

# HFE 18V-20

# HIGH VOLTAGE DIRECT CURRENT RELAY



### Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas ( mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 20A continuously at 85° C.
- Insulation resistance is 1000mΩ ( 1000VDC), and dielectric strength between the coil and contacts is 4KV, which meets the requirements of IEC 60664-1.
- No specific polarity requirements for the connection

### CONTACT DATA

Contact arrangement	1H	
Contact resistance	≤10mΩ(20A)	
Rated load current	20A	
Mechanical endurance	2 x 10 <sup>5</sup> ops	
Outline Dimensions	78.0 x 39.8 x 46.1 mm	
	<b>450V type</b>	<b>750V type</b>
Max. switching voltage	1000V	1000V
Max. breaking current	200A (450V, 1op min.)	200A (750V, 1op min.)
Max. switching power	9kW	15kW
Electrical endurance <sup>1)</sup>	Res. load	Switching: 1 x 10 <sup>5</sup> ops (450Vd.c., 20A)
		Switching: 7.5 x 10 <sup>4</sup> ops (750Vd.c., 20A)
	<b>1000V type</b>	
Max. switching voltage	1000V	
Max. breaking current	200A (1000V, 1op min.)	
Max. switching power	20kW	
Electrical endurance <sup>1)</sup>	Res. load	Switching: 3 x 10 <sup>4</sup> ops (1000Vd.c., 20A)
Current carrying capacity <sup>2)</sup>	20A: Cont. 30A: 1h 40A: 20min 80A: 30s 120A: 10s 200A: 0.6s	

**Notes:** 1) Until special statement, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.  
2) Ambient temperature is room temperature and cross section area of wire is 4mm<sup>2</sup> min. See Pic Endurance Capacity Curve for more information.

### COIL

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil power W
12	9	1	2.6
24	18	2	2.6

**Notes:** The values above are conservative values within the temperature range(-40°C to 85°C), the pulling in voltage and releasing voltage are showed in the Pic Pulling in / Release Voltage Change Curve.

### CHARACTERISTICS

Insulation resistance		1000MΩ (at 1000VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min.
	Between open contacts	3000VAC 1min.
Operate time (at nomi. volt.)		30ms max.
Release time (at nomi. volt.)		10ms max.
Shock resistance	Functional	196m/s <sup>2</sup>
	Destructive	490m/s <sup>2</sup>
Vibration resistance		10Hz to 500Hz 49m/s <sup>2</sup>
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		ISO
Unit weight		Approx.150g

**Notes:** The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

## ORDERING INFORMATION

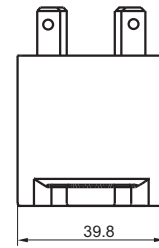
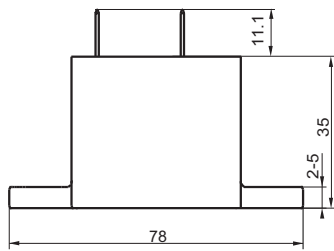
Type	HFE18V V: New energy vehicle	-20 /	750-	12-	H	2	(XXX)
Contact rating	20: 10A						
Load voltage	750: 750VDC Nil: 450VDC						
Coil voltage	12: 12VDC 24: 24 VDC						
Contact arrangement	H: 1 Form A						
Load input terminal	2: QC terminal fixing						
Special code <sup>1)</sup>	XXX: Customer special requirement Nil: Standard						

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

## OUTLINE DIMENSIONS,INSTALLATION HOLE

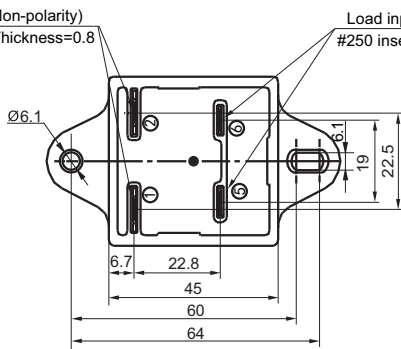
Unit: mm

### Outline Dimensions

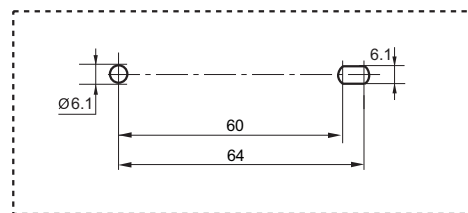


Coil input terminal (Non-polarity)  
#250insert terminal, Thickness=0.8

Load input terminal(Non-polarity)  
#250 insert terminal, Thickness=0.8

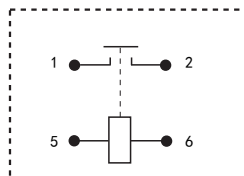


### Installation Hole



**Remark:** In case of no tolerance shown in outline dimension: outline dimension  $\leq 1$ mm, tolerance should be  $\pm 0.2$ mm; outline dimension  $> 1$ mm and  $\leq 5$ mm, tolerance should be  $\pm 0.3$ mm; outline dimension  $> 5$ mm, tolerance should be  $\pm 0.4$ mm.

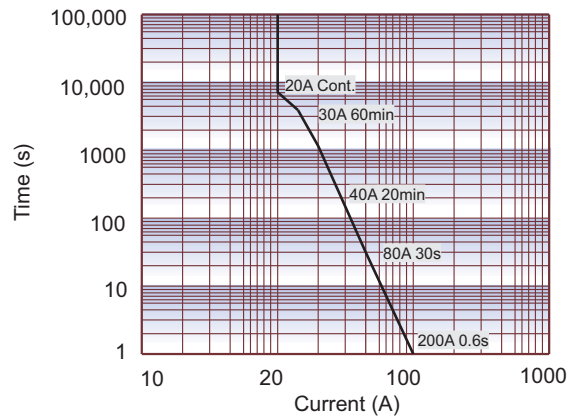
### Coil Wring Diagram



note: no polarity on the loads and coil.

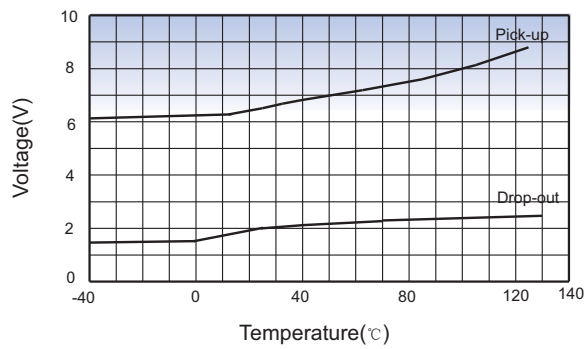
## CHARACTERISTIC CURVES

### Endurance Capacity Curve



**Notes:** The data above is measured at the environment temperature 85°C with cross section area of wire  $\geq 4\text{mm}^2$ . This data is only for reference and please do not use it for fuse selection.

### Pick-up Voltage / Drop-out Voltage Curve



**Notes:** When the coil voltage is at 12V, the data above is taken as sample value and only for reference ( Sample quantity: n=3)

## Cautions

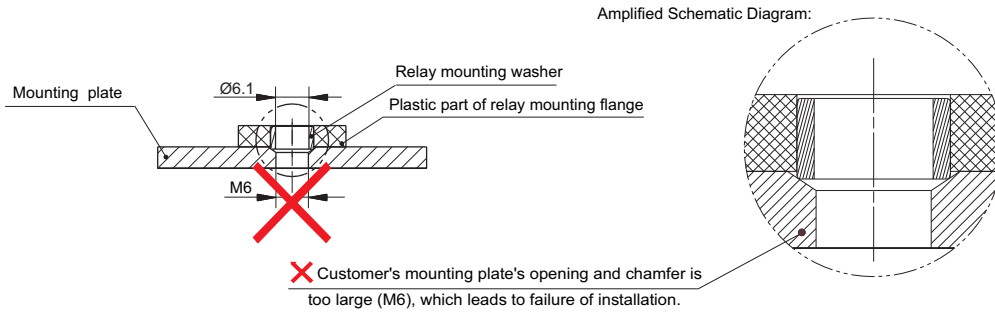
1. In case of loosening, please use washer when install the relay with M5 screw, and the torque within 3N·m ~ 4N·m. The push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.

2. Please do not adhere foreign materials like oil on the terminals and please use the wire with cross section area  $4\text{mm}^2$  min., otherwise the terminal parts may have abnormal heating.

3. Cautions of Relay Installatio:

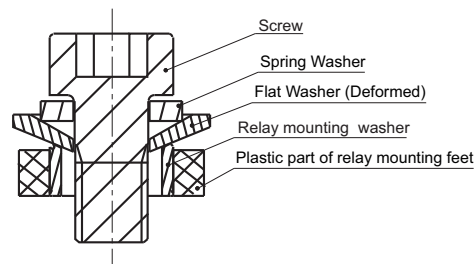
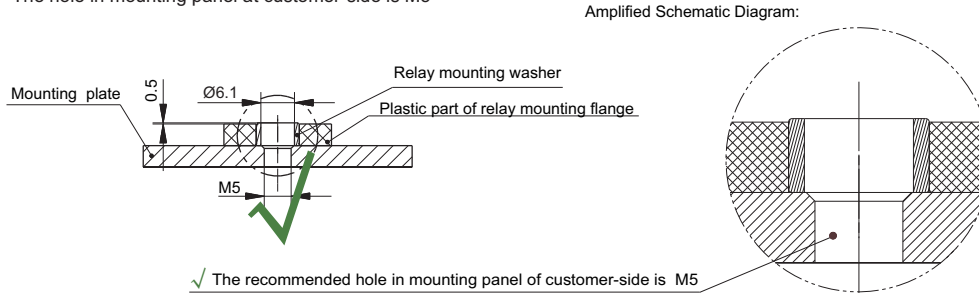
### Unrecommended method

The hole of mounting panel at customer-side is too large.



### Recommended method

The hole in mounting panel at customer-side is M5



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may stand deformation 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.