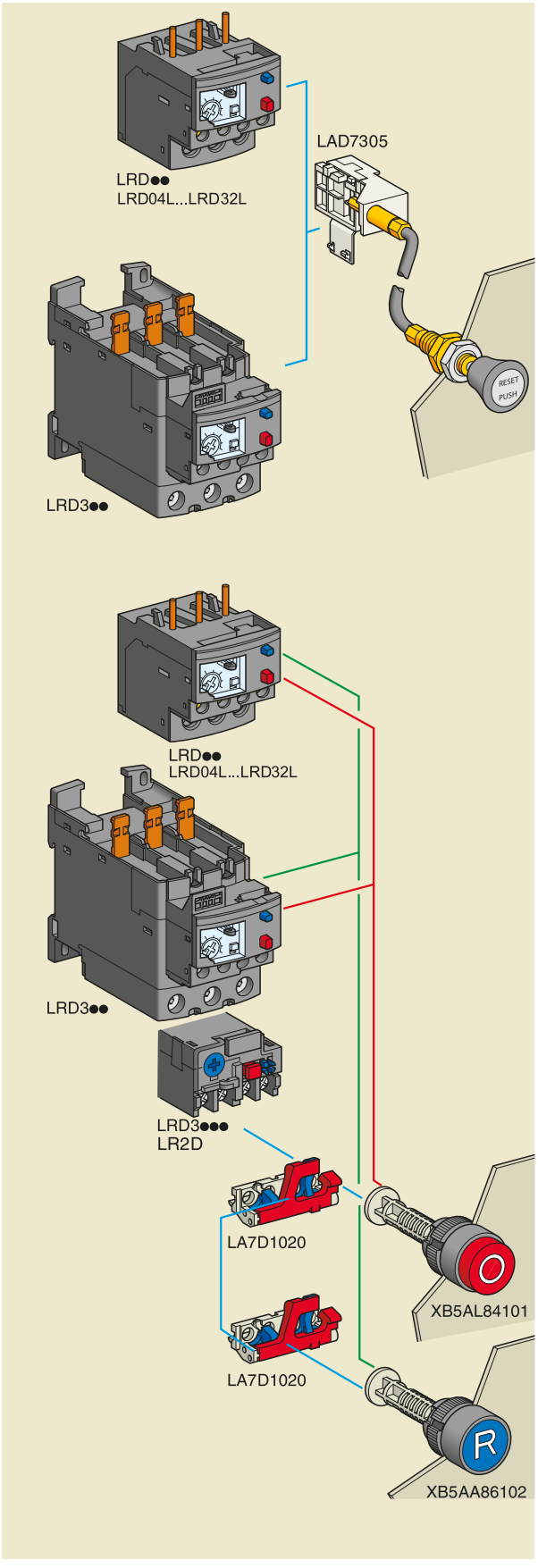
Schemes:
pages B11/33 and B11/39

DB439338.eps

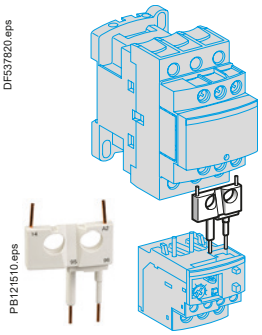


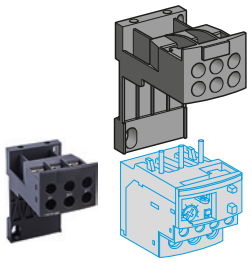
# Product references




*LAD7C●*

## Separate components for relays

| Description | For use with | Sold in lots of | Unit reference |
|---|---|---|---|
| Pre-wiring kit allowing direct connection of the N/C contact of relay LRD01…35 or LR3D02…D35 to the contactor | LC1D09…D18 | 10 | **LAD7C1** (1) |
| | LC1D25…D38 | 10 | **LAD7C2** (1) |
| Terminal block (2) for clip-on mounting on 35 mm rail (AM1DP200) or screw fixing; for fixing centres, see pages B11/31 to B11/33 | LRD01…35 and LR3D02…D35 | 1 | **LAD7B106** |
| | LRD05L...LRD32L, LR3D05L...LR3D32L | 1 | **LAD7B205** |
| | LRD33●●, LR3D33●●, LR2D35●●, LR3D35●● | 1 | **LA7D3064** (3) |
| EverLink® terminal block for independent mounting | LRD3●●, LRD3●●L and LR3D3●● | 1 | **LAD96560** |
| Size 4 Allen key, insulated, 1000 V | LRD3●●, LRD3●●L and LR3D3●● | 5 | **LADALLEN4** |
| Terminal block adapter for mounting a relay beneath an LC1D115 or D150 contactor | LRD33●●, LR3D33●●, LRD35●● | 1 | **LA7D3058** (3) |
| Mounting plates (4) for screw fixing on 110 mm centres | LRD01…35, LR3D02…D35, LRD05L... LRD32L, LR3D05L...LR3D32L | 10 | **DX1AP25** |
| | LRD3●●●, LR3D3●●●, LR2D35●● | 1 | **LA7D902** |
| Marker holders, snap-in 8 x 18 mm | LRD3●● | 100 | **LAD90** |
| | All relays except LRD01…35, LRD05L...32L, LR3D05L...D32L LR3D02…D35, LRD3●●, LRD3●●L and LR3D3●● | 100 | **LA7D903** |
| Bag of 400 blank legends (self-adhesive, 7 x 16 mm) | All relays | 1 | **LA9D91** |
| Remote Stop or electrical reset device (5) | LRD01…35, LR3D02…D35, LRD05L...32L, LR3D05L...D32L and LRD313…LRD380 | 1 | **LAD703●** (6) |
| Remote tripping or electrical reset device (5) | All relays except LRD01…35, LR9D01...32, LRD05L...32L, LR3D05L...D32L, LR3D02…D35, LR9D01...32, LRD3●●, LRD3●●L and LR3D3●● | 1 | **LA7D03●** (6) |
| Block of insulated terminals | LR9D | 2 | **LA9F103** (7) |
| IP 20 cover for lug type terminals for independent mounting | LRD3256…3806 | 1 | **LAD96570** |
| IP 20 cover for lug type terminals for mounting with contactor LC1D40A6…D65A6 | LRD3256…3806 | 1 | **LAD96575** |
| Terminal block for lug type terminals for independent mounting | LRD3256…3806 | 1 | **LAD96566** |



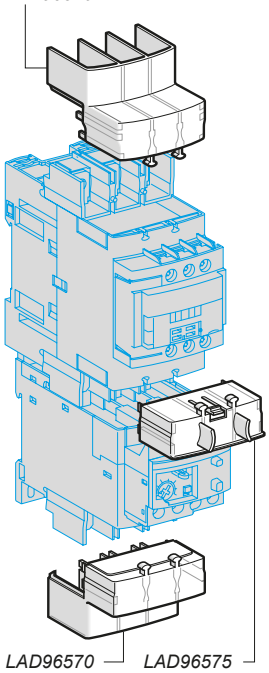

*LAD7B106*

## Remote control

### "Reset" function

| Description | For use with | Sold in lots of | Unit reference |
|---|---|---|---|
| By flexible cable (length = 0.5 m) | LRD01…35, LR3D02…D35, LR3D05L...D32L and LRD313…LRD380, LRD05L...LRD32L | 1 | **LAD7305** (8) |
| | All relays except LRD01...35, LR3D02...D35, LRD3●●, LRD05L...32L, LR3D05L...D32L, LRD3●●L, LR3D3●●, LR9D01 | 1 | **LA7D305** |

*LAD96570*




*LAD96570* *LAD96575*

### "Stop" and/or "Reset" functions

**The terminal protection shroud must be removed and the following 3 products must be ordered separately:**

| | | | | |
|---|---|---|---|---|
| Adapter for door mounting | LRD33●●, LR2D | | 1 | **LA7D1020** |
| Operating heads for spring return pushbutton | Stop | All relays | 1 | **XB5AL84101** |
| | Reset | All relays | 1 | **XB5AA86102** |

*(1) These pre-wiring kits cannot be used with reversing contactors.*
*(2) Terminal blocks are supplied with terminals protected against direct finger contact and screws in the open, "ready-to-tighten" position.*
*(3) To order a terminal block for connection by lugs, the reference becomes **LA7D30646**.*
*(4) Remember to order the terminal block corresponding to the type of relay.*
*(5) The time for which the coil of remote tripping or electrical resetting device **LA7D03** or **LAD703** can remain energised depends on its rest time: 1 s pulse duration with 9 s rest time; 5 s pulse duration with 30 s rest time; 10 s pulse duration with 90 s rest time; maximum pulse duration 20 s with a rest time of 300 s. Minimum pulse time: 200 ms.*
*(6) Reference to be completed by adding the code indicating the control circuit voltage.*
*Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):*

| Volts | 12 | 24 | 48 | 96 | 110 | 220/230 | 380/400 | 415/440 |
|---|---|---|---|---|---|---|---|---|
| 50/60 Hz | – | B | E | – | F | M | Q | N |
| Consumption, inrush and sealed: < 100 VA | | | | | | | | |
| ⎓ | J | B | E | DD | F | M | – | – |
| Consumption, inrush and sealed: < 100 W. | | | | | | | | |

*(7) Only one terminal block can be mounted below LR9D.*
*(8) Not compatible with 3-pole relays fitted with spring terminals.*

# Product references

*LR9D0● and LR9D32*

*LR9D5567*

*LAD7B205*

*LAD7B205 mounted on LR9D01*

*LR9D67*

## Electronic thermal overload relays for Deca contactors

- for use with fuses or magnetic circuit breakers
- compensated relays, with relay trip indicator,
- for a.c.,
- for direct mounting on contactor or independent mounting (1).

| Relay setting range | Fuses to be used with selected relay | | For direct mounting beneath contactor LC1 | Reference |
|---|---|---|---|---|
| | aM | gG | | |
| A | A | A | | |
| **Classes 5.10.20.30 (1) selectable for direct connection on Deca contactors or connection using connectors** | | | | |
| **0.1...0.5** | | | D09…D38 | **LR9D01** |
| **0.4...2** | | | D09…D38 | **LR9D02** |
| **1.6…8** | | | D09…D38 | **LR9D08** |
| **6.4…32** | | | D09…D38 | **LR9D32** |
| **Classes 10 or 10 A (1) for connection using bars or connectors** | | | | |
| **60…100** | 100 | 160 | D115…D150 | **LR9D5367** |
| **90…150** | 160 | 250 | D115…D150 | **LR9D5369** |
| **Classes 20 (1) for connection using bars or connectors** | | | | |
| **60…100** | 125 | 160 | D115…D150 | **LR9D5567** |
| **90…150** | 200 | 250 | D115…D150 | **LR9D5569** |

## Separate components for relays

| Description | For use with | Sold in lots of | Unit reference |
|---|---|---|---|
| Terminal block (2)<br>For clips-on mounting on 35 mm rails (AM1DP200) or screws fixing;<br>for fixing centres, see pages B11/35 to B11/37 | LR9D01, LR9D02, LR9D08, LR9D32 | 1 | **LAD7B205** |

## Electronic overload relays for balanced or unbalanced loads

| Relay setting range | Fuses to be used with selected relay | | For direct mounting beneath contactor LC1 | Reference |
|---|---|---|---|---|
| | aM | gG | | |
| A | A | A | | |
| **Classes 10 or 20 (1) selectable for direct connection using bars or connectors** | | | | |
| **60…100** | 100 | 160 | D115…D150 | **LR9D67** |
| **90…150** | 160 | 250 | D115…D150 | **LR9D69** |

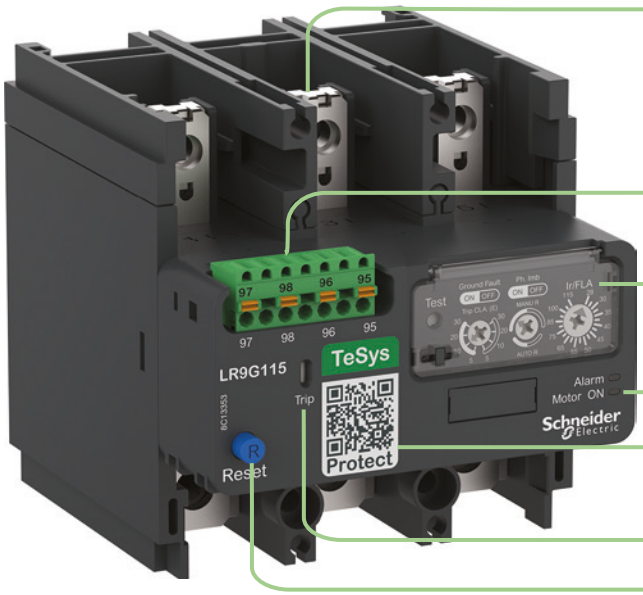
*(1) Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current $I_R$:*
*class 5: between 0.5 and 5 seconds*
*class 10: between 4 and 10 seconds*
*class 10 A: between 2 and 10 seconds*
*class 20: between 6 and 20 seconds*
*class 30: between 9 and 30 seconds.*
*(2) Terminal blocks are supplied with terminals protected against direct finger contact and screws in the open, "ready-to-tighten" position.*

Overload relays

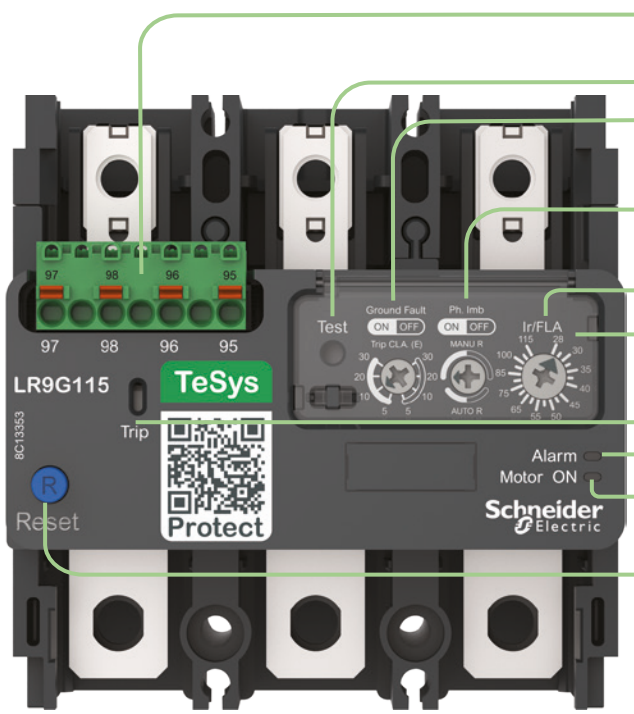
Characteristics: pages B11/34 to B11/37
Dimensions: page B11/38
Schemes: page B11/39


Life Is On Schneider Electric

# > Intelligent design for greater advantages




- Pole pitch aligned with TeSys Giga Contactor
- Push-in type control terminals
- Wide range of overload setting with trip class & ground fault protection
- Motor ON and trip Alarm indicators
- Unique QR code providing quick access to complete product data
- Relay trip indication
- Manual Reset button




- 1 NO + 1 NC trip contacts with push-in type terminals
- Test button
- 5E…30E trip class selection with ground fault protection option
- Manual/auto reset selection with phase imbalance protection option
- Setting dial for current Ir
- Transparent cover with seal protection
- Trip indicator
- Trip alarm LED indication
- Motor ON LED indication
- Manual reset button

# Perfect selection for your motor protection

Range
- A comprehensive range of TeSys Giga Electronic overload relays in 3 sizes
- Direct mounting of relay with contactors saving in panel space and installation time

28…115 A and 57…225 A

125…500 A

160...630 A

**Overload relays**
- Advanced electronic monitoring with high accuracy
- Thermal compensation for ambient temperatures up to 60 °C
- Wide range of current settings, 0.25...1 Ir setting
- Direct and separately mountable to manage panel design
- Pole pitch alignment with contactors, enabling direct mounting
- Push-in terminals for quick and easy control wiring options
- 4 references covering the complete range means less inventory
- Manual and auto reset to suit your needs
- Multiple reset options: Manual, Automatic & Remote
- Protection against phase loss
- Selectable protection against imbalanced load
- Selectable protection against ground fault
- ON status and overload alarm signaling by LED
- TRIP indicator

**Certifications**
- Multiple standards
- International certifications

**Trip class**
- Selectable, from class 5E to class 30E to suit different application needs

# Product references – coding principle

| LR9 | G | 630 |
|---|---|---|
| Electronic overload relay | TeSys Giga series | **Protection settings**<br>115: 28…115 A<br>225: 57…225 A<br>500: 125…500 A<br>630: 160…630 A |

# Product references

PB121623_R.tif

*LR9G225*

## TeSys Giga Electronic overload relays

- Electronic overload relay
- Suitable for independent mounting or direct mounting with TeSys Giga contactors
- Ergonomic rotary switches for thermal and protection settings
- Trip class selection: 5E/10E/20E/30E
- Overload, phase imbalance, phase loss and ground fault protections
- Manual and auto reset options
- LED indicator for Motor ON and pre-trip alarm
- Thermal memory and compensation
- Push-in terminals for control connections

PB121647.tif

*Direct mounting with TeSys Giga Contactor*

| Relay setting range | Fuses to be used with selected relay | | For direct mounting beneath contactor LC1G | Reference |
|---|---|---|---|---|
| | aM /gG/aR | kA | | |
| A | A | | | |
| **Class 5E...30E** | | | | |
| 28…115 | 125 aM | 100 | LC1G115…225 | **LR9G115** |
| 57…225 | 250 aM | 100 | LC1G115…225 | **LR9G225** |
| 125…500 | 630 aM | 100 | LC1G265…500 | **LR9G500** |
| | 630 gG | 80 | | |
| | 630 aR | 25 | | |
| 160…630 | 800 aR | 100 | LC1G630 | **LR9G630** |
| | 800 aR | 80 | | |
| | 800 aR | 25 | | |

# Overload relay accessories

PB121632.eps

*LA9G3650*

## Mounting and wiring accessories

| Description | Reference |
|---|---|
| Mounting base for alignment of LR9G115-225 with LC1G115-225 (2) | **LA9G3650** |
| Mounting base for alignment of LR9G500 with LC1G265-330 (2) | **LA9G3651** |
| Mounting base for alignment of LR9G500 with LC1G400-500 (2) | **LA9G3652** |
| Mounting base for alignment of LR9G630 with LC1G630-800 (2) | **LA9G3653** |
| Push-in connection adapter | **LA9G82** |

LA9G82_ISO.eps

*LA9G82*

## Front protection cover

| Description | Compatible with contactors | Quantity | Reference |
|---|---|---|---|
| Front protection cover (3) | LR9G115 / LR9G225 | 1 | **LA9G3704** |
| | LR9G500 | 1 | **LA9G3705** |
| | LR9G630 | 1 | **LA9G3706** |

PB121626.eps

*LA9G3704*

*(2) Used for independent mounting of Overload Relay beneath contactor to align main power pole connections.*
*(3) Used to cover main power connection terminals between contactor and overload with direct mounting option.*

Overload relays

# Product references

PB121733.eps

*LAD703●*

## Remote Reset control device

| Description | Quantity | Reference |
|---|---|---|
| Remote electrical reset device (1) | 1 | **LAD703●** (2) |
| Remote Reset function control by flexible cable (length = 0.5 m) | 1 | **LAD7305** |

*(1) The time for which the coil of remote electrical reset device LAD703● can remain energised depends on its rest time: 1 s pulse duration with 9 s rest time; 5 s pulse duration with 30 s rest time; 10 s pulse duration with 90 s rest time. Maximum pulse duration of 20 s with rest time of 300 s. Minimum pulse time: 200 ms.*
*(2) Reference to be completed by adding the coil voltage code.*

PB121732.eps

*LAD7305*

## Standard control circuit voltages

| Volts | 24 | 110 | 220/230 |
|---|---|---|---|
| ∿ 50/60 Hz | B | F | M |
| Consumption, inrush and sealed: < 100 VA | | | |
| ⎓ | B | F | M |
| Consumption, inrush and sealed: < 100 W. | | | |

# Product references

PB111974.eps

*LR97D07●●*

## LR97D electronic over current relays

| Relay setting range | Usable range (1) | For use with contactor (2) | Relay supply voltage | Reference (3) |
|---|---|---|---|---|
| A | A | | | |
| **0.3…1.5** | **0.3…1.3** | LC1 D09…D38 | ∼ 200…240 V | **LR97D015M7** |
| | | | ∼ 100…120 V | **LR97D015F7** |
| | | | ⎓/∼ 24 V | **LR97D015B** |
| | | | ⎓/∼ 48 V | **LR97D015E** |
| **1.2…7** | **1.2…6** | LC1 D09…D38 | ∼ 200…240 V | **LR97D07M7** |
| | | | ∼ 100…120 V | **LR97D07F7** |
| | | | ⎓/∼ 24 V | **LR97D07B** |
| | | | ⎓/∼ 48 V | **LR97D07E** |
| **5…25** | **5…21** | LC1 D09…D38 | ∼ 200…240 V | **LR97D25M7** |
| | | | ∼ 100…120 V | **LR97D25F7** |
| | | | ⎓/∼ 24 V | **LR97D25B** |
| | | | ⎓/∼ 48 V | **LR97D25E** |
| **20…38** | **20…34** | LC1 D25…D38 | ∼ 200…240 V | **LR97D38M7** |
| | | | ∼ 100…120 V | **LR97D38F7** |
| | | | ⎓/∼ 24 V | **LR97D38B** |
| | | | ⎓/∼ 48 V | **LR97D38E** |

PB111927.eps

*LT4730●●●*

## LT47 electronic over current relays

| Relay setting range | Usable range (1) | Relay supply voltage | Reference |
|---|---|---|---|
| A | A | | |
| **LT47 relay with manual/electric reset** | | | |
| **0.5…6** | **0.5…5** | ∼ 200…240 V | **LT4706M7S** |
| | | ∼ 100…120 V | **LT4706F7S** |
| | | ⎓/∼ 24 V | **LT4706BS** |
| **3…30** | **3…25** | ∼ 200…240 V | **LT4730M7S** |
| | | ∼ 100…120 V | **LT4730F7S** |
| | | ⎓/∼ 24 V | **LT4730BS** |
| **5…60** | **5…50** | ∼ 200…240 V | **LT4760M7S** |
| | | ∼ 100…120 V | **LT4760F7S** |
| | | ⎓/∼ 24 V | **LT4760BS** |
| | | ⎓/∼ 48 V | **LT4760ES** |
| **LT47 relay with automatic reset** | | | |
| **0.5…6** | **0.5…5** | ∼ 200…240 V | **LT4706M7A** |
| | | ⎓/∼ 24 V | **LT4706BA** |
| **3…30** | **3…25** | ∼ 200…240 V | **LT4730M7A** |
| | | ∼ 100…120 V | **LT4730F7A** |
| | | ⎓/∼ 24 V | **LT4730BA** |
| | | ⎓/∼ 48 V | **LT4730EA** |
| **5…60** | **5…50** | ∼ 200…240 V | **LT4760M7A** |
| | | ⎓/∼ 24 V | **LT4760BA** |

## Accessories (to be ordered separately)

| Description | For use with | Sold in lots of | Unit reference |
|---|---|---|---|
| Pre-wiring kits allowing connection of the LR97D relay N/C contact directly to the contactor | LC1 D09…D18 | 10 | **LAD7C1** |
| | LC1 D25…D38 | 10 | **LAD7C2** |
| Terminal block for clip-on mounting on 35 mm rail (AM1 DP200) | LR97D | 1 | **LAD7B106** |

*(1) To allow adjustment of the tripping sensitivity, see adjustment method (page B11/44).*
*(2) Please see chapter B8.*
*(3) If a pre-wiring kit is used, it is no longer possible to electrically wire signalling of tripped status.*

Overload relays

Characteristics: pages B11/44 to B11/47
Dimensions, schemes: page B11/48

## Product references

DPER01
DPER21
DPER32
DPER35
ER1XA2M
LA7D03B
LA7D03F
LA7D03M
LA7D03Q
LA7D1020
LA7D1064
LA7D305
LA7D3058
LA7D3064
LA7D30646
LA7D903
LA7K0064
LA9D730
LA9D91
LAD703B
LAD703E
LAD703F
LAD703M
LAD703Q
LAD7305
LAD7B105
LAD7B1056
LAD7B106
LAD7B205
LAD7C1
LAD7C2
LR2D3522
LR2D3553
LR2D3555
LR2D3557
LR2D3559
LR2D3561
LR2D3563
LR2K0301
LR2K0302
LR2K0303
LR2K0304
LR2K0305
LR2K0306
LR2K0307
LR2K0308
LR2K0310
LR2K0312
LR2K0314
LR2K0316
LR2K0321
LR2K0322
LR3D02
LR3D03
LR3D04
LR3D046
LR3D05
LR3D056
LR3D06
LR3D066
LR3D07
LR3D076
LR3D07L
LR3D08
LR3D086
LR3D08L
LR3D10
LR3D106
LR3D10L
LR3D12
LR3D126
LR3D12L
LR3D14
LR3D146
LR3D14L
LR3D16
LR3D166
LR3D16L
LR3D21
LR3D216
LR3D21L
LR3D22
LR3D226
LR3D22L
LR3D313
LR3D318
LR3D32
LR3D325
LR3D326
LR3D32L
LR3D332
LR3D3322
LR3D3353
LR3D3355
LR3D3363
LR3D3365
LR3D340
LR3D35
LR3D350
LR3D3522
LR3D3553
LR3D3555
LR3D3557
LR3D3559
LR3D3561
LR3D3563
LR3D365
LR3D380
LR3D3803
LR3D3806
LR3D4365
LR3D4367
LR3D4369
LR7K0305
LR7K0306
LR7K0308
LR7K0310
LR7K0312
LR7K0314
LR7K0316
LR97D015B
LR97D015E
LR97D015F7
LR97D015M7
LR97D07B
LR97D07E
LR97D07F7
LR97D07M7
LR97D25B
LR97D25E
LR97D25F7
LR97D25M7
LR97D38B
LR97D38E
LR97D38F7
LR97D38M7
LR9D5367
LR9D5369
LR9D5567
LR9D5569
LR9D67
LR9D69
LR9G115
LR9G225
LR9G500
LR9G630
LA9G3650
LA9G3651
LA9G3652
LA9G3653
LA9G82
LA9G3704
LA9G3705
LA9G3706
LRD01
LRD02
LRD03
LRD04
LRD046
LRD04L6
LRD05
LRD056
LRD05L
LRD06
LRD063
LRD066
LRD06L
LRD07
LRD073
LRD076
LRD07L
LRD07L6
LRD08
LRD083
LRD086
LRD08L
LRD08L6
LRD10
LRD103
LRD106
LRD10L
LRD10L6
LRD12
LRD123
LRD126
LRD12L
LRD14
LRD143
LRD146
LRD14L
LRD1508
LRD1510
LRD1512
LRD1514
LRD1516
LRD1521
LRD1522
LRD1530
LRD1532
LRD16
LRD163
LRD166
LRD16L
LRD16L6
LRD21
LRD213
LRD216
LRD21L
LRD21L6
LRD22
LRD223
LRD226
LRD22L
LRD22L6
LRD313
LRD313L
LRD318
LRD318L
LRD32
LRD325
LRD3256
LRD325L
LRD326
LRD32L
LRD32L6
LRD3312
LRD3314
LRD332
LRD3322
LRD3323
LRD332L
LRD3353
LRD3353A66
LRD3355
LRD3357
LRD3357A66
LRD3359
LRD3359A66
LRD3361
LRD3363
LRD3365
LRD33656
LRD33676
LRD33696
LRD340
LRD3406
LRD340L
LRD340L6
LRD35
LRD350
LRD3503
LRD3506
LRD350L
LRD356
LRD365
LRD3653
LRD3656
LRD365L
LRD365L6
LRD380
LRD3803
LRD3806
LRD4365
LRD4367
LRD4369
LRD488C
LT4706BA
LT4706BS
LT4706F7S
LT4706M7A
LT4706M7S
LT4730BA
LT4730BS
LT4730EA
LT4730F7A
LT4730F7S
LT4730M7A
LT4730M7S
LT4760BA
LT4760BS
LT4760ES
LT4760F7S
LT4760M7A
LT4760M7S



This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

TeSys LRK, Deca Overload relays

# Technical Data for Designers

## Contents


Motor and machine protection ..... B11/18 to B11/23

TeSys LRK - thermal overload protection:
- > characteristics ..... B11/24 to B11/25
- > dimensions and schemes ..... B11/26

Deca - thermal overload protection:
- > characteristics ..... B11/27 to B11/30
- > dimensions ..... B11/31 to B11/33
- > schemes ..... B11/33

Deca - electronic thermal overload protection:
- > characteristics ..... B11/34 to B11/37
- > dimensions ..... B11/38
- > schemes ..... B11/39

Giga - electronic overload relays:
- > characteristics ..... B11/40 to B11/42
- > dimensions and diagram ..... B11/43

LR97, LT47 - electronic over current relays:
- > characteristics ..... B11/44 to B11/47
- > dimensions and schemes ..... B11/48

## Introduction

Exceeding the operating limits of an electric motor will lead, eventually, not only to destruction of the motor itself but also of the mechanisms it drives.

This type of load can be the cause of electrical or mechanical faults.
■ Electrical faults:
□ overvoltage, voltage drop, imbalance and phase failure which cause variations in the current drawn,
□ short-circuits which can cause the current to reach levels capable of destroying the load.

■ Mechanical faults:
□ locked rotor,
□ brief or prolonged overload which leads to an increase in the current drawn by the motor, and therefore overheating.

The cost of these faults must take into account loss of production, loss of raw materials, repair of the production tool, poor quality of production and delays in delivery.

These faults can also have dramatic consequences on the safety of persons in direct or indirect contact with the motor.

To prevent these faults, protection measures are necessary. They make it possible to isolate the equipment to be protected from the mains supply by measuring variations in electrical values (voltage, current, etc.).

**Each motor starter must therefore have:**

■ **short-circuit protection**, to detect and break, as quickly as possible, abnormal currents generally greater than 10 times the rated current (In).

■ **overload protection**, to detect increases in current up to about 10 In and switch off the starter before overheating of the motor and conductors damages the insulation.

This protection is provided by specific devices such as fuses, circuit breakers and thermal overload relays, or by more integrated devices offering several types of protection.

## Causes, effects and consequences of various faults

There are two types of fault:
- Internal faults within the motor
- External faults: these are located outside the electric motor but their consequences can lead to damage inside the motor.

| Faults | Causes | Effects | Consequences on the motor and on the machine |
|---|---|---|---|
| Short-circuit | Contact between several phases, or between one phase and neutral or between several turns of the same phase. | ■ Current peak<br>■ Electrodynamic forces on the conductors | Destruction of windings |
| Overvoltage | ■ Lightning<br>■ Electrostatic discharge<br>■ Operation | Dielectric breakdown in the windings | Destruction of the windings due to loss of insulation |
| Phase imbalance and phase failure | ■ Opening of a phase<br>■ Single-phase load upstream of the motor<br>■ Short-circuit between the turns of the same winding | ■ Reduction of usable torque, efficiency and speed<br>■ Increase in losses<br>■ Starting impossible if phase failure | Overheating (1) |
| High starting frequency | ■ Failure of the automation system<br>■ Too many manual control operations<br>■ Numerous fault trips | High stator and rotor temperature rise due to the frequent start current | Overheating (1)<br>Consequences on the process |
| Voltage variations | ■ Instability of the mains voltage<br>■ Connection of heavy loads | ■ Reduction of usable torque<br>■ Increase in losses | Overheating (1) |
| Harmonics | ■ Pollution of the mains supply by variable speed drives, inverters, etc... | ■ Reduction of usable torque<br>■ Increase in losses | Overheating (1) |
| Long starting time | ■ Resistive torque too high (load too heavy)<br>■ Voltage drop | Increase in starting time | Overheating (1) |
| Jamming | ■ Mechanical problem (crusher)<br>■ Seizures | Overcurrent | Overheating (1)<br>Consequences on the process |
| No-load running | ■ Pump running empty<br>■ Mechanical break in drive to the load | Drop in current drawn | Consequences on the process |
| Frequency fluctuations | ■ Overload of a supply powered by limited independent sources<br>■ Faulty alternator speed regulator | ■ Increase in losses<br>■ Interferes with synchronous devices (clock, recorder, ...) | – |
| Overload | ■ Increase in resistive torque<br>■ Voltage drop<br>■ Drop in power factor | Increase in current consumption | Overheating (1) |
| Loss of machine excitation | ■ Significant drop in excitation current<br>■ Break in rotor winding | ■ Increase in active power<br>■ Drop in power factor | Significant overheating of rotor and cage |
| Phase-Earth fault | ■ Accidental Phase-Earth contacts<br>■ Accidental Phase-machine casing contacts (casing connected to earth) | ■ Overvoltage developed in the mains supply<br>■ Rise in earth potential (safety of persons) | Consequences on safety of persons |

*(1) Then, in the longer or shorter term, depending on the seriousness of the fault and/or its frequency, short-circuit and destruction of the windings.*

## Protection functions

### Short-circuit protection

#### General

A short-circuit results in a very rapid rise in current which can reach several hundred times the value of the operational current. The consequences of a short-circuit are dangerous to both equipment and persons. It is therefore imperative to use protection devices to detect the fault and very quickly break the circuit.

Two types of protection are commonly used:
■ fuses (cutout) which break the circuit by melting, which then requires their replacement,
■ magnetic trip circuit breakers, often more simply called "magnetic circuit breakers", which only require re-setting to put them back into service.
Short-circuit protection can also be built-into multifunction devices such as motor circuit breakers and contactor-breakers.

The main characteristics of short-circuit protection devices are:
■ their breaking capacity: this is the highest prospective short-circuit current value that a protection device can break at a given voltage.
■ their making capacity: this is the highest current value that the protection device can make at its rated voltage in specified conditions.
The making capacity is equal to k times the breaking capacity.

PB111830.eps

*Fuse carrier*
*Ref. LS1D32*

PB114116.eps

*Switch disconnectors*
*Ref. GS2N3*

#### Fuses (cutouts)

Fuses provide individual phase protection (single-pole), with a high breaking capacity in a compact size:
■ mounted either in fuse carriers,
■ or in isolators, replacing the original links or shunt bars.

For motor protection, aM type fuses are used. Their design characteristics allow them to conduct the high magnetising currents that occur when motors are switched on. They are therefore unsuitable for overload protection (unlike gG type fuses). This is why an overload relay must be included in the motor power supply circuit.

PB121671.eps

*Deca Magnetic circuit breaker*
*Ref. GV2L*

PB114909.eps

*Deca Magnetic circuit breaker*
*Ref. GV4LE*

#### Magnetic circuit breakers

These circuit breakers protect installations against short-circuits, within the limit of their breaking capacity.
Magnetic circuit breakers provide omnipole breaking as standard.
For relatively low short-circuit currents, the operation of a circuit breaker is faster than that of fuses.
This protection conforms to standard IEC 60947-2.
The thermal and electrodynamic effects are also limited, therefore ensuring better protection of cables and equipment.

PB121694.tif

*Deca Thermal overload relay*
*Ref. LRD08*

PB121503.eps

*Current measurement relay*
*Ref. RM4JA*

## Protection functions

### Overload protection

#### General

An overload condition is the most frequently encountered fault. The symptoms are a rise in the current drawn by the motor and thermal effects. A rapid return to normal operating conditions is important.
The actual operating conditions (ambient temperature, operating altitude and type of standard duty) are essential to determine the operating values of the motor (power, current) and to be able to select effective overload protection. These operational values are given by the motor manufacturer.

According to the level required, protection can be provided by:
■ overload relays and thermal overload relays (bi-metallic or electronic type) which protect motors in the event of:
□ overload, by monitoring the current drawn by each phase,
□ phase imbalance or failure, by their differential mechanism.
■ relays with PTC thermistor probes (Positive Temperature Coefficient).
■ overtorque relays,
■ multifunction relays.

#### Overload relays

These relays protect motors against overload. They must allow the temporary overload that occurs on starting and must only trip if the starting time is abnormally long.
The overload relay will be selected according to the length of the starting time (tripping class) and the motor rating.
These relays have a thermal memory (except for certain electronic overload relays, indicated by their manufacturers) and can be connected:
■ either in series with the load,
■ or to current transformers placed in series with the load.

**Bi-metallic thermal overload relays**
Combined with a contactor, these relays protect the line and the equipment against small and prolonged overloads. They must be protected against strong overcurrent by a circuit breaker or fuses.
These relays may be used on an a.c. or d.c. system and are generally:
■ 3-pole,
■ compensated, i.e. insensitive to ambient temperature variations,
■ with manual or automatic reset,
■ graduated with a "motor FLC" scale: allowing direct setting to the full load current as shown on the motor rating plate.
They can also be sensitive to phase failure: this is known as 'differential'. This function conforms to standards IEC 60947-4-1 and 60947-6-2.
This type of relay is extremely reliable and is a relatively low cost device.

**Electronic thermal overload relays**
Electronic thermal overload relays have the advantage of electronics which allow a more complex thermal image of the motor to be created.
They can be combined with products having complementary functions, such as:
■ temperature sensing via PTC probes,
■ protection against jamming and overtorque,
■ protection against phase reversal,
■ earth fault protection,
■ protection against no-load running,
■ alarm function.

*Instantaneous electronic overcurrent relays*
*Ref. LR97D07*

## Protection functions *(continued)*

### Overload protection (continued)

#### Relays for use with PTC thermistor probes

With direct sensing of the stator windings, these relays can be used to protect motors against:
- overload,
- a rise in ambient temperature,
- a ventilation circuit fault,
- a high starting frequency,
- mechanical shocks, etc.

#### Overload (or overtorque) relays

These relays protect the drive line in the event of a locked rotor, seizure or mechanical shocks. This is an additional protection.
Unlike thermal overload relays, these relays do not have a thermal memory. They have definite time characteristics (adjustable current threshold and time delay).
The overtorque relay can be used as overload protection for motors with long starting times or very frequent starting (for example, lifting hoists).

*T controller*
*Ref. LTMR08MBD*

#### Multifunction relays

- Overcurrent relays are limited when it is necessary to take into account problems associated with voltage, temperature or special applications. New production or maintenance management needs have prompted manufacturers to offer products which provide not only adaptable protection, but also complete management of the motor and its load.

They incorporate:
- current and voltage sensors (T controllers),
- hybrid analog and digital electronic technology,
- the use of communication buses for data exchange and control,
- powerful motor modelling algorithms,
- integrated application programs whose parameters can be set.

These products make it possible to reduce installation and operating costs by reducing maintenance and downtime.

T controllers:
The multifunction relay is separate from the power line and incorporates inputs and outputs. It can be used in conjunction with a contactor up to 810 A.

# Motor and machine protection

## Protection relay selection table

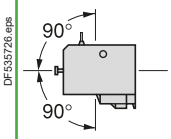
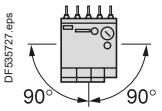
| | Motor protection | | Machine protection | Motor and machine protection | |
|---|---|---|---|---|---|
| **Relay type** | **Thermal overload relay Ref. LR2K, LRD, LRD3, LR9D (1), LR9G** | **Relays for use with PTC probes Ref. LT3S** | **Overtorque relays Ref. LR97D, LT47** | **Ultra controller Ref. LUTM** | **T controller Ref. LTMR** |
| **Causes of overheating** | (2) | | (2) | (2) | (3) |
| Slight overload | ■ | ■ | ▒ | ■ | ■ |
| Locked rotor | ■ | ▒ | ■ | ■ | ■ |
| No-load running | | | | ■ | ■ |
| Supply phase failure | ■ | ▒ | LR97D | ■ | |
| Ventilation fault | | ■ | | | With probes |
| Abnormal temperature rise | ▒ | ■ | | | With probes |
| Shaft bearing seizure | ▒ | ■ | ▒ | ▒ | With probes |
| Insulation fault | ▒ | | | ■ | ■ |
| Protracted starting time | ■ | ▒ | ■ | ■ | ■ |
| Severe duty | ▒ | ■ | ■ | ▒ | With probes |
| Voltage variation | ▒ | ▒ | ▒ | ▒ | ■ |
| Frequency fluctuations | ▒ | | | | ■ |
| Loss of machine excitation | | | | | ■ |

■ Ideally suited
▒ Possible solution
□ Not suitable (no protection)

*(1) For motor circuit breaker ref.* ***GV2ME****.*
*(2) Protection based on current.*
*(3) Protection based on current and voltage.*

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T14048. |
| Product certifications | | | UL , CSA, CCC, EAC, CB, UKCA certification |
| Degree of protection | Conforming to IEC 60529 | | Protection against direct finger contact |
| Ambient air temperature around the device | Storage | °C | -40...+70 |
| | For normal operation (IEC 60947) | °C | -20...+55 (without derating) |
| | Operating limit | °C | -30...+60 (with derating) (1) |
| Maximum operating altitude | Without derating | m | 2000 |
| Operating positions | | | **Vertical axis**   Without derating **Horizontal axis**   With derating (1) |
| Flame resistance | Conforming to 60695-2-11 | °C | 850 |
| Shock resistance, hot state (1/2 sine wave, 11 ms) | Conforming to IEC 60068-2-27, N/C contact | | 10 gn |
| | Conforming to IEC 60068-2-27, N/O contact | | 10 gn |
| Vibration resistance, hot state 5 to 300 Hz | Conforming to IEC 60068-2-6, N/C contact | | 2 gn |
| | Conforming to IEC 60068-2-6, N/O contact | | 2 gn |

| Cabling Screw clamp terminals | | | Minimum | Maximum | Maximum to IEC 60947 |
|---|---|---|---|---|---|
| | Solid cable | $mm^2$ | 1 x 1.5 | 2 x 4 | 1 x 4 + 1 x 2.5 |
| | Flexible cable without cable end | $mm^2$ | 1 x 0.75 | 2 x 4 | 2 x 2.5 |
| | Flexible cable with cable end | $mm^2$ | 1 x 0.34 | 1 x 1.5 + 1 x 2.5 | 1 x 1.5 + 1 x 2.5 |

| | | | |
|---|---|---|---|
| Tightening torque | Philips head n° 2 - Ø6 | N.m | 0.8 |
| Mounting | | | Directly under the contactor or reversing contactor |
| Connections | | | Made automatically when mounted under the contactor, as follows:<br>■ contactor terminal A2 connected to overload relay terminal 96 on all products,<br>■ contactor terminal 14 connected to overload relay terminal 95 on products with 3 P + N/O.<br>When using 3 P + N/C, or 4 P contactors, or the N/O auxiliary contact marked 13-14, at a voltage other than the coil voltage, break off the link marked 14. |

## Auxiliary contact characteristics

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Number of contacts | | | 1 N/C + 1 N/O | | | | | | |
| Conventional thermal current | | A | 6 | | | | | | |
| Short-circuit protection | Conforming to IEC 60947 gG fuse or circuit breaker GB2CB●● | A | 6 max. | | | | | | |
| Maximum power of the controlled contactor coils (sealed) (Occasional operating cycles of contact 95-96) | a.c. | V | 24 | 48 | 110 | 220/230 | 400 | 415/440 | 600/690 |
| | | VA | 100 | 200 | 400 | 600 | 600 | 600 | 600 |
| | d.c. | V | 24 | 48 | 110 | 220 | 250 | – | – |
| | | W | 100 | 100 | 50 | 45 | 35 | – | – |
| Maximum operational voltage | a.c., category AC-15 | V | 690 | | | | | | |
| | d.c., category DC-13 | V | 250 | | | | | | |

*(1) Please consult your Regional Sales Office.*
*(2) Very low safety voltage.*

References: pages B11/2 and B11/3
Dimensions: page B11/26
Schemes: page B11/26

# Characteristics

## Electrical characteristics of the power circuit

| | | | |
|---|---|---|---|
| Rated operational voltage (Ue) | Up to | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947 | **V** | 690 |
| | Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1 | **V** | 600 |
| Rated impulse withstand voltage (Uimp) | | **kV** | 6 |
| Frequency limits of the operational current | | **Hz** | Up to 400 |
| Power dissipated per pole | | **W** | 2 |

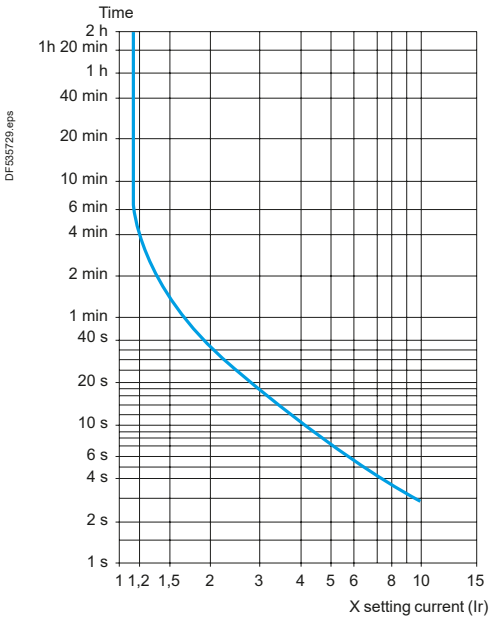
## Operating characteristics

| | | | |
|---|---|---|---|
| Tripping threshold | Conforming to IEC 60947-4-1 | **A** | 1.14 ±0.06 Ir |
| Sensitivity to phase failure | Conforming to IEC 60947 | | Yes |
| Reset | Manual or automatic | | Selected by means of a lockable and sealable switch on the front of the relay |
| Signalling | On front of relay | | Trip indicator |
| Reset-Stop function | | | Pressing the Reset-Stop button:<br>- actuates the N/C contact<br>- has no effect on the N/O contact |
| Test function | By pushbutton | | Pressing the Test button enables:<br>- checking of the control circuit wiring<br>- simulation of overload tripping (actuation of both N/C and N/O contacts, and of the trip indicator) |
| Short-circuit protection and coordination | | | See pages A5/12 and A5/30 |

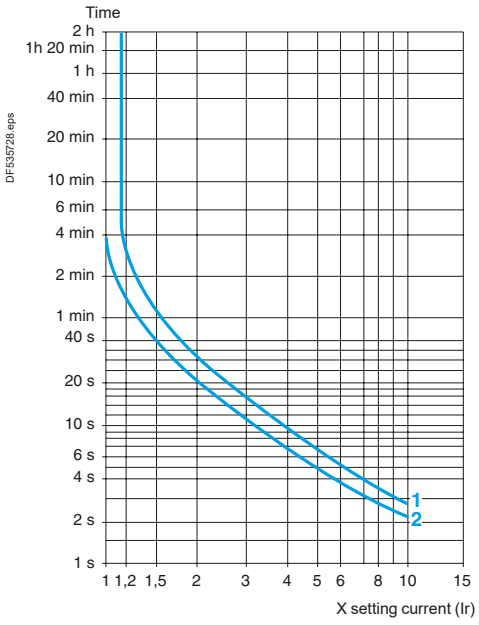
## Tripping curves

**Average operating time related to multiples of the current setting (Class 10 A)**

**Balanced 3-phase operation, from cold state**




**Balanced operation with 2 phases only, from cold state**




Setting: at lower end of scale

Setting: at upper end of scale

References:
pages B11/2 and B11/3

Dimensions:
page B11/26

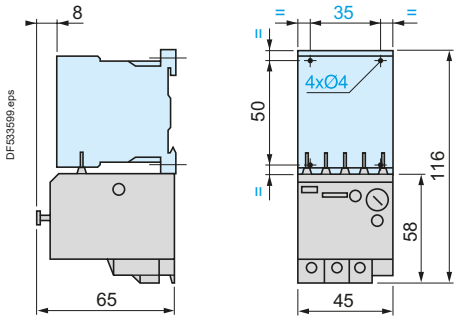
Schemes:
page B11/26

# Dimensions, mounting, schemes

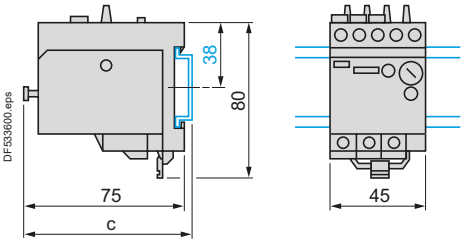
## Dimensions, mounting

### LR2K

**Direct mounting beneath the contactor**



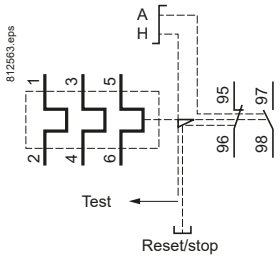

**Separate mounting with terminal block LA7K0064 on 35 mm ⎓ rail**
(AM1DP200 or AM1DE200)




| AM1 | c |
|---|---|
| DP200 | 78.5 |
| DE200 | 86 |

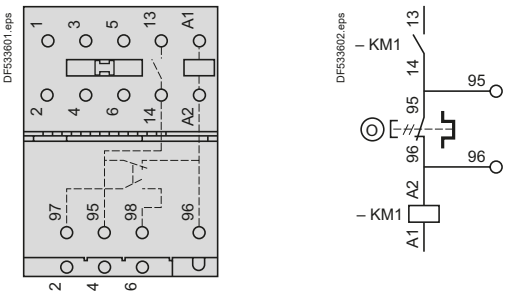
## Schemes

### LR2K

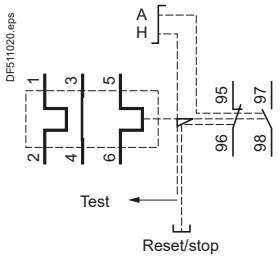



### LR2K + LC●K

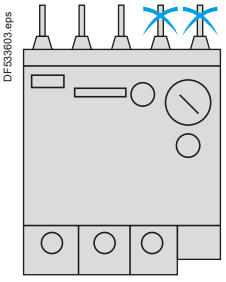
**Pre-wiring scheme**




### LR7K




***Note:*** *If pre-wiring is not required, break off the 2 links located on the thermal overload relay.*




Ref.
Overload relays

PB121694.tif

*Ref. LRD08*

PB121670_R.eps

*Ref. LRD05L...32L*

PB123810.eps

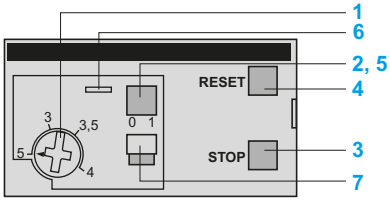
*Ref. LRD365*

EverLink®

PB123837.tif

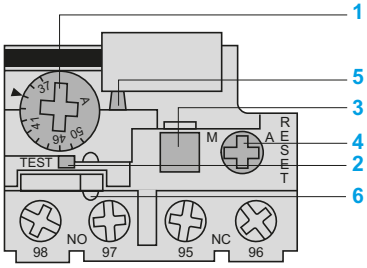
*Ref. LRD33●●*

DF567968.eps




*Ref. LRD01…35, LRD05L...32L*
*LRD313…LRD365*

DF567969.eps




*Ref. LRD3361…4369, LR2 D3561…3563*

## Introduction

3-pole Deca thermal overload relays are designed to protect a.c. circuits and motors against:
- overloads
- phase failure
- excessively long starting times
- prolonged stalled rotor condition.

### Power connection

**Product references LRD01 to LRD35**
LRD01 to 35 relays are designed for connection by screw clamp terminals.
They can be supplied for connection by spring terminals or by lugs (1).

**Product references LRD04 to LRD32L**
These relays are designed for connection by screw clamp terminals. They can be supplied for connection by lugs (1).

**Product references LRD313 to LRD380**
These relays are for connection by BTR screw connectors (hexagon socket head).
The screws are tightened by means of a size 4, insulated Allen key.
This type of connection uses the **Ever**Link® system with creep compensation (2) (Schneider Electric patent).
This technique makes it possible to achieve accurate and durable tightening torque.

These relays are also available for connection by lugs (1).

**Product references LRD3361 to 4369, LR2D3561 to D3563**
Product references LRD3361 to 4369 and LR2D3561 to D3563 relays are designed for connection by screw clamp terminals. They can be supplied for connection by lugs (1).

## Description

Deca 3-pole thermal overload relays are designed to protect a.c. circuits and motors against overloads, phase failure, long starting times and prolonged stalling of the motor.

1 Adjustment dial Ir.
2 Test button.
Operation of the Test button allows:
- checking of control circuit wiring,
- simulation of relay tripping (actuates both the N/O and N/C contacts).
3 Stop button. Actuates the N/C contact; does not affect the N/O contact.
4 Reset button.
5 Trip indicator.
6 Setting locked by sealing the cover.
7 Selector for manual or automatic reset.

Product references LRD01 to 35, LRD05L to 32L and LRD313 to LRD380 relays are supplied with the selector in the manual position, protected by a cover. Deliberate action is required to move it to the automatic position.

*(1) Connection by lugs meets the requirements of certain Asian markets and is suitable for applications subject to strong vibration, such as railway transport.*
*(2) Creep: normal crushing phenomenon of copper conductors, that is accentuated over time.*

References:
pages B11/4 to B11/7
Dimensions, mounting:
pages B11/31 to B11/33
Schemes:
page B11/33

# Characteristics

## Environment

| | | | |
|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1 UL 60947-5-1, CSA C22.2 n° 60947-5-1, EN 50495 (1), GB/T 14048.4, GB/T 14048.5 |
| Product certifications | | | UL (2), CSA (2), UKCA<br>IEC, CCC (3), EAC,<br>ATEX (1)<br>ABS, BV (4), DNV-GL (5), LRoS (6), RINA (7), RMRS (8), EU RO Mutual recognition (9) |
| Degree of protection (front face) | Conforming to IEC 60529 | | Protection against direct finger contact IP20 |
| Climatic withstand | | | Conforming to IACS E10 |
| Ambient air temperature around the device | Storage | °C | -60…+70 |
| | Normal operation, without derating (IEC 60947-4-1) | °C | -20…+60 |
| | Minimum /maximum operating temperatures (with derating) | °C | -20…+70 |
| Operating positions without derating | In relation to normal vertical mounting plane | | Any position.<br>When mounting on a vertical rail, use a stop. |
| Flame resistance | Conforming to 60695-2-11 | °C | 850 |
| Shock resistance | Permissible acceleration conforming to IEC 60068-2-27 | | 15 gn - 11 ms |
| Vibration resistance (10) | Permissible acceleration conforming to IEC 60068-2-6 | | 6 gn<br>except LRD05L...LRD32L: 3 gn |
| Dielectric strength at 50 Hz | Conforming to IEC 60947-1 | kV | 1.89 (product Ui 690 V), 2.2 (product Ui 1000 V) |
| Impulse withstand voltage | Conforming to IEC 60947-1 | kV | 6 |

## Electrical characteristics of power circuit

| Relay type | | | LRD01 …16, LR3D02 …16 | LRD05L ...32L | LRD21 …35, LR3D21 …35 | LRD313 …365 LR3D 313 …38 | LRD313L …365L | LRD3322 …33696 LR3D3322 … 33696 | LR2D 3522 … 3563 | LRD 4365 … 4369 |
|---|---|---|---|---|---|---|---|---|---|---|
| Tripping class | Conforming to UL 60947-4-1, IEC 60947-4-1 | | 10 A | 20 | 10 A | 10 A | 20 | 10 A | 20 | 10 A |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 | V | 690 | | | | | 1000 (11) | | |
| | Conforming to UL, CSA | V | 600 | | | | | | | 600 except **LRD 4369** |
| Rated impulse withstand voltage (Uimp) | | kV | 6 | | | | | | | |
| Rated operational voltage (Ue) | | V | 690 | | | | | | | |
| Frequency limits | Of the operating current | Hz | 0…400 | | | | | | | |
| Setting range | Depending on model | A | 0.1…13 | 0.63…32 | 12…38 | 9…80 | 9…65 | 17…140 | 17…80 | 80…140 |

## Auxiliary contact characteristics

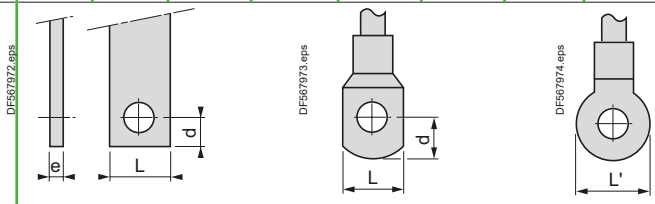
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Conventional thermal current | | A | 5 | | | | | |
| Max. sealed consumption of the operating coils of controlled contactors (Occasional operating cycles of contact 95-96) | a.c. supply, AC-15 | V | 120 | 240 | 380 | 480 | 500 | 600 |
| | | A | 3 | 1.5 | 0.95 | 0.75 | 0.72 | 0.12 |
| | d.c. supply, DC-13 | V | 125 | 250 | 440 | | | |
| | | A | 0.22 | 0.1 | 0.06 | | | |
| Protection against short-circuits | By gG, BS fuses. Maximum rating or by GB2 | A | 4 | | | | | |

*(1) For relays **LRD01** to **LRD380**, **LRD3322** to **LRD3365**, **LRD04L** to **LRD32L**, **LRD4365** to **LRD4369**, **LRD33656** to **LRD33696**.*
*(2) Except for relays **LRD4369**.*
*(3) CCC: Except for **LRD/LR3D04L** to **LRD/LR3D32L**, **LR2D3522** to **LR2D3563**.*
*(4) BV: except for **LRD/LR3D04L** to **LRD/LR3D32L**, **LRD/LR3D313** to **LRD/LR3D380, LR2D3522 to LR2D3563.***
*(5) DNV-GL: except for **LRD04L** to **LRD32L**.*
*(6) LRoS: except for **LRD/LR3D04L** to **LRD/LR3D32L**, **LRD/LR3D380**.*
*(7) RINA: for **LRD/LR3D01** to **LRD/LR3D35**.*
*(8) RMRS: for **LRD/LR3D313** to **LRD/LR3D380**.*
*(9) EU RO Mutual Recognition: for **LRD/LR3D313** to **LRD/LR3D380**, **LRD313L** to **LRD365L**.*
*(10) In case of vibration above 3gn on Deca Green contactor directly mounted with LRD, it is recommended do mount the devices separately by screws on metal plate.*
*(11) 750 V for **LRD33656**, **LRD33676**, **LRD33696**.*

Ref.
Overload relays
References: pages B11/4 to B11/7
Dimensions, mounting: pages B11/31 to B11/33
Schemes: page B11/33

# Characteristics

## Power circuit connection characteristics

| Relay type | | | LRD01 …16, LR3D01 …16 | LRD04L ...21L | LRD22L ...32L | LRD21 …35, LR3D21 …35 | LRD 313 …365 LR3D 313 …380 | LRD 313L …365L | LRD 3322 …33696 LR3D 3322 … 33696 | LR2D 3522 …3563 | LRD 4365 …4369 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Connection to screw clamp terminals | | | | | | | | | | | |
| Flexible cable without cable end | 1 conductor | mm² | 1.5…10 | | | 1.5…10 | 1…35 | 1…35 | 4…35 | | 4…50 |
| Flexible cable with cable end | 1 conductor | mm² | 1…4 | | 1...6 | 1…6 except **LRD21:** 1…4 | 1…35 | 1…35 | 4…35 | | 4…35 |
| Solid cable without cable end | 1 conductor | mm² | 1…6 | | 1.5…10 | 1.5/10 except **LRD21:** 1/6 | 1…35 | 1…35 | 4…35 | | 4…50 |
| Tightening torque | | N.m | 1.7 | | 2.5 | 2.5 | 1…25: 5 35: 8 | 1…25: 5 35: 8 | 9 | 9 | 9 |
| Connection to spring terminals (Min/max c.s.a.) (except LRD04L...LRD32L) | | | | | | | | | | | |
| Flexible cable without cable end | 1 conductor | mm² | 1.5…4 | – | – | 1.5…4 | – | – | – | – | – |
| Flexible cable with cable end | 1 conductor | mm² | 1.5…4 | – | – | 1.5…4 | – | – | – | – | – |
| Connection by bars or lugs | | |  | | | | | | | | |

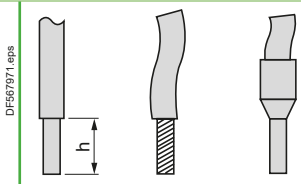


| Relay type | | | LRD016…166 LRD04L6 … 16L6 | LRD216…356 LRD21L6 … 32L6 | LRD3136 … 3806 | LRD313L6 … 365L6 | LRD3322A66 … 3365A66 |
|---|---|---|---|---|---|---|---|
| Pitch | Without spreaders | mm | 14.5 | 17.5 | 17.5 | 17.5 | 21.5 |
| Bars or cables with lugs | e | mm | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 |
| | L | mm | ≤ 8 | ≤ 8 | ≤ 13.5 | ≤ 13.5 | ≤ 16 |
| | L' | mm | ≤ 9.5 | ≤ 9.5 | ≤ 16.5 | ≤ 16.5 | ≤ 16 |
| | d | | ≤ 7 | ≤ 7 | ≤ 10 | ≤ 10 | ≤ 12 |
| Screws | | | M4 | M4 | M6 | M6 | M10 |
| | Tightening torque | N.m | 1.7 | 2.5 | 6 | 6 | 11.3 |

## Control circuit connection characteristics

### Connection to screw clamp terminals or spring terminals

Bare cables





| Relay type | | | LRD01 …16, LR3D01 …16 | LRD04L ...21L | LRD22L ...32L | LRD21 …35, LR3D21 …35 | LRD 313 …365 LR3D 313 …380 | LRD 313L …365L | LRD3322 …33696 LR3D 3322 … 33696 | LR2D 3522 … 3563 | LRD 4365 …4369 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Connection to screw clamp terminals (1) | Solid cable without cable end | mm² | 2 x 1…2.5 | | | | | | | | |
| | Flexible cable without cable end | mm² | 2 x 1…2.5 | | | | | | | | |
| | Flexible cable with cable end | mm² | 2 x 1…2.5 | | | | | | | | |
| Tightening torque | | N.m | 1.7 | | | | | | | | |
| Connection to spring terminals (Min/max c.s.a.) (except LRD04L...LRD32L) | Solid cable | mm² | 1…2.5 | – | | 1…2.5 | | | – | | |
| | Flexible cable without cable end | mm² | 1…2.5 | – | | 1…2.5 | | | – | | |

*(1) For relays **LRD313** to **380**: BTR hexagon socket head screws, **Ever**Link® system.*
*In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LADALLEN4**, see page B11/21).*

References: pages B11/4 to B11/7
Dimensions, mounting: pages B11/31 to B11/33
Schemes: page B11/33

# Characteristics

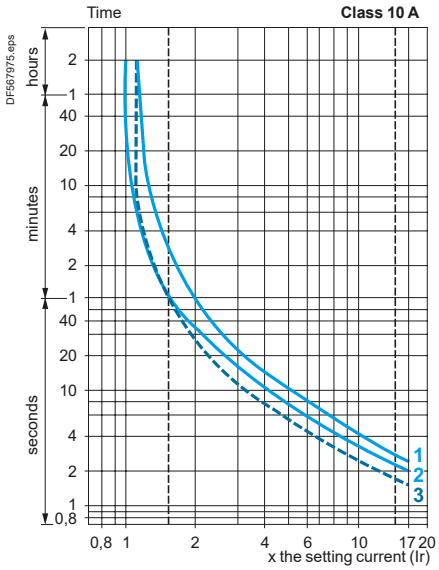
## Operating characteristics

| Relay type | | | LRD01 …16, LR3D02 …16 | LRD04L... LRD32L | LRD21 …35, LR3D21 …35 | LRD313 …365 LR3D 313 …380 | LRD313L …365L | LRD3322 …33696 LR3D3322 … 33696 | LR2D 3522 … 3563 | LRD 4365 …4369 |
|---|---|---|---|---|---|---|---|---|---|---|
| Temperature compensation | | °C | -20…+60 | | | | | | | |
| Tripping threshold | Conforming to IEC 60947-4-1 | A | 1.14 ±0.06 Ir | | | | | | | |
| Sensitivity to phase failure | | | Tripping current 130 % of Ir on two phases, the third phase at 0. | | | | | | | |

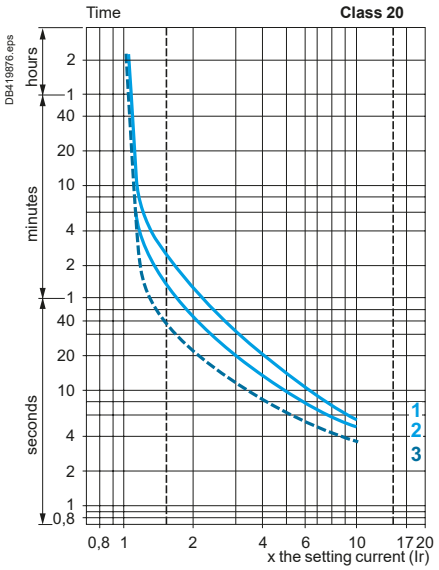
## Tripping curves

**Average operating time related to multiples of the setting current**

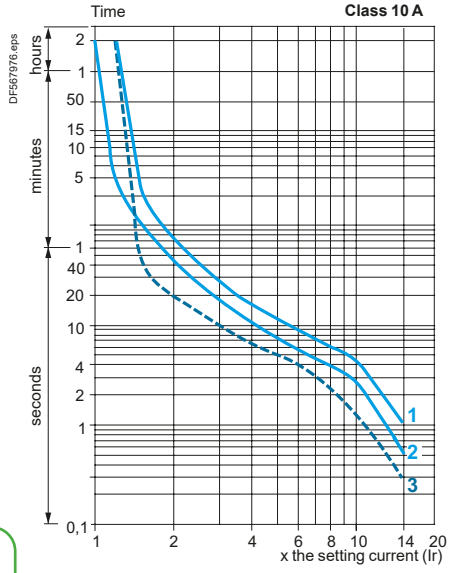
### LRD01 to LRD35, LR2D and LRD3322 to LRD4369



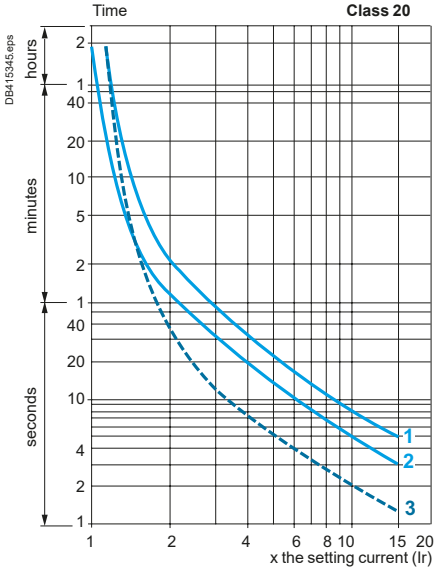

### LRD04L to LRD32L and LR2D3522 to LR2D3563




### LRD313 to LRD380




### LRD313L to LRD365L



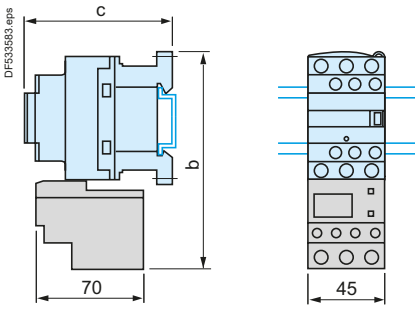

**1** Balanced operation, 3-phase, without prior current flow (cold state).
**2** 2-phase operation, without prior current flow (cold state).
**3** Balanced operation, 3-phase, after a long period at the set current (hot state).

References:
pages B11/4 to B11/7
Dimensions, mounting:
pages B11/31 to B11/33
Schemes:
page B11/33

# Dimensions, mounting

## LRD01…35 (1)

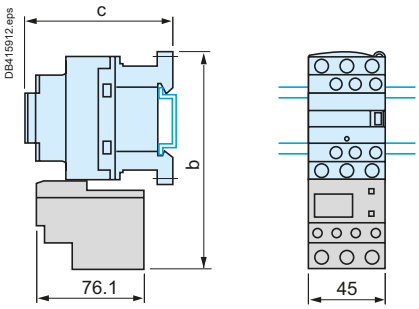
**Direct mounting beneath contactors with screw clamp connections**




| LC1 | D09…D18 | D25…D38 |
|---|---|---|
| b | 123 | 137 |
| c | See pages B11/28 and B8/100 | |

## LRD04...32L (1)

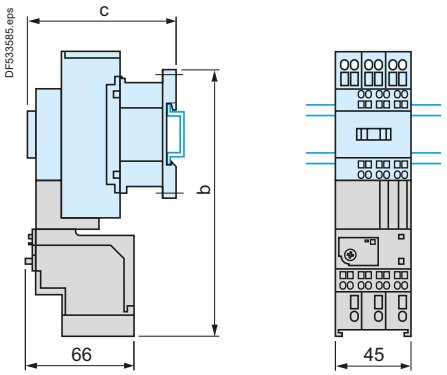
**Direct mounting beneath contactors with screw clamp connections**




| LC1 | D09…D18 | D25…D38 |
|---|---|---|
| b | 123 | 137 |
| c | See pages B11/28 and B8/100 | |

## LRD063…223

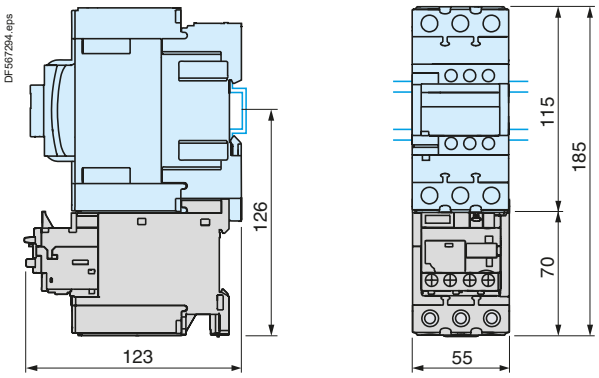
**Direct mounting beneath contactors with spring terminal connections**




| LC1 | D093…D253 |
|---|---|
| b | 168 |
| c | See pages B11/28 and B8/100 |

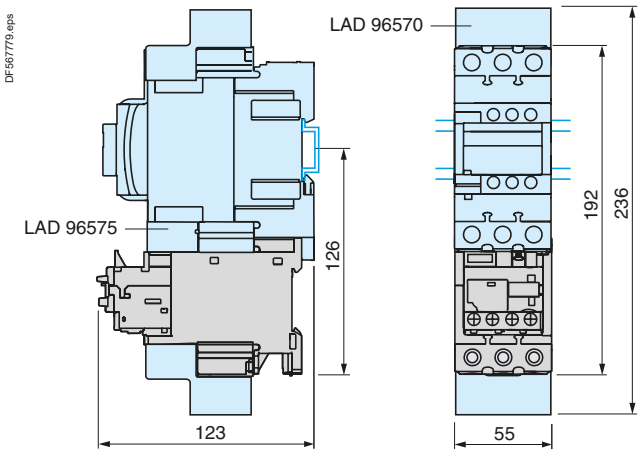
## LRD313…380 (1)

**Direct mounting beneath contactors LC1D40A…D80A with screw clamp connections or EverLink® connectors**



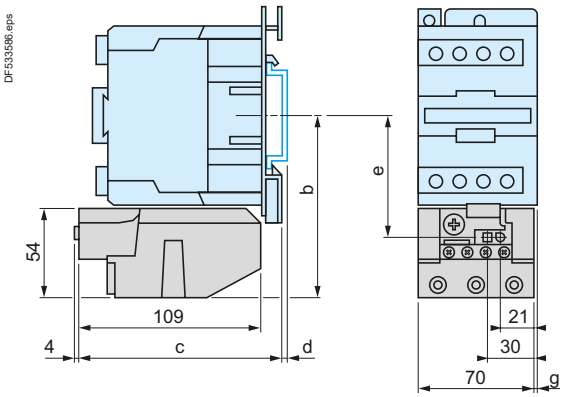

## LRD3256…3806 (1)

**Direct mounting beneath contactors LC1D40A6…D80A6 with lugs**




## LRD33●●●

**Direct mounting beneath contactors LC1D80…D95**




| AM1 | DL201 | DL200 |
|---|---|---|
| d | 7 | 17 |

| Control circuit AC | b | c | e | g (tri) | g (tetra) |
|---|---|---|---|---|---|
| LC1D80 | 115.5 | 124 | 76.9 | 9.5 | 22 |
| LC1D95 | 115.5 | 124 | 76.9 | 9.5 | - |
| **Control circuit DC** | | | | | |
| LC1D80, D95 | 115.5 | 179.4 | 76.9 | 9.5 | 22 |

*(1) In case of vibration above 3 gn on Deca Green contactor directly mounted with LRD, it is recommended do mount the devices separately by screws on metal plate.*

References:
pages B11/4 to B11/7

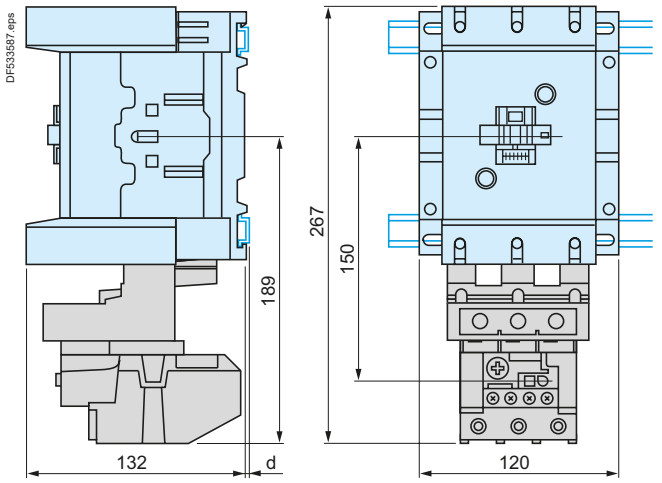
Characteristics:
pages B11/27 to B11/30

Schemes:
page B11/33

# Dimensions, mounting

## LRD4●●●

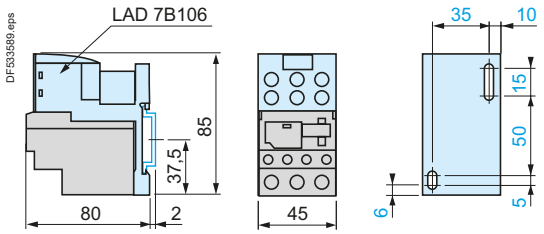
**Direct mounting beneath contactors LC1D115 and D150**



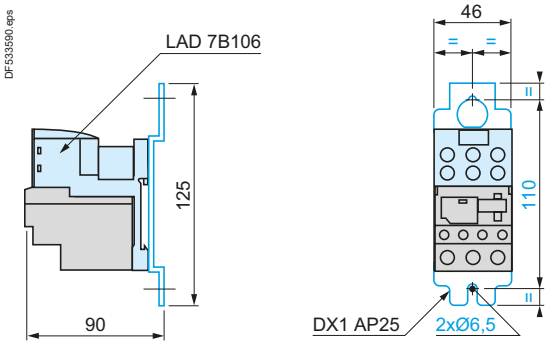

| AM1 | DL200 and DR200 | DE200 and ED●●● |
|---|---|---|
| d | 2.5 | 10.5 |

## LRD01…35

**Independent mounting on 50 mm centres or on rail AM1DP200 or DE200**



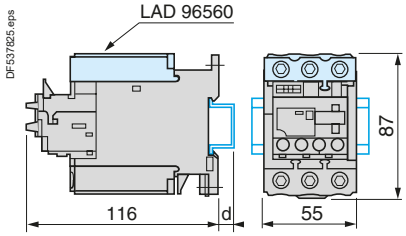

**Independent mounting on 110 mm centres**




## LRD313…380

**Mounting on rail AM1D●200 or ED200**

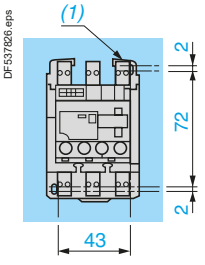
**With terminal block LAD96560**




| AM1 | DP200 | DE200 | ED200 |
|---|---|---|---|
| d | 2 | 9.5 | 9.5 |

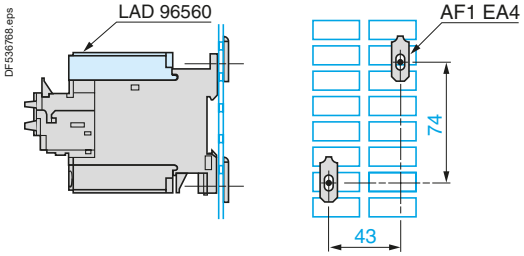
**Panel mounting**

**Outgoing terminal block not shown**



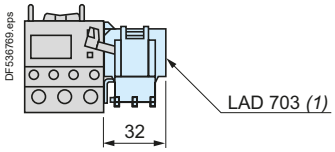

*(1) 2 elongated holes Ø 4.2 x 6.*

**Mounted on plate AM1P**




## LRD01…35 and LRD313…380

**Remote tripping or electrical reset**




*(1) Can only be mounted on RH side of relay **LRD01**…**35** and **LRD313**…**380** .*

References:
pages B11/4 to B11/7

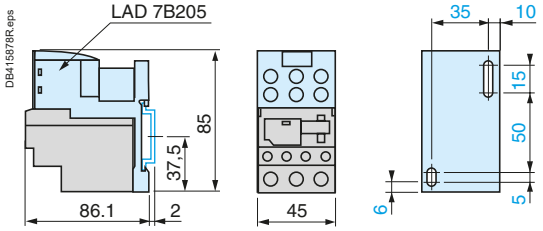
Characteristics:
pages B11/27 to B11/30

Schemes:
page B11/33

# Dimensions, mounting and schemes

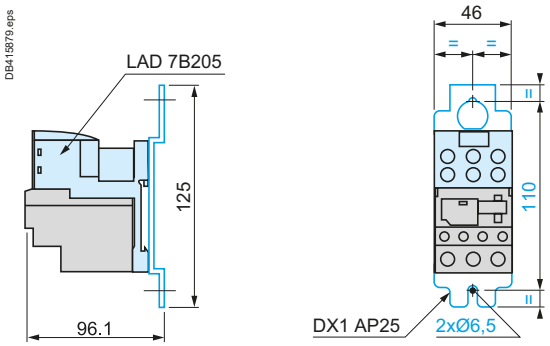
## LRD04L...32L

### Independent mounting on 50 mm centres or on rail AM1DP200 or DE200

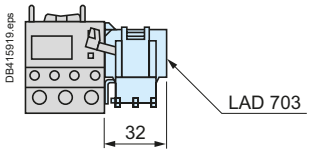



| AM1 | DP200 | DE200 |
|---|---|---|
| d | 2 | 9.5 |

### Independent mounting on 110 mm centres



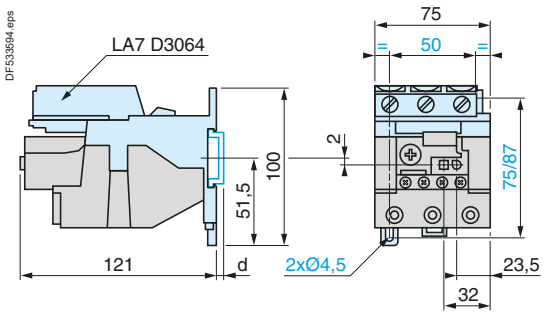

### Remote tripping or electrical reset




*(1) Can be mounted on RH or LH side of relay LR2D15.*

## LRD3●●● and LR2D35●●

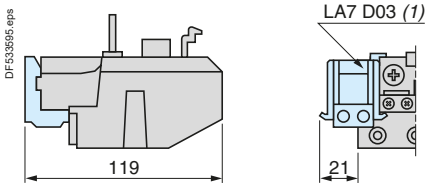
### Independent mounting on 50 mm centres or on rail AM1DP200 or DE200




| AM1 | DP200 | DE200 |
|---|---|---|
| d | 2 | 9.5 |

## LRD3●●●, LR2D35●● and LR9D

### Remote tripping or electrical reset



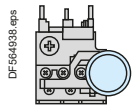

*(1) Can be mounted on RH or LH side of relay **LRD3●●●**, **LR2D35●●** or **LR9D**.*

## LRD3●●●

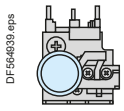
### Adapter for door mounted operator

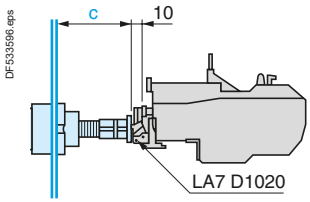
**LA7D1020**

**Stop**




**Reset**



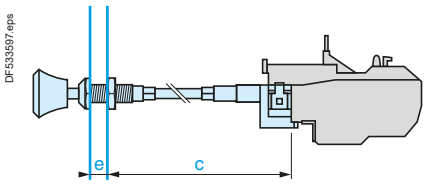

*c: adjustable from 17 to 120 mm*

## LRD, LRD313...380, LRD04...32L

### "Reset" by flexible cable

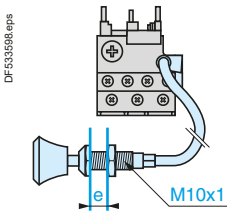
**LA7D305 and LAD7305**

**Mounting with cable straight**

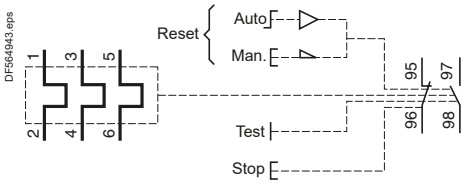



*e: up to 20 mm / c: up to 550 mm*

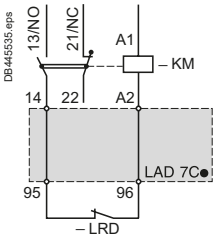
**Mounting with cable bent**




## LRD●●, LRD3●● and LR2D●●

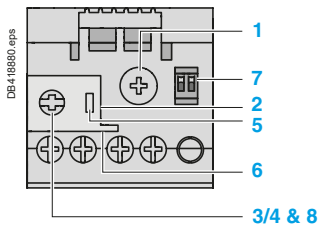



## Pre-wiring kit LAD7C1, LAD7C2




References:
pages B11/4 to B11/7

Characteristics:
pages B11/27 to B11/30




*LR9D01...32*

## Product references LR9D01, 02, 08 and 32

These self-powered electronic thermal overload relays are designed for direct mounting to contactors LC1D09 through LC1D38.

In addition to the protection provided by the Deca thermal overload relays (see page B11/31), they offer the following additional features:
- protection against phase imbalance
- choice of starting class
- protection of unbalanced circuits
- protection of single-phase circuits

1 Adjustment dial Ir.
2 Test button.
3 Stop button.
4 Reset button.
5 Trip indicator.
6 Setting locked by sealing the cover.
7 Class 5/10/20/30 dipswitches.
8 Reset mode selector.

## Environment

| Relay type | | | LR9D01, 02, 08, 32 |
|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4 |
| Product certifications | | | CCC, CSA, UL, CB, UKCA certification |
| Degree of protection | Conforming to IEC 60529 and VDE 0106 | | IP 20 on front panel |
| Ambient air temperature around the device (Conforming to IEC 60255-8) | Storage | **°C** | -55 to +80 |
| | Normal operation | **°C** | -25 to +70 |
| Maximum operating altitude | Without derating | **m** | 2000 |
| Operating positions without derating | In relation to normal vertical mounting plane | | Any position |
| Shock resistance | Permissible acceleration conforming to IEC 60068-2-27 | | 15 g (11ms) |
| Vibration resistance | Permissible acceleration conforming to IEC 60068-2-6 | | 6 g (10-150 Hz) |
| Dielectric strength at 50 Hz | Conforming to IEC 60947-4-1 | **kV** | 6 |
| Surge withstand, common mode | Conforming to IEC 61000-4-5 | **kV** | 2 |
| Resistance to electrostatic discharge | Conforming to IEC 61000-4-2 | **kV** | 8 |
| Immunity to radiated radio-frequency disturbances | Conforming to IEC 61000-4-3 and NF C 46-022 | **V/m** | 10 |
| Immunity to fast transient currents | Conforming to IEC 61000-4-4 | **kV** | 2 |
| Electromagnetic compatibility | Draft EN 50081-1 and 2, EN 50082-2 | | Meets requirements |

## Electrical characteristics of auxiliary contacts

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Conventional thermal current | | **A** | 5 | | | | | |
| Max. sealed consumption of the operating coils of controlled contactors (Occasional operating cycles of contact 95-96) | a.c. supply, AC-15 | **V** | 24 | 48 | 110 | 220 | 380 | 600 |
| | | **VA** | 100 | 200 | 400 | 600 | 600 | 600 |
| | d.c. supply, DC-13 | **V** | 24 | 48 | 110 | 220 | – | – |
| | | **W** | 100 | 100 | 50 | 45 | – | – |
| Protection against short-circuits | By gG or BS fuses or by circuit breaker **GB2** | **A** | 5 | | | | | |
| Cabling Flexible cable without cable end | 1 or 2 conductors | **mm² (AWG)** | 1 to 2.5 (18 to 14) | | | | | |
| | Tightening torque | **Nm (lb-in)** | 0.8 (7) | | | | | |

References: page B11/10
Dimensions, mounting: page B11/38
Schemes: page B11/39

# Characteristics

## Electrical characteristics of power circuit

| Relay type | | | LR9D01 | LR9D02 | LR9D08 | LR9D32 |
|---|---|---|---|---|---|---|
| Tripping class | Conforming to IEC/EN 60947-4-1 | | 5, 10, 20, 30 | | | |
| | Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1 | | 10, 20, 30 | | | |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 | **V AC** | 1000 | | | |
| Rated operational voltage (Ue) | Conforming to IEC 60947-4-1 | **V AC** | 690 | | | |
| | Conforming to UL/CSA | **V AC** | 600 | | | |
| Rated impulse withstand voltage | | **kV** | 6 | | | |
| Frequency limits | Of the operating current | **Hz** | 50…60 | | | |
| Setting range | | **A** | 0.1...0.5 | 0.4...2 | 1.6...8 | 6.4...32 |
| Power circuit connections | Wire size - 1 or 2 conductors | **mm² (AWG)** | 1 to 16 (14 to 6) | | | |
| | Tightening torque | **Nm (lb-in)** | 3.1 (28) | | | |

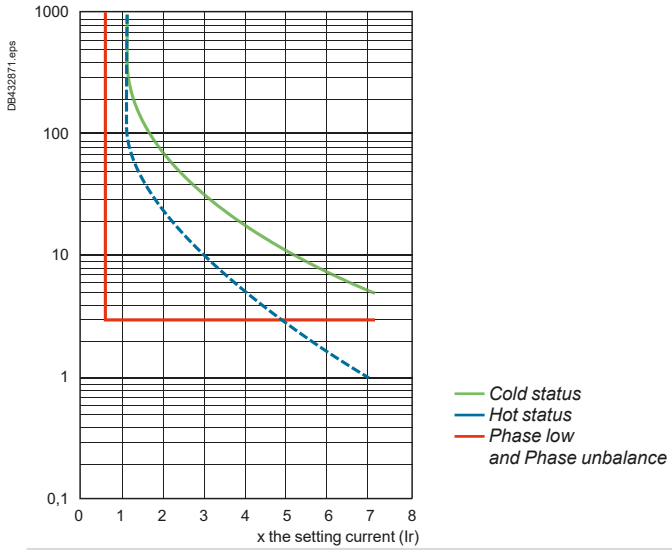
## Operating characteristics

| | | | |
|---|---|---|---|
| Consumption | | **mW** | < 300 |
| Tripping thresholds | Conforming to IEC 60947-4-1 | **A** | 1.25 In |
| Sensitivity to phase unbalance | Conforming to IEC 60947-4-1 | | Phase difference > 40%, tripping in 3 s |
| Current setting ratio | | | 5:1 |
| Automatic reset time | | **min.** | 1.5…4 |

## LR9D01, 02, 08, 32 tripping curves

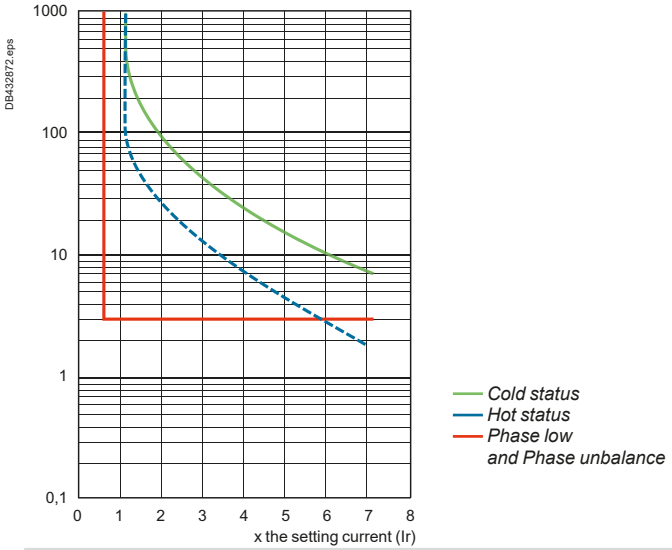
### Class 5 Trip curve

Tripping time in seconds



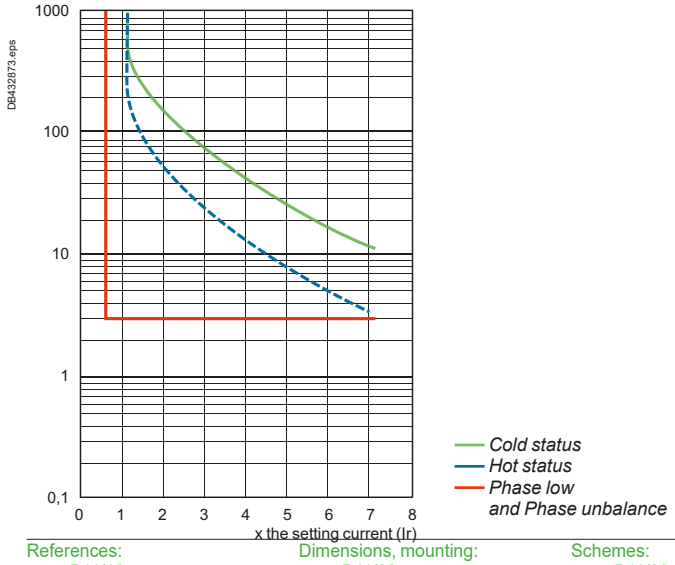

### Class 10 Trip curve

Tripping time in seconds



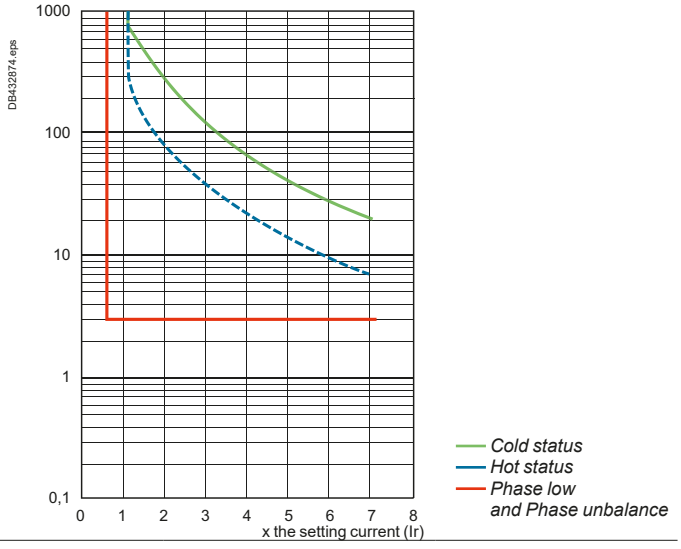

### Class 20 Trip curve

Tripping time in seconds

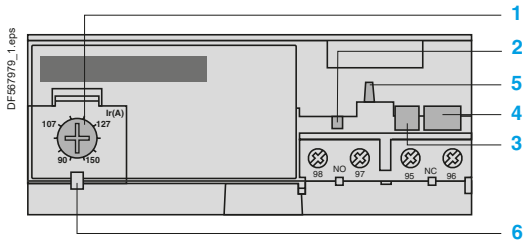



### Class 30 Trip curve

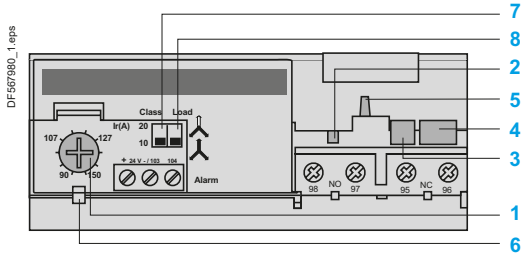
Tripping time in seconds




References: page B11/10
Dimensions, mounting: page B11/38
Schemes: page B11/39




*LR9D5367…D5569*




*LR9D67 and D69*

## Description: LR9D5367...LR9D5569, LR9D67, LR9D69

These electronic thermal overload relays are designed for use with contactors LC1D115 and D150.

In addition to the protection provided by Deca thermal overload relays (see page B11/27), they offer the following special features:
- protection against phase imbalance
- choice of starting class
- protection of unbalanced circuits
- protection of single-phase circuits
- alarm function to avoid tripping by load shedding.

| | |
|---|---|
| 1 | Adjustment dial Ir. |
| 2 | Test button. |
| 3 | Stop button. |
| 4 | Reset button. |
| 5 | Trip indicator. |
| 6 | Setting locked by sealing the cover. |
| 7 | Class 10/class 20 selector switch. |
| 8 | Selector for balanced load /unbalanced load |

## Environment

| Relay type | | | LR9D5367...LR9D5569, LR9D67, LR9D69 |
|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4 |
| Product certifications | | | UL, CSA, CCC, ABS, BV, DNV-GL, UKCA |
| Degree of protection | Conforming to IEC 60529 | | IP 20 on front panel with protective covers **LA9D11570●** or **D11560●** |
| Climatic withstand | | | according to IACS E10 |
| Ambient air temperature around the device (Conforming to IEC 60255-8) | Storage | **°C** | - 40…+ 85 |
| | Normal operation | **°C** | - 20…+ 55 (1) |
| Maximum operating altitude | Without derating | **m** | 2000 |
| Operating positions without derating | In relation to normal vertical mounting plane | | Any position |
| Shock resistance | Permissible acceleration conforming to IEC60028-2-27 | | 13 gn - 11 ms |
| Vibration resistance | Permissible acceleration conforming to IEC 60068-2-6 | | 2 gn - 5…300 Hz |
| Dielectric strength at 50 Hz | Conforming to IEC 60947-4-1 | **kV** | 6 |
| Surge withstand | Conforming to IEC 61000-4-5 | **kV** | 6 |
| Resistance to electrostatic discharge | Conforming to IEC 61000-4-2 | **kV** | 8 |
| Immunity to radiated radio-frequency disturbances | Conforming to IEC 61000-4-3 | **V/m** | 10 |
| Immunity to fast transient currents | Conforming to IEC 61000-4-4 | **kV** | 2 |
| Electromagnetic compatibility | EN 50081-1 and 2, EN 50082-2 | | Meets requirements |

## Electrical characteristics of auxiliary contacts

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Conventional thermal current | | **A** | 5 | | | | | |
| Max. sealed consumption of the operating coils of controlled contactors (Occasional operating cycles of contact 95-96) | a.c. supply | **V** | 24 | 48 | 110 | 220 | 380 | 600 |
| | | **VA** | 100 | 200 | 400 | 600 | 600 | 600 |
| | d.c. supply | **V** | 24 | 48 | 110 | 220 | 440 | – |
| | | **W** | 100 | 100 | 50 | 45 | 25 | – |
| Protection against short-circuits | By gG or BS fuses or by circuit breaker **GB2** | **A** | 5 | | | | | |
| Cabling Flexible cable without cable end | 1 or 2 conductors | **mm²** | Minimum c.s.a.: 1<br>Maximum c.s.a.: 2.5 | | | | | |
| | Tightening torque | **Nm** | 1.2 | | | | | |

*(1) For operating temperatures up to 70 °C, please consult your Regional Sales Office.*

References: page B11/10
Dimensions, mounting: page B11/38
Schemes: page B11/39

# Characteristics

## Electrical characteristics of power circuit

| Relay type | | | LR9D5367...LR9D5569, LR9D67, LR9D69 |
|---|---|---|---|
| Tripping class | Conforming to IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1 | | 10 or 20 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 | **V** | 1000 |
| | Conforming to UL, CSA | **V** | 600 |
| Rated impulse withstand voltage (Uimp) | | **kV** | 8 |
| Frequency limits | Of the operating current | **Hz** | 50…60 (1) |
| Setting range | Depending on model | **A** | 60…150 |
| Power circuit connections | Width of terminal lug | **mm** | 20 |
| | Clamping screw | | M8 |
| | Tightening torque | **N.m** | 18 |

## Operating characteristics

| | | | |
|---|---|---|---|
| Temperature compensation | | **°C** | - 20…+70 |
| Tripping thresholds | Conforming to IEC 60947-4-1 | | |
| | Alarm | **A** | 1.05 ±0.06 In |
| | Trip | **A** | 1.12 ±0.06 In |
| Sensitivity to phase failure | Conforming to IEC 60947-4-1 | | Tripping in 4 s ±20 % in the event of phase failure |

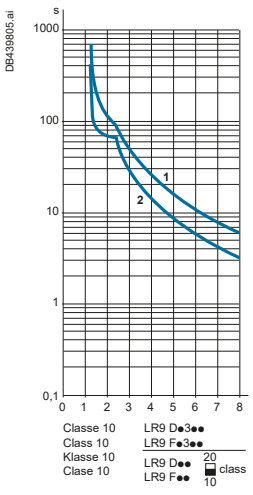
## Alarm circuit characteristics

| | | | |
|---|---|---|---|
| Rated supply voltage | d.c. supply | **V** | 24 |
| Supply voltage limits | | **V** | 17…32 |
| Current consumption | No-load | **mA** | ≤ 5 |
| Switching capacity | | **mA** | 0…150 |
| Protection | Short-circuit and overload | | Self protected |
| Voltage drop | Closed state | **V** | ≤ 2.5 |
| Cabling | Flexible cable without cable end | **mm²** | 0.5…1.5 |
| Tightening torque | | **N.m** | 0.45 |

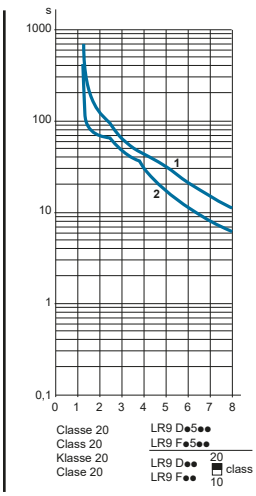
*(1) For other frequencies and for applications involving the use of these overload relays with soft starters or variable speed drives, please consult your Regional Sales Office.*

## LR9D5367...LR9D5569, LR9D67, LR9D69 tripping curves

Tripping time in seconds




Tripping time in seconds



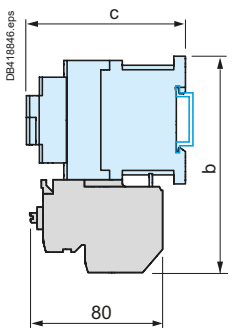

Average operating time related to multiples of the setting current

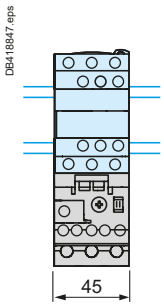
**1** Cold state curve
**2** Hot state curve

References: page B11/10
Dimensions, mounting: page B11/38
Schemes: page B11/39

# Dimensions, mounting

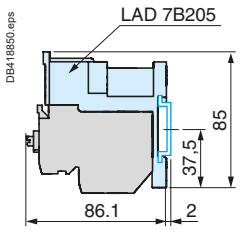
## LR9D01, 02, 08, 32

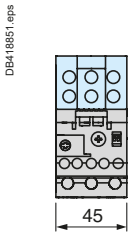


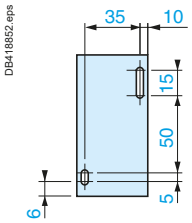




| LC1 | D09...D18 | D25...D38 |
|---|---|---|
| b | 130 | 140 |
| c | See pages B8/65 and B8/66 | |

## LR9D01...32

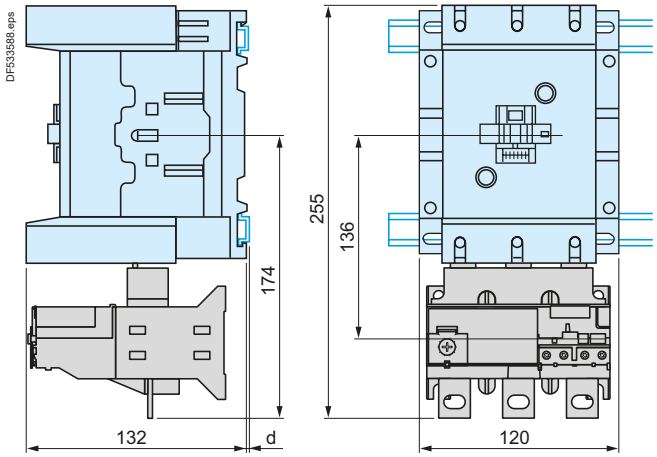



## LR9D53●●, LR9D55●●, LR9D67, LR9D69

**Direct mounting beneath contactors LC 1D115 and D150**



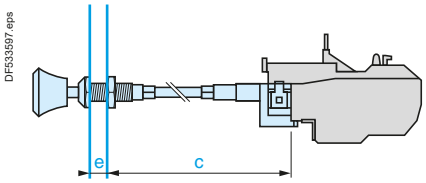

| AM1 | DP200 and DR200 | DE200 and ED●●● |
|---|---|---|
| d | 2.5 | 10.5 |

## LR9D

**"Reset" by flexible cable**

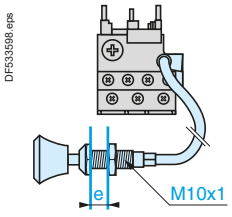
**LA7D305 and LAD7305**

**Mounting with cable straight**




*e: up to 20 mm / c: up to 550 mm*

**Mounting with cable bent**

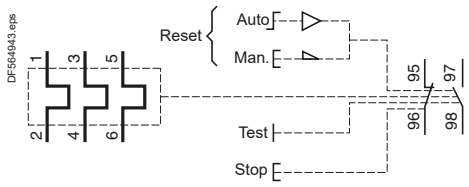



*e: up to 20 mm*

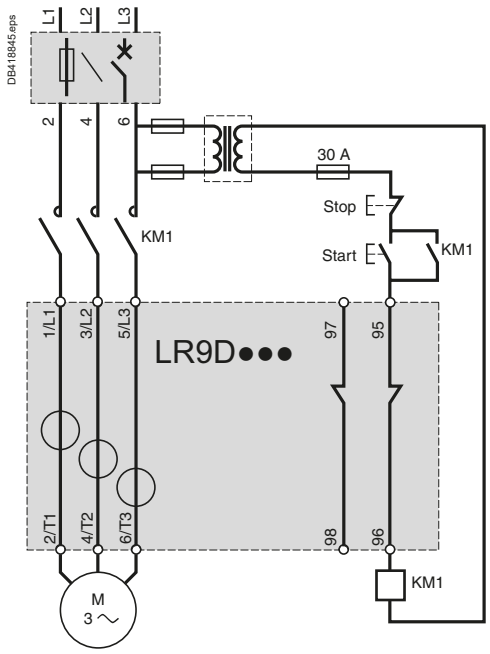
Ref.
Overload relays

# Schemes

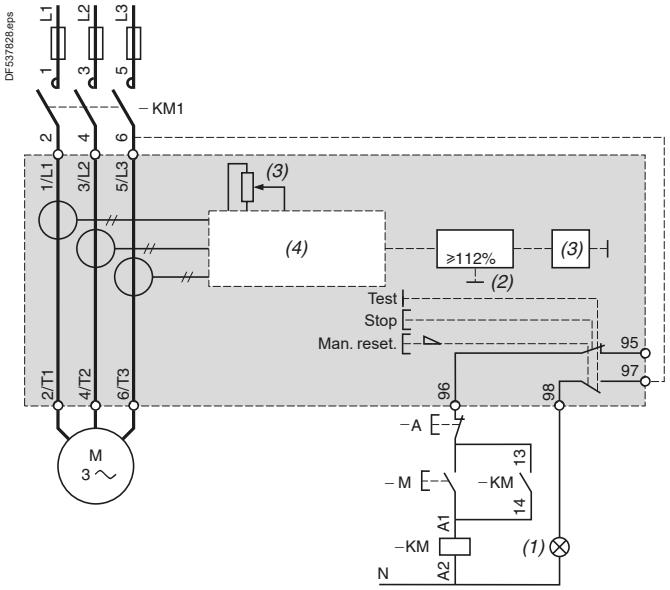
## LR9D01, 02, 08, 32




## LR9D01, 02, 08, 32, LR9 D110S

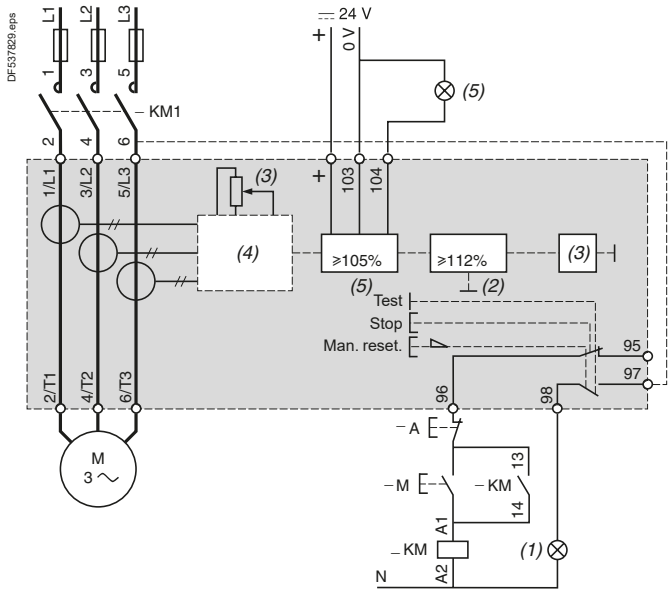



## LR9D5●●●




*(1)* *Tripped.*
*(2)* *Overload.*
*(3)* *Setting current.*
*(4)* *Specialised circuit.*

## LR9D67 and LR9D69




*(1)* *Tripped.*
*(2)* *Overload.*
*(3)* *Setting current.*
*(4)* *Specialised circuit.*
*(5)* *Alarm.*

References:
page B11/10

Characteristics:
pages B11/34 to B11/37

Dimensions:
page B11/38

# Characteristics

## Environment

| Contactor type | | | LR9G115 | LR9G225 | LR9G500 | LR9G630 |
|---|---|---|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4 | | | |
| Product certifications | | | CB Scheme, CCC, cULus, UKCA, ATEX, EU-RO-MR by DNV | | | |
| Degree of protection | Conforming to IEC 60529 / VDE 0106 | | IP 20 on front of relay with accessories LA9G37●● | | | |
| Climatic withstand | | | according to IACS E10 | | | |
| Ambient air temperature around the device (conforming to IEC 60255-8) | Storage | **°C** | -55...+80 | | | |
| | Normal operation | **°C** | -25…+60 | | | |
| Maximum operating altitude | Without derating | **m** | 3000 | | | |
| Net weight | | **kg** | 1.2 | | 1.7 | 2.8 |
| Operating positions without derating | In relation to normal vertical mounting plane / floor mounting | | Any position | | | |
| Shock resistance 11 ms | Permissible acceleration conforming to IEC 60068-2-27 | | 15 gn | | | |
| Vibration resistance 5 to 300 Hz | Permissible acceleration conforming to IEC 60068-2-6 | | 6 gn | | | |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC 60947-4-1 | **kV** | 8 | | | |
| Surge withstand | Conforming to IEC 61000-4-5 | **kV** | 4 | | | |
| Resistance to electrostatic discharge | Conforming to IEC 61000-4-2 | **kV** | 8 (in air)<br>6 (in direct mode) | | | |
| Resistance to radiated radio-frequency disturbance | Conforming to IEC 61000-4-3 | **V/m** | 20 | | | |
| Resistance to fast transient currents | Conforming to IEC 61000-4-4 | **kV** | 4 | | | |
| Electromagnetic compatibility | EN 50081-1 and 2, EN 50082-2 | | Conforming | | | |



Introduction:
pages B11/11 to B11/12

References:
pages B11/13 to B11/14

Dimensions:
page B11/43



Life Is On Schneider Electric

# Characteristics

## Power circuit - Electrical characteristics

| Relay type | | | LR9G115 | LR9G225 | LR9G500 | LR9G630 |
|---|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 Over-voltage category III, degree of pollution: 3 | **V** | 1000 | | | |
| Rated impulse withstand voltage (Uimp ) | Conforming to IEC 60947-1 | **kV** | 8 | | | |
| Rated operational current (Ie) | | **A** | 28 to 630 | | | |
| Short-circuit protection and coordination | | | See pages A5/7 to A5/8, A5/23 to A5/26 and A5/38 to A5/39. | | | |
| Frequency limits of the operating current | | **Hz** | 50 / 60 | | | |
| Power circuit connections | Width of terminal lug | **mm** | 18 | 18 | 30 | 48 |
| | Clamping screw | | M8 | M8 | M10 | M12 |
| | Tightening torque | **N.m** | 18 | 18 | 35 | 58 |

## Auxiliary contact electrical characteristics

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Conventional thermal current | | **A** | 5 | | | | | | |
| Short-circuit protection | By gG fuses | **A** | 6 | | | | | | |
| Connection (Push-in type) | | | **Min.** | **Max.** | | | | | |
| Flexible cable | 1 conductor with cable end | **mm²** | 0.25 | 2.5 | | | | | |
| | 2 conductors with Dual Sleeve | **mm²** | 0.5 | 1 | | | | | |
| Solid cable | 1 conductor | **mm²** | 0.2 | 2.5 | | | | | |
| | Stripping length | **mm** | 10 | 10 | | | | | |
| Rated operational contact power | a.c. supply AC-15 | **V** | **24** | **48** | **120** | **240** | **380** | **480** | **500** |
| | | **A** | 4 | 4 | 3 | 1.5 | 0.95 | 0.75 | 0.72 |
| | | **VA** | 96 | 192 | 360 | 360 | 361 | 360 | 360 |
| | d.c. supply DC-13 | **V** | **24** | **48** | **125** | **250** | **–** | **–** | **–** |
| | | **A** | 2 | 0.7 | 0.22 | 0.11 | – | – | – |
| | | **W** | 48 | 33.6 | 27.5 | 27.5 | – | – | – |
| Maximum operational voltage | a.c., category AC-15 | **V** | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| | d.c., category DC-13 | **V** | 250 | 250 | 250 | 250 | 250 | 250 | 250 |

Overload relays

# Characteristics

## Operating characteristics

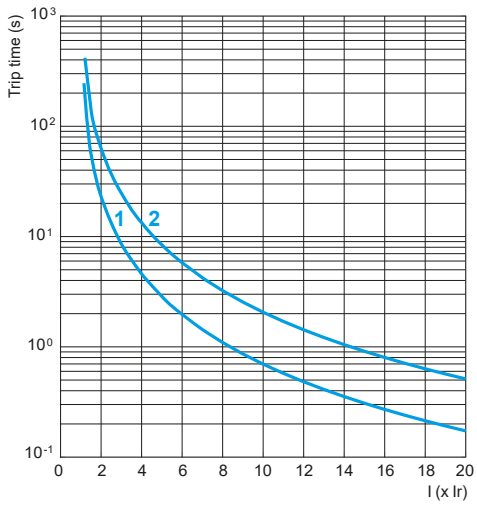
| | | | | |
|---|---|---|---|---|
| Tripping class | Conforming to IEC 60947-4-1 | | | 5E/10E/20E/30E |
| Operating temperature | | | **°C** | -40…+60 (1) |
| Reset | | | | auto and manual |
| Trip alarm and fault indication | | | | On front of relay |
| Test function | | | | On front of relay |
| Tripping thresholds | Conforming to IEC 60947-4-1 | Alarm | | ≥ 90% of permissible thermal state |
| | | Tripping | **A** | 1.2 ± 0.05 Ir |
| Sensitivity to phase loss | Conforming to IEC 60947-4-1 | | | Tripping in 4 s ± 1 s in the event of phase loss |
| Phase imbalance | Conforming to IEC 60947-1 | | | Tripping in 5 s ± 1 s if imbalance ratio ≥ 40 % according to Annex T5.5 |
| Ground fault | Conforming to IEC 60947-4-1 | | | Ig = 0.75 Ir<br>Tripping 1 s ± 20 % if I ≥ 1.1 Ig |
| Adjustment (nominal motor current) | | | | Setting dial on front of relay (64 settings) |
| Security sealing | | | | Yes |

*(1) Adjustment of dial setting(s): -25...+60 °C.*

## LR9G tripping curves

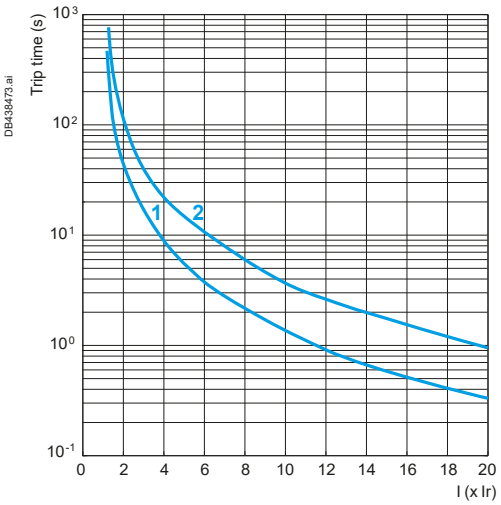
### Average operating times depending on multiples of the setting current

**Class 5E**



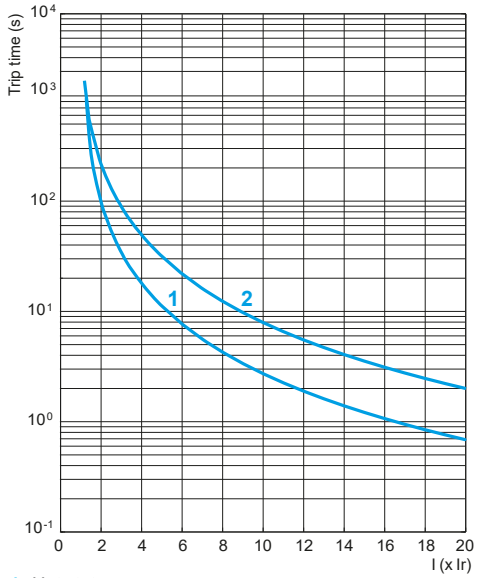

1 Hot state
2 Cold state

**Class 10E**



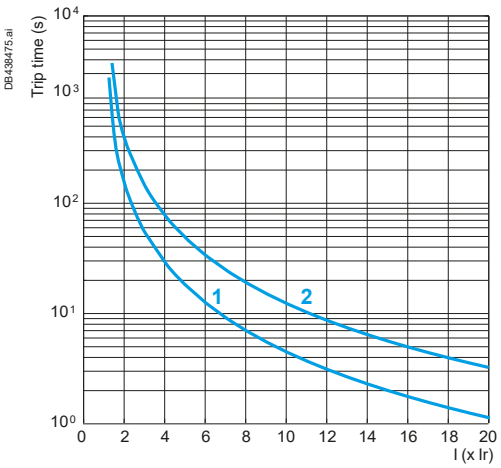

1 Hot state
2 Cold state

**Class 20E**




1 Hot state
2 Cold state

**Class 30E**




1 Hot state
2 Cold state

Introduction:
pages B11/11 to B11/12

References:
pages B11/13 to B11/14

Dimensions:
page B11/43



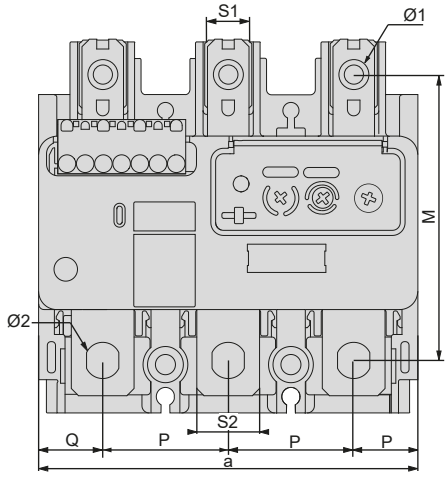
Life Is On Schneider Electric

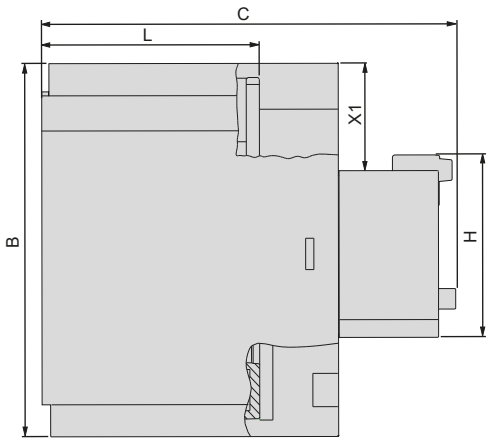
# Dimensions and diagram

## Dimensions

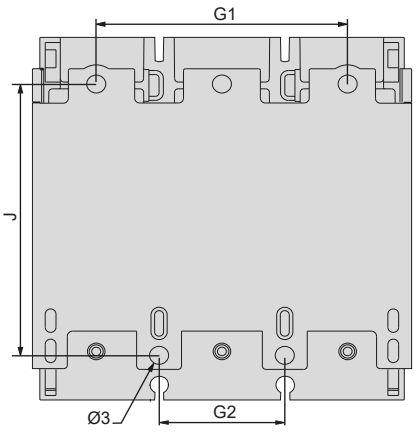
**LR9G115...630**

DB438399.ai



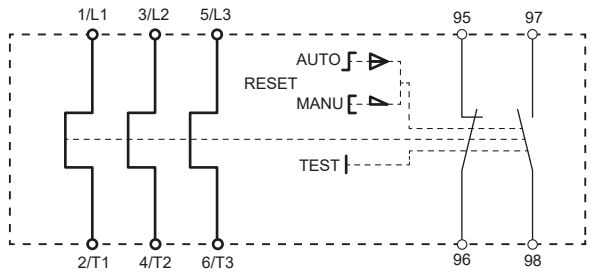

DB438402.ai




| LR9G | 115-225 | 500 | 630 |
|---|---|---|---|
| a | 105.7 | 140 | 210 |
| b | 109.55 | 115.65 | 149.45 |
| c | 126.2 | 139.2 | 185.9 |
| G1 | 70 | 119.3 | 186.2 |
| G2 | 35 | 45 | 70 |
| J | 80.1 | 68.25 | 86 |
| M | 78 | 83 | 100 |
| H | 52 | 52 | 52 |
| L | 66 | 79 | 107 |
| P | 35 | 45 | 70 |
| Q | 18 | 25 | 35 |
| S1 | 11.5 | 22.5 | 22.5 |
| S2 | 17.5 | 30.5 | 50 |
| Ø1 | 8.3 | 10.6 | 13 |
| Ø2 | 9 | 10.6 | 13 |
| Ø3 | 5.3 | 5.3 | 8.5 |
| X1 | 30 | 33 | 50 |

## Diagram

DB438512.ai




Overload relays

## Introduction

PB111974.eps

*LR97D*

PB111927.eps

*LT47*

LR97D and LT47 electronic over current relays have been developed to satisfy machine protection requirements.
These relays have definite time characteristics: current threshold and time based function.
They are particularly recommended for providing mechanical protection on machines with high resistive torque, high inertia and with strong probability of jamming under steady state conditions.
They can be used for motor protection in the case of long starting times or frequent starting.
The LR97D relay also incorporates two fixed time protection functions, one of 0.5 seconds against locked rotor and one of 3 seconds against phase failure.
LR97D and LT47 can be used to provide mechanical shock protection. In this case, setting the O-Time knob to minimum will ensure tripping in 0.3 seconds.
LR97D is designed to be directly connected downstream of the Deca contactor.
LT47 provides two current transformers, to be crossed by the motor power cables.

### Applications

LR97D and LT47 relays are particularly suitable for the following machines:
■ Monitoring function for excessively long starting time on machines with a risk of difficult starting:
□ Machines with high resistive torque, high inertia machines.
■ Monitoring of machines during steady state operation: overtorque detection function
□ Machines with strong risk of jamming, machines with torque build-up over time,
□ Mechanical failure monitoring,
□ Faster detection of malfunctioning on machines where the motor is oversized in relation to its thermal protection $I^2t$.
■ Motor protection for specific applications:
□ Machines with long starting times,
□ Machines with high on-load factor: more than 30 to 50 starts/hour,
□ Machine with fluctuating load from a steady state, where the thermal image of a thermal overload relay (thermal memory) is unsuitable in relation to actual overheating of the motor.

**Examples of machines:**
□ Conveyors, crushers and mixers,
□ Fans, pumps and compressors,
□ Centrifuges and spin-dryers,
□ Presses, shearing machines, saws, broaching machines, sanders and lifting hoists.

### Operation

Because of their two separate time settings, LR97D and LT47 relays can be combined with the motor-starter function:
D-Time: starting time, O-Time: trip time during steady state.
The D-Time function is only available during the motor starting phase. During this phase the overload detection function is inhibited in order to allow starting. Under steady state conditions, when the motor current is greater than the setting current due to an overload or single-phasing, the red LED lights up and the internal relay switches its contact after a time preset by the O-Time knob.
The red LED stays on, indicating that the relay has tripped.

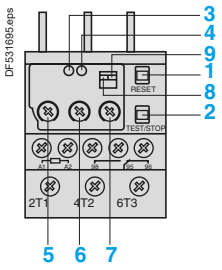
The relays are simple to set, in 5 easy steps:
- Adjust the 3 knobs to maximum (Load, D-Time and O-Time),
- Adjust the D-Time knob to the value corresponding to the motor starting time.
- When the motor reaches steady state, adjust the Load knob (turn the knob counter-clockwise until the red LED starts to flicker).
- Slowly turn the Load knob clockwise until the LED goes out.
- Set the required tripping time, using the O-Time knob.

## Description

### Description

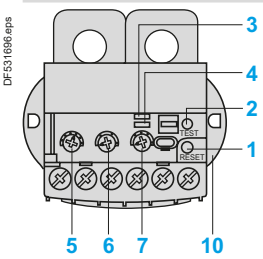
**LR97D●●●●●**

DF531695.eps




**LT47●●●●●**

DF531696.eps




1 RESET knob
2 TEST/STOP knob
3 Ready/Run Indicator
4 Relay tripped indicator
5 Current setting
6 Adjustment of starting time
7 Adjustment of tripping time
8 Manual/Auto adjustment
9 Single-phase/3-phase adjustment
10 Retractable fixing lugs

### Status signalling

**LR97D●●●●●**

To assist fast diagnostics, two LEDs (one green and one red) allow signalling of the operating status:

DF563948.eps

| Status | | | LED signal | |
|---|---|---|---|---|
| | | | Green LED | Red LED |
| Voltage | | | On | Off |
| Starting | | | | |
| Steady state | | | On | Off |
| Overload | | | On | |
| Trip | Over-current | | Off | On |
| | Rotor locked | | Off | |
| | Phase fail-ure | L1 | Off | |
| | | L2 | Off | |
| | | L3 | Off | |

**LT47●●●●●**

DF563947.eps

| Condition | LED signal | |
|---|---|---|
| | Green LED | Red LED |
| Voltage | On | Off |
| Starting | | |
| Steady state | On | Off |
| Overload | On | |
| Trip | Off | On |

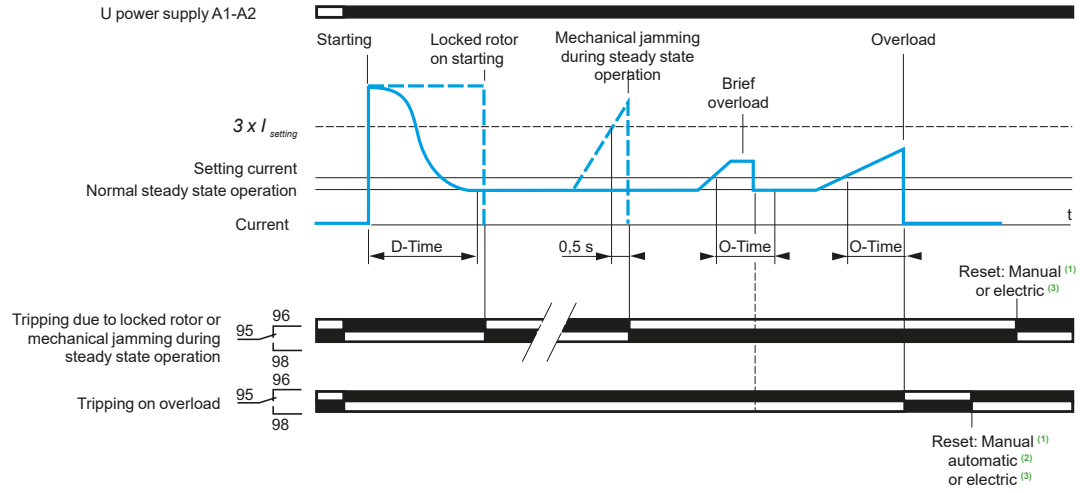
References: page B11/15
Dimensions, mounting: page B11/48
Schemes: page B11/48

## Curves

### LR97D

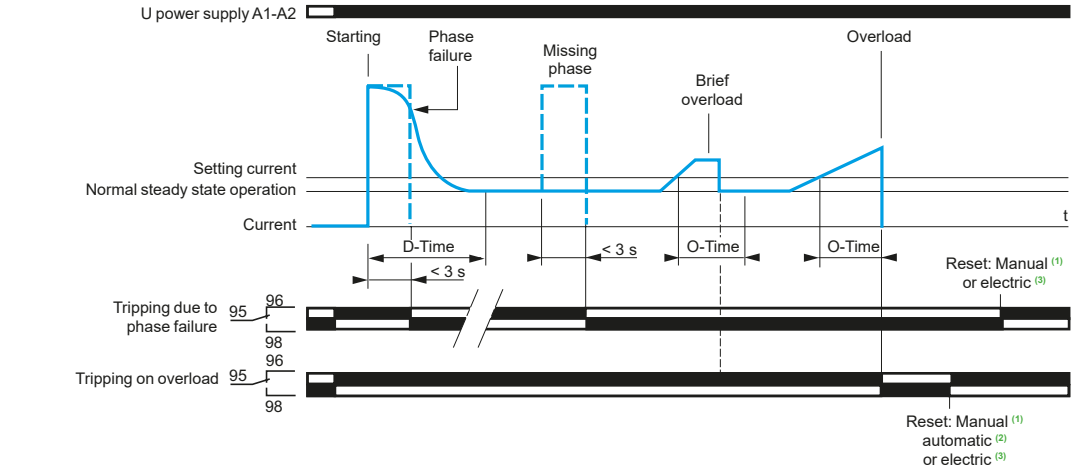
**Overload protection**
**Protection against locked rotor and mechanical jamming under steady state conditions**

DF532218.eps



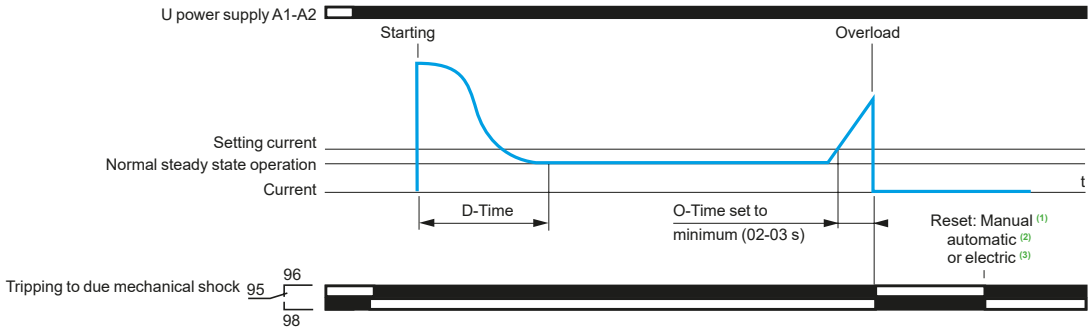

**Overload protection**
**Protection against phase failure during starting and during steady state operation**

DF532219.eps




**Mechanical shock protection**

DF532220.eps




*(1) By Reset button.*
*(2) Fixed time of 120 s. Selectable by dip switch. Function not available in the event of tripping due to locked rotor/mechanical jamming (I> 3 x $I_{setting}$) or phase failure.*
*(3) By brief interruption of power supply, minimum 0.1 s.*

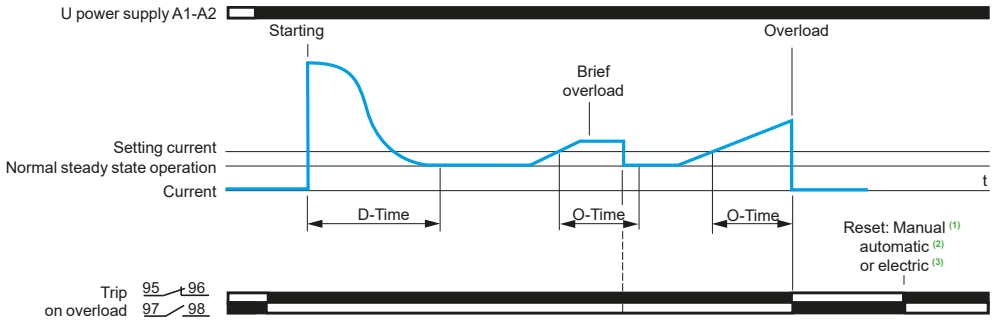
References: page B11/15
Dimensions, mounting: page B11/48
Schemes: page B11/48

## Curves

### LT47

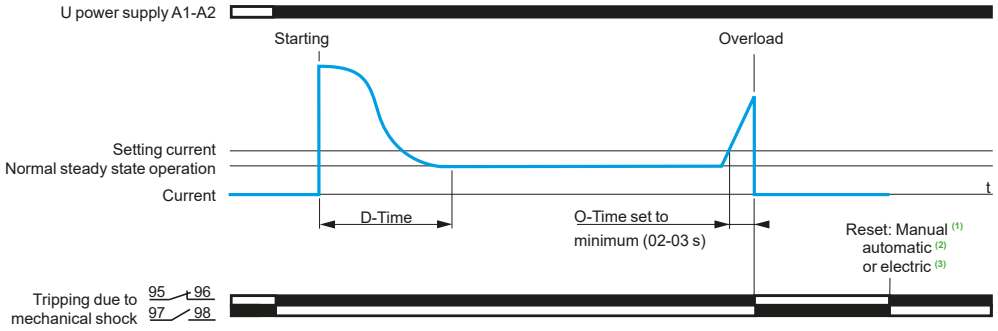
#### Overload protection

DF532221.eps




#### Mechanical shock protection

DF532222.eps




*(1) By Reset button.*
*(2) Only available on version with automatic reset (**LT47●●●●A**). Time adjustable from 1 to 120 s with the R-Time knob.*
*(3) By brief interruption of power supply, minimum 0.1 s.*

## Characteristics

### Environment

| Relay type | | | LR97D●●●● | LT47●●●● |
|---|---|---|---|---|
| **Conforming to standards** | | | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 | IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5 |
| **Product certifications** | | | UL, CSA, CCC, EAC | UL, CSA, CCC, EAC |
| **Degree of protection** | Conforming to IEC 60529 | | IP 20 (front face) | IP 20 (front face) |
| **Ambient air temperature around the device** | Storage | **°C** | - 30…+ 80 | - 30…+ 80 |
| | Normal operation without derating (IEC 60947-4-1) | **°C** | - 25…+ 60 | - 25…+ 60 |
| **Maximum operating altitude** | | **m** | 2000 | 2000 |
| **Operating positions without derating** | In relation to normal vertical mounting plane | | Any position | Any position |
| **Shock resistance** | Permissible acceleration conforming to IEC 60068-2-27 | | 15 gn - 11 ms | 15 gn - 11 ms |
| **Vibration resistance** | Permissible acceleration conforming to IEC 60068-2-6 | | 4 gn | 4 gn |
| **Dielectric strength at 50 Hz** | Conforming to IEC 60947-4-1 | **kV** | 2 | 2 |
| **Surge withstand** | Conforming to IEC 61000-4-5 | **kV** | 6 | 6 |
| **Resistance to electrostatic discharge** | In open air | **kV** | 8 (level 3) | 8 (level 3) |
| | In direct mode | **kV** | 6 (level 3) | 6 (level 3) |
| **Immunity to radiated radio-frequency disturbance** | | **V/m** | 10 (level 3) | 10 (level 3) |
| **Immunity to fast transient currents** | | **kV** | 2 | 2 |
| **Conducted emissions** | Conforming to EN 55011 | | Class A | Class A |
| **Conducted HF disturbance** | Conforming to EN 61000-4-6 | **V** | 10 | 10 |

Ref.
Overload relays

References: page B11/15
Dimensions, mounting: page B11/48
Schemes: page B11/48

## Characteristics

### Auxiliary contact characteristics

| Relay type | | | | LR97D●●●●● | | | | LT47●●●●● | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Contact type | | | | 1 NO/NC | | | | 1 N/O + 1N/C | | | |
| Conventional thermal current | | | A | 3 | | | | 3 | | | |
| Maximum hold consumption of controlled contactor coils (occasional operating cycles of contact 95-96) | Conforming to IEC 60947 | | V | ∼ 24 | ∼ 48 | ∼ 110 | ∼ 220 | ∼ 24 | ∼ 48 | ∼ 110 | ∼ 220 |
| | | | VA | 70 | 140 | 360 | 360 | 70 | 140 | 360 | 360 |
| | | | V | ⎓ 24 | ⎓ 48 | ⎓ 110 | ⎓ 220 | ⎓ 24 | ⎓ 48 | ⎓ 110 | ⎓ 220 |
| | | | W | 55 | 55 | 28 | 28 | 55 | 55 | 28 | 28 |
| Short-circuit protection | By gG, BS fuses. Maximum rating or GB2 circuit breaker | | A | 3 | | | | 3 | | | |
| Connection by cable or lug-clamps | | | | | | | | | | | |
| Flexible cable without cable end | 1 or 2 conductors | Min. | mm² | 1 x 0.75 | | | | 1 x 1 | | | |
| | | Max. | mm² | 2 x 2.5 | | | | 2 x 2.5 | | | |
| Flexible cable with cable end | 1 or 2 conductors | Min. | mm² | 1 x 0.34 | | | | 1 x 1 | | | |
| | | Max. | mm² | 1 x 1.5 + 1 x 2.5 | | | | 2 x 2.5 | | | |
| External Ø of lugs | | | mm | 7 | | | | 7 | | | |
| Ø of screw | | | mm | M3 | | | | M3.5 | | | |
| Tightening torque | | | N.m | 0.6…1.2 | | | | 0.8...1.7 | | | |

### Electrical characteristics of power circuit

| Relay type | | | | LR97D015●● to LR97D25●● | LR97D38●● | LT47●●●●● |
|---|---|---|---|---|---|---|
| Setting range | Depending on model | | A | 0.3…38 | | 0.5…60 |
| Tripping class | | | | Adjustable | | Adjustable |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-4-1 | | V | 690 | | 690 |
| | Conforming to UL, CSA | | V | 600 | | 600 |
| Rated impulse withstand voltage (Uimp) | | | kV | 6 | | 6 |
| Frequency limits | Of the operating current | | Hz | 50…60 | | 50…60 |
| Connection by cable or lug-clamps | | | | | | |
| Flexible cable without cable end | 1 conductor | Min. | mm² | 1.5 | 2.5 | – |
| | | Max. | | 10 | 10 | – |
| Flexible cable with cable end | 1 conductor | Min. | mm² | 1 | 1 | – |
| | | Max. | | 4 | 6 | – |
| External Ø of lugs | | | mm | 10 | 12 | – |
| Ø of screw | | | mm | M4 | M4 | – |
| Tightening torque | | | N.m | 2 | 2 | – |

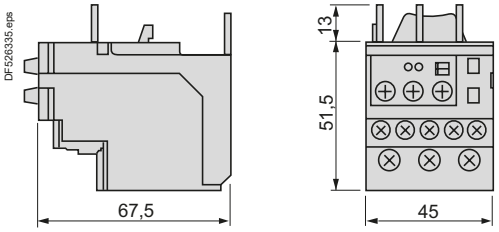
### Operating characteristics

| Relay type | | | | LR97D●●●●● | | LT47●●●●S | | LT47●●●●A |
|---|---|---|---|---|---|---|---|---|
| Adjustment | Current | | A | "Load" knob | | "Load" knob | | "Load" knob |
| | Time | D-time knob | s | 0.5…30 | | 0.5…30 | | – |
| | | O-time knob | s | 0.2/0.3…10 | | 0.2/0.3…10 | | 0.2/0.3…30 |
| | | R-time knob | s | – | | – | | 1…120 |
| Reset | Manual | | | Reset button | | Reset button | | Reset button |
| | Automatic | | | 120 s fixed | | – | | R-time knob: 1-120 s |
| | Electrical | | | By interruption of power supply (minimum 0.1 s) | | By interruption of power supply (minimum 0.1 s) | | By interruption of power supply (minimum 0.1 s) |
| Protection functions | | | | **On starting** | **Steady state** | **On starting** | **Steady state** | – |
| Overload $I_{max} > I_{setting}$ | Tripping | | | Inhibited during D-time | After O-time | Inhibited during D-time | After O-time | After O-time |
| Locked rotor, mechanical jamming $I > 3 \times I_{setting}$ | Tripping | | | After D-time | < 0.5 s | Inhibited during D-time | After O-time | After O-time |
| Sensitivity to phase failure | Tripping | | | < 3 s | < 3 s | Inhibited during D-time | After O-time | After O-time |
| Status and fault signalling (see table page 24517/2) | | | | 2 LEDs | | 2 LEDs | | 2 LEDs |
| TEST/STOP function | Test | | | No load | | No load | | No load |
| | Stop | | | Under load | | Under load | | Under load |
| Sealing | | | | Yes | | Yes | | Yes |

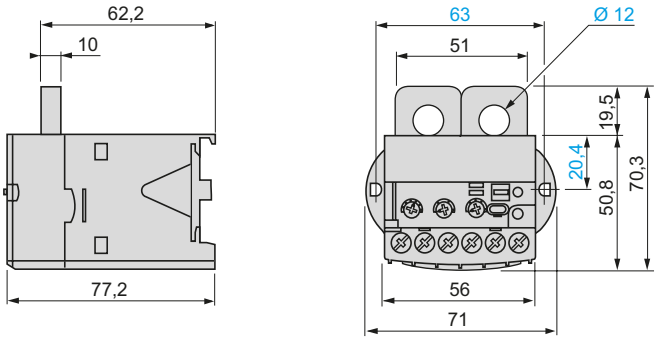
References: page B11/15
Dimensions, mounting: page B11/48
Schemes: page B11/48

## Dimensions

### LR97D●●●●



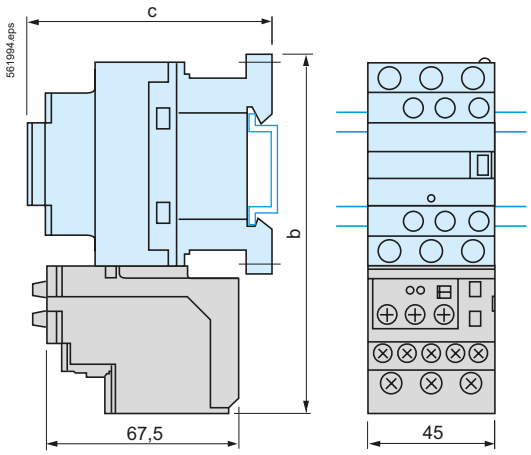

### LT47●●●●




## Mounting

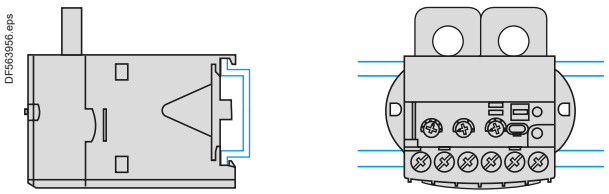
### LR97D●●●●

**Direct mounting beneath the contactor**




| LC1 | D09…D18 | D25…D38 |
|---|---|---|
| b | 123 | 137 |
| c | See pages B8/76 and B8/77 | |

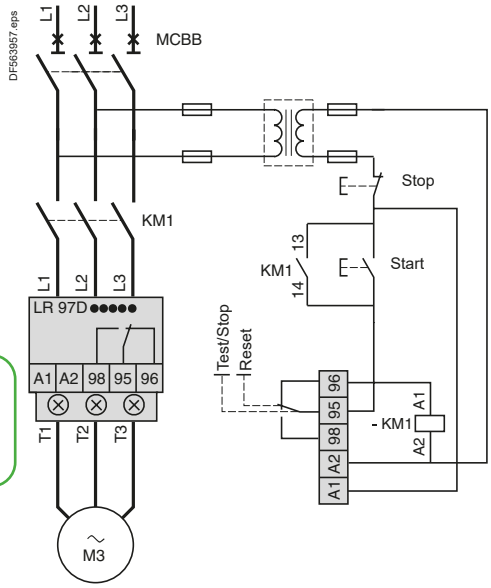
### LT47●●●●



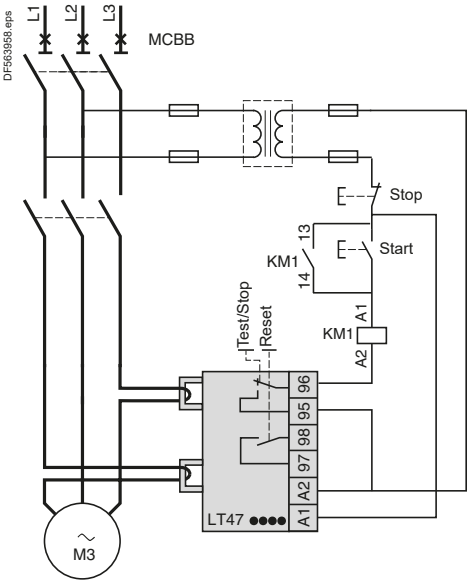

*Note: Can be mounted on ⊔ rail.*

## Schemes

### LR97D●●●●




### LT47●●●●




Ref.
Overload relays

References:
page B11/15

Characteristics:
pages B11/44 to B11/47

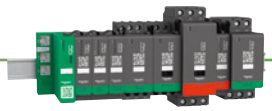
# Part C

## COMPONENTS FOR ADVANCED SOLUTIONS

**TeSys** Active
T motor management system

C1/1

**TeSys** Active
Island motor starters



C2/1



This PDF Catalog is updated twice a year. Please check on the link below that you are using the last version.
**Ref. MKTED210011EN**

# TeSys Active
# T Motor management system

Chapter
C1




| TeSys T Motor management system | | |
|---|---|---|
| TeSys T Motor management controllers with Modbus, or CANopen, Devicenet, PROFIBUS, Ethernet TCP/IP communication port | | C1/2 |
| Extension modules for TeSys T Motor management system | | C1/3 |
| HMI terminal and cables | | C1/3 |
| Accessories | | C1/4 |
| Coordination tables:<br>■ fuses (NFC, DIN type aM) + contactor + TeSys T + current transformers<br>■ magnetic circuit breaker + contactor + TeSys T + current transformers | | C1/6 |

Technical Data for Designers C1/13

# Product references



PB121434.eps

*LTMR08MBD*

PB121440.eps

*LTMR08CBD*

PB121441.eps

*LTMR08DBD*

PB121442.eps

*LTMR08PBD*

PB121443.eps

*LTMR08EBD*

## Controllers

| Setting range | Control voltage | Current range | Reference |
|---|---|---|---|
| A | V | A | |
| **For Modbus** | | | |
| 8 | ⎓ 24 | 0.4...8 | **LTMR08MBD** |
| | ∿ 100...240 | 0.4...8 | **LTMR08MFM** |
| 27 | ⎓ 24 | 1.35...27 | **LTMR27MBD** |
| | ∿ 100...240 | 1.35...27 | **LTMR27MFM** |
| 100 | ⎓ 24 | 5...100 | **LTMR100MBD** |
| | ∿ 100...240 | 5...100 | **LTMR100MFM** |
| **For CANopen** | | | |
| 8 | ⎓ 24 | 0.4...8 | **LTMR08CBD** |
| | ∿ 100...240 | 0.4...8 | **LTMR08CFM** |
| 27 | ⎓ 24 | 1.35...27 | **LTMR27CBD** |
| | ∿ 100...240 | 1.35...27 | **LTMR27CFM** |
| 100 | ⎓ 24 | 5...100 | **LTMR100CBD** |
| | ∿ 100...240 | 5...100 | **LTMR100CFM** |
| **For DeviceNet** | | | |
| 8 | ⎓ 24 | 0.4...8 | **LTMR08DBD** |
| | ∿ 100...240 | 0.4...8 | **LTMR08DFM** |
| 27 | ⎓ 24 | 1.35...27 | **LTMR27DBD** |
| | ∿ 100...240 | 1.35...27 | **LTMR27DFM** |
| 100 | ⎓ 24 | 5...100 | **LTMR100DBD** |
| | ∿ 100...240 | 5...100 | **LTMR100DFM** |
| **For PROFIBUS DP** | | | |
| 8 | ⎓ 24 | 0.4...8 | **LTMR08PBD** |
| | ∿ 100...240 | 0.4...8 | **LTMR08PFM** |
| 27 | ⎓ 24 | 1.35...27 | **LTMR27PBD** |
| | ∿ 100...240 | 1.35...27 | **LTMR27PFM** |
| 100 | ⎓ 24 | 5...100 | **LTMR100PBD** |
| | ∿ 100...240 | 5...100 | **LTMR100PFM** |
| **For Ethernet TCP/IP (communication protocols: Modbus/TCP and EtherNet/IP)** | | | |
| 8 | ⎓ 24 | 0.4...8 | **LTMR08EBD** |
| | ∿ 100...240 | 0.4...8 | **LTMR08EFM** |
| 27 | ⎓ 24 | 1.35...27 | **LTMR27EBD** |
| | ∿ 100...240 | 1.35...27 | **LTMR27EFM** |
| 100 | ⎓ 24 | 5...100 | **LTMR100EBD** |
| | ∿ 100...240 | 5...100 | **LTMR100EFM** |

## Filter

| Control voltage | Current max | Reference |
|---|---|---|
| V | mA | |
| ∿ 150...240 | 130 | **LTM9F** |

Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35



Life Is On Schneider Electric

# Product references

*LTMEV40BD*

*LTMCC004*

*LTMCUF*

## Extension modules (with voltage measurement on the 3 phases)

| Input control voltage | Number of inputs | Supply to the electronics | Reference |
|---|---|---|---|
| V | | | |
| ⎓ 24 | 4 | Via the controller | **LTMEV40BD** |
| ∿ 100…240 | 4 | Via the controller | **LTMEV40FM** |

## HMI terminals

| Description | | Supply Voltage | Reference |
|---|---|---|---|
| Operator control unit | Languages: English French Spanish | Supply via the controller | **LTMCU** |
| Operator control unit with Fast Device Replacement Service (FDR) | Languages: English French Spanish | Supply via the controller | **LTMCUF** |
| Kit for portable LTM CU | | | **LTM9KCU** |

| Description | Number and type of connectors | Length m | Reference |
|---|---|---|---|
| Connecting cables for the LTM CU control unit | 2 x RJ45 | 1 | **LTM9CU10** |
| | | 3 | **LTM9CU30** |
| Connecting cables for the XBT N410 | SUB-D 25-way female RJ45 | 2.5 | **XBTZ938** |

## Cables

| Description | Number and type of connectors | Length m | Reference |
|---|---|---|---|
| Connecting cables For connecting the controller to the extension module | 2 x RJ45 | 0.04 | **LTMCC004** (1) |
| | | 0.3 | **LTM9CEXP03** |
| | | 1 | **LTM9CEXP10** |

*(1) Sold in lots of 6.*



Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Product references



## Configuration tools

| Description | Composition | Reference | Weight kg |
|---|---|---|---|
| Connection cable for PC | USB to RJ45 cable, length 2.5 m | **TCSMCNAM3M002P** | 0.200 |

## Current transformers

| Operational current | | Reference | Weight |
|---|---|---|---|
| Primary | Secondary | | |
| A | A | | kg |
| 100 | **1** | **LT6CT1001** | 0.550 |
| 200 | **1** | **LT6CT2001** | 0.550 |
| 400 | **1** | **LT6CT4001** | 0.550 |
| 800 | **1** | **LT6CT8001** | 0.680 |

PF526393.eps

*LT6CT4001*

## Earth fault toroids (marketed under the Schneider Electric brand)

| Rated operational current Ie | Internal Ø of toroid | Reference | Weight |
|---|---|---|---|
| A | mm | | kg |
| **Closed toroids, type A** | | | |
| 65 | 30 | **50437** | 0.120 |
| 85 | 50 | **50438** | 0.200 |
| 160 | 80 | **50439** | 0.420 |
| 250 | 120 | **50440** | 0.530 |
| 400 | 200 | **50441** | 1.320 |
| 630 | 300 | **50442** | 2.230 |
| **Split toroids, type OA** | | | |
| 85 | 46 | **50485** | 1.300 |
| 250 | 110 | **50486** | 3.200 |

## PTC thermistor probes (3)

| Description | Nominal Operating Temperature (NOT) | Colour | Unit reference (4) |
|---|---|---|---|
| | °C | | |
| Triple probes | 90 | Green/green | **DA1TT090** |
| | 110 | Brown/brown | **DA1TT110** |
| | 120 | Grey/grey | **DA1TT120** |
| | 130 | Blue/blue | **DA1TT130** |
| | 140 | White/blue | **DA1TT140** |
| | 150 | Black/black | **DA1TT150** |
| | 160 | Blue/red | **DA1TT160** |
| | 170 | White/green | **DA1TT170** |

PB121445.eps

*DA1TT●●●*

*(1) The transformers offered for use with Ultra starters are suitable. Please consult our "Ultra starter-controllers" catalogue*
*(2) For use with **LTMR08●●** controllers.*
*(3) PTC: Positive Temperature Coefficient.*
*(4) Sold in lots of 10.*

## Marking accessories (to be ordered separately)

| Description | Composition | Height mm | Unit reference | Weight kg |
|---|---|---|---|---|
| Clip-in markers | Strips of 10 identical numbers (0 to 9) or capital letters (A to Z) | **5** | **NSYTRABF5●** (1) | 0.002 |
| | | **6** | **NSYTRABF6●** (1) | 0.002 |

## Connection accessories

| Description | | Length m | Reference | Weight kg |
|---|---|---|---|---|
| **For Modbus connection** | | | | |
| Cables fitted with 2 x RJ45 connectors | | 0.3 | **VW3A8306R03** | 0.045 |
| | | 1 | **VW3A8306R10** | 0.065 |
| | | 3 | **VW3A8306R30** | 0.125 |
| T-junctions | | 0.3 | **VW3A8306TF03** | 0.032 |
| | | 1 | **VW3A8306TF10** | 0.032 |
| RS 485 line terminator | | – | **VW3A8306R** | 0.012 |
| **For CANopen connection** | | | | |
| Cables | | 50 | **TSXCANCA50** | 4.930 |
| | | 100 | **TSXCANCA100** | 8.800 |
| | | 300 | **TSXCANCA300** | 24.560 |
| IP20 connectors SUB-D 9-way female Line end adapter switch | Elbowed (90°) | – | **TSXCANKCDF90T** | 0.046 |
| | Straight | – | **TSXCANKCDF180T** | 0.049 |
| | Elbowed (90°) with SUB-D 9-way connector for connection to PC or diagnostic tool | – | **TSXCANKCDF90TP** | 0.051 |
| **For DeviceNet connection** | | | | |
| Cables | | 50 | **TSXCANCA50** | 4.930 |
| | | 100 | **TSXCANCA100** | 8.800 |
| | | 300 | **TSXCANCA300** | 24.560 |
| **For PROFIBUS DP connection** (2) | | | | |
| Cables | | 100 | **TSXPBSCA100** | – |
| | | 400 | **TSXPBSCA400** | – |
| Connectors | With line terminator | – | **490NAD91103** | – |
| | Without line terminator | – | **490NAD91104** | – |
| | With line terminator and terminal port | – | **490NAD91105** | – |
| **For Ethernet TCP/IP connection** | | | | |
| **Shielded twisted pair cables to standard EIA/TIA568** | | | | |
| Cables fitted with 2 x RJ45 connectors for connection to terminal equipment | Straight | 2 | **490NTW00002** | – |
| | | 5 | **490NTW00005** | – |
| | | 12 | **490NTW00012** | – |
| | | 40 | **490NTW00040** | – |
| | | 80 | **490NTW00080** | – |
| **Shielded twisted pair cables, UL and CSA 22.1 approved** | | | | |
| Cables fitted with 2 x RJ45 connectors for connection to terminal equipment | Straight | 2 | **490NTW00002U** | – |
| | | 5 | **490NTW00005U** | – |
| | | 12 | **490NTW00012U** | – |
| Ethernet Connector | Elbowed 180° | | **LTM9CE180T** (3) | 0.180 |

*(1) When ordering, replace the ● in the reference with the number or letter required.*
*(2) To order other connectors and cables (UL cables for harsh environments, etc.), please consult our Customer Care Centre.*
*(3) Sold in packs of 6.*

Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Coordination: fuses (NFC, DIN type aM) + contactor + TeSys T + current transformers



## 0.37 to 75 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V | | Switch-disconnector | aM fuses | | Contactor | TeSys T controller | External current transformer |
|---|---|---|---|---|---|---|---|
| P | Ie | Reference (1) | Size | Rating | Reference (2) | Reference | Reference |
| kW | A | | | A | | | |
| 0.37 | 1.1 | GS1DD | 10 x 38 | 2 | LC1D09 | LTMR08●● | – |
| 0.55 | 1.5 | GS1DD | 10 x 38 | 2 | LC1D09 | LTMR08●● | – |
| 0.75 | 1.9 | GS1DD | 10 x 38 | 4 | LC1D09 | LTMR08●● | – |
| 1.1 | 2.7 | GS1DD | 10 x 38 | 4 | LC1D09 | LTMR08●● | – |
| 1.5 | 3.6 | GS1DD | 10 x 38 | 4 | LC1D09 | LTMR08●● | – |
| 2.2 | 4.9 | GS1DD | 10 x 38 | 6 | LC1D09 | LTMR08●● | – |
| 3 | 6.5 | GS1DD | 10 x 38 | 8 | LC1D09 | LTMR27●● | – |
| 4 | 8.5 | GS1DD | 10 x 38 | 10 | LC1D09 | LTMR27●● | – |
| 5.5 | 11.5 | GS1DD | 10 x 38 | 16 | LC1D12 | LTMR27●● | – |
| 7.5 | 15.5 | GS1DD | 10 x 38 | 16 | LC1D25 | LTMR27●● | – |
| 10 | 19 | GS●F | 14 x 51 | 25 | LC1D25 | LTMR27●● | – |
| 11 | 22 | GS●F | 14 x 51 | 25 | LC1D25 | LTMR27●● | – |
| 15 | 29 | GS●F | 14 x 51 | 32 | LC1D32 | LTMR100●● | – |
| 18.5 | 35 | GS●F | 14 x 51 | 40 | LC1D40A | LTMR100●● | – |
| 22 | 41 | GS●J | 22 x 58 | 50 | LC1D50A | LTMR100●● | – |
| 30 | 55 | GS●J | 22 x 58 | 80 | LC1D65A | LTMR100●● | – |
| 37 | 66 | GS●J | 22 x 58 | 100 | LC1D80 | LTMR100●● | – |
| 45 | 80 | GS●J | 22 x 58 | 100 | LC1D95 | LTMR100●● | – |
| 55 | 97 | GS●K | T00 | 125 | LC1D115 | LTMR08●● | LT6CT2001 |
| 75 | 132 | GS●L | T0 | 160 | LC1D150 | LTMR08●● | LT6CT2001 |

*(1) GS●: GS1 for direct operator, GS2 for external operator.*
*(2) For reversing operation, replace the prefix LC1 with LC2.*

## 90 to 355 kW at 400 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Switch-disconnector | aM fuses | | Contactor | TeSys T controller | | External current transformer |
|---|---|---|---|---|---|---|---|---|---|
| 400 V | | | Product type | Size | Rating | Product type | Product type (1) | Ir setting (2) | Reference |
| P | Ie | Iq | | | | | | | |
| kW | A | kA | | | A | | | A | |
| 90 | 160 | 80 | GS●●N | 1 | 200 | LC1G185 | LTMR08●●● | 160 | LUTC2001 |
| 110 | 195 | 80 | GS●●N | 1 | 250 | LC1G225 | LTMR08●●● | 195 | LUTC4001 |
| 132 | 230 | 80 | GS●●QQ | 2 | 315 | LC1G265 | LTMR08●●● | 230 | LUTC4001 |
| 160 | 280 | 80 | GS●●QQ | 2 | 400 | LC1G330 | LTMR08●●● | 280 | LUTC4001 |
| 200 | 350 | 80 | GS2S | 3 | 500 | LC1G400 | LTMR08●●● | 350 | LUTC8001 |
| 250 | 430 | 80 | GS2S | 3 | 500 | LC1G500 | LTMR0●●● | 430 | LUTC8001 |
| 315 | 540 | 80 | GS2S | 3 | 630 | LC1G630 | LTMR08●●● | 540 | LUTC8001 |
| 355 | 610 | 80 | GS2V | 4 | 800 | LC1G630 | LTMR08●●● | 610 | LUTC8001 |

*(1) Please refer to C1/2 to select the complete reference for* TeSys T *motor management controller.*
*(2) This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.*

Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Coordination: magnetic circuit breaker + contactor + TeSys T + current transformers

## 0.06 to 75 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V | | | Limiter block | Circuit breaker | Contactor | TeSys T controller | External current transformer |
|---|---|---|---|---|---|---|---|
| P | Ie | Iq | Reference | Reference | Reference | Reference | Reference |
| kW | A | kA | | | | | |
| **0.06** | 0.2 | 130 | – | **GV2L03** | **LC1D09** | **LTMR08●●** | – |
| **0.09** | 0.3 | 130 | – | **GV2L03** | **LC1D09** | **LTMR08●●** | – |
| **0.12** | 0.44 | 130 | – | **GV2L04** | **LC1D09** | **LTMR08●●** | – |
| **0.18** | 0.6 | 130 | – | **GV2L04** | **LC1D09** | **LTMR08●●** | – |
| **0.25** | 0.85 | 130 | – | **GV2L05** | **LC1D09** | **LTMR08●●** | – |
| **0.37** | 1.1 | 130 | – | **GV2L05** | **LC1D09** | **LTMR08●●** | – |
| **0.4** | 1.1 | 130 | – | **GV2L05** | **LC1D09** | **LTMR08●●** | – |
| **0.55** | 1.5 | 130 | – | **GV2L06** | **LC1D09** | **LTMR08●●** | – |
| **0.6** | 1.5 | 130 | – | **GV2L06** | **LC1D09** | **LTMR08●●** | – |
| **0.75** | 1.9 | 130 | – | **GV2L07** | **LC1D09** | **LTMR08●●** | – |
| **0.8** | 1.9 | 130 | – | **GV2L07** | **LC1D09** | **LTMR08●●** | – |
| **1.1** | 2.7 | 130 | – | **GV2L07** | **LC1D18** | **LTMR08●●** | – |
| **1.5** | 3.6 | 130 | – | **GV2L08** | **LC1D18** | **LTMR08●●** | – |
| **2.2** | 4.9 | 130 | – | **GV2L10** | **LC1D18** | **LTMR08●●** | – |
| **3** | 6.5 | 130 | – | **GV2L14** | **LC1D18** | **LTMR08●●** | – |
| **4** | 8.5 | 130 | – | **GV2L14** | **LC1D18** | **LTMR27●●** | – |
| **5.5** | 11.5 | 130 | – | **GV2L16** | **LC1D25** | **LTMR27●●** | – |
| **7.5** | 15.5 | 50 | – | **GV2L20** | **LC1D25** | **LTMR27●●** | – |
| **9** | 18.1 | 50 | – | **GV2L22** | **LC1D25** | **LTMR27●●** | – |
| **11** | 22 | 50 | – | **GV2L22** | **LC1D25** | **LTMR27●●** | – |
| **15** | 29 | 50 | – | **GV3L32** | **LC1D40A** | **LTMR100●●** | – |
| **7.5** | 15.5 | 85 | **GV1L3** | **GV2L20** | **LC1D25** | **LTMR27●●** | – |
| **9** | 18.1 | 85 | **GV1L3** | **GV2L22** | **LC1D25** | **LTMR27●●** | – |
| **11** | 22 | 85 | **GV1L3** | **GV2L22** | **LC1D25** | **LTMR27●●** | – |
| **15** | 29 | 85 | **GV1L3** | **GV2L32** | **LC1D40A** | **LTMR100●●** | – |
| **18.5** | 35 | 50 | – | **GV3L40** | **LC1D50A** | **LTMR100●●** | – |
| **22** | 41 | 50 | – | **GV3L50** | **LC1D50A** | **LTMR100●●** | – |
| **30** | 55 | 50 | – | **GV3L65** | **LC1D65A** | **LTMR100●●** | – |
| **37** | 66 | 70 | – | **GV4LE80S** | **LC1D80** | **LTMR100●●** | – |
| **45** | 80 | 70 | – | **NSX100HMA** | **LC1D115** | **LTMR100●●** | – |



Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Coordination: magnetic circuit breaker + contactor + TeSys T + current transformers



## 0.06 to 75 kW at 400/415 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V | | | Circuit breaker | Contactor | TeSys T controller | External current transformer |
|---|---|---|---|---|---|---|
| P | Ie | Iq | Reference | Reference | Reference | Reference |
| kW | A | kA | | | | |
| **55** | 97 | 50 | **NSX160NMA** | **LC1D115** | **LTMR08●●** | **LT6CT2001** |
| **55** | 97 | 70 | **NSX160HMA** | **LC1D115** | **LTMR08●●** | **LT6CT2001** |
| **75** | 132 | 50 | **NSX160NMA** | **LC1D150** | **LTMR08●●** | **LT6CT2001** |
| **75** | 132 | 70 | **NSX160HMA** | **LC1D150** | **LTMR08●●** | **LT6CT2001** |

## 90 to 250 kW at 400 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Circuit breaker | | Contactor | TeSys T controller | | External current transformer |
|---|---|---|---|---|---|---|---|---|
| 400 V | | | Product type (1) | Irm (2) | Product type | Product type (3) | Ir setting (2) | Reference |
| P | Ie | Iq | | | | | | |
| kW | A | kA | | A | | | A | |
| **90** | 160 | 130 | **NSX250● + MA** | 2200 | **LC1G185** | **LTMR08●●** | 160 | **LUTC2001** |
| **110** | 195 | 130 | **NSX250● + MA** | 2640 | **LC1G225** | **LTMR08●●** | 195 | **LUTC2001** |
| **132** | 230 | 130 | **NSX400● + MicroLogic 1.3 M** | 3200 | **LC1G265** | **LTMR08●●** | 230 | **LUTC4001** |
| **160** | 280 | 130 | **NSX400● + MicroLogic 1.3 M** | 3840 | **LC1G330** | **LTMR08●●** | 280 | **LUTC4001** |
| **200** | 350 | 130 | **NSX630● + MicroLogic 1.3 M** | 5000 | **LC1G400** | **LTMR08●●** | 350 | **LUTC4001** |
| **220** | 388 | 130 | **NSX630● + MicroLogic 1.3 M** | 5500 | **LC1G500** | **LTMR08●●** | 388 | **LUTC4001** |
| **250** | 430 | 130 | **NSX630● + MicroLogic 1.3 M** | 6000 | **LC1G500** | **LTMR08●●** | 430 | **LUTC8001** |
| **300** | 460 | 130 | **NS800L + MicroLogic 5.0 LR OFF** | 8800 | **LC1G630** | **LTMR08●●** | 460 | **LUTC8001** |
| **335** | 575 | 130 | **NS800L + MicroLogic 5.0 LR OFF** | 9600 | **LC1G630** | **LTMR08●●** | 575 | **LUTC8001** |

*(1) Product type to be completed by replacing the ● with the breaking performance code:*

| Rated conditional short-circuit (kA) | NSX250●/ NSX400●/ NSX630● | | | | | NS800● |
|---|---|---|---|---|---|---|
| Breaking performance code | F | N | H | S | L | L |
| **400 V** | 36 | 50 | 70 | 100 | 130 | 150 |

*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*
*(3) Please refer to C1/2 to select the complete reference for* TeSys T *motor management controller.*

## Substitution table

| | Old range LT6P multifunction protection relay | | | New range T controllers | | |
|---|---|---|---|---|---|---|
| Motor current | Reference | Reference | External current transformer Reference | Reference | Reference | External current transformer Reference |
| | ∼ 100…240 V | ⎓ 24 V | | ∼ 100…240 V | ⎓ 24 V | |
| I < 5 A | LT6P0M005FM | LT6P0M005S144 | – | **LTMR08●FM** | **LTMR08●BD** | **–** |
| 5 A < I < 25 A | LT6P0M025FM | LT6P0M025S144 | – | **LTMR27●FM** | **LTMR27●BD** | **–** |
| 25 A < I < 100 A | LT6P0M005FM | LT6P0M005S144 | LT6CT1001 | **LTMR100●FM** | **LTMR100●BD** | **–** |
| 100 A < I < 200 A | LT6P0M005FM | LT6P0M005S144 | LT6CT2001 | **LTMR08●FM** | **LTMR08●BD** | **LT6CT2001** |
| 200 A < I < 400 A | LT6P0M005FM | LT6P0M005S144 | LT6CT4001 | **LTMR08●FM** | **LTMR08●BD** | **LT6CT4001** |
| 400 A < I < 800 A | LT6P0M005FM | LT6P0M005S144 | LT6CT8001 | **LTMR08●FM** | **LTMR08●BD** | **LT6CT8001** |

Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Coordination: fuses (NFC, DIN type aM) + contactor + TeSys T + current transformers

## 0.37 to 75 kW at 690 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 | | Switch-disconnector (1) | aM fuses | | Contactor | TeSys T controller | External current tranformer |
|---|---|---|---|---|---|---|---|
| P | Ie | Reference | Size | Rating | Reference | Reference | Reference |
| kW | A | | | A | | | |
| 0.37 | 0.64 | GS●F | 14 x 51 | 1 | LC1D09 | LTMR08●● | – |
| 0.55 | 0.87 | GS●F | 14 x 51 | 2 | LC1D09 | LTMR08●● | – |
| 0.75 | 1.1 | GS●F | 14 x 51 | 2 | LC1D09 | LTMR08●● | – |
| 1.1 | 1.6 | GS●F | 14 x 51 | 2 | LC1D09 | LTMR08●● | – |
| 1.5 | 2.1 | GS●F | 14 x 51 | 4 | LC1D09 | LTMR08●● | – |
| 2.2 | 2.8 | GS●F | 14 x 51 | 4 | LC1D09 | LTMR08●● | – |
| 3 | 3.8 | GS●F | 14 x 51 | 6 | LC1D09 | LTMR08●● | – |
| 4 | 4.9 | GS●F | 14 x 51 | 6 | LC1D09 | LTMR08●● | – |
| 5.5 | 6.7 | GS●F | 14 x 51 | 8 | LC1D25 | LTMR08●● | – |
| 7.5 | 8.9 | GS●F | 14 x 51 | 10 | LC1D25 | LTMR27●● | – |
| 11 | 12.8 | GS●F | 14 x 51 | 16 | LC1D25 | LTMR27●● | – |
| 15 | 17 | GS●G | T000 | 20 | LC1D32 | LTMR27●● | – |
| 18.5 | 21 | GS●G | T000 | 25 | LC1D32 | LTMR27●● | – |
| 22 | 24 | GS●G | T000 | 32 | LC1D40A | LTMR27●● | – |
| 30 | 32 | GS●G | T000 | 40 | LC1D50A | LTMR100●● | – |
| 37 | 39 | GS●J | 22 x 58 | 50 | LC1D65A | LTMR100●● | – |
| 45 | 47 | GS●J | 22 x 58 | 63 | LC1D80 | LTMR100●● | – |
| 55 | 57 | GS●J | 22 x 58 | 80 | LC1D115 | LTMR100●● | – |
| 75 | 77 | GS●KK | T00 | 100 | LC1D115 | LTMR100●● | – |

*(1) GS●: GS1 for direct operator, GS2 for external operator.*

## 110 to 400 kW at 690 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e | | | Switch-disconnector | aM fuses | | Contactor | TeSys T controller | | External current transformer |
|---|---|---|---|---|---|---|---|---|---|
| 690 V | | | Product type | Size | Rating | Product type | Product type (1) | Ir setting (2) | Reference |
| P | Ie | Iq | | | | | | | |
| kW | A | kA | | | A | | | A | |
| 110 | 113 | 80 | GS●●KK | 0 | 125 | LC1G185 | LTMR08●●● | 113 | LUTC2001 |
| 132 | 134 | 80 | GS●●L | 0 | 160 | LC1G265 | LTMR08●●● | 134 | LUTC2001 |
| 160 | 162 | 80 | GS●●N | 1 | 160 | LC1G265 | LTMR08●●● | 162 | LUTC2001 |
| 200 | 203 | 80 | GS●●N | 1 | 200 | LC1G330 | LTMR08●●● | 203 | LUTC2001 |
| 220 | 224 | 80 | GS●●QQ | 2 | 250 | LC1G400 | LTMR08●●● | 224 | LUTC4001 |
| 250 | 250 | 80 | GS●●QQ | 2 | 250 | LC1G400 | LTMR08●●● | 250 | LUTC4001 |
| 290 | 292 | 80 | GS●●QQ | 2 | 315 | LC1G500 | LTMR08●●● | 292 | LUTC4001 |
| 315 | 313 | 80 | GS●●QQ | 2 | 400 | LC1G500 | LTMR08●●● | 313 | LUTC4001 |
| 355 | 354 | 80 | GS2S | 3 | 500 | LC1G630 | LTMR08●●● | 354 | LUTC4001 |
| 400 | 400 | 80 | GS2S | 3 | 630 | LC1G630 | LTMR08●●● | 400 | LUTC8001 |

*(1) Please refer to C1/2 to select the complete reference for* TeSys T *motor management controller.*
*(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.*

Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Coordination: magnetic circuit breaker + contactor + TeSys T + current transformers



## ½ to 20 HP at 480 V - 3P

| Standard power ratings 480 V | | | Limiter block | Circuit breaker | Contactor | TeSys T controller | External current transformer |
|---|---|---|---|---|---|---|---|
| P | Ie | Iq | Reference | Reference | Reference | Reference | Reference |
| HP | A | kA | | | | | |
| – | 0.49 | 100 | – | GV2L04 | LC1D09 | LTMR08●● | – |
| – | 0.64 | 100 | – | GV2L05 | LC1D09 | LTMR08●● | – |
| – | 0.87 | 100 | – | GV2L05 | LC1D09 | LTMR08●● | – |
| 0.5 | 1.1 | 100 | – | GV2L06 | LC1D09 | LTMR08●● | – |
| 0.75 | 1.6 | 100 | – | GV2L06 | LC1D25 | LTMR08●● | – |
| 1 | 2.1 | 65 | GV1L3 | GV2L07 | LC1D25 | LTMR08●● | – |
| 1.5 | 3 | 65 | GV1L3 | GV2L08 | LC1D25 | LTMR08●● | – |
| 2 | 3.4 | 65 | GV1L3 | GV2L08 | LC1D25 | LTMR08●● | – |
| 3 | 4.8 | 65 | GV1L3 | GV2L10 | LC1D25 | LTMR08●● | – |
| 5 | 7.6 | 65 | GV1L3 | GV2L14 | LC1D25 | LTMR08●● | – |
| 7.5 | 11 | 65 | GV1L3 | GV2L16 | LC1D25 | LTMR27●● | – |
| 10 | 14 | 65 | GV1L3 | GV2L16 | LC1D25 | LTMR27●● | – |
| 10 | 14 | 100 | LA9LB920 | GV2L16 | LC1D25 | LTMR27●● | – |
| 15 | 21 | 65 | GV1L3 | GV2L22 | LC1D32 | LTMR27●● | – |
| 15 | 21 | 100 | LA9LB920 | GV2L22 | LC1D32 | LTMR27●● | – |
| 20 | 27 | 65 | GV1L3 | GV2L32 | LC1D40A | LTMR100●● | – |
| 20 | 27 | 100 | LA9LB920 | GV2L32 | LC1D40A | LTMR100●● | – |

## 0.25 to 22 kW at 690 V: type 2 coordination

| Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 690 V | | | Limiter block | Circuit breaker | Contactor | TeSys T controller | External current transformer |
|---|---|---|---|---|---|---|---|
| P | Ie | Iq | Reference | Reference | Reference | Reference | Reference |
| kW | A | kA | | | | | |
| – | 0.49 | 100 | – | GV2L04 | LC1D09 | LTMR08●● | – |
| – | 0.64 | 100 | – | GV2L05 | LC1D09 | LTMR08●● | – |
| – | 0.87 | 100 | – | GV2L05 | LC1D09 | LTMR08●● | – |
| 0.75 | 1.1 | 100 | – | GV2L06 | LC1D09 | LTMR08●● | – |
| 1.1 | 1.6 | 100 | – | GV2L06 | LC1D25 | LTMR08●● | – |
| 1.5 | 2.1 | 65 | LA9LB920 | GV2L07 | LC1D25 | LTMR08●● | – |
| 2.2 | 2.8 | 65 | LA9LB920 | GV2L08 | LC1D25 | LTMR08●● | – |
| 3 | 3.8 | 65 | LA9LB920 | GV2L08 | LC1D25 | LTMR08●● | – |
| 4 | 4.9 | 65 | LA9LB920 | GV2L10 | LC1D25 | LTMR08●● | – |
| 5.5 | 6.7 | 65 | LA9LB920 | GV2L14 | LC1D25 | LTMR08●● | – |
| 7.5 | 8.9 | 65 | LA9LB920 | GV2L14 | LC1D25 | LTMR27●● | – |
| 9 | 10.6 | 65 | LA9LB920 | GV2L16 | LC1D25 | LTMR27●● | – |
| 11 | 12.8 | 65 | LA9LB920 | GV2L16 | LC1D25 | LTMR27●● | – |
| 15 | 17 | 65 | LA9LB920 | GV2L20 | LC1D32 | LTMR27●● | – |
| 18.5 | 21 | 65 | LA9LB920 | GV2L22 | LC1D32 | LTMR27●● | – |
| 22 | 24 | 65 | LA9LB920 | GV2L32 | LC1D40A | LTMR100●● | – |

Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35



Life Is On Schneider Electric

# Product references



| | |
|---|---|
| 50437 | LTMR100CFM |
| 50438 | LTMR100DBD |
| 50439 | LTMR100DFM |
| 50440 | LTMR100EBD |
| 50441 | LTMR100EFM |
| 50442 | LTMR100MBD |
| 50485 | LTMR100MFM |
| 50486 | LTMR100PBD |
| 490NAD91103 | LTMR100PFM |
| 490NAD91104 | LTMR27CBD |
| 490NAD91105 | LTMR27CFM |
| 490NTW00012U | LTMR27DBD |
| DA1TT090 | LTMR27DFM |
| DA1TT110 | LTMR27EBD |
| DA1TT120 | LTMR27EFM |
| DA1TT130 | LTMR27MBD |
| DA1TT140 | LTMR27MFM |
| DA1TT150 | LTMR27PBD |
| DA1TT160 | LTMR27PFM |
| DA1TT170 | TSXCANCA100 |
| LT6CT1001 | TSXCANCA300 |
| LT6CT2001 | TSXCANCA50 |
| LT6CT4001 | TSXCANKCDF180T |
| LT6CT8001 | TSXCANKCDF90T |
| LTM9BPS | TSXCANKCDF90TP |
| LTM9CE180T | TSXPBSCA100 |
| LTM9CEXP10 | TSXPBSCA400 |
| LTM9CU10 | VW3A8306R |
| LTM9CU30 | VW3A8306R03 |
| LTM9F | VW3A8306R10 |
| LTM9KCU | VW3A8306R30 |
| LTMCU | VW3A8306TF03 |
| LTMCUF | VW3A8306TF10 |
| LTMEV40BD | XBTZ938 |
| LTMEV40FM | |
| LTMR08CBD | |
| LTMR08CFM | |
| LTMR08DBD | |
| LTMR08DFM | |
| LTMR08EBD | |
| LTMR08EFM | |
| LTMR08MBD | |
| LTMR08MFM | |
| LTMR08PBD | |
| LTMR08PFM | |
| LTMR100CBD | |

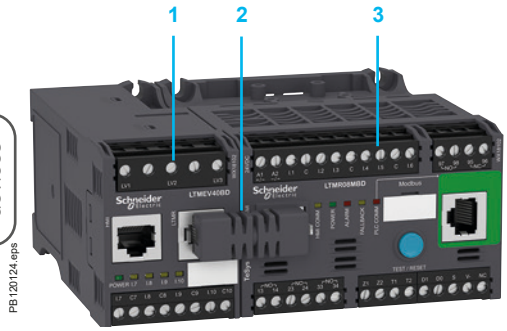
This document is current. Click on the product reference to get the most recent availability status (hyperlink to **se.com** product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

# Technical Data for Designers

Contents

T Motor management system:


> characteristics ..... C1/14 to C1/28
> curves ..... C1/29
> dimensions ..... C1/30 to C1/31
> schemes ..... C1/32 to C1/35




PB120124.eps

1 LTMEV40BD extension module
2 LTMCC004 2 x RJ45 jumper
3 LTMR08MBD controller

## Introduction

TeSys T is a motor management system that provides protection, metering and monitoring functions for single-phase and 3-phase, constant speed, a.c. motors up to 810 A.

Suitable for the harshest applications, this product range offers:
- high-performance multifunction protection, independent of the automation system
- a local HMI control unit for reading, displaying and modifying the parameters monitored, diagnostics, etc.
- configuration using SoMove software
- connection to the automation system via a communication network (selection according to various protocols).

## Application

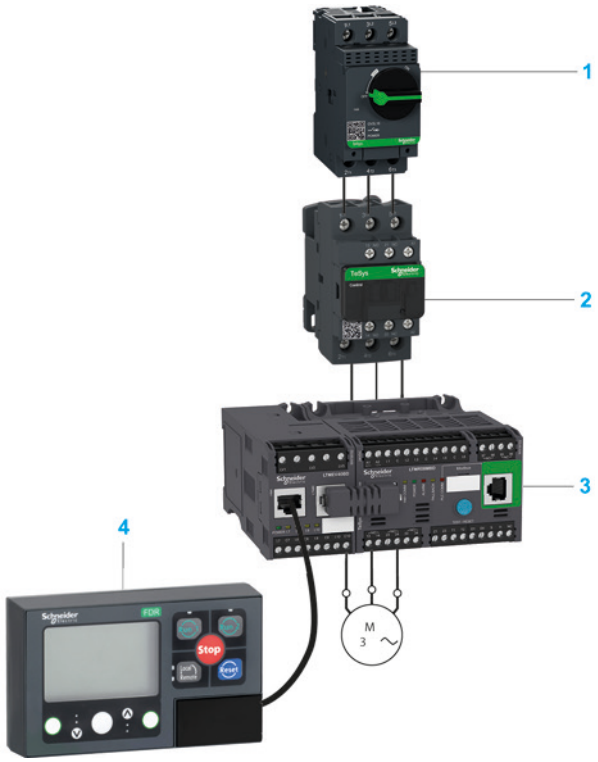
The TeSys T motor management system is used for motor control and protection in harsh industrial applications, in which downtime must be avoided because it is very costly: Oil & Gas, chemical industry, water treatment, metal, minerals and mining, pharmaceutical industry, microelectronics, tunnels, airports etc.

With TeSys T motor management system, unexpected stops of a process or manufacturing, associated with a motor, are anticipated via predictive analysis of fault situations. Fault tripping is therefore reduced to a minimum.

Its use in motor control panels makes it possible to:
- increase the operational availability of installations
- improve flexibility from project design through to implementation
- increase productivity by making available all information needed to run the system.

The motor management system integrates perfectly with Schneider Electric low voltage equipment, such as Okken, Blokset and Prisma.

PB123812.eps




1 Magnetic Circuit breaker
2 Contactor
3 Controller with extension module
4 Operator control unit

References:
pages C1/2 to C1/9
Curves:
page C1/29
Dimensions, mounting:
pages C1/30 to C1/31
Schemes:
pages C1/32 to C1/35

PB121434.eps

*LTMR08MBD*

PB121436.eps

*LTMEV40BD*

PB112374.eps

*LTMCUF*

## Introduction

### Composition of the motor management system

The system comprises:
- an LTMR motor management controller
  - with internal current transformer up to 100 A
  - above 100 A, by external current transformer up to 810 A
- an LTME extension module
- an LTMCU operator control unit
- configuration software incorporated in the SoMove software application
- accessories for system set-up.

### Communication

The LTMR controller is equipped with a communication interface to allow remote monitoring and control of the motor. All motor information is then available at automation system level.

The following networks are available:
- Modbus, CANopen, DeviceNet, PROFIBUS DP and Ethernet TCP/IP (with two communication protocols, Modbus/TCP and EtherNet/IP).

## T system functions

### Protection functions

- against thermal overload
- against phase imbalance and phase failure
- thermal motor protection via PTC probes
- against phase reversal
- against earth faults
- against long starting times and motor stalling
- against automatic load shedding and restarting
- against load fluctuations (I, U, P)
- against variations of Cos φ (power factor).

### Metering functions

- Measurements (rms values):
  - current on the 3 phases
  - voltage on the 3 phases (shedding)
  - motor temperature
  - earth fault.
- Values calculated:
  - average current
  - frequency
  - Cos φ (power factor), power, power consumption...

### Motor control functions

A motor managed by TeSys T motor management system can be controlled:
- locally, using the logic inputs present on the product, or via the HMI terminal
- remotely, via the network (connection by terminal block or connector except for DeviceNet: terminal block only).

### Motor control modes

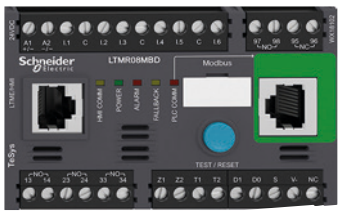
5 predefined motor control modes are incorporated in the controller:
- overload mode: monitoring of motors whose control is not managed by the controller,
- independent mode: starting of non-reversing motors,
- reverser mode: starting of reversing motors,
- 2-step mode: 2-step starting of motors (star-delta, by autotransformer and by resistor),
- 2-speed mode: 2-speed starting of motors (Dahlander, pole changer).

A 6th "Custom" mode is available to allow the user to create a specific motor control mode that is not predefined in the controller.

### Statistical and diagnostic functions

- Fault statistics: counters per type of protection and history of the last 5 faults.
- Motor statistics: saving of motor statistics values.
- Diagnosis of faults affecting correct operation of the product.

References: pages C1/2 to C1/9 | Curves: page C1/29 | Dimensions, mounting: pages C1/30 to C1/31 | Schemes: pages C1/32 to C1/35




PB121447.eps

*LTMR●●*

## Controller ref. LTMR

The controller is the central component in the motor management system.
It manages the basic functions such as:
- measurement of 3-phase current via integral current transformers from 0.4 to 100 A (up to 810 A by external current transformers)
- measurement of earth current by external earth fault toroid
- measurement of motor temperature by PTC probe
- inputs and outputs for the various motor control modes, fault management and associated functions.

### Characteristics

**Supply**
2 types of controller power supply are available:
- 24 V⎓
- 100…240 V∿.

**Current ranges**
3 current ranges allow measurement of motor current from 0.4 to 100 A:
- 0.4…8 A
- 1.35…27 A
- 5…100 A.

For use with external current transformers, choose the 0.4…8 A range (1 or 5 A current transformer secondary).

**Inputs**
- 6 discrete logic inputs.

**Outputs**
- 3 relay logic outputs (1N/O).
- 1 relay output for fault signalling (1N/O + 1N/C).

**Measurements**
- Connections for a temperature probe.
- Connections for an earth fault toroid.

## Extension module ref. LTME

The extension module adds the following functionalities to the T controller:
- voltage measurement on the 3 phases. This enables it to calculate numerous engine monitoring parameters (power, frequency, Cos φ…)
- 4 additional inputs.

### Characteristics

**Inputs**
- 4 discrete logic inputs (independent).

**Power supplies**
- 2 types of power supply for the inputs: 24 V⎓ and 100…240 V∿.
  - A 24 V⎓ expansion module can be assembled with a 24 V⎓ controller or with a 100…240 V∿ controller.
  - A 100…240 V∿ expansion module can be assembled with a 100…240 V∿ controller.

**Voltage measurement between phases up to 690 V nominal.**

PB121448.eps

*LTMCU*

## Human/Machine Interfaces (HMI)

Depending on the application, 2 types of HMI can be used with the LTMR controller.
- ■ The LTMCU operator control unit:
  - □ entirely dedicated to the T range
  - □ only for control/monitoring of an LTMR controller.
- ■ A Magelis XBTN410 terminal for control/monitoring of 1 to 8 LTMR controllers.

## Operator control unit ref. LTMCU

Dedicated exclusively to T controllers, control unit LTMCU makes it possible to:
- ■ configure the parameters of the LTMR controller
- ■ display information on controller configuration and operation
- ■ monitor the alarms and faults generated by the controller
- ■ local control of the motor via the local control interface (keys can be customised). Three different languages can be loaded into the LTMCU controller at the same time.

By default, these 3 languages are:
- ■ LTMCU: English, French and Spanish

***Note:*** *English is the only compulsory language.*

A language download utility (LangTool), together with all the other languages, are available on the website “www.se.com”.
This tool allows the languages present in the LTMCU control unit to be adapted.

The LTMCU HMI control unit has an RJ45 port, protected by a flexible cover to provide a good level of protection (IP54).
This port on the front panel allows connection to a PC, via a connecting cable, in order to use SoMove software.
In this case, the control unit acts as a transmitter and all information can then be viewed in SoMove.
The LTMCU HMI can be used as a portable version by using the separate kit LTM9KCU. This kit consists of two snap-on plastic shells (tool-free mounting) fitted with a simple fixing system that uses magnets for mounting on all types of metal surfaces.

## The Magelis XBT N410 HMI terminal

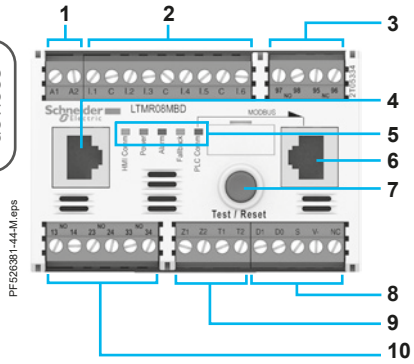
Two applications have been predefined for T motor management system.
Depending on the application loaded, the HMI terminal makes it possible to:
- ■ configure and monitor a motor starter (LTM_1T1_V1.dop)
- ■ monitor and modify certain parameters on up to 8 motor starters (LTM_1T8_X_V1.dop) (1).

XBTL1000 programming software is needed for loading applications into the HMI terminal.
These applications are available on the website “www.se.com”.

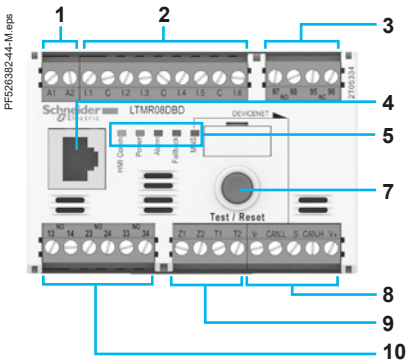
*(1) Replace the X with an E for the English version, or an F for the French version.*

## Controllers ref. LTMR

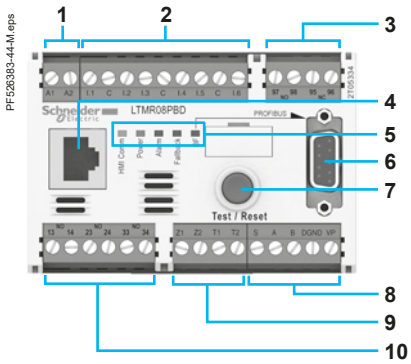
### Modbus



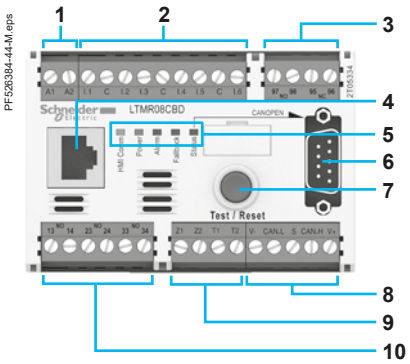

### DeviceNet



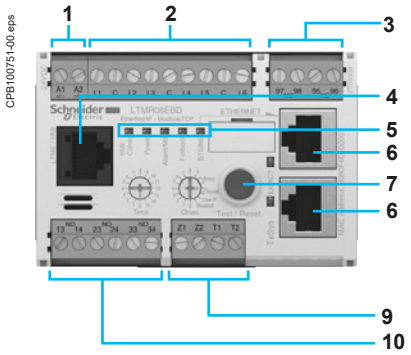

### PROFIBUS DP




### CANopen




### Ethernet TCP/IP (communication protocols: Modbus/TCP and EtherNet/IP)

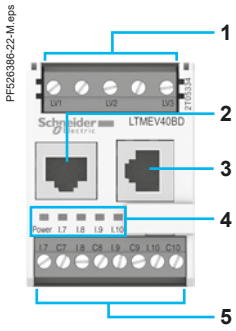



Controllers feature the following on their front panel:

**1** Controller power supply.
**2** Input connections.
**3** Fault outputs (N/O+N/C).
**4** Port for connection to the HMI terminal, a PC or an extension module (RJ45).
**5** Controller status LEDs.
**6** Network port for connection to the network by connector (except DeviceNet) (1).
**7** Test/Reset button.
**8** Connection to the network by terminal block (except Ethernet TCP/IP).
**9** Connection for an earth fault toroid and temperature probes.
**10** Outputs for motor control mode function.

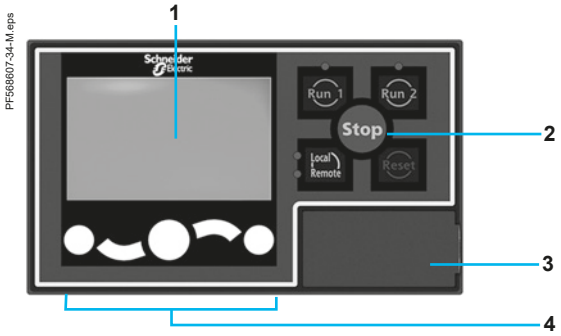
*(1) Connection using power extension (daisy-chaining) is possible for Ethernet TCP/IP.*

## Extension modules ref. LTMEV40●●




Extension modules have the following on their front face:
**1** Inputs for voltage measurement.
**2** Port for connection to the HMI terminal or to the PC.
**3** Port for connection to the controller.
**4** Extension module status LEDs.
**5** Connection of additional inputs.

## Operator control unit ref. LTMCU




The control unit has the following on its front face:
**1** Screen LCD display.
**2** Local control interface including control keys and LEDs.
**3** RJ45 port on front panel for connection to a PC (protected by a cover).
**4** Contextual navigation keys.

References: pages C1/2 to C1/9
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

## Thermal and current protection functions

| Functions<br>Description | Setting range | Controller LTMR | Controller and extension module (LTMR + LTME) | Alarm threshold | Fault threshold |
|---|---|---|---|---|---|
| Thermal overload:<br>thermal protection of motor by monitoring current consumption | Class: 5, 10, 15, 20, 25, 30.<br>Inverse ther/definite time | | | | |
| Motor temperature:<br>thermal monitoring of the motor using temperature probes (winding, paper...). Up to 3 sensors in series. | PTC binary<br>PTC/NTC analogue:<br>20 …6500 Ohm | | | | |
| Phase imbalance:<br>monitors the symmetry of currents. To be used for imbalance < 80 % of the average current (1). | 10…70% I average<br>0.2…20 s | | | | |
| Phase failure:<br>monitors the symmetry of currents. To be used for imbalance < 80 % of the average current (1). | 0.1…30 s | | | | |
| Phase reversal:<br>signals when the phase sequence is different from the defined sequence (motor running). | A-B-C<br>A-C-B | | | | |
| Long starting time:<br>monitors the motor starting time | 100…800 % of FLC (2)<br>1…200 s | | | | |
| Locked rotor:<br>locking detected by a sudden increase in current after the start phase | 100…800 % of FLC (2)<br>1…30 s | | | | |
| Min/max current load limit variations:<br>monitors motor load through variations of current around preset thresholds. | min.:<br>30…100 % of FLC (2)<br>1…200 s<br>max.:<br>20…800 % of FLC (2)<br>1…250 s | | | | |
| Earth fault:<br>signals internal insulation faults, by vectorial summing of external currents, via earth fault toroid. | internal:<br>50…500 % min FLC (2)<br>0.5…25 s<br>external:<br>0.02…21 A<br>0.1…25 s | | | | |
| Frequent starting:<br>Protects the motor against overheating due to frequent starting. | 0…999.9 s | | | | |

## Voltage and power protection functions

| | | | | | |
|---|---|---|---|---|---|
| Phase imbalance:<br>monitors the symmetry of voltage between phases.<br>To be used for imbalance < 40 % of the average voltage (3). | 3…15 %<br>0.2…20 s | | | | |
| Phase failure:<br>monitors the symmetry of voltage between phases.<br>To be used for imbalance > 40 % of the average voltage (3). | 0.1…30 s | | | | |
| Phase reversal:<br>signals when the phase sequence is different from the defined sequence (motor stopped). | A-B-C<br>A-C-B | | | | |
| Voltage variations.<br>Min/max voltage limits:<br>monitors voltage variations around preset thresholds. | min.:<br>70…99 %<br>0.2…25 s<br>max.:<br>101…115 %<br>0.2…25 s | | | | |
| Load shedding:<br>opens outputs O.1 and O.2 if voltage drops below a preset threshold. | 68…115 %<br>1…9999 s | | | | |
| Power variations.<br>Min/max power limits:<br>monitors power variations around preset thresholds. | 20…800 %<br>1…100 s | | | | |
| Variations of Cos φ.<br>Min/max limits of Cos φ:<br>monitors variations of Cos φ around preset thresholds. | 0…1 s<br>1…25 s | | | | |

Function performed.

*(1) Average current value measured on the 3 phases.*
*(2) FLC: Full Load Current (setting current).*
*(3) Average voltage value measured on the 3 phases.*

References: pages C1/2 to C1/9
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Characteristics



## Motor control functions

| Functions | Description | With controller LTMR | With controller LTMR and extension module LTME |
|---|---|---|---|
| Control modes | Local, via terminal block | ■ | ■ |
| | Local, via HMI terminal (1) | ■ | ■ |
| | Remote, via network | ■ | ■ |
| Operating modes | Overload | ■ | ■ |
| | Independent | ■ | ■ |
| | Reverser | ■ | ■ |
| | 2-step | ■ | ■ |
| | 2-speed | ■ | ■ |
| | "Custom" mode | ■ | ■ |
| Fault management | Manual reset | ■ | ■ |
| | Automatic reset | ■ | ■ |
| | Remote reset | ■ | ■ |

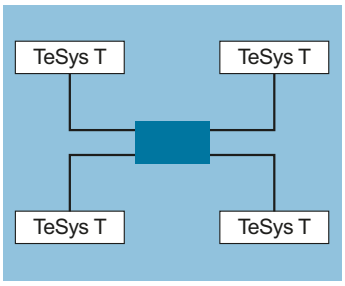
## Metering functions and statistics

| Functions | Description | Measurement range | With controller LTMR | With controller LTMR and extension module LTME |
|---|---|---|---|---|
| Measurements (2) | Current/Phase | 0.08…1000 A | ■ | ■ |
| | Earth current | 0.1633 x CT ratio | ■ | ■ |
| | Average current | 0.08…1000 A | ■ | ■ |
| | Current imbalance between phases | 0…200 % | ■ | ■ |
| | Thermal capacity level | 0…200 % | ■ | ■ |
| | Motor temperature rise | 0…6500 Ohm | ■ | ■ |
| | Frequency | 0… 100 Hz | | ■ |
| | Voltage between phases | ∼ 0…830 V | | ■ |
| | Voltage imbalance between phases | 0…200 % | | ■ |
| | Active power | 0…6553.5 kW | | ■ |
| | Reactive power | 0…6553.5 kVAR | | ■ |
| | Cos φ (power factor) | 0…100 | | ■ |
| | Active power consumption | 0…400 kWh | | ■ |
| | Reactive power consumption | 0…400 kVARh | | ■ |
| Fault statistics | Protection fault counters | | ■ | ■ |
| | Protection alarm counters | | ■ | ■ |
| | Diagnostic fault counters | | ■ | ■ |
| | Motor control function counters | | ■ | ■ |
| | Fault history | | ■ | ■ |
| Fault diagnostics | Internal watchdog fault | | ■ | ■ |
| | Controller internal temperature | | ■ | ■ |
| | Temperature sensor connection | | ■ | ■ |
| | Current connection | | ■ | ■ |
| | Voltage connection | | | ■ |
| | Motor control commands (start, stop, run check back and stop check back) | | ■ | ■ |
| | Control configuration checksum | | ■ | ■ |
| | Loss of communication | | ■ | ■ |
| Motor statistics | Number of motor control commands (O.1/O.2 starts) | | ■ | ■ |
| | Operating time | | ■ | ■ |
| | Number of starts/hour | | ■ | ■ |
| | Last start I max. | | ■ | ■ |
| | Duration of last start | | ■ | ■ |
| Thermal overload statistics | Time to trip | | ■ | ■ |
| | Time to restart | | ■ | ■ |
| System operating statistics | Run, ON, Start, alarm, fault. | | ■ | ■ |

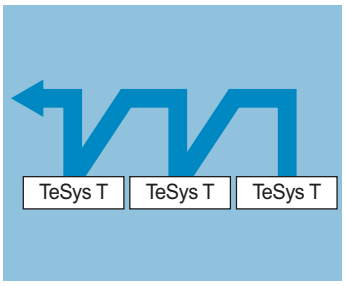
*(1) HMI: Human Machine Interface.*
*(2) See measurement details page C1/26.*

References: pages C1/2 to C1/9
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35


Life Is On Schneider Electric




*Star topology*




*Daisy chain topology*

**Star topology**

In a star topology, all the peripherals are linked via an intermediate peripheral (hub or switch).

In industrial Ethernet applications, the use of full duplex switches (instead of hubs) as central peripherals is strongly recommended.

**Daisy chain topology**

Daisy chaining, at bus level, is another connection topology commonly used in industrial automation system networks. The cable segments link several peripherals to each other, constituting the peripheral "section" of the network cable.



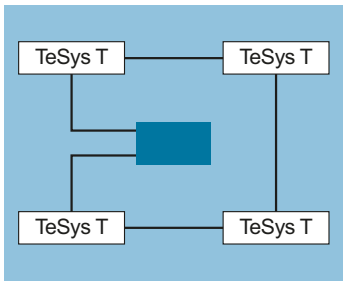
Ref.

References:
pages C1/2 to C1/9

Curves:
page C1/29

Dimensions, mounting:
pages C1/30 to C1/31

Schemes:
pages C1/32 to C1/35




*Ring topology*

## Ethernet: different network topologies

### Ring topology

In a ring topology, all the peripherals or components of the network infrastructure are connected within a loop.
This type of topology makes it possible to achieve different levels of redundancy of the network.

### Ethernet ring

Ethernet rings are generally the main networks in applications where a high level of reliability is required. If a ring topology is required, the switches handling this function must be used.

### Redundancy

Redundancy of the network infrastructure is the key to development of applications with high operational reliability.
Implementing a single or double ring architecture makes it possible to provide protection against breaks in network segments.

### Single ring

The first level of redundancy can be achieved by installing a single ring.
ConneXium switches can be used to establish main network ring configurations.
The ring is created using RSTP protocol.
If a section of the line fails, the ring structure converts into a line type configuration.

## Ethernet: different communication protocols

LTMR controllers communicating over an Ethernet network can communicate either using the Modbus/TCP communication protocol or using the EtherNet/IP communication protocol. Both protocols are loaded in the controller. One must be selected for the operation.

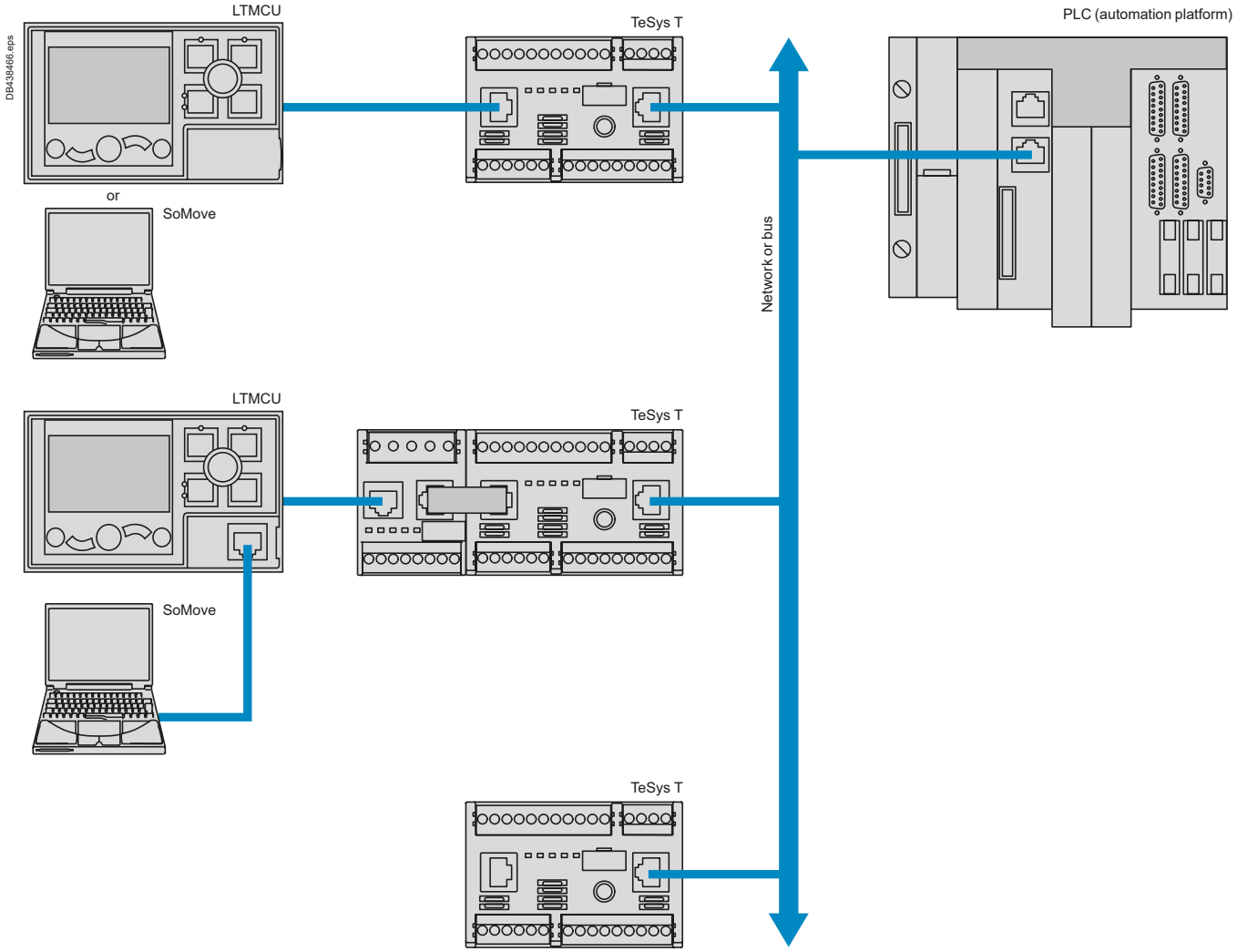
***Note:*** *EtherNet/IP communication protocol is supported by ODVA, also promoter of DeviceNet communication solution. Note that in EtherNet/IP, IP stands for Industrial Protocol.*

■ IP address Class for Ethernet TCP/IP version: Class A 20 ETH10/100.

| Services available on Ethernet TCP/IP version | | |
|---|---|---|
| | In Modbus/TCP | In Ethernet/IP |
| Web Server | ■ | ■ |
| Modbus messaging | ■ | |
| IO Messaging | | ■ |
| Explicit Messaging | | ■ |
| Client FDR | ■ | ■ |
| SNMP network administrator | ■ | ■ |
| RSTP | ■ | ■ |
| Discovery | ■ | ■ |
| Master IP | ■ | ■ |
| Broadcast Storm Protection | ■ | ■ |

References: pages C1/2 to C1/9
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

## Possible configurations and applications

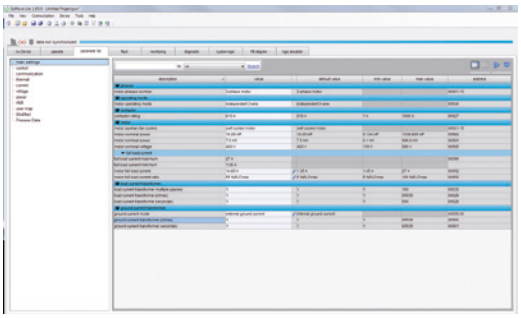





Ref.

References:
pages C1/2 to C1/9
Curves:
page C1/29
Dimensions, mounting:
pages C1/30 to C1/31
Schemes:
pages C1/32 to C1/35

PB113436.eps



*Example of T configurator setup screen*

## Configuration with SoMove

The T configurator is incorporated in the SoMove software application, as from version 2.5. (1)
It allows configuration, commissioning and maintenance of motor starters protected by TeSys T motor management system.

A library containing predefined motor control mode functions is available in order to:
- allow standardisation
- avoid errors
- reduce motor starter setup times.

5 predefined motor control modes are incorporated in the controller:
- overload mode: monitoring of motors whose control is not managed by the controller
- independent mode: starting of non-reversing motors
- reverser mode: starting of reversing motors
- 2-step mode: 2-step starting of motors (star-delta, by autotransformer and by resistor)
- 2-speed mode: 2-speed starting of motors (Dahlander, pole changer).

By using logic functions, a "Custom" mode makes it possible to:
- easily adapt these predefined motor control mode functions to the specific needs of your applications
- create a link with the motor starter environment or
- create new functions.

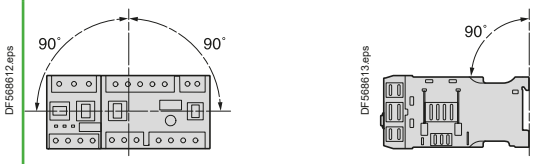
The functions thus defined can be saved and used to build your function library for future applications.
To create special functions, a logic editor is incorporated in the configurator and allows a choice of 2 programming languages:
- function block
- structured text.

*(1) An update file is available, free of charge, on the website "www.se.com". It will enable you to take advantage of the latest functions in the T motor management system.*

Ref.

# Characteristics

## Environment

| Product type | | | LTMR controllers | | LTMEV40●● extension modules | |
|---|---|---|---|---|---|---|
| Conforming to standards | | | IEC/EN 60947-4-1, UL60947-4-1A, CSA 22-2 n°60947-4-1, IACS E10 | | | |
| Product certifications | | | UL, CSA, CE, CCC, UKCA, EAC/GOST, RCM/CTIC'K, Atex, Marine (BV, LROS, DNV, RINA, ABS) (1) | | | |
| Rated insulation voltage of the outputs (Ui) | Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution 3 | V | 690 | | | |
| | Conforming to UL 508, CSA C222 n° 14 | V | 690 | | | |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC/EN 60947-4-1 | | | | | |
| | ∿ 100…240 V supply, inputs and outputs | kV | 4 | | 4 | |
| | ⎓ 24 V supply, inputs and outputs | kV | 0.8 | | 0.8 | |
| | Communication circuits | kV | 0.8 | | – | |
| | Current or voltage measurement circuit | kV | 6 | | 6 | |
| Short-circuit withstand | Conforming to IEC/EN 60947-4-1 | kA | 100 | | | |
| Climatic withstand | Conforming to IEC/EN 60068-2-30 | | 12 x 24 hour cycles | | | |
| | Conforming to IEC/EN 60070-2-11 | h | 48 | | | |
| Ambient air temperature around the device | Storage | °C | - 40…+80 | | | |
| | Operation | °C | - 20…+60 | | | |
| Operating position without dating | In relation to normal vertical mounting plane | | ±30° in relation to mounting plate, ±90°   | | | |
| Flame resistance | Conforming to UL 94 | °C | 960 (for parts supporting live components) | | | |
| | Conforming to IEC/EN 60695-2-12 | °C | 650 (for other parts) | | | |
| Shock resistance (1/2 sine wave, 11 ms) | Conforming to IEC/EN 60068-2-27 (2) | | 15 gn | | | |
| Vibration resistance | Conforming to IEC/EN 60068-2-6 (2) 5…300 Hz | | 4 gn (plate mounted)<br>1 gn (mounted on ⊥ rail) | | | |
| Resistance to electrostatic discharge | Conforming to IEC/EN 61000-4-2 | kV | In open air: 8 - Level 3<br>On contact: 6 - Level 3 | | | |
| Immunity to radiated electromagnetic interference | Conforming to IEC 61000-4-3 | V/m | 10 - Level 3 | | | |
| Immunity to fast transient bursts | Conforming to IEC 61000-4-4 | kV | On supply and relay outputs: 4 - Level 4<br>Other circuits: 2 - Level 3 | | | |
| Immunity to radioelectric fields (3) | Conforming to IEC/EN 61000-4-6 | V | 10 - Level 3 | | | |
| Immunity to dissipated shock waves | Conforming to IEC/EN 61000-4-5 | | **Common mode** | **Serial mode** | **Common mode** | **Serial mode** |
| | Relay outputs and supply | kV | 4 | 2 | – | – |
| | ⎓ 24 V inputs | kV | 1 | 1 | 1 | 1 |
| | ∿ 100…240 V inputs | kV | 2 | 1 | 2 | 1 |
| | Voltage inputs | kV | – | – | 4 | 2 |
| | Communication | kV | 2 | – | 2 | – |
| | Temperature sensor (IT1/IT2) | kV | 1 | 0.5 | – | – |

| Altitude derating | | **2000 m** | **3000 m** | **3500 m** | **4000 m** | **4500 m** |
|---|---|---|---|---|---|---|
| | Rated operational voltage (Ui) | 1 | 0.93 | 0.87 | 0.8 | 0.7 |
| | Max. operating temperature | 1 | 0.93 | 0.92 | 0.9 | 0.88 |

*(1) Certain certifications are pending; please consult your Customer Care Centre.*
*(2) Without modifying the contact states, in the most unfavourable direction.*
*(3) This product has been designed for use in environment A and in B, it may cause unwanted electromagnetic disturbance to other devices, which may require the implementation of adequate mitigation measures.*

References: pages C1/2 to C1/9
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Characteristics



## Controller and extension module characteristics

| Product type | | | | Controllers | | Extension modules | |
|---|---|---|---|---|---|---|---|
| | | | | LTMR●●●BD | LTMR●●●FM | LTMEV40BD | LTMEV40FM |
| **Control supply** | | | | | | | |
| Operational voltage (U) | Conforming to IEC/EN 60947-1 | | V | ⎓ 24 | ∿ 100…240 | – | |
| Resistance to voltage dips | Conforming to IEC/EN 61000-4-11 | | V | 0 for 3 ms<br>70 % of U for 500 ms | | – | |
| Associated protection | | | A | gG fuse, 0.5 | | – | |
| Operational voltage | Limit values | | V | ⎓ 20.4…26.24 | ∿ 93.5…264 | – | |
| Current consumption | 50/60 Hz | | mA | ⎓ 56…127 | ∿ 8…62.8 | – | |
| Connectors | Pitch | | mm | 5.08 | | 5.08 | |
| Flexible cable without cable end | 1 conductor | | mm² | 0.2…2.5 | | 0.2…2.5 | |
| | 2 identical conductors | | mm² | 0.2…1.5 | | 0.2…1.5 | |
| Flexible cable with cable end | | | | | | | |
| Without insulated ferrule | 1 conductor | | mm² | 0.25…2.5 | | 0.25…2.5 | |
| | 2 identical conductors | | mm² | 0.5…1.5 | | 0.5…1.5 | |
| With insulated ferrule | 1 conductor | | mm² | 0.25…2.5 | | 0.25…2.5 | |
| | 2 identical conductors | | mm² | 0.2…1 | | 0.2…1 | |
| Solid cable without cable end | 1 conductor | | mm² | 0.2…2.5 | | 0.2…2.5 | |
| | 2 identical conductors | | mm² | 0.2…1 | | 0.2…1 | |
| Conductor size | | | | AWG24 to AWG14 | | AWG24 to AWG14 | |
| Tightening torque | | | N.m | 0.5…0.6 | | 0.5…0.6 | |
| Flat screwdriver | | | mm | 3 | | 3 | |
| **Input characteristics** | | | | | | | |
| Nominal values | Conforming to IEC/EN 61131-1 | | | Type 1 positive logic (⎓: resistive, ∿: capacitive) | | | |
| | Voltage | | V | ⎓ 24 | ∿ 100…240 | ⎓ 24 | ∿ 100…240 |
| | Current | | mA | ⎓ 7 | ∿ 3.1 for 100 V<br>∿ 7.5 for 240 V | ⎓ 7 | ∿ 3.1 for 100 V<br>∿ 7.5 for 240 V |
| Logic inputs | Logic state 1 | Voltage | V | 15 min | 79 < U < 264 | 15 min | 79 < U < 264 |
| | | Current | mA | 2 min…15 max | 2 min at 110 V…<br>3 min at 220 V | 2 min…15 max | 2 min at 110 V…<br>3 min at 220 V |
| | Logic state 0 | Voltage | V | 5 max | 0 < U < 40 | 5 max | 0 < U < 40 |
| | | Current | mA | 15 max | 15 max | 15 max | 15 max |
| Response time | Change to state 1 | | ms | 15 | 25 | 15 | 25 |
| | Change to state 0 | | ms | 5 | 25 | 5 | 25 |
| **Output characteristics** | | | | | | | |
| Type | | | | Volt free, single break | | | |
| Load | ∿ | | | 250 V / 5 A B300 | | | |
| | ⎓ | | | 30 V / 5 A | | | |
| Permissible power in cat. AC-15 | For 500 000 operating cycles | | VA | 480 / Ie max: 2 A | | | |
| Permissible power in cat. DC-13 | For 500 000 operating cycles | | W | 30 / Ie max: 1.25 A | | | |
| Associated protection | | | A | gG fuse, 4 | | | |
| Max. frequency | | | Hz | 2 | | | |
| Max. operating level | | | op. cycles/h | 1800 | | | |
| Response time | Change to state 1 | | ms | 10 max | | | |
| | Change to state 0 | | ms | 10 max | | | |
| **Measurement details** | | | | | | | |
| Current | | | | 1 % for the 0.4…8 A and 1.35…27 A ranges<br>2 % for the 5…100 A range | | | |
| Voltage | | | | 1 % from 100 to 830 V | | | |
| Earth fault current | Internal measurement without earth fault toroid | | | 5…15 % for<br>current > 0.1 A in the 0.4…8 A range<br>current > 0.2 A in the 1.35…27 A range<br>current > 0.3 A in the 5…100 A range | | | |
| | External measurement with earth fault toroid | | | < 5 % or 0.01 A | | | |
| Temperature measurement | | | | 2 % | | | |
| Power factor | | | | 10 % | | | |
| Active and reactive power | | | | 15 % | | | |
| Internal clock | | | | ±30 min / year | | | |

References: pages C1/2 to C1/9 | Curves: page C1/29 | Dimensions, mounting: pages C1/30 to C1/31 | Schemes: pages C1/32 to C1/35



Life Is On Schneider Electric

## Bus and network characteristics

| Type of bus/network | Modbus | CANopen | DeviceNet | PROFIBUS DP | Ethernet |
|---|---|---|---|---|---|
| Physical interface | 2-wire RS 485 | ISO 11898 | ISO 11898 | polarised 2-wire RS 485 | IEEE 802.3 |
| Addressing | 1 to 247 | 1 to 127 | 1 to 64 | 1 to 125 | 0 to 159 (1) |
| Transmission speeds | 1.2 to 19.2 kb/s | 10, 20, 50, 125, 250, 500, 800 and 1000 kb/s + Auto baud | 125 to 500 kb/s | 9.6 kb to 12 Mb/s | 10/100 Mb/s, with automatic recognition |
| Connections | RJ45/terminal block | 9-way SUB-D/ terminal block | Terminal block | 9-way SUB-D/ terminal block | RJ45 |
| Cables | 2 shielded twisted pairs | 4 twisted, shielded wires | 4 twisted, shielded wires | 2 shielded twisted pairs, type A | 2 shielded twisted pairs |

## LTMCU operator control unit

### Environment

| | | | |
|---|---|---|---|
| Conforming to standards | | | IEC/EN 61131-2, UL60947-4-1A, CSA 22-2 n°60947-4-1 |
| Product certifications | | | UL, CSA, CE, EAC/GOST, RCM/CTIC'K |
| Ambient air temperature around the device | Storage | °C | -40…+80 |
| | Operation | °C | -20…+60 |
| Relative humidity | | | 15…95 % without condensation |
| Climatic withstand | Conforming to IEC/EN 60068-2-30 | | 12 x 24 hour cycles |
| Degree of protection | Conforming to IEC 60947-1 | | IP54 |
| Shock resistance | Conforming to IEC/EN 60068-2-27 | | 15 gn / 11ms |
| Vibration resistance | Conforming to IEC/EN 60068-2-6 5…300 Hz | | 4 gn |
| Flame resistance | Conforming to IEC 60947-1 | °C | 650 |
| | Conforming to UL 94 | | V2 |

### Electrical characteristics

| | | | |
|---|---|---|---|
| Supply to the product | | | Powered via the controller |
| Maximum current | | mA | 140 |
| Maximum power dissipated | | W | 1 |
| Resistance to electromagnetic discharge | Conforming to IEC/EN 61000-4-2 | kV | In open air: 8. Level 3<br>On contact: 4. Level 3 |
| Immunity to radiated electromagnetic interference | Conforming to IEC/EN 61000-4-3 | V/m | 10 - Level 3 |
| Immunity to fast transient bursts | Conforming to IEC/EN 61000-4-4 | kV | 2, shielded access. Level 3 |
| Immunity to radioelectric fields | Conforming to IEC/EN 61000-4-6 | V | 10. Level 3 |
| Immunity to shock waves | Conforming to IEC/EN 61000-4-5 | kV | 2, shielded access. Level 3 |

### Physical characteristics

| | | | |
|---|---|---|---|
| Mounting | | | Flush mounted |
| Display | | | Backlit LCD |
| Signalling | | | By 4 LEDs |
| Cabling | | | RJ45 |

*(1) For DHCP, stored IP, addressing limited by subnet mask.*

References: pages C1/2 to C1/9
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31
Schemes: pages C1/32 to C1/35

# Characteristics



## LT6CT●●●● external current transformer characteristics

| | | | | | |
|---|---|---|---|---|---|
| Conforming to standards | | IEC 60185, BS 7626 | | | |
| Precision | | Class 5P | | | |
| Precision limit factor | | 15 | | | |
| Rated insulation voltage (Ui) | | 690 | | | |
| Maximum operating temperature | **°C** | 50 | | | |
| Transformer ratio | **A** | 100/1 | 200/1 | 400/1 | 800/1 |
| Diameter of conductor passage hole | **mm** | 35 | 35 | 35 | 35 |
| Maximum cabling c.s.a. | **mm²** | 30 x 10 | 30 x 10 | 30 x 10 | incorporated (1) |

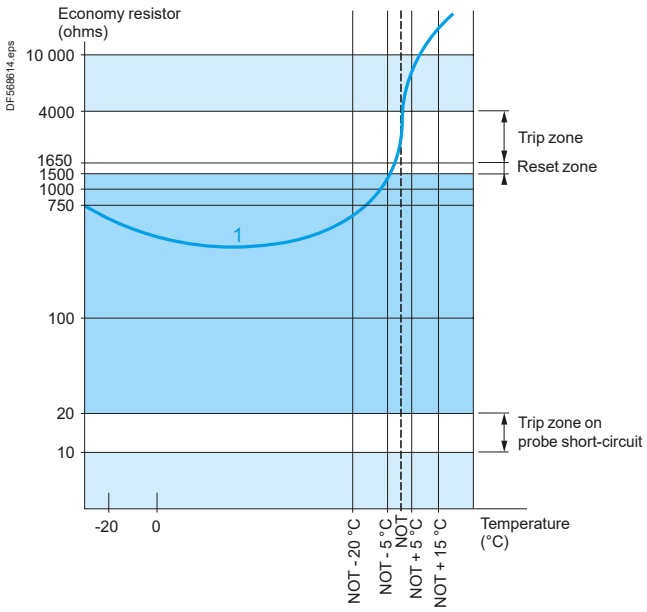
## Earth fault toroid characteristics

| **Toroid type** | | **50437** | **50438** | **50439** | **50440** | **50441** | **50442** | **50485** | **50486** |
|---|---|---|---|---|---|---|---|---|---|
| Rated insulation voltage Ui | **V** | 1000 | | | | | | | |
| Operating temperature | **°C** | - 35…+ 70 | | | | | | | |
| Protection index | | IP30 (connections IP20) | | | | | | | |
| Transformer ratio | | 1/1000 | | | | | | | |
| Rated operational current Ie | **A** | 65 | 85 | 160 | 250 | 400 | 630 | 85 | 250 |
| Max. conductor c.s.a. per phase | **mm²** | 25 | 50 | 95 | 240 | 2 x 185 | 2 x 240 | 50 | 240 |

## DA1TT●● probe characteristics

| | | | |
|---|---|---|---|
| Conforming to standards | | | IEC 60034-11 mark A |
| Economy resistor | At 25 °C | Ω | 3 x 250 in series |
| Rated operational voltage (Ue) | Per probe | **V** | ⎓ 2.5 max |
| Rated insulation voltage (Ui) | | **kV** | 2.5 |
| Insulation | | | Reinforced |
| Length of connecting cables | Between probes | **mm** | 250 |
| | Between probe and motor terminal plate | **m** | 1 |

**Guaranteed operating zones**: example with 3 probes type DA1TT●●● (250 Ω at 25 °C) in series, conforming to standard EC 60034-11, mark A.




**1** 3 probes type DA1●●● (250 Ω at 25 °C) in series.

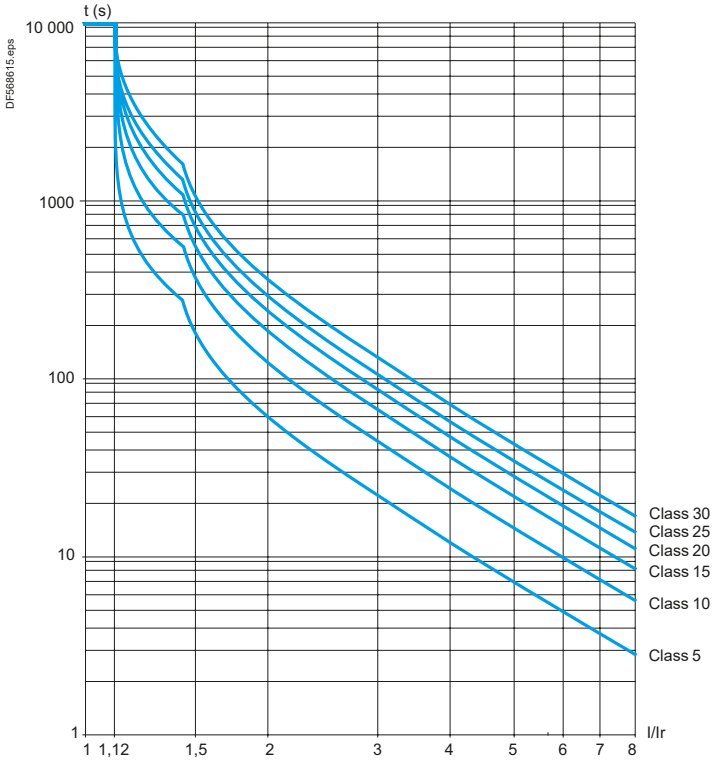
NOT: Nominal Operating Temperature.

Protection unit tripped.

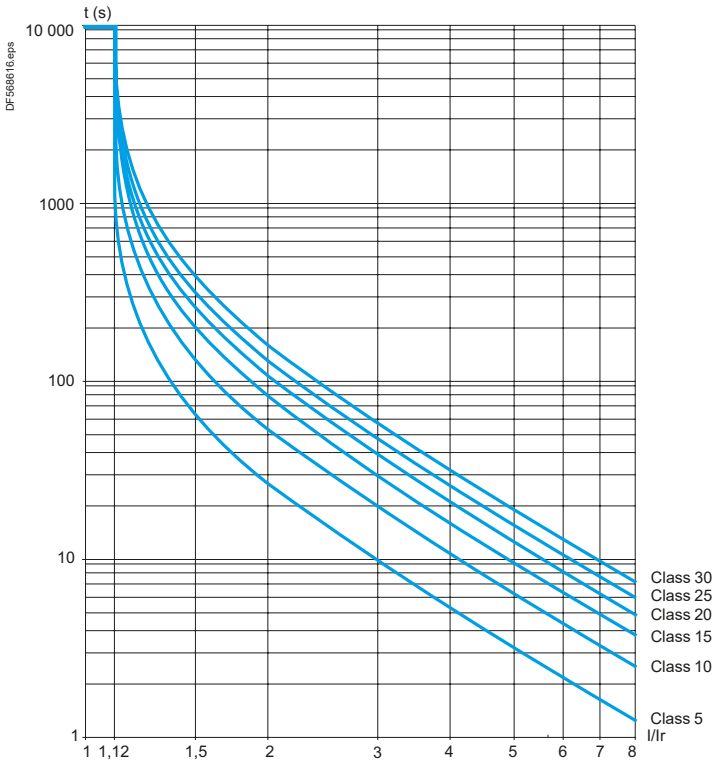
Protection unit reset.

*(1) Electrical connection to be made using M10 bolt.*

## Cold state curves



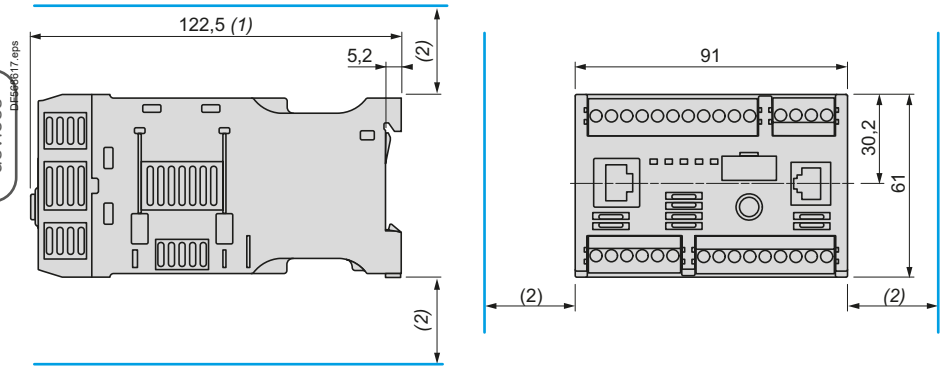

## Hot state curves



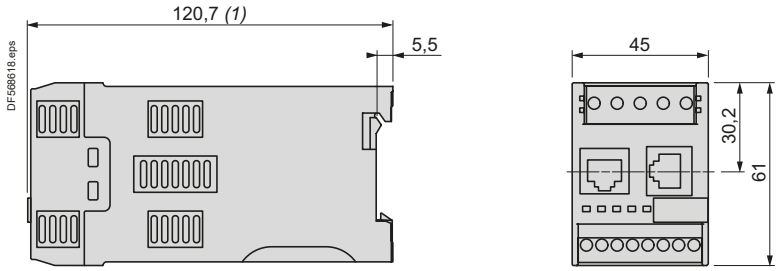
# Dimensions, mounting



## LTMR●● controllers

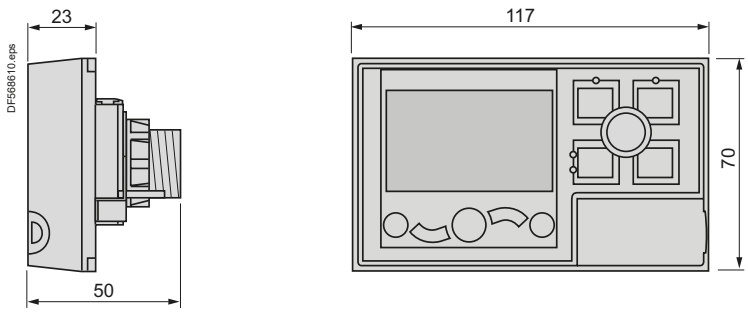



## LTMEV40●● extension modules

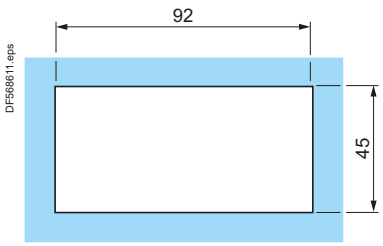




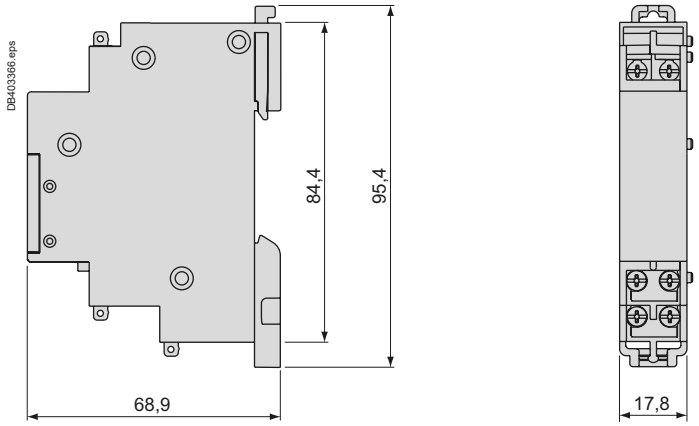

## LTMCU operator control unit




**Panel mounting, cut-out**




## LTM9F




*(1) 140 mm with RJ45 connector for connection to extension module and to network,*
*166 mm with PROFIBUS DP/CANopen connector.*
*(2) Leave a gap around the device of: 9 mm at 45 °C, 9 to 40 mm from 45 to 50 °C, 40 mm at 60 °C.*

References: pages C1/2 to C1/9
Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Schemes: pages C1/32 to C1/35

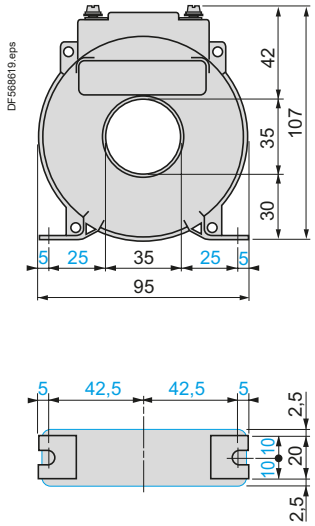


Life Is On Schneider Electric

# Dimensions

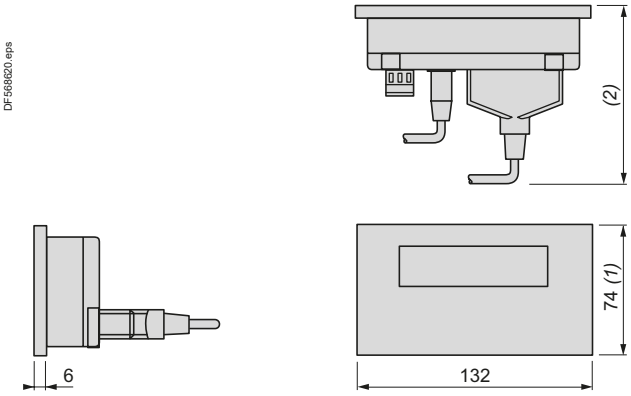
## Current transformers

### LT6CT




## HMI terminal

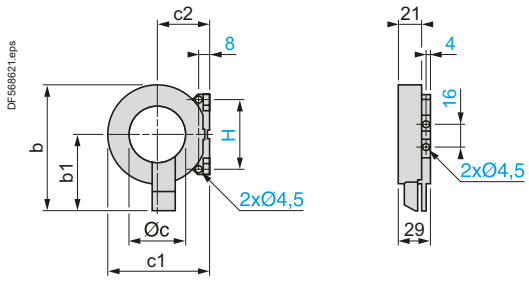
### XBTN410




*(1) 104 mm with fixing clips (supplied with the product).*
*(2) 58 mm with SUB-D 25-way elbowed cable **XBTZ9680** for Twido, TSX Micro and Premium or **XBTZ998** for Advantys STB.*
*104 mm with SUB-D 25-way cable **XBTZ68/Z9681** for Twido, TSX Micro and Premium.*

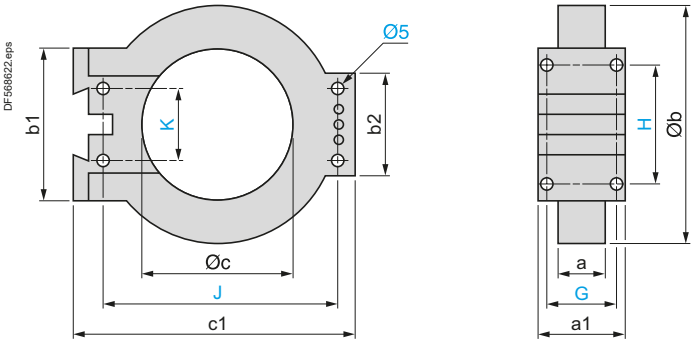
## Earth fault toroids

### 50437 and 50438



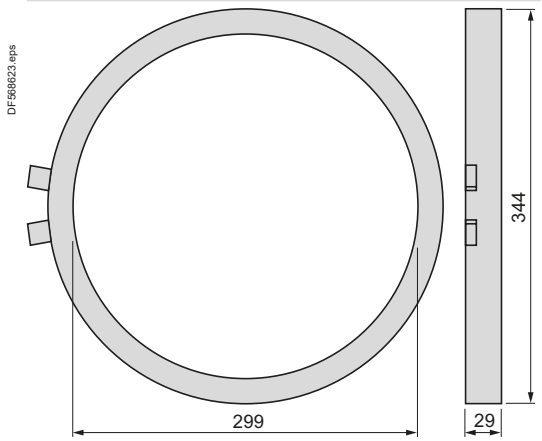

| Type | b | b1 | Øc | c1 | c2 | H |
|---|---|---|---|---|---|---|
| **50437** | 83 | 53 | 30 | 60 | 31 | 50 |
| **50438** | 109 | 66 | 50 | 87 | 45 | 60 |

### 50439, 50440 and 50441

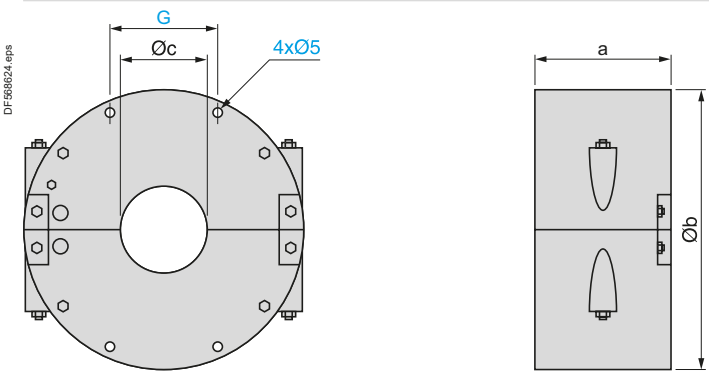



| Type | a | a1 | Øb | b1 | b2 | Øc | c1 | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **50439** | 26.5 | 44 | 122 | 80 | 55 | 80 | 150 | 35 | 65 | 126 | 40 |
| **50440** | 26.5 | 44 | 164 | 80 | 55 | 120 | 190 | 35 | 65 | 166 | 40 |
| **50441** | 29 | 46 | 256 | 120 | 90 | 196 | 274 | 37 | 104 | 254 | 60 |

### 50442




### 50485 and 50486

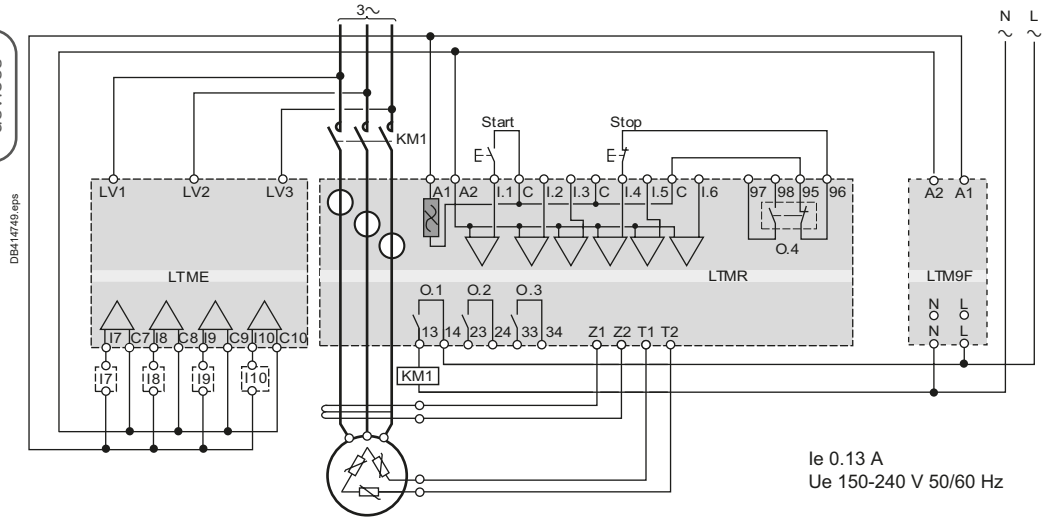



| Type | a | Øb | Øc | G |
|---|---|---|---|---|
| **50485** | 72 | 148 | 46 | 57 |
| **50486** | 78 | 224 | 110 | 76 |

References:
pages C1/2 to C1/9
Characteristics:
pages C1/14 to C1/28
Curves:
page C1/29
Schemes:
pages C1/32 to C1/35

## Schemes

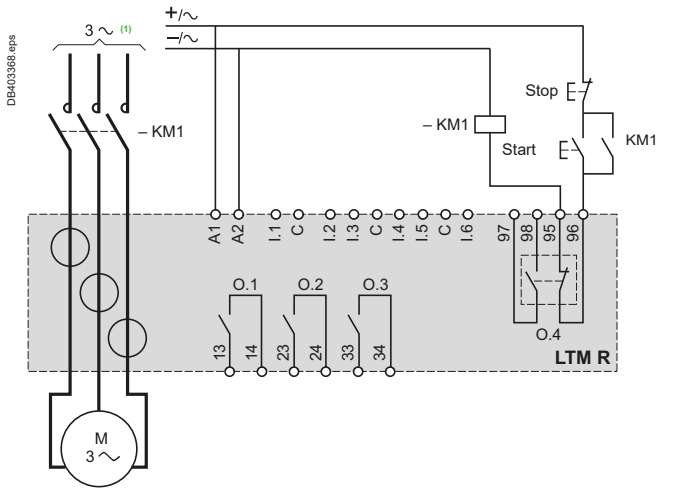
### LTMR●●FM wiring with LTM9F filter




***Note:*** *inputs MUST be connected across the common terminals (C).*

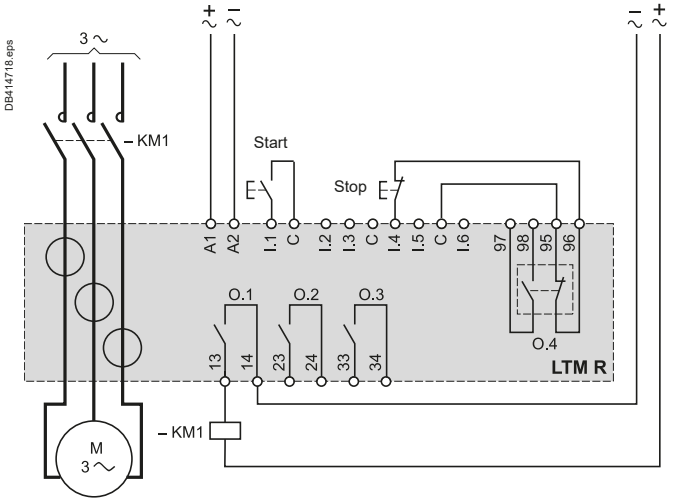
### Overload mode

#### 3-wire local-control



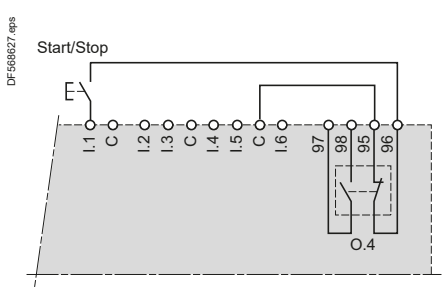

### Independent mode

#### 3-wire local-control

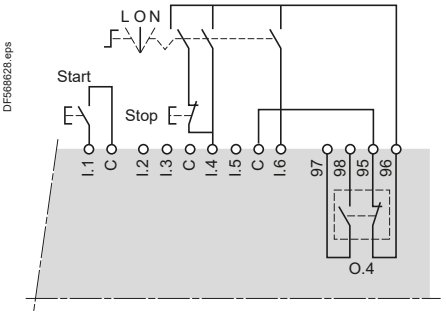



*(1) Connection of a single-phase motor is possible. In this case, do not use the central current transformer.*

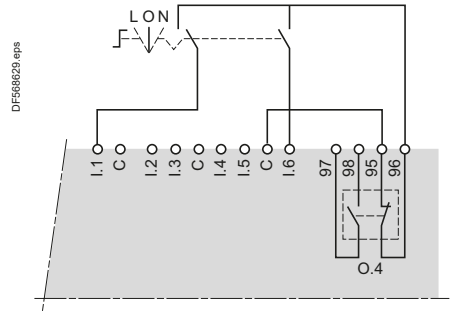
#### 2-wire local-control




#### 3-wire with switchable local/network control




#### 2-wire with switchable local/network control



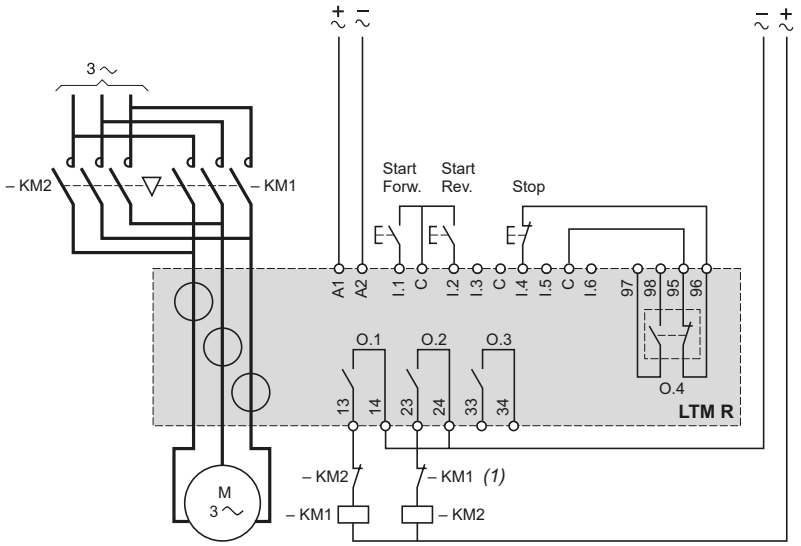

L: Local control
O: Stop
N: Network control

## Schemes

### Reverser mode

**3-wire local-control**

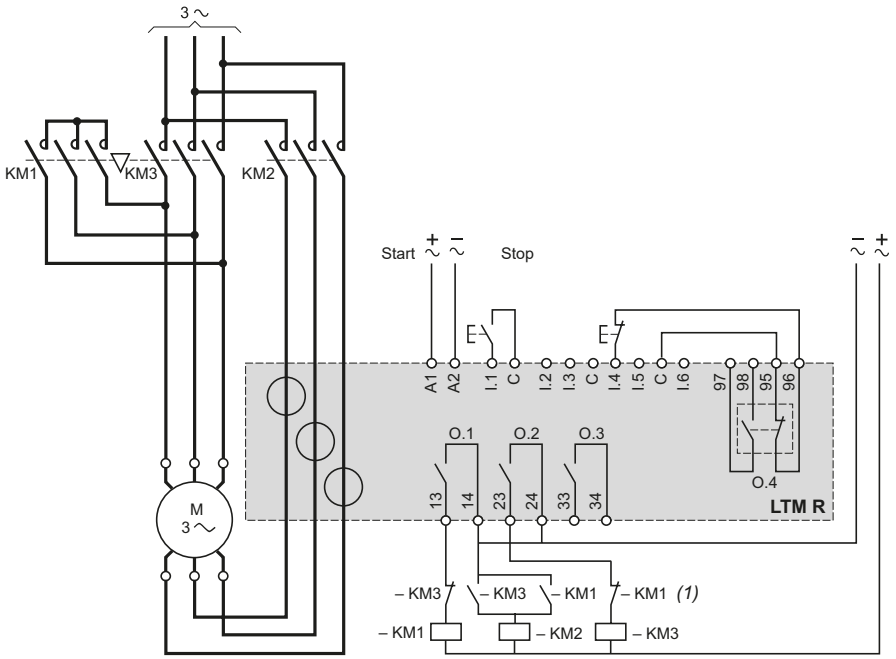
DB414719.eps




### 2-step mode, star-delta application

**3-wire local-control**

DB438600.eps




*(1) Contacts for interlocking KM1 and KM2 are not obligatory because the controller electronically interlocks outputs O.1 and O.2.*

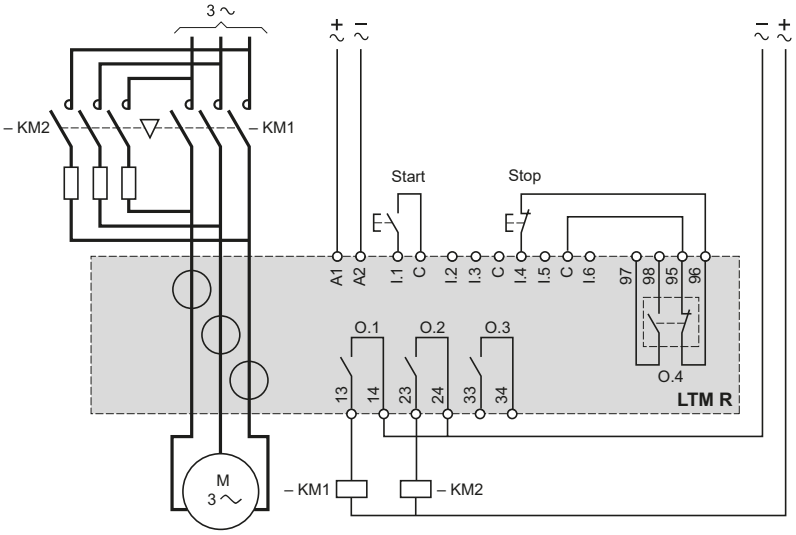
References: pages C1/2 to C1/9
Characteristics: pages C1/14 to C1/28
Curves: page C1/29
Dimensions, mounting: pages C1/30 to C1/31

## Schemes

### 2-step mode, primary resistor application

**3-wire local-control**

DB414721.eps

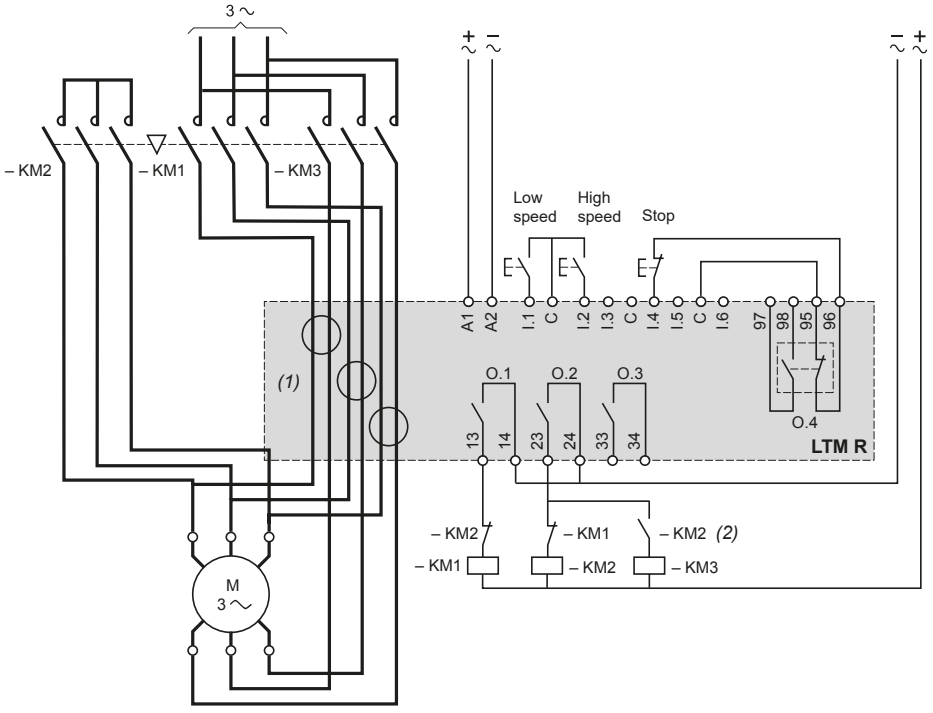





### 2-speed mode, Dahlander application

**3-wire local-control**

DB418281.eps

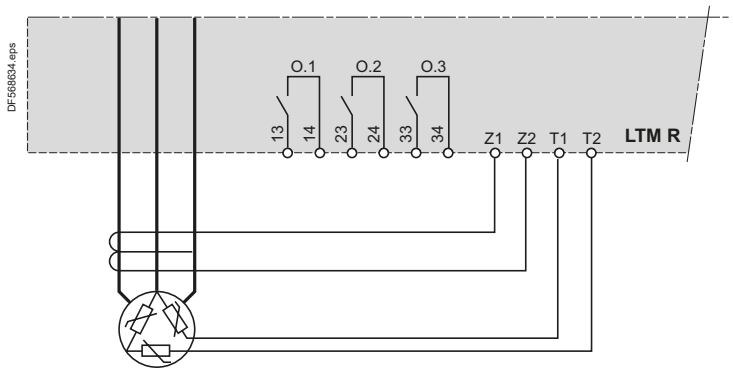



*(1) For a Dahlander application, all the power cables must pass through current transformers. The controller can also be placed upstream of the contactor. In this case, and if the Dahlander motor is used in "variable torque" mode, all the cables downstream of the contactors must be of identical size.*

*(2) Contacts for interlocking KM1 and KM2 are not obligatory because the controller electronically interlocks outputs O.1 and O.2.*

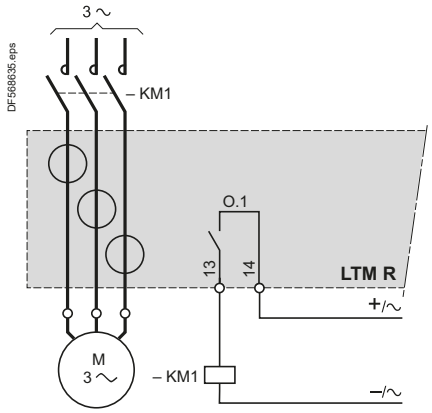
## Schemes

### Earth fault toroid and motor temperature probe connection

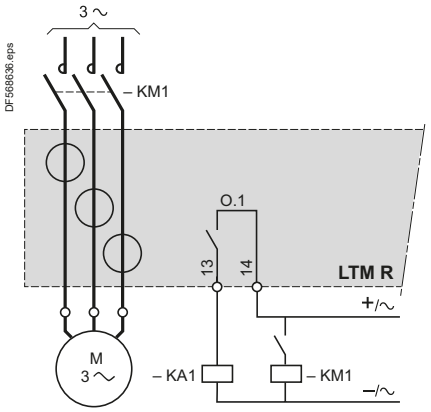



### Connection of outputs for motor control mode function

**Without intermediate relay**




**With intermediate relay**




References:
pages C1/2 to C1/9
Characteristics:
pages C1/14 to C1/28
Curves:
page C1/29
Dimensions, mounting:
pages C1/30 to C1/31

# TeSys Active
## island Motor starters



**TeSys** island Motor starters


| Type of information | | Pages |
|---|---|---|
| **Introduction**<br>Digital multifunctional load management solution | | C2/2 |

## Digital multifunctional load management solution

**TeSys** Active - island Motor starters are designed to switch, protect, and manage motors and other electrical loads up to 80 Amps (AC3) in an electrical control panel.

### Dedicated to Control and Monitor Machine and Processes

**TeSys island** is a digital load management solution that makes machines and processes smarter and more reliable.

**TeSys island** is a fully digitized and object-oriented load management system and an Industry 4.0 compliant data provider.

It is reducing time to market and is enabling OEMs to move forward in their Industry 4.0 journey.

### Benefits of the object-oriented functional approach

The **TeSys avatar** approach simplifies application and system configuration and reduces engineering tasks. Thus **TeSys island** makes the machine engineering and installation phase much faster.

In addition, **TeSys island** can be easily integrated into 3rd party automation systems and supports several fieldbuses like EtherNet/IP, Modbus TCP, PROFINET and PROFIBUS.

**TeSys island** gives users access to all relevant load data for advanced system diagnostics.

## More information

- Watch videos, read documents and use the product selector online on Schneider Electric website.

**TeSys island catalog:**

> Ref. Document: LVCATISL_EN

**TeSys island design guides:**

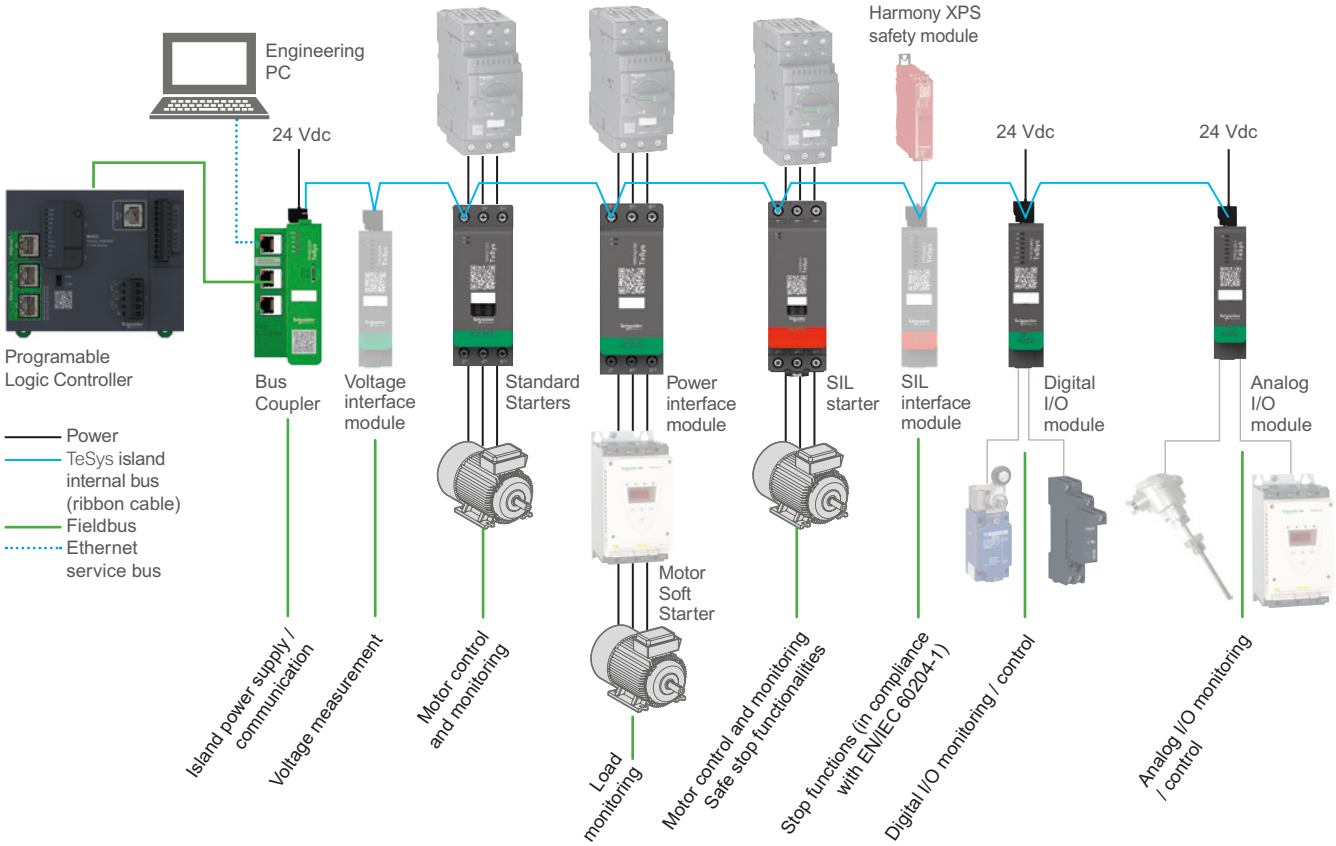
> 8536IB1901: TeSys island System Guide
> 8536IB1902: TeSys island Installation Guide
> 8536IB1903: TeSys island Operating Guide
> 8536IB1904: TeSys island Functional Safety (Safe Stop according to EN 61800-5-2) Guide
> 8536IB1905: Third Party Function Block Guide and more.

## Main characteristics

- **TeSys island** manages motors and other electrical loads up to 80 A (AC-3) / 37 kW/40 hp
- Fieldbus connectivity via bus coupler for EtherNet/IP, Modbus TCP, PROFINET or PROFIBUS
- Availability of all relevant load data like current, power, energy and advanced diagnostic data
- Simplified engineering and commissioning due to **TeSys avatar** objects and dedicated configuration and maintenance tools
- Up to 20 modules on 1 island mounted on DIN rail (up to 112 cm length)
- No control or auxiliary wiring required, thanks to full connectivity over fieldbus
- All adjustments and setting are digitized, no mechanical dials or dip switches
- Limited number of references including 5 starter sizes, digital & analog I/Os and voltage measurement modules
- SIL starter available for integration into functional safety systems according to IEC 61508, IEC 62061 and ISO 13849-1, including TUV certification (Stop 0 and 1 with wiring categories 1 to 2, suitable for PL c, d and SIL level 2), UKCA
- Fully complaint to international standards (IEC / UL / CSA 61010, IEC / UL / CSA 60947, GB/T14018)
- Embedded Cybersecurity (Achilles Level 2).



## Modular architecture, thanks to **TeSys** Active - island Motor starters internal bus



# Notes

# Notes

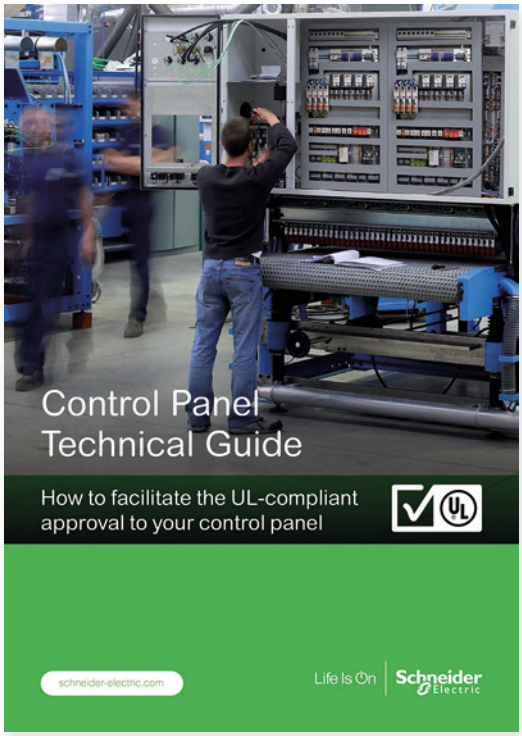
# Notes

# Notes

# Control Panel Technical guides

> Discover our technical guides collection. They are dedicated to frequent issues faced when designing an installing a control panel.

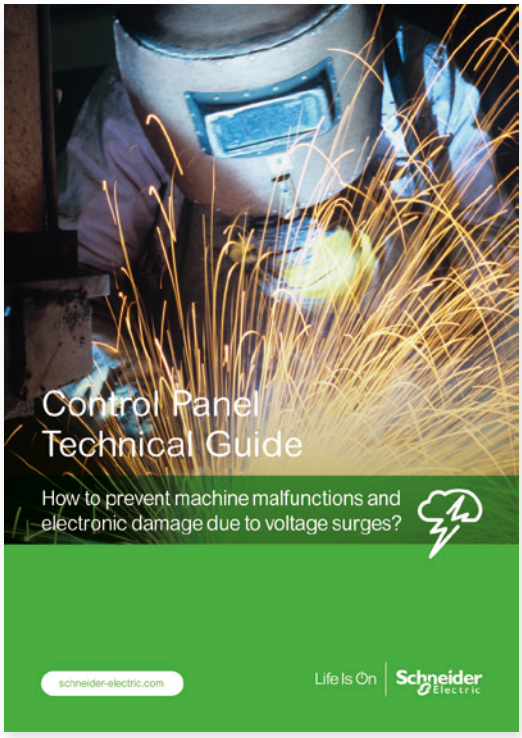
> Free download on www.se.com with the document reference or from the QR codes.




How to facilitate the UL-compliant approval to your control panel

> Ref: CPTG005_EN

> Click on QR code to download




How to prevent machine malfunctions and electronic damage due to voltage surges

> Ref: CPTG002_EN

> Click on QR code to download

# Control Panel Technical guides

> Discover our technical guides collection. They are dedicated to frequent issues faced when designing an installing a control panel.

> Free download on www.se.com with the document reference or from the QR codes.

How to protect a machine from malfunctions due to electromagnetic disturbance

> Ref: CPTG003_EN

> Click on QR code to download

How to reduce damage to components through effective thermal management

> Ref: CPTG001_EN

> Click on QR code to download

# Control Panel Technical guides

> Discover our technical guides collection. They are dedicated to frequent issues faced when designing an installing a control panel.

> Free download on www.se.com with the document reference or from the QR codes.

How define the right outdoor solution and optimize its durability

> Ref: CPTG006_EN

> Click on QR code to download

How to protect electrical equipment from condensation

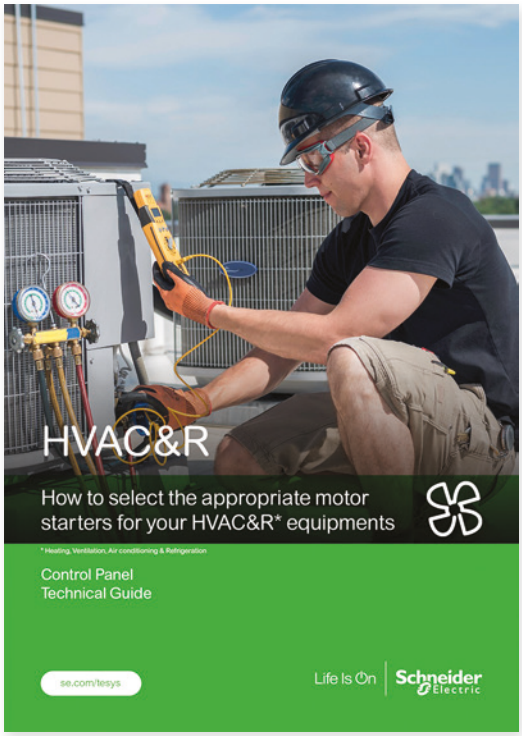
> Ref: UE12MK03EN

> Click on QR code to download

# Control Panel Technical guides

> Discover our technical guides collection. They are dedicated to frequent issues faced when designing an installing a control panel.

> Free download on www.se.com with the document reference or from the QR codes.

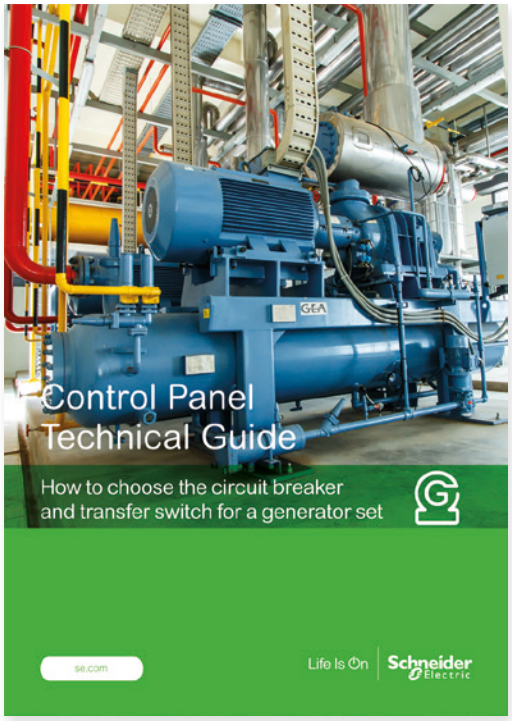



How to select the appropriate motor starters for your HVAC & R* equipments

* Heating, Ventilation, Air conditioning & Refrigeration

> Ref: CPTG007_EN

> Click on QR code to download




How to choose the circuit breaker and transfer switch for a generator set

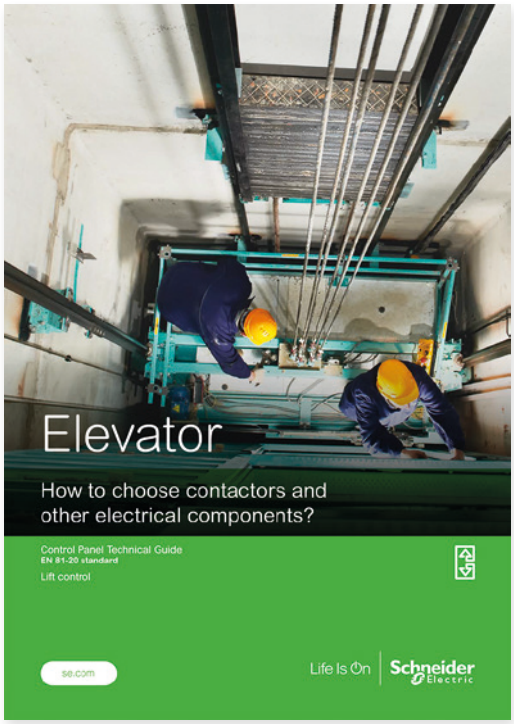
> Ref: CPTG008_EN

> Click on QR code to download

# Control Panel Technical guides

> Discover our technical guides collection. They are dedicated to frequent issues faced when designing an installing a control panel.

> Free download on www.se.com with the document reference or from the QR codes.

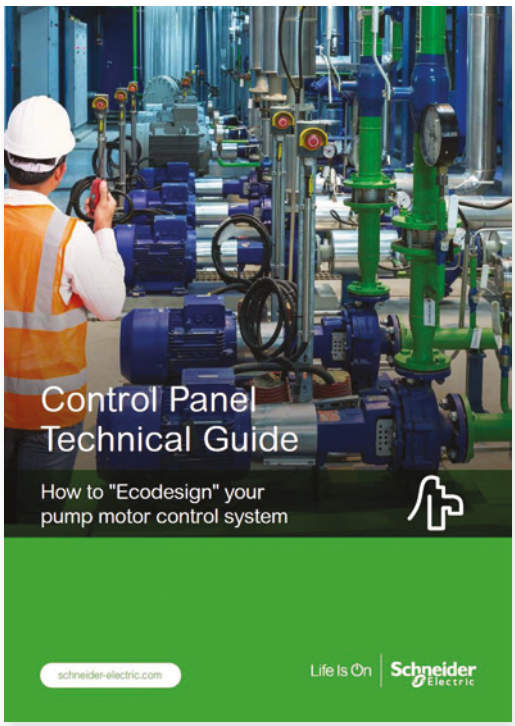



**New edition 2020**

Elevator
How to choose contactors and other electrical components

> Ref: CPTG009_EN

> Click on QR code to download




How to "Ecodesign" your pump motor control system

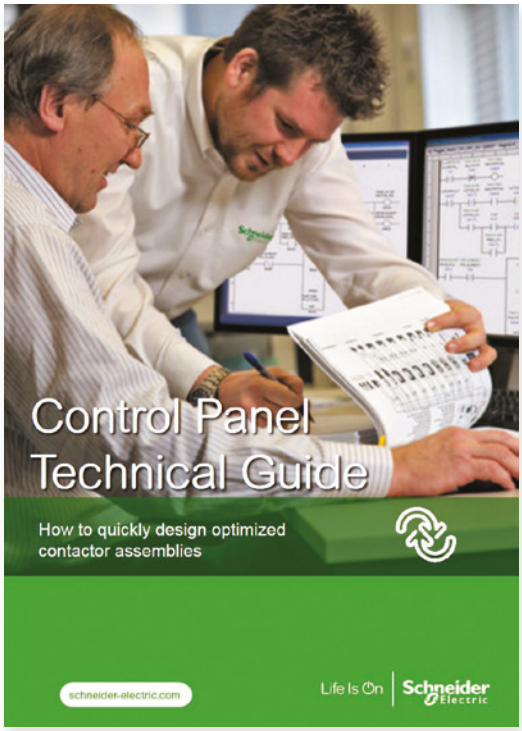
> Ref: CPTG010_EN

> Click on QR code to download

# Control Panel Technical guides

> Discover our technical guides collection. They are dedicated to frequent issues faced when designing an installing a control panel.

> Free download on www.se.com with the document reference or from the QR codes.




How to quickly design optimized contactor assemblies

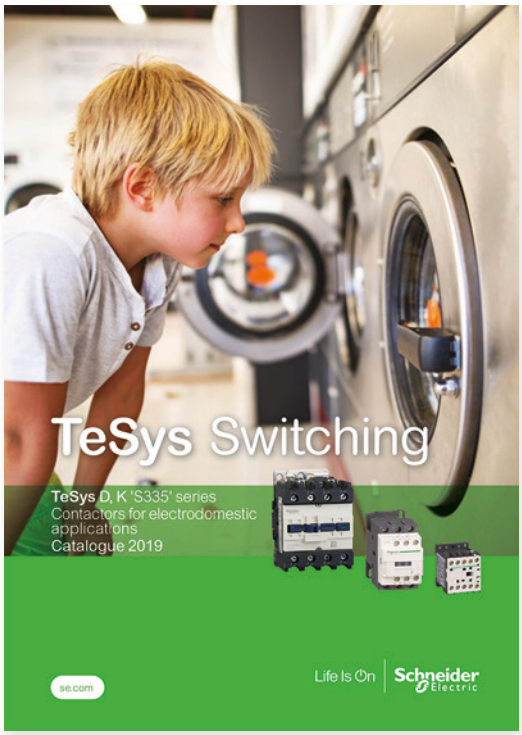
> Ref: CPTG011_EN

> Click on QR code to download

# Catalogues of contactors for specific applications

> For applications requiring components conforming to specific standards with increased severity.

> **TeSys** Switching
**TeSys** D, K S355 and S207 series contactors are built for these purpose, with new materials.




> **TeSys** Switching
**TeSys** D, K 'S355 series' (EN60335 standards)
Contactors for electrodomestic applications

> Ref: LVCATESDK335_EN

> Click on QR code to download.

> **TeSys** Control
**TeSys** K, Deca, Giga S207 series (EN45545 R22 HL3 standards)
Contactors for railways applications

> Ref: LVCATRAIL_EN

> Click on QR code to download.

# Green Premium™

## An industry leading portfolio of offers delivering sustainable value

Green Premium™

More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

- RoHS compliance
- REACh substance information
- Industry leading # of PEP's*
- Circularity instructions

Discover what we mean by green
Check your products!

The Green Premium program stands for our commitment to deliver customer valued sustainable performance. It has been upgraded with recognized environmental claims and extended to cover all offers including Products, Services and Solutions.

### $CO_2$ and P&L impact through… Resource Performance

Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of $CO_2$ emissions.

### Cost of ownership optimization through… Circular Performance

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

### Peace of mind through… Well-being Performance

Green Premium products are RoHS and REACh compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

### Improved sales through… Differentiation

Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)

Life Is On | Schneider Electric

**Schneider Electric Industries SAS**

35, rue Joseph Monier
CS 30323
92506 Rueil Malmaison Cedex
France

RCS Nanterre 954 503 439
Capital social 928 298 512 €
www.se.com

January, 2024
ART834519

© 2024 - Schneider Electric. All Rights Reserved.
All trademarks are owned by Schneider Electric Industries SAS or its affiliated companies.
Document reference: MKTED210011EN

This document has been printed on recycled paper