EVC 135 Contactor

- **Limiting continuous current 135A at 85°C**
- **Hermetically sealed**
- **UL approved**

FEVC135_fbw1

Typical applications

- DC high voltage high current applications
- Main contactor for hybrid and electric vehicles
- Contactor for onboard chargers, auxiliary loads and precharge systems

Contact Data

Contact arrangement	1 Form X (SPST NO DM)
Rated operating voltage	450 to 600VDC (900VDC)[1]
Continuous carry current	
85°C, load cable 35mm²/69mcm	135A
Limiting short-time current	
85°C, load cable 35mm²/69mcm	225A / 6min
Make/break current at various voltages	see graph on page 3
Limiting break current, forward direction	
resistive load, 23°C, 450VDC	1 x 660A
Load life	see graph on page 3
Initial contact resistance, measured at 100A, 30s	0.5mΩ (typical) 1.0 mΩ (max.)
Operate / release time max.	
close (includes bounce)	25[2]
bounce (after close only)	5
release (includes arcing) at 2000A	10
Mechanical life	>1,000,000 cycles

1) Suitable for voltages up to 450VDC with limited capability to 900VDC. UL approved model EVC 135-XXXXB required for 450 to 600VDC, limited capability to 900VDC.
2) 25ms at nominal operating voltage. Consult TE Connectivity for operating time not done at rated voltage.

Coil Data[3]

Un-economized coil for optional voltage reduction after pull-in

Coil code	Rated voltage VDC	Pull-in voltage max. VDC	Min. hold voltage VDC	Min. Drop-out voltage VDC	Coil resistance Ω -5 %/+10%
5	12	8.8	7.15	1.0	26
7	24	17.5	12.6	2.0	96

Un-economized coil for external economization[4]

Coil code	Rated voltage VDC	Pull-in voltage max. VDC	Min. hold voltage[5] VDC	Min. Drop-out voltage VDC	Coil resistance Ω -5 %/+10%
4	12	7.5	4.6	0.85	15.3
6	12	3.5	2.0	0.5	3.8

3) All data valid at 23°C coil temperature.
4) Un-economized coil must be economized by the customer to avoid overheating.
5) Must operate at 12V for 100ms before reducing to minimum hold voltage.

Coil Data (continued)

Recommended PWM parameters for customer supplied economizer circuit (valid from -40°C to 85°C)

Frequency kHz	Operating Voltage Range VDC	Coil Current (min. recomm. RMS) mA	Duty cycle %	Max. Inrush Time ms
20 ±2	9 to 16	650	3.8Ω coil: 30 ±5 15.3Ω coil: 50 ±5	200

Insulation Data

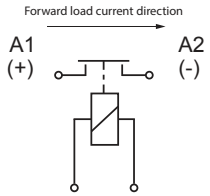
Initial dielectric strength[6]	
between open contacts	2920VDC / leakage <1mA
between contact and coil	2920VDC / leakage <1mA
max. altitude	5000m
Insulation resistance at 500VDC[6]	
between open contacts	>1 GΩ
between contact and coil	>1 GΩ

6) Meets dielectric strength and IR requirements according to ISO 6469-3, conformity to IEC60664-1 in preparation.

Other Data

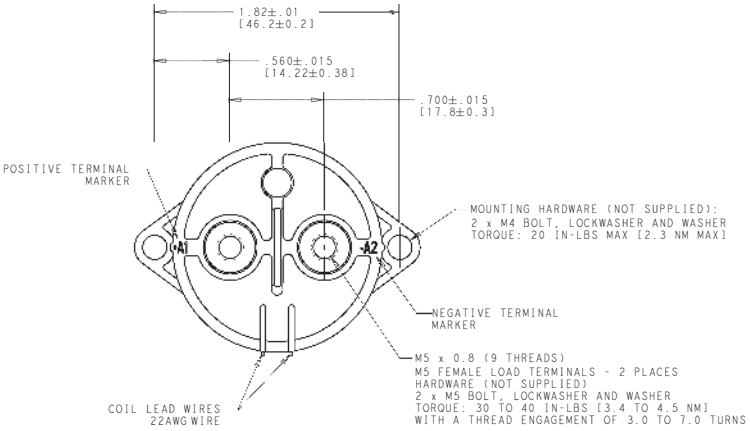
Material data	
EU RoHS/ELV compliant	
Ambient temperature	-40°C to +85°C
Vibration resistance (functional)	
sine, 55-2000Hz, peak	20g
Shock resistance (functional)	
coil energized, peak	50g
Terminal type	stripped wires (coil) and screw (load)
Weight	approx. 180g (0.40lb)

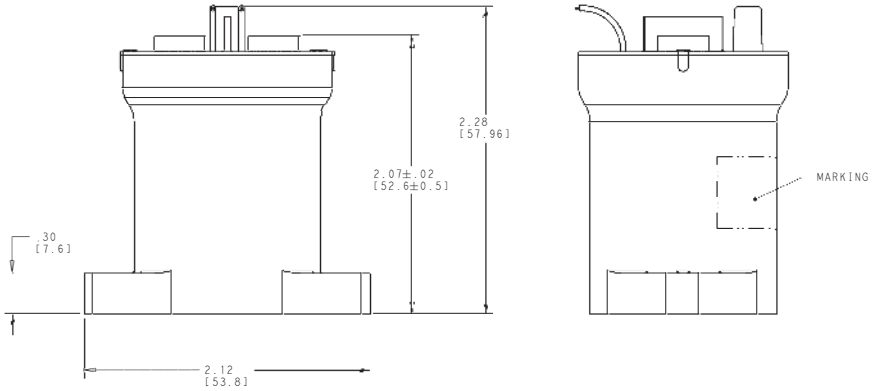
Terminal Assignment



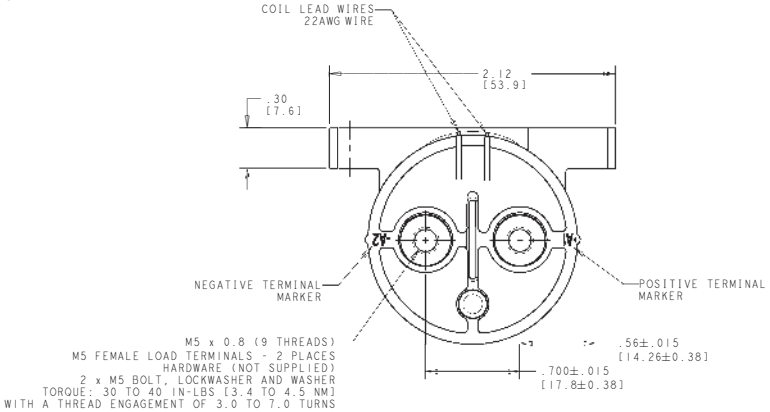
EVC 135 Contactor (Continued)

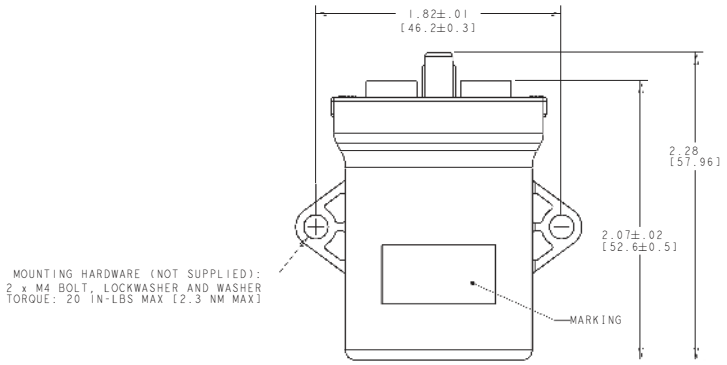
Dimensions
EVC 135 Contactor Bottom Mount





Dimensions
EVC 135 Contactor Side Mount





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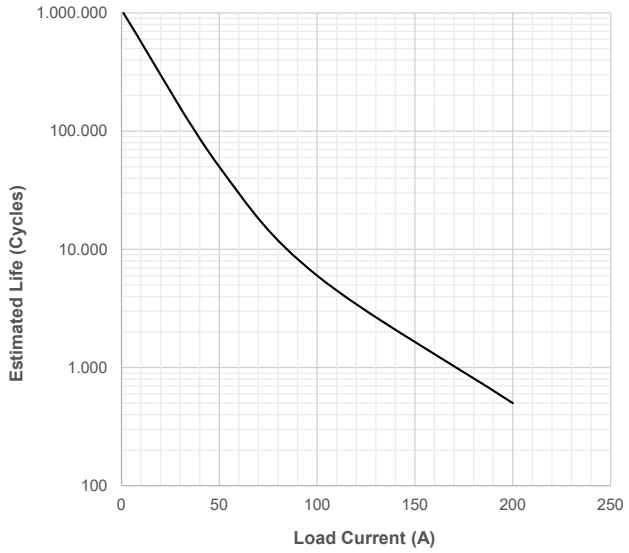
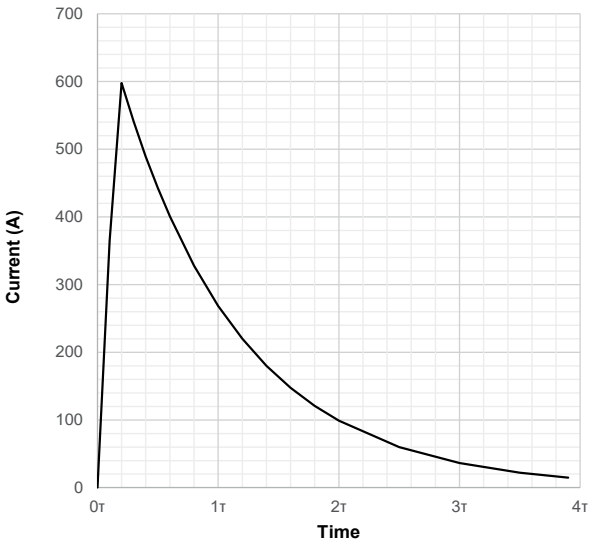
Contact performance

Life cycle vs. resistive load at 400VDC
(Chart is for engineering guideline, verification at 2,200VRMS for dielectric withstand)



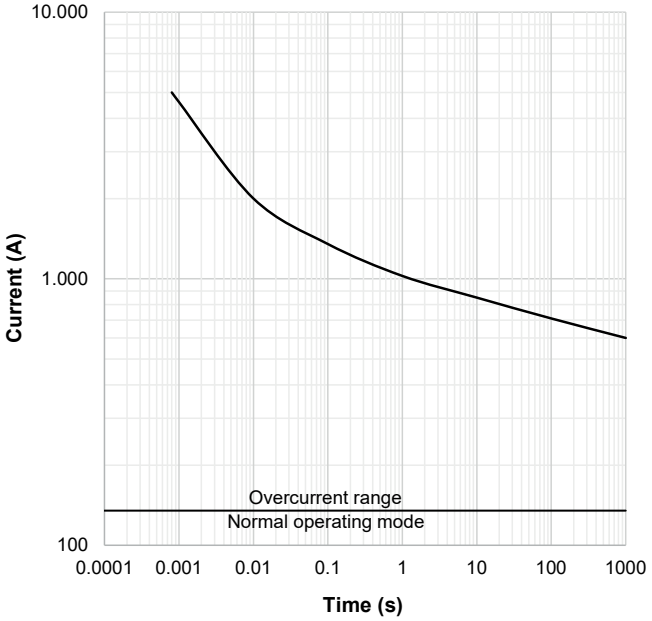
Notes:
1) The maximum make current is 600A to avoid contact welding.
2) For reverse current, the performance will roughly be reduced by 50% of the cycle life in forward direction.

Contacts closed into capacitor precharge sequence at various time constants



Notes:
1) Because higher current causes more damage to contact surface, at least 95% precharge is recommended.
2) Inrush current dependent upon RC time constant and precharge timing sequence.

Estimated fuse guide for EVC 135 contactors
(Reference only – not to be used for actual fuse sizing)



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EVC 135 Contactor (Continued)

Product code structure	Typical product code	EVC 135	-4	B	N	G	A

Type
EVC 135 EVC 135 Contactor

Coil
4 12VDC (15.3Ω coil)
5 12VDC (26.0Ω coil)
6 12VDC (3.8Ω coil)
7 24VDC (96.0Ω coil)

Coil wire length
A 15 inches (380mm)
B 6 inches (150mm)

Coil termination
N None – stripped wires
C Customer specific connector

Mounting & power terminals
G Bottom mount (2 x #8), M5 x 10
H Side mount (2 x #8), M5 x 10

Arc magnet
A Grade 8 (Standard)
B Grade 30 (required for UL approval at >450VDC)

Production in Americas (only)

Product code	Coil resistance	Coil voltage	Economization or voltage reduction	Coil leads	Mounting	Part number
EVC 135-4BNGA	15.3Ω	12VDC	Required	6 inches	Bottom	2203194-1
EVC 135-4ANGA				15 inches		2138011-1
EVC 135-5ANGA	26.0Ω		Optional			2138622-1
EVC 135-7BNGA	96.0Ω	24VDC		6 inches		2138602-1
EVC 135-4ANHA	15.3Ω	12VDC	Required	15 inches	Side	2272229-1
EVC 135-4BNHA				6 inches		2138168-1
EVC 135-5BNGA	26.0Ω		Optional		Bottom	2098371-1
EVC 135-6BNGA	3.8Ω		Required			2138084-1

Production in Asia (only)

Product code	Coil resistance	Coil voltage	Economization or voltage reduction	Coil leads	Mounting	Part number
EVC 135-4BNGA	15.3Ω	12VDC	Required	6 inches	Bottom	2219560-2
EVC 135-5ANGA	26.0Ω		Optional	15 inches		2219560-7
EVC 135-5BNGA						2219560-3
EVC 135-6BNGA	3.8Ω		Required			2219560-1

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