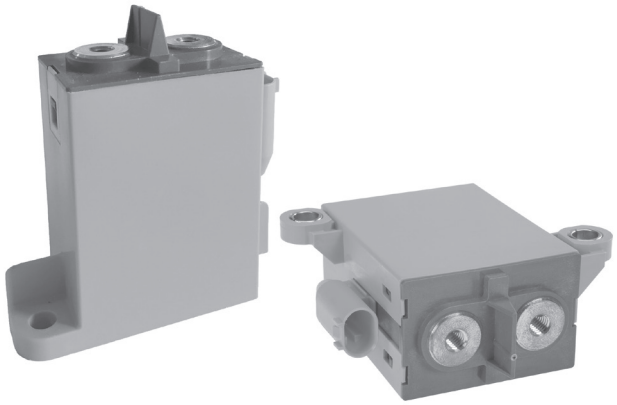
EVC 175 Main Contactor

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



EVC_175_compo

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.

All data preliminary.

Contact Data

Contact arrangement	1 Form X (SPST NO DM)
Rated voltage	450VDC
Max. switching voltage	500VDC, depending on load characteristics[1)]
Limiting continuous current	
+85°C, load cable 25mm²	160A
+85°C, load cable 30mm² (rated)	175A
+85°C, load cable 35mm²	190A
+85°C, load cable 40mm²	210A
+85°C, load cable 50mm²	235A
Limiting short-time current +85°C, load cable 35mm²	500A 0.5min, 1500A 2s, 5000A, 20ms
Limiting make/break current	
Forward current direction, cable 35mm²	ON: 210A at 24VDC / OFF: 10A at 24VDC 100000 times, 0.05mH temperature collective 1 (LV 124)
altitude max. 5500m	ON: 210A at 24VDC / OFF: 500A at 450VDC 10 times, 0.05mH +23°C
Limiting break current	
Forward current direction, cable 35mm² altitude max. 5500m	1500A at 450VDC, 1 time +23°C
Reverse current direction, cable 35mm², 23°C altitude max. 5500 m	210A at 200VDC[1)]
Voltage drop (initial) at 100A	max. 40mV after 60s
Voltage drop (over lifetime) at 175A	typ. 35mV after 60s
Operate time max. (at rated coil voltage)	20ms
Release time max. (at rated coil voltage, w/o diode)	8ms
Mechanical endurance	>200000 ops.

1) Please contact TE Connectivity for details.

Coil Data[2)] (Coil 0001)

Un-economized: single coil version for external economization[3)]

Coil code	Rated voltage VDC	Operate voltage VDC	Max. cont. voltage VDC	Non-release voltage VDC	Coil resistance Ω±10%
0001	12	7.5	8.7	1.6	5.0

Recommended parameters for external economization with PWM[4)]

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

2) All values valid for 23°C ambient temperature with no pre-energization if not noted otherwise. Refer to diagram for values at other temperatures.
3) Requires external coil economization that must start 100-300ms after coil activation. Avoid repetitive switching. Minimum clamp voltage 36V (see circuit recommendation).
4) Valid over ambient temperature range from -40°C to +85°C. Values include the specified shock and vibration resistance.

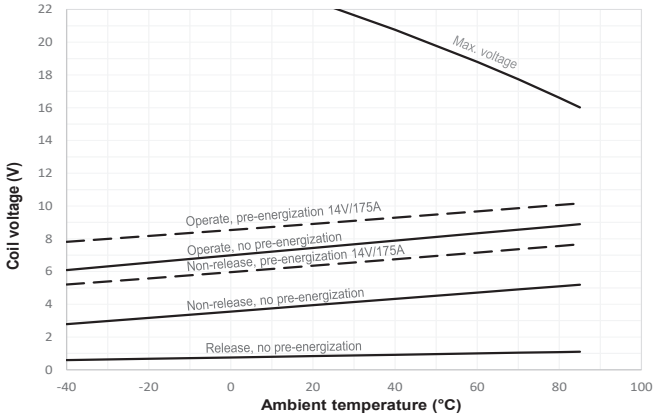
Coil Data (Coil 0002)

Economized: dual coil version with internal switch

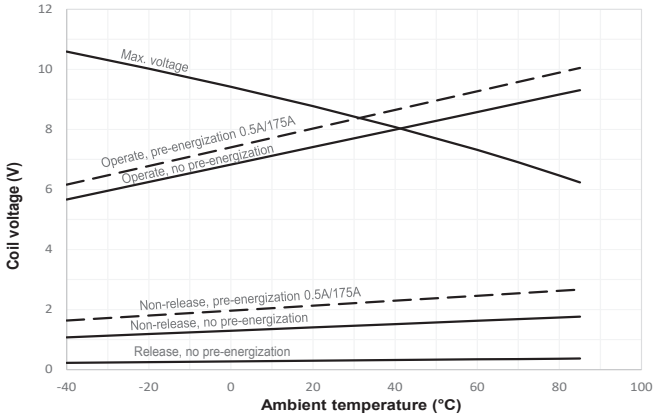
Coil code	Rated voltage VDC	Operate voltage VDC	Nominal inrush current ADC	Non-release voltage VDC	Max. voltage VDC	Coil resistance Ω±10%
0002	12	7.5	4.0	4.0	16.0	3/33[5)]

5) 3Ω coil is switched off internally min. 120ms after pull-in. Demagnetization voltage is clamped at 40V. No external coil suppression necessary. External coil suppression could reduce switching capability. Please contact TE Connectivity for details.

Coil operating range (coil 0002)



Coil operating range (coil 0001)



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EVC 175 Main Contactor (Continued)

Insulation Data	
Initial dielectric strength	
between open contacts	2800VDC/3mA[6]
between contact and coil	2800VDC/3mA[6]
Altitude max.	5500m
Insulation resistance after 1500A abuse test	
between open contacts	≥2MΩ[7]
between contact and coil	≥100MΩ[7]
Clearance/creepage	
IEC 60664-1 (2007)	over voltage cat. I[8] pollution degree 3
Altitude max.	5500m

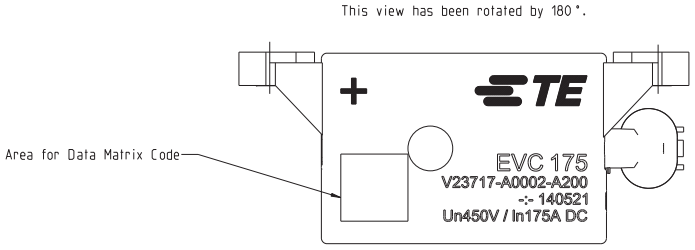
6) ISO/DIS 6469-3:2011 (page 12-13).
7) EN 61810-1:2004 table 8, functional and basic insulation.
8) Meets rated impulse voltage 2500V

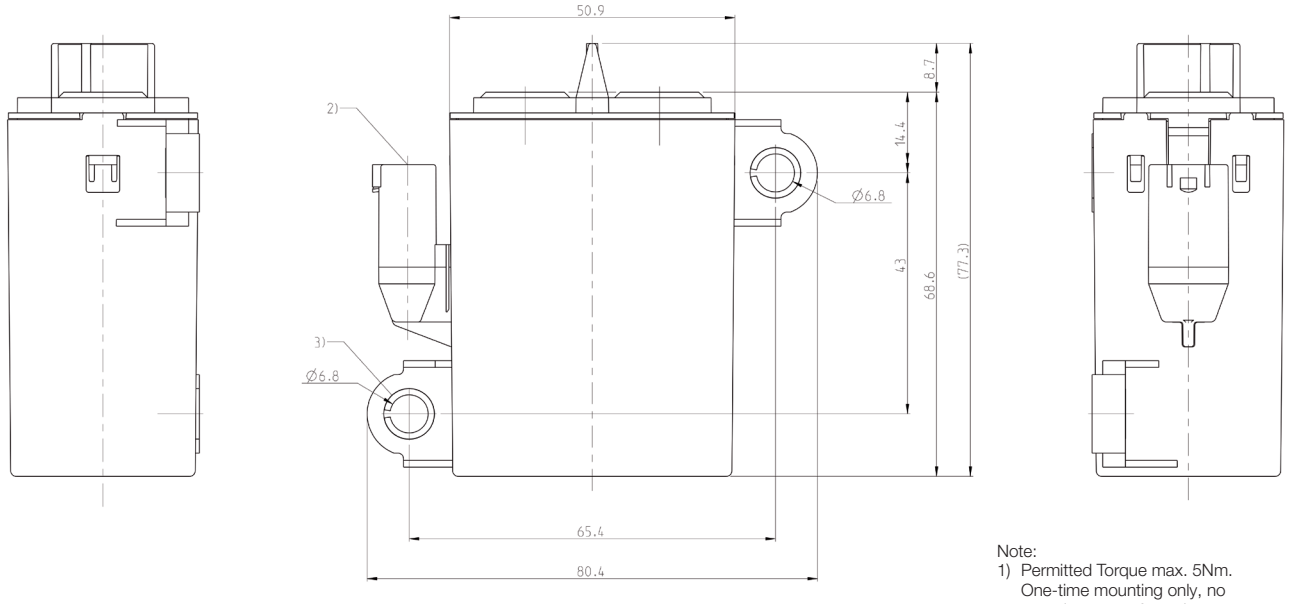
Other Data	
Ambient temperature	-40°C to +85°C
Degree of protection	RT I (IEC 61810)
Vibration resistance (functional)	
IEC 60068-2-6 (sine sweep)[9]	(10 to 500)Hz / min. 10g
Shock resistance (functional)	
IEC 60068-2-27 (half sine)[9]	ON: 6ms, min. 50g[10] / 10 times OFF: 6ms, min. 20g / 10 times
Terminal type	connector (coil) and screw (load)
Weight	approx. 295g (10.4oz)

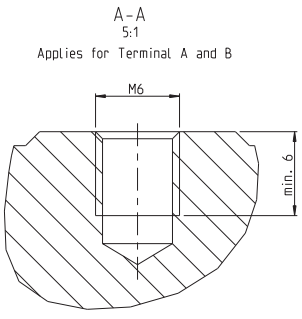
9) No change in the switching state >10µs.
10) Higher values (e.g. 60g) can be achieved by using coil 0001 with increased holding current applied.

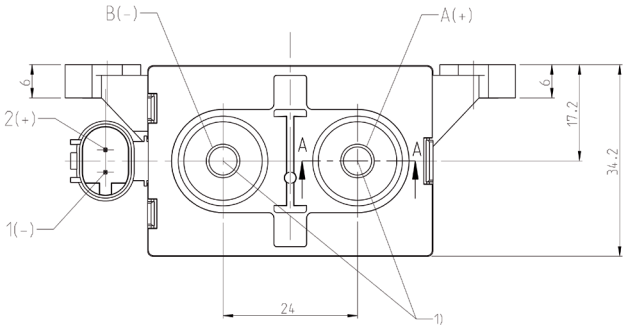
Dimensions

EVC 175 Main Contactor Side Mount Version







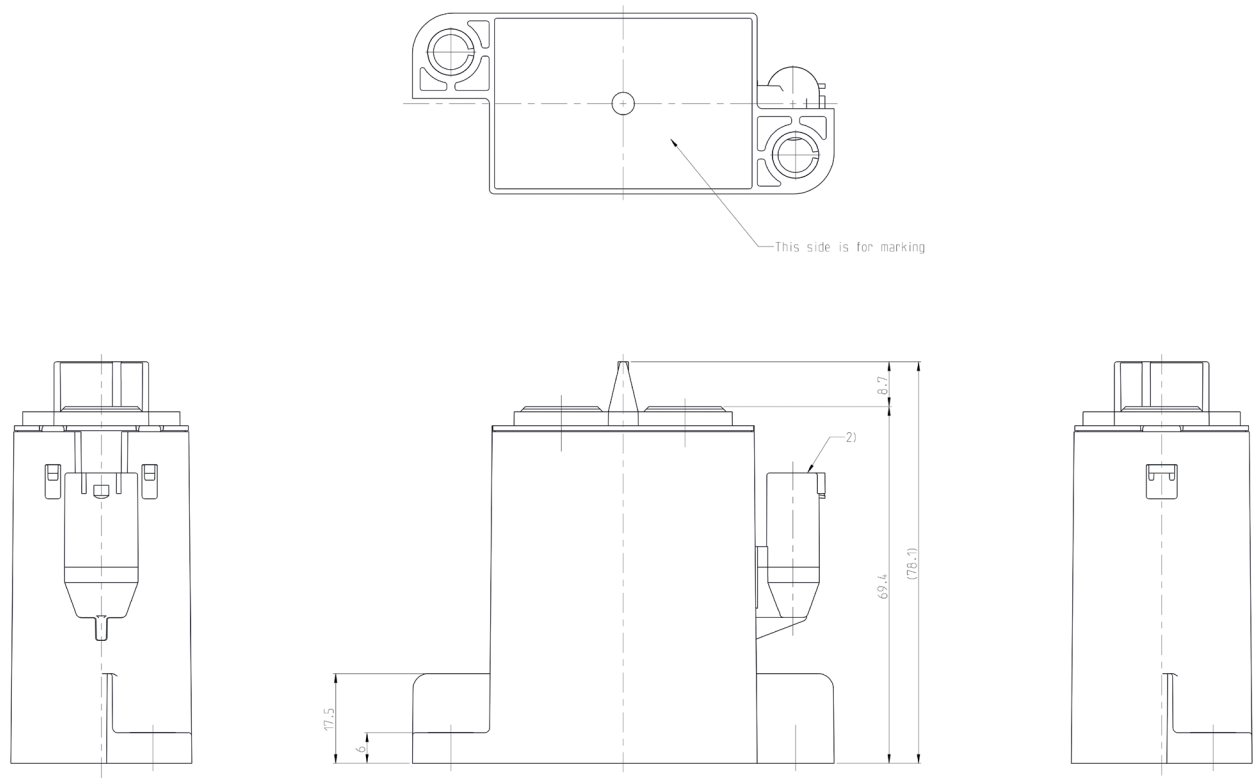


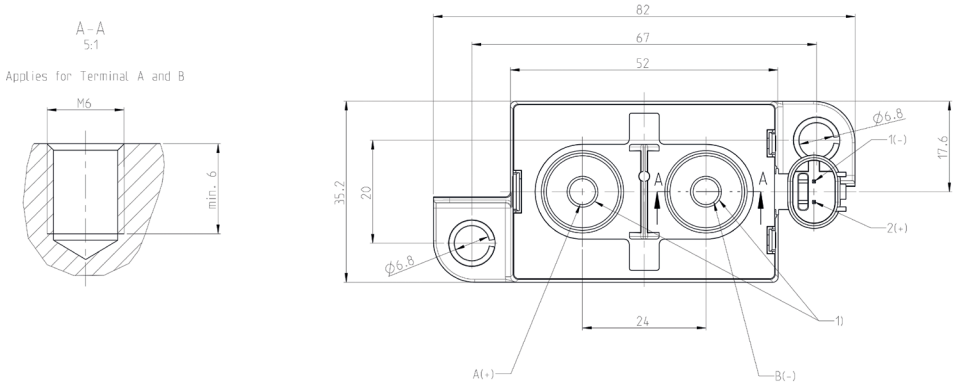
Note:
1) Permitted Torque max. 5Nm. One-time mounting only, no recurring screw fastening permitted.
2) Socket Housing TE Interface 2 Pos. MQS Code A. appropriate for Socket Housing 2 Pos. MQS. TE part number 1-967644-1.
3) Mount load connections first. Consult TE Connectivity for detailed mounting instructions.

Tolerances ISO8015 / ISO2768-cL.

EVC 175 Main Contactor (Continued)

Dimensions
EVC 175 Main Contactor Bottom Mount Version



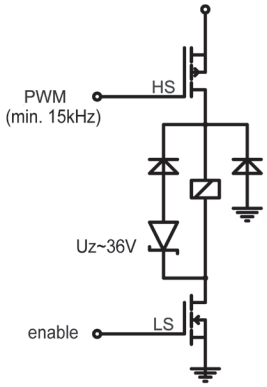


Note:
1) Permitted Torque max. 5Nm. One-time mounting only, no recurring screw fastening permitted.
2) Socket Housing TE Interface 2 Pos. MQS Code A. appropriate for Socket Housing 2 Pos. MQS. TE part number 1-967644-1.
3) Mount load connections first. Consult TE Connectivity for detailed mounting instructions.

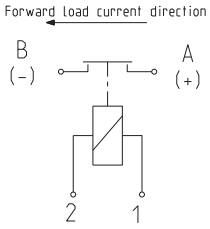
Tolerances ISO8015 / ISO2768-cL.

EVC 175 Main Contactor (Continued)

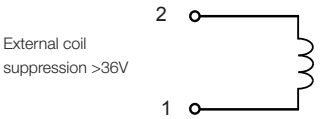
Circuit recommendation for coil 0001
Always use low-side switch "Enable" for switch-off.



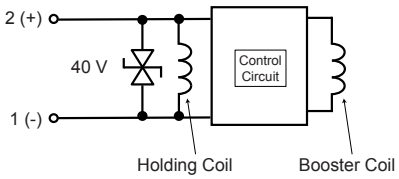
Terminal Assignment



Un-economized coil



Economized coil internal circuit



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 based

Status monitoring
0 None

Coil connector version
0 MQS sealed

Product code	Relay version	Coil	Circuit	Coil suppr.	Part number
V23717-A0001-A200	Side mount fixation	12VDC	External economizer	External >36V	6-1904123-6
V23717-A0002-A200			Internal economizer	Internal	2-1904070-1
V23717-B0001-A200	Bottom mount fixation		External economizer	External >36V	5-1904144-3
V23717-B0002-A200			Internal economizer	Internal	8-1904133-1

Consult TE Connectivity for sample availability.