

# DC HIGH VOLTAGE EV CONTACTOR

## EVC50



### ▶ FEATURES

- With ceramic seal structure, the contact chamber filled with hydrogen mixed educing gas, combined with magnetic blow-out. Voltage relay can cut off load voltage of 1000VDC.
- The outer coil energy saving plate has a low holding power of 1.5W and a coil induction electromotive force of 0.
- The model with auxiliary contact can monitor the position of the main contact in real time, and is suitable for the charging product field where the main contact is required to be monitored in real time.
- The main / auxiliary contacts in a sealed, hydrogen mixed reduced gas environment are not easily contaminated or oxidized even in the harshest environments.products have been approved by CCC, CQC, CE, CB and passed the TS16949 system.

### ▶ COIL SPECIFICATION

| NOMINAL VOLTAGE | ITEM | MAX.STARTING CURRENT(A) | MAX.IMPACT TIME(ms) | NOMINAL OPERATING CURRENT(A) | PULL-IN VOLTAGE(V)         | DROP-OUT VOLTAGE(V) | COIL POWER | MAX. ALLOWABLE VOLTAGE(V) |
|-----------------|------|-------------------------|---------------------|------------------------------|----------------------------|---------------------|------------|---------------------------|
|                 | DC   | 9~36                    | 1.5A                | 120ms                        | 0.12A@12VDC<br>0.06A@24VDC | ≤9VDC               | ≥3VDC      | 18W (0.1s)<br>Keep 1.7W   |
| 12 V            |      | 0.46A                   | Keep                | 0.46A                        | ≤9VDC                      | ≥1VDC               | 5.5W       | 16VDC                     |
| 24 V            |      | 0.25A                   | Keep                | 0.25A                        | ≤18VDC                     | ≥2VDC               | 6W         | 32VDC                     |

### ▶ CONTACT RATINGS

| ITEM                                       | MODEL | Unipolar resistive load(L/R≤1ms) |  |
|--|-------|----------------------------------|--|
|  |       | EVC050                           |  |
| Maximum Continuous Current                 |       | 50A                              |  |
| Maximum Cut Off                            | V     | 1000V DC                         |  |
|  | A     | 500A 300VDC 1 Ops                |  |
| Min. Switching Capacity(Resistive Load)    |       | 1A 12VDC                         |  |
| Short Term Current                         |       | 80A 10min, 120A 60s, 500A 1s     |  |
| Contact Resistance                         |       | ≤1.5mΩ (DC 50A)                  |  |
| Contact Material                           |       | Alloy Cu                         |  |
| Contact Arrangement                        |       | 1 A (SPST-NO.)                   |  |
| General Auxiliary Contacts Current Range   |       | 2A 30VDC / 3A 125VAC             |  |
| General Minimum Current Auxiliary Contacts |       | 100mA 8VDC                       |  |

### ▶ PART NUMBERING RULE

**EVC 050 A - 1 A D**

| Series            | Rated Current | Auxiliary contactor         | Contact Type        | Coil Voltage | Coil lead                             |
|-------------------|---------------|-----------------------------|---------------------|--------------|---------------------------------------|
| EVC=Circular type | 050:050A      | Null:no auxiliary contactor | 1: 1a Normally Open | 12: 12VDC    | D=direct wire without connection plug |
|                   |               | A:With auxiliary contactor  |                     | 24:24VDC     | E=direct wire with connector plug     |
|                   |               |                             |                     | A:9~36VDC    |                                       |

- Note: 1. specifications are obtained in the environment of 23 degrees C  
 2. maximum allowable contact temperature: 150 C; 175 degrees C 2Hmax; 200 degrees C 2minMax  
 3. the finished product withstand pressure / insulation is 50Mohm,  
 4.after the maximum limit cut-off, the auxiliary contacts can not meet the pressure insulation  
 5. coil resistance test error + 10%

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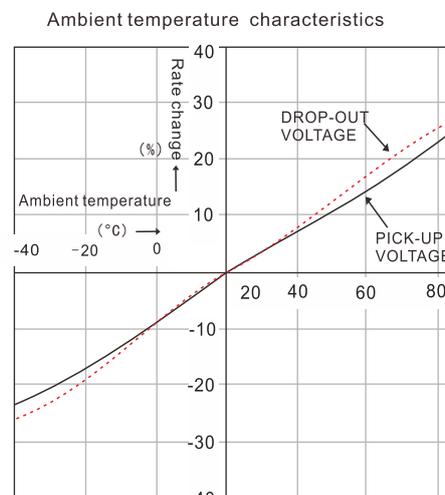
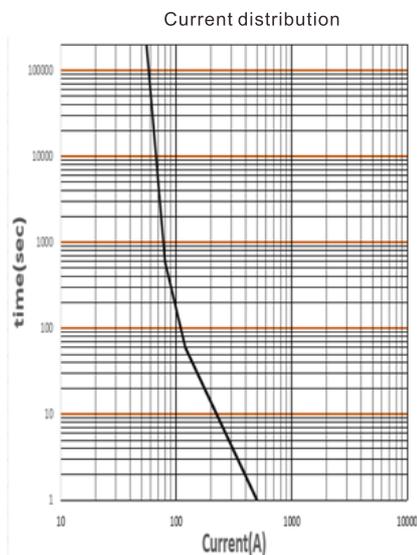
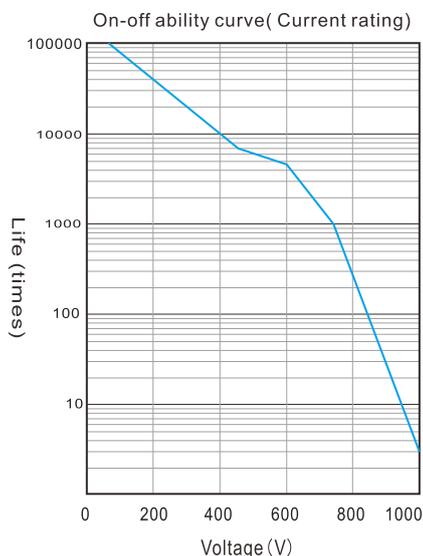
### ▶ INSULATION PERFORMANCE

|                        |                          |                     |
|------------------------|--------------------------|---------------------|
| Insulation Resistance  |                          | Min.1000MΩ 1000V DC |
| Dielectric Strength    | Between Open Contacts    | 2500V AC 60 Sec.1mA |
|                        | Between Contact And Coil | 2500V AC 60 Sec.1mA |
| Operate Time(at 20 °C) |                          | ≤30ms               |
| Release Time(at 20 °C) |                          | ≤10ms               |

### ▶ MECHANICAL PARAMETERS

|  |  |             |                             |
|--|--|-------------|-----------------------------|
| Life   | Mechanical Life                                  |             | 2x10 <sup>5</sup> Ops       |
|  | Electrical Life<br>(Resistive Load)<br>(L/R≤1ms) | 450V DC 50A | 6,000 Ops                   |
|  |  | 750V DC 50A | 1,000 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,<br>Transport And Storage | Ambient Temperature                              |             | -40°C to +85°C              |
|  | Humidity   |             | 5 to 95% R.H.               |
| Weight   |  |             | 180g                        |

### ▶ ENGINEERING DATA

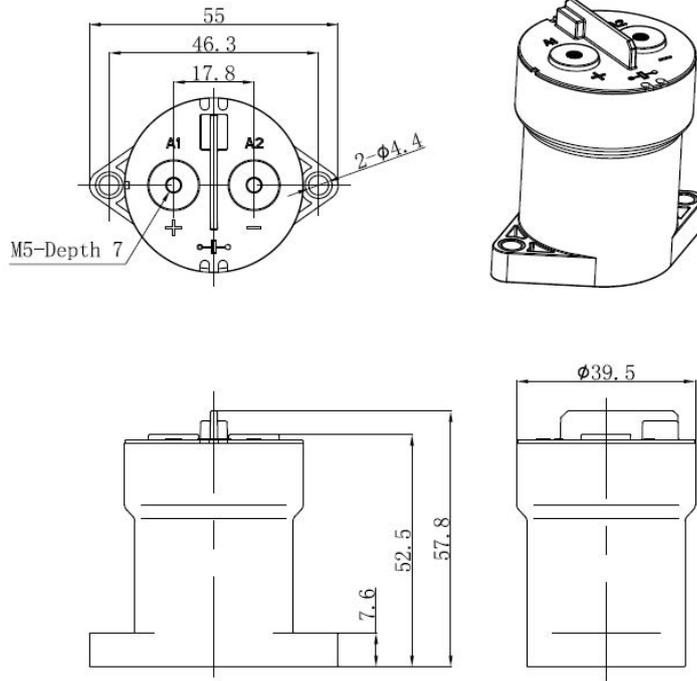


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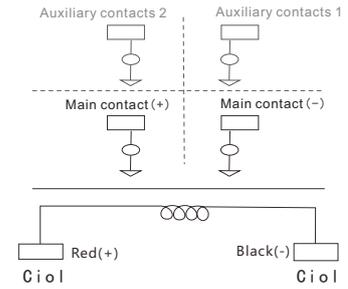
## EVC50



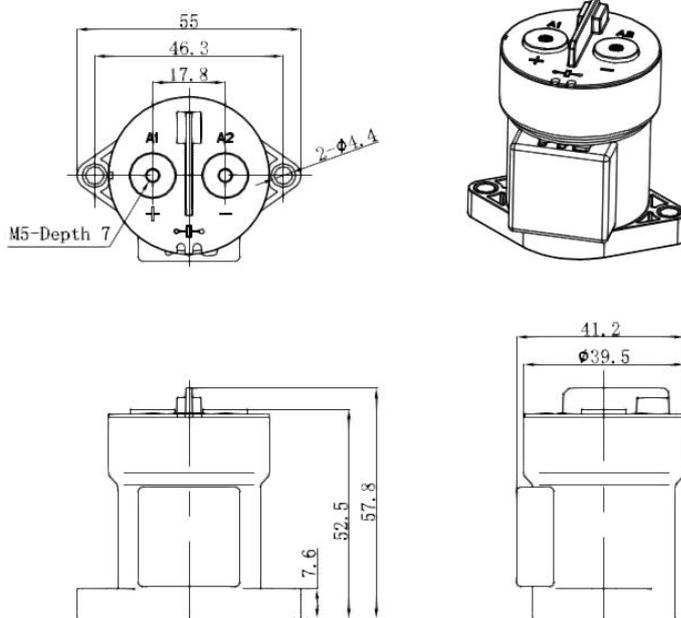
### DIMENSIONAL DRAWING 1



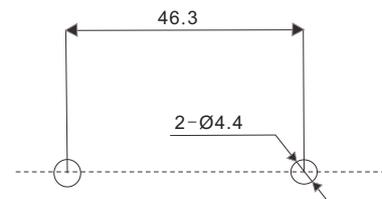
### SCHEMATIC



### DIMENSIONAL DRAWING 2



### 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      | EVC 200<br>EVC250 | EVC300<br>EVC350 | EVC400<br>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      | 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    | EVC200<br>EVC250 | EVC300    | EVC350    | EVC400    | 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 | 3N.m~4N.m        | 3N.m~4N.m | 3N.m~4N.m | 3N.m~4N.m | 3N.m~4N.m |
| M6     | 5N.m~6N.m |           |           |           | 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<br>EVC 200  | EVR250             | EVR300             | EVC50             | EVC100            | EVC135            | EVC150            | EVC250             | EVC300             | EVC350             | EVC400             | EVC500             |
|------------------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Nominal sectional area (Min) | 50mm <sup>2</sup> | 4mm <sup>2</sup> | 15mm <sup>2</sup> | 35mm <sup>2</sup> | 50mm <sup>2</sup> | 75mm <sup>2</sup> | 100mm <sup>2</sup> | 120mm <sup>2</sup> | 150mm <sup>2</sup> | 13mm <sup>2</sup> | 35mm <sup>2</sup> | 40mm <sup>2</sup> | 75mm <sup>2</sup> | 120mm <sup>2</sup> | 150mm <sup>2</sup> | 200mm <sup>2</sup> | 200mm <sup>2</sup> | 300mm <sup>2</sup> |

## 9.Packing specification

| Each box             | EVT150            | EVR20             | EVR40             | EVR100           | EVR120           | EVR150           | EVR200           | EVR250           | EVR300            | EVC50             | EVC100            | EVC135            | EVC150            | EVC 200<br>EVC250 | EVC300            | EVC350            | EVC400            | EVC500            |
|----------------------|-------------------|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Specifications D*W*H | 475*328<br>*113mm | 362*357<br>*146mm | 407*337<br>*131mm | 482*457<br>*91mm | 482*457<br>*91mm | 532*432<br>*91mm | 557*577<br>*96mm | 557*577<br>*96mm | 507*402<br>*119mm | 412*407<br>*146mm | 412*407<br>*146mm | 412*407<br>*146mm | 482*382<br>*106mm | 482*382<br>*106mm | 507*402<br>*119mm | 507*402<br>*119mm | 507*402<br>*119mm | 507*402<br>*119mm |
| Number               | 40pcs             | 40pcs             | 40pcs             | 20pcs            | 20pcs            | 20pcs            | 20pcs            | 20pcs            | 15pcs             | 60pcs             | 60pcs             | 60pcs             | 20pcs             | 20pcs             | 20pcs             | 20pcs             | 20pcs             | 20pcs             |
| Net weight           | 5.4kg             | 6.4kg             | 7.2kg             | 7kg              | 7kg              | 8kg              | 9.4kg            | 9.4kg            | 8kg               | 10.8kg            | 10.8kg            | 10.8kg            | 7.6kg             | 7.6kg             | 11kg              | 11kg              | 11kg              | 11kg              |
| Monomer              | 0.13kg            | 0.16kg            | 0.18kg            | 0.35kg           | 0.35kg           | 0.4kg            | 0.47kg           | 0.47kg           | 0.53kg            | 0.18kg            | 0.18kg            | 0.18kg            | 0.38kg            | 0.38kg            | 0.55kg            | 0.55kg            | 0.55kg            | 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.