

# HFE82V-600

# 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.
- 600A continuous carry current capability at 85°C.
- Max. insulation resistance up to 1000MΩ (@1000 VDC), dielectric strength (coil-contact) up to 4kV, IEC 60664-1 compliant.
- Coil with energy-saving devices

RoHS compliant

## CONTACT DATA

Contact arrangement	1 Form A
Contact resistance <sup>1)</sup>	≤0.1mΩ(600A)
Contact rating	600A
Mechanical endurance	2x10 <sup>5</sup> ops
Max. switching voltage	1000VDC
Max. breaking current	2500A(800VDC) 1 op
Max. switching power	600kW
Electrical endurance <sup>2)</sup>	Making:5×10 <sup>4</sup> ops (750VDC 120A,0.6s on:5.4s off)
	Switching:1×10 <sup>5</sup> ops(800VDC,10A)
	Switching:1×10 <sup>4</sup> ops(800VDC,100A)
	Switching:2×10 <sup>3</sup> ops(750VDC,300A)
	Switching:500 ops(750VDC,600A)
	Reverse switching: 5×10 <sup>3</sup> ops(750VDC,-100A)
	Reverse switching: 1×10 <sup>3</sup> ops(750VDC,-300A)
	Reverse switching: 300 ops(750VDC,-600A)
	Breaking:1 op(800 VDC,2500A)
	Switching:100 ops(1000 VDC,600A)
Current carrying <sup>3)</sup> capacity	600A:Cont.
	800A: 20min
	1000A: 5min
	3000A: 4s
	8000A: 10ms

**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 0.05s:20s.

The energy-saving board is built in the relay. The coil will switch after 0.2 seconds of driving. However, repeated on-off operations within 0.2 seconds may cause failure. Products with built-in circuit boards cannot be driven by slow rising voltage. Please use fast rising edge (step power supply method) to drive the coil, otherwise it will not work!

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.

4) 8000A 10ms is short circuit carrying test. relay contact may be welded, but will not burn or exploded.

## COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	1 ~ 9	Switch on:50(time:0.2s) Holding:10
24	≤18	2 ~ 18	Switch on:50(time:0.2s) Holding:10

## CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	196m/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		M10 screw terminal female
Unit weight		Approx.1800g
Outline Dimensions		146.0 x 66.6 x 132.8mm

**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	-600/ 750-	24-	H-	L	6	(XXX)
Application	V: Vehicle							
Contact rating	600: 600A							
Load voltage	Nil: 450 VDC    750: 750 VDC 1000: 1000 VDC							
Coil voltage	12: 12 VDC    24: 24 VDC							
Contact arrangement	H: 1 Form A							
Coil terminal structure	L: Lead wire							
Load terminal structure	6: Screw terminal female and copper bus bar terminal							
Special code <sup>1)</sup>	XXX: Customer special requirement							

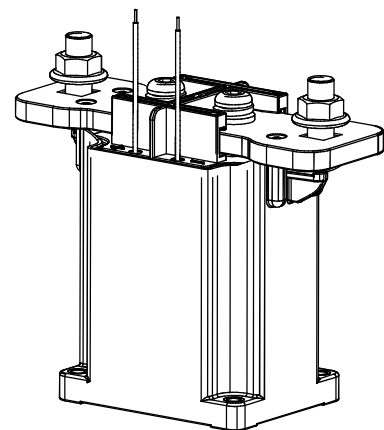
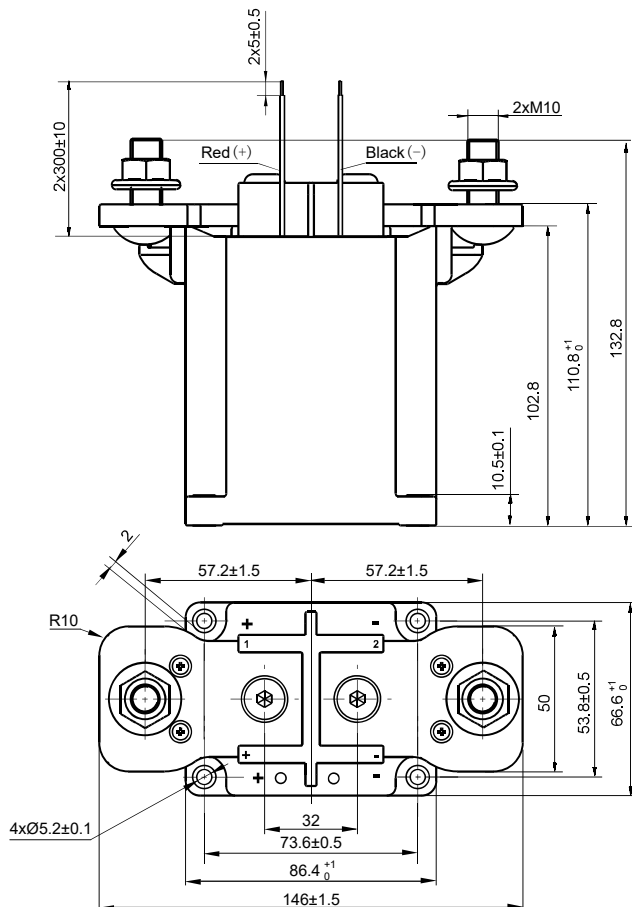
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

## OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

### Outline Dimensions

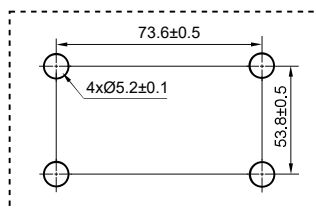
HFE82V-600/XXX-XX-H-L6



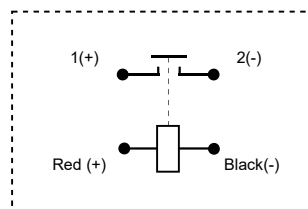
## OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



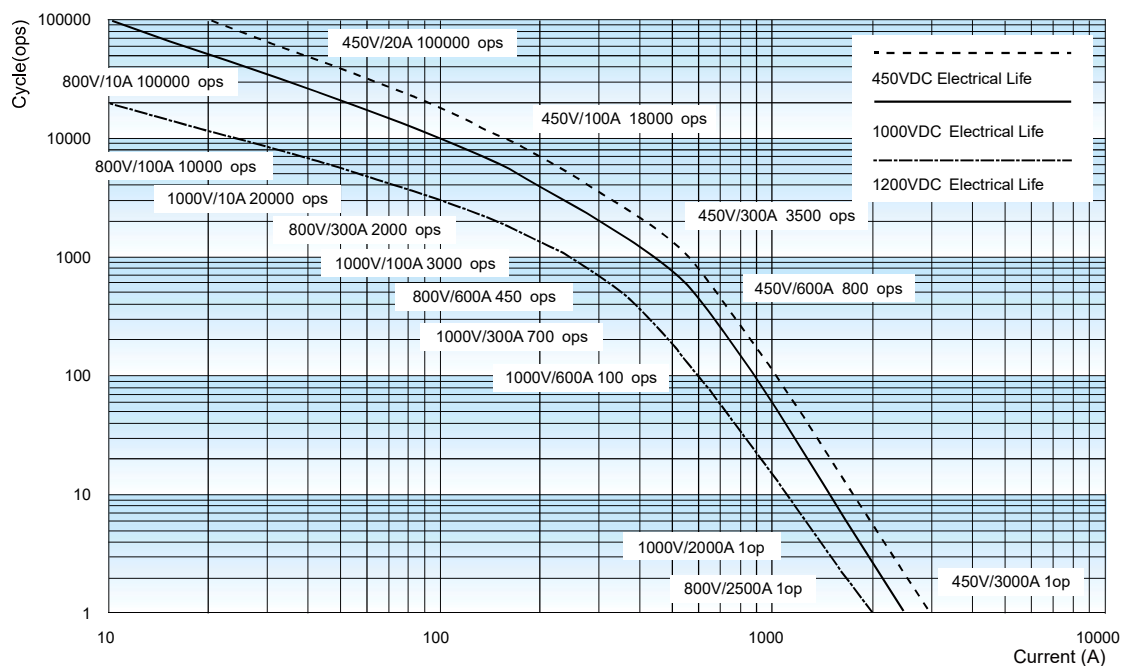
Terminal Arrangement



Notes: Polarity on the load and coil sides.

## CHARACTERISTIC CURVES

Breaking Capability Curve (Resistive Load)

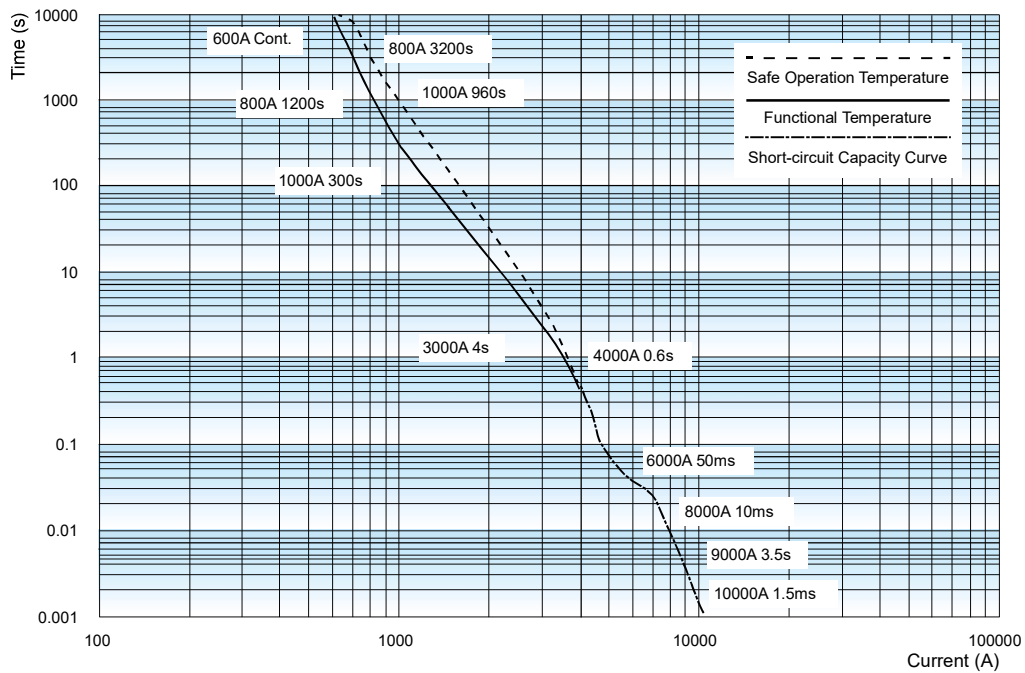


### Notes:

- 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:  $23^\circ\text{C}$ ;  
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

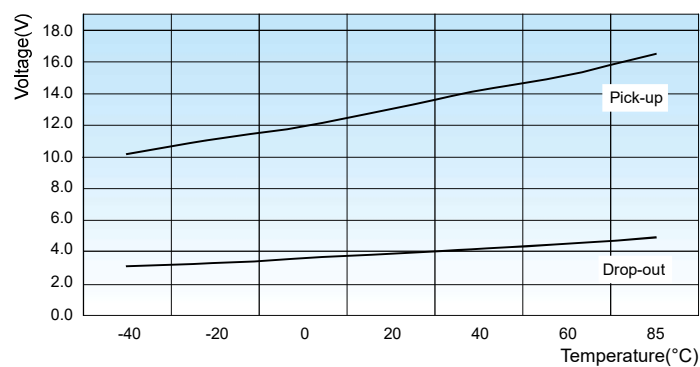
Endurance Capacity Curve



### 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  $\geq 8000\text{A}$  20ms. 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  $\geq 14000\text{A}$  6ms, 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 20N.m to 25N.m. The torque beyond the range may cause damage.

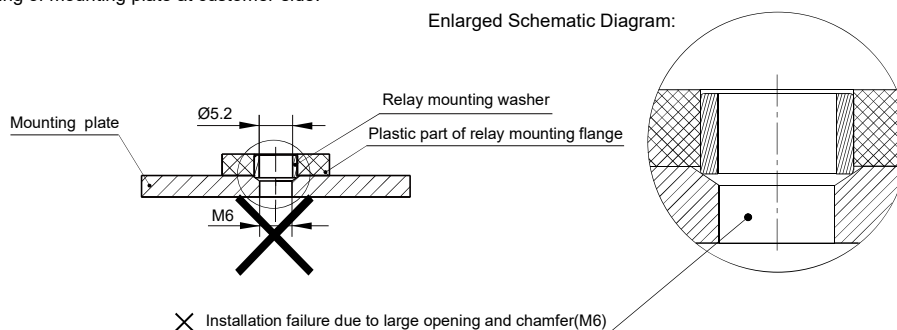
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M10 Bolt	20N·m ~ 25N·m	Ø10mm ~ Ø10.5mm	≥4mm	M5 Screw	3N·m ~ 4N·m

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 product has energy-saving board inside and the coil will switch automatically after 0.2s drive, but repeated switching within 0.2s may cause failure of relay.
7. The product with PCB inside cannot be driven by ramp up voltage, please drive the coil by step type power, otherwise the relay may fail to work.
8. Cautions of mounting for relay body:

### Unrecommended method

Large opening of mounting plate at customer-side.

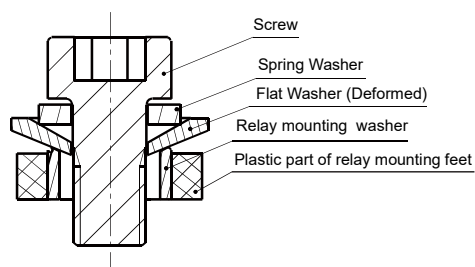
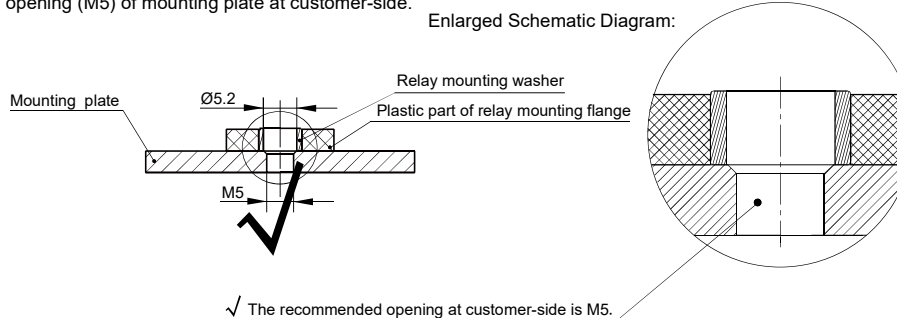
Enlarged Schematic Diagram:



### 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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