

HFE82V-400M

DIRECT CURRENT RELAY



File No.:E133481

File No.:N8A0532860053



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 ¹⁾	≤0.2mΩ(400A)	
Contact rating	400A	
Mechanical endurance	2x10 ⁵ ops	
Max. switching voltage	1000 VDC	
Max. breaking current	2000A(1000 VDC) 1 op	
Max. switching power	360kW	
Electrical endurance ²⁾	Type 450V	Type 750V
	Making:7.5x10 ⁴ ops (22.5VDC, 140AC=1100μF)	Breaking:1000 ops (800 VDC,200A)
	Breaking:7.5x10 ⁴ ops (450 VDC, 5A)	Breaking:200 ops (800 VDC,400A)
	Breaking:2.5x10 ⁴ ops (450 VDC,10A)	
	Breaking:7.5x10 ⁴ ops (450 VDC, 5A)	
	Breaking:3000 ops (450 VDC,200A)	
	Breaking:1000 ops (450 VDC,400A)	
Current carrying ³⁾ capacity	Type 1000V	
	Breaking:100 ops (1000 VDC,400A)	
	400A:Cont.	
	750A: 200s	
	1000A: 65s	
	1350A: 28s	
	2000A: 10s	

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 200mm² min. See Fig. Endurance Capacity Curve for more information.

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
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	Open:98m/s ² Close:196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.730g
Outline Dimensions		See“Outline Dimensions”

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

SAFETY APPROVAL RATINGS

UL/CUL	Resistive Switching:100A 1000VDC 6000 ops 40°C
	Resistive Switching: 400A 1000VDC 300 ops 40°C
	Resistive Switching:280A 1000VDC 500 ops 40°C
	Resistive Switching: 350A 150VDC 3000 ops 40°C
TÜV	DC-1: 400A 450VDC 6000 ops 40°C
	DC-1: 400A 750VDC 6000 ops 40°C
CE	DC-1: 400A 450VDC 6000 ops 40°C
	DC-1: 400A 750VDC 6000 ops 40°C

Notes:1) The load without temperature specified in the table refers to the ambient temperature being room temperature.

2) The above only lists some typical loads certified for this product. The electrical durability varies due to the different detailed testing conditions for each load. If you need more information, please contact us.



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

2024 Rev.1.00

ORDERING INFORMATION

Type	HFE82	V	-400	M/	750-12-	H	-C	5	Y	-1	(901)	(XXX)
Application	V: Vehicle											
Contact rating	400: 400A											
Series breakdown	M: M series											
Load voltage	Nil:450VDC 800:800VDC 1000:1000VDC											
Coil voltage	12: 12 VDC 24: 24 VDC											
Contact arrangement	H: 1 Form A											
Coil terminal structure	C: Connector											
Load terminal structure	5: Screw terminal female											
Mounting	Nil: Vertical Mounting Y: Horizontal Mounting											
Coil characteristic	1: Single coil											
Special code ¹⁾	Nil: Model used for MQS connector											
	901: Model used for THB connector or Yazaki connector											
	971: Customization horizontal mounting type as customer's requirement											
Special code ¹⁾	XXX: Customer special requirement											

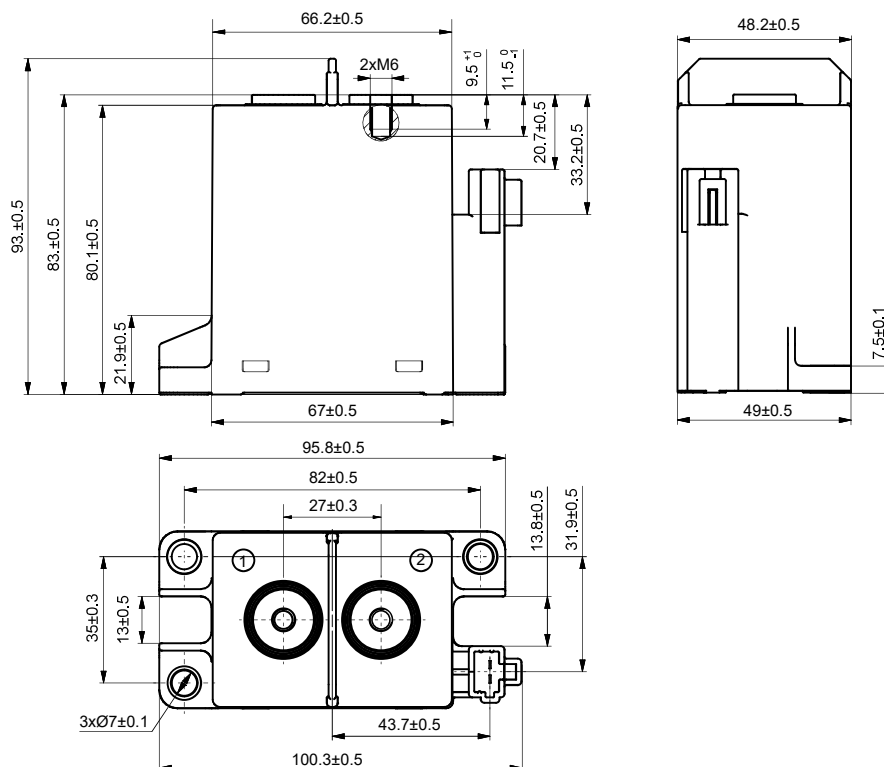
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82V-400M/XXX-XX-H-C5-1(901)

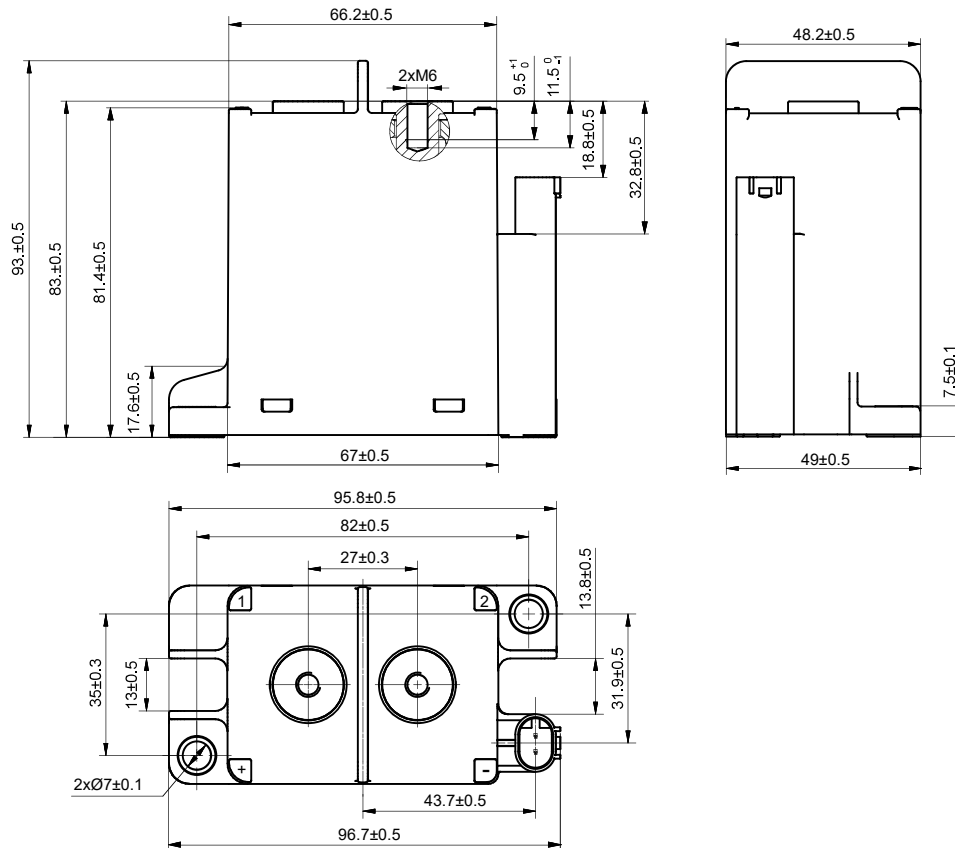


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

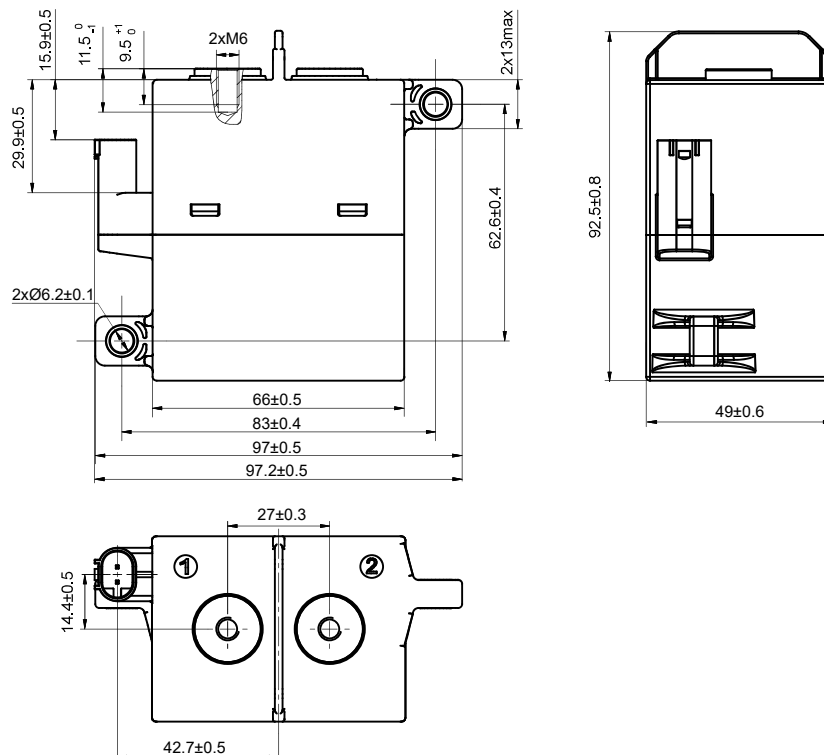
Unit: mm

Outline Dimensions

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



HFE82V-400M/XXX-XX-H-C5Y-1(971)

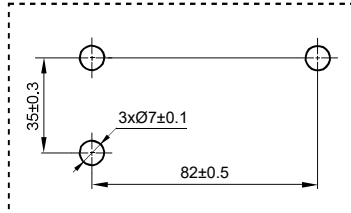


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

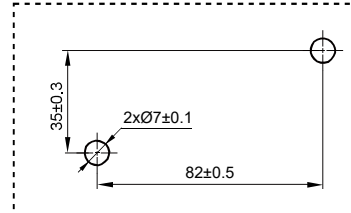
Unit: mm

Mounting Hole

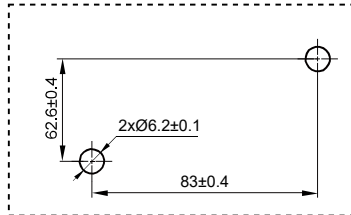
HFE82V-400M/XXX-XX-H-C5-1(901)



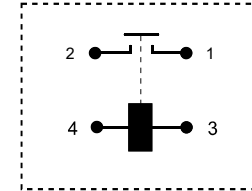
HFE82V-400M/XXX-XX-H-C5-1



HFE82V-400M/XXX-XX-H-C5Y-1(971)



Terminal Arrangement



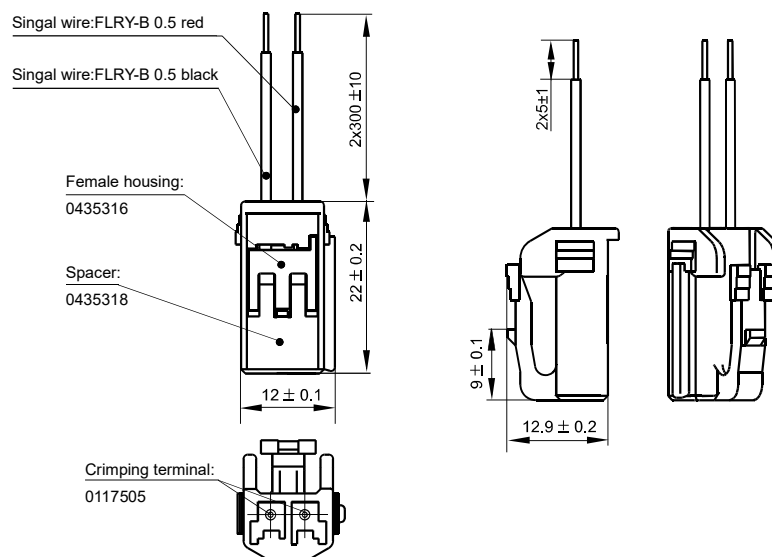
Notes: No polarity on the load and coil sides.

WIRING DIAGRAM

Unit: mm

C:Connector

Mating connector for HFE82V-400M/XXX-XX-H-C5-1(901)
(Configured by customers: THB 0435 series, Yazaki 7283-1020)



WIRING DIAGRAM

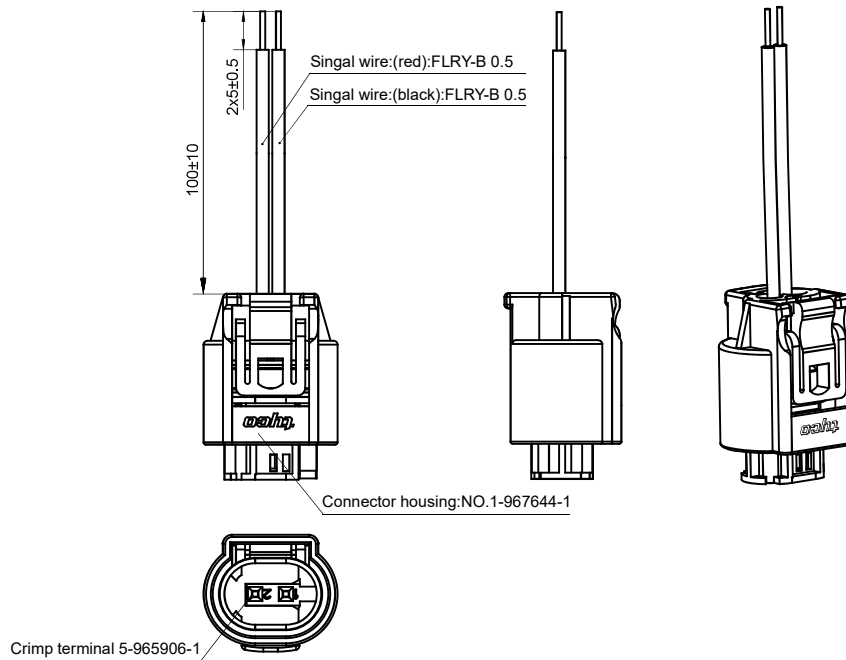
Unit: mm

C:Connector

Mating connector for HFE82V-400M/XXX-XX-H-C5Y-1(971)

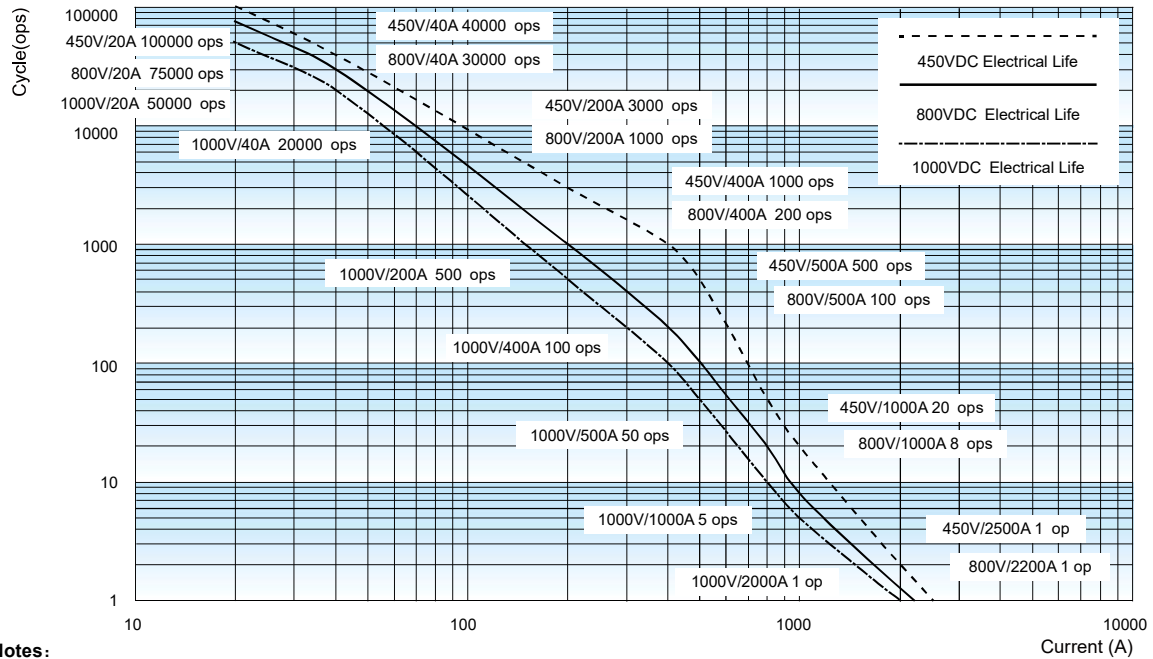
Mating connector for HFE82-400M/XXX-XX-H-C5-1

(Applicable to 2 position MQS connector of TE. Housing for female terminals is NO.1-967644-1)



CHARACTERISTIC CURVES

Breaking Capability Curve (Resistive Load)

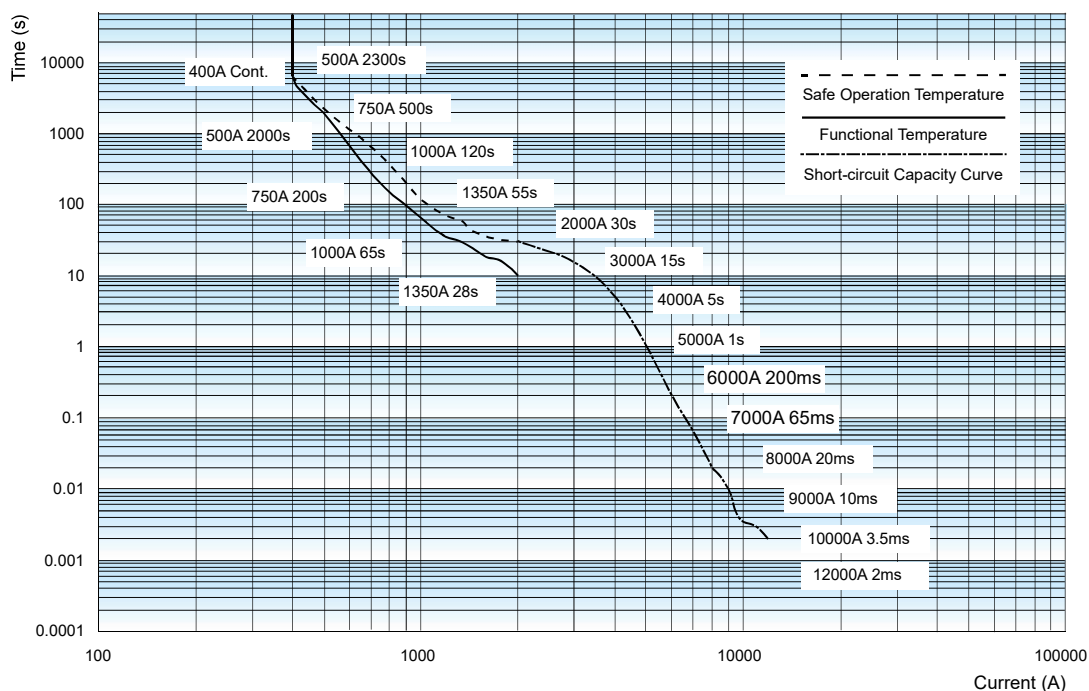


Notes:

1. The data is for reference only.
2. Cable cross section: $\geq 200\text{mm}^2$.
3. The data is measured under the resistive load ($L/R \leq 1\text{ms}$), the duty cycle: 0.6s on: 5.4s off, ambient temperature: 23°C ;
The values may change according to the load type, duty cycle, and environmental conditions. therefore, it is recommended to confirm the values under actual load.

CHARACTERISTIC CURVES

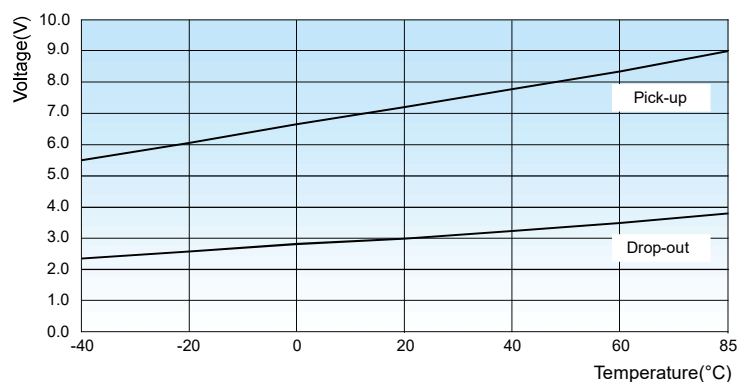
Endurance Capacity Curve



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 $\geq 8000\text{A}$. 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 $\geq 10000\text{A}$, 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

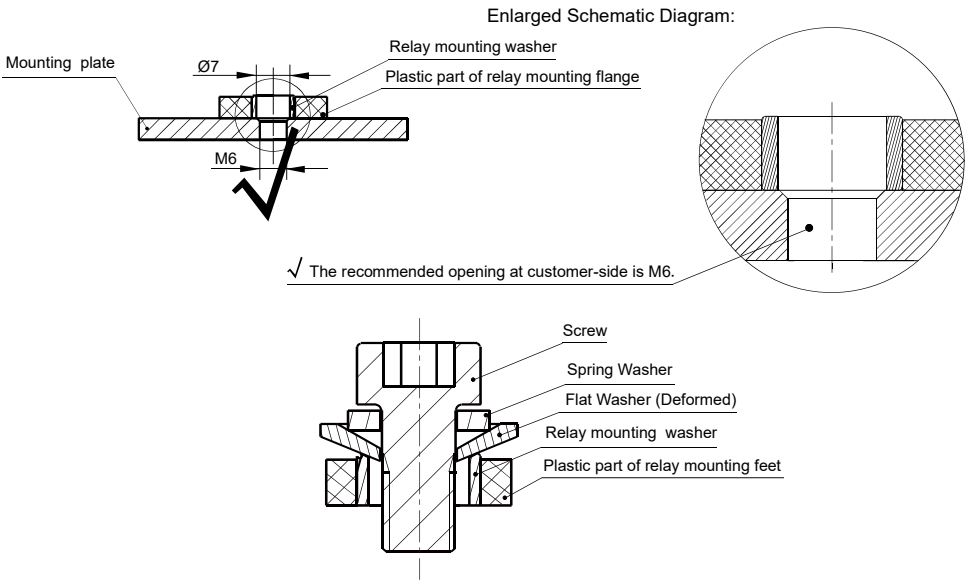
1. In case of looseness, please use washer when install the relay with M6 screw, and the torque within 6N.m to 8N.m, The screw tightening torque at terminals shall be within 6N.m to 8N.m. The torque beyond the range may cause damage.

	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
Vertical Mounting	M6 Screw	6N·m ~ 8N·m	Ø6.0mm ~ Ø6.5mm	2mm ~ 3mm	M6 Screw	6N·m ~ 8N·m
Horizontal Mounting	M6 Screw	6N·m ~ 8N·m	Ø6.0mm ~ Ø6.5mm	2mm ~ 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 200mm², otherwise it may cause the abnormal heating of the terminal part.
6. Cautions of mounting for relay body:

Recommended method

Appropriate opening (M6) of mounting plate at customer-side.



When use M6 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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