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***WORLD PRODUCTS INC.*® is the Exclusive Agent in North America for Ebusbar® HV Relays for EV.**

DC HIGH VOLTAGE EV RELAY

Ebusbar Product Catalog

To Build The Most Competitive New Energy Automobile Integrated Services Platform

Ebusbar 巴斯巴

BRIEF INTRODUCTION

INNOVATION TECHNOLOGY
LEADING INDUSTRY

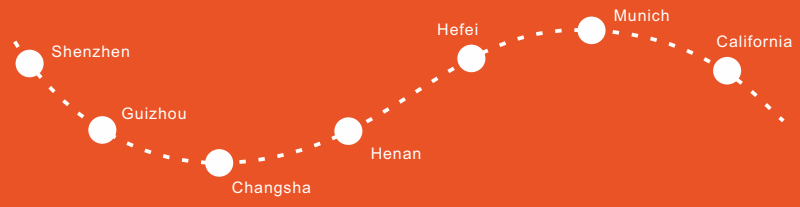
Shenzhen Busbar Sci-Tech Development Co., LTD

FOCUS ON NEW ENERGY PRODUCTION

Shenzhen Busbar Sci-Tech Development Co.,Ltd. (Ebusbar) is a service-oriented and high-tech enterprise specializing in R&D, manufacturing, marketing and sales of low carbon and high performance products which are widely used in renewable energy industry. Ebusbar covers production lines including laminated bus bar, soft bus bar, EV charging connector, EV charging terminal, HV connector, relay, power system and integrated solution for EV like PDU, VCU, Bidirectional DC/DC, on-board charger, etc, which enable it to satisfy the global development of EV, solar energy, smart grid, etc. In addition, Ebusbar has expanded business from component manufacturing to charging service provision, and started investing in EV charging infrastructure construction and charging management system development.
As one of the pioneers stepped into EV business in China, Ebusbar has successfully accomplished quite many influential projects for domestic and overseas clients, and has consequently gathered know-how and rich experience in real-problem solving. Ebusbar will keep on providing our clients with professional and innovative solution, prompt and flexible service, competitive price and high-quality products.

To Build The Most Competitive New Energy Automobile Integrated Services Platform

Production base



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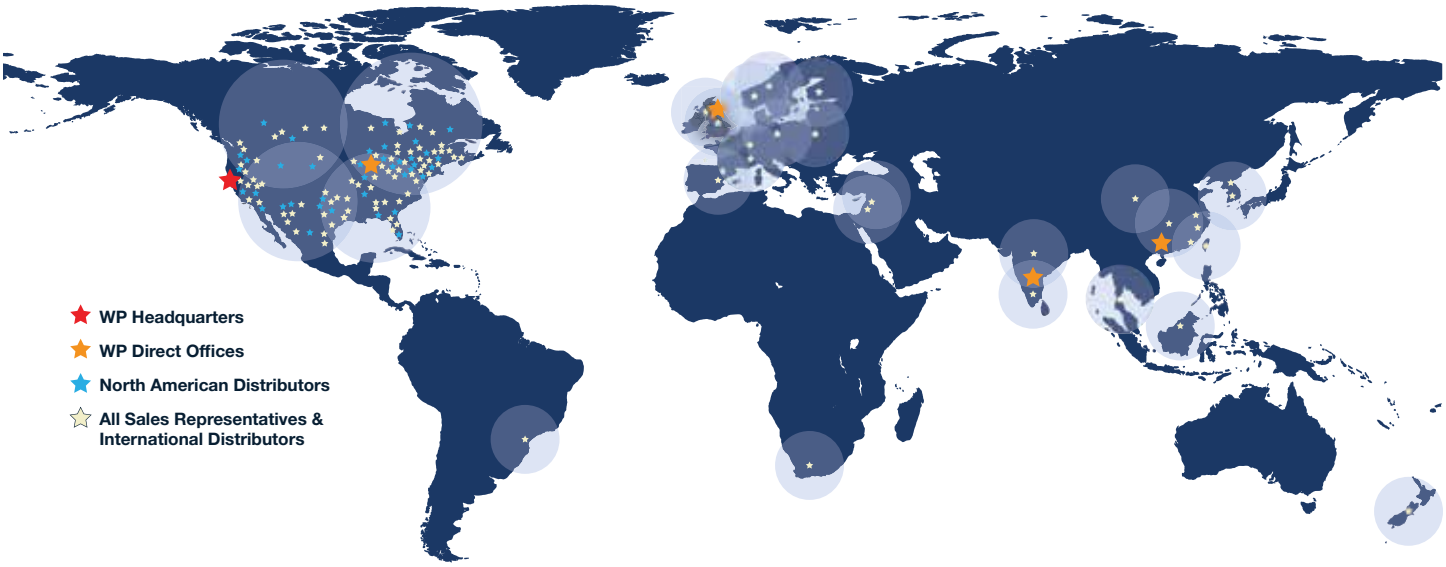
S

Global Automotive Electronic Component Leader For Over 45 Years



World Products Inc.®

For over 45 years, World Products Inc.® (WPI) has worked with Tier 1 automotive suppliers and has offered the highest quality products with superior technical support to the automotive industry. WPI brings additional value in today's electric vehicle market with our award-winning customer service and a dedicated automotive sales force, while providing our customers with environmentally sound and technologically advanced products. WPI consistently delivers the highest quality products at competitive prices and we support our customers with a world-wide distribution network which assists their businesses to successfully compete in a global market.

C-TPAT

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HIGH VOLTAGE RELAY SERIES

EVR RELAY

EVC CONTACTOR

HIGH VOLTAGE DC RELAY SERIES

WORLD PRODUCTS INC.® is the Exclusive Agent in North America for Ebusbar® HV Relays for EV.

Voltage relay is an electrical controlling device, also known as contactor. A circuit switch of nature protection and automatic adjustment with low voltage controlling switch(Safety low voltage 12V~72V control over high voltage 300V~1000V). It's a so-called automatic switch normally applied to automatic control circuit(low current controlling over high current).

ADVANTAGE

- **Superior R&D team:**
  R&D team come from global top 500 well-known companies and cooperated with several research institutes and colleges.

- **Quality system:**
  Full-developed and standard Quality System which including TS16949,ISO9001&ISO14000 etc.

- **Advantage Manufacturer:**
  Advanced manufacture facility and automatic production lines with 100 million PCS annual output and a hundred thousand class of purification workshop covering 2,000 square meters.

- **Standard Testing System:**
  600KW electric lifetime testing system and full series enviromental testing system.

- **Numerous Customers base:**
  Ebusbar relay has the advantage of high performance,low resistance,long life-time,energy saving, high load capacity and already cooperated with BMW,Nanjing Jinglong, FAW,BAIC,CRRC,Shannxi Auto,Zotye,Renault and some othe famous aotomotive factory in China and world.

- **Multiple product series and specifications:**
  Load range of EVR(Square) and EVC(Circle) Series: Current: 10A~500A, Voltage:12~1000VDC, could meet different customers needs and compatibility with all square and circle HV relay in the market.

APPLICATION

DC high voltage EV relay is widely used in electric vehicles, hybrid vehicles, fuel cell vehicles, solar power, wind power, cloud server power supply, battery charging and discharging system, the DC power supply voltage control equipment and heavy machinery.

New energy vehicle

Charging station,charging pile

Photovoltaic Generation System

Wind power generation

Cloud server power supply

Heavy industry machinery

FIG ELECTRIC CAR RELAY SELECTION

1.EVC250,EVC350,EVR200,EVR300;
An emergency cut off the high voltage circuit in case of an accident or an abnormal circuit.

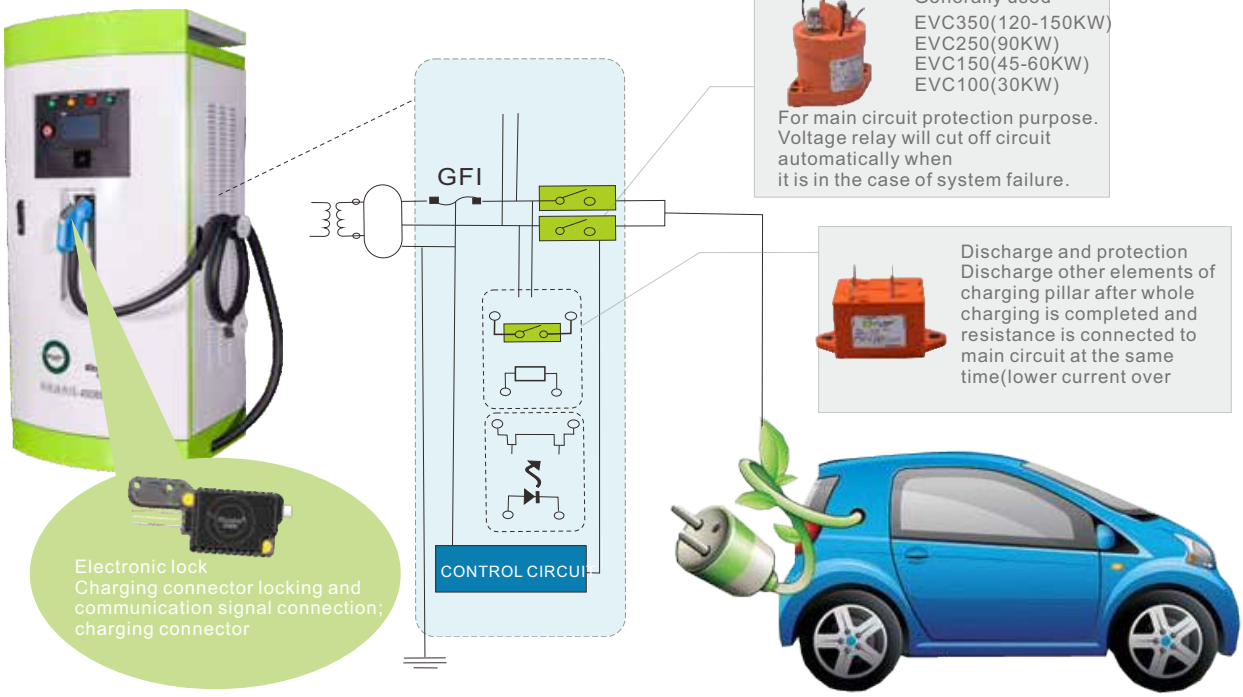
2.EVR20;Pre charge relay: to share the impact load of the main relay with the pre charge resistance

5. (BEV) 80A-250A , EVR100,EVR150,EVR200,EVC250A; Fast charging,It is mainly used to isolate high voltage, such as charging, unexpected circuit abnormalities.

4. (10A-32A)Slow charging,EVR40,EVC50

3.EVR20,EVR40,EVC50; High pressure Allocation

APPLICATION OF VOLTAGE RELAY IN CHARGING STATION



Generally used
EVC350(120-150KW)
EVC250(90KW)
EVC150(45-60KW)
EVC100(30KW)
For main circuit protection purpose. Voltage relay will cut off circuit automatically when it is in the case of system failure.

Discharge and protection Discharge other elements of charging pillar after whole charging is completed and resistance is connected to main circuit at the same time(lower current over

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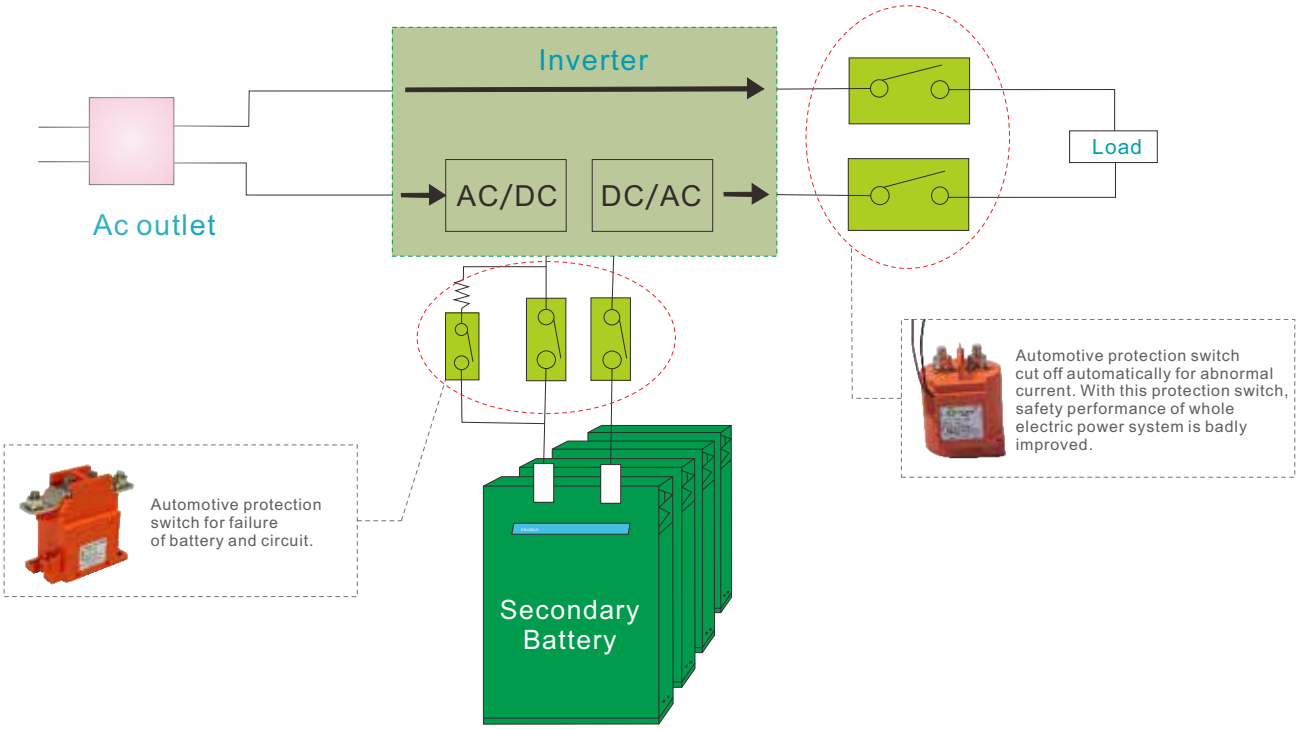
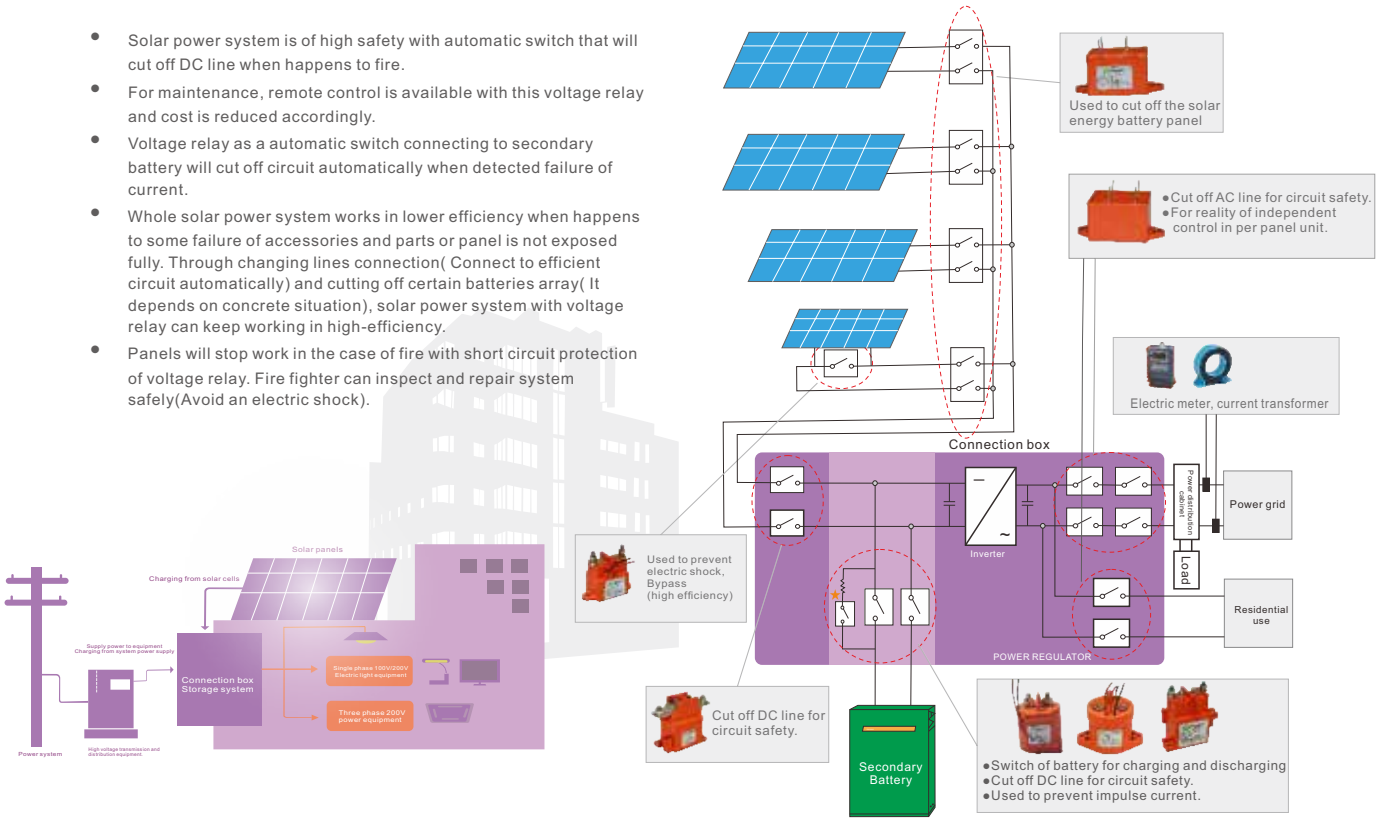
VOLTAGE RELAY USED IN BATTERY ENERGY STORAGE SYSTEM



VOLTAGE RELAY USED IN SOLAR POWER

- Solar power system is of high safety with automatic switch that will cut off DC line when happens to fire.
- For maintenance, remote control is available with this voltage relay and cost is reduced accordingly.
- Voltage relay as a automatic switch connecting to secondary battery will cut off circuit automatically when detected failure of current.
- Whole solar power system works in lower efficiency when happens to some failure of accessories and parts or panel is not exposed fully. Through changing lines connection(Connect to efficient circuit automatically) and cutting off certain batteries array(It depends on concrete situation), solar power system with voltage relay can keep working in high-efficiency.
- Panels will stop work in the case of fire with short circuit protection of voltage relay. Fire fighter can inspect and repair system safely(Avoid an electric shock).

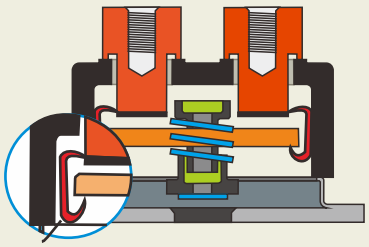


FEATURES

Although it is a minimum power relay, it can conduct and cut off electric circuit with DC high voltage and heavy current. Advantages of DC high voltage EV relay compared to DC contactors is listed here.

Sealing structure
Arc will not leak

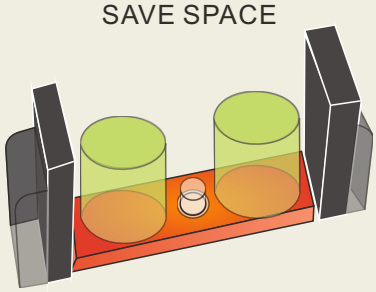
SAFETY



Electric arc

No arc space

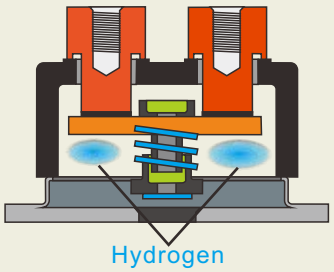
SAVE SPACE



Voltage relay can be installed within a close distance as there is no necessity for special arc space.

With sealed electric contact filled by hydrogen gas mixture, it can achieve a high volume cutting off even with tiny interstice of electric contact.

SMALL TYPE



Hydrogen

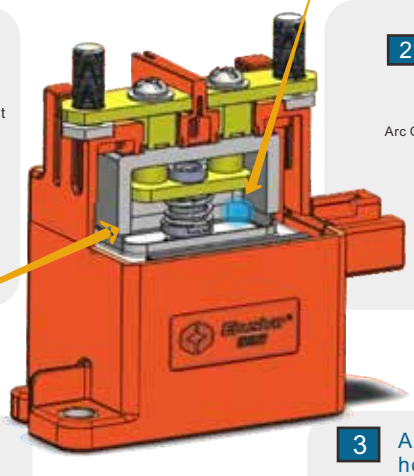
Voltage relay can cool and cut off arc with hydrogen gas mixture sealed in electric contact.

PRINCIPLE AND MECHANISM

Application of high voltage relays

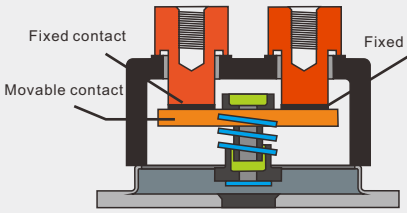
Seal hydrogen gas mixture into ceramic cavity through metal laser welding and high vacuum braze welding.

H2 GAS MIXTURE

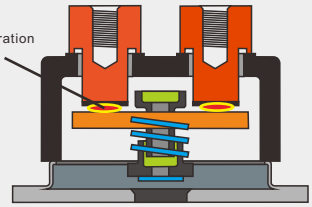


CERAMIC SEAL CAVITY

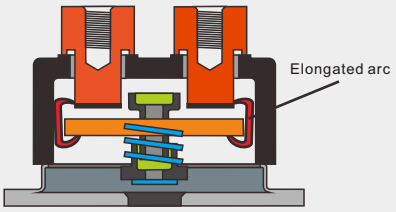
1 Relay is energized



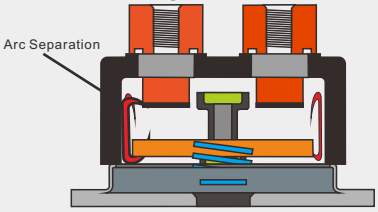
2 Arc is generated with separation of relays



3 Arc drives electric contacts move horizontally with external magnetic force



4 Arc is diverted to inwall of seal contacts, and cutting off of circuit is completed with stretching of it but no leak in addition



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ORDER INFORMATION

Product			EVC SERIES			
Current Rating			50A	100A	150A	250A	500A
Dimensions LXWXH			 55x35x58.5	 55x35x58.5	 80.4x52.8x73	 80.4x52.8x73	 70.7x62.5x77.6
Contact Configuration			1A	1A	1A	1A	1A
Auxiliary Contact			X	O	O	O	O
Characteristics			Ceramic seal structure, the contact chamber filled hydrogen mixed reducing gas, combined with magnetic blow-out				
Nominal Coil voltage			12V, 24V		9V~36V ECO		
Contact Capacity Rated Load	350A 300A 250A 200A 150A 100A 50A		50A 450V DC	100A 450V DC	150A 450V DC	250A 450V DC	350A 450V DC
Min. Contact Capacity Load			1A 12V DC	1A 12V DC	1A 12V DC	1A 12V DC	1A 12V DC
Lifespan	Mechanical		200,000 (ops)	200,000 (ops)	200,000 (ops)	200,000 (ops)	200,000 (ops)
	Electrical	450V	Min 10,000 (ops)	Min 10,000(ops)	Min 10,000(ops)	Min 10,000(ops)	Min 4,000 (ops)
		750V	Min 3,000 (ops)	Min 3,000(ops)	Min 3,000(ops)	Min 3,000(ops)	Min 1,000(ops)
Dielectric Strength	Between Open Contacts		2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.1mA
	Between Contact and Coil		4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	3000V AC 60 Sec.1mA
Nominal Operating Power			5.5W	5.5W	43.2W (0.1s) Keep.1.7w	43.2W (0.1s) Keep.1.7w	45.6W (0.1s) Keep.3.4w
UL/CUL			File #492594				PENDING

APPLICATIONS

- New Energy Vehicles (BEV,HEV,FCEV)
- Charging Station and Charging Pile
- Clean Energy: Solar Energy / Wind Power Generation System
- AGV (unmanned delivery vehicles), Golf Cart
- Medical Devices
- Construction Equipment and Construction
- Cloud Server and Driving Power Supply - UPS
- Ground Heating System; Quick Charge Power Supply
- Battery Charging and Discharging System

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ORDER INFORMATION

Product			EVR SERIES					
Current Rating			20A	40A	100A	120A	150A	200A	300A
Dimensions LXWXH			 78x39.2x35	 72x32.6x57.7	 77x40.4x76.2	 77x40.4x76.2	 79x41.1x84.3	 105.3x45x88	 80.4x56x73
Contact Configuration			1A	1A	1A	1A	1A	1A	1A
Auxiliary Contact			X	X	X	X	X	O	O
Characteristics			Ceramic seal structure, the contact chamber filled hydrogen mixed reducing gas, combined with magnetic blow-out						
Nominal Coil voltage			12V, 24V					12V, 24V ECO	
Contact Capacity Rated Load	350A 300A 250A 200A 150A 100A 50A		20A 450V DC	40A 450V DC	100A 450V DC	120A 450V DC	150A 450V DC	200A 450V DC	300A 450V DC
Min. Contact Capacity Load			1A 12 DC	1A 12V DC	1A 12V DC	1A 12V DC	1A 12V DC	1A 12V DC	1A 12V DC
Lifespan	Mechanical		200,000 (ops)	200,000 (ops)	200,000 (ops)	200,000 (ops)	200,000 (ops)	200,000 (ops)	200,000 (ops)
	Electrical	450V	Min 10,000(ops)	Min 10,000(ops)	Min 10,000(ops)	Min 10,000(ops)	Min 10,000(ops)	Min 10,000(ops)	Min 6,000(ops)
		750V	Min 3,000(ops)	Min 3,000(ops)	Min 3,000(ops)	Min 3,000(ops)	Min 3,000(ops)	Min 3,000(ops)	Min 1,000(ops)
Dielectric Strength	Between Open Contacts		2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.10mA	2500V AC 60 Sec.1 mA
	Between Contact and Coil		4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	4000V AC 60 Sec.10mA	3000V AC 60 Sec.1m
Nominal Operating Power			3.6W	3W	4.5W	4.5W	6W	34W (0.1s) Keep.4w	34W (0.1s) Keep.4w

Machinery

Charging power supply;

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01

HIGH VOLTAGE EV RELAY

1.EVR SERIES

EVR20
EVR40
EVR100
EVR120
EVR150
EVR200

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DC HIGH VOLTAGE EV RELAY

EVR20

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	40Ω	0.3A	≤9.0VDC	≥1VDC	3.6W	16VDC
	24	160Ω	0.15A	≤18.0VDC	≥2VDC	3.6W	32VDC

CONTACT RATINGS

ITEM / MODEL	Unipolar resistive load(L/R≤1ms)	
	EVR20	
Maximum Continuous Current	20A	
Maximum Cut Off	V	1000V DC
	A	200A (300V DC)
	W	60KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 60A 50 Ops	
Reverse Direction Cut-off	-	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	30A 15min，50A 2min(≥ 3mm^2)	
Contact Resistance	≤10mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	

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DC HIGH VOLTAGE EV RELAY

EVR20

PART NUMBERING RULE

EVR 020 – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVR=Square	020 : 20A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
				24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>5mm
	Creepage Distance	>5mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 20A	10,000 Ops
		750V DC 20A	3,000 Ops
Shock Resistance	Functional		Min 196㎨{20G} 11ms ,(10μS)
	Destructive		Min 490㎨{50G} 6ms
Vibration Resistance	Functional		43㎨{5G} 10 to 200Hz,(10μS)
	Destructive		43㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			160g

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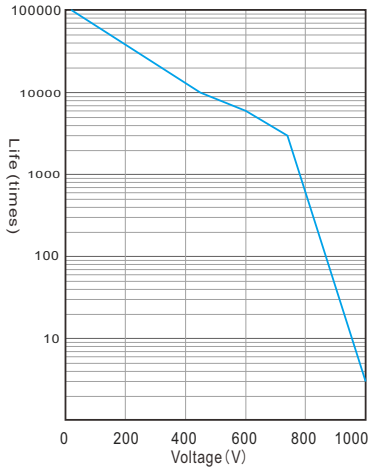
DC HIGH VOLTAGE EV RELAY

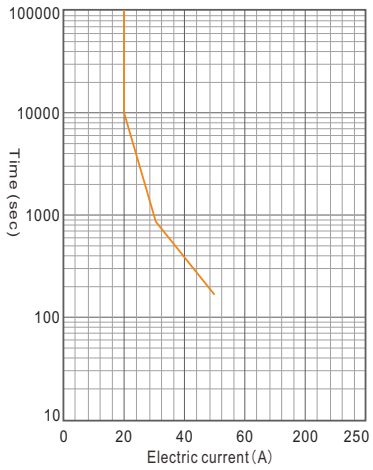
EVR20

ENGINEERING DATA

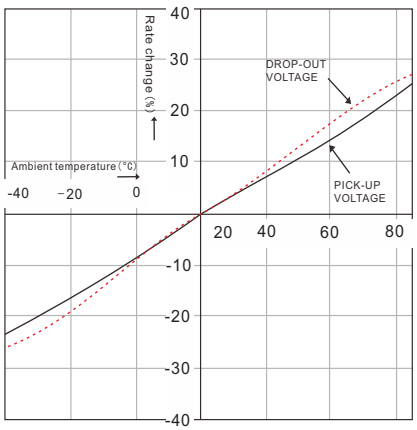
On-off ability curve(Current rating)



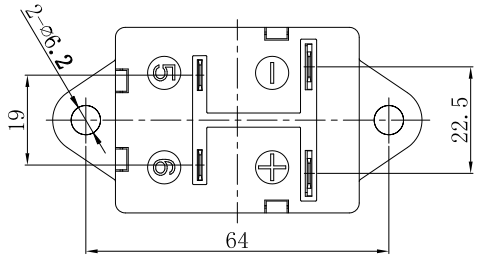
Current distribution

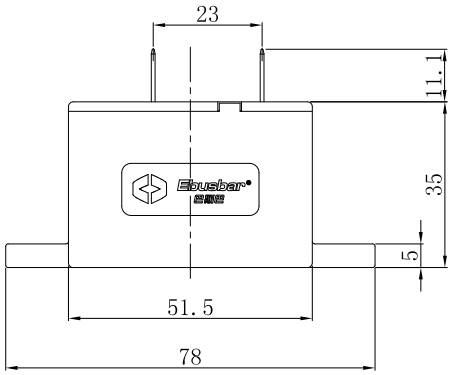


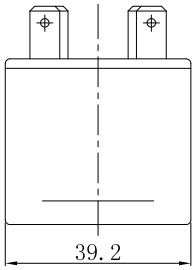
Ambient temperature characteristics



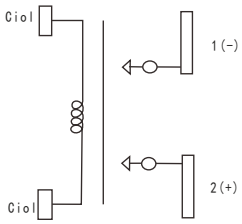
DIMENSIONAL DRAWING



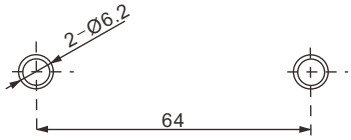




SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV RELAY

EVR40

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	48Ω	0.25A	≤9.0VDC	≥1VDC	3W	16VDC
	24	192Ω	0.125A	≤18.0VDC	≥2VDC	3W	32VDC

CONTACT RATINGS

ITEM / MODEL	Unipolar resistive load(L/R≤1ms)	
	EVR40	
Maximum Continuous Current	40A	
Maximum Cut Off	V	1000V DC
	A	400A (300V DC)
	W	120KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 120A 50 Ops	
Reverse Direction Cut-off	-40A 200VDC 1000 Ops	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	60A 15min，100A 2min (≥ 10㎜²)	
Contact Resistance	≤10mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	

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DC HIGH VOLTAGE EV RELAY

EVR40

PART NUMBERING RULE

EVR 040 – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVR=Square	040 : 40A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
				24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>10mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 40A	10,000 Ops
		750V DC 40A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms ,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		49㎨{5G} 10 to 200Hz,(10μS)
	Destructive		49㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			180g

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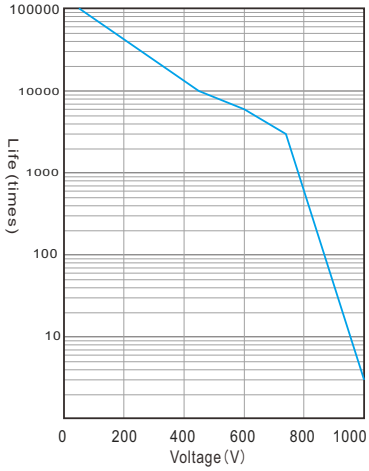
DC HIGH VOLTAGE EV RELAY

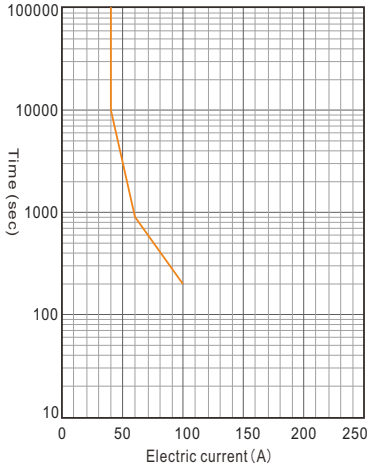
EVR40

ENGINEERING DATA

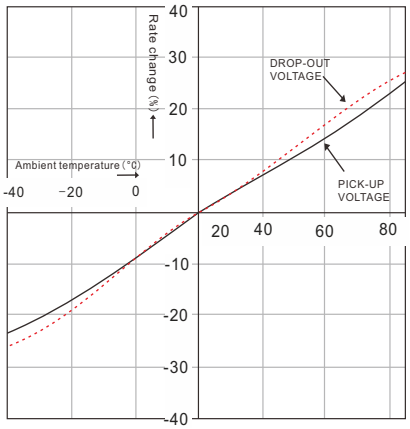
On-off ability curve(Current rating)



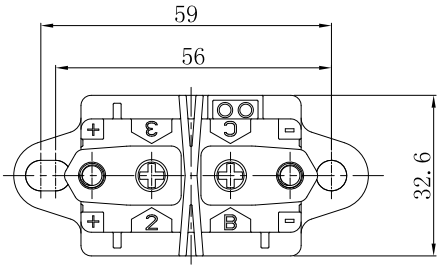
Current distribution

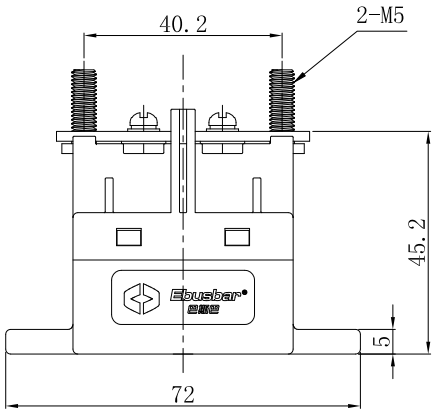


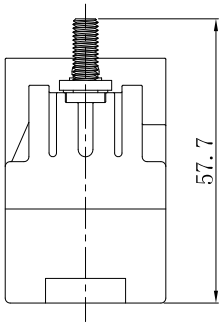
Ambient temperature characteristics



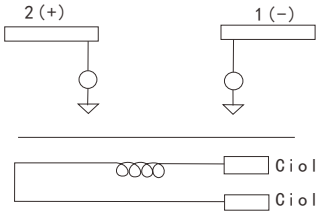
DIMENSIONAL DRAWING



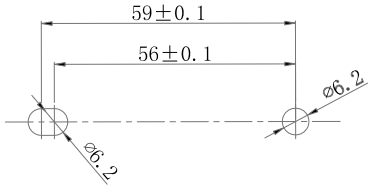




SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV RELAY

EVR100

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	32Ω	0.375A	≤9.0VDC	≥1VDC	4.5W	16VDC
	24	128Ω	0.128A	≤18.0VDC	≥2VDC	4.5W	32VDC

CONTACT RATINGS

MODEL / ITEM	Unipolar resistive load(L/R≤1ms)	
	EVR100	
Maximum Continuous Current	100A	
Maximum Cut Off	V	1000V DC
	A	1000A (300V DC)
	W	300KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 200A 100 Ops	
Reverse Direction Cut-off	-100A 200VDC 1000 Ops	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	150A 10min，225A 2min(≥ 35mm^2)	
Contact Resistance	≤1.5mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1A (SPST-NO.)	

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DC HIGH VOLTAGE EV RELAY

EVR100

PART NUMBERING RULE

EVR 100 – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVR=Square	100 : 100A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
				24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 100A	10,000 Ops
		750V DC 100A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms ,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		43㎨{4.4G} 10 to 200Hz,(10μS)
	Destructive		43㎨{4.4G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			350g

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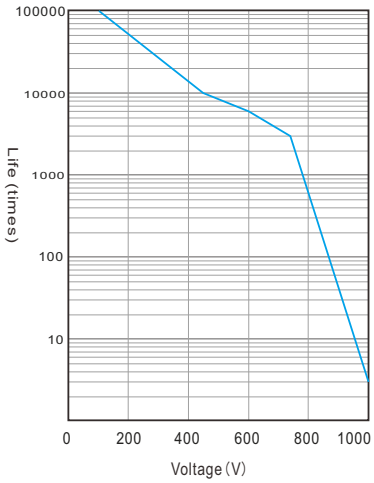
DC HIGH VOLTAGE EV RELAY

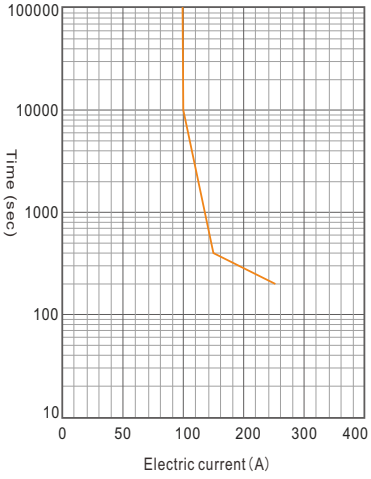
EVR100

ENGINEERING DATA

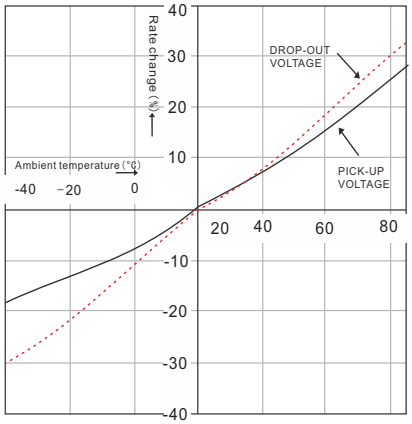
On-off ability curve(Current rating)



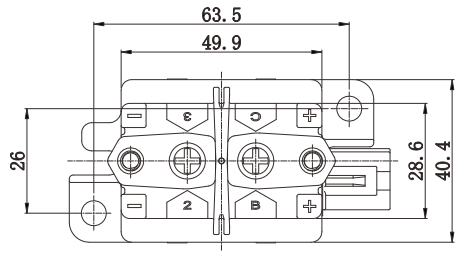
Current distribution

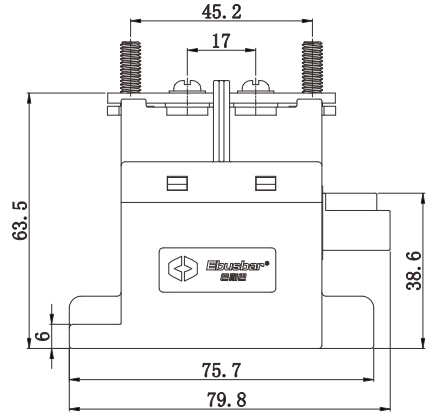


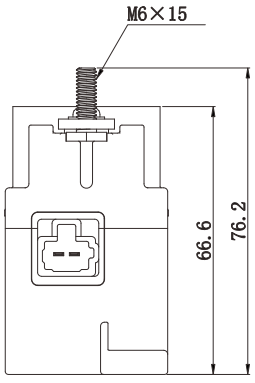
Ambient temperature characteristics



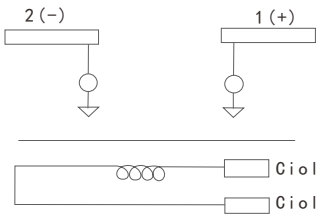
DIMENSIONAL DRAWING



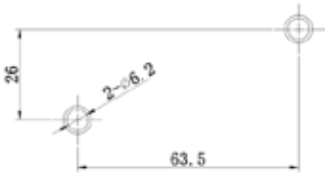




SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV RELAY

EVR120

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	32Ω	0.375A	≤9.0VDC	≥1VDC	4.5W	16VDC
	24	128Ω	0.128A	≤18.0VDC	≥2VDC	4.5W	32VDC

CONTACT RATINGS

ITEM / MODEL	Unipolar resistive load(L/R≤1ms)	
	EVR120	
Maximum Continuous Current	120A	
Maximum Cut Off	V	1000V DC
	A	1200A (300V DC)
	W	360KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 250A 100 Ops	
Reverse Direction Cut-off	-120A 200VDC 1000 Ops	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	180A 15min，300A 2min(≥ 40mm^2)	
Contact Resistance	≤1.5mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	

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DC HIGH VOLTAGE EV RELAY

EVR120

PART NUMBERING RULE

EVR 120 – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVR=Square	120 : 120A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
				24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 120A	10,000 Ops
		750V DC 120A	3,000 Ops
Shock Resistance	Functional		Min 196m/s² {20G} 11ms,(10μS)
	Destructive		Min 490m/s² {50G} 6ms
Vibration Resistance	Functional		43m/s²{4.4G} 10 to 200Hz,(10μS)
	Destructive		43m/s²{4.4G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			350g

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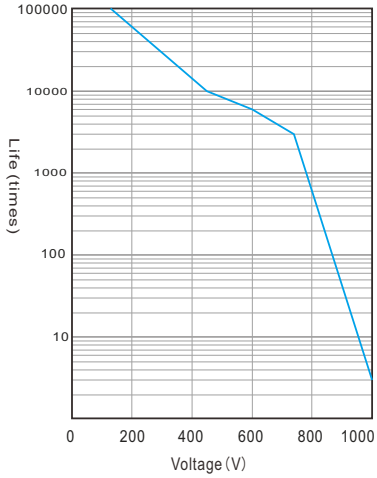
DC HIGH VOLTAGE EV RELAY

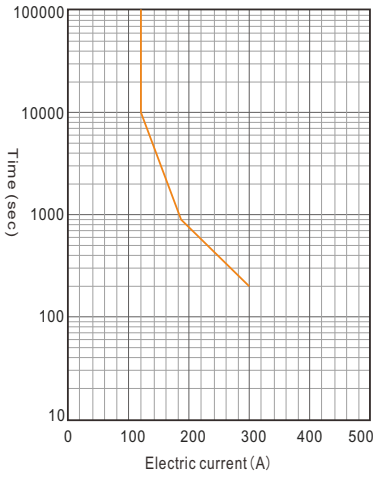
EVR120

ENGINEERING DATA

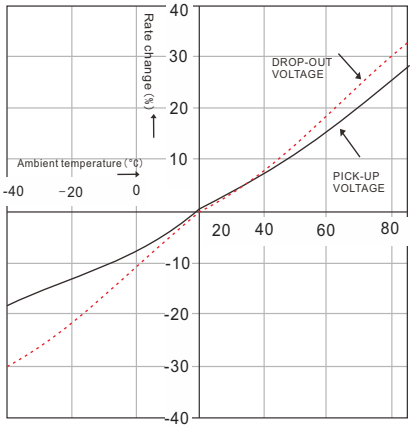
On-off ability curve(Current rating)



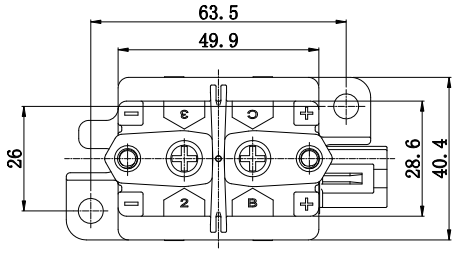
Current distribution

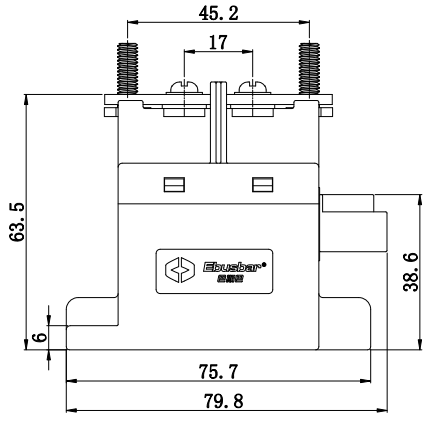


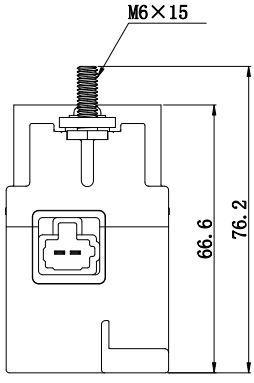
Ambient temperature characteristics



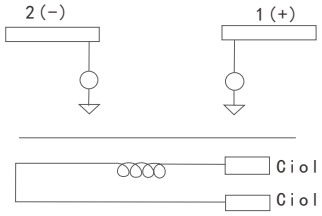
DIMENSIONAL DRAWING



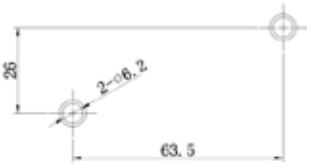




SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV RELAY

EVR150

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	24Ω	0.5A	≤9.0VDC	≥1VDC	6W	16VDC
	24	96Ω	0.25A	≤18.0VDC	≥2VDC	6W	32VDC

CONTACT RATINGS

ITEM / MODEL	Unipolar resistive load(L/R≤1ms)	
	EVR150	
Maximum Continuous Current	150A	
Maximum Cut Off	V	1000V DC
	A	1500A (300V DC)
	W	450KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 300A 100 Ops	
Reverse Direction Cut-off	-150A 200VDC 1000 Ops	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	225A 10min，320A 2min. (≥ 50mm^2)	
Contact Resistance	≤0.4mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	

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DC HIGH VOLTAGE EV RELAY

EVR150

PART NUMBERING RULE

EVR 150 – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVR=Square	150 : 150A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
				24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 150A	10,000 Ops
		750V DC 150A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms ,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		49㎨{5G} 10 to 200Hz,(10μS)
	Destructive		49㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			400g

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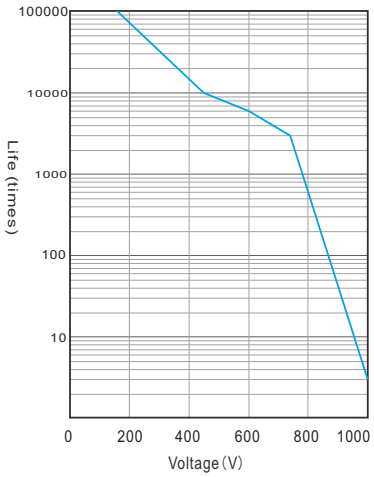
FOCUS ON NEW ENERGY PRODUCTION

DC HIGH VOLTAGE EV RELAY

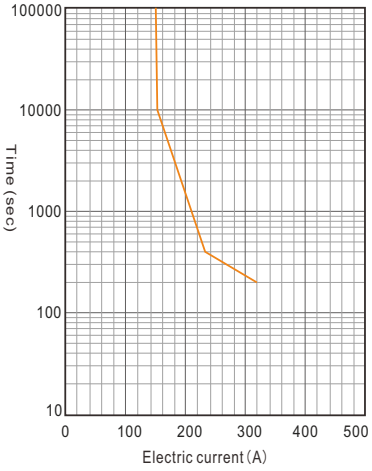
EVR150

ENGINEERING DATA

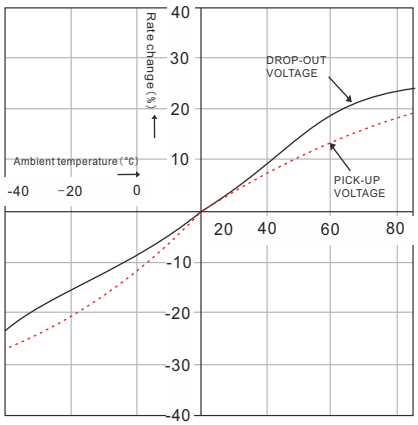
On-off ability curve(Current rating)



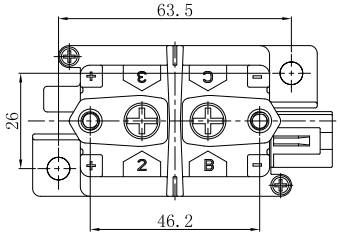
Current distribution

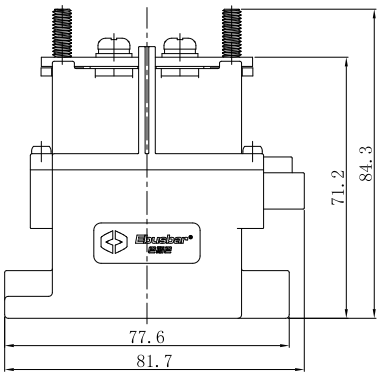


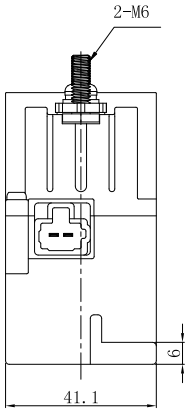
Ambient temperature characteristics



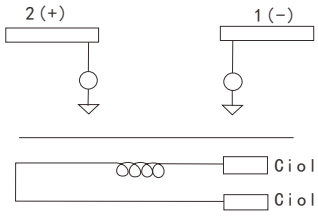
DIMENSIONAL DRAWING



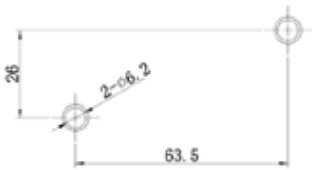




SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV RELAY

EVR200

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	3A	0.35A	≤9.0VDC	≥1VDC	On 34W(0.1s) Keep 4W	16VDC
	24	1.5A	0.175A	≤18.0VDC	≥2VDC	On 34W(0.1s) Keep 4W	32VDC

CONTACT RATINGS

MODEL / ITEM	Unipolar resistive load(L/R≤1ms)	
	EVR200	
Maximum Continuous Current	200A	
Maximum Cut Off	V	1000V DC
	A	2000A (300V DC)
	W	600KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 400A 100 Ops	
Reverse Direction Cut-off	-200A 200VDC 1000 Ops	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	300A 15min，500A 2min. (≥ 60mm²)	
Contact Resistance	≤0.3mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	

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DC HIGH VOLTAGE EV RELAY

EVR200

PART NUMBERING RULE

EVR 200 – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVR=Square	200 : 200A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
				24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 200A	10,000 Ops
		750V DC 200A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms ,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		49㎨{5G} 10 to 200Hz,(10μS)
	Destructive		49㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			500g

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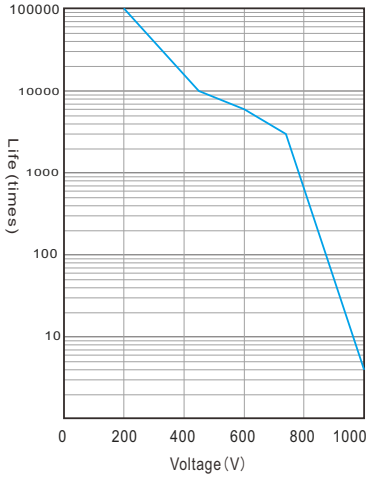
DC HIGH VOLTAGE EV RELAY

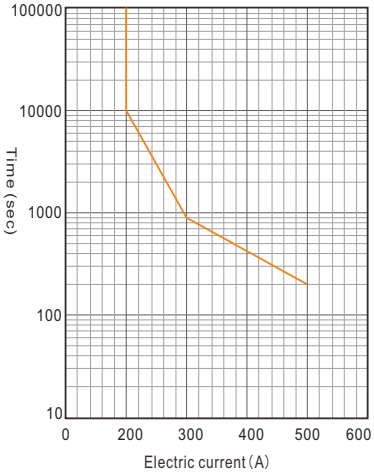
EVR200

ENGINEERING DATA

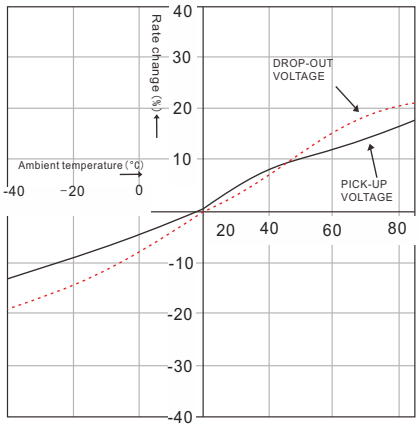
On-off ability curve(Current rating)



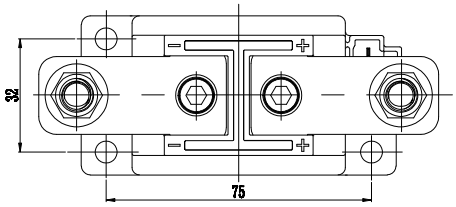
Current distribution

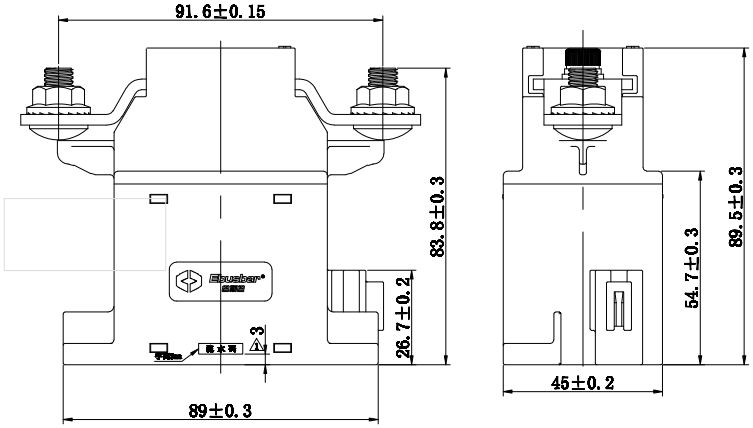


Ambient temperature characteristics

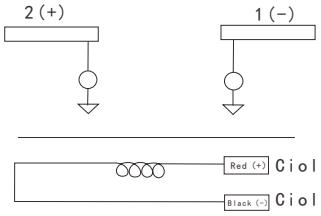


DIMENSIONAL DRAWING

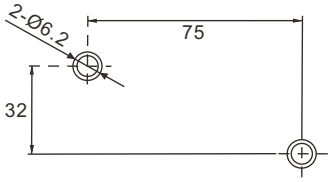




SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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EV CONTACTOR
DC HIGH VOLTAGE
EVR300

Typical Applications

- DC high current and high voltage applications.
- Main Contactors for hybrid vehicles/ electric vehicles and fuel-cell cars.
- Battery charging systems.

Product Facts

- Hydrogen dielectric for power switching high current and high voltage loads.
- Operating range:12~1000VDC.
- Hermetically 'Super-sealed' environment chamber uniquely protects all moving parts.
- Built-in coil economizer only 4W(ave.) hold power and it limits back EMF to 0V.

Coil data

	Inrush Current (Max.)	Inrush Time (Max.)	Hold Current (Ave.)	Pull-in Voltage	Drop-out Voltage	Limit Input Voltage	Launch Power	Hold Power
12DC	3.0A	0.4s	0.35A	≤7.2V	≥1V	16VDC	34W	4W
24VDC	1.5A		0.2A	≤14.4V	≥2V	32VDC		

Contact data

Item \ Data		Un-polar resistive load(L/R1≤ms)
Continuous Current		300A
Max. Contact Capacity	V	1000VDC
	A	300A
	W	225KW
Max. Switching Capacity		300A/450VDC
Min. Switching Capacity		1A 12VDC
Carrying Current Capacity		Reference curve
Contact Resistance (at 23℃)		≤0.5mΩ (DC250A)
Contact Material		Alloy Cu
Contact Type		1A(SPST-NO)
Aux. Contact Current, Max.		---
Aux. Contact Current, Min.		---

Product Name Structure

EVR 300 – 1 12 D - 001

Series	Rated Current	Contact Type	Coil Voltage	Coil lead	Special Code
EVR (Square)	300: 300A	1: 1a Normally Open	12: 12VDC 24: 24VDC	D:wire type E:wire type with quick plug	0--:appearance -0-:installation --0:client code

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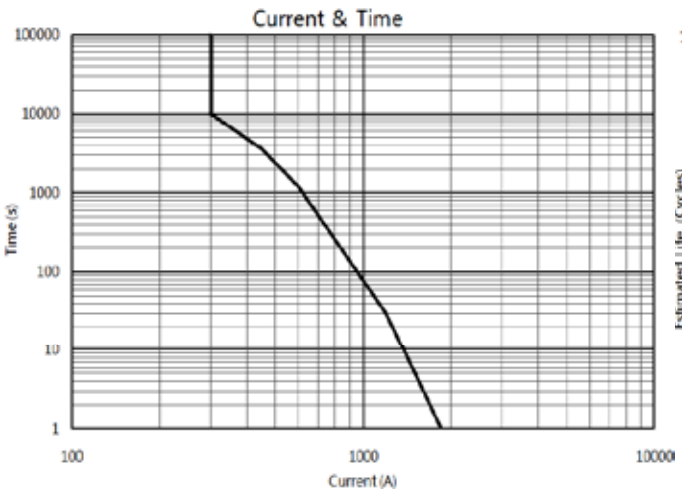
EV CONTACTOR
DC HIGH VOLTAGE
EVR300

Characteristics

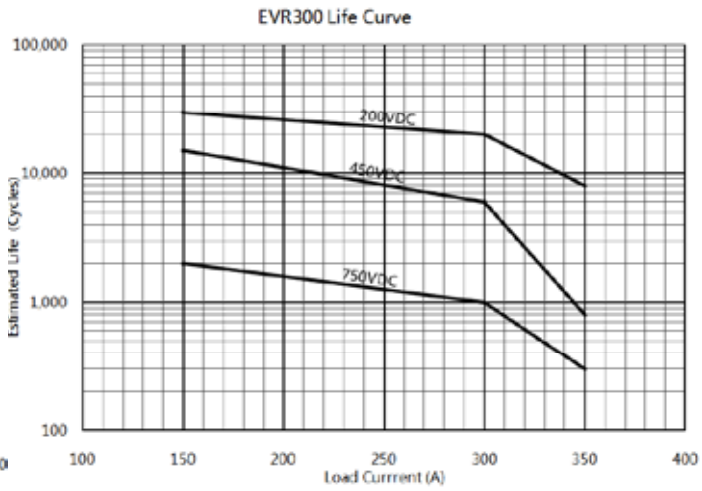
Life	Mechanical Life		2×10^5 Ops
	Electrical Life(L/R1≤ms) (Switching Life)	450VDC 300A	6000 Ops
		750VDC 300A	1000 Ops
Insulation Resistance			Min. 100MΩ 500VDC
Insulation Dielectric Strength	Between Open Contact		2500VAC 60Sec. 1mA
	Between Contact and Coil		3000VAC 60Sec. 1mA
Operate Time (at 23℃)			⩽30ms
Release Time (at 23℃)			⩽10ms
Bounce Time (at 23℃)			⩽5ms
Shock Resistance	Functional		Min 196m/s² (20G) 11ms, (10μs)
	Destructive		Min 490m/s² (50G) 6ms
Vibration Resistance	Functional		Min 43m/s² (5G) 10~200Hz
	Destructive		Min 43m/s² (5G) 10~200Hz
Conditions for operation Transport and storage	Ambient Temperature		-40℃~85℃
	Humidity		5~85%RH.
Unit Weight			550g

Reference Data

Carrying Current Curve



Make/Break Power Switching (R load)



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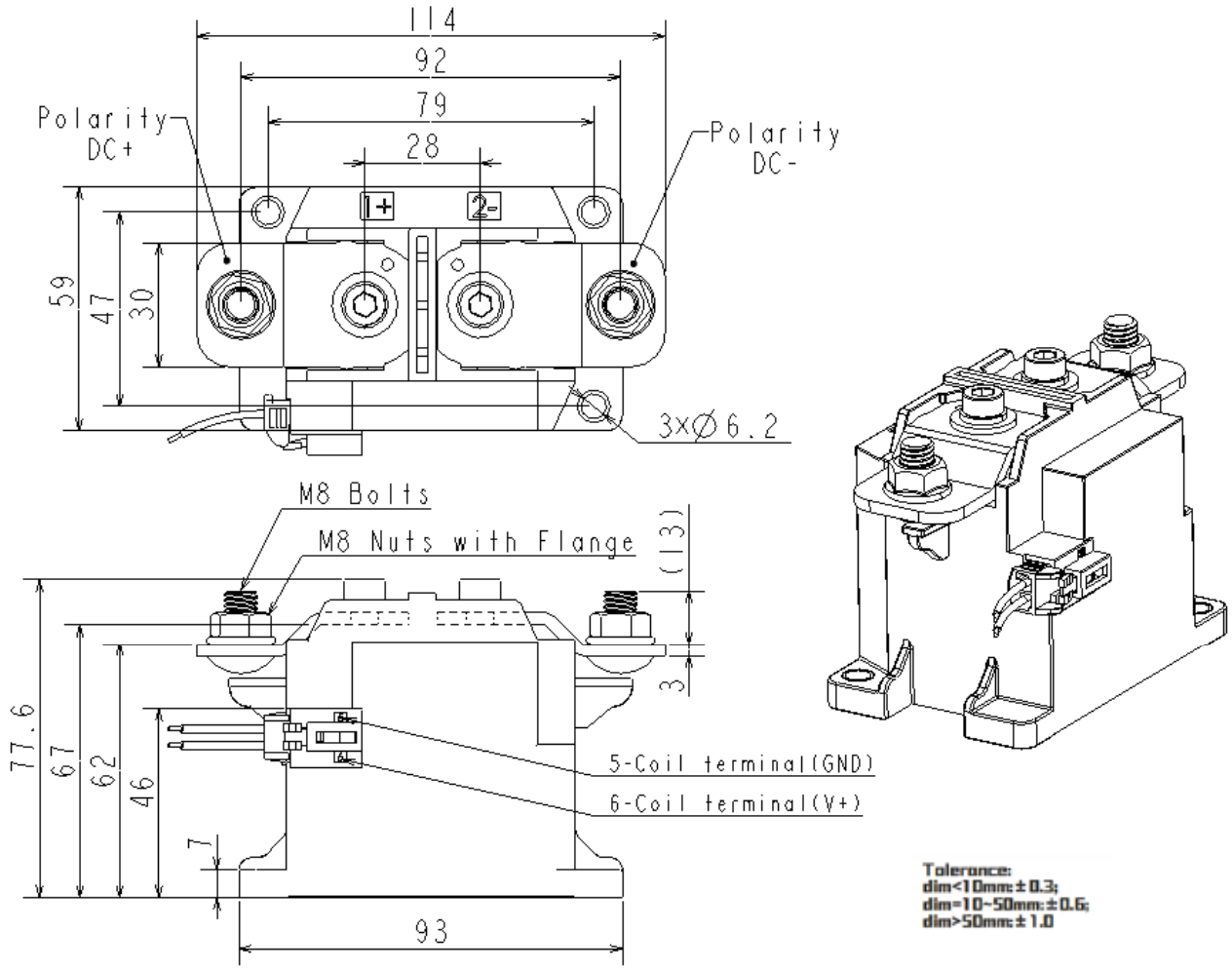
EV CONTACTOR
DC HIGH VOLTAGE
EVR300

Dimensional Drawing



Note:
1. All data valid at 23℃ coil temperature.
2. Maximum allowed terminal temperature are: 150℃ continuous; 175℃ for 2H; 200℃ for 6min.
3. End of life when dielectric strength between terminals falls below 50 Megohms@500VDC.
4. The maximum make current is 1800A to avoid contact welding.
5. The contactor can not the initial data, when the end of life.
6. The coil resistance tolerance is ±10%.

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02

HIGH VOLTAGE EV CONTACTOR

2.EVC SERIES

EVC50
EVC100
EVC150
EVC250
EVC350

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DC HIGH VOLTAGE EV CONTACTOR

EVC50

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions
- **UL/CUL File #E492594**

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	26Ω	0.5A	≤9.0VDC	≥1VDC	5.5W	16VDC
	24	100Ω	0.25A	≤18.0VDC	≥2VDC	5.5W	32VDC

CONTACT RATINGS

ITEM / MODEL	Unipolar resistive load(L/R≤1ms)	
	EVC50	
Maximum Continuous Current	50A	
Maximum Cut Off	V	1000V DC
	A	500A (300V DC)
	W	150KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 150A 100 Ops	
Reverse Direction Cut-off	-50A 200VDC 1000 Ops	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	75A 15min，125A 2min. (≥ 10mm^2)	
Contact Resistance	≤1.5mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	

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DC HIGH VOLTAGE EV CONTACTOR

EVC50

PART NUMBERING RULE

EVC 050 – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVC=Round	050 : 50A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
				24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 50A	10,000 Ops
		750V DC 50A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms ,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		49㎨{5G} 10 to 200Hz,(10μS)
	Destructive		49㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			180g

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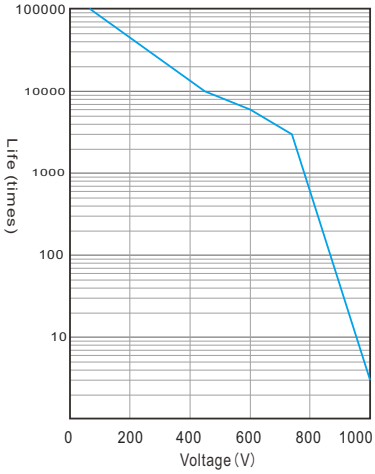
DC HIGH VOLTAGE EV CONTACTOR

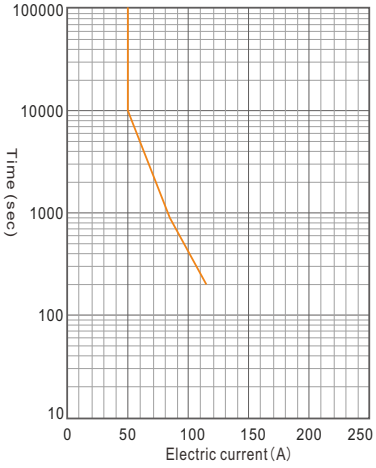
EVC50

ENGINEERING DATA

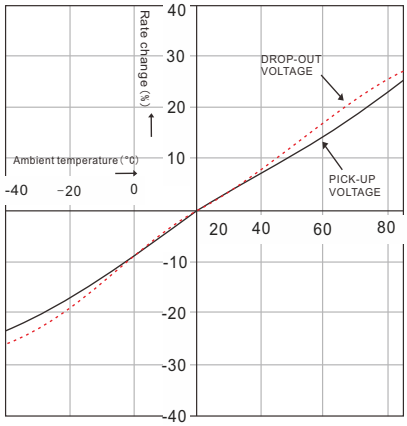
On-off ability curve(Current rating)



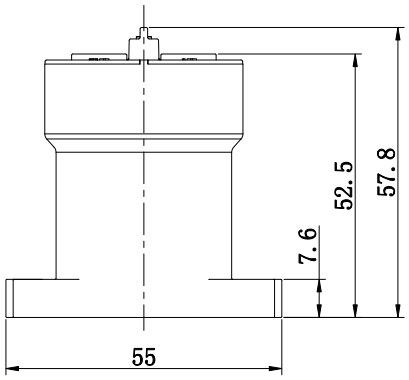
Current distribution

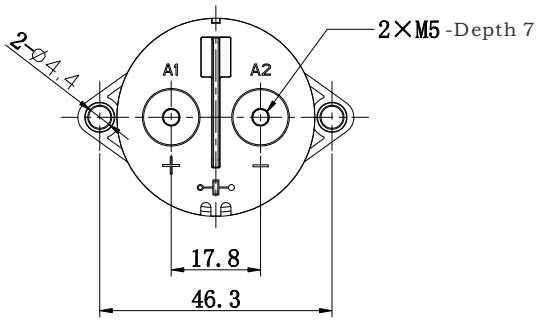


Ambient temperature characteristics

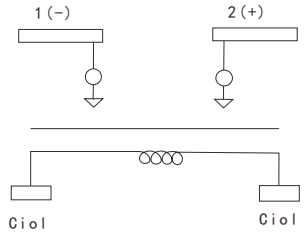


DIMENSIONAL DRAWING

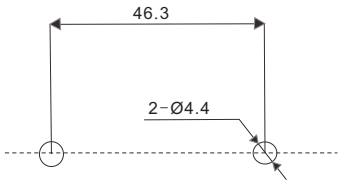




SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV CONTACTOR

EVC100

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions
- **UL/CUL File #E492594**

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		COIL RESISTANCE (Ω)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	NOMINAL OPERATING POWER (W)	MAX. ALLOWABLE VOLTAGE(V)
DC	12	26Ω	0.5A	≤9.0VDC	≥1VDC	5.5W	16VDC
	24	100Ω	0.25A	≤18.0VDC	≥2VDC	5.5W	32VDC

CONTACT RATINGS

MODEL / ITEM	Unipolar resistive load(L/R≤1ms)	
	EVC100	
Maximum Continuous Current	100A	
Maximum Cut Off	V	1000V DC
	A	1000A 300V DC
	W	300KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening / Closing Rating	750VDC 200A 100 Ops	
Reverse Direction Cut-off	-100A 200VDC 1000 Ops	
Min. Switching Capacity(Resistive Load)	1A 12VDC	
Short Term Current	150A 15min，225A 2min. (≥ 35mm^2)	
Contact Resistance	≤1.5mΩ (6V DC 20A)	
Contact Material	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	
General Auxiliary Contacts Current Range	2A 30VDC / 3A 125VAC	
General Auxiliary Contacts Minimum Current	100mA 8VDC	

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DC HIGH VOLTAGE EV CONTACTOR

EVC100

PART NUMBERING RULE

EVC 100 A – 1 12 D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVC=Round	100 : 100A	Null:NO auxiliary contacts	"1"=1a,Normolly Open	12 : 12VDC	"D"= Wire type, with no quick plug	01-99
		A: With auxiliary contacts		24 : 24VDC	"E"= Wire type, with quick plug	

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 100A	10,000 Ops
		750V DC100A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms ,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		49㎨{5G} 10 to 200Hz,(10μS)
	Destructive		49㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			180g

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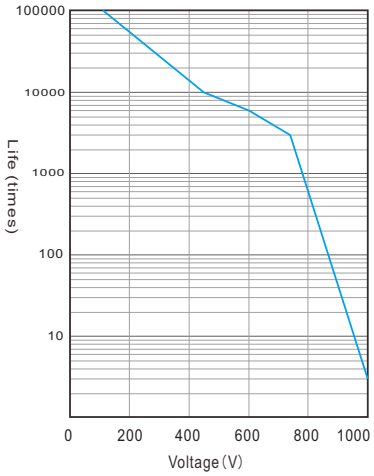
DC HIGH VOLTAGE EV CONTACTOR

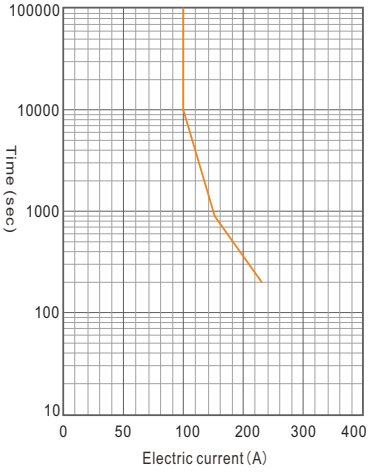
EVC100

ENGINEERING DATA

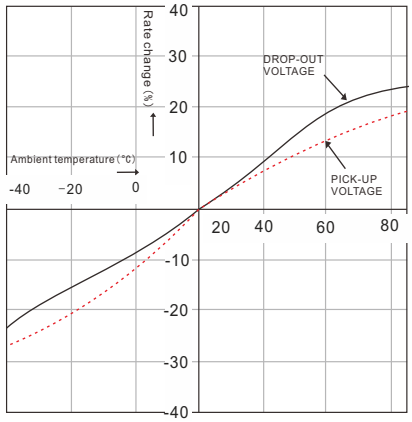
On-off ability curve(Current rating)



Current distribution



Ambient temperature characteristics



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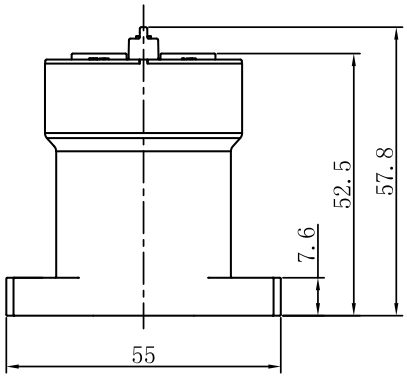

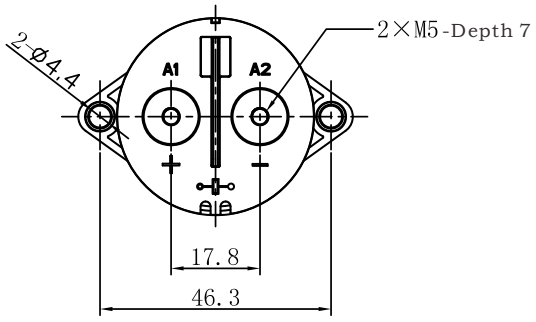

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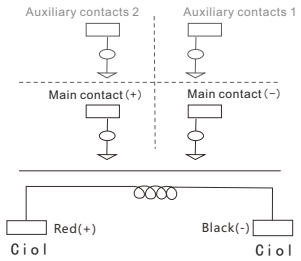
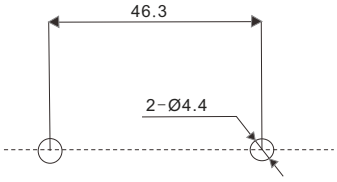


MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV CONTACTOR

EVC150

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions
- **UL/CUL File #E492594**

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		MAX.STARTING CURRENT(A)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	MAX.REVERSE DIRECTION CUT-OFF	MAX. ALLOWABLE VOLTAGE(V)	POWER SAVE MODE
DC	9~36	3.6A	0.13A@12VDC 0.07A@24VDC	≤8.5VDC	≥4.5VDC	2V	36VDC	PWM

CONTACT RATINGS

ITEM / MODEL	Unipolar resistive load (L/R≤1ms)	
	EVC150	
Maximum Continuous Current	150A	
Maximum Cut Off	V	1000V DC
	A	1500A (300V DC)
	W	450KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening/closing Rating	750VDC 300A 100 Ops	
Reverse Direction Cut-off	-150A 200VDC 1000 Ops	
Min. Applicable Load	1A 12VDC	
Min. Switching Capacity(Resistive Load)	225A 10min，320A 2min. (≥ 50mm^2)	
Short Term Current	≤0.5mΩ (6V DC 20A)	
Contact Resistance	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	
General Auxiliary Contacts Current Range	2A 30VDC / 3A 125VAC	
General Minimum Current Auxiliary Contacts	100mA 8VDC	

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DC HIGH VOLTAGE EV CONTACTOR

EVC150

PART NUMBERING RULE

EVC 150 A – 1 A D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVC=Round	150 : 150A	Null:NO auxiliary contacts A: With auxiliary contacts	"1"=1a,Normolly Open	A: 9~36VDC	"D"= Wire type, with no quick plug "E"= Wire type, with quick plug	01-99

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 150A	10,000 Ops
		750V DC 150A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		49㎨{5G} 10 to 200Hz,(10μS)
	Destructive		49㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			380g

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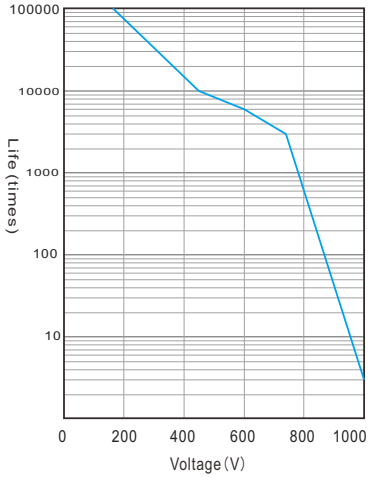
DC HIGH VOLTAGE EV CONTACTOR

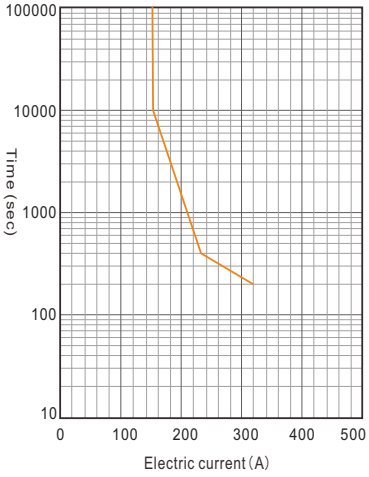
EVC150

ENGINEERING DATA

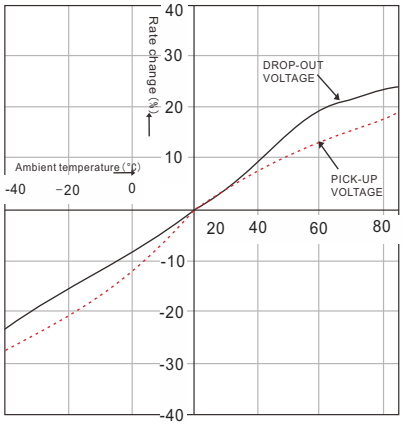
On-off ability curve(Current rating)



Current distribution



Ambient temperature characteristics



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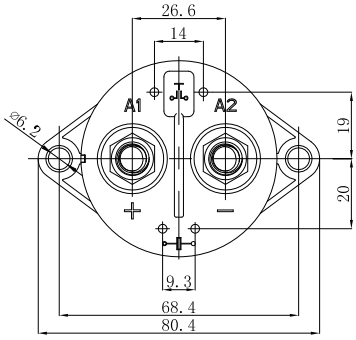

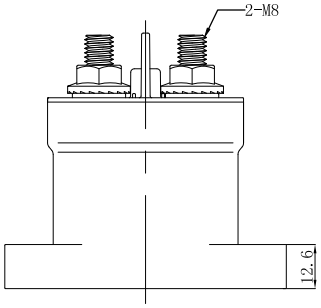

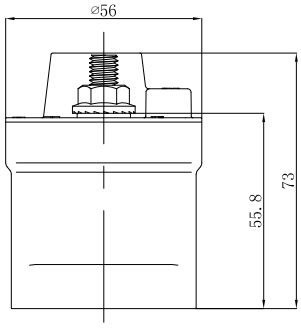

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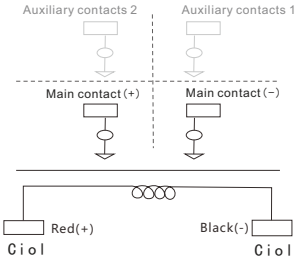
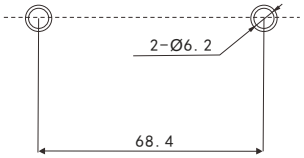


MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV CONTACTOR

EVC250

FEATURES

- **High-voltage, high-current control capable**
  With ceramic seal structure, the contact chamber filled with hydrogen mixed reducing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- **Compact Design & Low Operating Sound**
  By using a capsule contact mechanism that is enclosed with hydrogen gas, highcapacity cutoff is possible even with a tiny contact gap. There is little operating sound, which does not change even when large currents are cut off.
- **Arc space unnecessary**
  The enclosure box is smaller thanks to an arc-space-free construction from which the arc will not get out.
- **Safety**
  Arc will not get out with design of that contacts are enclosed in a sealed capsule.
- **High contact reliability**
  The contact part is hermetically sealed with H2 mixed gas, hence the contact resistance remains stable regardless of the ambient conditions
- **UL/CUL File #E492594**

COIL SPECIFICATION

ITEM / NOMINAL VOLTAGE(V)		MAX.STARTING CURRENT(A)	NOMINAL OPERATING CURRENT(A)	PULL-IN VOLTAGE(V)	DROP-OUT VOLTAGE(V)	MAX.REVERSE DIRECTION CUT-OFF	MAX. ALLOWABLE VOLTAGE(V)	POWER SAVE MODE
DC	9~36	3.6A	0.13A@12VDC 0.07A@24VDC	≤9VDC	≥4.8VDC	2V	36VDC	PWM

CONTACT RATINGS

ITEM / MODEL	Unipolar resistive load (L/R≤1ms)	
	EVC250	
Maximum Continuous Current	250A	
Maximum Cut Off	V	1000V DC
	A	2500A (300V DC)
	W	750KW
Nominal Switching Capacity(Resistive Load)	450VDC	
Overload Opening/closing Rating	750VDC 350A 100 Ops	
Reverse Direction Cut-off	-250A 200VDC 1000 Ops	
Yung Resistance Load (Charge Capacitance)	500V 500A 10,000 Ops	
Min. Applicable Load	1A 12VDC	
Min. Switching Capacity(Resistive Load)	375A 10min，500A 2min. (≥ 75mm^2)	
Short Term Current	≤0.5mΩ (6V DC 20A)	
Contact Resistance	Alloy Cu	
Contact Arrangement	1 A (SPST-NO.)	
General Auxiliary Contacts Current Range	2A 30VDC / 3A 125VAC	
General Auxiliary Contacts Minimum Current	100mA 8VDC	

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DC HIGH VOLTAGE EV CONTACTOR

EVC250

PART NUMBERING RULE

EVC 250 A – 1 A D 01

Product Series	Contact load	Auxiliary contacts	Contact Form	Coil voltage	Coil which leads to the way	Special Code
EVC=Round	250 : 250A	Null:NO auxiliary contacts A: With auxiliary contacts	"1"=1a,Normolly Open	A: 9~36VDC	"D"= Wire type, with no quick plug "E"= Wire type, with quick plug	01-99

INSULATION PERFORMANCE

Insulation Resistance		Min.100MΩ 500V DC
Dielectric Strength	Between Open Contacts	2500V AC 60 Sec.10mA
	Between Contact And Coil	4000V AC 60 Sec.10mA
Load Terminal	Electric Clearance	>6mm
	Creepage Distance	>10mm
Impulse Withstand Voltage		5000V AC
Operate Time(at 20 ℃)		Max. 30ms
Release Time(at 20 ℃)		Max. 10ms
Bounce Time(at 20 ℃)		Max. 5ms

Remarks: 1, Ambient Temperature 20 ° C; 2, Coil Resistance Tolerance ± 10%

MECHANICAL PARAMETERS

Life	Mechanical Life		$2x10^5$ Ops
	Electrical Life (Resistive Load) (L/R≤1ms)	450V DC 250A	10,000 Ops
		750V DC 250A	3,000 Ops
Shock Resistance	Functional		Min 196㎨ {20G} 11ms,(10μS)
	Destructive		Min 490㎨ {50G} 6ms
Vibration Resistance	Functional		49㎨{5G} 10 to 200Hz,(10μS)
	Destructive		49㎨{5G} 10 to 200Hz 4h
Conditions For Operation, Transport And Storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Weight			380g

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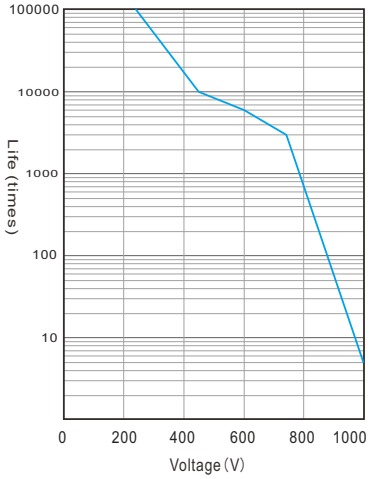
DC HIGH VOLTAGE EV CONTACTOR

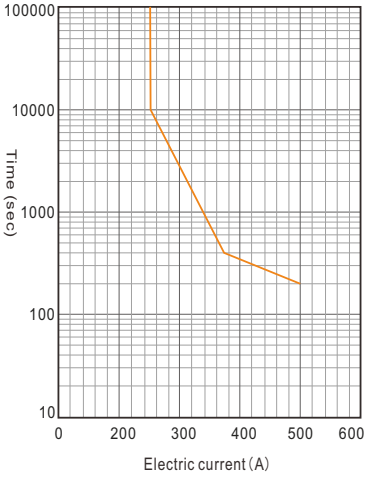
EVC250

ENGINEERING DATA

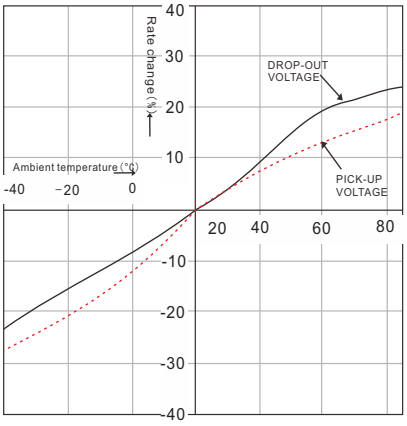
On-off ability curve(Current rating)



Current distribution



Ambient temperature characteristics



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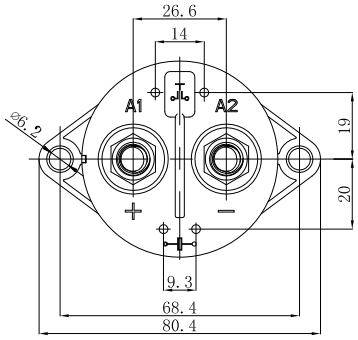

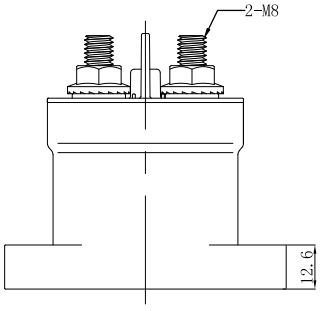

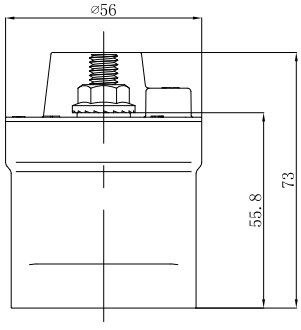

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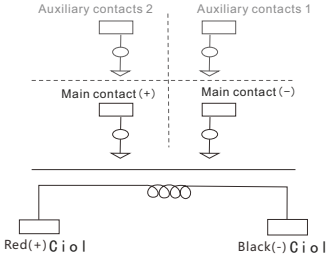
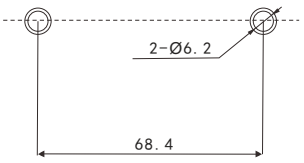


MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

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DC HIGH VOLTAGE EV CONTACTOR

EVC500

Typical Applications

- DC high current and high voltage applications.
- Main contactors for hybrid vehicles/ electric vehicles and fuel-cell cars.
- Battery charging systems.

Product Facts

- Hydrogen dielectric for power switching high current and high voltage loads.
- Operating range:12~1000VDC. Limiting continuous current 500A (with 214mm^2).
- Optional auxiliary contact for monitoring of power contact postion.
- Hermetically 'Super-sealed' environment chamber uniquely protects all moving parts.
- Built-in coil economizer only 1.5W(ave.) hold power and it limits back EMF to 0V.

Coil Data

Item / Coil Voltage		Inrush Current (Max.)	Inrush Time (Max.)	Holding Current (Ave.)	Pull-In Voltage	Drop-Out Voltage	Limit Input Voltage	Nominal Duty	Nominal Frequency
DC	9~36 V	3.8A	120ms	0.15A@12VDC 0.08A@24VDC	≤9VDC	≥5VDC	36VDC	20% (@12VDC)	20K Hz

Contact Data

Item \ Type	Unipolar resistive load(L/R≤1ms)	
	EVC500	
Max. Continuous Current	500A	
Max. Contact Capacity	V	1000V DC
	A	3500A
	W	265KW
Max. Switching Capacity	1600A / 450VDC 1Ops	
Min. Switching Capacity	1A 12VDC	
Carrying Current Capacity	Reference curve	
Contact Resistance(at 23 ℃)	≤0.4mΩ (DC 500A)	
Contact Material (at 23 ℃)	Alloy Cu	
Aux. Contact Type	1 A (SPST-NO.)	
Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC	
Aux. Contact Current, Min.	100mA 8VDC	

Product Name Structure

EVC 500 A – 1 A D P 001

Series	Rated Current	Auxiliary Contactor	Contact Type	Coil voltage	Coil lead way	ECO Mode	Special Code
EVC=Circulerar	500 : 500A	None: Basic Type A: Aux. Contactor	"1"=1A, Normolly Open	A:9~36VDC	'D'= Wire type, with no quick lug 'E'= Wire type, with quick plug	'P':PCB external	0--:appearance -0-:installation --0:client code

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FOCUS ON NEW ENERGY AUTOMOBILE

DC HIGH VOLTAGE EV CONTACTOR

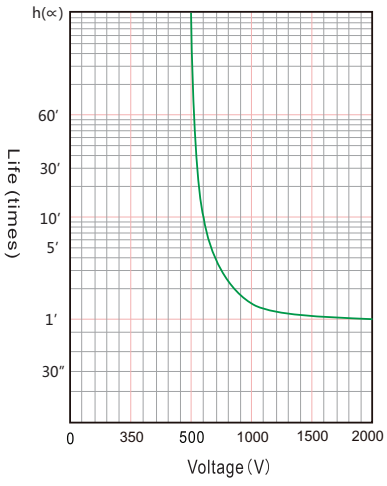
EVC500

Characteristics

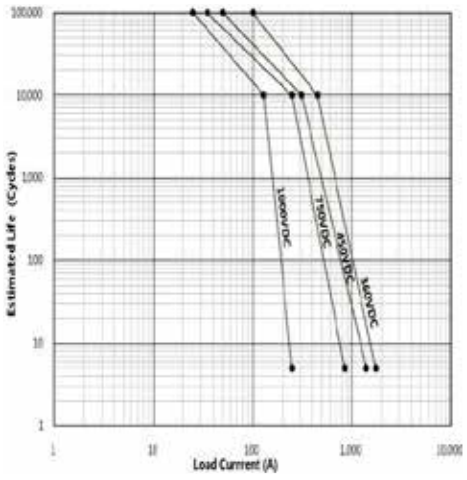
Life	Mechanical Life		2x10^5 Ops
	Electrical Life(L/R≤1ms) (Switching Life.)	450V DC 350A	4,000 Ops
		750V DC 350A	1,000 Ops
Insulation Resistance			Min.100MΩ 500V DC
Insulation Dielectirc Strength	Between Open Contacts		2500VAC 60 Sec. 1mA
	Between Contact And Coil		3000 VAC 60 Sec. 1mA
Operate Time(at 23 ℃)			≤30ms
Release Time(at 23 ℃)			≤10ms
Bounce Time(at 23 ℃)			≤5ms
Shock Resistance	Functional		196㎨ {20G} 6ms
	Destructive		490㎨{50G}11ms (10μs)
Vibration Resistance	Functional		49㎨ {5G} 10 to 200Hz,(10μs)
	Destructive		49㎨ {5G} 10 to 200Hz 4h
Conditions for operation transport and storage	Ambient Temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit Weight			550g

Reference Data

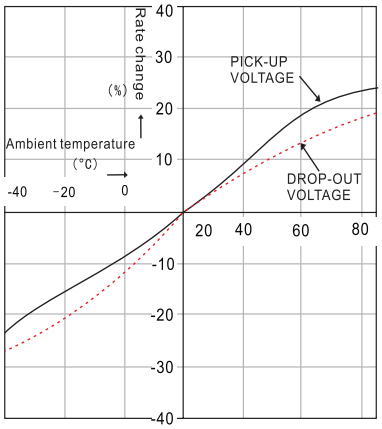
Carrying Current Rating Curve



Make/Break Power Switching Ratings(Resisrive load)



Ambient temperature characteristics



Note:

1. All data valid at 23℃ coil tempreture.
2. Maximum allowed terminal temperatures are:150℃ continous;175℃ for 2h; 200℃ for 6min.
3. End of life when dielectric strength between terminals falls below 50 Megohms @ 500VDC.
4. The maximum make current is 1800A to avoid contact welding.
5. The contactor can not meet the initial data, when the end of life.
6. The coil resistance toerance is ±10%

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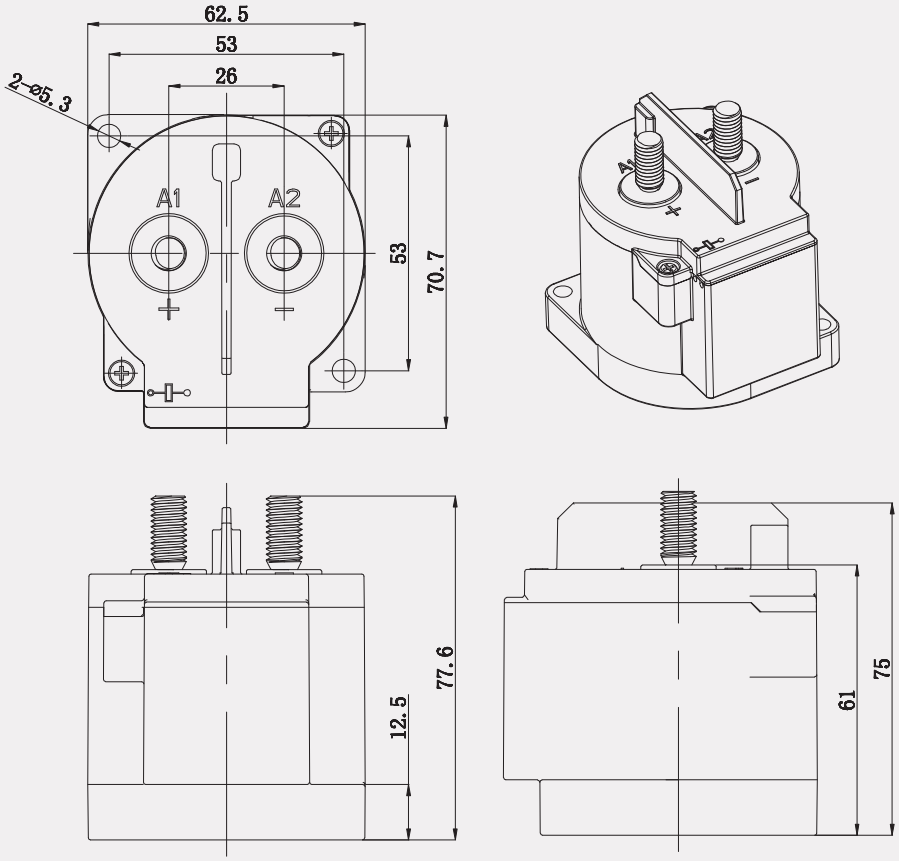
FOCUS ON NEW ENERGY AUTOMOBILE

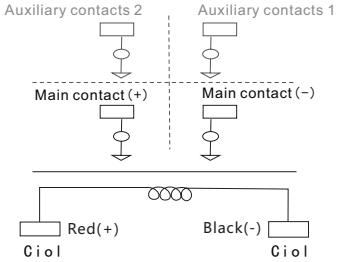
DC HIGH VOLTAGE EV CONTACTOR

EVC500

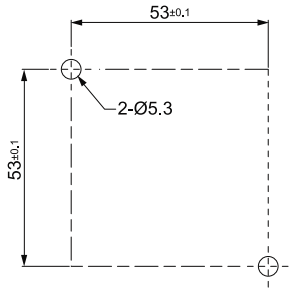
DIMENSIONAL DRAWING



SCHEMATIC



MOUNTING DIMENSIONS



Tolerance:
dim<10mm:±0.3;
dim=10~50mm:±0.6;
dim>50mm:±1.0

EV RELAY APPLICATION PRECAUTIONS:

EV series high voltage DC relay with higher arc cooling capacity hydrogen medium, have the ability of DC high voltage cutting and adopt ceramic sealing explosion-proof structure. Contact part have waterproof, anti oxidation and other functions. It can be widely used in electric vehicles, hybrid vehicles, fuel cell vehicles, construction machinery, photovoltaic power generation, wind power generation, battery charging
and discharging system, DC voltage power control and other DC high voltage fields.

Notes:

1. All types of relay terminals have polarity difference. Please use correctly according to the mark on each surface of the product. When the connection polarity is reversed, the electrical characteristics promised in the specification will not be guaranteed.
2. The rated value of contact parameters are the value of resistive load. Without measures, there may be a decline in electrical life and the occurrence of cut off. If using diodes, it may lead to a decline in cutting performance
3. During the action voltage test of double coil relay, voltage can not be risen slowly. Please drive the product coil through the fast rising (step type power supply mode) , otherwise the relay will not act.
4. Don't put the relay in the environment that over normal operating temperature (-40 degrees C to 85 C) for a long time.
5. Please avoid installing near in strong magnetic field (around transformer and magnet) and hot objects.
6. Make sure the main power line is closest to the relay leading-out terminal, then installed tightly according to the order of the flat washer, spring washer and nut. Incorrect connection order may cause serious overheating, and lead to the insulation layer melting of connecting cable .
7. Screw locking torque of every part should be accordant with following chart in case of breakage.

Part I Leading-out terminal installation:

Nut	EVR20	EVR40	EVR100	EVR120	EVR150	EVR200	EVR250	EVR300	EVC50	EVC100	EVC135	EVC150	EVC250	EVC500
M4		3N.m~4N.m							3N.m~4N.m	3N.m~4N.m	3N.m~4N.m			
M5			6N.m~8N.m	6N.m~8N.m	6N.m~8N.m									
M6						10N.m~12N.m	10N.m~12N.m	10N.m~12N.m				10N.m~12N.m	10N.m~12N.m	10N.m~12N.m
M8														

Remarks:EVC050,EVC100 Use screws;

Part II Relay installation:

Screws	EVR20	EVR40	EVR100	EVR120	EVR150	EVR200	EVR250	EVR300	EVC50	EVC100	EVC135	EVC150	EVC250	EVC500
M4									2N.m~3N.m	2N.m~3N.m	2N.m~3N.m			
M5	3N.m~4N.m	3N.m~4N.m	3N.m~4N.m	3N.m~4N.m	3N.m~4N.m	3N.m~4N.m						3N.m~4N.m	3Nm~4N.m	3Nm~4N.m
M6	5N.m~6N.m	5N.m~6N.m	5N.m~6N.m	5N.m~6N.m	5Nm~6Nm	5N.m~6N.m	5N.m~6N.m	5N.m~6N.m				5N.m~6N.m	5N.m~6N.m	5N.m~6N.m
M8														

Remarks: a. Screw strength must be in compliance with the requirements of grade 8.8 or above ; (GB/T70.1)
b. The effective locking thread length must be greater than 5mm;

8. Please avoid adhering grease and other foreign material on the leading-out terminal; Please use the following specifications of the connection wire, otherwise it may cause abnormal heat of the terminal part.

Product	EVT150	EVR20	EVR40	EVR100	EVR120	EVR150	EVR200	EVR250	EVC50	EVC100	EVC135	EVC150	EVC250	EVC500
Nominal sectional area (Min)		3mm²	10mm²	35mm²	40mm²	50mm²	60mm²	75mm²	10mm²	35mm²	40mm²	50mm²	75mm²	100mm²

9.Packing specification

Each box	EVT150	EVR20	EVR40	EVR100	EVR120	EVR150	EVR200	EVR250	EVC50	EVC100	EVC135	EVC150	EVC250	EVC500
Specifications D*W*H	475*328 *113mm	362*357 *146mm	407*337 *131mm	482*457 *91mm	482*457 *91mm	532*432 *91mm	557*577 *96mm	557*577 *96mm	412*407 *146mm	412*407 *146mm	412*407 *146mm	482*382 *106mm	482*382 *106mm	507*402 *119mm
Number	40pcs	40pcs	40pcs	20pcs	20pcs	20pcs	20pcs	20pcs	60pcs	60pcs	60pcs	20pcs	20pcs	20pcs
Net weight	5.4kg	6.4kg	7.2kg	7kg	7kg	8kg	10kg	10kg	10.8kg	10.8kg	10.8kg	7.6kg	7.6kg	11kg
Monomer	0.13kg	0.16kg	0.18kg	0.35kg	0.35kg	0.4kg	0.4kg	0.4kg	0.18kg	0.18kg	0.18kg	0.38kg	0.38kg	0.55kg

Note: there is a shockproof bubble bag in the packing box, and there is shockproof foam inside the box;

10. In the case of accidental fall of the relay, see intended not to use.
11. Attentions and product technical data should be updated termly, and copyright by Ebusbar all.

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