FH101HD

High Voltage DC Relay

Features



- ●Hermetically sealed with ceramic technology, without risk of arc leaking, no fire or explosion.
- ●Filled with hydrogen gas to prevent the oxidation, Low contact resistance.
- ● 150A continuous carry current capability at 85°C
- ● Max. switching voltage 1000VDC
- ● Meet the requirements for handling abnormal operating conditions and can switch under 10-times over current.
- ●Max. insulation resistance up to 1000MΩ (1000 VDC), dielectric strength (between contact and coil) up to 4kV, IEC60664-1 compliant.
- ●Pulse withstand voltage above 6 KV
- ●Available auxiliary contacts
- ●Compact size, low profile, PCB mount

■ Characteristics

Classification	Item		Specification
Contact Data	Contact arrangement		1A
	Contact resistance(initial)		≤0.5mΩ(150A)
	Contact rating		150A 1000VDC 80A 1500VDC
	Max. breaking current		1200A(300VDC 0.6S ON) 1 ops
	Max. switching power		180KW
Auxiliary Contact Data	Contact arrangement		1A
	Rated current		2A
	Working voltage		8VDC-30VDC
	Contact resistance		≤100 mΩ
Electrical performance	Insulation resistance(initial)		1000MΩ(at500VDC)
	Dielectric strength (initial)	Between open contacts	3000VAC 1min（50Hz/60Hz）
		Between coil & contacts	4000VAC 1min（50Hz/60Hz）
	Pulse withstand voltage		6KV
	Operate time		≤30ms
	Release time		≤10ms
Mechanical performance	Shock resistance	Functional	98m/s^2(10g)
		Destructive	490m/s^2(50g)
	Vibration resistance		10Hz ~ 55Hz 49m/s2
Endurance	Mechanical endurance		2×10^5 ops
	Electrical endurance		Making：10000 ops （150A 37.5VDC Inrush 400A RC=1ms） Breaking：500 ops（150A 1000VDC）

		Breaking：10 ops（250A 850VDC） Switching：6000 ops（5A 1000VDC）
Current carrying capacity		150A:Cont 320A:2min 900A:8s
Operate condition	Ambient temperature	-40℃~+85℃
	Humidity	5%~85%RH
Weight		Approx. 370g
Outline dimensions		Max75*Max52*Max46
Load terminal structure		PCB
Altitude		3050 m

Notes: The above values are the initial values.

■ Coil Data（23℃）

Rated Voltage	Pick-up Voltage (VDC)	Drop-out Voltage (VDC)	Rated current (A)±10%	Coil resistance (Ω)±10%	Power rating (W)	Maximum allowable voltage (VDC)
DC 12V	≤9	≥1	0.5	25	6	13.2
DC 24V	≤18	≥2	0.25	100		26.4

■ Order Information

FH101HD -150 -1000 -1A AC -XXX DC12V

① Type

② Contact rating 80=100A,150=150A

③ Load voltage 1000：1000VDC,1500:1500VDC

④ Contact arrangement：1A=1 Form A

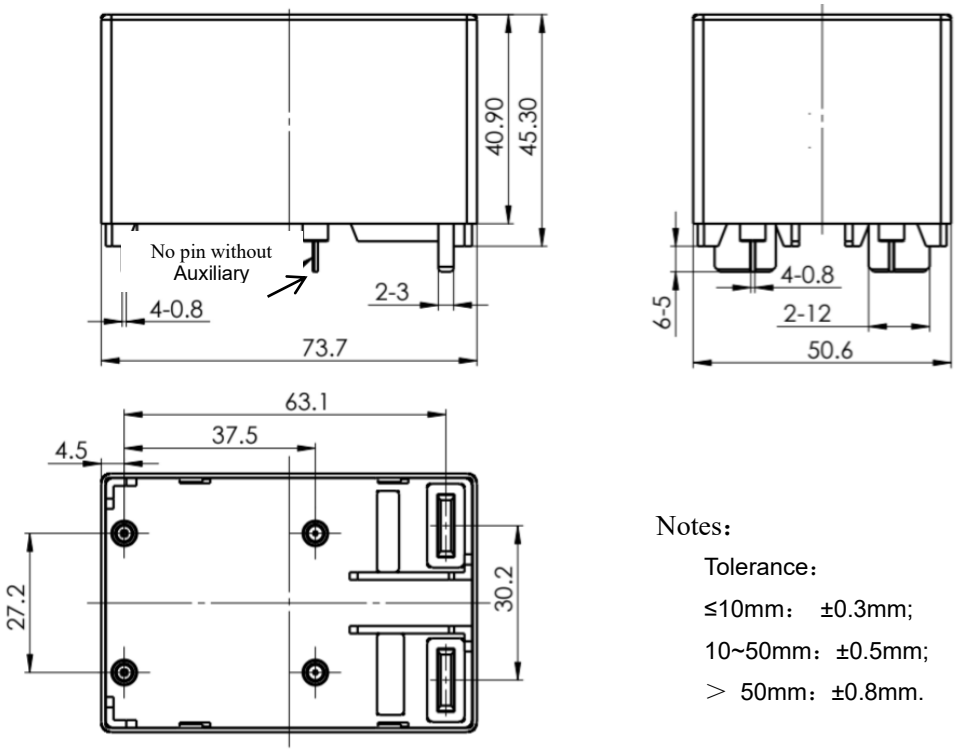
⑤ Auxiliary Contact arrangement：None, no auxiliary contacts；AC=1 Form A

⑥ Customer Special code：xxx Numbers or letters denote customer’s requirements

⑦ Coil rated voltage：DC12/24V

■ Outline Dimensions, Terminal arrangement, PCB layout（Unit: mm）

Outline dimension



Notes：

Tolerance：

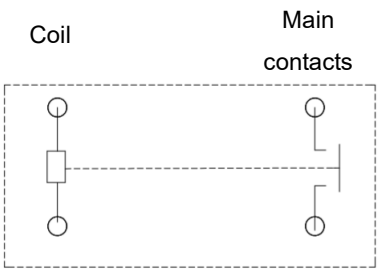
≤10mm： ±0.3mm;

10~50mm：±0.5mm;

＞ 50mm：±0.8mm.

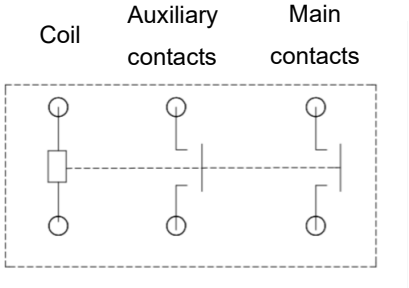
Terminal Arrangement

(Bottom view)



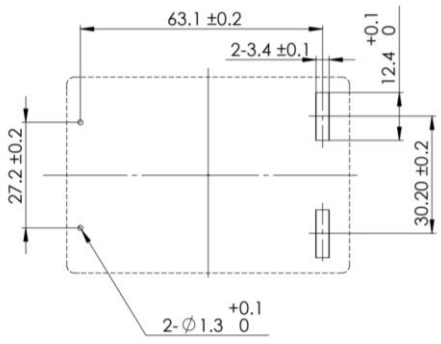
Terminal Arrangement (With auxiliary contacts)

(Bottom view)



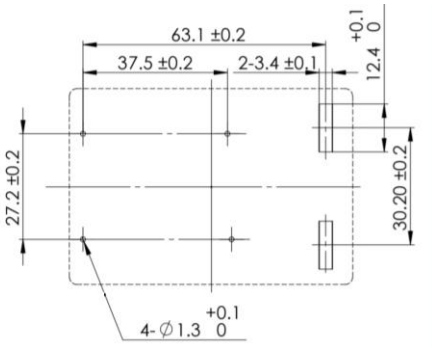
PCB layout

(Bottom view)



PCB layout (With auxiliary contact)

(Bottom view)



Note：

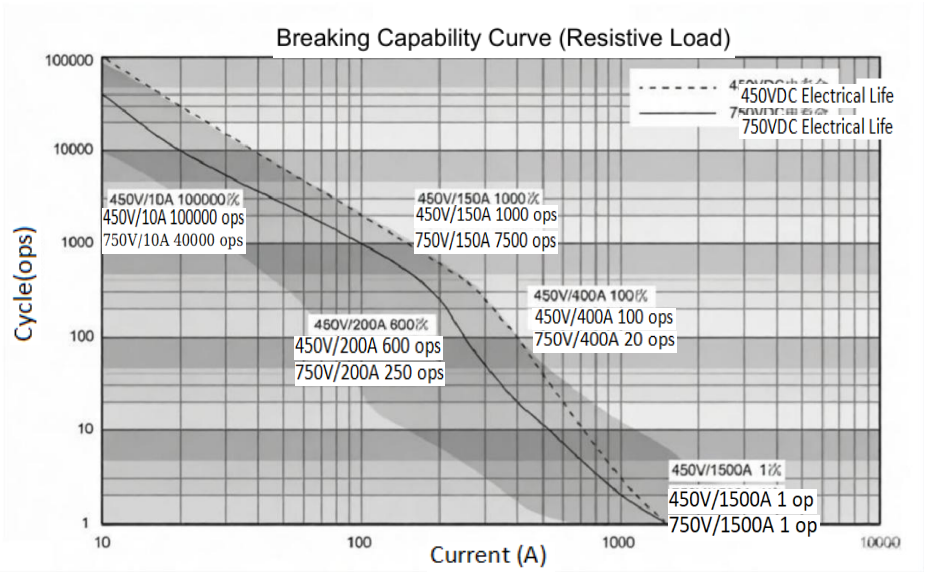
(1) The load and coil are non-polar.

(2) The pin dimensions marked in the product outline dimension are pre soldering dimensions (they will become larger after soldering). The mounting hole dimensions are the recommended design dimensions for PCB board holes. The specific PCB board hole design dimensions may be measured and adjusted according to the actual product.

■ Safety Approval Ratings

Approval	File No.	Contact arrangement	Contact material	Approved ratings
UL/C-UL				
TUV				
CQC				

■ Characteristic Curves



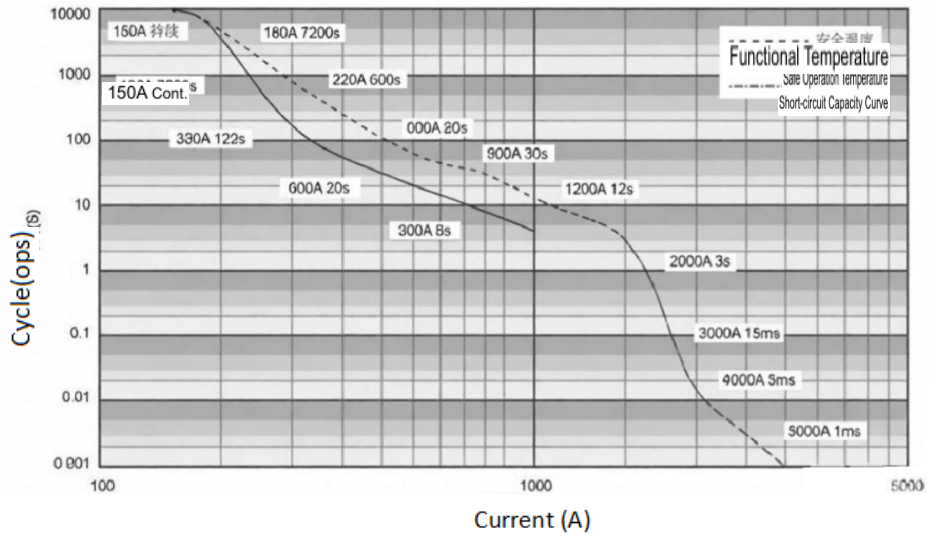
1. The data is for reference only.

2. Cable cross section:⩾50mm² .

3. The data is measured under the resistive load (L/R≤1ms), the duty cycle:0.6s on:5.4s off, ambient temperature:23ºC; 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.

4.The curve represents measured data from standard relays. During system design, factors such as system voltage, electromagnetic compatibility of copper busbars, and installation stress effects must be considered. For inquiries, please contact Fanhar.

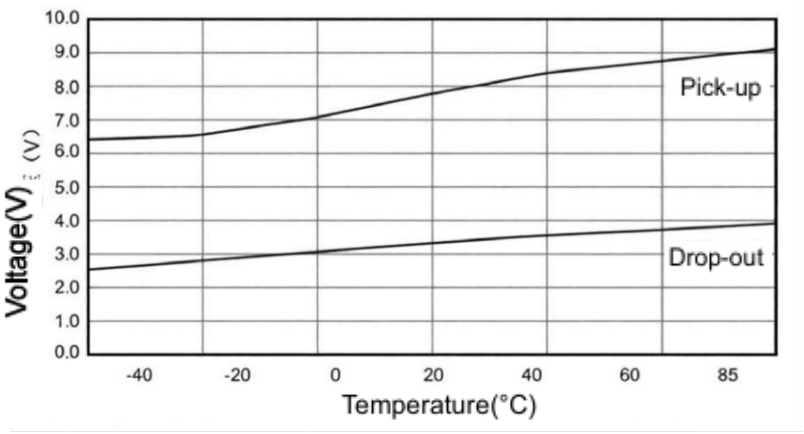
Endurance Capacity Curve



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℃ and 130℃ respectively; 130℃ is the long-term operating temperature for the material, 180℃ is the short-term usage temperature for material aging;
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≥50mm^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≥3000A. 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≥5000A 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 sample values for reference only.
2. The sample coil has a rated voltage of 12 VDC.
3. The sampling ambient temperature is -40℃～85℃.

■ Cautions

1.The soldering conditions for PCB: For manual soldering with temperature at (380±20)℃ within (3~5)s, for wave-soldering with temperature at (265±5)℃ within (3~8)s. Relays are not allowed to be welded repeatedly.

2.After welding, water washing is not allowed.

3.Please avoid adhering to foreign matter such as grease on the terminal lead end and please use the conductor with min. cross-sectional area of 50mm^2, otherwise it may cause the abnormal heating of the terminal part.

4. Do not use the relay when it is dropped.

5. Avoid to install in strong magnetic fields (around transformers or magnets) and near heating unit.

6.The specification is for reference only. Specifications subject to change without notice.