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EVC 250-800 Main Contactor

- Limiting continuous current 250A at 85°C
- Suitable for voltage levels up to 900VDC
- High peak current carrying capability up to 6000A¹⁾

Typical applications

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

All data preliminary.

Contact Data

| | |
|---|---|
| Contact arrangement | 1 Form X (SPST NO DM) |
| Rated voltage | 800VDC |
| Max. switching voltage | 900VDC 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 | 400A 5min / 600A 1min / 6000A 20ms |
| Limiting make current | |
| resistive load, cable 50mm ² , 23°C, 50VDC | 50000x250A |
| Limiting break current | |
| Forward load current direction | 1x700A / |
| altitude max. 5500m, 800VDC | 5000x100A / 50000x50A |
| Limiting break current | |
| Reverse load current direction | |
| resistive load, cable 50mm ² , 23°C | 1x415A / 20x50A / |
| altitude max. 5500m | 10000x20A, dep. on load voltage ¹⁾ |
| 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) 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 $\Omega \pm 10\%$ |
|-----------|-------------------|---------------------|------------------------|-------------------------|-----------------------------------|
| 0101 | 12 | 5.3 | 6.7 | 2.0 | 3.9 |

Recommended parameters for external economization with PWM⁴⁾

| Min. frequency kHz | Controlled current PWM Max. current A | Controlled voltage equivalent Min. current A | Max. voltage V | Min. voltage V |
|--------------------|---------------------------------------|--|----------------|----------------|
| 15 | 1.0 | 0.5 | 5.9 | 2.6 |

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 $\Omega \pm 10\%$ ⁴⁾ |
|-----------|-------------------|---------------------|----------------------------|-------------------------|------------------|---|
| 0102 | 12 | 7.6 | 4.7 | 4.0 | 16.0 | 2.6/26 ⁵⁾ |
| 0112 | 24 | 13.0 | 4.8 | 8.0 | 29.2 | 5.0/79 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 60V (see circuit recommendation).

4) Demagnetization voltage is clamped at 50V (coil 0102) / 70V (coil 0112). External coil suppression is not necessary and could reduce switching capability. Contact TE Connectivity for details.

5) 2.6 Ω coil / 5.0 Ω coil is switched off internally min. 120ms after pull-in.

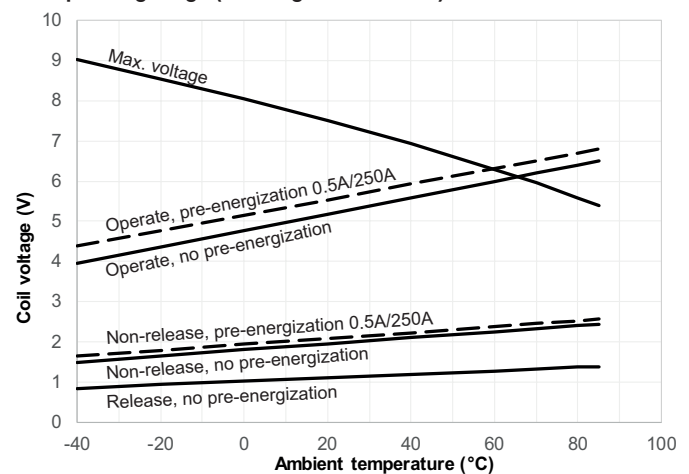


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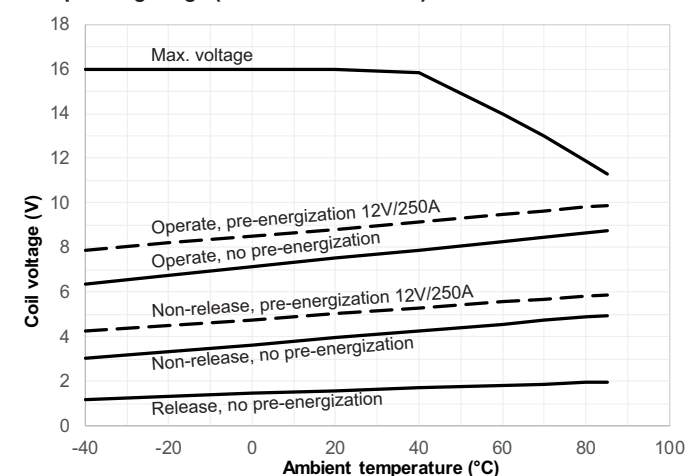
Insulation Data

| | |
|--|---|
| Initial dielectric strength | |
| between open contacts | 4000VDC / 3mA |
| between contact and coil | 4000VDC / 3mA |
| max. altitude | 5500m |
| Insulation resistance after 2000A abuse test | |
| between open contacts | >200M Ω |
| between contact and coil | >200M Ω |
| Clearance/creepage | |
| acc. IEC 60664-1 (2007) for | over voltage category I, pollution degree 2 |

Coil operating range (12V single coil version)

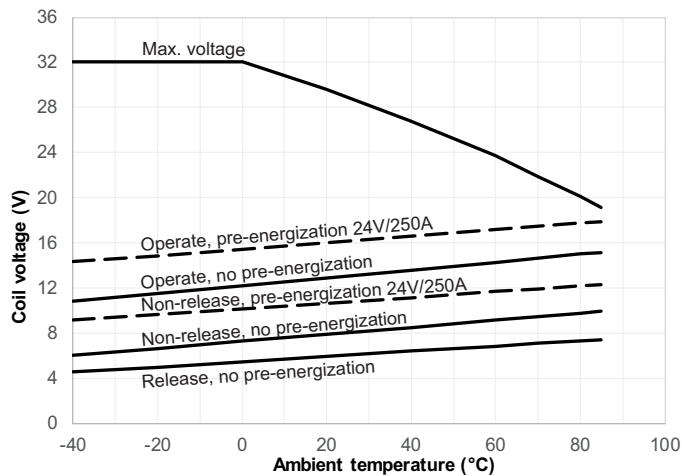


Coil operating range (12V dual coil version)



EVC 250-800 Main Contactor (Continued)

Coil operating range (24V dual coil version)

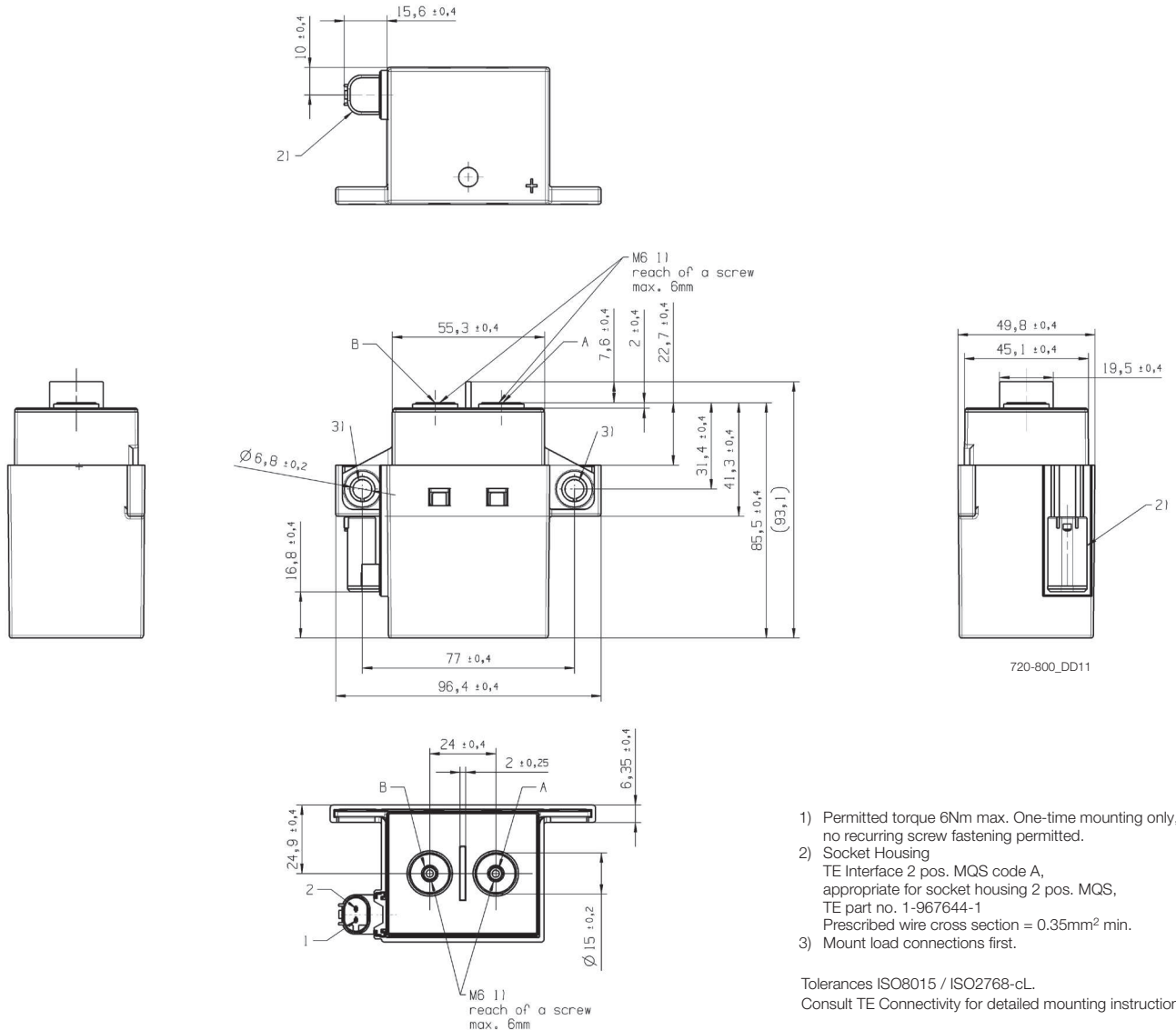


Other Data

| | |
|---|---|
| Ambient temperature | -40°C to +85°C |
| Degree of protection | IP54 ⁶⁾ (IEC 60529), dustproof: 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. 525 to 580g (18.5 to 20.5oz) depending on version |
| Packaging unit and delivery | 20 pcs. |

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

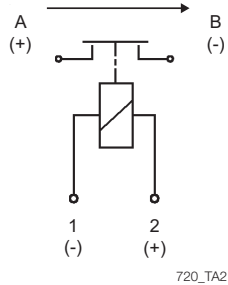
Dimensions



EVC 250-800 Main Contactor (Continued)

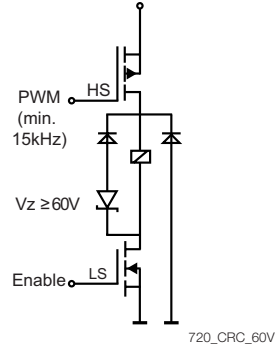
Terminal Assignment

Forward load current direction



Circuit recommendation for coil 0101

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



Product code structure

Typical product code

V23720 -A **0101** -B **0** **0** **1**

Designator

V23720 EVC 250-800 Main Contactor

Relay Version

A Side mount fixation

Coil

0101 12V single coil for external economization
0102 12V dual coil with internal switch
0112 24V dual coil with internal switch

Rated voltage

B 800VDC

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-A0101-B001 | SPDT-NO-DM | 12VDC | No economizer | External ≥60V | 800VDC | 3.9Ω | 2-1904136-5 |
| V23720-A0102-B001 | | | Coil switch | Internal | | Double coil 2.6/26Ω | 7-1904137-6 |
| V23720-A0112-B001 | | 24VDC | | | | Double coil 5.0/79Ω | 2-2317670-1 |