Bussmann series
contactor catalogue for EV application

BUSSMANN SERIES

Leadership in fusible circuit protection

EATON
Powering Business Worldwide

Table of Content

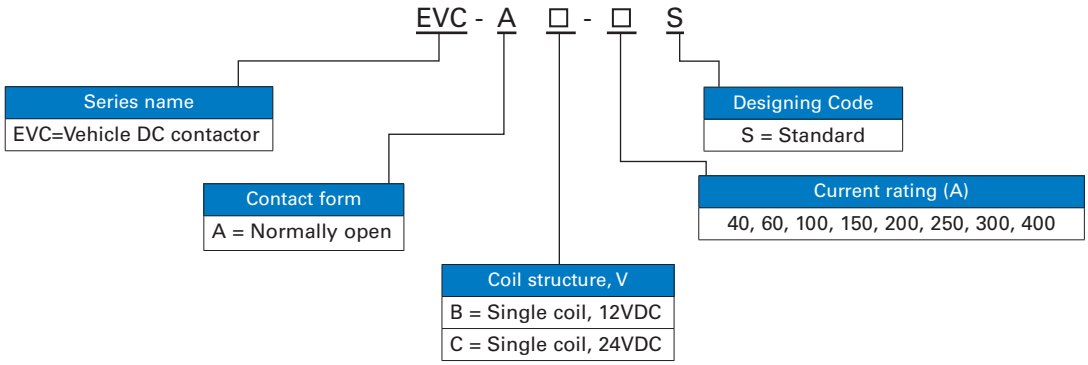
Basic information

EVC DC square contactor uses highly reliable ceramic sealing technology. Compared with traditional DC contactors, this product series has:

- 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 – Filling in the arc extinguishing gas to improve the arc extinguishing performance of the product and prevent the contacts from oxidation.
- Magnetic blow-out – Use permanent magnets to blow and pull the arc, increasing the capacity of arc extinguishing.
- Miniaturization – New technology increases the load capacity of same volume
- Fully RoHS compliant – More environmentally friendly

It is one of the most used electronic components in electrical vehicles and charging piles for switching and controlling the DC circuits and the equipment. It has long life, high reliability, small size, low power consumption, electromagnetic compatibility, flame retardancy and fast response.

EVC Part number designation



EVC DC Contactors – 40A

1

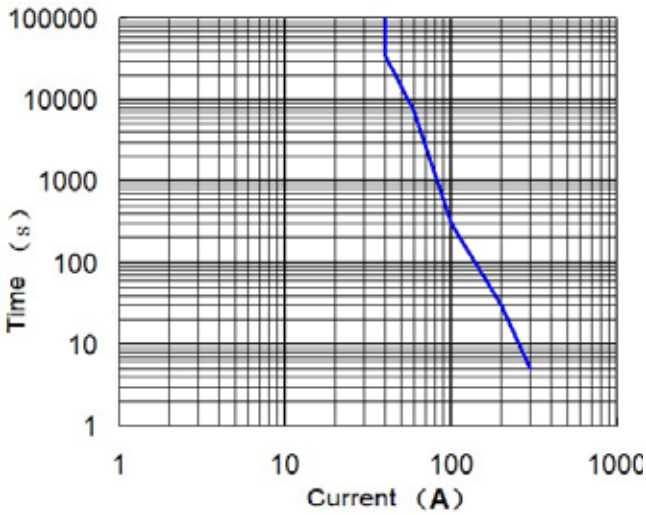
1.1. EVC Technical parameters

Parameters	EVC-A - 40S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	40A
Short-time withstand current	7,200 sec. 60A,300 sec. 100A 30 sec. 200A,5 sec. 300A (see 5, curve)
Operation time,23°C	
Closing time	≤ 25ms
Release time	≤ 10ms
Min. continuity load	1A 12VDC
Max breaking current	400A 450VDC 1 time
Contact resistance(Under rated current, initial value)	<2.5mΩ
Electrical performance	
Electrical life	40A 450VDC 10,000 times 40A 750VDC 5,000 times
Switch off overload	120A 450VDC 30 times
Electrical life - Reverse	-40A 200VDC 10,000 times -40A 750VDC 5,000 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min.(leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction	Half sine wave, 11ms, 196m/s²
Shock resistance-Destruction	Half sine wave, 6ms, 490m/s²
Random vibration	10-2000Hz,57.9m/s²
Mechanical life	200,000 times
Weight	About 140g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

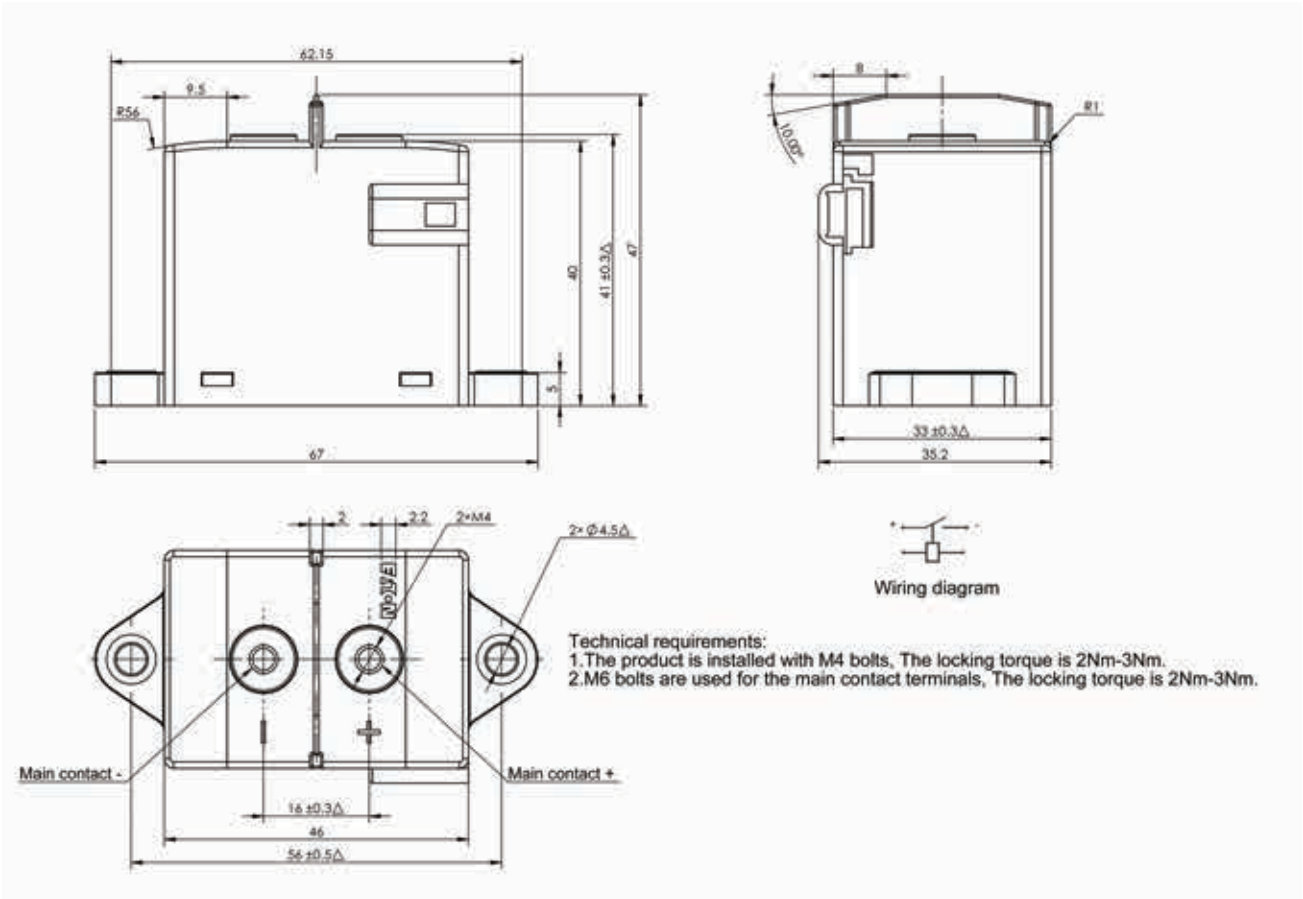
1.2 EVC Coil parameters

Parameter	EVC-AB-20S	EVC-AC-20S
Coil series number	B	C
Coil operating voltage	12VDC	24VDC
Coil voltage(Max.)	16VDC	32VDC
Operating voltage,25°C(Max.)	9VDC	18VDC
Release voltage,25°C(Min.)	0.6VDC	1.2VDC
Rated operating current(25°C)	0.23A	0.12A
Coil resistance(25°C±5%Ω)	53Ω	213Ω
Coil power	2.7W	2.7W
Pick up voltage,85°C(Max)	9.6VDC	19.2VDC

1.3 EVC Carrying withstand current curve



1.4 EVC Outline drawing



- **Remark:**
  - Δ sign is an importantly controlled size
  - The product is installed with M4 bolts and the locking torque is 2Nm-3Nm
  - Main contact terminal is installed with M4 bolts and the locking torque is 2Nm-3Nm
- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable;
  - The contacts are divided into "+" pole and "-" pole.Therefore, when connecting the contacts, it is necessary to install them according to the instructions of the wiring diagram
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying

EVC DC Contactors – 60A

2

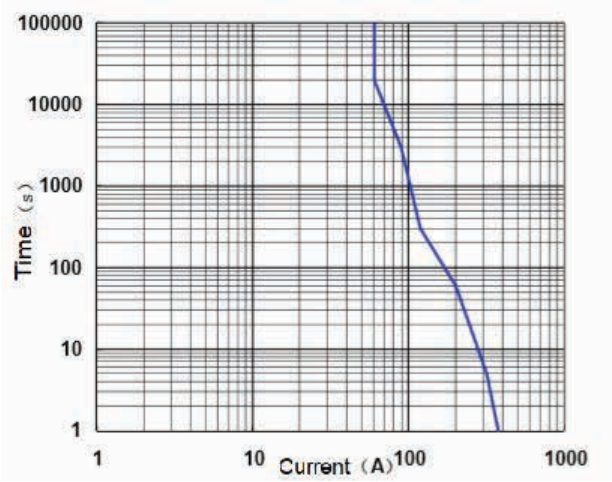
2.1 EVC Technical parameters

Parameters	EVC-A - 60S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	60A
Short-time withstand current	3,000 sec. 90A, 300 sec. 120A, 60 sec.200A, 5sec. 320A, 5sec. 320A (see 5, curve)
Operation time, 23°C	
Closing time	≤ 25ms
Release time	≤ 10ms
Min. continuity load	1A 12VDC
Max breaking current	400A 450VDC 1 time
Contact resistance(Under rated current, initial value)	<5mΩ
Electrical performance	
Resistive load (On-off ratio: 0.6S :5.4S)	60A 450VDC 5,000 times (on-off) 60A 750VDC 2,000 times (on-off) 120A 450VDC 30 times (on-off) -40A 750VDC 5,000 times (on-off)
Electrical life	150A 450VDC 2,000 times 200A 450VDC 1,000 times
Switch off overload	300A 450VDC 100 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min.(leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction	Half sine wave, 11ms, 196m/s²
Shock resistance-Destruction	Half sine wave, 6ms, 490m/s²
Random vibration	10-2,000Hz, 57.9m/s²
Mechanical life	200,000 times
Weight	About 150g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

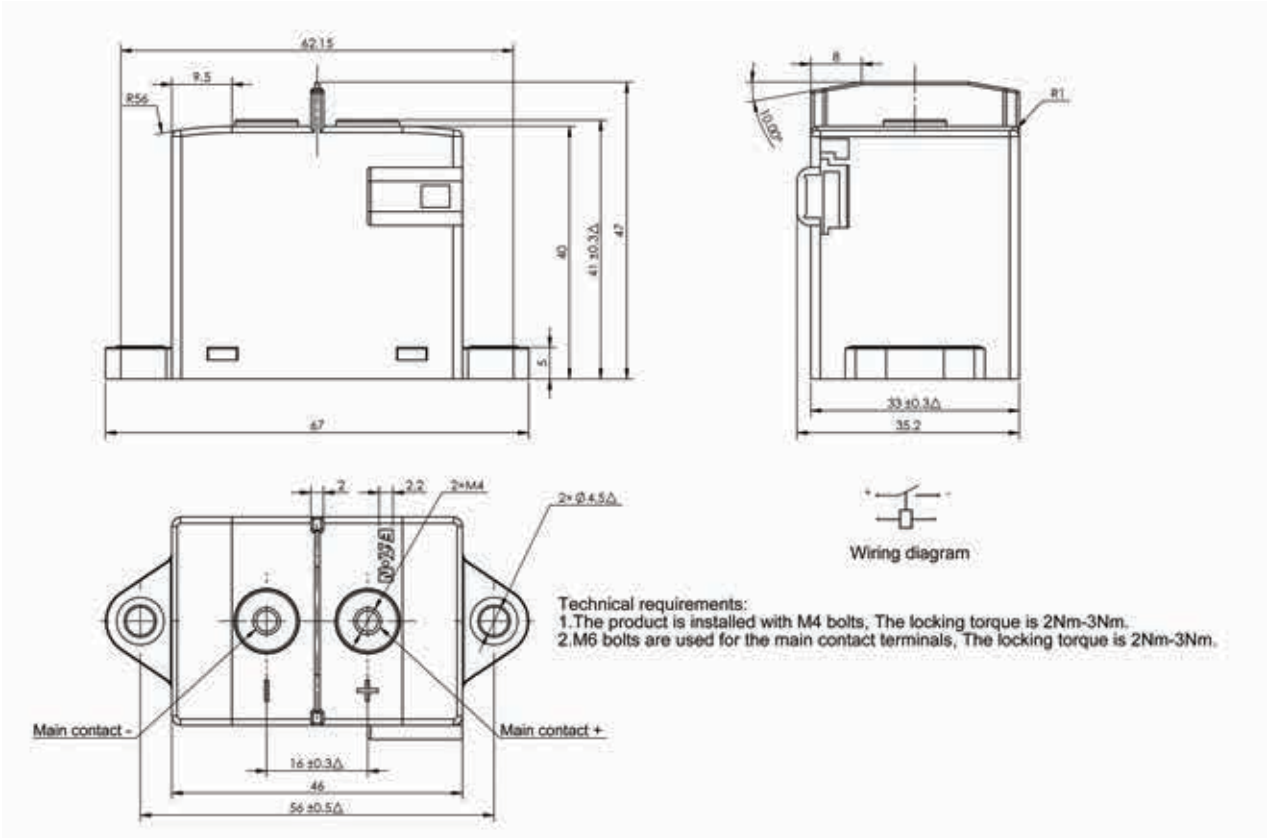
2.2 EVC Coil parameters

Parameter	EVC-AB-60S	EVC-AC-60S
Coil series number	B	C
Rated voltage	12VDC	24VDC
Max. Operating voltage	16VDC	32VDC
Pick up voltage,23°C (Max.)	≤9VDC	≤18VDC
Release voltage, 23°C (Min.)	≥0.6VDC	≥1.2VDC
Rated operating current (23°C)	0.26A	0.13A
Coil power	3.1W	3.1W

2.3 EVC Carrying withstand current curve



2.4 EVC drawing



- **Remark:**
  - Δ sign is an importantly controlled size;
  - The product is installed with M4 bolts and the locking torque is 2Nm-3Nm;
  - Main contact terminal is installed with M4 bolts and the locking torque is 2Nm-3Nm

- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable;
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying

EVC DC Contactors – 100A

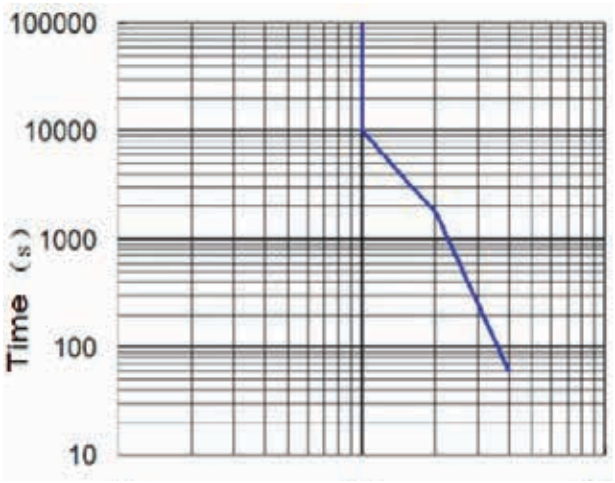
3.1 EVC Technical parameters

Parameters	EVC-A - 100S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	100A
Short-time withstand current	3,600 sec. 150A, 1,800 sec. 200A, 60 sec.400A (see 5, curve)
Operation time,23°C	
Closing time	≤ 50ms
Release time	≤ 10ms
Min. continuity load	1A 12VDC
Max breaking current	1000A 450VDC 1 time
Contact resistance(Under rated current, initial value)	<2.5mΩ
Electrical performance	
Electrical life	100A 450VDC 3,000 times 100A 750VDC 1,000 times (see 5, curve)
Switch off overload	200A 450VDC 500 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min.(leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction	Half sine wave, 11ms, 196m/s²
Shock resistance-Destruction	Half sine wave, 6ms, 490m/s²
Random vibration	10-2,000Hz, 57.9m/s²
Mechanical life	300,000 times
Weight	About 360g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

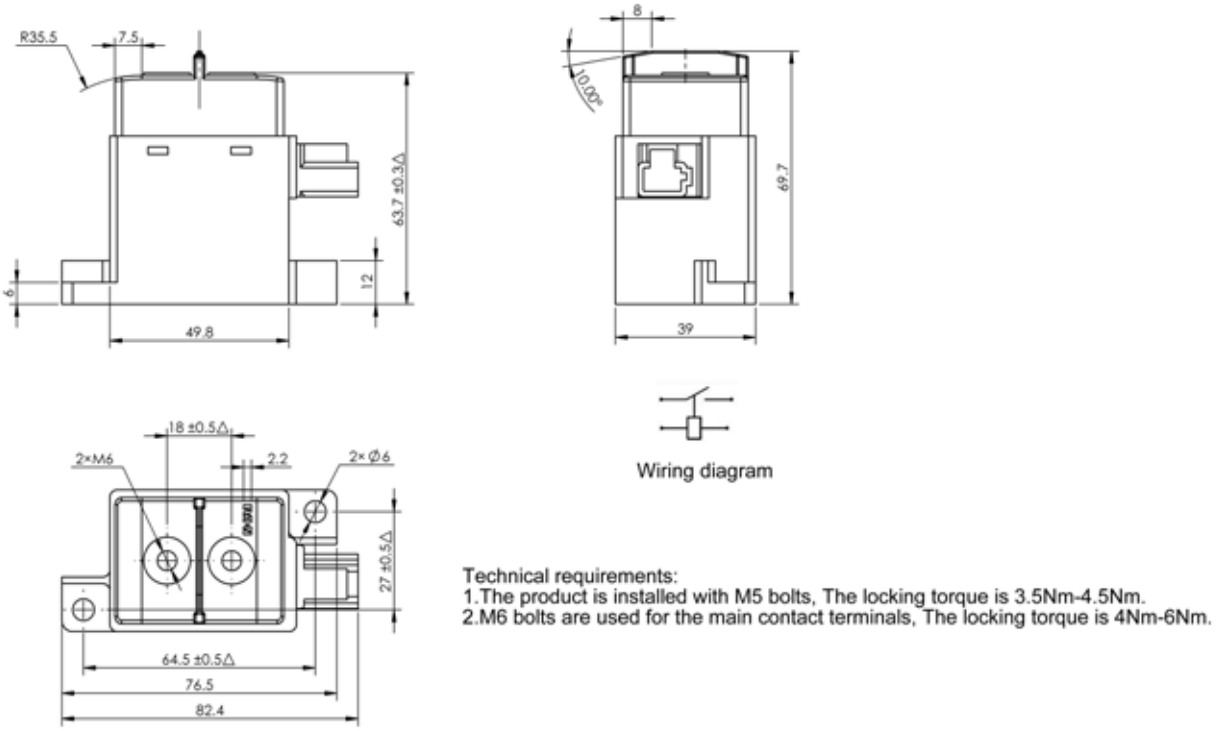
3.2 EVC Coil parameters

Parameter	EVC-AB-100S	EVC-AC-100S
Coil series number	B	C
Coil operating voltage	12VDC	24VDC
Coil voltage(Max.0	16VDC	32VDC
Operating voltage,25°C(Max.)	9VDC	18VDC
Release voltage,25°C(Min.)	1.2VDC	2.4VDC
Rated operating current(25°C)	0.5A	0.25A
Coil resistance(25°C ± 5%Ω)	23Ω	95Ω
Coil power	6W	6W
Pick up voltage,85°C(Max)	9.6V	19.2V

3.3 EVC Carrying withstand current curve



3.4 EVC Outline drawing



Technical requirements:
1.The product is installed with M5 bolts, The locking torque is 3.5Nm-4.5Nm.
2.M6 bolts are used for the main contact terminals, The locking torque is 4Nm-6Nm.

- **Remark:**
  - Δ sign is an importantly controlled size;
  - The product is installed with M5 bolts and the locking torque is 3.5Nm-4.5Nm;
  - Main contact terminal is installed with M6 bolts and the locking torque is 4Nm-6Nm

- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying.

EVC DC Contactors – 150A

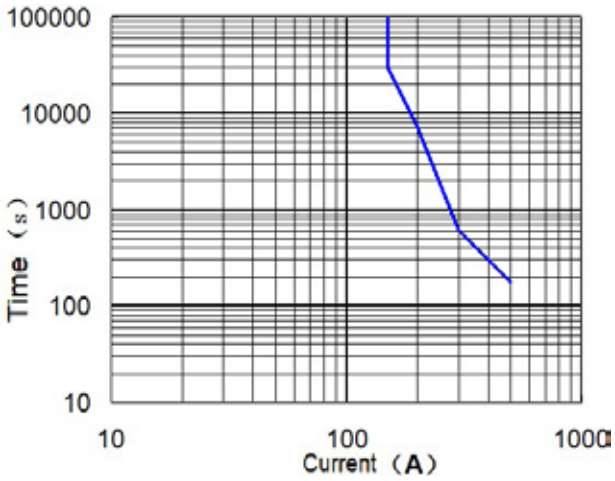
4.1 EVC Technical parameters

Parameters	EVC-A - 150S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	150A
Short-time withstand current	7,200 sec. 200A, 600 sec. 300A, 180 sec.500A (see 5, curve)
Operation time,23°C	
Closing time	≤ 50ms
Release time	≤ 10ms
Min. continuity load	1A 12VDC
Max breaking current	1,500A 450VDC 5 times 2,000A 450VDC 1 time
Contact resistance(Under rated current, initial value)	<2mΩ
Electrical performance	
Electrical life	150A 450VDC 2,000 times 200A 450VDC 1,000 times (see 5, curve)
Switch off overload	300A 450VDC 100 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min. (leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction	Half sine wave, 11ms, 196m/s²
Shock resistance-Destruction	Half sine wave, 6ms, 490m/s²
Random vibration	10-2,000Hz, 57.9m/s²
Mechanical life	300,000 times
Weight	About 360g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

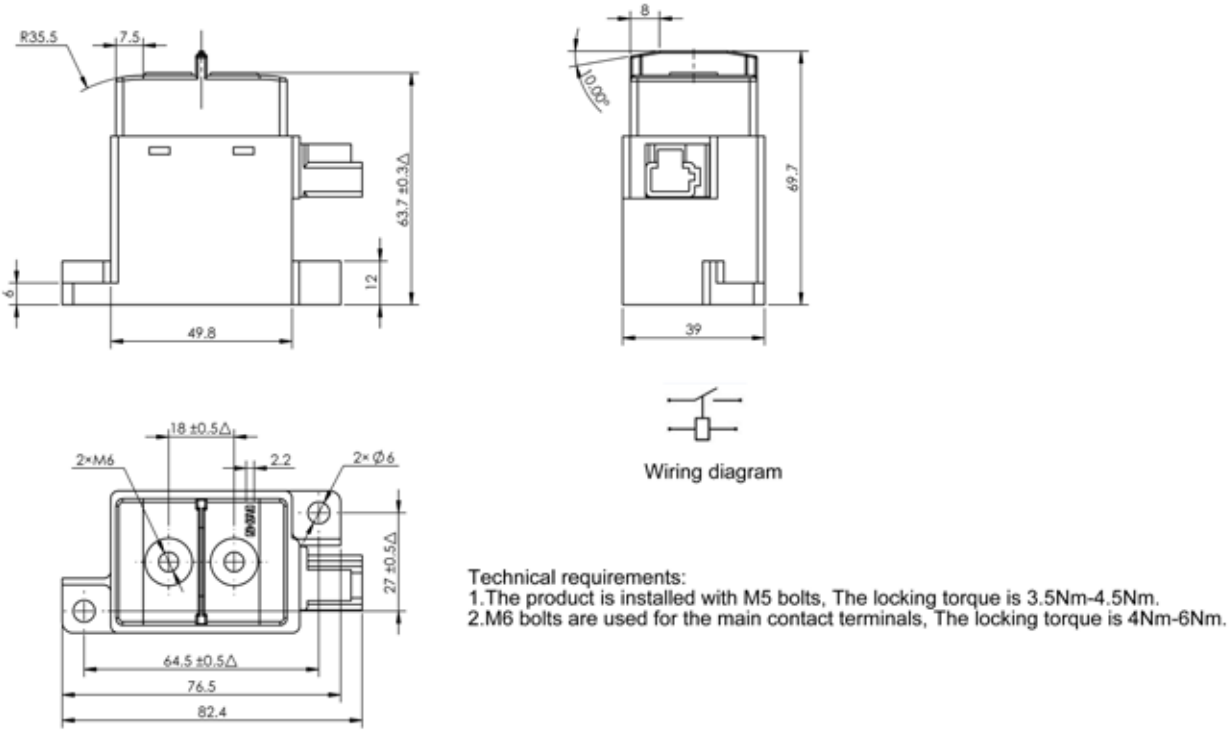
4.2 EVC Coil parameters

Parameter	EVC-AB-150S	EVC-AC-150S
Coil series number	B	C
Coil operating voltage	12VDC	24VDC
Coil voltage(Max.0	16VDC	32VDC
Operating voltage,25°C(Max.)	9VDC	18VDC
Release voltage,25°C(Min.)	1.2VDC	2.4VDC
Rated operating current(25°C)	0.58A	0.29A
Coil resistance(25°C ± 5%Ω)	20.5Ω	82.5Ω
Coil power	7W	7W
Pick up voltage,85°C(Max)	9.6V	19.2V

4.3 EVC Carrying withstand current curve



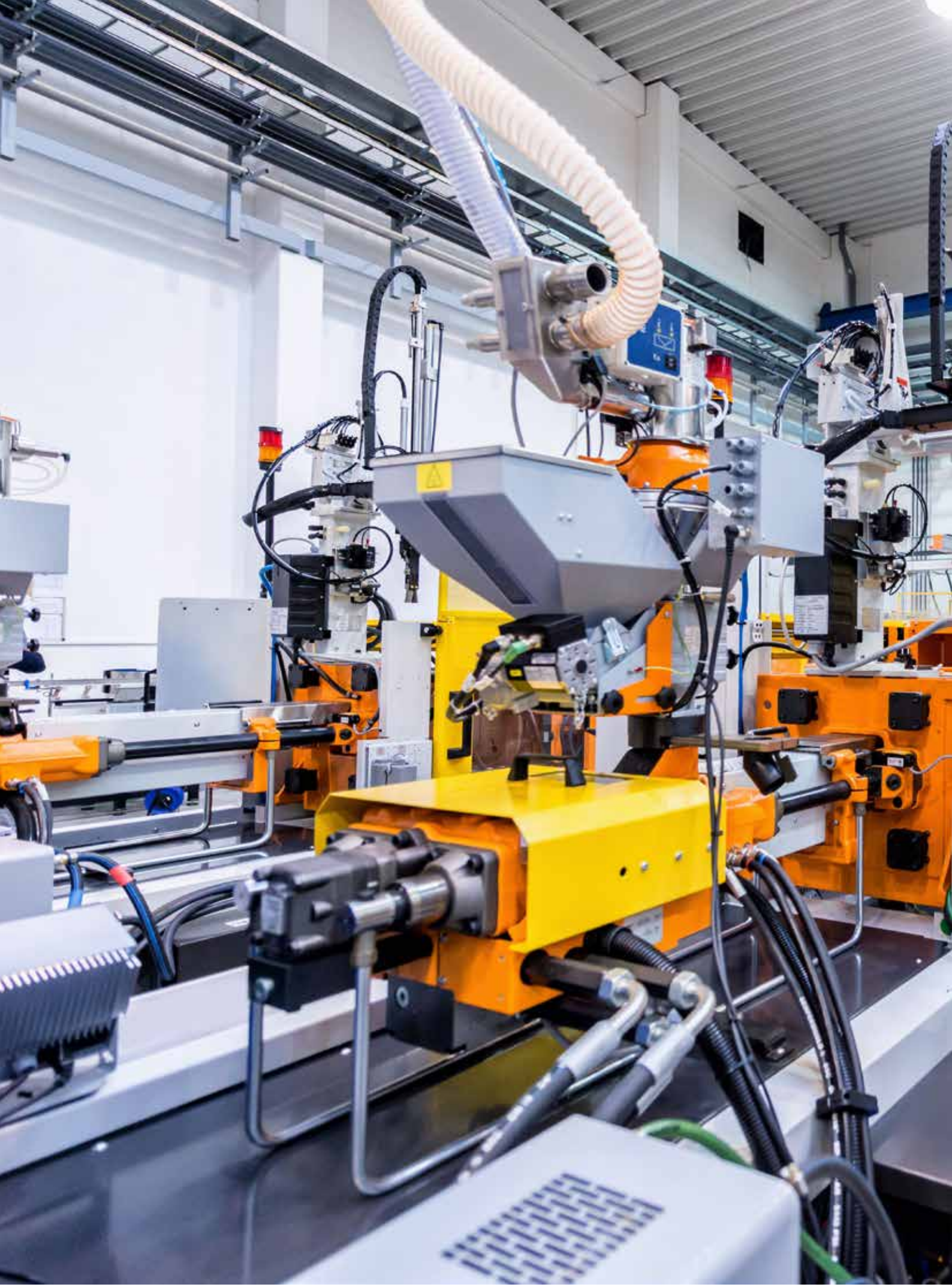
4.4 EVC Outline drawing

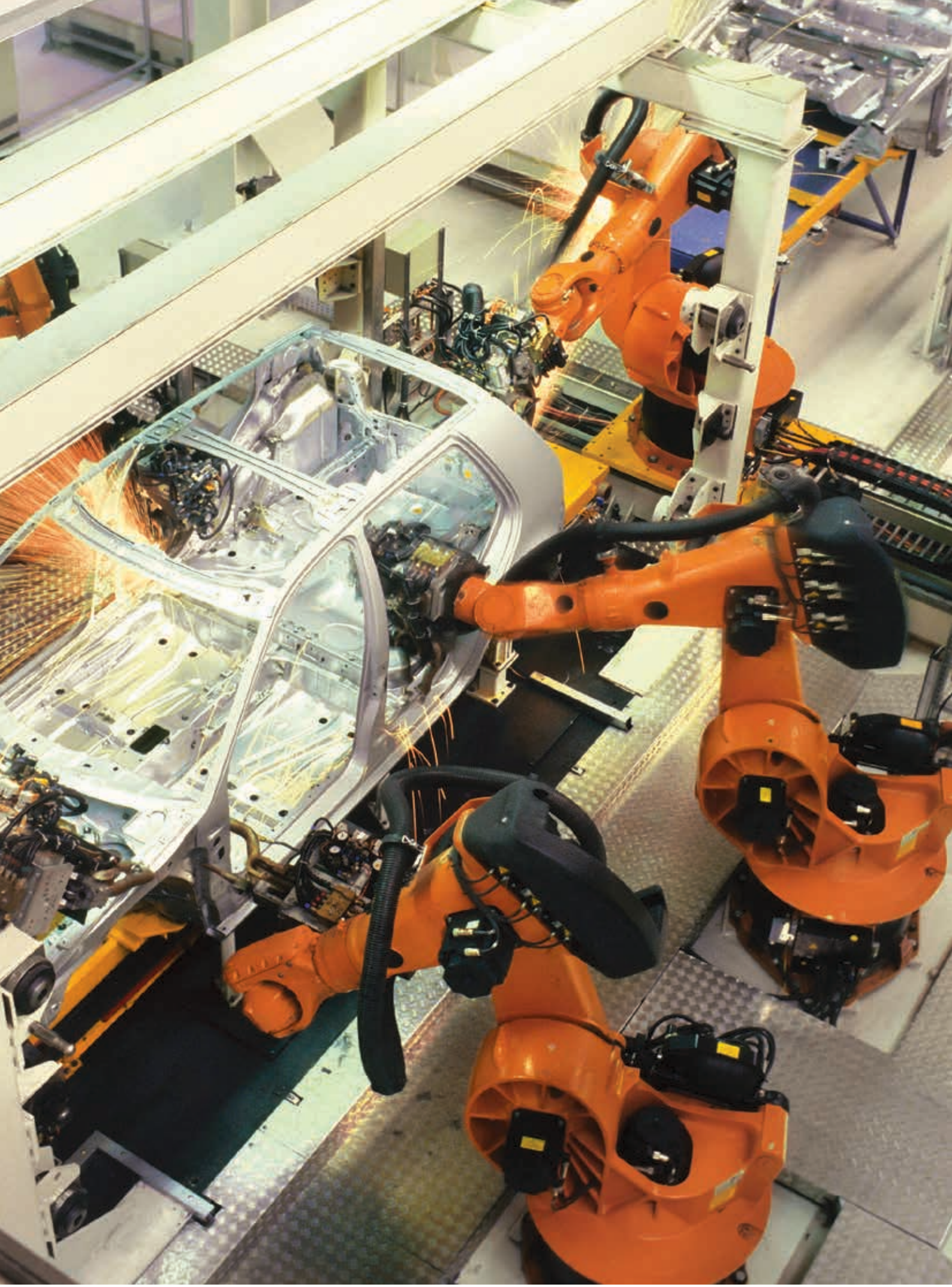


Technical requirements:
1.The product is installed with M5 bolts, The locking torque is 3.5Nm-4.5Nm.
2.M6 bolts are used for the main contact terminals, The locking torque is 4Nm-6Nm.

- **Remark:**
  - Δ sign is an importantly controlled size;
  - The product is installed with M5 bolts and the locking torque is 3.5Nm-4.5Nm;
  - Main contact terminal is installed with M6 bolts and the locking torque is 2Nm-3Nm

- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable;
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying






AUTOCLAVE PAN


DURANE

EVC DC Contactors – 200A

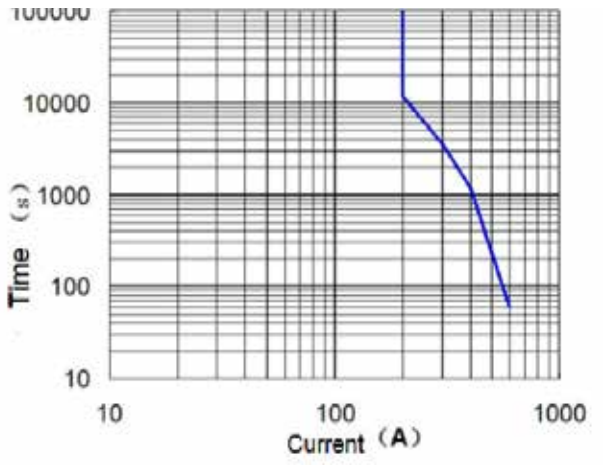
5.1 EVC Technical parameters

Parameters	EVC-A - 200S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	200A
Short-time withstand current	3,600 sec. 300A, 1,200 sec. 400A, 60 sec. 600A (see 5, curve)
Operation time,23°C	
Closing time	≤ 50ms
Release time	≤ 3ms
Min. continuity load	1A 12VDC
Max breaking current	2,000A 450VDC 3 times
Contact resistance(Under rated current, initial value)	<0.5mΩ
Electrical performance	
Electrical life	200A 450VDC 3,500 times 200A 750VDC 1,500 times
Switch off overload	300A 750VDC 1,000 times 300A 750VDC 200 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min. (leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction (Half sine wave, 11ms, test time 10μs)	Contact close: 20G Contact open: 10G
Shock resistance-Destruction (Half sine wave, 6ms)	50G
Vibration resistance-Malfunction (10-2000Hz, test time 10μs)	4.5G
Vibration resistance-Destruction (10-2000Hz, 3 axes by 4h each.)	4.5G
Mechanical life	200,000 times
Weight	About 700g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

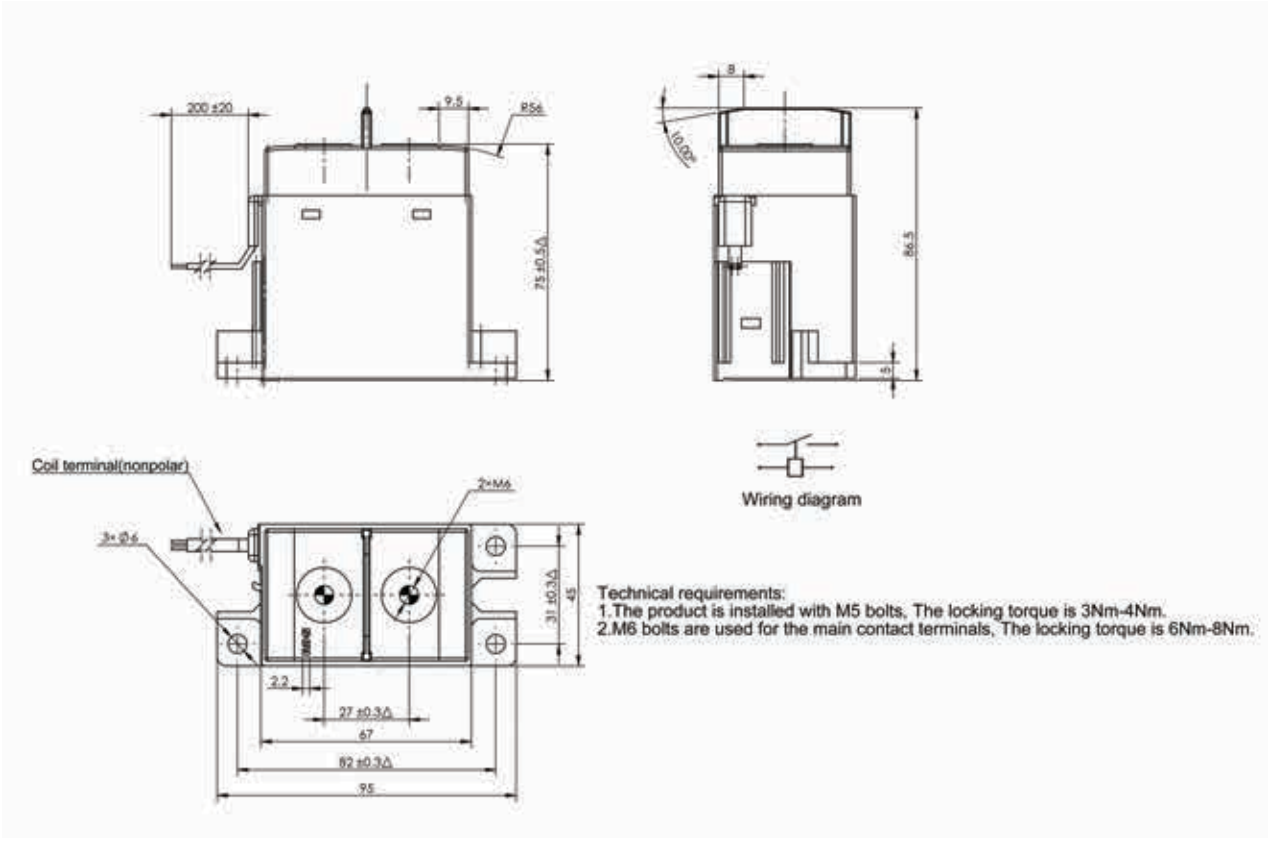
5.2 EVC Coil parameters

Parameter	EVC-AB-200S	EVC-AC-200S
Coil series number	B	C
Coil operating voltage	12VDC	24VDC
Coil voltage(Max.)	16VDC	32VDC
Operating voltage,25°C(Max.)	9VDC	≤18VDC
Release voltage,25°C(Min.)	1.2VDC	≥1.2VDC
Rated operating current(25°C)	0.67A	0.13A
Coil resistance(25°C±5%Ω)	18Ω	3.1W
Coil power	8W	
Pick up voltage,85°C(Max)	9.6V	

5.3 EVC Carrying withstand current curve



5.4 EVC Outline drawing



- **Remark:**
  - Δ sign is an importantly controlled size;
  - The product is installed with M5 bolts and the locking torque is 3Nm-4Nm;
  - Main contact terminal is installed with M6 bolts and the locking torque is 6Nm-8Nm

- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable;
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying

EVC DC Contactors – 250A

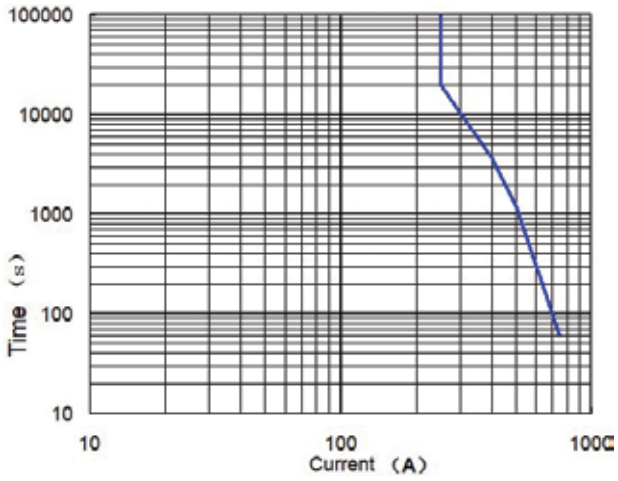
6.1 EVC Technical parameters

Parameters	EVC-A - 250S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	250A
Short-time withstand current	3,600 sec. 400A, 1,200 sec. 500A, 60 sec.750A (see 5, curve)
Operation time,23°C	
Closing time	≤ 50ms
Release time	≤ 3ms
Min. continuity load	1A 12VDC
Max breaking current	2,000A 450VDC 3 times
Contact resistance(Under rated current, initial value)	<0.5mΩ
Electrical performance	
Electrical life	250A 450VDC 3,000 times 250A 750VDC 1,000 times
Switch off overload	300A 450VDC 1,500 times 300A 750VDC 300 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min. (leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction	Half sine wave, 11ms, 196m/s²
Shock resistance-Destruction	Half sine wave, 6ms, 490m/s²
Random vibration	10-2,000Hz, 57.9m/s²
Mechanical life	200,000 times
Weight	About 550g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

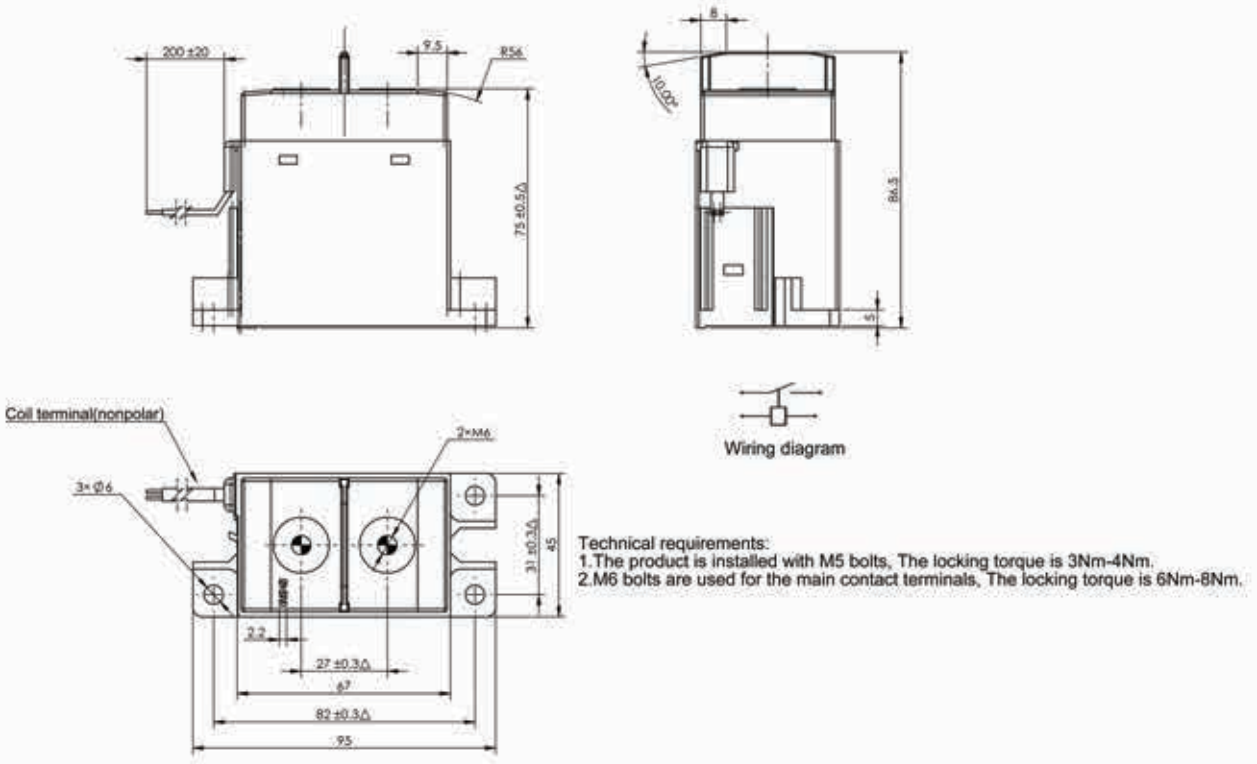
6.2 EVC Coil parameters

Parameter	EVC-AB-250S	EVC-AC-250S
Coil series number	B	C
Coil operating voltage	12VDC	24VDC
Coil voltage(Max.)	16VDC	32VDC
Operating voltage,25°C(Max.)	9VDC	18VDC
Release voltage,25°C(Min.)	1.2VDC	2.4VDC
Rated operating current(25°C)	0.67A	0.34A
Coil resistance(25°C±5%Ω)	18Ω	72Ω
Coil power	8W	8W
Pick up voltage,85°C(Max)	9.6V	19.2V

6.3 EVC Carrying withstand current curve



6.4 EVC Outline drawing



- **Remark:**
  - Δ sign is an importantly controlled size;
  - The product is installed with M5 bolts and the locking torque is 3Nm-4Nm;
  - Main contact terminal is installed with M6 bolts and the locking torque is 6Nm-8Nm

- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable;
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying

EVC DC Contactors – 300A

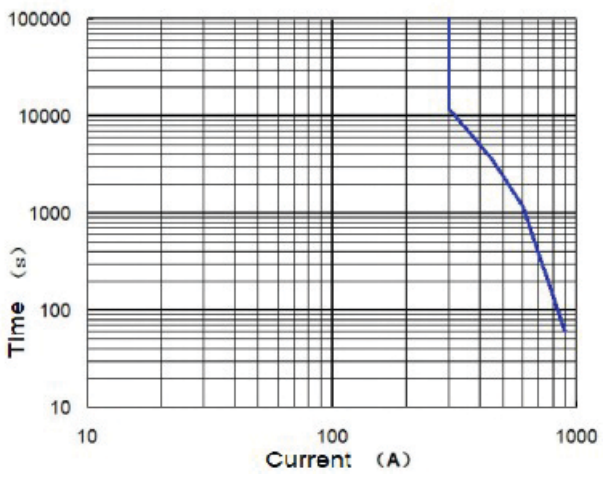
7.1 EVC Technical parameters

Parameters	EVC-A - 300S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	300A
Short-time withstand current	3,600 sec. 400A, 1,200 sec. 600A, 60 sec. 900A (see 5, curve)
Operation time,23°C	
Closing time	≤ 30ms
Release time	≤ 10ms
Min. continuity load	1A 12VDC
Max breaking current	2,500A 450VDC 1 time
Contact resistance(Under rated current, initial value)	<0.4mΩ
Electrical performance	
Electrical life	300A 450VDC 3,000 times 300A 750VDC 1,000 times
Switch off overload	400A 800VDC 20 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min. (leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction	Half sine wave, 11ms, 196m/s²
Shock resistance-Destruction	Half sine wave, 6ms, 490m/s²
Random vibration	10-2,000Hz, 57.9m/s²
Mechanical life	200,000 times
Weight	About 600g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

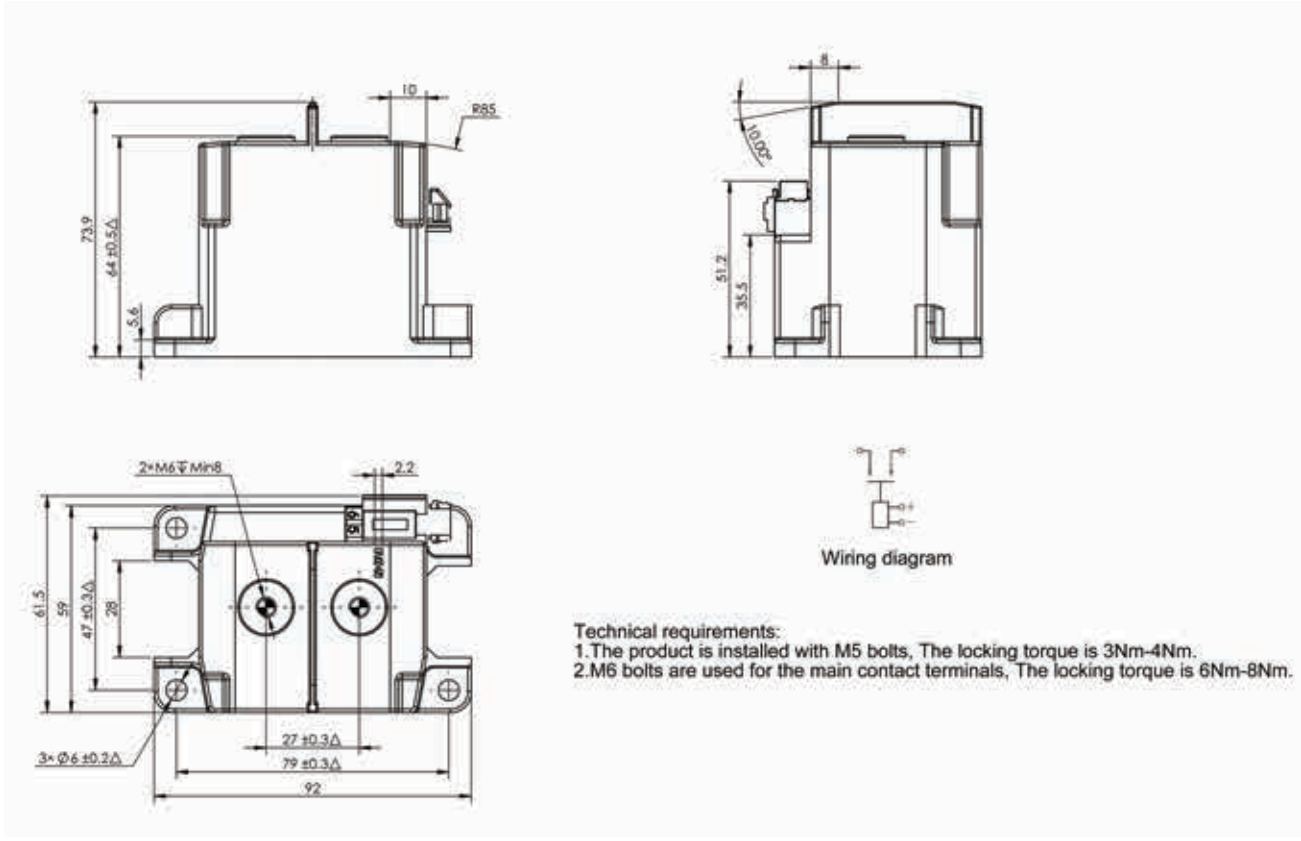
7.2 EVC Coil parameters

Parameter	EVC-AS-300S	EVC-AT-300S
Coil series number	S	T
Coil operating voltage	12VDC	24VDC
Coil voltage(Max.)	16VDC	32VDC
Operating voltage,25°C(Max.)	9VDC	18VDC
Release voltage,25°C(Min.)	1.2VDC	2.4VDC
Max. input inrush current (100ms)	2.8A	1.4A
Maintain operating current (25°C)	0.36A	0.18A
Coil power (25°C)		
Starting power	35W	35W
Maintain power	4.5W	4.5W
Pick up voltage,85°C(Max)	9.6V	19.2V

7.3 EVC Carrying withstand current curve



7.4 EVC Outline drawing



- **Remark:**
  - Δ sign is an importantly controlled size;
  - The product is installed with M5 bolts and the locking torque is 3Nm-4Nm;
  - Main contact terminal is installed with M8 bolts and the locking torque is 9Nm-10Nm.

- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable;
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying

EVC DC Contactors – 400A

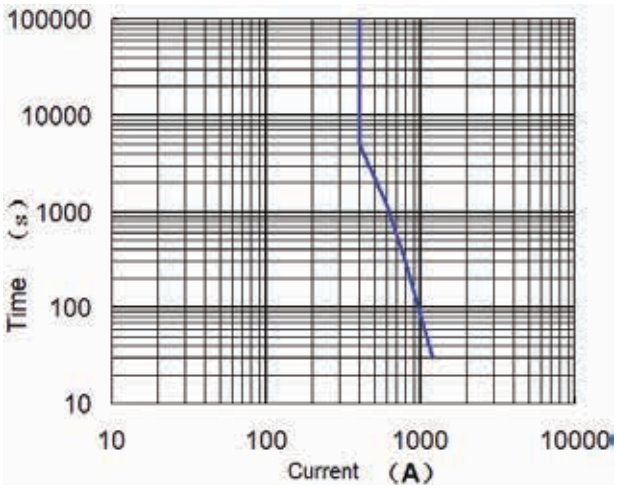
8.1 EVC Technical parameters

Parameters	EVC-A - 400S
Main contact	
Contact form(main)	Single-pole single-throw – Normally Open
Rated voltage	12-750VDC
Rated current	400A
Short-time withstand current	1,200 sec. 600A, 300 sec. 800A, 30 sec.1,200A (see 5, curve)
Operation time,23°C	
Closing time	≤ 30ms
Release time	≤ 10ms
Min. continuity load	1A 12VDC
Max breaking current	3,200A 450VDC 1 time
Contact resistance(Under rated current, initial value)	<1mΩ
Electrical performance	
Electrical life	400A 450VDC 2,000 times 400A 750VDC 1,000 times
Switch off overload	500A 800VDC 50 times
Insulation resistance	>1,000MΩ(1,000VDC) (After the life test: 50 MΩ)
Dielectric withstand voltage(Between contacts, between contacts and coils)	2,500VAC,1 min. (leakage current ≤ 1mA)
Mechanical performance	
Shock resistance-Malfunction	Half sine wave, 11ms, 196m/s²
Shock resistance-Destruction	Half sine wave, 6ms, 490m/s²
Random vibration	10-2,000Hz, 57.9m/s²
Mechanical life	200,000 times
Weight	About 700g
Environmental requirements	
Ambient operating temperature range	-40°C~+85°C
Humidity range	5%~95%RH

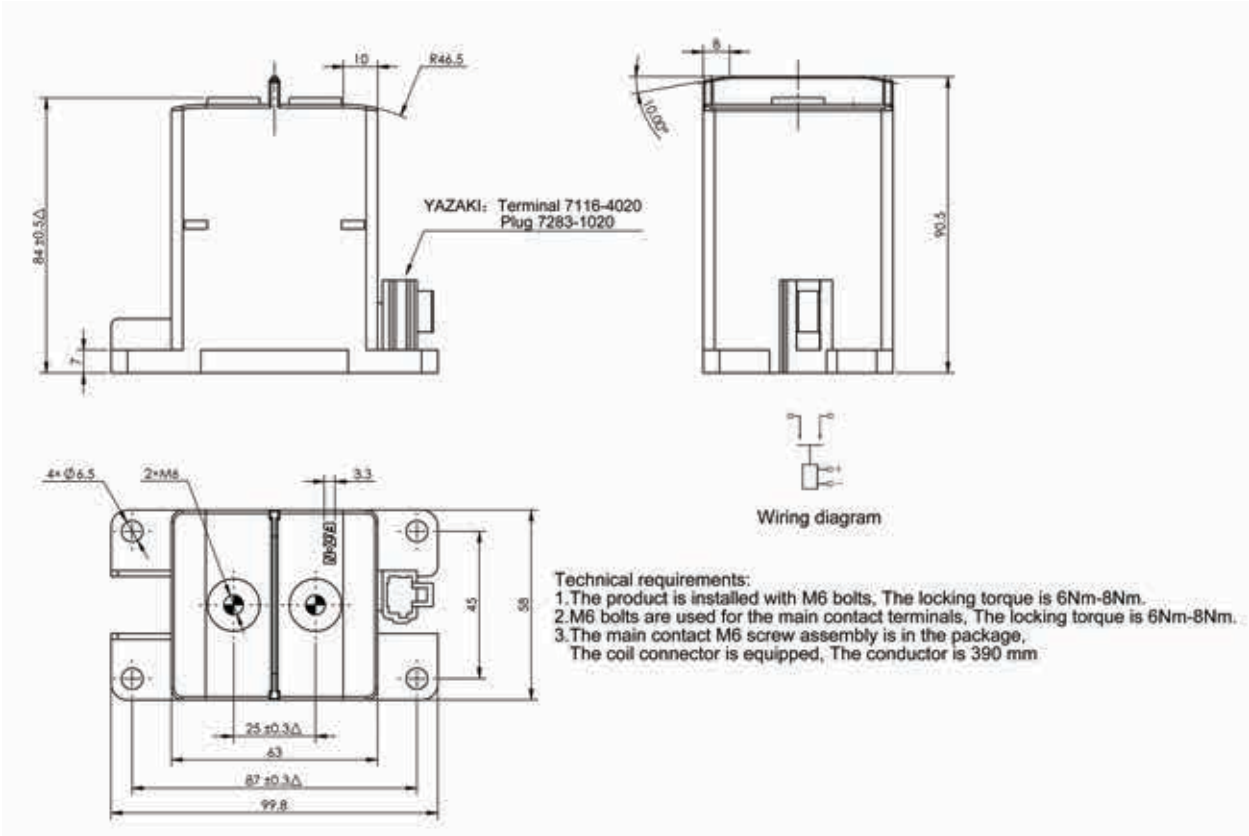
8.2 EVC Coil parameters

Parameter	EVC-AS-400S	EVC-AT-400S
Coil series number	S	T
Coil operating voltage	12VDC	24VDC
Coil voltage(Max.)	16VDC	32VDC
Operating voltage, 25°C(Max.)	9VDC	18VDC
Release voltage, 25°C(Min.)	1.2VDC	2.4VDC
Max. input inrush current (100ms)	5.2A	2.6A
Maintain operating current (25°C)	0.38A	0.19A
Coil power (25°C)		
Starting power	63W	63W
Maintain power	4.5W	4.5W
Pick up voltage, 85°C(Max)	9.6V	19.2V

8.3 EVC Carrying withstand current curve



8.4 EVC Outline drawing



- **Remark:**
  - Δ sign is an importantly controlled size;
  - The product is installed with M6 bolts and the locking torque is 6Nm-8Nm;
  - Main contact terminal is installed with M6 bolts and the locking torque is 6Nm-8Nm.

- **Application considerations**
  - Warning - When more than one outgoing strip is used at the outgoing end of the power supply, make sure that the main power line is closest to the connector of the contactor, and the outgoing line with small current is at the top, followed by washer, elastic washer and nut. Improper connection sequence can cause severe overheating and lead to melting the insulation of the connecting cable;
  - When the coil connected with diodes in parallel, it may also lead to the decrease of contact breaking ability, which should be paid attention to when applying

Eaton Bussmann
Cooper Xi'an Fusegear Co., Ltd.
No. 86, Jinye Road, High-Tech Zone,
Xi'an, Shaanxi Province, P. R. China
Hotline: 400 629 1869

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