

# Solid State Relays from 5 to 125 A

**77**  
SERIES



Industrial  
motors



Industrial  
furnaces  
and ovens



Lighting control  
in corridors (for  
hotels, offices  
and hospitals)



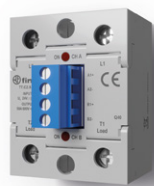
Bottling plant



Labelling  
machines



Packaging  
machines





### 5 A modular SSR, 1 NO AC output

- 17.5 mm housing
- 60 to 240 V AC output (with back to back SCR)
- 5 kV (1.2/50  $\mu$ s) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- 3-phase general purpose
- 35 mm rail (EN 60715) mount

77.01

Box clamp



\* See L77-8 diagram page 20

\*\* See L77-1 and L77-2 diagrams page 19

For outline drawing see page 27

### Output specification

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Output configuration                               | 1 NO (SPST-NO)           |
| Rated current $I_N$ /Max. peak current* (10 ms)    | A 5/300*                 |
| Rated voltage                                      | V AC (50/60 Hz) 230      |
| Switching voltage range                            | V AC (50/60 Hz) 48...265 |
| Repetitive peak off-state voltage                  | $V_{pk}$ 800             |
| Rated load AC7a ( $\cos \varphi = 0.8$ )           | A 5                      |
| Rated load AC15                                    | A 5                      |
| Single phase motor rating (230 V AC)               | kW —                     |
| Nominal lamp rating:                               |                          |
| 230 V incandescent/halogen W                       | 1000                     |
| fluorescent tubes with electronic ballast W        | 1000                     |
| fluorescent tubes with electromagnetic ballast W   | 1000                     |
| CFL W                                              | 800                      |
| 230 V LED W                                        | 800                      |
| LV halogen or LED with electronic ballast W        | 800                      |
| LV halogen or LED with electromagnetic ballast W   | 1000                     |
| Minimum switching current @ 230 V                  | mA 100                   |
| Typical "OFF-state" leakage current @ 230 V        | mA 0.5                   |
| Max "ON-state" voltage drop @ 25 °C and 5 A/100 mA | V 0.85/1.5               |
| Power loss @ 5 A                                   | W 4                      |

### Input specification

|                           |                    |        |          |
|---------------------------|--------------------|--------|----------|
| Nominal voltage ( $U_N$ ) | V AC (50/60 Hz)    | —      | 230      |
|                           | V DC               | 6...24 | —        |
| Rated power               | VA (50 Hz)/W       | —/0.4  | 3.6/0.3  |
| Operating range           | V AC (50/60 Hz)    | —      | 90...265 |
|                           | V DC               | 4...32 | —        |
| Must drop-out voltage     | V AC (50/60 Hz)/DC | 3      | 24       |

### Technical data

|                                                      |        |                      |
|------------------------------------------------------|--------|----------------------|
| Electrical life                                      | cycles | 10 · 10 <sup>6</sup> |
| Operate/release time                                 | ms     | 20/12                |
| Insulation between input and output (1.2/50 $\mu$ s) | kV     | 5                    |
| Ambient temperature                                  | °C     | -20...+70**          |
| Protection category                                  |        | IP 20                |

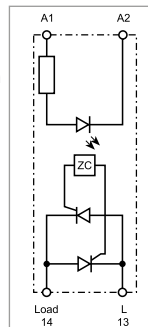
Approvals (according to type)

### 77.01.x.xxx.8050



### Zero-crossing switch-on Suggested applications:

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver



Simplified circuit diagram

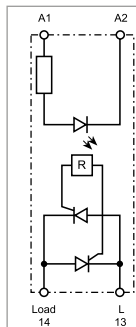
### 77.01.x.xxx.8051



### Random switch-on

### Suggested applications:

- Finer control requiring short operate time (specially motor control)
- AC Input phase different from AC Output phase



Simplified circuit diagram

D

**7 - 15 A modular SSR, 1 NO DC output**

- 17.5 mm housing
- 2 versions, for 24 and 125 V DC mosfet output
- 4 kV (1.2/50 µs) insulation between Input and Output
- Short circuit protection
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- Suitable for railway applications
- 35 mm rail (EN 60715) mount

77.01

Box clamp

D



\* See L77-3 and L77-4 diagrams page 19

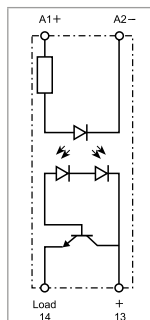
For outline drawing see page 27

**Output specification**

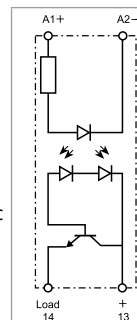
| Output configuration                               |        | 1 NO (SPST-NO)  | 1 NO (SPST-NO)  |
|----------------------------------------------------|--------|-----------------|-----------------|
| Rated current $I_N$ /Max. peak current (10 ms)     | A      | 15/160          | 7/60            |
| Rated voltage                                      | V DC   | 24              | 125             |
| Switching voltage range                            | V DC   | 16...32         | 43...140        |
| Rated load DC13                                    | A      | 5               | 2.5             |
| DC motor rating                                    | kW     | 0.2             | —               |
| Minimum switching current                          | mA     | 100             | 50              |
| Typical "OFF-state" leakage current                | mA     | 3               | 6               |
| Max "ON-state" voltage drop<br>@ 25 °C and $I_N$   | V      | 0.06            | 0.2             |
| Power loss @ $I_N$                                 | W      | 1               | 1.5             |
| Input specification                                |        |                 |                 |
| Nominal voltage ( $U_N$ )                          | V DC   | 6...24          | 6...24          |
| Rated power                                        | W      | 0.4             | 0.4             |
| Operating range                                    | V DC   | 4...32          | 4...32          |
| Must drop-out voltage                              | V DC   | 3               | 3               |
| Technical data                                     |        |                 |                 |
| Electrical life                                    | cycles | $10 \cdot 10^6$ | $10 \cdot 10^6$ |
| Operate/release time                               | ms     | 0.05/2          | 0.05/2          |
| Insulation between input<br>and output (1.2/50 µs) | kV     | 4               | 4               |
| Ambient temperature                                | °C     | -20...+70*      | -20...+70*      |
| Protection category                                |        | IP 20           | IP 20           |

**Approvals** (according to type)**77.01.9.024.9024****24 V DC output switching  
15 A rated****Applications in Energy,  
Automation and Machines:**

- Control of electric, pneumatic and hydraulic electromagnetic valves
- Direct control of loads such as motors and electromagnets

Simplified  
circuit diagram**77.01.9.024.9125****110...125 V DC output  
switching  
7 A rated****Applications in Energy,  
Automation and Machines:**

- Control of electric, pneumatic and hydraulic electromagnetic valves
- Direct control of loads such as motors and electromagnets

Simplified  
circuit diagram

### 15 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- 24 to 277 V AC output (with TRIAC)
- 6 kV (1.2/50 µs) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- 3-phase general purpose
- "Relay-style" terminal arrangement (input and output terminals on opposite sides)
- 35 mm rail (EN 60715) mount

77.11  
Box clamp



\* See L77-9 diagram page 20

\*\* See L77-5 diagrams page 19

For outline drawing see page 27

### Output specification

| Output configuration                             |                 | 1 NO (SPST-NO) | 1 NO (SPST-NO) |
|--------------------------------------------------|-----------------|----------------|----------------|
| Rated current $I_N$ /Max. peak current* (10 ms)  | A               | 15/400*        | 15/400*        |
| Rated voltage                                    | V AC (50/60 Hz) | 230            | 230            |
| Switching voltage range                          | V AC (50/60 Hz) | 19...305       | 19...305       |
| Repetitive peak off-state voltage                | $V_{pk}$        | 800            | 800            |
| Rated load AC7a (cos $\varphi$ = 0.8, @ 25 °C)   | A               | 20             | 20             |
| Rated load AC15                                  | A               | 15             | 15             |
| Single phase motor rating (230 V AC)             | kW              | —              | 0.75           |
| Nominal lamp rating:                             |                 |                |                |
| 230 V incandescent/halogen W                     |                 | 4000           | 2500           |
| fluorescent tubes with electronic ballast W      |                 | 4000           | 2500           |
| fluorescent tubes with electromagnetic ballast W |                 | 2000           | 1000           |
| CFL W                                            |                 | 3000           | 1500           |
| 230 V LED W                                      |                 | 3000           | 1500           |
| LV halogen or LED with electronic ballast W      |                 | 3000           | 1500           |
| LV halogen or LED with electromagnetic ballast W |                 | 3000           | 1500           |
| Minimum switching current @ 250 V                | mA              | 100            | 100            |
| Typical “OFF-state” leakage current @ 250 V      | mA              | 1              | 1              |
| Max “ON-state” voltage drop @ 25 °C and 15 A     |                 |                |                |
|                                                  | V               | 1.55           | 1.55           |
| Power loss @ 15 A                                | W               | 14             | 14             |

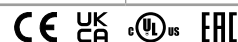
### Input specification

|                                          |                 |        |          |        |          |
|------------------------------------------|-----------------|--------|----------|--------|----------|
| Nominal voltage ( $U_N$ )                | V AC (50/60 Hz) | —      | 230      | —      | 230      |
|                                          | V DC            | 24     | —        | 24     | —        |
| Rated power VA (50 Hz)/W                 |                 | 0.4    | 7.5/0.9  | 0.4    | 7.5/0.9  |
| Operating range                          | V AC (50/60 Hz) | —      | 40...280 | —      | 40...280 |
|                                          | V DC            | 4...32 | —        | 4...32 | —        |
| Must drop-out voltage V AC (50/60 Hz)/DC |                 | —/2    | 6/—      | —/2    | 6/—      |

### Technical data

|                                                    |  |                      |           |                      |          |
|----------------------------------------------------|--|----------------------|-----------|----------------------|----------|
| Electrical life cycles                             |  | 10 · 10 <sup>6</sup> |           | 10 · 10 <sup>6</sup> |          |
| Operate/release time ms                            |  | < 10/< 10            | < 10/< 30 | < 1/< 10             | < 2/< 25 |
| Insulation between input and output (1.2/50 µs) kV |  | 6                    |           | 6                    |          |
| Ambient temperature °C                             |  | -20...+80**          |           | -20...+80**          |          |
| Protection category                                |  | IP 20                |           | IP 20                |          |

Approvals (according to type)



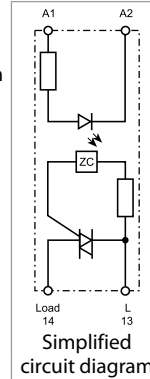
### 77.11.x.xxx.8250



#### Zero-crossing switch-on

#### Suggested applications:

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver



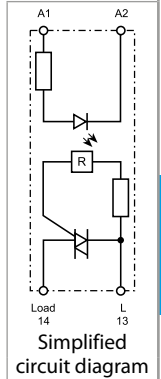
### 77.11.x.xxx.8251



#### Random switch-on

#### Suggested applications:

- Fine controls involving shorter time (specially motor control)



**25 A modular SSR, 1 NO output**

- 22.5 mm housing, heat-sink + plastic cover
- 24 to 277 V AC output (with TRIAC)
- 6 kV (1.2/50 µs) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- 3-phase general purpose
- "Relay-style" terminal arrangement (input and output terminals on opposite sides)
- 35 mm rail (EN 60715) mount

77.21  
Box clamp

\* See L77-10 diagram page 20

\*\* See L77-6 diagrams page 19

For outline drawing see page 27

**Output specification**

Output configuration

Rated current (@40 °C)  $I_N$ /  
Max. peak current\* (10 ms)

A

Rated voltage V AC (50/60 Hz)

Switching voltage range V AC (50/60 Hz)

Repetitive peak off-state voltage  $V_{pk}$ Rated load AC7a (cos  $\varphi$  = 0.8, @ 25 °C)

A

Rated load AC15

A

Single phase motor rating (230 V AC)

kW

Nominal lamp rating:

230 V incandescent/halogen W

fluorescent tubes with

electronic ballast W

fluorescent tubes with

electromagnetic ballast W

CFL W

230 V LED W

LV halogen or LED with

electronic ballast W

LV halogen or LED with

electromagnetic ballast W

Minimum switching current @ 250 V

mA

Typical "OFF-state" leakage current @ 250 V

mA

Max "ON-state" voltage drop  
@ 25 °C and 25 A

V

Power loss @ 25 A

W

**Input specification**Nominal voltage ( $U_N$ ) V AC (50/60 Hz)

—

24

—

4...32

—/2

V DC

Rated power @  $U_{MAX}$  VA (50 Hz)/W

0.4

7.5/0.9

—

Operating range V AC (50/60 Hz)

V DC

Must drop-out voltage V AC (50/60 Hz)/DC

**Technical data**

Electrical life cycles

Operate/release time ms

Insulation between input  
and output (1.2/50 µs)

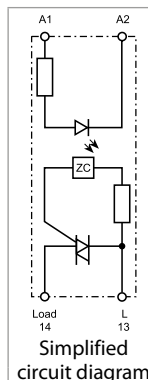
kV

Ambient temperature °C

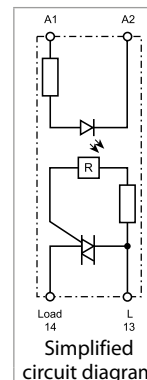
Protection category

**Approvals** (according to type)**NEW 77.21.x.xxx.8250****Zero-crossing switch-on  
Suggested applications:**

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver

**NEW 77.21.x.xxx.8251****Random switch-on****Suggested applications:**

- Finer control requiring short operate time (specially motor control)



| Output configuration                             |                    | 1 NO (SPST-NO)       |           | 1 NO (SPST-NO)       |          |
|--------------------------------------------------|--------------------|----------------------|-----------|----------------------|----------|
| Rated current (@40 °C) I <sub>N</sub> /          |                    |                      |           |                      |          |
| Max. peak current* (10 ms)                       | A                  | 25/400*              |           | 25/400*              |          |
| Rated voltage                                    | V AC (50/60 Hz)    | 230                  |           | 230                  |          |
| Switching voltage range                          | V AC (50/60 Hz)    | 19...305             |           | 19...305             |          |
| Repetitive peak off-state voltage                | V <sub>pk</sub>    | 800                  |           | 800                  |          |
| Rated load AC7a (cos φ = 0.8, @ 25 °C)           | A                  | 25                   |           | 25                   |          |
| Rated load AC15                                  | A                  | 25                   |           | 25                   |          |
| Single phase motor rating (230 V AC)             | kW                 | —                    |           | 1                    |          |
| Nominal lamp rating:                             |                    |                      |           |                      |          |
| 230 V incandescent/halogen W                     |                    | 4000                 |           | 2500                 |          |
| fluorescent tubes with electronic ballast W      |                    | 4000                 |           | 2500                 |          |
| fluorescent tubes with electromagnetic ballast W |                    | 2000                 |           | 1000                 |          |
| CFL W                                            |                    | 3000                 |           | 1500                 |          |
| 230 V LED W                                      |                    | 3000                 |           | 1500                 |          |
| LV halogen or LED with electronic ballast W      |                    | 3000                 |           | 1500                 |          |
| LV halogen or LED with electromagnetic ballast W |                    | 3000                 |           | 1500                 |          |
| Minimum switching current @ 250 V                | mA                 | 100                  |           | 100                  |          |
| Typical “OFF-state” leakage current @ 250 V      | mA                 | 1                    |           | 1                    |          |
| Max “ON-state” voltage drop @ 25 °C and 25 A     | V                  | 1.55                 |           | 1.55                 |          |
| Power loss @ 25 A                                | W                  | 14                   |           | 14                   |          |
| Input specification                              |                    |                      |           |                      |          |
| Nominal voltage (U <sub>N</sub> )                | V AC (50/60 Hz)    | —                    | 230       | —                    | 230      |
|                                                  | V DC               | 24                   | —         | 24                   | —        |
| Rated power @ U <sub>MAX</sub>                   | VA (50 Hz)/W       | 0.4                  | 7.5/0.9   | 0.4                  | 7.5/0.9  |
| Operating range                                  | V AC (50/60 Hz)    | —                    | 40...280  | —                    | 40...280 |
|                                                  | V DC               | 4...32               | —         | 4...32               | —        |
| Must drop-out voltage                            | V AC (50/60 Hz)/DC | —/2                  | 6/—       | —/2                  | 6/—      |
| Technical data                                   |                    |                      |           |                      |          |
| Electrical life                                  | cycles             | 10 · 10 <sup>6</sup> |           | 10 · 10 <sup>6</sup> |          |
| Operate/release time                             | ms                 | < 10/< 10            | < 10/< 30 | < 1/< 10             | < 2/< 25 |
| Insulation between input and output (1.2/50 μs)  | kV                 | 6                    |           | 6                    |          |
| Ambient temperature                              | °C                 | –20...+80**          |           | –20...+80**          |          |
| Protection category                              |                    | IP 20                |           | IP 20                |          |
| Approvals (according to type)                    |                    | CE UKCA              |           |                      |          |

### 30 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- 60 to 440 V AC output (with back to back SCR)
- 6 kV (1.2/50  $\mu$ s) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- 3-phase general purpose
- "Relay-style" terminal arrangement (input and output terminals on opposite sides)
- 35 mm rail (EN 60715) mount

77.31  
Box clamp



\* See L77-11 diagram page 20

\*\* See L77-7 diagrams page 19

For outline drawing see page 27

### Output specification

| Output configuration                                     |                 | 1 NO (SPST-NO) | 1 NO (SPST-NO) |
|----------------------------------------------------------|-----------------|----------------|----------------|
| Rated current I <sub>N</sub> /Max. peak current* (10 ms) | A               | 30/520*        | 30/520*        |
| Rated voltage                                            | V AC (50/60 Hz) | 400            | 400            |
| Switching voltage range                                  | V AC (50/60 Hz) | 48...480       | 48...480       |
| Repetitive peak off-state voltage                        | V <sub>pk</sub> | 1100           | 1100           |
| Rated load AC7a (cos φ = 0.8)                            | A               | 30             | 30             |
| Rated load AC15                                          | A               | 20             | 20             |
| Single phase motor rating (230 V AC)                     | kW              | —              | 1.5            |
| Nominal lamp rating:                                     |                 |                |                |
| 230 V incandescent/halogen W                             |                 | 6000           | 4500           |
| fluorescent tubes with electronic ballast W              |                 | 6000           | 4000           |
| fluorescent tubes with electromagnetic ballast W         |                 | 3000           | 1800           |
| CFL W                                                    |                 | 4000           | 2500           |
| 230 V LED W                                              |                 | 4000           | 2500           |
| LV halogen or LED with electronic ballast W              |                 | 4000           | 2500           |
| LV halogen or LED with electromagnetic ballast W         |                 | 4000           | 2500           |
| Minimum switching current @ 400 V                        | mA              | 300            | 300            |
| Typical “OFF-state” leakage current @ 400 V              | mA              | 1              | 1              |
| Max “ON-state” voltage drop @ 25 °C and 30 A             |                 |                |                |
|                                                          | V               | 0.85           | 0.85           |
| Power loss @ 30 A                                        | W               | 16             | 16             |

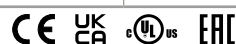
### Input specification

|                                          |                 |          |          |        |          |
|------------------------------------------|-----------------|----------|----------|--------|----------|
| Nominal voltage ( $U_N$ )                | V AC (50/60 Hz) | 24       | 230      | —      | 230      |
|                                          | V DC            | 24       | —        | 24     | —        |
| Rated power @ $U_{MAX}$ VA (50 Hz)/W     |                 | 0.24/0.4 | 7.5/0.9  | 0.4    | 7.5/0.9  |
| Operating range                          | V AC (50/60 Hz) | —        | 40...280 | —      | 40...280 |
|                                          | V DC            | 4...32   | —        | 4...32 | —        |
| Must drop-out voltage V AC (50/60 Hz)/DC |                 | 6/2      | 6/—      | —/2    | 6/—      |

### Technical data

|                                                         |  |                      |           |                      |          |
|---------------------------------------------------------|--|----------------------|-----------|----------------------|----------|
| Electrical life cycles                                  |  | 10 · 10 <sup>6</sup> |           | 10 · 10 <sup>6</sup> |          |
| Operate/release time ms                                 |  | < 10/< 10            | < 10/< 30 | < 1/< 10             | < 2/< 25 |
| Insulation between input and output (1.2/50 $\mu$ s) kV |  | 6                    |           | 6                    |          |
| Ambient temperature °C                                  |  | -20...+80**          |           | -20...+80**          |          |
| Protection category                                     |  | IP 20                |           | IP 20                |          |

Approvals (according to type)

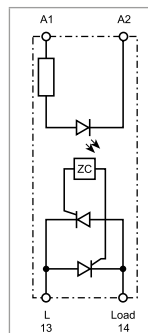


### 77.31.x.xxx.8050



#### Zero-crossing switch-on Suggested applications:

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver



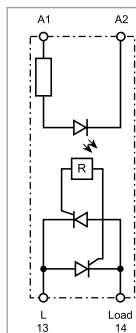
Simplified circuit diagram

### 77.31.x.xxx.8051



#### Random switch-on Suggested applications:

- Finer control requiring short operate time (specially motor control)



Simplified circuit diagram



**30 A modular SSR, 1 NO output**

- 22.5 mm housing, heat-sink + plastic cover
- 60 to 440 V AC output (with back to back SCR)
- 6 kV (1.2/50  $\mu$ s) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- 3-phase general purpose
- "Contactor-style" terminal arrangement (input and output terminals on adjacent sides)
- 35 mm rail (EN 60715) mount

77.31  
Box clamp



\* See L77-11 diagram page 20

\*\* See L77-7 diagrams page 19

For outline drawing see page 27

**Output specification**

| Output configuration                                     |                 | 1 NO (SPST-NO) | 1 NO (SPST-NO) |
|----------------------------------------------------------|-----------------|----------------|----------------|
| Rated current I <sub>N</sub> /Max. peak current* (10 ms) | A               | 30/520*        | 30/520*        |
| Rated voltage                                            | V AC (50/60 Hz) | 400            | 400            |
| Switching voltage range                                  | V AC (50/60 Hz) | 48...480       | 48...480       |
| Repetitive peak off-state voltage                        | V <sub>pk</sub> | 1100           | 1100           |
| Rated load AC7a (cos φ = 0.8)                            | A               | 30             | 30             |
| Rated load AC15                                          | A               | 20             | 20             |
| Single phase motor rating (230 V AC)                     | kW              | —              | 1.5            |
| Nominal lamp rating:                                     |                 |                |                |
| 230 V incandescent/halogen W                             |                 | 6000           | 4500           |
| fluorescent tubes with electronic ballast W              |                 | 6000           | 4000           |
| fluorescent tubes with electromagnetic ballast W         |                 | 3000           | 1800           |
| CFL W                                                    |                 | 4000           | 2500           |
| 230 V LED W                                              |                 | 4000           | 2500           |
| LV halogen or LED with electronic ballast W              |                 | 4000           | 2500           |
| LV halogen or LED with electromagnetic ballast W         |                 | 4000           | 2500           |
| Minimum switching current @ 400 V                        | mA              | 300            | 300            |
| Typical “OFF-state” leakage current @ 400 V              | mA              | 1              | 1              |
| Max “ON-state” voltage drop @ 25 °C and 30 A             | V               | 0.85           | 0.85           |
| Power loss @ 30 A                                        | W               | 16             | 16             |

**Input specification**

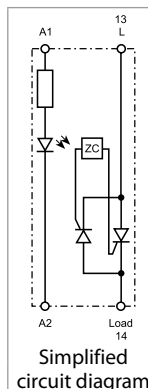
|                           |                    |        |          |        |          |
|---------------------------|--------------------|--------|----------|--------|----------|
| Nominal voltage ( $U_N$ ) | V AC (50/60 Hz)    | —      | 230      | —      | 230      |
|                           | V DC               | 24     | —        | 24     | —        |
| Rated power               | VA (50 Hz)/W       | 0.4    | 7.5/0.9  | 0.4    | 7.5/0.9  |
| Operating range           | V AC (50/60 Hz)    | —      | 40...280 | —      | 40...280 |
|                           | V DC               | 4...32 | —        | 4...32 | —        |
| Must drop-out voltage     | V AC (50/60 Hz)/DC | —/2    | 6/—      | —/2    | 6/—      |

**Technical data**

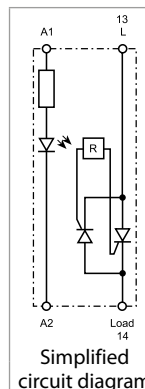
|                                                      |        |                      |           |                      |          |
|------------------------------------------------------|--------|----------------------|-----------|----------------------|----------|
| Electrical life                                      | cycles | 10 · 10 <sup>6</sup> |           | 10 · 10 <sup>6</sup> |          |
| Operate/release time                                 | ms     | < 10/< 10            | < 10/< 30 | < 1/< 10             | < 2/< 25 |
| Insulation between input and output (1.2/50 $\mu$ s) | kV     | 6                    |           | 6                    |          |
| Ambient temperature                                  | °C     | -20...+80**          |           | -20...+80**          |          |
| Protection category                                  |        | IP 20                |           | IP 20                |          |

**Approvals** (according to type)**77.31.x.xxx.8070****Zero-crossing switch-on****Suggested applications:**

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver

**77.31.x.xxx.8071****Random switch-on****Suggested applications:**

- Fine controls involving shorter time (specially motor control)





**25, 40 and 60 A panel Zero-crossing SSR, "hockey puck" style**

**Type 77.A1.x.xxx.8x50:** 25 A

**Type 77.B1.x.xxx.8x50:** 40 A

**Type 77.D1.x.xxx.8x50:** 60 A

**8250:** 24 to 280 VAC switching load voltage

**8650:** 24 to 660 VAC switching load voltage

- "hockey puck" housing with folding screw cover
- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "Relay-style": input and output terminals on opposite sides
- Mounting on control cabinet sheet metal or on heatsink

77.A1/B1/D1

Screw terminal (plate clamp)\*



\* See recommendation for wiring page 17

\*\* See L77-13, L77-14 and L77-15 diagrams page 21

Four outline drawing see page 27

| Output specification                                    |                    | 77...8250              | 77...8650 | 77...8250   | 77...8650 | 77...8250   | 77...8650 |
|---------------------------------------------------------|--------------------|------------------------|-----------|-------------|-----------|-------------|-----------|
| Output configuration                                    |                    | 1 NO                   |           | 1 NO        |           | 1 NO        |           |
| Rated current I <sub>N</sub> /Max. peak current (10 ms) | A                  | 25/300                 |           | 40/500      |           | 60/700      |           |
| Rated voltage                                           | V AC (50/60 Hz)    | 240                    | 600       | 240         | 600       | 240         | 600       |
| Switching voltage range                                 | V AC (50/60 Hz)    | 24...280               | 24...660  | 24...280    | 24...660  | 24...280    | 24...660  |
| Operating frequency range                               | Hz                 | 47...400               | 47...400  | 47...400    | 47...400  | 47...400    | 47...400  |
| Repetitive peak off-state voltage                       | V <sub>pk</sub>    | 600                    | 1600      | 600         | 1600      | 600         | 1600      |
| Rated load AC53                                         | A                  | 50                     |           | 8           |           | 12          |           |
| Nominal lamp rating:                                    |                    |                        |           |             |           |             |           |
| 230 V incandescent/halogen W                            |                    | 2000                   |           | 4000        |           | 7200        |           |
| fluorescent tubes with electronic ballast W             |                    | 2000                   |           | 4000        |           | 7200        |           |
| fluorescent tubes with electromagnetic ballast W        |                    | 1000                   |           | 2000        |           | 3600        |           |
| CFL W                                                   |                    | 800                    |           | 3000        |           | 4800        |           |
| 230 V LED W                                             |                    | 800                    |           | 3000        |           | 4800        |           |
| LV halogen or LED with electronic ballast W             |                    | 800                    |           | 3000        |           | 4800        |           |
| LV halogen or LED with electromagnetic ballast W        |                    | 1000                   |           | 3000        |           | 4800        |           |
| Minimum switching current @ 250 V                       | mA                 | 100                    |           | 100         |           | 100         |           |
| Typical "OFF-state" leakage current @ rated voltage     | mA                 | 0.1                    |           | 0.1         |           | 0.1         |           |
| Max "ON-state" voltage drop @ 25 °C and I <sub>N</sub>  | V                  | 1.5                    |           | 1.5         |           | 1.5         |           |
| Power loss @ I <sub>N</sub>                             | W                  | 30                     |           | 48          |           | 72          |           |
| Input specification                                     |                    |                        |           |             |           |             |           |
| Nominal voltage (U <sub>N</sub> )                       | V AC (50/60 Hz)    | —                      | 230       | —           | 230       | —           | 230       |
|                                                         | V DC               | 24                     | —         | 24          | —         | 24          | —         |
| Rated power @ U <sub>MAX</sub>                          | VA (50 Hz)/W       | —/0.55                 | 5.3/—     | —/0.55      | 5.3/—     | —/0.55      | 5.3/—     |
| Operating range                                         | V AC (50/60 Hz)    | —                      | 90...280  | —           | 90...280  | —           | 90...280  |
|                                                         | V DC               | 3...32                 | —         | 3...32      | —         | 3...32      | —         |
| Must drop-out voltage                                   | V AC (50/60 Hz)/DC | —/1                    | 15/—      | —/1         | 15/—      | —/1         | 15/—      |
| Technical data                                          |                    |                        |           |             |           |             |           |
| Electrical life                                         | cycles             | —                      |           | —           |           | —           |           |
| Operate/release time                                    | ms                 | 10/10                  | 40/20     | 10/10       | 40/20     | 10/10       | 40/20     |
| Insulation between input and output (1.2/50 μs)         | kV                 | —                      |           | —           |           | —           |           |
| Ambient temperature                                     | °C                 | –30...+80**            |           | –30...+80** |           | –30...+80** |           |
| Protection category                                     |                    | IP 20                  |           | IP 20       |           | IP 20       |           |
| Approvals (according to type)                           |                    | <div>CEUKFARALUS</div> |           |             |           |             |           |

**80, 100 and 125 A panel Zero-crossing SSR, "hockey puck" style****Type 77.F1.x.xxx.8x50:** 80 A**Type 77.G1.x.xxx.8x50:** 100 A**Type 77.H1.x.xxx.8x50:** 125 A**8250:** 24 to 280 VAC switching load voltage**8650:** 24 to 660 VAC switching load voltage

- "hockey puck" housing with folding screw cover
- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "Relay-style": input and output terminals on opposite sides
- Mounting on control cabinet sheet metal or on heatsink

77.F1/G1/H1

Screw terminal (plate clamp)\*



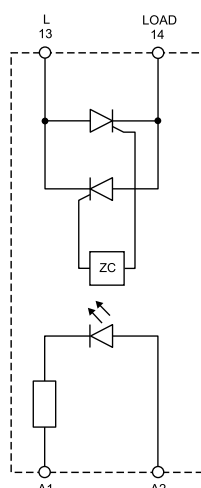
\* See recommendation for wiring page 17

\*\* See L77-16, L77-17 and L77-18 diagrams page 21

For outline drawing see page 27

**NEW 77.F1.x.xxx.8x50****Zero-crossing switch-on**

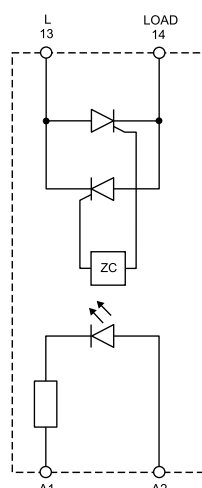
- Output: 80 A
- Suggested applications: heater control, lamps, solenoid, contactor driver



Simplified circuit diagram

**NEW 77.G1.x.xxx.8x50****Zero-crossing switch-on**

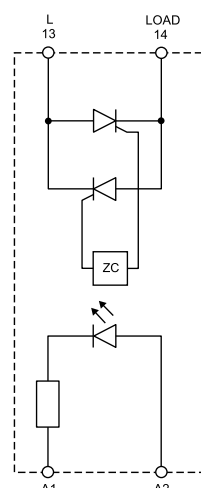
- Output: 100 A
- Suggested applications: heater control, lamps, solenoid, contactor driver



Simplified circuit diagram

**NEW 77.H1.x.xxx.8x50****Zero-crossing switch-on**

- Output: 125 A
- Suggested applications: heater control, lamps, solenoid, contactor driver



Simplified circuit diagram

| Output specification                                    |  | 77...8250          |  | 77...8650   |  | 77...8250   |  | 77...8650   |  |          |  |
|---------------------------------------------------------|--|--------------------|--|-------------|--|-------------|--|-------------|--|----------|--|
| Output configuration                                    |  | 1 NO               |  | 1 NO        |  | 1 NO        |  | 1 NO        |  |          |  |
| Rated current I <sub>N</sub> /Max. peak current (10 ms) |  | A                  |  | 80/800      |  | 100/1500    |  | 125/2250    |  |          |  |
| Rated voltage                                           |  | V AC (50/60 Hz)    |  | 240         |  | 600         |  | 240         |  | 600      |  |
| Switching voltage range                                 |  | V AC (50/60 Hz)    |  | 24...280    |  | 24...660    |  | 24...280    |  | 24...660 |  |
| Operating frequency range                               |  | Hz                 |  | 47...400    |  | 47...400    |  | 47...400    |  | 47...400 |  |
| Repetitive peak off-state voltage                       |  | V <sub>pk</sub>    |  | 600         |  | 1600        |  | 600         |  | 1600     |  |
| Rated load AC53                                         |  | A                  |  | 16          |  | 20          |  | 25          |  |          |  |
| Minimum switching current @ 250 V                       |  | mA                 |  | 100         |  | 100         |  | 100         |  |          |  |
| Typical "OFF-state" leakage current @ rated voltage     |  | mA                 |  | 0.1         |  | 0.1         |  | 0.1         |  |          |  |
| Max "ON-state" voltage drop @ 25 °C and I <sub>N</sub>  |  | V                  |  | 1.5         |  | 1.5         |  | 1.5         |  |          |  |
| Power loss @ I <sub>N</sub>                             |  | W                  |  | 96          |  | 120         |  | 150         |  |          |  |
| Input specification                                     |  |                    |  |             |  |             |  |             |  |          |  |
| Nominal voltage (U <sub>N</sub> )                       |  | V AC (50/60 Hz)    |  | —           |  | 230         |  | —           |  | 230      |  |
|                                                         |  | V DC               |  | 24          |  | —           |  | 24          |  | —        |  |
| Rated power @ U <sub>MAX</sub>                          |  | VA (50 Hz)/W       |  | —/0.55      |  | 5.3/—       |  | —/0.55      |  | 5.3/—    |  |
| Operating range                                         |  | V AC (50/60 Hz)    |  | —           |  | 90...280    |  | —           |  | 90...280 |  |
|                                                         |  | V DC               |  | 3...32      |  | —           |  | 3...32      |  | —        |  |
| Must drop-out voltage                                   |  | V AC (50/60 Hz)/DC |  | —/1         |  | 15/—        |  | —/1         |  | 15/—     |  |
| Technical data                                          |  |                    |  |             |  |             |  |             |  |          |  |
| Electrical life                                         |  | cycles             |  | —           |  | —           |  | —           |  |          |  |
| Operate/release time                                    |  | ms                 |  | 10/10       |  | 40/20       |  | 10/10       |  | 40/20    |  |
| Insulation between input and output (1.2/50 μs)         |  | kV                 |  | —           |  | —           |  | —           |  |          |  |
| Ambient temperature                                     |  | °C                 |  | -30...+80** |  | -30...+80** |  | -30...+80** |  |          |  |
| Protection category                                     |  |                    |  | —           |  | —           |  | —           |  |          |  |
| Approvals (according to type)                           |  |                    |  |             |  |             |  |             |  |          |  |

**25, 50 and 75 A dual phase Random SSR, "hockey puck" style with 2 independent channel**

**Type 77.A2.9.024.8671:** 25 A - 600 V AC

**Type 77.C2.9.024.8671:** 50 A - 600 V AC

**Type 77.E2.9.024.8671:** 75 A - 600 V AC

- 2 independent output channel driven by independent low power DC input
- "hockey puck" housing with folding screw cover
- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- "contactor-style": input and output terminals on adjacent sides
- Mounting on control cabinet sheet metal or on heatsink

77.A2/C2/E2

Screw terminal (plate clamp)\*



\* See recommendation for wiring page 17

\*\* See L77-19, L77-20 and L77-21 diagrams page 22

For outline drawing see page 27

**NEW 77.A2.9.024.8671**



**Random switch-on**

- Output: 25 A/600 V AC
- Suggested applications: heater or motor control

**NEW 77.C2.9.024.8671**



**Random switch-on**

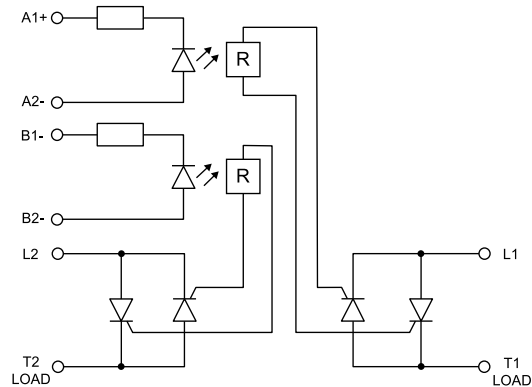
- Output: 50 A/600 V AC
- Suggested applications: heater or motor control

**NEW 77.E2.9.024.8671**



**Random switch-on**

- Output: 75 A/600 V AC
- Suggested applications: heater or motor control



Simplified circuit diagram

| Output specification                                    |             |             |             |
|---------------------------------------------------------|-------------|-------------|-------------|
| Output configuration                                    | 2 NO        | 2 NO        | 2 NO        |
| Rated current $I_N$ /Max. peak current (10 ms) A        | 25/300      | 50/500      | 75/750      |
| Rated voltage V AC (50/60 Hz)                           | 600         | 600         | 600         |
| Switching voltage range V AC (50/60 Hz)                 | 24...660    | 24...660    | 24...660    |
| Operating frequency range Hz                            | 47...400    | 47...400    | 47...400    |
| Repetitive peak off-state voltage $V_{pk}$              | 1200        | 1200        | 1200        |
| Rated load AC53 A                                       | 5           | 10          | 15          |
| Minimum switching current @ 600 V mA                    | —           | —           | —           |
| Typical "OFF-state" leakage current @ rated voltage mA  | 5           | 5           | 5           |
| Max "ON-state" voltage drop @ 25 °C and $I_N$ V         | 1.5         | 1.5         | 1.5         |
| Power loss @ $I_N$ W                                    | 60          | 120         | 180         |
| Input specification                                     |             |             |             |
| Nominal voltage ( $U_N$ ) V DC                          | 24          | 24          | 24          |
| Rated power @ $U_{MAX}$ W                               | 0.3         | 0.3         | 0.3         |
| Operating range V DC                                    | 4...32      | 4...32      | 4...32      |
| Must drop-out voltage V AC (50/60 Hz)/DC                | 1           | 1           | 1           |
| Technical data                                          |             |             |             |
| Electrical life cycles                                  | —           | —           | —           |
| Operate/release time ms                                 | 1/10        | 1/10        | 1/10        |
| Insulation between input and output (1.2/50 $\mu$ s) kV | —           | —           | —           |
| Ambient temperature °C                                  | -30...+80** | -30...+80** | -30...+80** |
| Protection category                                     | —           | —           | —           |
| <b>Approvals</b> (according to type)                    |             |             |             |

**25 and 40 A three phase Random SSR, "hockey puck" style****Type 77.A3.x.xxx.8671:** 25 A - 600 V AC**Type 77.B3.x.xxx.8671:** 40 A - 600 V AC

- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "contactor-style": input and output terminals on adjacent sides
- Mounting on control cabinet sheet metal or on heatsink

77.A3/B3

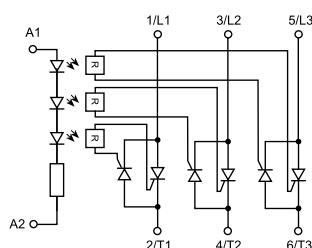
Screw terminal (plate clamp)\*

**NEW 77.A3.x.xxx.8671****Random switch-on**

- Output: 25 A/600 V AC
- Suggested applications: heater or motor control

**NEW 77.B3.x.xxx.8671****Random switch-on**

- Output: 40 A/600 V AC
- Suggested applications: heater or motor control



Simplified circuit diagram

\* See recommendation for wiring page 17

\*\* See L77-22 and L77-23 diagrams page 22

For outline drawing see page 27

**Output specification**

|                                                        |  |          |          |
|--------------------------------------------------------|--|----------|----------|
| Output configuration                                   |  | 3 NO     | 3 NO     |
| Rated current $I_N$ /Max. peak current (10 ms) A       |  | 25/300   | 40/500   |
| Rated voltage V AC (50/60 Hz)                          |  | 600      | 600      |
| Switching voltage range V AC (50/60 Hz)                |  | 24...660 | 24...660 |
| Operating frequency range Hz                           |  | 47...400 | 47...400 |
| Repetitive peak off-state voltage $V_{pk}$             |  | 1600     | 1600     |
| Rated load AC53 A                                      |  | 5        | 8        |
| Minimum switching current @ 600 V mA                   |  | —        | —        |
| Typical "OFF-state" leakage current @ rated voltage mA |  | 10       | 10       |
| Max "ON-state" voltage drop @ 25 °C and $I_N$ V        |  | 1.6      | 1.6      |
| Power loss @ $I_N$ W                                   |  | 90       | 144      |

**Input specification**

|                                           |        |          |        |          |
|-------------------------------------------|--------|----------|--------|----------|
| Nominal voltage ( $U_N$ ) V AC (50/60 Hz) | —      | 230      | —      | 230      |
| V DC                                      | 24     | —        | 24     | —        |
| Rated power @ $U_{MAX}$ VA (50 Hz)/W      | —/0.55 | 5.3/—    | —/0.55 | 5.3/—    |
| Operating range V AC (50/60 Hz)           | —      | 90...280 | —      | 90...280 |
| V DC                                      | 4...32 | —        | 4...32 | —        |
| Must drop-out voltage V AC (50/60 Hz)/DC  | 1      | 15       | 1      | 15       |

**Technical data**

|                                                         |             |             |
|---------------------------------------------------------|-------------|-------------|
| Electrical life cycles                                  | —           | —           |
| Operate/release time ms                                 | 1           | 10/20       |
| Insulation between input and output (1.2/50 $\mu$ s) kV | —           | —           |
| Ambient temperature °C                                  | −30...+80** | −30...+80** |
| Protection category                                     | —           | —           |

**Approvals** (according to type)

**60 and 80 A three phase Random SSR, "hockey puck" style**

**Type 77.D3.x.xxx.8671:** 60 A - 600 V AC

**Type 77.F3.x.xxx.8671:** 80 A - 600 V AC

- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "contactor-style": input and output terminals on adjacent sides
- Mounting on control cabinet sheet metal or on heatsink

**NEW 77.D3.x.xxx.8671**



#### Random switch-on

- Output: 60 A/600 V AC
- Suggested applications: heater or motor control

**NEW 77.F3.x.xxx.8671**



#### Random switch-on

- Output: 80 A/600 V AC
- Suggested applications: heater control

77.D3/F3

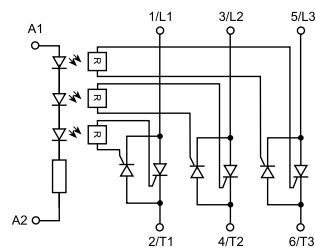
Screw terminal (plate clamp)\*



\* See recommendation for wiring page 17

\*\* See L77-24 and L77-25 diagrams page 22

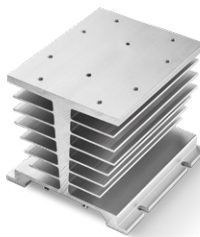
For outline drawing see page 27

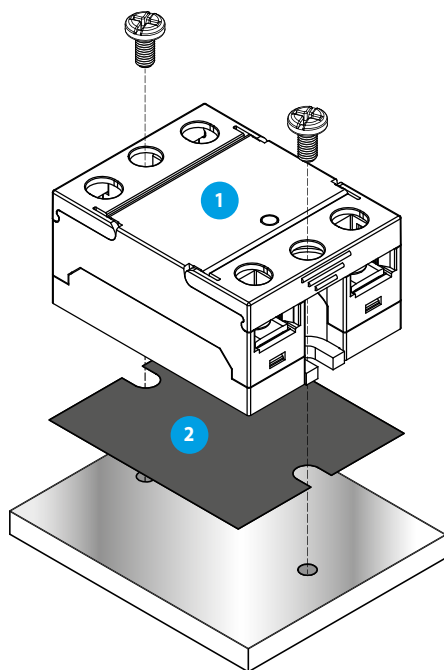


Simplified circuit diagram

| Output specification                                    |                    |                                                                                                                                                                                                                                                                                                                                                  |          |             |          |
|---------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|----------|
| Output configuration                                    |                    | 3 NO                                                                                                                                                                                                                                                                                                                                             |          | 3 NO        |          |
| Rated current I <sub>N</sub> /Max. peak current (10 ms) | A                  | 60/700                                                                                                                                                                                                                                                                                                                                           |          | 80/1280     |          |
| Rated voltage                                           | V AC (50/60 Hz)    | 600                                                                                                                                                                                                                                                                                                                                              |          | 600         |          |
| Switching voltage range                                 | V AC (50/60 Hz)    | 24...660                                                                                                                                                                                                                                                                                                                                         |          | 24...660    |          |
| Operating frequency range                               | Hz                 | 47...400                                                                                                                                                                                                                                                                                                                                         |          | 47...400    |          |
| Repetitive peak off-state voltage                       | V <sub>pk</sub>    | 1600                                                                                                                                                                                                                                                                                                                                             |          | 1600        |          |
| Rated load AC53                                         | A                  | 12                                                                                                                                                                                                                                                                                                                                               |          | 16          |          |
| Minimum switching current @ 600 V                       | mA                 | —                                                                                                                                                                                                                                                                                                                                                |          | —           |          |
| Typical “OFF-state” leakage current @ 600 V             | mA                 | 10                                                                                                                                                                                                                                                                                                                                               |          | 10          |          |
| Max “ON-state” voltage drop @ 25 °C and I <sub>N</sub>  | V                  | 1.6                                                                                                                                                                                                                                                                                                                                              |          | 1.6         |          |
| Power loss @ I <sub>N</sub>                             | W                  | 216                                                                                                                                                                                                                                                                                                                                              |          | 288         |          |
| Input specification                                     |                    |                                                                                                                                                                                                                                                                                                                                                  |          |             |          |
| Nominal voltage (U <sub>N</sub> )                       | V AC (50/60 Hz)    | —                                                                                                                                                                                                                                                                                                                                                | 230      | —           | 230      |
|                                                         | V DC               | 24                                                                                                                                                                                                                                                                                                                                               | —        | 24          | —        |
| Rated power @ U <sub>MAX</sub>                          | VA (50 Hz)/W       | —/0.55                                                                                                                                                                                                                                                                                                                                           | 5.3/—    | —/0.55      | 5.3/—    |
| Operating range                                         | V AC (50/60 Hz)    | —                                                                                                                                                                                                                                                                                                                                                | 90...280 | —           | 90...280 |
|                                                         | V DC               | 4...32                                                                                                                                                                                                                                                                                                                                           | —        | 4...32      | —        |
| Must drop-out voltage                                   | V AC (50/60 Hz)/DC | 1                                                                                                                                                                                                                                                                                                                                                | 15       | 1           | 15       |
| Technical data                                          |                    |                                                                                                                                                                                                                                                                                                                                                  |          |             |          |
| Electrical life                                         | cycles             | —                                                                                                                                                                                                                                                                                                                                                |          | —           |          |
| Operate/release time                                    | ms                 | 1                                                                                                                                                                                                                                                                                                                                                | 10/20    | 1           | 10/20    |
| Insulation between input and output (1.2/50 μs)         | kV                 | —                                                                                                                                                                                                                                                                                                                                                |          | —           |          |
| Ambient temperature                                     | °C                 | –30...+80**                                                                                                                                                                                                                                                                                                                                      |          | –30...+80** |          |
| Protection category                                     |                    | —                                                                                                                                                                                                                                                                                                                                                |          | —           |          |
| Approvals (according to type)                           |                    |     |          |             |          |

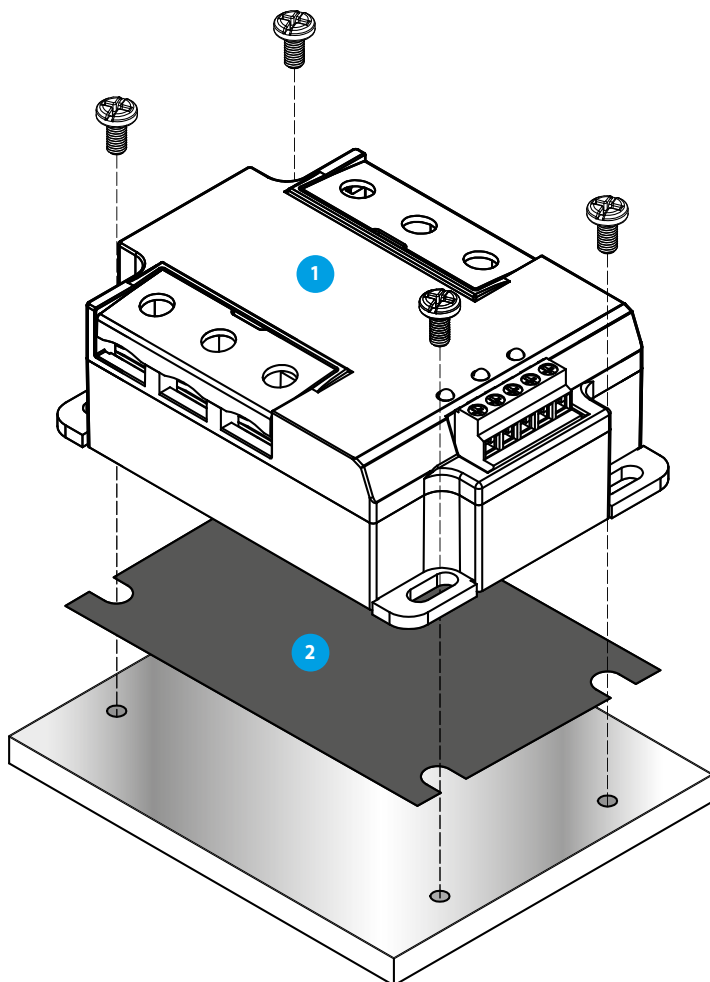
## Hockey puck heat sink selection

| Heat sink                                                                                                  | Relays SSR                                                      | Thermal pad                                                                                                                                                                                                                                                                                     | K/W  | Product Description                                                             |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------|
| <b>077.21</b><br>         | 77.A1                                                           | 077.T1<br><br>077.T2<br>                                                                                                      | 2.1  | Heat sink SSR 1 phase                                                           |
| <b>077.13</b><br>         | 77.A1<br>77.B1                                                  | 077.T1<br><br>077.T2<br>                                                                                                      | 1.3  | Heat sink SSR 1 phase                                                           |
| <b>077.08</b><br>        | 77.B1 - D1 - F1 - G1 - H1<br>77.A2 - C2 - E2<br>77.A3 - B3      | 077.T1<br><br>077.T2<br><br>077.T3<br>    | 0.8  | Heat sink SSR 1, 2, 3 phases                                                    |
| <b>077.03.9.024</b><br> | 77.D1 - F1 - G1 - H1<br>77.A2 - C2 - E2<br>77.A3 - B3 - D3 - F3 | 077.T1<br><br>077.T2<br><br>077.T3<br> | 0.35 | Heat sink with 24 V DC - 5.5 W cooling fan<br>Suitable for SSR 1, 2, 3 phases   |
| <b>077.03.8.230</b><br> | 77.D1 - F1 - G1 - H1<br>77.A2 - C2 - E2<br>77.A3 - B3 - D3 - F3 | 077.T1<br><br>077.T2<br><br>077.T3<br> | 0.35 | Heat sink with 230 V AC - 14.5 W cooling fan<br>Suitable for SSR 1, 2, 3 phases |



- 1 Type**  
77.x1  
77.x2

- 2 Thermal Pad**  
077.T1  
077.T2



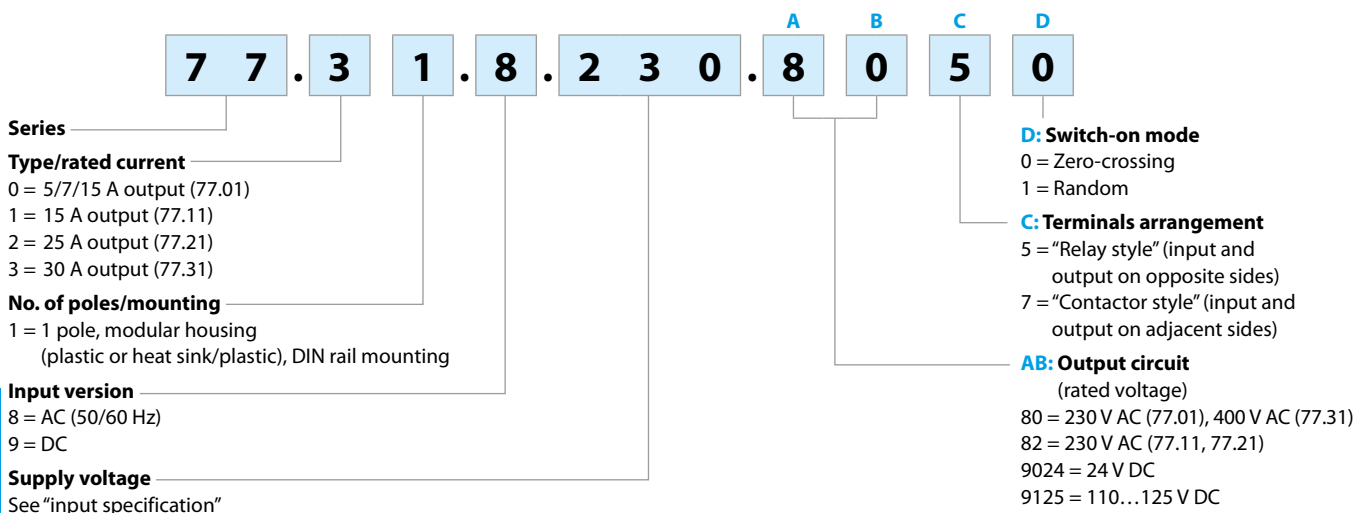
- 1 Type**  
77.A3  
77.B3  
77.D3  
77.F3

- 2 Thermal Pad**  
077.T3



## Ordering information DIN rail SSR

Example: 77 series modular SSR, 1 output 30 A AC, input voltage 230 V AC, relay style terminals arrangement, zero-crossing switch-on.



## Codes/Module width

77.01.8.230.8050/17.5 mm 5 A  
77.01.9.024.8050/17.5 mm 5 A  
77.01.8.230.8051/17.5 mm 5 A  
77.01.9.024.8051/17.5 mm 5 A  
77.01.9.024.9125/17.5 mm 7 A  
77.01.9.024.9024/17.5 mm 15 A

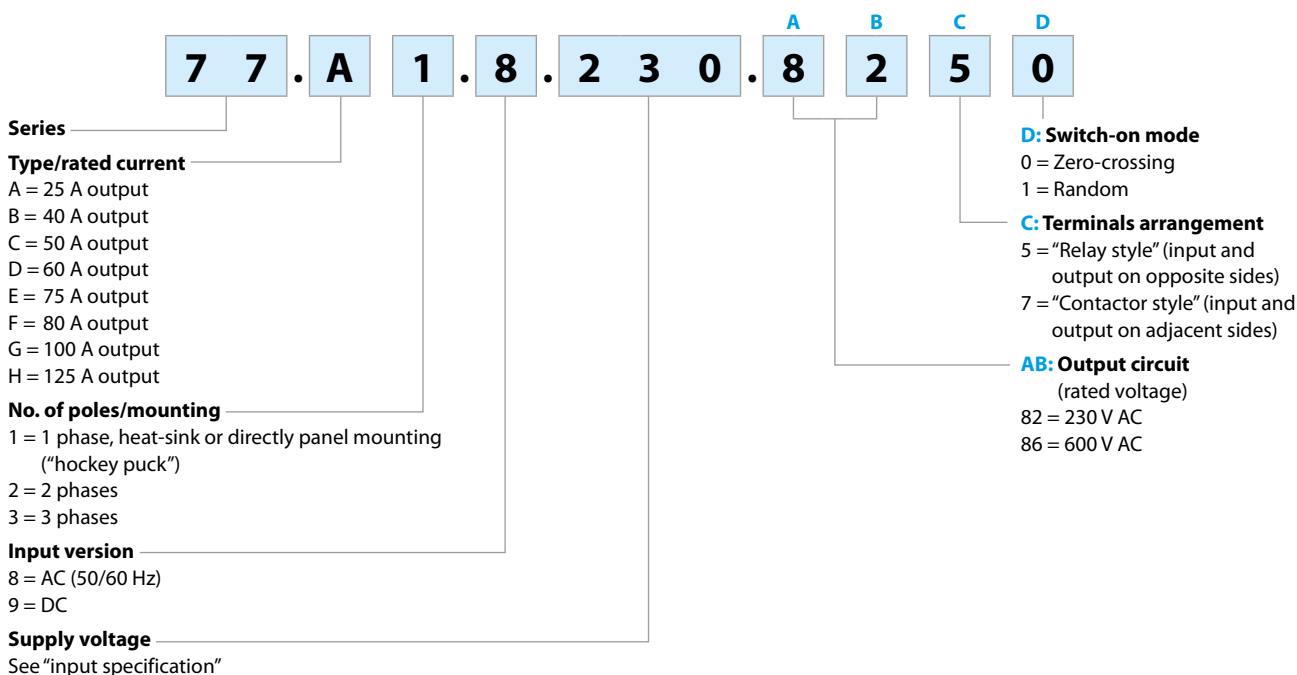
77.11.8.230.8250/22.5 mm 15 A  
77.11.9.024.8250/22.5 mm 15 A  
77.11.8.230.8251/22.5 mm 15 A  
77.11.9.024.8251/22.5 mm 15 A

77.21.8.230.8250/22.5 mm 25 A  
77.21.9.024.8250/22.5 mm 25 A  
77.21.8.230.8251/22.5 mm 25 A  
77.21.9.024.8251/22.5 mm 25 A

77.31.8.024.8050/22.5 mm 30 A  
77.31.8.230.8050/22.5 mm 30 A  
77.31.9.024.8050/22.5 mm 30 A  
77.31.8.230.8051/22.5 mm 30 A  
77.31.9.024.8051/22.5 mm 30 A  
77.31.8.230.8070/22.5 mm 30 A  
77.31.9.024.8070/22.5 mm 30 A  
77.31.8.230.8071/22.5 mm 30 A  
77.31.9.024.8071/22.5 mm 30 A

## Ordering information hockey puck SSR

Example: 77 series modular SSR, 1 output 25 A AC, input voltage 230 V AC, relay style terminals arrangement, zero-crossing switch-on.



## Codes/Module width

**1 phase 25 - 40 - 60 - 80 - 100 - 125 A**  
77.x1.8.230.8250/"hockey puck"  
77.x1.9.024.8250/"hockey puck"  
77.x1.8.230.8650/"hockey puck"  
77.x1.9.024.8650/"hockey puck"

**2 phases 25 - 50 - 75 A**  
77.x2.9.024.8671/"hockey puck"

**3 phases 25 - 40 - 60 - 80 A**  
77.x3.8.230.8671/"hockey puck"  
77.x3.9.024.8671/"hockey puck"

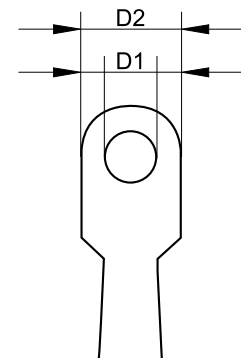
## Technical data

| Insulation                                                                                     |                        |                    | 77.01.8xxx          |                     | 77.01.9xxx          |                     | 77.11               |                     | 77.21               |                     | 77.31               |                     |
|------------------------------------------------------------------------------------------------|------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                                                                                |                        |                    | Dielectric strength | Impulse (1.2/50 μs) | Dielectric strength | Impulse (1.2/50 μs) | Dielectric strength | Impulse (1.2/50 μs) | Dielectric strength | Impulse (1.2/50 μs) | Dielectric strength | Impulse (1.2/50 μs) |
| Between input and output                                                                       |                        |                    | 2500 V AC           | 5 kV                | 3000 V AC           | 4 kV                | 3000 V AC           | 6 kV                | 3000 V AC           | 6 kV                | 3000 V AC           | 6 kV                |
| Between input and ground (heat-sink)                                                           |                        |                    | —                   | —                   | —                   | —                   | 3000 V AC           | 6 kV                | 3000 V AC           | 6 kV                | 3000 V AC           | 6 kV                |
| Between output and ground (heat-sink)                                                          |                        |                    | —                   | —                   | —                   | —                   | 2500 V AC           | 4 kV                | 2500 V AC           | 4 kV                | 4000 V AC           | 6 kV                |
| EMC specifications                                                                             |                        | Reference standard | 77.01.8.230         |                     | 77.01.9.024         |                     | 77.11               |                     | 77.21               |                     | 77.31               |                     |
|                                                                                                |                        |                    | 230 V AC            |                     | 24 V DC             |                     | 24 V DC             | 230 V AC            | 24 V DC             | 230 V AC            | 24 V AC/DC          | 230 V AC            |
| Electrostatic discharge                                                                        | contact discharge      | EN 61000-4-2       | 4 kV                |                     | 4 kV                |                     | 4 kV                |                     | 4 kV                |                     | 4 kV                |                     |
|                                                                                                | air discharge          | EN 61000-4-2       | 8 kV                |                     | 8 kV                |                     | 8 kV                |                     | 8 kV                |                     | 8 kV                |                     |
| Radiated electromagnetic field (80...1000 MHz)                                                 |                        | EN 61000-4-3       | 30 V/m              |                     | 20 V/m              |                     | 20 V/m              |                     | 20 V/m              |                     | 30 V/m              |                     |
| Fast transients on supply terminals (burst 5/50 ns, 5 and 100 kHz)                             |                        | EN 61000-4-4       | 1 kV                |                     | 1 kV                |                     | 1 kV                | 3 kV                | 1 kV                | 3 kV                | 1 kV                | 3 kV                |
| Voltage pulses on supply terminals (surge 1.2/50 μs)                                           | common mode            | EN 61000-4-5       | —                   |                     | —                   |                     | 3 kV                | 3 kV                | 3 kV                | 3 kV                | 3 kV                | 3 kV                |
|                                                                                                | differential mode      | EN 61000-4-5       | 1 kV                |                     | 0.5 kV              |                     | 0.5 kV              | 1.5 kV              | 0.5 kV              | 1.5 kV              | 0.5 kV              | 1.5 kV              |
| Radio-frequency common mode voltage (0.15...230 MHz) on supply terminals                       |                        | EN 61000-4-6       | 10 V                |                     | 10 V                |                     | 10 V                |                     | 10 V                |                     | 10 V                |                     |
| Terminals                                                                                      |                        |                    | 77.01.x.xxx         |                     | 77.01.9.xxx         |                     | 77.11               |                     | 77.21               |                     | 77.31               |                     |
|  Screw torque |                        | Nm                 | 0.8                 |                     | 0.8                 |                     | 0.8                 |                     | 0.8                 |                     | 0.8                 |                     |
| Max. wire size                                                                                 |                        |                    | solid cable         | stranded cable      | solid cable         | stranded cable      | solid cable         | stranded cable      | solid cable         | stranded cable      | solid cable         | stranded cable      |
|                                                                                                |                        |                    | mm <sup>2</sup>     | 1 x 6 / 2 x 4       | 1 x 4 / 2 x 2.5     | 1 x 6 / 2 x 4       | 1 x 4 / 2 x 2.5     | 1 x 6 / 2 x 4       | 1 x 6 / 2 x 4       | 1 x 6 / 2 x 4       | 1 x 6 / 2 x 4       | 1 x 6 / 2 x 4       |
|                                                                                                |                        |                    | AWG                 | 1 x 10 / 2 x 12     | 1 x 12 / 2 x 14     | 1 x 10 / 2 x 12     | 1 x 12 / 2 x 14     | 1 x 10 / 2 x 12     | 1 x 10 / 2 x 12     | 1 x 10 / 2 x 12     | 1 x 10 / 2 x 12     | 1 x 10 / 2 x 12     |
| Wire strip length                                                                              |                        | mm                 | 9                   |                     | 9                   |                     | 9                   |                     | 9                   |                     | 9                   |                     |
| Other data                                                                                     |                        |                    |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Power lost to the environment                                                                  | without output current | W                  | 0.5                 |                     | 0.5                 |                     | 0.9                 |                     | 0.9                 |                     | 0.9                 |                     |
|                                                                                                | with rated current     | W                  | 4.0                 |                     | 4.0                 |                     | 14                  |                     | 15                  |                     | 16                  |                     |

|                                      |                                       |    | 77.X1               | 77.X2               | 77.X3               |
|--------------------------------------|---------------------------------------|----|---------------------|---------------------|---------------------|
|                                      |                                       |    | Dielectric strength | Dielectric strength | Dielectric strength |
| Between Input and output             |                                       |    | 4 kV                | 4 kV                | 4 kV                |
| Between input and ground (heat-sink) |                                       |    | 4 kV                | 2.5 kV              | 2.5 kV              |
| Terminals                            |                                       |    |                     |                     |                     |
| Screw torque                         | Input side                            | Nm | 1.5                 | 0.5                 | 0.5                 |
|                                      | Output side                           | Nm | 2.2                 | 2.2                 | 2.2                 |
|                                      | On heatsink with thermal pad or paste | Nm | 2.2                 | 2.2                 | 2.2                 |

## Recommendation for wiring

| Load current (A) | Cross section area of wire (mm <sup>2</sup> ) | Wire size (AWG) | DIN 46234 terminal model | D1 (mm) | D2 (mm) |
|------------------|-----------------------------------------------|-----------------|--------------------------|---------|---------|
| 15 - 20          | 2.5                                           | 12              | 4 - 6                    | 4.3     | 8       |
|                  |                                               |                 | 5 - 6                    | 5.3     | 10      |
| 20 - 35          | 4                                             | 10              | 4 - 6                    | 4.3     | 8       |
|                  |                                               |                 | 5 - 6                    | 5.3     | 10      |
| 25 - 32          | 6                                             | 10              | 4 - 6                    | 4.3     | 8       |
|                  |                                               |                 | 5 - 6                    | 5.3     | 10      |
| 32 - 50          | 10                                            | 8               | 5 - 10                   | 5.3     | 10      |
| 50 - 65          | 16                                            | 6               | 5 - 16                   | 5.3     | 11      |
| 65 - 85          | 25                                            | 4               | 5 - 25                   | 5.3     | 12      |



Note: If the wire cross section area is bigger than 25 mm<sup>2</sup>, we suggest to use 2 smaller cross section wires and connect them back to back superimposed (in parallel).

## Input specification

### 77.01

| Nominal voltage | Input code | Operating range  |                  |                  |                  | Must drop-out voltage (AC/DC) | Input current                    |
|-----------------|------------|------------------|------------------|------------------|------------------|-------------------------------|----------------------------------|
|                 |            | AC               |                  | DC               |                  |                               |                                  |
|                 |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               |                                  |
| U <sub>N</sub>  |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               | I <sub>N</sub> at U <sub>N</sub> |
| V               |            | V                | V                | V                | V                | V                             | mA                               |
| 24              | 9.024      | —                | —                | 4                | 32               | 3.0                           | 18                               |
| 230             | 8.230      | 90               | 265              | —                | —                | 24                            | 15                               |

### 77.11/77.21

| Nominal voltage | Input code | Operating range  |                  |                  |                  | Must drop-out voltage (AC/DC) | Input current                    |
|-----------------|------------|------------------|------------------|------------------|------------------|-------------------------------|----------------------------------|
|                 |            | AC               |                  | DC               |                  |                               |                                  |
|                 |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               |                                  |
| U <sub>N</sub>  |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               | I <sub>N</sub> at U <sub>N</sub> |
| V               |            | V                | V                | V                | V                | V                             | mA                               |
| 24              | 9.024      | —                | —                | 4                | 32               | 2                             | 11                               |
| 230             | 8.230      | 40               | 305              | —                | —                | 6                             | 25                               |

### 77.31

| Nominal voltage | Input code | Operating range |           |           |           | Must drop-out voltage<br>(AC/DC) | Input current<br><br>$I_N$ at $U_N$ |
|-----------------|------------|-----------------|-----------|-----------|-----------|----------------------------------|-------------------------------------|
|                 |            | AC              |           | DC        |           |                                  |                                     |
|                 |            | $U_{min}$       | $U_{max}$ | $U_{min}$ | $U_{max}$ |                                  |                                     |
| $U_N$           |            | V               | V         | V         | V         | V                                | mA                                  |
| V               |            | V               | V         | V         | V         | V                                | mA                                  |
| 24              | 8.024      | 16              | 32        | —         | —         | 6                                | 10                                  |
| 24              | 9.024      | —               | —         | 4         | 32        | 2                                | 11                                  |
| 230             | 8.230      | 40              | 280       | —         | —         | 6                                | 25                                  |

### 77.x1.x.xxx.8x50

| Nominal voltage | Input code | Operating range  |                  |                  |                  | Must drop-out voltage (AC/DC) | Input current<br><br>I <sub>N</sub> at U <sub>N</sub> |
|-----------------|------------|------------------|------------------|------------------|------------------|-------------------------------|-------------------------------------------------------|
|                 |            | AC               |                  | DC               |                  |                               |                                                       |
|                 |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               |                                                       |
| U <sub>N</sub>  |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               |                                                       |
| V               |            | V                | V                | V                | V                | V                             | mA                                                    |
| 24              | 9.024      | —                | —                | 3                | 32               | 1.25                          | 25                                                    |
| 230             | 8.230      | 90               | 280              | —                | —                | 1.25                          | 35                                                    |

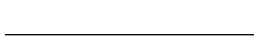
### 77.x2.9.024.8671

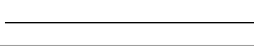
| Nominal voltage | Input code | Operating range  |                  |                  |                  | Must drop-out voltage<br>(AC/DC) | Input current                    |
|-----------------|------------|------------------|------------------|------------------|------------------|----------------------------------|----------------------------------|
|                 |            | AC               |                  | DC               |                  |                                  |                                  |
|                 |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                                  |                                  |
| U <sub>N</sub>  |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                                  | I <sub>N</sub> at U <sub>N</sub> |
| V               |            | V                | V                | V                | V                | V                                | mA                               |
| 24              | 9.024      | —                | —                | 4                | 32               | 1.5                              | 25                               |

### 77.x3.x.xxx.8671

| Nominal voltage | Input code | Operating range  |                  |                  |                  | Must drop-out voltage (AC/DC) | Input current                    |
|-----------------|------------|------------------|------------------|------------------|------------------|-------------------------------|----------------------------------|
|                 |            | AC               |                  | DC               |                  |                               |                                  |
|                 |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               |                                  |
| U <sub>N</sub>  |            | U <sub>min</sub> | U <sub>max</sub> | U <sub>min</sub> | U <sub>max</sub> |                               | I <sub>N</sub> at U <sub>N</sub> |
| V               |            | V                | V                | V                | V                | V                             | mA                               |
| 24              | 9.024      | —                | —                | 4                | 32               | 1.6                           | 35                               |
| 230             | 8.230      | 90               | 280              | —                | —                | 1.6                           | 30                               |

### Led indication

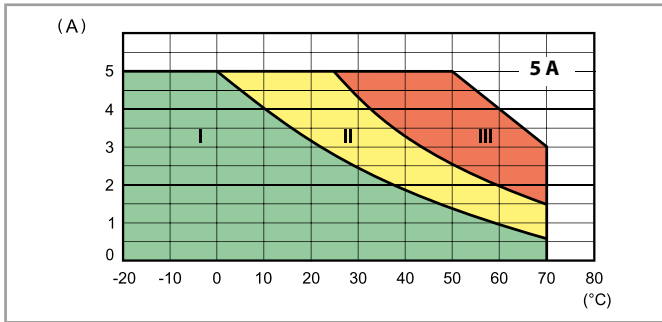
| LED                                                                                | Supply voltage |
|------------------------------------------------------------------------------------|----------------|
|  | OFF            |
|  | ON             |

| LED<br>(77.01.9.024.9xxx only)                                                     | Short circuit* |
|------------------------------------------------------------------------------------|----------------|
|  | NO             |
|  | YES            |

\*To restore normal operation it is necessary to disconnect the power, resolve the short circuit and then restore power.

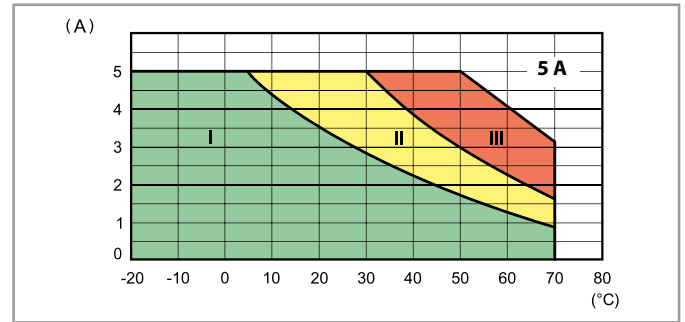
## Output specification

**L77-1 Output RMS current v ambient temperature**  
77.01.9.024.805x @ 32 V DC

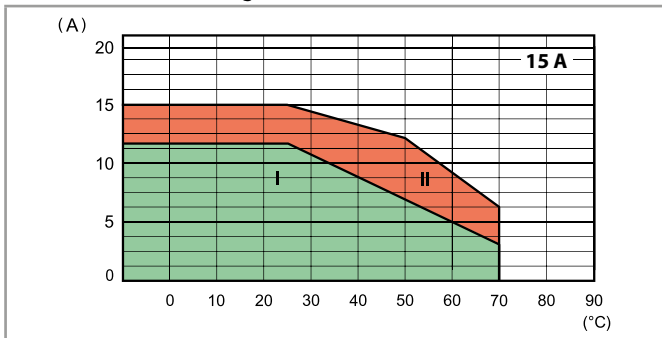


- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed as a group (9 mm gap between each SSR)
- III - Modular SSR installed individually in free air (without a significant influence from nearby components)

**L77-2 Output RMS current v ambient temperature**  
77.01.8.230.805x @ 265 V AC

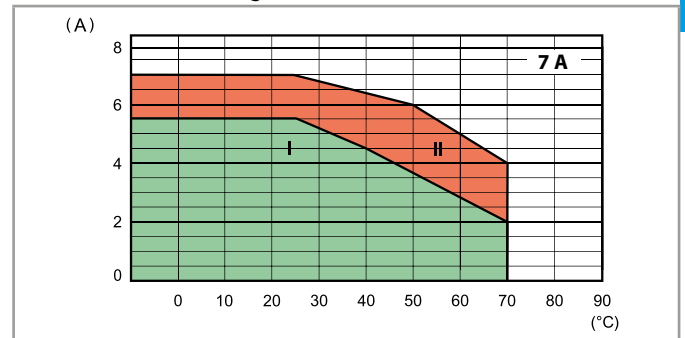


**L77-3 Output DC current v ambient temperature**  
77.01.9.024.9024 @ 32 V DC

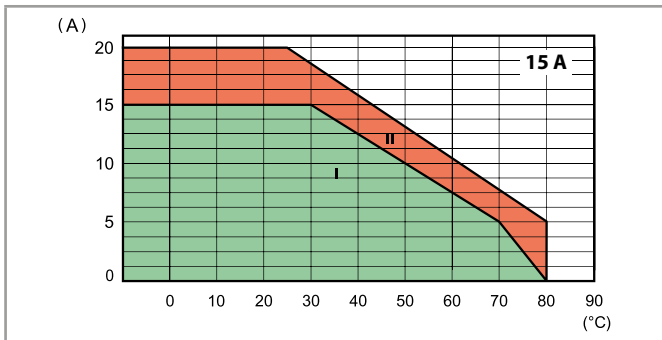


- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed individually in free air, or with a gap  $\geq 9$  mm, which implies a not significant influence from nearby components

**L77-4 Output DC current v ambient temperature**  
77.01.9.024.9125 @ 32 V DC

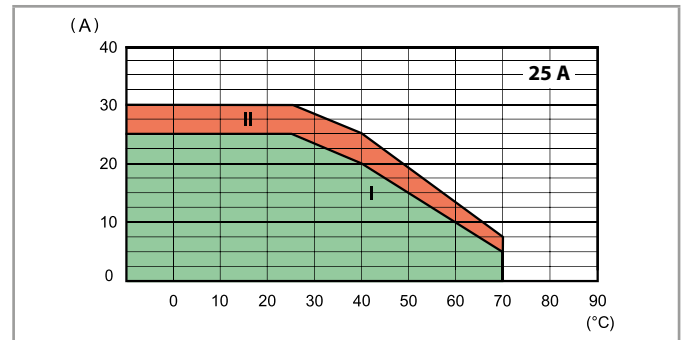


**L77-5 Output RMS current v ambient temperature**  
77.11.x.xxx.82xx



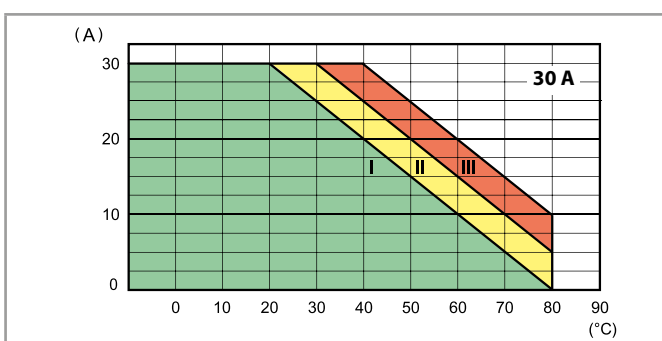
- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed individually in free air, or with a gap  $\geq 20$  mm, which implies a not significant influence from nearby components

**L77-6 Output RMS current v ambient temperature**  
77.21.x.xxx.825x



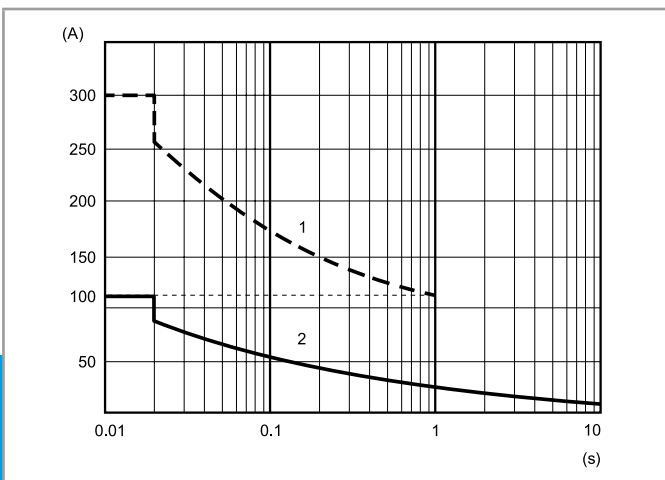
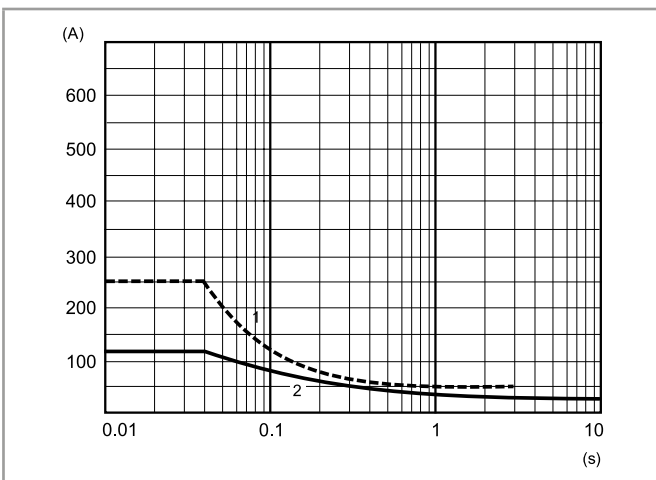
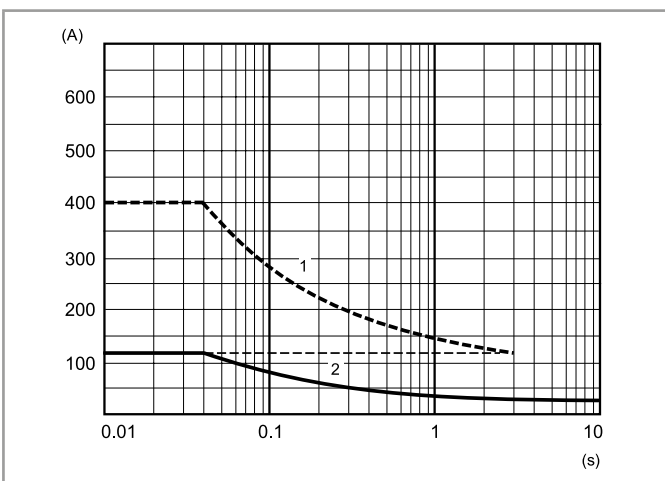
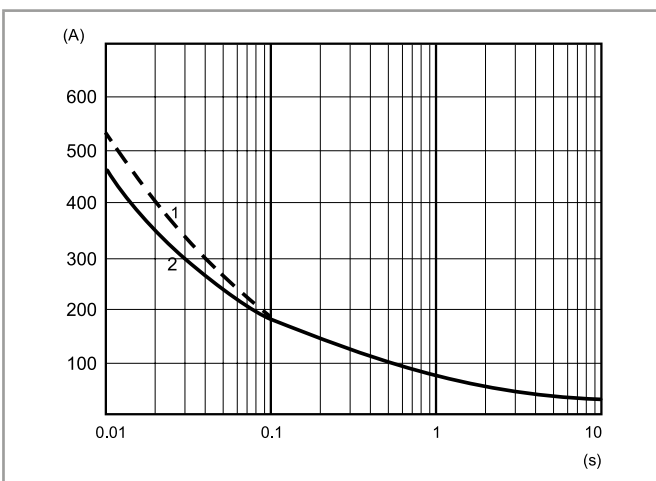
- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed individually in free air, or with a gap  $\geq 20$  mm, which implies a not significant influence from nearby components

**L77-7 Output RMS current v ambient temperature**  
77.31.x.xxx.80xx



- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed as a group (20 mm gap between each SSR)
- III - Modular SSR installed individually in free air, or with a gap  $\geq 40$  mm, which implies a not significant influence from nearby components)

## Output specification

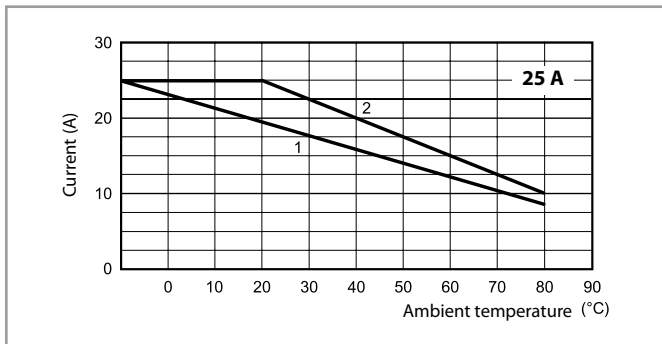
L77-8 Inrush peak current (AC) v inrush time  
77.01.x.xxx.80xxL77-9 Inrush peak current (AC) v inrush time  
77.11.x.xxx.82xxL77-10 Inrush peak current (AC) v inrush time  
77.21.x.xxx.825xL77-11 Inrush peak current (AC) v inrush time  
77.31.x.xxx.80xx

1 - "Cold" conditions (ambient temperature = 23 °C, no output current during the last 15 minutes)

2 - "Hot" conditions (ambient temperature = 50 °C, rated output current)

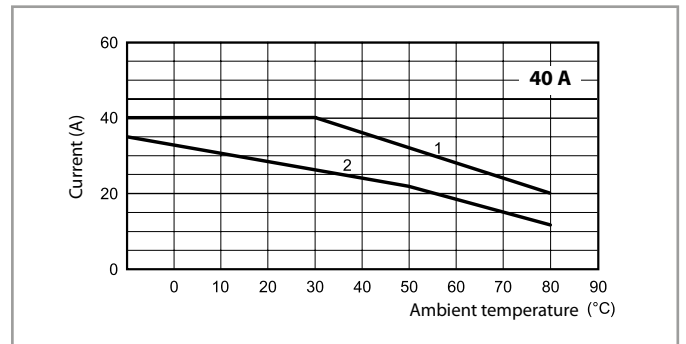
## Output specification

**L77-12 Output RMS current v ambient temperature**  
**77.A1.x.xxx.8x50**



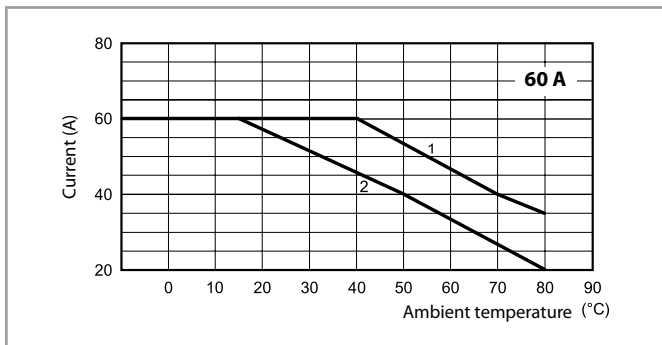
- 1 - Installation on heat-sink 077.21 (2.1 K/W)  
2 - Installation on heat-sink 077.13 (1.3 K/W)

**L77-13 Output RMS current v ambient temperature**  
**77.B1.x.xxx.8x50**



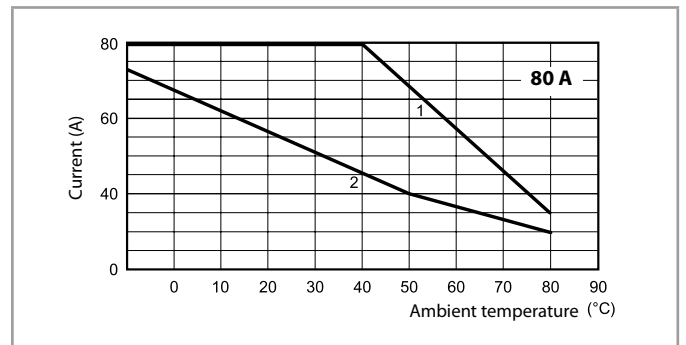
- 1 - Installation on heat-sink 077.08 (0.8 K/W)  
2 - Installation on heat-sink 077.13 (1.3 K/W)

**L77-14 Output RMS current v ambient temperature**  
**77.D1.x.xxx.8x50**



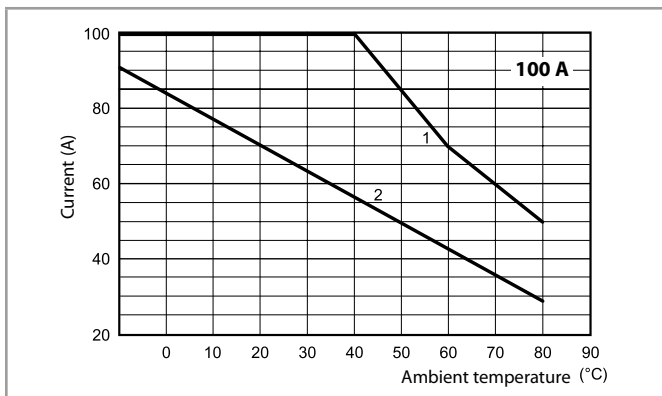
- 1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)  
2 - Installation on heat-sink 077.08 (0.8 K/W)

**L77-15 Output RMS current v ambient temperature**  
**77.F1.x.xxx.8x50**



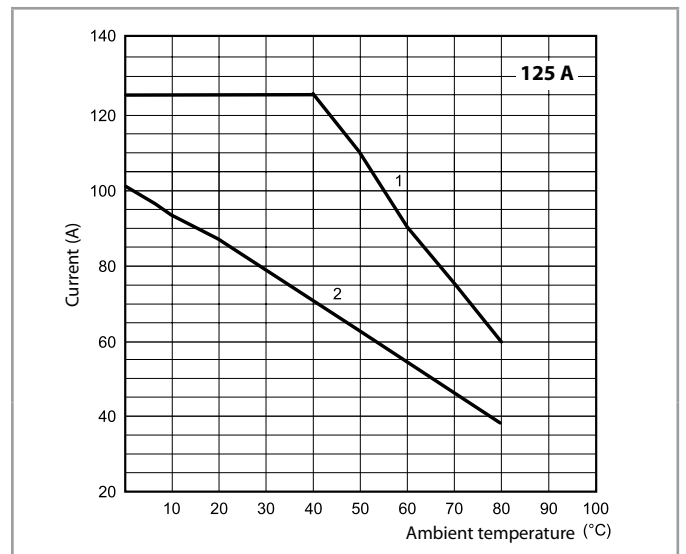
- 1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)  
2 - Installation on heat-sink 077.08 (0.8 K/W)

**L77-16 Output RMS current v ambient temperature**  
**77.G1.x.xxx.8x50**



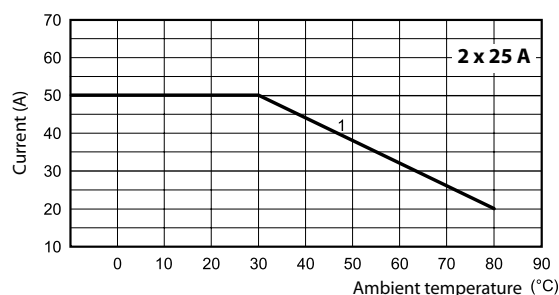
- 1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)  
2 - Installation on heat-sink 077.08 (0.8 K/W)

**L77-17 Output RMS current v ambient temperature**  
**77.H1.x.xxx.8x50**

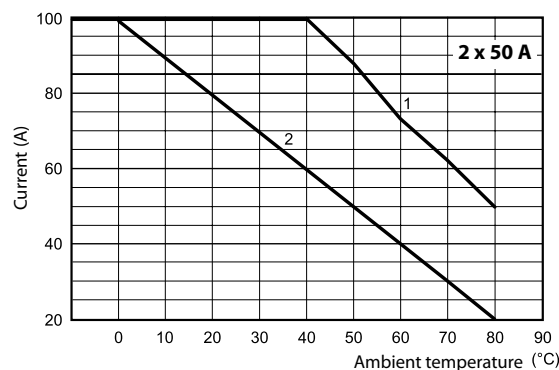


- 1 - Installation on heat-sink 077.03.X.XXX (0.35 K/W)  
2 - Installation on heat-sink 077.08 (0.8 K/W)

## Output specification

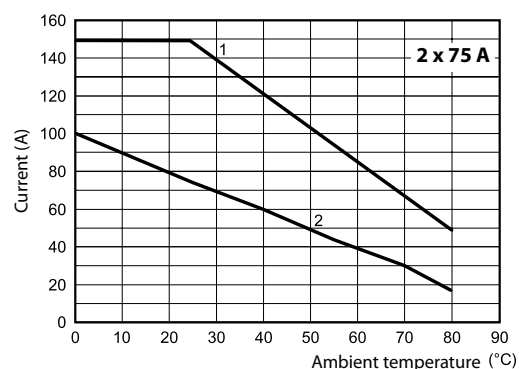
L77-18 Output RMS current v ambient temperature  
77.A2.9.024.8671

1 - Installation on heat-sink 077.08 (0.8 K/W)

L77-19 Output RMS current v ambient temperature  
77.C2.9.024.8671

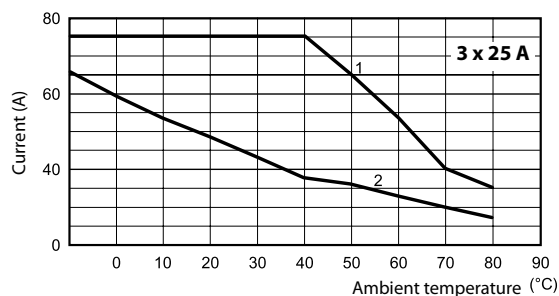
1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-20 Output RMS current v ambient temperature  
77.E2.9.024.8671

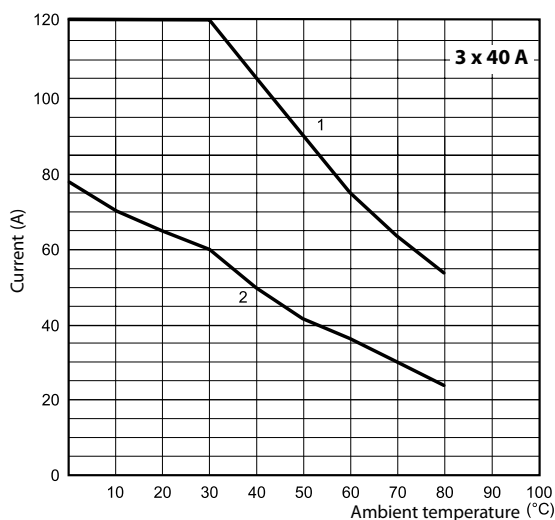
1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-21 Output RMS current v ambient temperature  
77.A3.x.xxx.8671

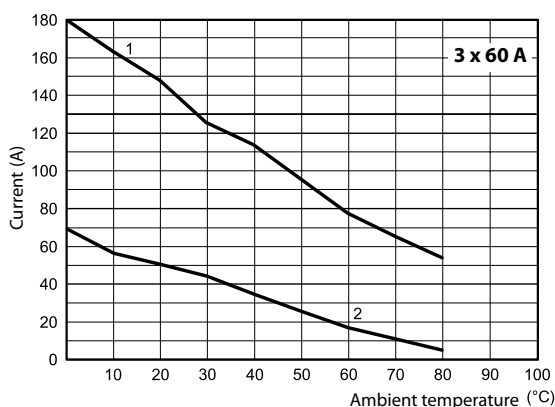
1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-22 Output RMS current v ambient temperature  
77.B3.x.xxx.8671

1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

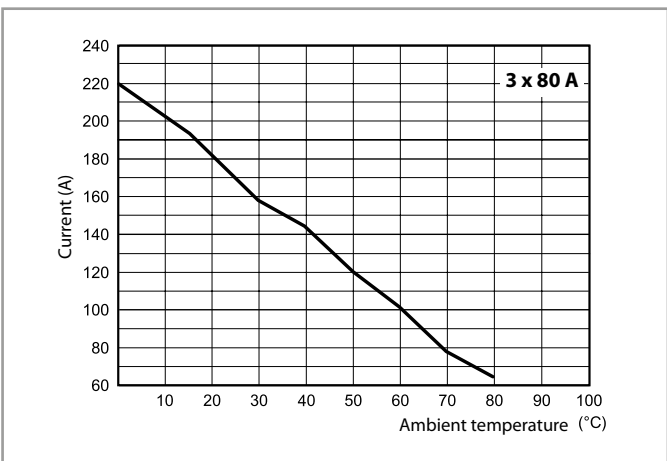
L77-23 Output RMS current v ambient temperature  
77.D3.x.xxx.8671

1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

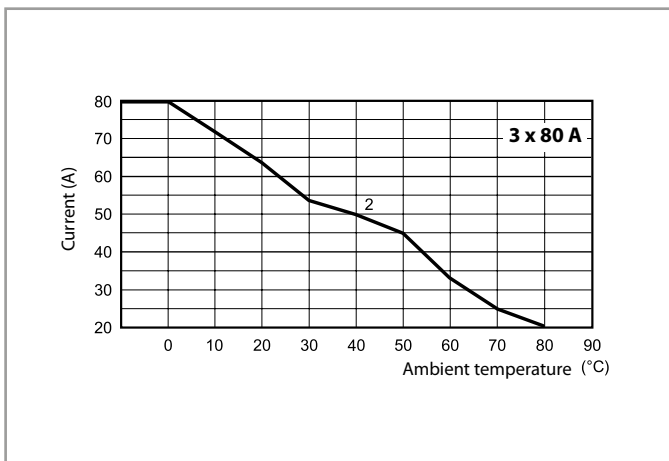
Output specification

L77-24 Output RMS current v ambient temperature  
77.F3.x.xxx.8671



1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

L77-25 Output RMS current v ambient temperature  
77.F3.x.xxx.8671



2 - Installation on heat-sink 077.08 (0.8 K/W)

D



## Output specification

| Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle) |                  |                  |          |       |
|------------------------------------------------------------------------|------------------|------------------|----------|-------|
| Load                                                                   | 77.01.x.xxx.805x | 77.01.9.024.9xxx | 77.11/21 | 77.31 |
| 5 A 230 V (AC1)                                                        | 5000             | —                | —        | —     |
| 5 A 24 V DC L/R = 20 ms                                                | —                | 3600             | —        | —     |
| 1 A (AC15)                                                             | 10000            | —                | —        | —     |
| 0.5 A (AC15)                                                           | 20000            | —                | —        | —     |
| 15 A 305 V cos $\varphi$ = 0.8                                         | —                | —                | 1800     | —     |
| 15 A 305 V cos $\varphi$ = 0.5                                         | —                | —                | 1200     | —     |
| 30 A 480 V cos $\varphi$ = 0.8                                         | —                | —                | —        | 1800  |
| 30 A 480 V cos $\varphi$ = 0.5                                         | —                | —                | —        | 1200  |
| 25 A 230 V cos $\varphi$ = 0.7                                         | —                | —                | —        | —     |
| 40 A 230 V cos $\varphi$ = 0.7                                         | —                | —                | —        | —     |
| 50 A 230 V cos $\varphi$ = 0.7                                         | —                | —                | —        | —     |

| Other data                                                                                                |                      |                      |                                                      |                         |
|-----------------------------------------------------------------------------------------------------------|----------------------|----------------------|------------------------------------------------------|-------------------------|
|                                                                                                           | 77.01.x.xxx.805x     | 77.01.9.024.9xxx     | 77.11/21                                             | 77.31                   |
| <b>Critical rising voltage</b> dv/dt<br>without input control<br>(gate open)<br>@ T <sub>j</sub> = 125 °C | > 1000 V/μs          | > 1000 V/μs          | > 500 V/μs<br>> 10 V/μs<br>(with di/dt =<br>20 A/ms) | > 1000 V/μs             |
| <b>Critical rising current</b> di/dt<br>@ T <sub>j</sub> = 125 °C                                         | > 50 A/μs            | > 50 A/μs            | > 50 A/μs                                            | > 150 A/μs              |
| <b>I<sup>2</sup>t for fusing</b> @ t <sub>p</sub> = 10 ms                                                 | 450 A <sup>2</sup> s | 450 A <sup>2</sup> s | 1000 A <sup>2</sup> s*                               | 1350 A <sup>2</sup> s** |

Suggested fuse (depending on application) for short-circuit protection (Ultra-Fast acting types for semiconductors):

\* 20 A, 660 V AC, 10 x 38 mm, 200 kA, 360 A<sup>2</sup>s.\*\* 30 A, 660 V AC, 10 x 38 mm, 200 kA, 1000 A<sup>2</sup>s.

| Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle) |             |             |             |             |             |             |
|------------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Load                                                                   | 77.A1.x.xxx | 77.B1.x.xxx | 77.D1.x.xxx | 77.F1.x.xxx | 77.G1.x.xxx | 77.H1.x.xxx |
| 25 A 230 V cos $\varphi$ = 0.7                                         | 1800        | —           | —           | —           | —           | —           |
| 40 A 230 V cos $\varphi$ = 0.7                                         | —           | 1800        | —           | —           | —           | —           |
| 60 A 230 V cos $\varphi$ = 0.7                                         | —           | —           | 1800        | —           | —           | —           |
| 80 A 230 V cos $\varphi$ = 0.7                                         | —           | —           | —           | 1800        | —           | —           |
| 100 A 230 V cos $\varphi$ = 0.7                                        | —           | —           | —           | —           | 1800        | —           |
| 125 A 230 V cos $\varphi$ = 0.7                                        | —           | —           | —           | —           | —           | 1800        |

| Other data                                                                                             |                      |                       |                        |                         |                         |                         |
|--------------------------------------------------------------------------------------------------------|----------------------|-----------------------|------------------------|-------------------------|-------------------------|-------------------------|
|                                                                                                        | 77.A1.x.xxx          | 77.B1.x.xxx           | 77.D1.x.xxx            | 77.F1.x.xxx             | 77.G1.x.xxx             | 77.H1.x.xxx             |
| <b>Critical rising voltage</b> dv/dt<br>without input control<br>(gate open) @ T <sub>j</sub> = 125 °C | 500 V/μs             | 500 V/μs              | 500 V/μs               | 500 V/μs                | 500 V/μs                | 500 V/μs                |
| <b>I<sup>2</sup>t for fusing</b> @ t <sub>p</sub> = 10 ms                                              | 450 A <sup>2</sup> s | 1250 A <sup>2</sup> s | 2450 A <sup>2</sup> s* | 3200 A <sup>2</sup> s** | 11 250 A <sup>2</sup> s | 25 000 A <sup>2</sup> s |

| Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle) |             |             |             |
|------------------------------------------------------------------------|-------------|-------------|-------------|
| Load                                                                   | 77.A2.x.xxx | 77.C2.x.xxx | 77.E2.x.xxx |
| 25 A 230 V cos $\varphi$ = 0.7                                         | 1800        | —           | —           |
| 50 A 230 V cos $\varphi$ = 0.7                                         | —           | 1800        | —           |
| 75 A 230 V cos $\varphi$ = 0.7                                         | —           | —           | 1800        |

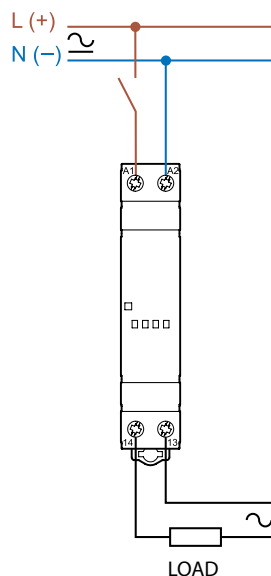
| Other data                                                                                             |                      |                       |                        |
|--------------------------------------------------------------------------------------------------------|----------------------|-----------------------|------------------------|
|                                                                                                        | 77.A2.x.xxx          | 77.C2.x.xxx           | 77.E2.x.xxx            |
| <b>Critical rising voltage</b> dv/dt<br>without input control<br>(gate open) @ T <sub>j</sub> = 125 °C | 500 V/μs             | 500 V/μs              | 500 V/μs               |
| <b>I<sup>2</sup>t for fusing</b> @ t <sub>p</sub> = 10 ms                                              | 450 A <sup>2</sup> s | 2110 A <sup>2</sup> s | 2810 A <sup>2</sup> s* |

| Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle) |             |             |             |             |
|------------------------------------------------------------------------|-------------|-------------|-------------|-------------|
| Load                                                                   | 77.A3.x.xxx | 77.B3.x.xxx | 77.D3.x.xxx | 77.F3.x.xxx |
| 25 A 230 V cos $\varphi$ = 0.7                                         | 1800        | —           | —           | —           |
| 40 A 230 V cos $\varphi$ = 0.7                                         | —           | 1800        | —           | —           |
| 60 A 230 V cos $\varphi$ = 0.7                                         | —           | —           | 1800        | —           |
| 80 A 230 V cos $\varphi$ = 0.7                                         | —           | —           | —           | 1800        |

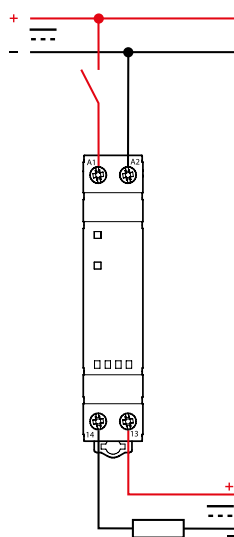
| Other data                                                                                             |                      |                       |                        |                         |
|--------------------------------------------------------------------------------------------------------|----------------------|-----------------------|------------------------|-------------------------|
|                                                                                                        | 77.A3.x.xxx          | 77.B3.x.xxx           | 77.D3.x.xxx            | 77.F3.x.xxx             |
| <b>Critical rising voltage</b> dv/dt<br>without input control<br>(gate open) @ T <sub>j</sub> = 125 °C | 500 V/μs             | 500 V/μs              | 500 V/μs               | 500 V/μs                |
| <b>I<sup>2</sup>t for fusing</b> @ t <sub>p</sub> = 10 ms                                              | 450 A <sup>2</sup> s | 1250 A <sup>2</sup> s | 2450 A <sup>2</sup> s* | 8190 A <sup>2</sup> s** |

## Wiring diagrams

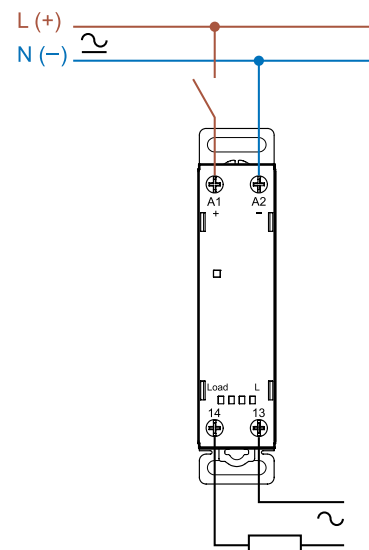
**Single-phase connection  
(77.01...805x)**



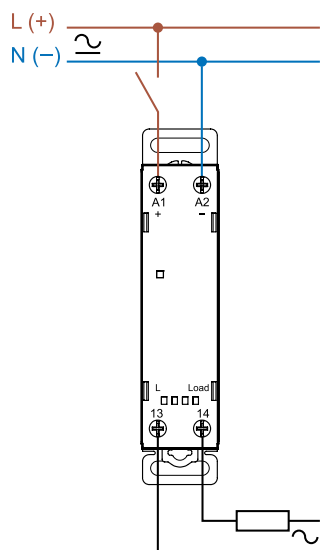
**Single-phase connection DC  
(77.01...9x2x)**



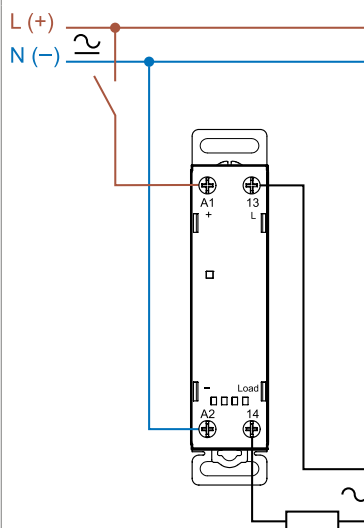
**Single-phase connection  
(77.11/77.21)**



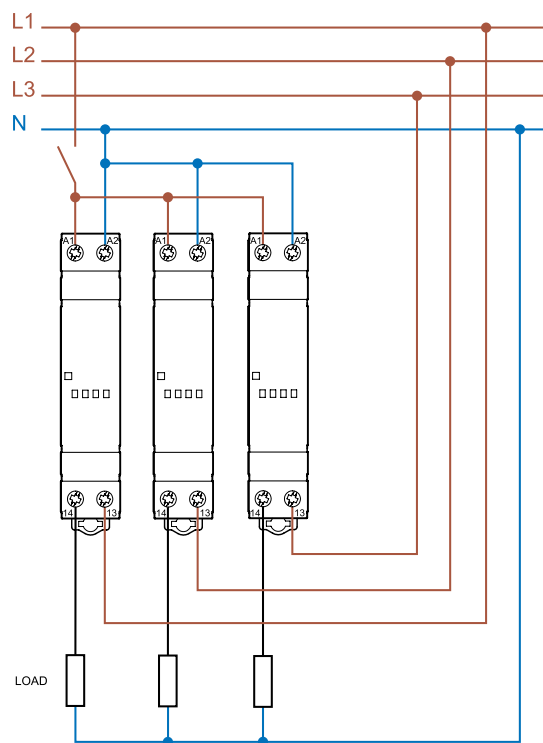
**Single-phase connection  
(77.31...805x)**



**Single-phase connection  
(77.31...807x)**



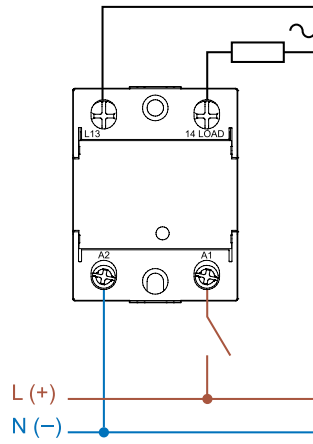
**Example of three-phase connection  
(with 3 x 77.01)**



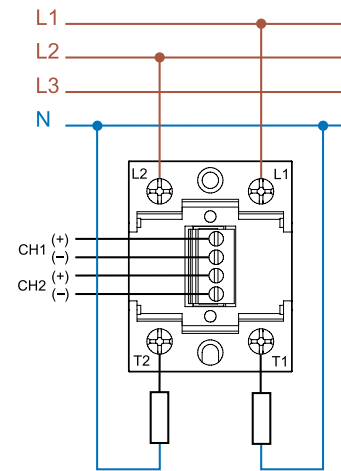
Note: this connection can be used with all 77 series types.

## Wiring diagrams

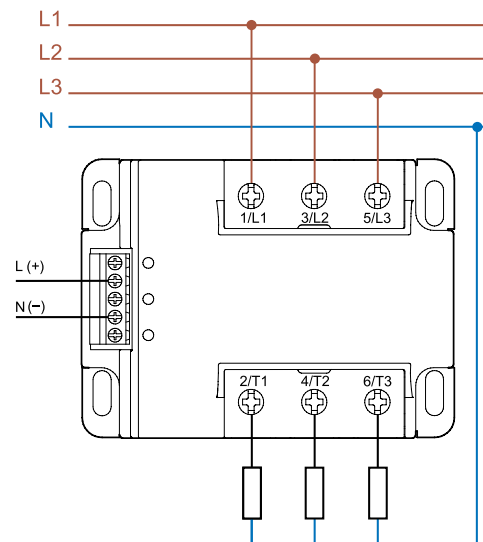
**Single-phase connection  
(77.x1)**



**Dual phase connection  
(77.x2)**

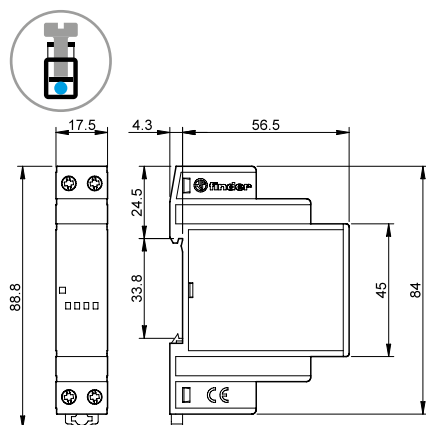


**Three phase connection  
(77.x3)**

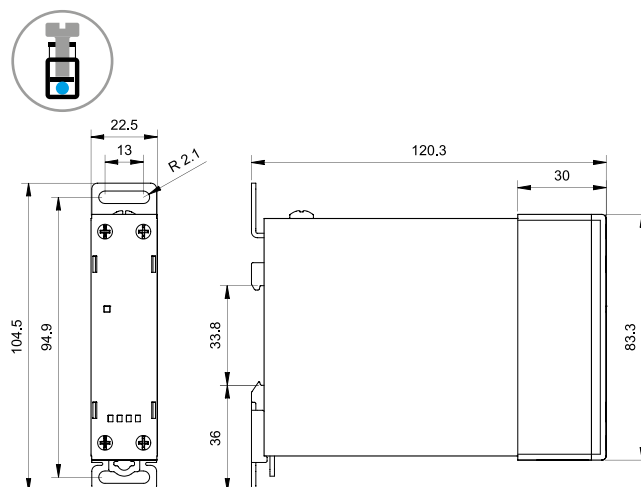


### Outline drawings

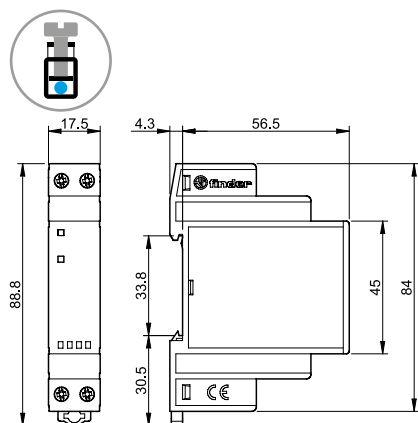
Type 77.01  
Box clamp



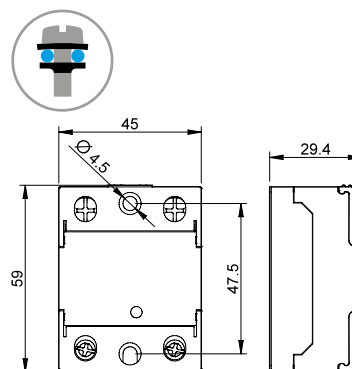
Types 77.11/21/31  
Box clamp



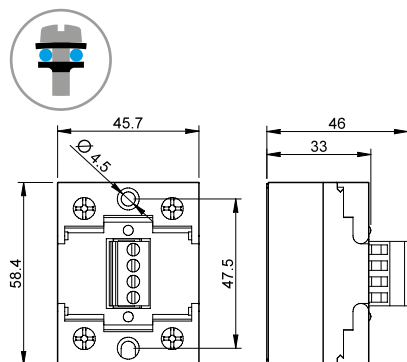
Type 77.01 DC  
Box clamp



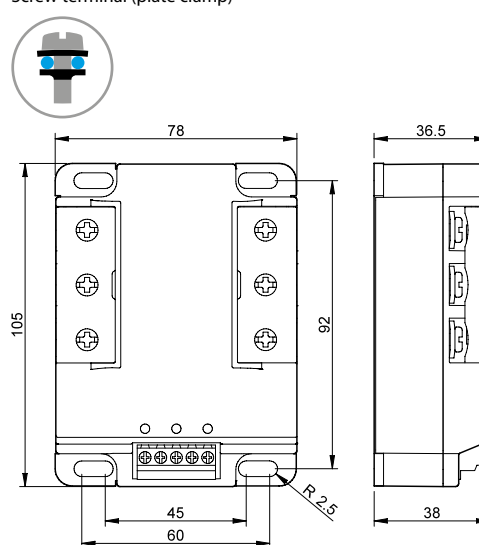
Type 77.x1  
Screw terminal (plate clamp)



Type 77.x2  
Screw terminal (plate clamp)



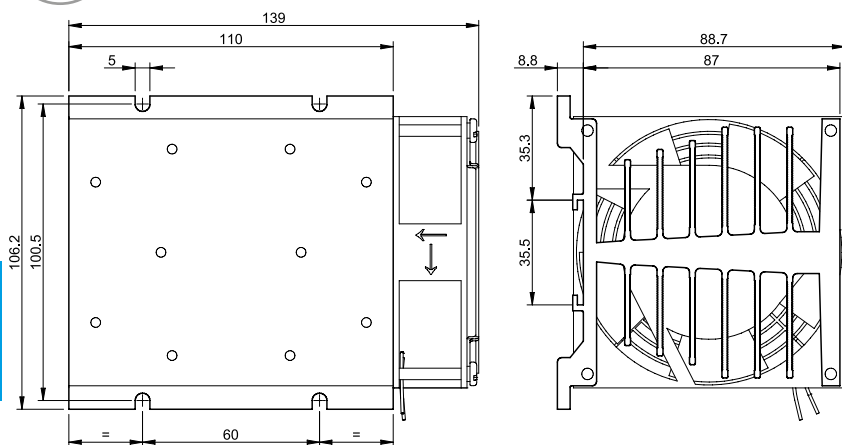
Type 77.x3  
Screw terminal (plate clamp)



## Outline drawings

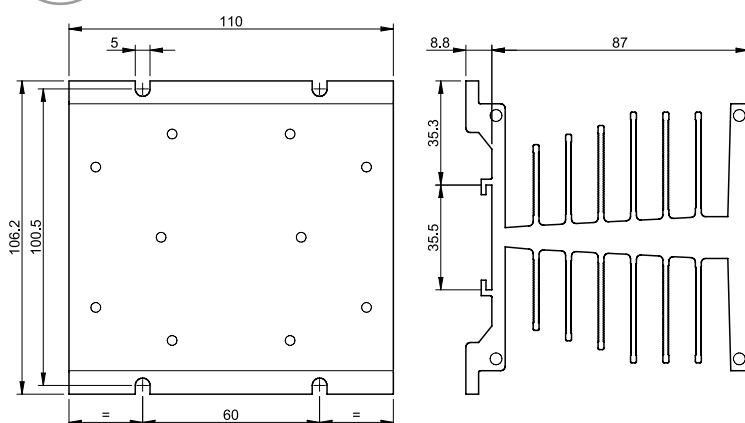
Type 077.03.x.xxx

Box clamp



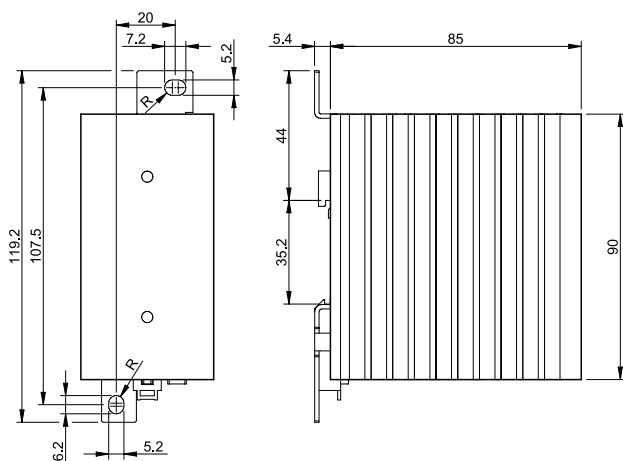
Type 077.08

Box clamp



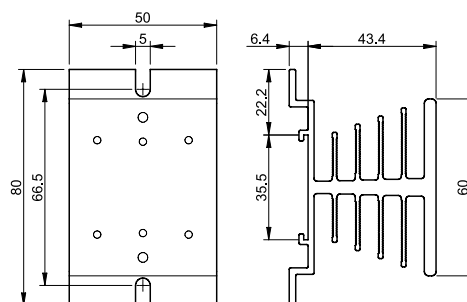
Type 077.13

Box clamp



Type 077.21

Box clamp



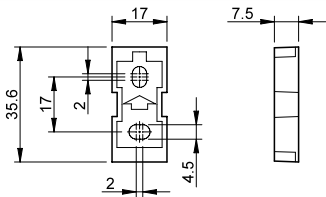
Accessories



020.01

**Adaptor for panel mounting**, plastic, 17.5 mm wide for 77.01 only

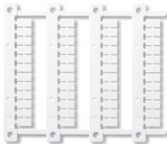
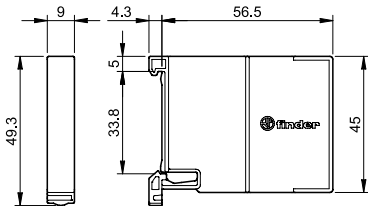
020.01



022.09

**Separator for rail mounting**, plastic, 9 mm wide

022.09



060.48

**Sheet of marker tags (CEMBRE Thermal transfer printers)** for all relays (48 tags), 6 x 12 mm

060.48

D

