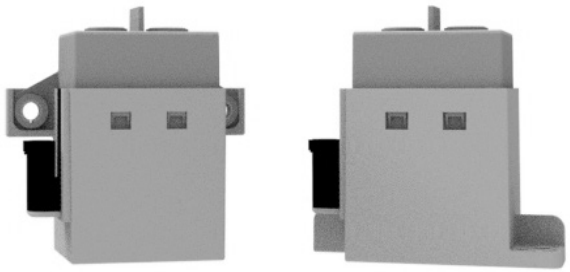
EVC 250-800 Main Contactor

- **Limiting continuous current 250A at 85°C**
- **Suitable for voltage levels up to 900VDC**
- **High peak current carrying capability up to 6000A[1)]**



Typical applications

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

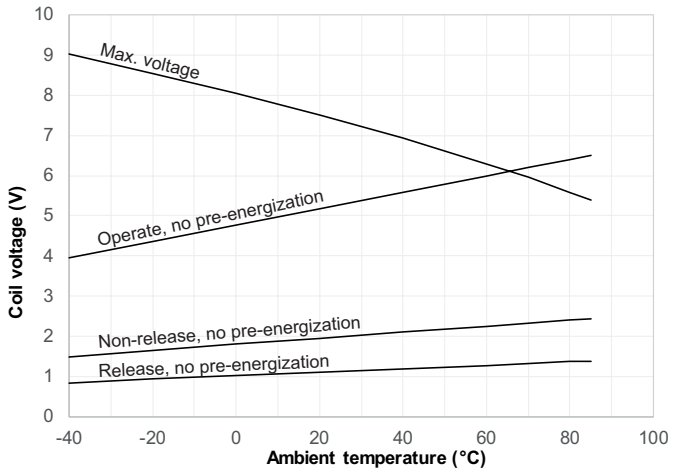
Contact Data	
Contact arrangement	1 form X (SPST NO DM)
Rated voltage	800VDC
Maximum switching voltage	900VDC, dep. on load characteristics[1)]
Rated current	load cable 50mm²
Forward load current direction	250A
Limiting continuous current	load cable 50mm²
85°C	250A
Limiting short time current	load cable 50mm²
85°C	400A 5min
	600A 1min
	6000A 20ms
Limiting make current	$5x10^4$x250A at 50VDC

Contact Data (continued)	
Limiting break current	1x650A at 800VDC
Forward load current direction	5000x100A at 800VDC
altitude max 5500m	$5x10^4$x50A at 800VDC
Limiting break current	1x415A at 300VDC
Reverse load current direction	20x50A at 800VDC
altitude max 5500m	$1x10^4$x20A at 800VDC
Voltage drop (initial) at 100A	max. 40mV after 60s[2)]
Voltage drop (over lifetime) at 250A	typ. 50mV after 60s[3)]
Operate time[4)]	max. 25ms
Release time[4)]	max. 10ms[5)]
Mechanical endurance	>$2x10^5$ ops.

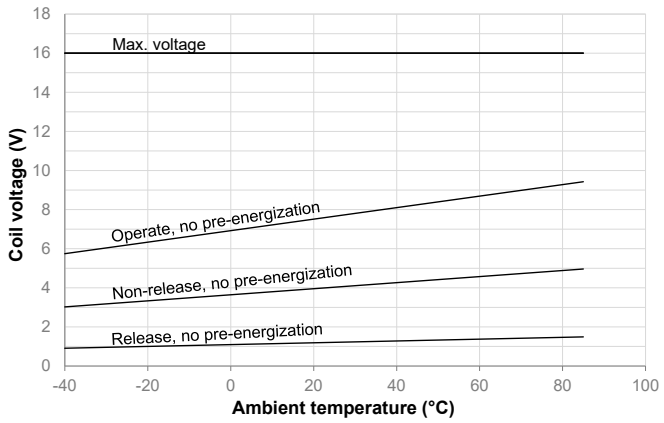
1) Please contact TE Connectivity for details.
2) Measurement condition: 370A for 2s followed by 100A for 60s.
3) Max. 600mV with current >1A.
4) At rated coil voltage.
5) Without arc duration (only mechanical contact opening considered).

EVC 250-800 Main Contactor (Continued)

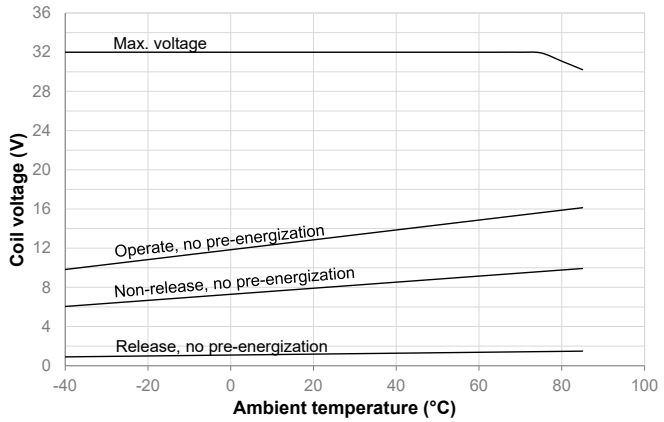
Coil operating range (12V single coil version)



Coil operating range (12V dual coil version)



Coil operating range (24V dual coil version)



Coil Data[6)]

Un-economized: single coil version for external economization[7)]

Coil code	Rated voltage [VDC]	Operate voltage [VDC]	Max. cont. voltage [VDC]	Non-release voltage [VDC]	Coil resistance [Ω] ±10%
0101	12	5.3	6.7	2.0	3.9

Recommended parameters for external economization with PWM[7)]

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

Economized: dual coil version with internal switch[8)9)]

Coil code	Rated voltage [VDC]	Operate voltage[10)] [VDC]	Nominal inrush current [ADC]	Non-release voltage [VDC]	Max. voltage [VDC]	Coil resistance [Ω] ±10%
0102	12	7.6	4.7	4.0	16.0	2.6/26[11)]
0112	24	13.0	4.8	8.0	29.2	5.0/79[11)]

Insulation Data

Initial dielectric strength	
between open contacts	4000VDC / 3mA
between contact and coil	4000VDC / 3mA
Insulation resistance after 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
Max. altitude	5500m

Other Data

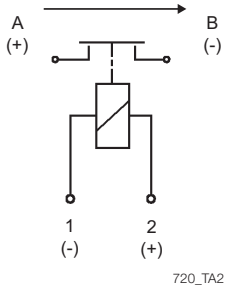
Ambient temperature	-40°C to +85°C
Degree of protection	
IEC 60529 (2000-09)	IP54[12)]
Vibration resistance (functional)	
IEC 60068-2-6 (2007-12)	10 to 500Hz, min. 10g
sine sweep	No change of switching state >10µs.
Shock resistance (functional)	
IEC 60068-2-27(2008-02)	closed: 11ms, min. 40g
half sine	open: 11ms, min. 20g
	No change of switching state >10µs.
Terminal type	connector (coil) and screw (load)
Weight	approx. 525 / 580g (18.5 / 20.5oz), depending on version
Packaging unit	20 pcs.

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 60V (see circuit recommendation).
8) Demagnetization voltage is clamped at ~70V. External coil suppression is not necessary and could reduce switching capability. Contact TE Connectivity for details.
9) Max. duty cycle 0.5Hz.
10) Max. rise time 100ms.
11) 2.6Ω coil / 5.0Ω coil is switched off internally min. 120ms after pull-in
12) Protection class applicable for all mounting orientations except load terminals upwards.

EVC 250-800 Main Contactor (Continued)

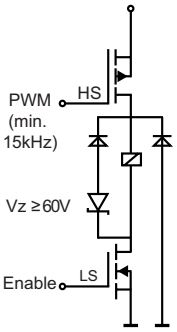
Terminal Assignment

Forward load current direction



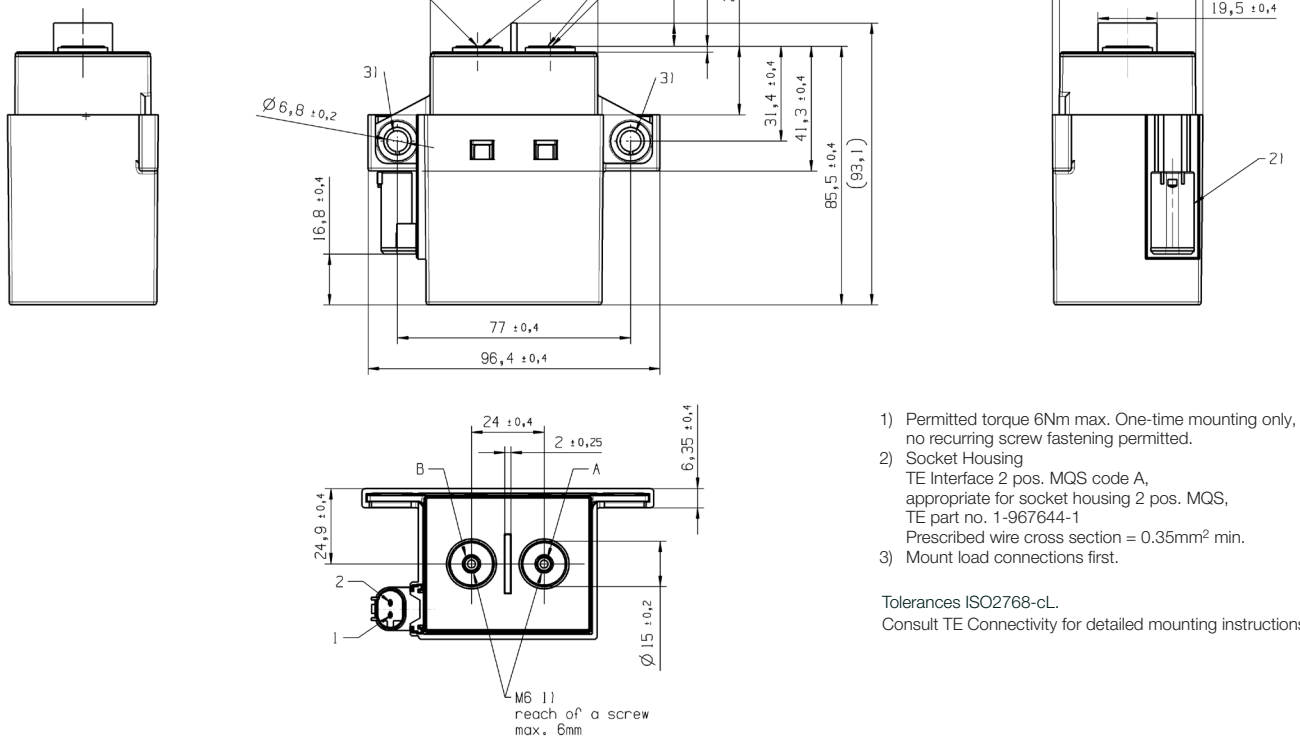
Circuit recommendation for coil 0101

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



Dimensions

Side Mount Version

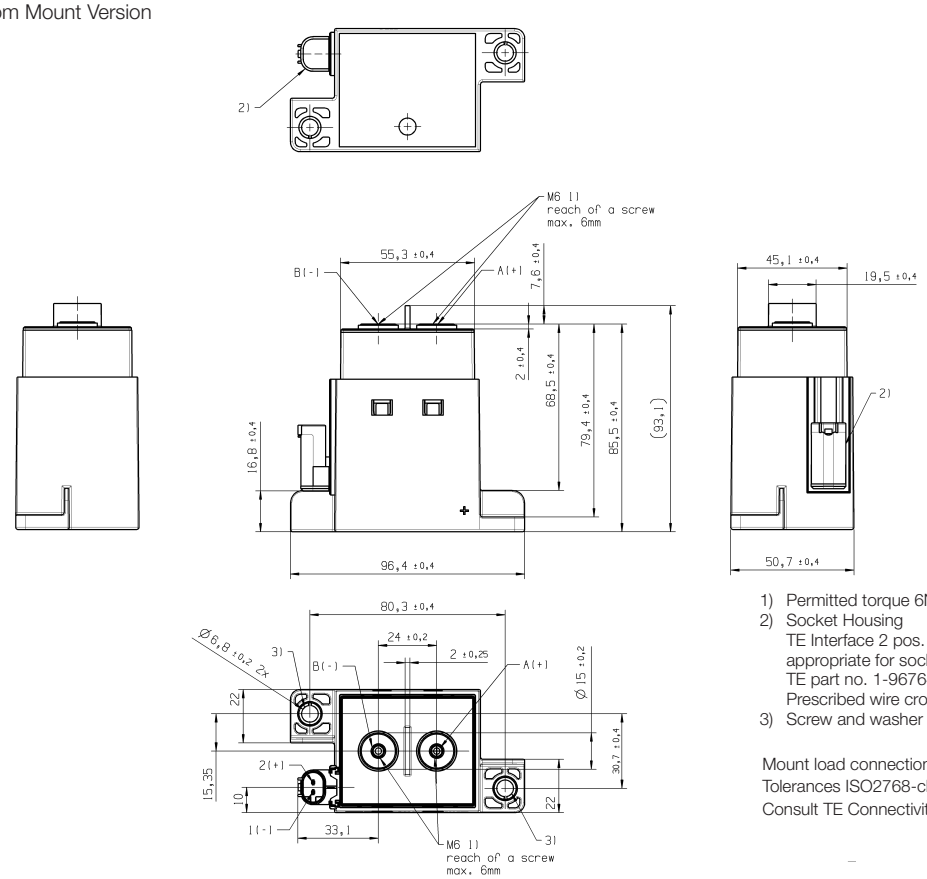


1) Permitted torque 6Nm max. One-time mounting only, no recurring screw fastening permitted.
2) Socket Housing
TE Interface 2 pos. MQS code A,
appropriate for socket housing 2 pos. MQS,
TE part no. 1-967644-1
Prescribed wire cross section = 0.35mm² min.
3) Mount load connections first.

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

EVC 250-800 Main Contactor (Continued)

Dimensions
Bottom Mount Version



1) Permitted torque 6Nm max. when min. 5 turns
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) Screw and washer and screw with washer are recommended for fastening.

Mount load connection first.
Tolerances ISO2768-cL.
Consult TE Connectivity for detailed mounting instructions.

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
B Bottom 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 alloy

Special features
0 None

Coil connector
1 MQS sealed

Product Code	Arrangement	Coil Suppr.	Circuit	Coil	Relay Type	Resistance	Part Number
V23720-A0101-B001	SPST-NO-DM	External ≥60V	No economizer	12VDC	800VDC	3.9Ω	2-1904136-5
V23720-A0102-B001	SPST-NO-DM	Internal	Coil switch	12VDC	800VDC	Double coil 2.6/26Ω	7-1904137-6
V23720-A0112-B001	SPST-NO-DM	Internal	Coil switch	24VDC	800VDC	Double coil 5.0/79Ω	2-2317670-1
V23720-B0101-B001	SPST-NO-DM	External ≥60V	No economizer	12VDC	800VDC	3.9Ω	2340516-1

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