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**


F720_fbw1

Typical applications

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

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 50mm²	250A
Limiting continuous current	
85°C, load cable 50mm²	250A
Limiting short-time current	
85°C, load cable 50mm²	300A 7min/ 600A 1min/6000A 25ms
Limiting make current	
resistive load, cable 50mm², 23°C, 50VDC	50000x250A
Limiting break current	
Forward load current direction altitude max 5500m, 400VDC	1x2000A / 5000x200A/50000x100A
Limiting break current	
Reverse load current direction	
resistive load, cable 50mm², 23°C	20x200A
altitude max 5500m	10000x100A, dep. on load voltage[1)]
Voltage drop (initial) at 100A	max. 40mV after 60s[2)]
Voltage drop (over lifetime) at 250A	typ. 50mV[3)]
Operate/release time max.	25ms at 14VDC (coil voltage)
Mechanical endurance	>200000 ops.

1) Please contact TE Connectivity for details.
2) Measurement condition: 370A for 2s followed by 100A for 60s
3) Max. 600mV with current >1A.

Coil Data[4)]

Un-economized: single coil version for external economization[5)]

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	3.9

Recommended parameters for external economization with PWM[6)]

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

Economized: dual coil version with internal switch

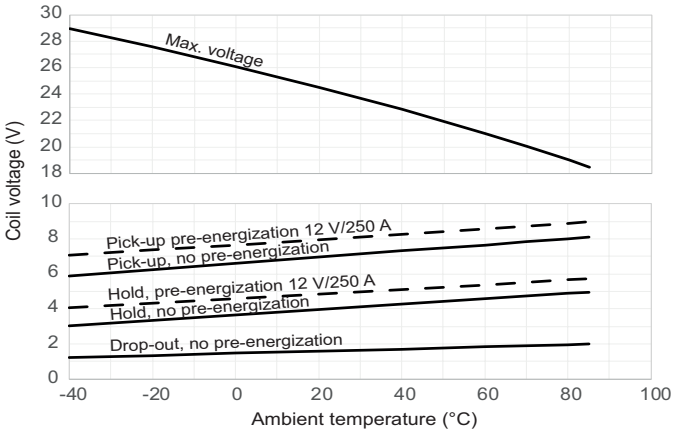
Coil code	Rated voltage VDC	Operate voltage VDC	Nominal inrush current ADC	Non-release voltage VDC	Max. voltage VDC	Coil resistance Ω±10%
0002	12	7.0[7)]	4.0	4.0	16.0	3.6/36[8)]

4) All values valid for 23°C ambient temperature with no pre-energization if not noted otherwise. Refer to diagram for values at other temperatures.
5) Requires external coil economization that must start 100-300ms after coil activation. Avoid repetitive switching. Minimum clamp voltage 60V (see circuit recommendation).
6) Valid over ambient temperature range from -40°C to +85°C. Values include the specified shock and vibration resistance.
7) Max. rise time 100ms.
8) 3.6Ω coil is switched off internally max. 250ms after pull-in. Demagnetization voltage is clamped at 60V. No external coil suppression necessary. External coil suppression could reduce switching capability. Please contact TE Connectivity for details.

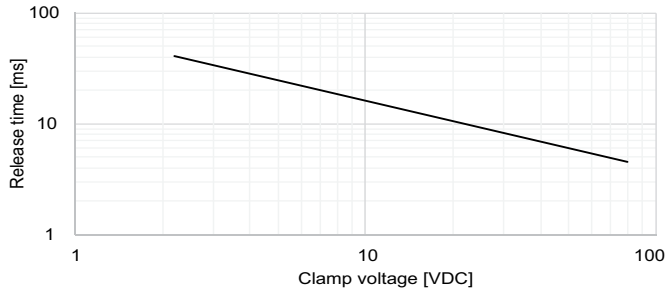
Insulation Data

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



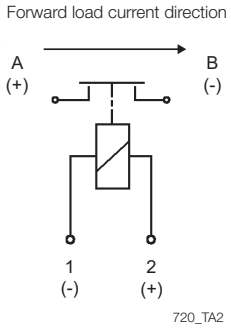
The values for switching capability are only valid for coil termination of minimum 60VDC. For other termination voltages please contact TE Connectivity application engineering.

EVC 250 Main Contactor (Continued)

Other Data	
Ambient temperature	-40°C to +85°C
Degree of protection dustproof:	IP54[9] (IEC 60529), RT I (IEC 61810)
Vibration resistance (functional) IEC 60068-2-6 (sine sweep)	10 to 500Hz, min. 10g.
Shock resistance (functional)[10] IEC 60068-2-27 (half sine)	closed: 11ms, min. 100g 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.

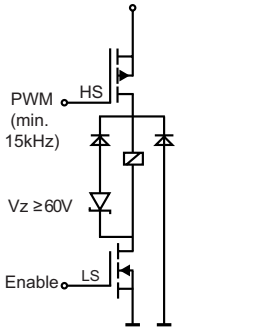
9) Protection class applicable for all mounting orientations except load terminals upwards.
10) No change in the switching state >10µs.

Terminal Assignment

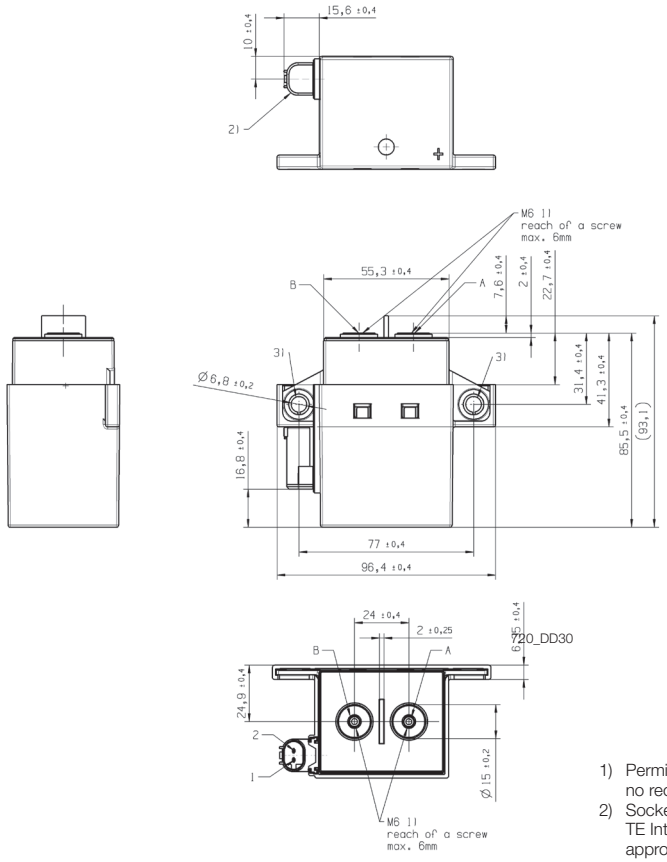


Circuit recommendation for coil 0001

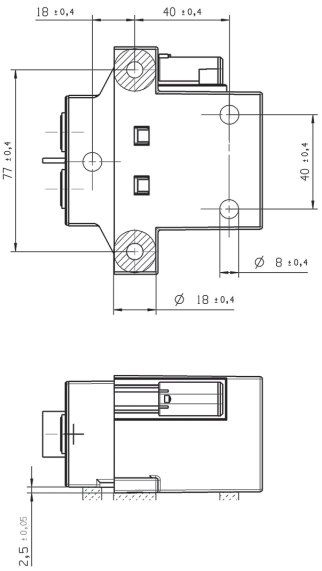
Always use low-side switch “Enable” for switch off



Dimensions



Mounting Conditions



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 = 0.35mm^2 min.
3) Mount load connections first.

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

EVC 250 Main Contactor (Continued)

Product code structure — 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

Production in Europe (only)

Product code	Cont. arrang.	Coil	Circuit	Coil suppr.	Relay type	Resistance	Part number
V23720-A0001-A001	SPDT-NO-DM	12VDC	No economizer	External ≥60V	450VDC	3.9Ω	2-1904070-2
V23720-A0002-A001			Coil switch	Internal		Double coil 3.6/36Ω	4-1904065-7

Production in Asia (only)

Product code	Cont. arrang.	Coil	Circuit	Coil suppr.	Relay type	Resistance	Part number
V23720-A0001-A001	SPDT-NO-DM	12VDC	No economizer	External ≥60V	450VDC	3.9Ω	2328528-1
V23720-A0002-A001			Coil switch	Internal		Double coil 3.6/36Ω	2306649-1