

# HFE82V-400C

# DIRECT CURRENT RELAY



## Features

- Hermetically sealed with ceramic brazing technology, without risk of arc leaking, no fire or explosion.
- Filled with hydrogen gas to prevent the oxidation and burnout of contacts; Low and stable contact resistance, with IP67 compliant.
- 400A continuous carry current capability at 85°C.
- Max. insulation resistance up to 1000MΩ (@1000 VDC), dielectric strength (coil-contact) up to 3kV, IEC 60664-1 compliant.

RoHS compliant

## CONTACT DATA

|  |  |  |
|--|--|--|
| Contact arrangement                        | 1 Form A   |  |
| Contact resistance <sup>1)</sup>           | ≤0.2mΩ(400A)   |  |
| Contact rating                             | 400A   |  |
| Mechanical endurance                       | 2 x 10 <sup>5</sup> ops  |  |
| Max. switching voltage                     | 1000 VDC   |  |
| Max. breaking current                      | 2000A (750 VDC) 1 op   |  |
| Max. switching power                       | 400kW  |  |
|  | <b>Type 450V</b>   | <b>Type 750V</b>   |
| Electrical endurance <sup>2)</sup>         | Making:7.5×10 <sup>4</sup><br>(Steady140A,<br>Contact voltage<br>20 VDC) | Making:7.5×10 <sup>4</sup><br>(Steady140A,<br>Contact voltage<br>20 VDC) |
|  | Breaking:400 ops<br>(450 VDC,400A)                                       | Breaking:100 ops<br>(750 VDC,400A)                                       |
|  | Breaking:1 op<br>(450 VDC,2000A)   | Breaking:1 op<br>(750 VDC,2000A)   |
|  | <b>Type 1000V</b>  |  |
| Electrical endurance <sup>2)</sup>         | Marking:7.5×10 <sup>4</sup> ops (Steady1140A,<br>Contact voltage 20 VDC) |  |
|  | Breaking:20 ops(1000VDC,400A)  |  |
|  | Breaking:1 op(1000VDC,1200A)   |  |
| Current carrying <sup>3)</sup><br>capacity | 400A:Cont.   |  |
|  | 600A 160s  |  |
|  | 800A 70s   |  |
|  | 900A 55s   |  |
|  | 1000A 20s  |  |

**Notes:** 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.  
The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 200mm<sup>2</sup> min. See Fig. Endurance Capacity Curve for more information.

## AUX CONTACT DATA

|                                  |               |
|----------------------------------|---------------|
| Contact arrangement              | 1 Form B      |
| Contact resistance <sup>1)</sup> | ≤150mΩ(at 1A) |
| Contact Rating                   | 6VDC 10mA     |
| Min. Applicable Load             | 6VDC 3mA      |

## COIL

23°C

| Rated Voltage VDC | Pick-up Voltage VDC | Drop-out Voltage VDC | Coil power W |
|-------------------|---------------------|----------------------|--------------|
| 12                | ≤9                  | ≥1                   | 6            |
| 24                | ≤18                 | ≥2                   | 6            |

## CHARACTERISTICS

|                               |                                       |   |
|-------------------------------|---------------------------------------|---|
| Insulation resistance         |                                       | 1000MΩ(1000 VDC)  |
| Dielectric strength           | Between coil & contacts               | 3000 VAC 1min   |
|                               | Between open contacts                 | 3000 VAC 1min   |
|                               | Between contacts & auxiliary contacts | 3000 VAC 1min   |
| Operate time (at rated volt.) |                                       | ≤30ms   |
| Release time (at rated volt.) |                                       | ≤10ms   |
| Shock resistance              | Functional (Main contacts)            | Close:198 m/s <sup>2</sup><br>Open:147 m/s <sup>2</sup> |
|                               | Functional (aux contacts)             | Close:98 m/s <sup>2</sup><br>Open:98 m/s <sup>2</sup>   |
|                               | Destructive                           | 490m/s <sup>2</sup>                                     |
| Vibration resistance          |                                       | 10Hz ~ 500Hz 49m/s <sup>2</sup>                         |
| Humidity                      |                                       | 5% ~ 85% RH   |
| Ambient temperature           |                                       | -40°C ~ 85°C  |
| Load terminal structure       |                                       | M6 screw terminal female                                |
| Unit weight                   |                                       | Approx.400g   |
| Outline Dimensions            |                                       | 84.5 x 42.5 x 74.5mm                                    |

**Notes:**The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000, ISO/EC 27001 CERTIFIED

2024 Rev.1.00

## ORDERING INFORMATION

|                            |  |   |      |    |      |     |    |   |   |   |   |    |       |
|----------------------------|--|---|------|----|------|-----|----|---|---|---|---|----|-------|
| Type                       | HFE82                                      | V | -400 | C/ | XXX- | 12- | H- | X | C | 5 | X | -1 | (XXX) |
| Application                | V: Vehicle                                 |   |      |    |      |     |    |   |   |   |   |    |       |
| Contact rating             | 400: 400A                                  |   |      |    |      |     |    |   |   |   |   |    |       |
| Series breakdown           | C: C series                                |   |      |    |      |     |    |   |   |   |   |    |       |
| Load voltage               | Nil:450VDC 750:750VDC 1000:1000VDC         |   |      |    |      |     |    |   |   |   |   |    |       |
| Coil voltage               | 12: 12 VDC 24: 24 VDC                      |   |      |    |      |     |    |   |   |   |   |    |       |
| Contact arrangement        | H: 1 Form A                                |   |      |    |      |     |    |   |   |   |   |    |       |
| Auxiliary contact form     | Nil: Without auxiliary contact B: 1 Form B |   |      |    |      |     |    |   |   |   |   |    |       |
| Coil terminal structure    | C: Connector                               |   |      |    |      |     |    |   |   |   |   |    |       |
| Load terminal structure    | 5: Screw terminal female                   |   |      |    |      |     |    |   |   |   |   |    |       |
| Mounting                   | Nil: Vertical mounting                     |   |      |    |      |     |    |   |   |   |   |    |       |
| Coil characteristic        | 1: Single coil                             |   |      |    |      |     |    |   |   |   |   |    |       |
| Special code <sup>1)</sup> | XXX: Customer special requirement          |   |      |    |      |     |    |   |   |   |   |    |       |

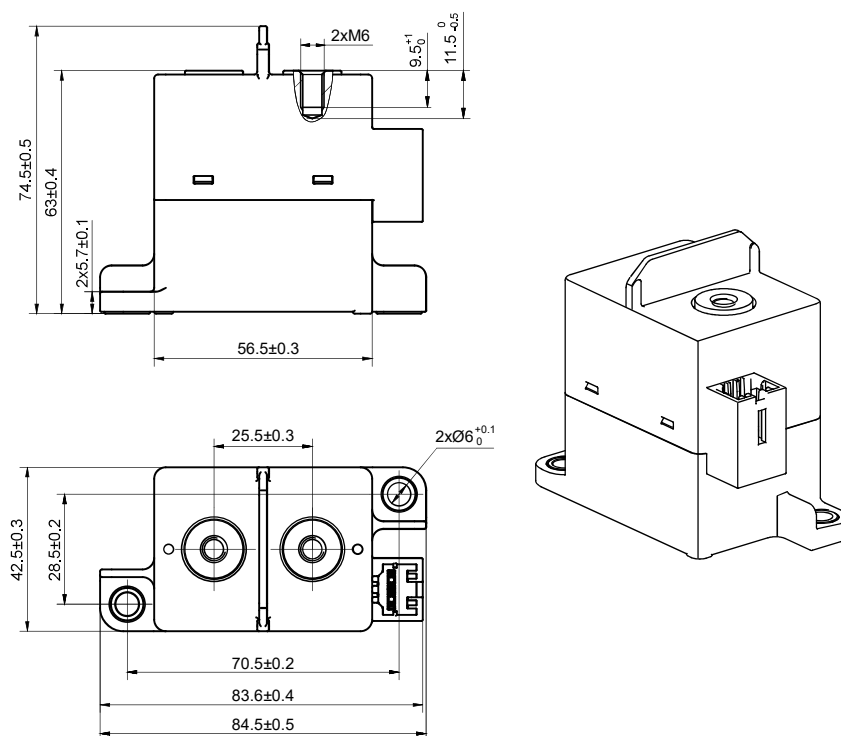
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

## OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

### Outline Dimensions

HFE82V-400C/XXX-XX-HX-C5-1(917)

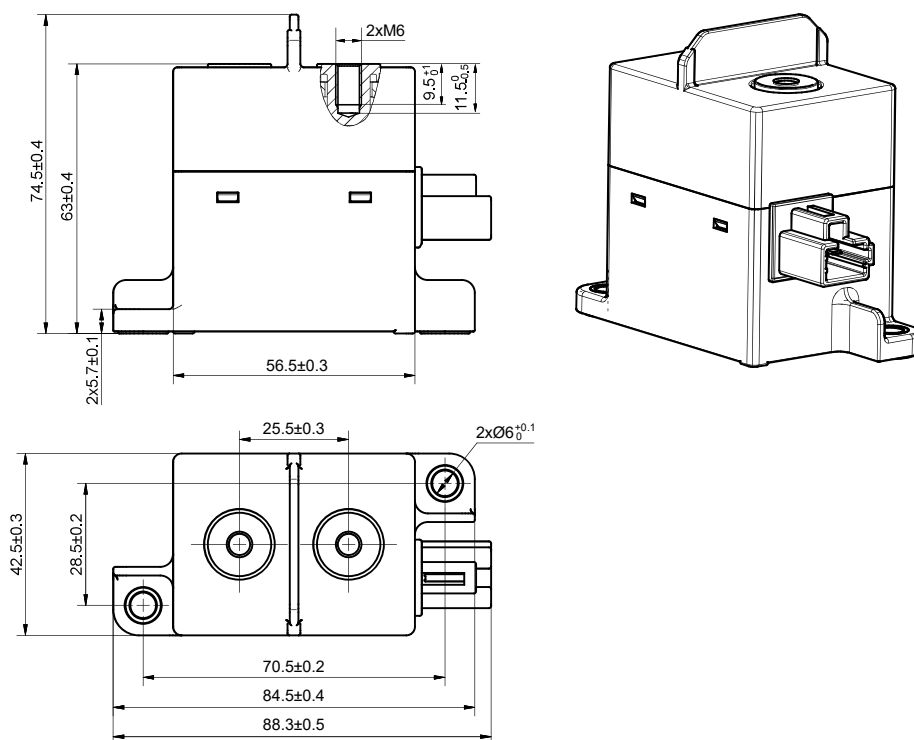


# OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

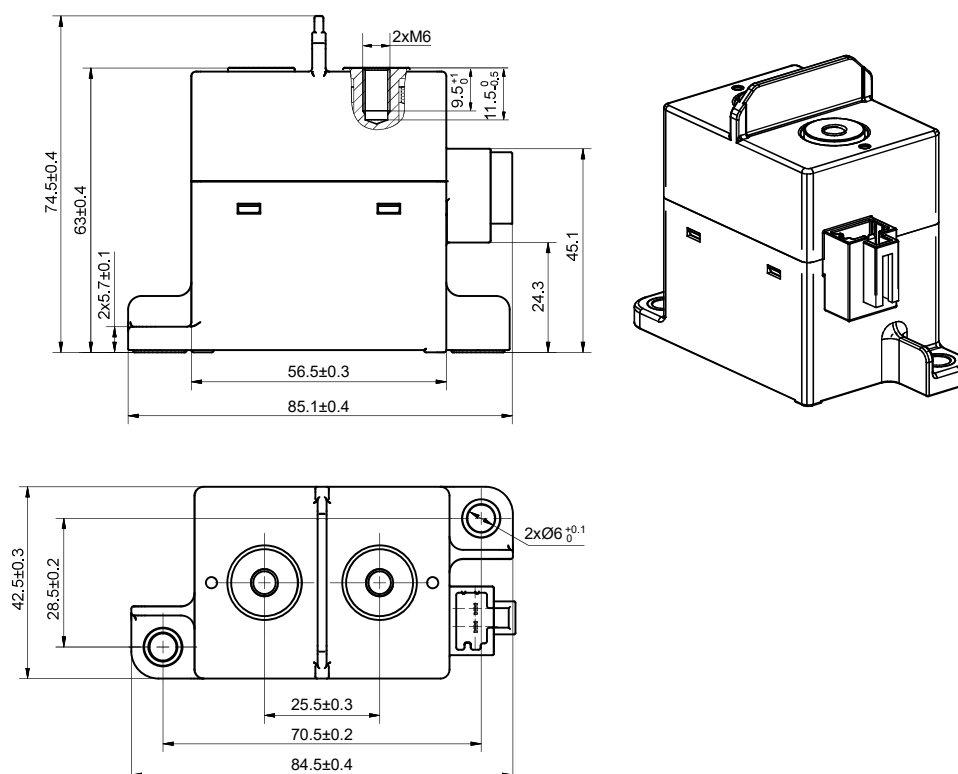
Unit: mm

## Outline Dimensions

HFE82V-400C/XXX-XX-H-C5-1



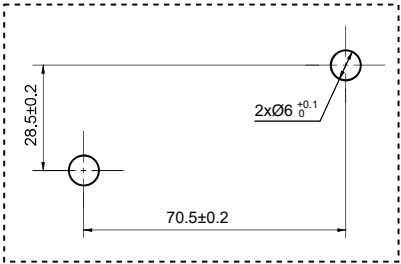
HFE82V-400C/XXX-XX-H-C5-1(917)



# OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

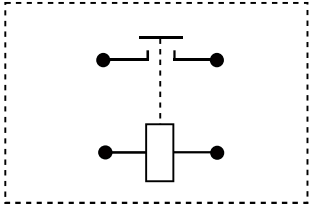
Unit: mm

Mounting Hole



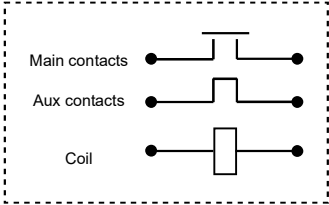
Terminal Arrangement

HFE82V-400C/XXX-XX-H-C5-1  
HFE82V-400C/XXX-XX-H-C5-1(917)



**Notes:** No polarity on the load and coil sides.

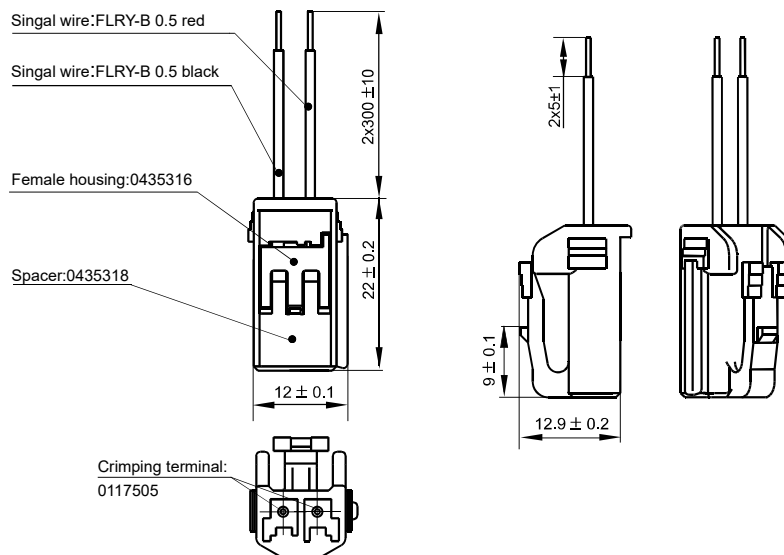
HFE82V-400C/XXX-XX-HX-C5-1(917)



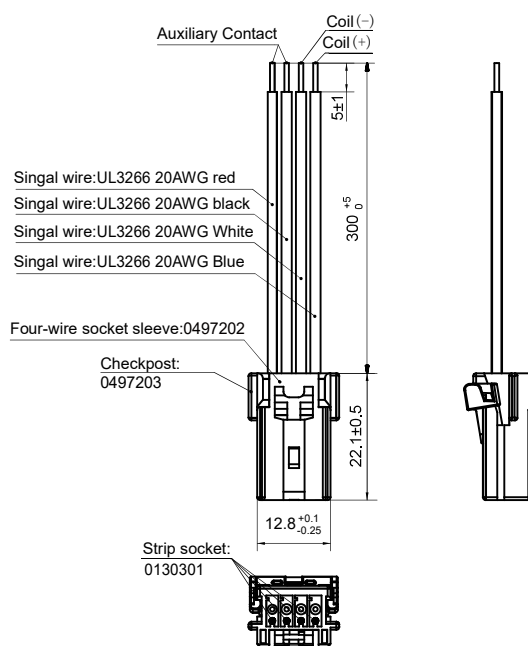
**Notes:** Without polarity on the coil and main Contact,  
Without polarity on the Aux.

## C:Connector

HFE82V-400C/XXX-XX-H-C5-1  
HFE82V-400C/XXX-XX-H-C5-1(917)  
(Configured by customers:THB 0435 series; Yazaki 7283-1020)

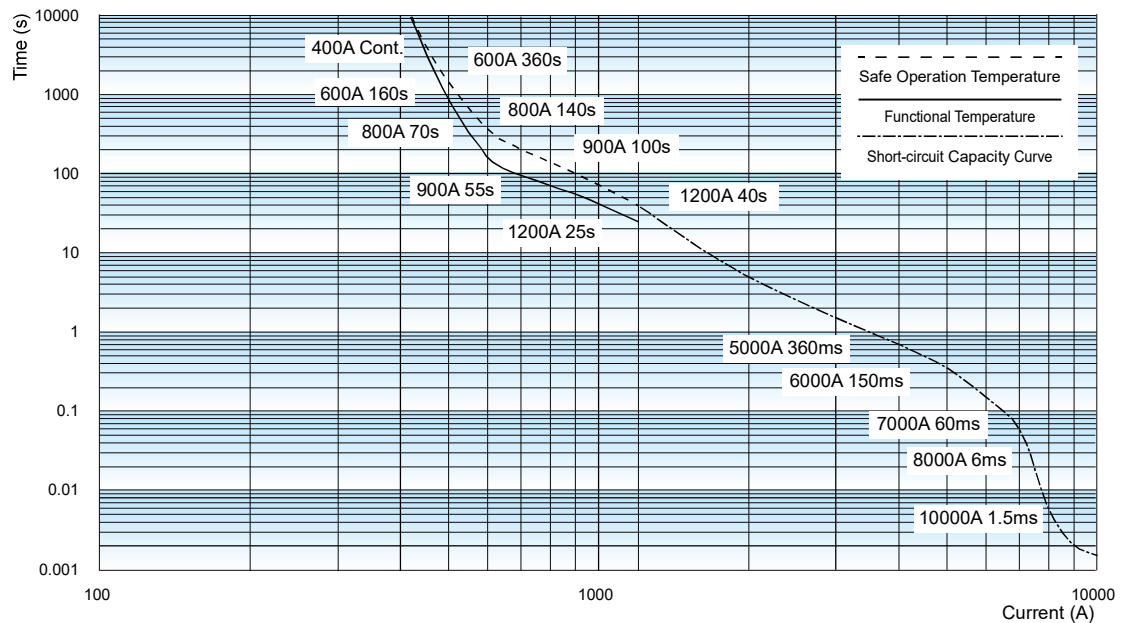


HFE82V-400C/XXX-XX-HX-C5-1(917)  
(Configured by customers:THB 0497 series, Hu lane:TK04FW)



## CHARACTERISTIC CURVES

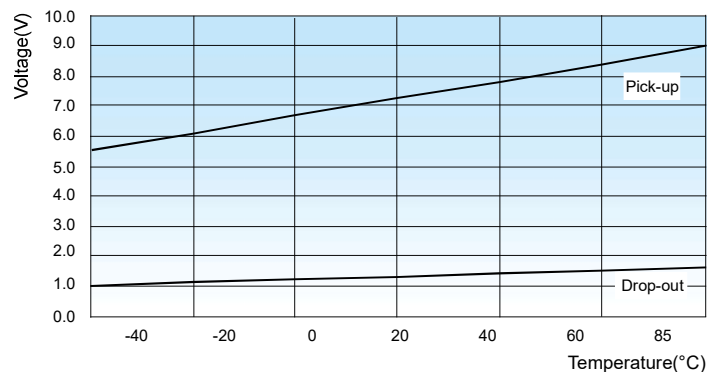
Endurance Capacity Curve



**Notes:**

- 1) The data is for design reference, it shall be verified as actual for model selection and fuse mating of short-circuit current test.
- 2) The upper temperature limit of safe operation and function are set for 180°C and 130°C respectively.
- 3) It is recommended that the upper temperature limit shall not exceed 130°C when long time operation) The relay may also fail, if the safe temperature limit of 180°C is exceeded.
- 4) Risks of fire and explosion may exist when the working condition beyond the safe circuit curve. in case of similar working condition, the relay shall be replaced in time.
- 5) The ambient temperature is 85°C for safe operation and function, and for current above 2000A, the temperature is room temperature with cross-sectional area  $\geq 200\text{mm}^2$ .
- 6) Even if it is below the safety curve when the current  $\geq 2000\text{A}$ , the relay is likely to be bonded during current carrying. If there is a break beyond the specification, fire and explosion may occur.
- 7) The contact is likely to bounce off when the current  $\geq 6000\text{A}$ . If the fuse cannot be fused in time, the relay may explode and may be ignited if the arc continues to burn after the explosion.
- 8) The contact will severely bounce off when the current  $\geq 8000\text{A}$ , which may cause the circuit current cannot continue to rise. If the fuse cannot be fused in time, the relay may explode and the arc may ignite the relay after the explosion.

Pick-up Voltage / Drop-out Voltage Curve



- Notes:**
- 1) The above values are sampling values for reference only;
  - 2) The rated voltage of the sample coil is 12VDC;
  - 3) The sampling ambient temperature is -40°C ~ 85°C.

## CAUTIONS

1. In case of looseness, please use washer when install the relay with M5 screw, and the torque within 3N.m to 4N.m, The screw tightening torque at terminals shall be within 6N.m to 8N.m. The torque beyond the range may cause damage.

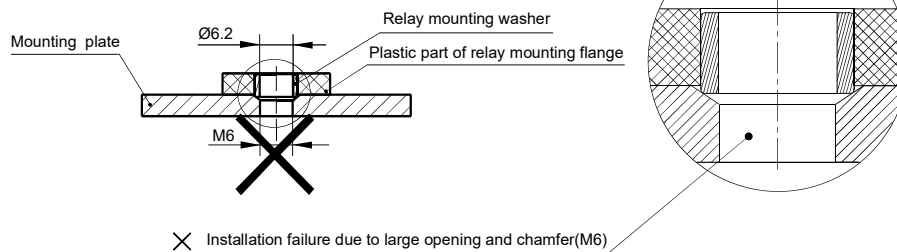
| Mounting for load terminal |                    |                             |                             | Mounting for relay body |                    |
|----------------------------|--------------------|-----------------------------|-----------------------------|-------------------------|--------------------|
| Mounting way               | Torque requirement | Hole dia. of copper bus bar | Thickness of copper bus bar | Mounting way            | Torque requirement |
| M6 Screw                   | 6N·m ~ 8N·m        | Ø6.0mm ~ Ø6.5mm             | 3mm                         | M5 Screw                | 3N·m ~ 4N·m        |

2. Please tighten the load terminal of relay vertically with preloading first when installing. Repeat locking is not recommended.
3. If any special screws and nuts, such as nylok, are used when installing, it is recommended to contact and confirm with Hongfa.
4. If any special installation requirements, such as downward direction, multi busbar connection, are involved, it is recommended to contact and confirm with Hongfa.
5. Please avoid adhering to foreign matter such as grease on the terminal lead end and please use the conductor with min. cross section area of 200mm<sup>2</sup>, otherwise it may cause the abnormal heating of the terminal part.
6. The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

### Unrecommended method

Large opening of mounting plate at customer-side.

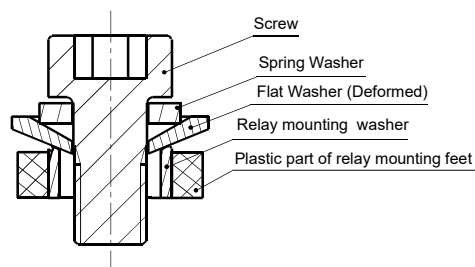
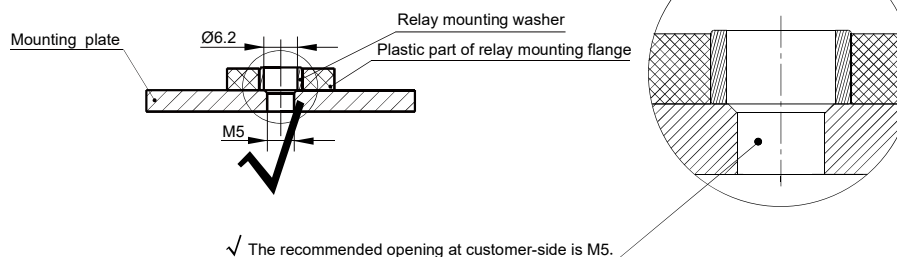
Enlarged Schematic Diagram:



### Recommended method

Appropriate opening (M5) of mounting plate at customer-side.

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

## Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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