HFE85V-300M 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.
- 300A 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)		Main contacts: ≤0.3mΩ(at 200A) Aux contacts: ≤150mΩ(at 1A)
Contact rating		300A
Mechanical endurance		2x10^5 ops
Max. switching voltage		1000VDC
Max. breaking current		2000A(450VDC) 1 op
Max. switching power		450kW
Electrical endurance 1)	Res.load	Breaking:100 ops(1000VDC,300A)
		Breaking:500 ops(800VDC,300A)
		Breaking:500 ops(750VDC,300A)
		Breaking:1000 ops(450VDC,300A)
		Breaking:1 op(450VDC, 2000A)
Current carrying 2) capacity		300A:Cont.
		450A:400s
		600A:150s
		1000A:23s
		2000A:10s

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

2) Unless otherwise specified, the temperature of eletrical endurance is at 23°C and the on-off ratio is 1s:9s.
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 100mm^2 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	Driving Power: 60 Holding Power: 4.3
24	≤18	≥2	

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:196m/s^2; AUX contacts:147m/s^2@energized 98m/s^2@(non-energized)
	Destructive	490m/s^2
Vibration resistance		1.5mm DA10Hz ~ 500Hz 49m/s^2
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.420g
Outline Dimensions		84.5 x 62.5 x 73.0

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

ORDERING INFORMATION

	HFE85	V	-300	M/	XXX	12-	H-	B	C	5	-6	(XXX)
Type												
Application	**V:** Vehicle											
Contact rating	**300:** 300A											
Series breakdown	**M:** M series											
Load voltage	**Nil:** 450VDC **750:** 750VDC **800:** 800VDC **1000:**1000VDC											
Coil voltage	**12:** 12VDC **24:** 24VDC											
Contact arrangement	**H:** 1 Form A											
Aux Contact type	**B:** 1 Form B											
Coil terminal structure	**C:** Connector											
Load terminal structure	**5:** Screw terminal female											
Coil characteristic	**6:** Double coil with PCBA											
Special code[1)]	**XXX:** Customer special requirement											

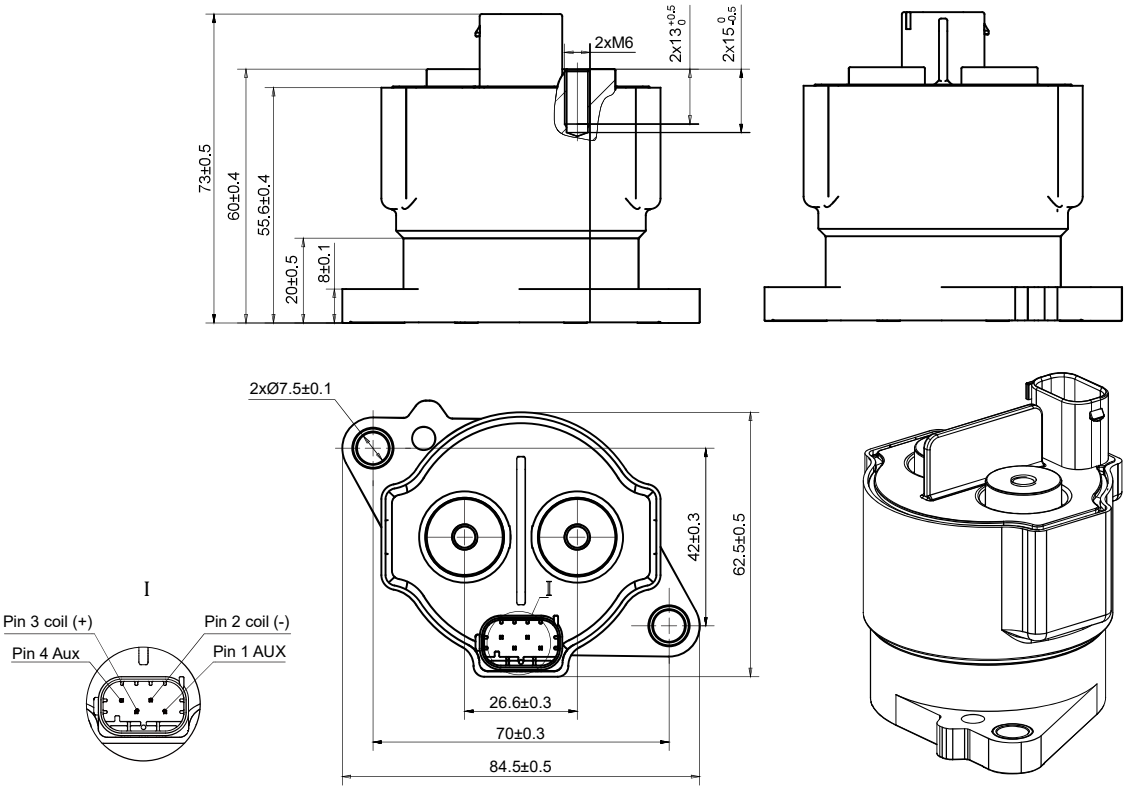
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

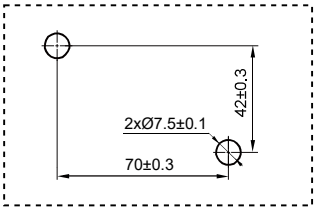
HFE85V-300M/XXX12-H-BC5-6



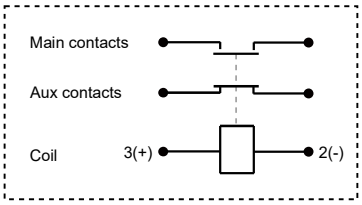
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



Terminal Arrangement



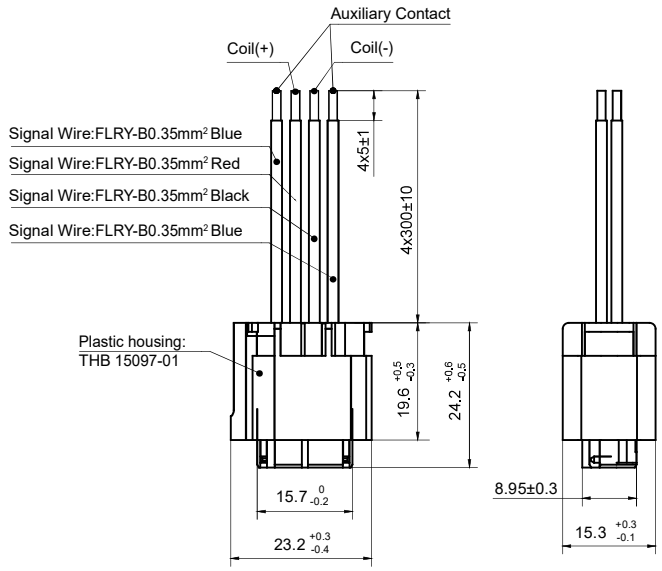
Notes: With polarity on the coil,
Without polarity on the Aux contacts and main contacts.

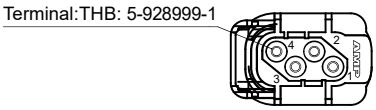
WIRING DIAGRAM

Unit: mm

C:Connector

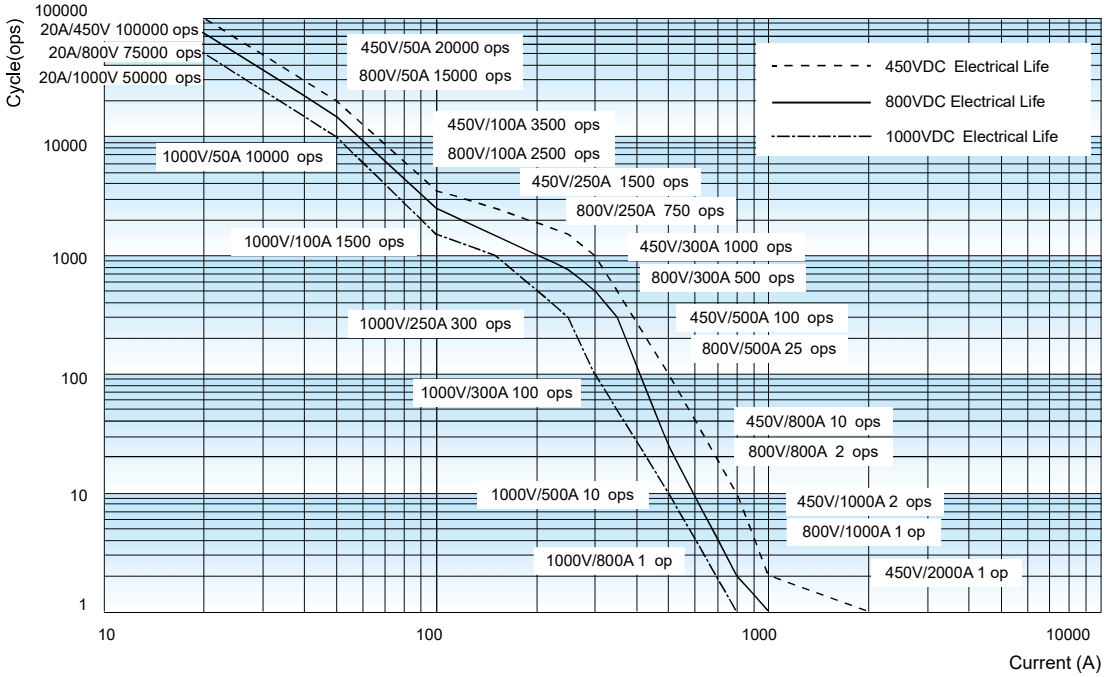
(Configured by customers: THB:15097-1;TE:1-967640-1;Delphi13655424)





CHARACTERISTIC CURVES

Breaking Capability Curve (Resistive Load)

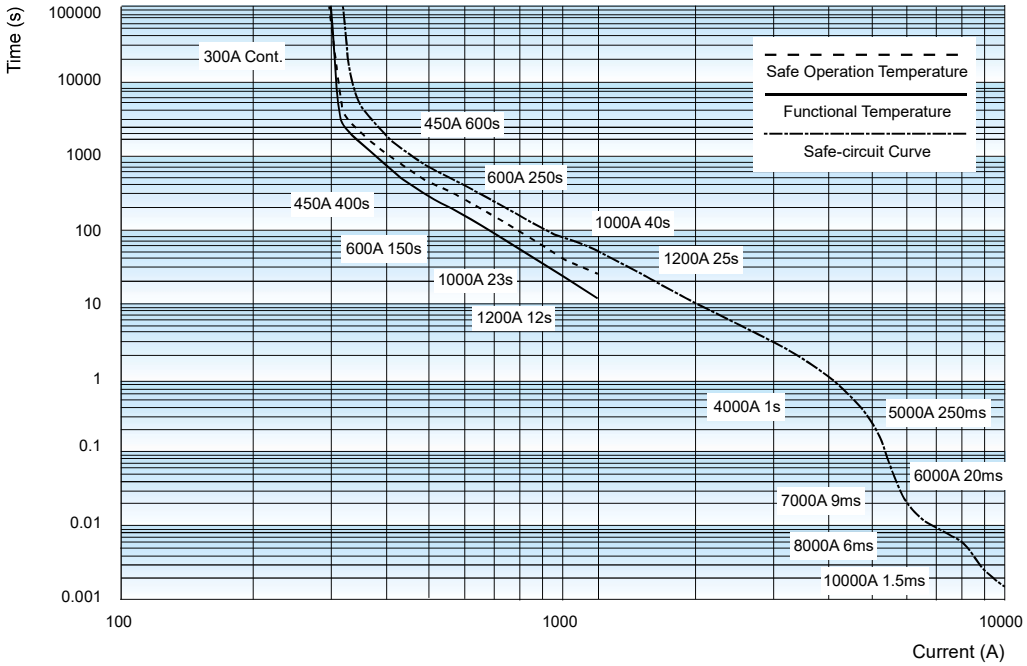


Notes：

1) The data is for reference only.
2) Cable cross section:≥100mm².
3) The data is measured under the resistive load (L/R≤1ms), 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

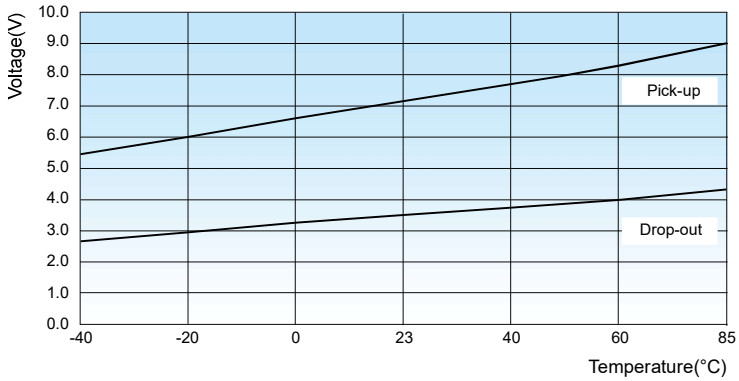
Endurance Capacity Curve



Notes：

1) The data is for design reference, it shall be verifed 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℃ and 130℃ respectively.
3) It is recommended that the upper temperature limit shall not exceed 130℃ when long time operation. The relay may also fail, if the safe temperature limit of 180℃ 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℃ for safe operation and function, and for current above 2000A, the temperature is room temperature with cross-sectional area≥100mm^2.
6. Even if it is below the safety curve when the current≥1200A, 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≥6000A 20ms. If the fuse cannot be fused in time, the relay may explode and may be iqnited if the arc continues to burn after the explosion.
8) The contact will severely bounce off when the current≥8000A 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℃ ~ 85℃.

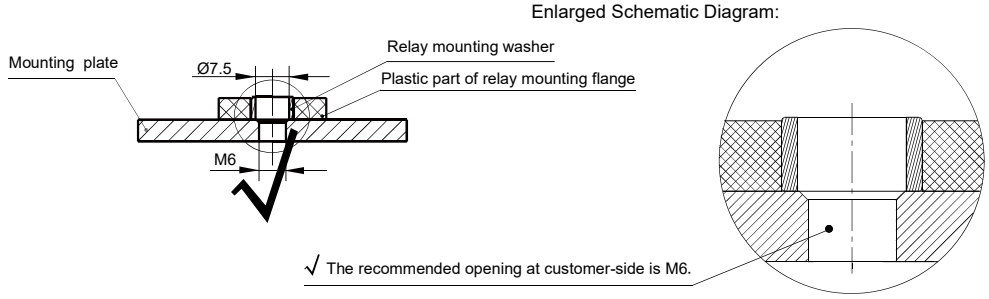
CAUTIONS

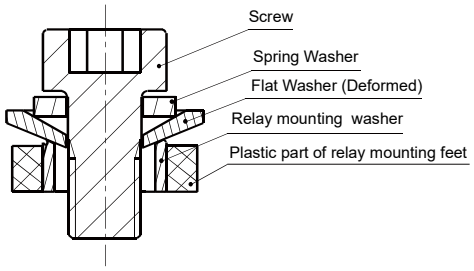
1. In case of looseness, please use washer when install the relay with M6 screw, and the torque within 5N.m to 6N.m, The screw tightening torque at terminals shall be within 6N.m to 8N.m. The torque beyond the range may cause damage.

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	Ø6.8mm ~ Ø7.2mm	4mm	M6 Screw	5N·m ~ 6N·m

2. 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 100mm^2, otherwise it may cause the abnormal heating of the terminal part.
3. The recommended thickness of copper bus-bar is 4mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
4. 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.