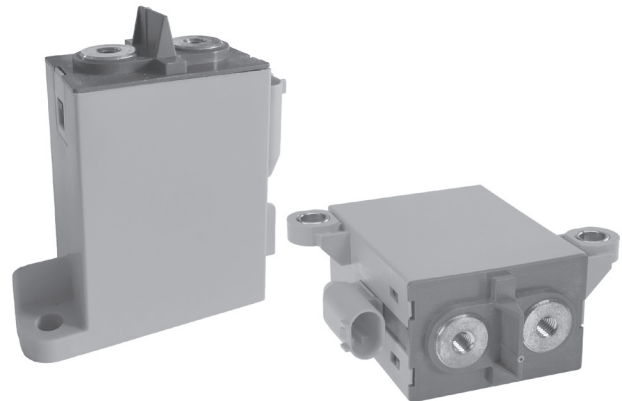


EVC 175 Main Contactor

- Limiting continuous current 175A at +85°C
- Suitable for voltage levels up to 500VDC
- High peak current carrying capability up to 5000A¹⁾
- IEC 60664 (2007) compliant

Typical applications

DC high voltage and high current applications, e.g. main contactors for larger hybrid electric vehicles (HEV), plug-in hybrids (PHEV) and full electric vehicles (BEV), battery charging systems.



EVC_175_compo

Contact Data

Contact arrangement	1 form X (SPST NO DM)
Rated voltage	450VDC
Maximum switching voltage	500VDC, dep. on load characteristics ¹⁾
Limiting continuous current	
+85°C, load cable 25mm ²	160A
+85°C, load cable 30mm ² (rated)	175A
+85°C, load cable 35mm ²	190A
+85°C, load cable 40mm ²	210A
+85°C, load cable 50mm ²	235A
Limiting short time current	load cable 35mm ²
85°C	500A 0.5min 1500A 2s 5000A 20ms ¹⁾
Limiting make/break current	load cable 35mm ²
Forward current direction	0.05mH ON: 210A at 24VDC OFF: 10A at 24VDC -40°C up to +80°C 100000 times
Reverse current direction	ON / OFF 33A at 437VDC, 0.05mH 23°C 25 times

Contact Data (continued)

Limiting break current	load cable 35mm ²
Forward current direction	500A at 450VDC, 0.05mH 23°C 10 times
	1500A at 450VDC, 0.05mH 23°C 1 time
Voltage drop (initial) at 100A	max. 40mV after 60s ²⁾
Voltage drop (over lifetime) at 175A	typ. 35mV ³⁾
Operate time ⁴⁾	20ms
Release time ⁴⁾	8ms
Mechanical endurance	>2x10 ⁵ ops. ⁵⁾

1) Please contact TE Connectivity for details.

2) Measurement condition: 370A for 2s followed by 100A for 60s

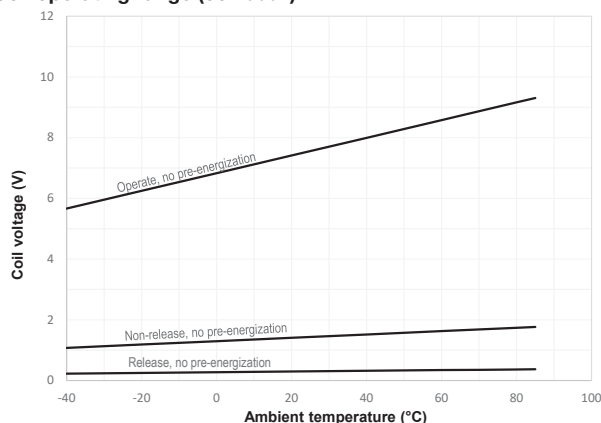
3) Max. 600mV with current >1A

4) Measured at standard conditions (23°C/12V without suppression elements)

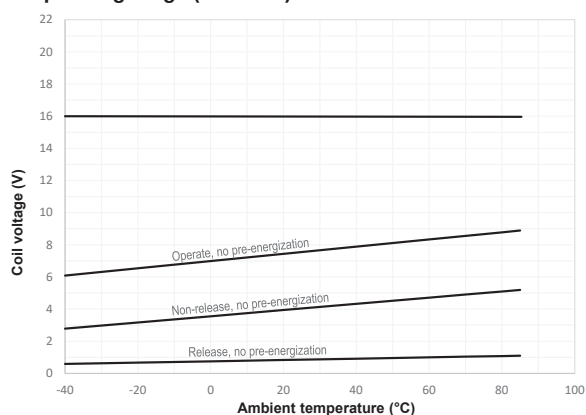
5) Preliminary data - not validated yet

EVC 175 Main Contactor (Continued)

Coil operating range (coil 0001)



Coil operating range (coil 0002)



Insulation Data

Initial dielectric strength	
between open contacts	2800VDC/3mA ¹⁴⁾
between contact and coil	2800VDC/3mA ¹⁴⁾
Insulation resistance after 1500A abuse test	
between open contacts	≥2MΩ ¹⁵⁾
between contact and coil	≥100MΩ ¹⁵⁾
Clearance/creepage	
IEC 60664-1 (2007)	over voltage cat. I ¹⁶⁾ pollution degree 3
Altitude max.	5500m

Other Data

Ambient temperature	-40°C to +85°C
Degree of protection	RT I
IEC 61810 (2015-02)	
Vibration resistance (functional) ¹⁷⁾	
ISO 16750-3 (2007)	30.8m/s ²
wide-band random (profile IV)	No change of switching state >10μs
Shock resistance (functional) ¹⁷⁾	
ISO 16750-3 (2007)	ON: 6ms, min. 50g ¹⁸⁾ / 10 times
half sine	OFF: 6ms, min. 20g / 10 times
	No change of switching state >10μs.
Terminal type	connector (coil) and screw (load)
Weight	approx. 295g (10.4oz)
Packaging unit	36 pcs.

Note:
Temperature monitoring of load terminals recommended.
Avoid impact of strong external magnetic fields near the contactor.

Coil Data⁶⁾ (Coil 0001)

Un-economized: single coil version for external economization^{7,8)}

Coil code	Rated voltage [VDC]	Must Operate voltage [VDC]	Non-release voltage [VDC]	Coil resistance [Ω]
0001	12	7.5	1.6	±10% 5.0

Recommended parameters for external economization with PWM^{9,10)}

Min. frequency [kHz]	Controlled current Max. current [A RMS]	PWM Min. current [A RMS]	Controlled voltage Max. voltage [V RMS]	equivalent Min. voltage [V RMS]
20	0.77	0.4	5.9	3.0

Coil Data⁶⁾ (Coil 0002)

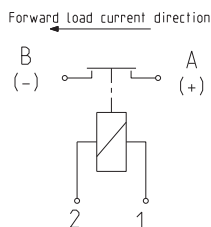
Economized: dual coil version with internal switch^{9,11)}

Coil code	Rated voltage [VDC]	Must Operate voltage ¹²⁾ [VDC]	Nominal inrush current [ADC]	Non-release voltage [VDC]	Max. voltage [VDC]	Coil resistance [Ω]
0002	12	7.5	4.0	4.0	16.0	±10% 3/33 ¹³⁾

- 6) All values valid for 23°C ambient temperature with no pre-energization if not noted otherwise. Refer to diagram for values at other temperatures.
- 7) Requires external coil economization that must start 100-300ms after coil activation. Avoid repetitive switching. Minimum clamp voltage 36V (see circuit recommendation).
- 8) Valid for 0g
- 9) To ensure the specified number of switching cycles apply a minimum pull-in current of 2.4A for at least 100ms. Values include the specified shock and vibration resistance. Valid over ambient temperature range from -40°C to +85°C.
- 10) Valid for 50g
- 11) Max. duty cycle 0.5Hz
- 12) Max. rise time 100ms. To ensure the specified number of switching cycles apply a minimum coil voltage of 12V for at least 100ms. Values include the specified shock and vibration resistance. Valid over ambient temperature range from -40°C to +85°C.
- 13) 3Ω coil is switched off internally max. 130ms after pull-in. Demagnetization voltage is clamped at approx. 40V. No external coil suppression necessary. External coil suppression could reduce switching capability. Please contact TE Connectivity for details
- 14) ISO/DIS 6469-3:2011 (page 12-13).
- 15) EN 61810-1:2004 table 8, functional and basic insulation.
- 16) Meets rated impulse voltage 2500V
- 17) Preliminary data for bottom mount version. Data not validated yet.
- 18) Higher values can be achieved with increased holding current applied.

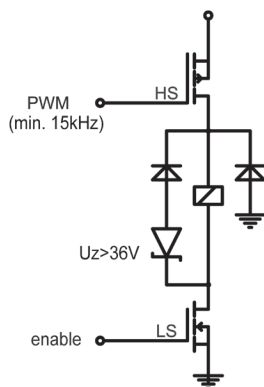
EVC 175 Main Contactor (Continued)

Terminal Assignment



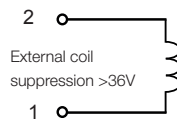
Circuit recommendation for coil 0001
Always use low-side switch “Enable” for switch-on

Always use low-side switch “Enable” for switch-off.



Un-economized coil
Coil 0001

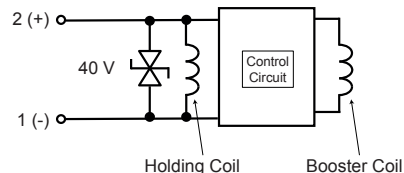
Coil 0001



Economized coil internal circuit

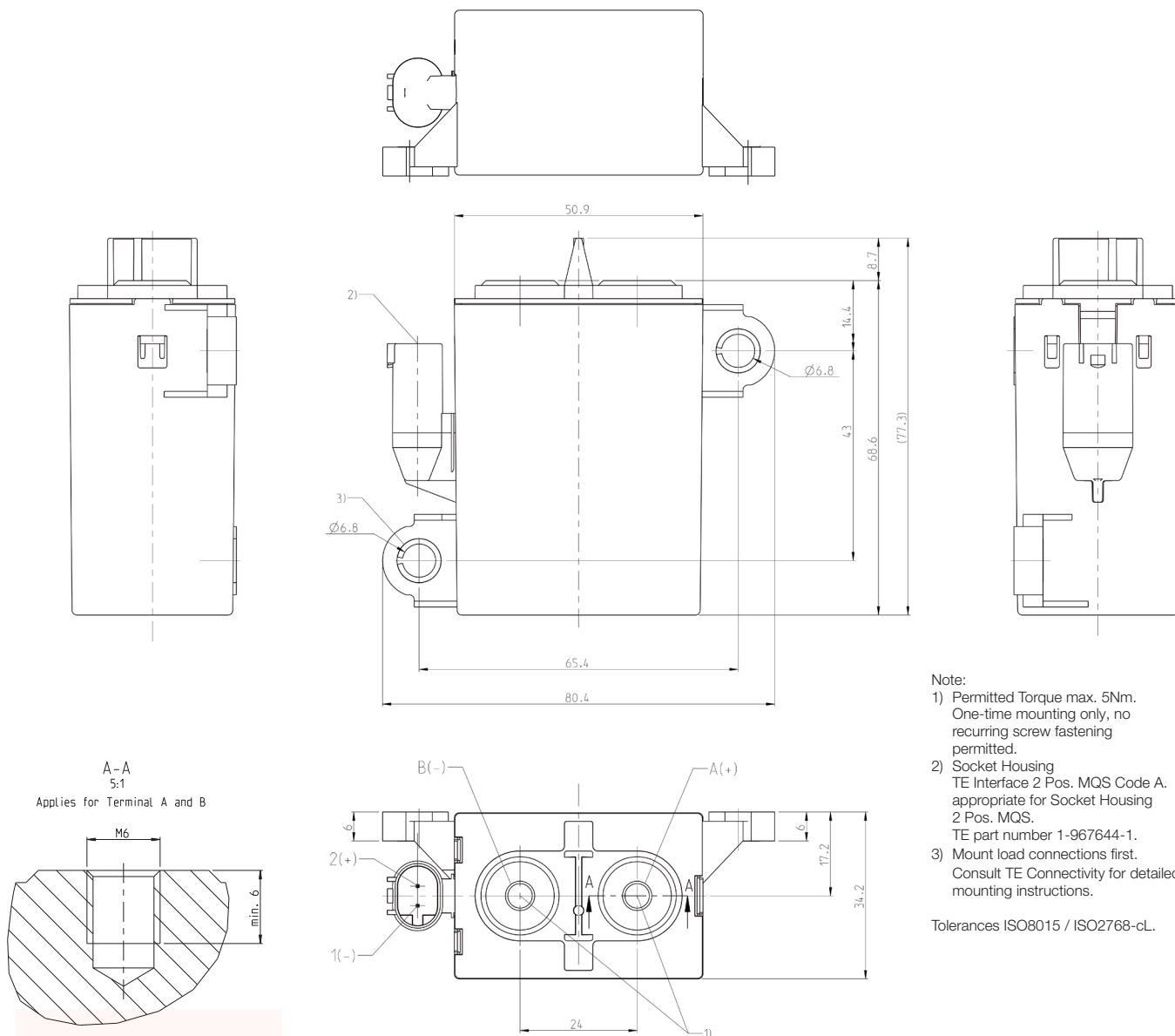
Coil 0002

Coil 0002



Dimensions

EVC 175 Main Contactor Side Mount Version



Note:

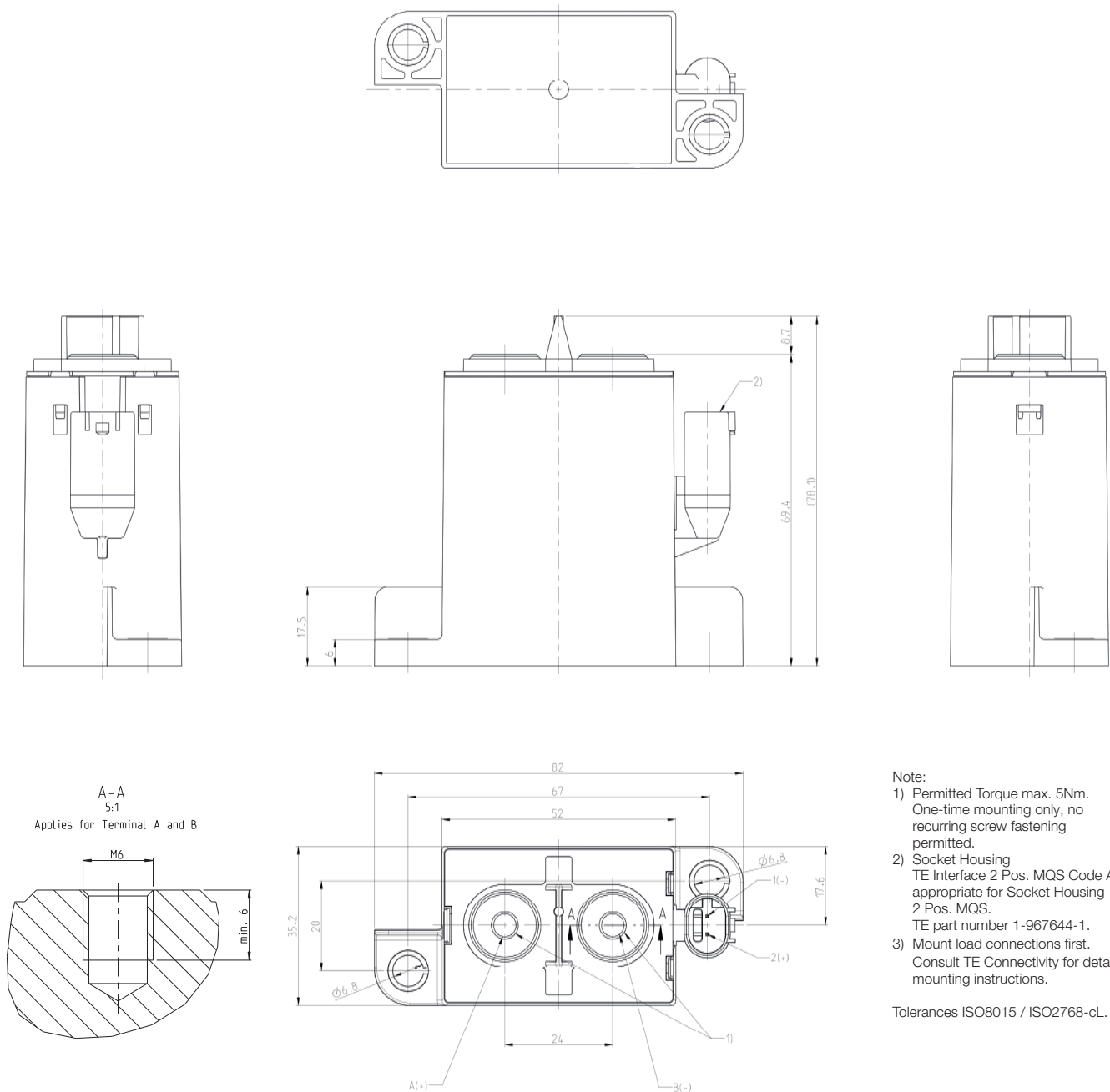
- 1) Permitted Torque max. 5Nm.
One-time mounting only, no
recurring screw fastening
permitted.
- 2) Socket Housing
TE Interface 2 Pos. MQS Code A.
appropriate for Socket Housing
2 Pos. MQS.
TE part number 1-967644-1.
- 3) Mount load connections first.
Consult TE Connectivity for detailed
mounting instructions.

Tolerances ISO8015 / ISO2768-cl

EVC 175 Main Contactor (Continued)

Dimensions

EVC 175 Main Contactor Bottom Mount Version



Note:

- 1) Permitted Torque max. 5Nm.
One-time mounting only, no
recurring screw fastening
permitted.
- 2) Socket Housing
TE Interface 2 Pos. MQS Code A.
appropriate for Socket Housing
2 Pos. MQS.
TE part number 1-967644-1.
- 3) Mount load connections first.
Consult TE Connectivity for detailed
mounting instructions.

Tolerances ISO8015 / ISO2768-cL.

EVC 175 Main Contactor (Continued)

Product code structure		Typical product code		V23717	-A	0002	-A	2	0	0
Type		V23717 EVC 175 Main Contactor								
Relay version		A Side mount fixation		B Bottom mount fixation						
Coil version		0001 Un-economized, single coil (12V)		0002 Economized, dual coil (12V)						
Load voltage		A 450VDC								
Contact material		2 Silver alloy								
Status monitoring		0 None								
Coil connector version		0 MQS sealed								

Production in Europe (only)

Product code	Relay version	Coil suppr.	Circuit	Part number
V23717-A0001-A200	Side mount fixation	External >36V	External economizer	6-1904123-6
V23717-A0002-A200		Internal	Internal economizer	2-1904070-1
V23717-B0001-A200	Bottom mount fixation	External >36V	External economizer	5-1904144-3
V23717-B0002-A200		Internal	Internal economizer	8-1904133-1

Consult TE Connectivity for sample availability.

Production in Asia (only)

Product code	Relay version	Coil suppr.	Circuit	Part number
V23717-A0001-A200	Side mount fixation	External >36V	External economizer	2312311-2
V23717-A0002-A200		Internal	Internal economizer	2312311-1
V23717-B0001-A200	Bottom mount fixation	External >36V	External economizer	2312311-4
V23717-B0002-A200		Internal	Internal economizer	2312311-3

Consult TE Connectivity for sample availability.