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EVC 250 Main Contactor

- Limiting continuous current 250A at 85°C
- Suitable for voltage levels up to 450VDC
- High peak current carrying capability up to 6000A

Typical applications

- DC high voltage high current applications
- Main contactors for hybrid, full battery electric vehicles and fuel-cell cars
- Battery charging systems



F720_fw1

Contact Data	
Contact arrangement	1 Form X (SPST NO DM)
Rated voltage	450VDC
Max. switching voltage	500VDC, dep. on load characteristics ¹⁾
Rated current	
Forward load current direction, cable 50mm ²	250A
Limiting continuous current	
85°C, load cable 50mm ²	250A
Limiting short-time current	
85°C, load cable 50mm ²	300A 7min/ 600A 1min/6000A 25ms
Limiting make current	
resistive load, cable 50mm ² , 23°C, 50VDC	50000x250A
Limiting break current	
Forward load current direction	1x2000A /
altitude max 5500m, 400VDC	5000x200A/50000x100A
Limiting break current	
Reverse load current direction	
resistive load, cable 50mm ² , 23°C	20x200A
altitude max 5500m, 400VDC	10000x100A
Voltage drop (initial) at 100A	max. 40mV after 60s
Voltage drop (over lifetime) at 250A	typ. 50mV after 60s
Operate/release time max.	25ms at 14VDC (coil voltage)
Mechanical endurance	>200000 ops.

¹⁾ Values are influenced by system temperature and load current. Please contact TE Connectivity for details.

Coil Data²⁾

Un-economized: single coil version for external economization³⁾

Coil code	Rated voltage VDC	Operate voltage VDC	Max. cont. voltage VDC	Non-release voltage VDC	Coil resistance Ω±10%
0001	12	6.0	5.0	1.4	3.8

Recommended parameters for external economization with PWM⁴⁾

Min. frequency kHz	Controlled current Max. current A	PWM Min. current A	Controlled voltage equivalent Max. voltage A	Min. voltage A
15	1.0	0.5	5.0	2.0

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	7.0	4.0	4.0	16.0	3.6/36 ⁵⁾

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).

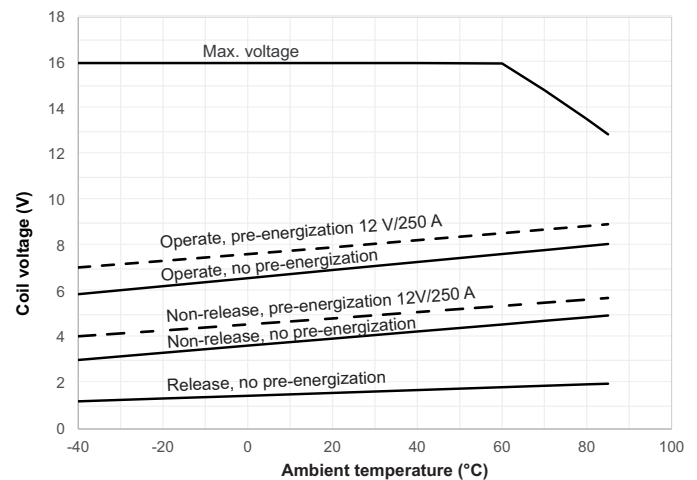
⁴⁾ Valid over ambient temperature range from -40°C to +85°C. Values include the specified shock and vibration resistance.

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.

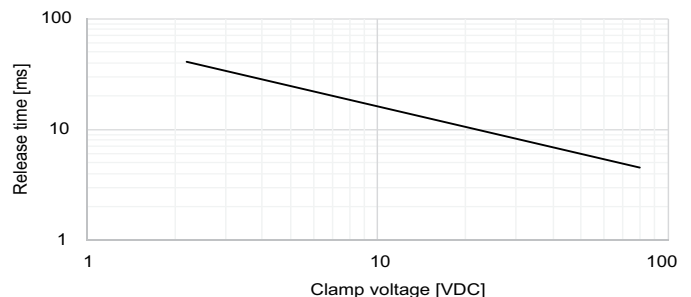
Insulation Data

Initial dielectric strength	
between open contacts	2800VDC / 3mA
between contact and coil	2800VDC / 3mA
max. altitude	5500m
Insulation resistance after 2000A abuse test	
between open contacts	>200MΩ
between contact and coil	>200MΩ
Clearance/creepage	
acc. IEC 60664-1 (2007) for	over voltage category I, pollution degree 2

Coil operating range (for coil 0002 only)



Typical release time (coil switch-off until contact opens) versus clamp voltage for 12VDC energization



The values for switching capability are only valid for coil termination of 36VDC. For other termination voltages please contact TE Connectivity application engineering.

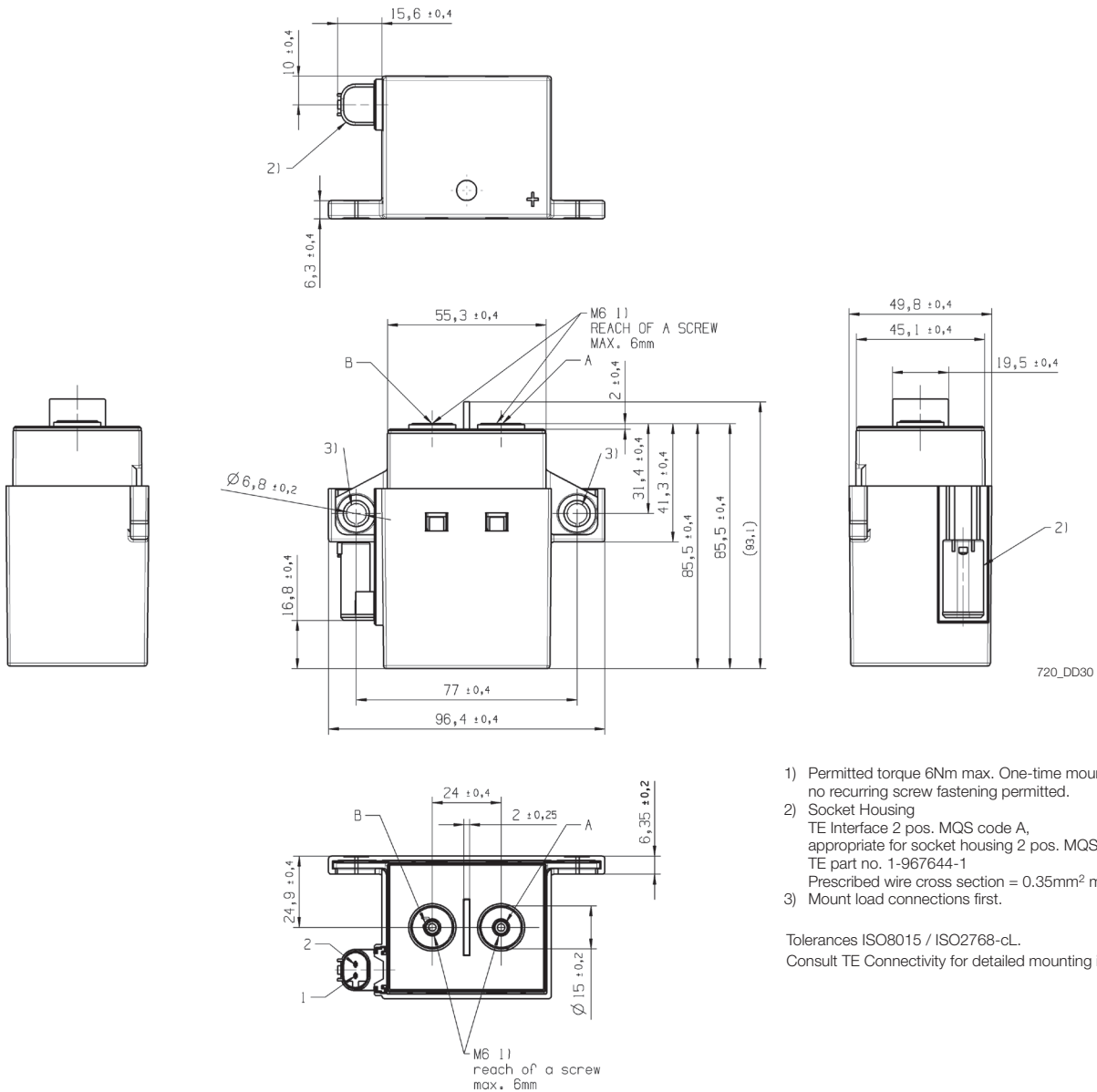
EVC 250 Main Contactor (Continued)

Other Data

Ambient temperature	-40°C to +85°C
Degree of protection dustproof:	IP54 ⁶⁾ (IEC 60529), RT I (IEC 61810)
Vibration resistance (functional) IEC 60068-2-6 (sine sweep)	10 to 500Hz, min. 10g.
Shock resistance (functional) ⁷⁾ IEC 60068-2-27 (half sine)	closed: 11ms, min. 40g open: 11ms, min. 20g
Terminal type	connector (coil) and screw (load)
Weight	approx. 520 to 605g (18.3 to 21.2oz), depending on version
Packaging unit	20 pcs.

6) Protection class applicable for all mounting orientations except load terminals upwards.
7) No change in the switching state >10µs.

Dimensions

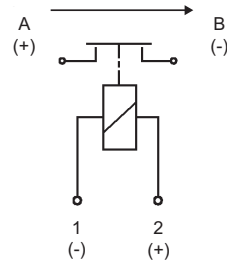


- 1) Permitted torque 6Nm max. One-time mounting only, no recurring screw fastening permitted.
- 2) Socket Housing
TE Interface 2 pos. MQS code A, appropriate for socket housing 2 pos. MQS, TE part no. 1-967644-1
Prescribed wire cross section = 0,35mm² min.
- 3) Mount load connections first.

Tolerances ISO8015 / ISO2768-cL.
Consult TE Connectivity for detailed mounting instructions.

Terminal Assignment

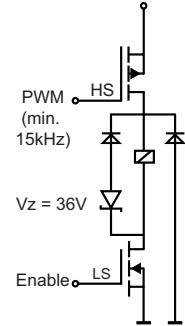
Forward load current direction



720_TA2

Circuit recommendation for coil 0001

Always use low-side switch "Enable" for switch off



720_CRC4

EVC 250 Main Contactor (Continued)

Product code structure for samples	Typical product code	V23720	-A	0001	-A	0	0	1
Designator V23720 EVC 250 Main Contactor								
Relay version A Side mount fixation								
Coil 0001 12V single coil for external economization	0002 12V dual coil with internal switch							
Rated voltage A 450VDC								
Contact material 0 Silver based								
Special features 0 None								
Coil connector 1 MQS sealed								

Product code	Cont. arrang.	Coil	Circuit	Coil suppr.	Relay type	Resistance	Part number
V23720-A0001-A001	SPDT-NO-DM	12VDC	No economizer	External >40V	450VDC	4Ω	2-1904070-2
V23720-A0002-A001			Coil switch	Internal		Double coil 3/36Ω	4-1904065-7