HF187F MINIATURE HIGH POWER RELAY

File No.:E133481

File No.:R 50506590

File No.:CQC 21002324800

Features

- 4 Main contacts +1 Auxiliary contact
- Detection of main contact welding makes it possible to construct a safety circuit (according to IEC 61810-3)
- Meet the requirements for auxiliary contact linked with power contact (mirror contact) (according to IEC 60947-4-1)
- Contact gap：3.9mm (Main contact),each contact, 4mm main contact gap specifications are optional
- Low coil holding voltage contributes to energy saving
- Contact category :CC2
- Special version fully compliant to the short circuit current test of IEC 62955 available
- Outline dimensions：(59×35×47)mm

RoHS compliant

CONTACT DATA

Contact arrangement		4A/4A+1B
Contact resistance (initial)	Main contact	Typ.: 2mΩ(6VDC 20A) Max.:10mΩ(6VDC 20A)
	Auxiliary contact	100mΩ max(at 6VDC 1A)
Contact material		Main contact：$AgSnO_2$ Auxiliary contact：AgNi
Contact rating (resistance)	Main contact	40A 440VAC
	Auxiliary contact	1A 277VAC, 1A 30VDC
Max. switching voltage	Main contact	440VAC
	Auxiliary contact	277V AC, 30VDC
Max. switching current		Main contact:40A Auxiliary contact:1A
Max. switching power		Main contact:17600VA Auxiliary contact:277VA/30W
Min. switching load[2)] (Auxiliary contact)		NC: 100mA 12VDC NC(Gold plated): 10mA 12VDC
Mechanical endurance		1×10^5ops
Electrical endurance		NO: Making 10A Loading 40A Breaking 10A,440VAC, Resistive load, 85℃, 5×10^4ops NC:1A 125VAC/30VDC, Resistive load, 85℃, 1s on 9s off,1×10^4ops

Notes:1) The data shown above are initial values.
2) Min. contact load is reference value. Please perform the confirmation test with the actual load before usage since reference value may change according to switching frequencies, environmental conditions and expected life cycles.

COIL

Coil power	Approx.4.8W
Holding voltage	35% to 80%U_N(at 23℃) 40% to 60%U_N(at 85℃)

Notes:1) The coil holding voltage is the voltage applied to coil 100ms after the rated voltage.
2) To avoid overheating and burning,the coil can not be consistently applied with voltage higher than maximum holding voltage.

COIL DATA 23℃

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min	Max. Allowable Voltage VDC [1)]	Coil Resistance Ω
9	6.75	0.45	9.9	16.9×(1±10%)
12	9	0.6	13.2	30×(1±10%)
24	18	1.2	26.4	120×(1±10%)
48	36	2.4	52.8	480×(1±10%)

Notes:1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

CHARACTERISTICS

Insulation resistance		1000MΩ (500VDC)
Dielectric strength	Between open Main contacts	2000VAC 1min
	Between Main contact & Auxiliary contact	5000VAC 1min
	Between Main contact sets	3500VAC 1min
	Between coil & Auxiliary contacts	2000VAC 1min
	Between coil & Main contacts	5000VAC 1min
	Between open Auxiliary contacts	1000VAC 1min
Operate time (at nomi. volt.)		40ms max.
Release time (at nomi. volt.)		20ms max.
Coil temperature rise		70K max. (Contact load current 40A, Applied voltage of coil 100% rated voltage for 100 ms then reduce to 60% rated voltage for holding,at 85℃)
Shock resistance	Functional	Main contact:98m/s²
	Destructive	980m/s²
Vibration resistance		Main contact:10Hz to 55Hz 1.0mm DA
Humidity		5% to 85%RH
Ambient temperature		-40℃ to 85℃
Termination		PCB
Unit weight		Approx. 200g
Construction		Flux proofed

SAFETY APPROVAL RATINGS

UL/CUL	NO: Making 10A Loading 40A Breaking 10 A,440VAC NC: 1A 125VAC/30VDC Resistive 85℃
TÜV	NO: Making 10A Loading 40A Breaking 10 A,440VAC NO: 32A 440VAC Resistive 85℃ NC:1A 277VAC/30VDC Resistive 85℃ 32A 440VAC 85℃
CQC	NO: Making 10A Loading 40A Breaking 10A,440VAC NC:1A 277VAC/30VDC Resistive 85℃

Notes:1) All values unspecified are at room temperature.
2) Only some typical rating are listed above.If more details are required,please contact us.

ORDERING INFORMATION

	HF187F/	12	-4H	B	T	F	（XXX）
Type							
Coil voltage	9,12,24,48 VDC						
Main contact arrangement		**4H:** 4 Form A					
Auxiliary contact arrangement		**B:** 1 Form B **Nil:** Without auxiliary contact					
Main contact material		**T:** $AgSnO_2$					
Insulation class		**F:** Class F					
Special code		**XXX:** Customer special requirement; **Nil:** Standard[4)] **955:** Fully compliant to the short circuit current test of IEC 62955[5)] **991:** Auxiliary contact gold plated **AB4:**The initial contact gap of the main contact is ⩾4.0mm					

Notes: 1) Please avoid using the relay in an environment containing organic silicon,otherwise the entry of organic silicon into the relay may acceleration contact failure.If there are harmful substances and elements such as water vapor,H_2S,SO_2,NO_2,Cl,P,dust,etc.， as well as unknown harmful substances and elements,In the use of environmental gases,it may lead to increased contact resistance and poor contact during the use of relays.In the above situations,please control the materials that produce harmful substances and elements or use plastic sealed type， and arrange relevant tests to confirm that it meet the requirements for actual use.

2) Water clearing or surface process is not suggested after the flux-proofed relays are assembled on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

4) Short circuit capability: Ip⩾2.6kA, I^2t ⩾6.5kA^2s (compliant to IEC 62955 9.11.2.3 a))

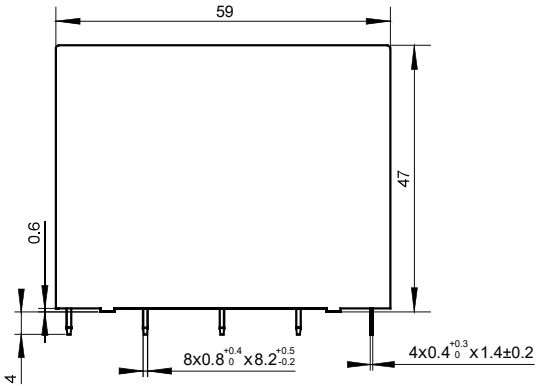
5) Test Sequence E: 9.11.2.3 a) 440VAC, Ip⩾2.6kA, I^2t⩾6.5kA^2s (In⩽32A, Inc=10kA) + 9.11.2.2 440VAC, Im=500A.
Test Sequence F: 9.11.2.3 b) 440VAC, Im=500A + 9.11.2.3 c) 440VAC, Ip⩾2.6kA,I^2t⩾6.5 kA^2s(In⩽32A, IΔc=10kA)

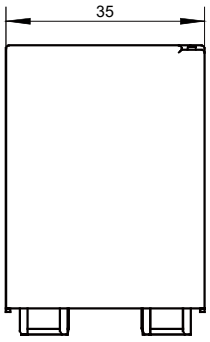
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

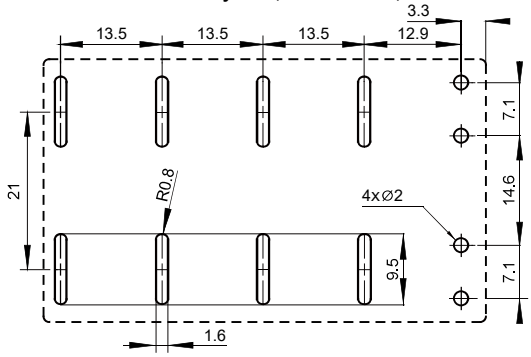
4HB

Outline Dimensions

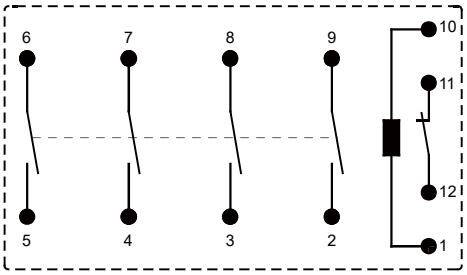




PCB Layout(Bottom view)



Wiring Diagram(Bottom view)

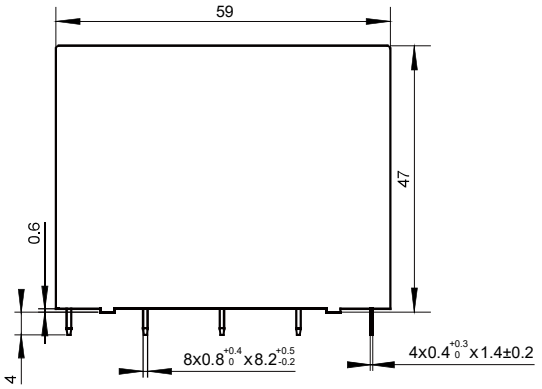


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

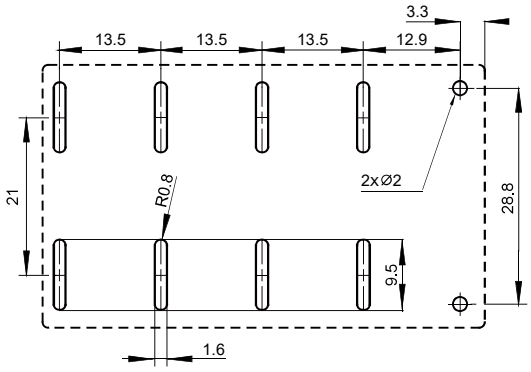
Unit: mm

4H

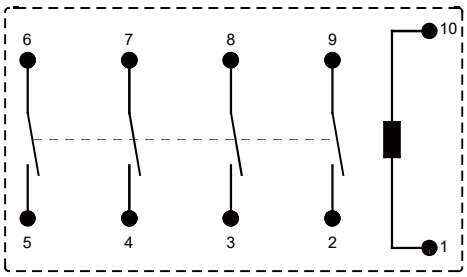
Outline Dimensions



PCB Layout(Bottom view)



Wiring Diagram(Bottom view)



Notes:1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension＞1mm and ≤5mm,tolerance should be ±0.3mm; outline dimension＞5mm and ≤30mm, tolerance should be ±0.4mm;outline dimension＞30 mm, tolerance should be ±0.6mm.

2) The tolerance without indicating for PCB layout is always ±0.1mm.

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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