

EVC Series High Voltage DC Contactor—EVC-400S (400A Type)

Ceramic seal type



Application information

EVC series square contactor is applicable to DC systems with working voltage up to DC1000V, mainly used in new energy vehicles, charging piles, photovoltaic, energy storage and other fields. It has the characteristics of long service life, high reliability, small size and low power consumption, as well as electromagnetic compatibility, flame retardancy and rapid response.

Summarize

- Complete sealing – The contacts are in a sealed environment with low contact resistance and good stability, which can be used in harsh environments.
- Filling gas – The gas filled in the ceramic cavity helps to quickly extinguish the arc and ensure that the contact is not oxidized. The protection grade of the contact can reach IP67.
- Nonpolarity – The installation does not need to consider the current direction, which is suitable for bidirectional current flow.
- Fully RoHS compliant – More environmentally friendly.

Part number designation

EVC	-	A	-	B	-	400	-	S
Series		Contact form		Coil struc.		Current rating		Standard
		A : 1NO		B : 12VDC C : 24VDC				

Contact Specification

Contact Arrangement	1NO
Contact Material	Copper Alloy
Operation Voltage	12~1,000VDC
Continue Current	400A 240mm ²
Initial Contact Resistance	< 0.4mΩ (@400A)
Current Durability (240mm ² 85°C) Refer to the current carrying curve	600A 1,200s 800A 300s 1,200A 30s
Max. Breaking Current	3,200A 450V 1 ops

Durability

Electric Durability	±400A 450VDC 2,000 ops (Making & Breaking)
	±400A 750VDC 1,000 ops (Making & Breaking)
	±500A 450VDC 50ops (Breaking)

Mechanical Durability 200,000 ops

Note:

- Electric durability tests are conducted in room temperature, operating frequency : 0.6s : 5.4s
- Mechanical durability tests are conducted in room temperature, operating frequency 0.3s : 0.3s

Coil Specification

Coil Type	B	C
Rated Voltage (23°C)	12VDC	24VDC
Max. Operating Voltage (23°C)	16VDC	32VDC
Pick-up Voltage (-40~85°C)	Max. 9VDC	Max. 18VDC
Drop-out Voltage (-40~85°C)	Min. 1.2VDC	Min. 2.4VDC
Rated starting power (23°C)	≈55W	≈55W
Rated holding power (23°C)	≈4.5W	≈4.5W
Driving Mode	Dual coil	Dual coil

- The contactor has a built-in one shot pulse generation circuit. Please drive the coil through the fast rising edge (pulse power supply mode), otherwise the contactor may not work normally.
- The coil current will automatically switch after the contactor dual coil is closed for about 300ms. Repeated switching operation less than 300ms may cause contactor failure.

Mechanical Performance

Shock-Function	1/2 sine, 11ms, 196m/s ² (20G)
Shock-Destructive	1/2 sine, 11ms, 490m/s ² (50G)
Vibration	10-2000Hz, 57.9m/s ² (6G)

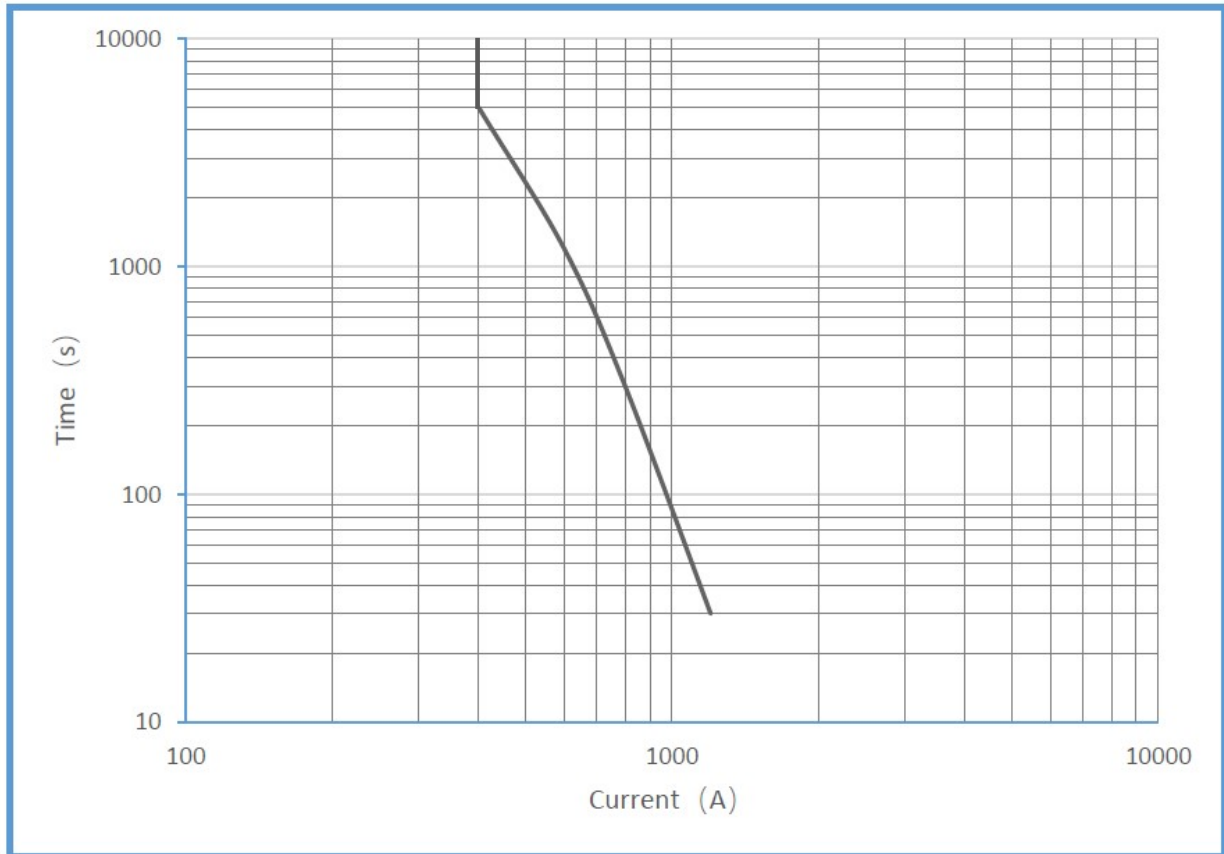
Application Condition

Operating Temperature	-40~85°C
Operating Humidity	5%~95%RH
Storage Temperature	10~75°C
Storage Humidity	5%~95%RH
Mounting Direction	Random
Weight	Approx. 700g

Electric Performance

Operate Time	30ms (At rated coil voltage, 23°C)
Release Time	10ms (At rated coil voltage, 23°C)
Bounce Time	5ms (At rated coil voltage, 23°C)
Insulation Resistance (Between open contact)	Before test: ≥ 1,000MΩ After test: ≥ 50MΩ
Insulation Resistance (Between contact and coil)	Before test: ≥ 1,000MΩ After test: ≥ 50MΩ
Dielectric Strength Leakage currents ≤ 1mA (Between open contact)	Before test: 2,500VAC, 50/60Hz, 1min After test: 2,500VAC, 50/60Hz, 1min
Dielectric Strength Leakage currents ≤ 1mA (Between contact and coil)	Before test: 2,500VAC, 50/60Hz, 1min After test: 2,500VAC, 50/60Hz, 1min

Current Carrying Curve



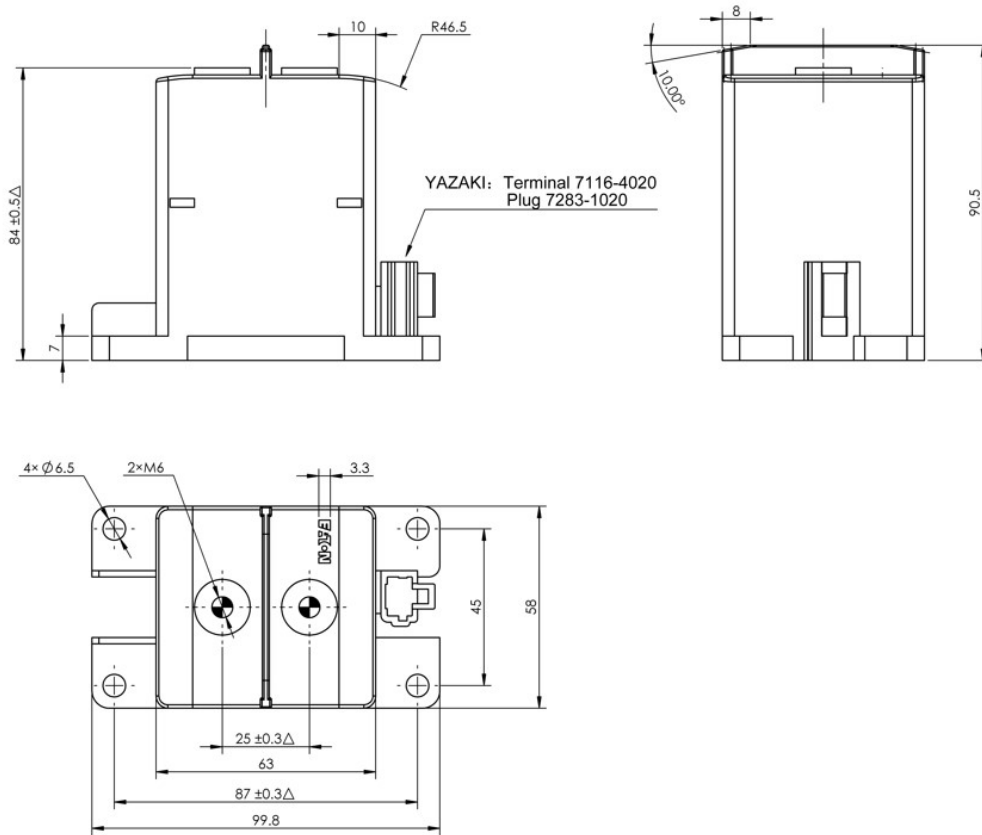
Note

- The curve is based on the ambient temperature of 85°C, the cross-sectional area of conductor is 240mm².

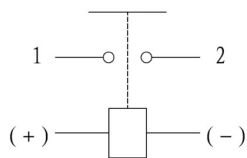
Order information

Order Part No.	Coil Type	Mounting Type	Others
EVC-AB-400S	12VDC	Bottom Mounting	-
EVC-AC-400S	24VDC	Bottom Mounting	-

Dimension



Wiring Diagram



负载无极性，线圈有极性

Load has no polarity, the coil has polarity.

Note:

- Δ marked as important control dimension
- No tolerance marked, refer to:

尺寸 (mm)	< 10	10~50	> 50
公差 (mm)	±0.3	±0.5	±0.8

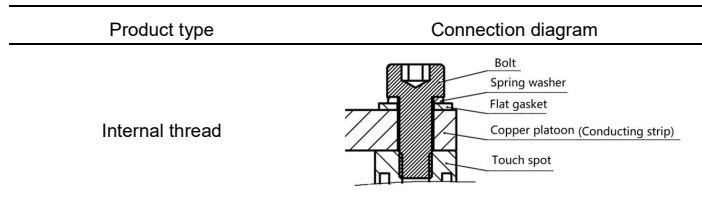
- Coil mating connector recommend:

Brand	Connector	Terminal
Yazaki	7283-1020	7116-4020
THB	0435307	01175

- The products are shipped with standard installation screws, gaskets, spring washers and other accessories.
- The product coil harness is selected according to the order model.

Application considerations

- When the contactor is connected by one or more conductive copper bars, please ensure that the conductive copper bars are closely connected with the contact end surfaces (multiple copper bars need to ensure that the conductive copper bars with large current are closest to the contact end surfaces, followed by the conductive copper bars with small current), and then the flat washers, spring washers and nuts. Improper connection sequence can cause severe overheating.



- Please avoid adhering foreign matters, grease and corrosive liquid during installation, otherwise it will cause abnormal heating at the contact end of the contactor.
- The locking torque of contactor installation shall be controlled within the range specified in the table below, which may cause thread damage. Mounting screw at the load end is an option. Please refer to the following table for installation method and other information.

Installation part of load end				Body installation part		
Installation	Torque	Breaking torque	Recommended thread engagement length	Installation	Torque	Breaking torque
M6 bolt	6N·m~8N·m	≥12N·m	≥7.5mm	M6 bolt	6N·m~8N·m	≥12N·m

- Please avoid installation near strong magnetic fields (around transformers, magnets, etc.) and heating objects.
- The contact of the contactor is nonpolar, and the load can be connected in any direction.
- Coil circuit of the contactor is divided into positive and negative poles, which shall be wired according to the wiring diagram.
- Paralleling freewheeling diode at the coil end of the contactor as a measure to suppress the reverse voltage will prolong the release time of the contactor and lead to the decrease of the product cutting performance. The product has built-in suppression coil to suppress the reverse overvoltage of the coil components.
- When the contactor is applied in the capacitive load circuit, please pay attention to taking pre charging and other measures. It is recommended that the closing pressure difference of the contactor be controlled within 20V. If pre charging measures are not taken, contact adhesion may be caused.
- When the contactor is applied in the inductive load circuit, it is recommended to install surge absorption device in parallel with the inductive load. If no measures are taken, the cut-off performance of the contactor may be reduced.
- Please avoid collision or falling of the contactor during use, installation or transportation. In order to maintain the performance of the contactor, it is not recommended to use the contactor after impact or falling.
- The contact cavity of the contactor is filled with protective gas, and there is internal gas penetration along with the change of contact temperature. It is strictly prohibited to put the relay in the use temperature range (- 40 ~ + 85 ° C) exceeding the product for a long time.
- For information on matching application of contactors and fuses, please contact Bussmann technical support team.

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