

# HF161F-40W

## MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R 50475730



File No.:20002246447



### Features

- Applicable to inverter used for photovoltaic power generation systems
- Ideal for UPS
- 43 A 277 VAC switching capability
- Contact gap 2.1 mm, 2.0 mm, 1.8 mm is optional
- Low coil holding voltage contributes to saving energy of equipment.
- Class F insulation system
- Outline Dimensions:(30.4×15.9×23.3)mm

RoHS compliant

### CONTACT DATA

Contact arrangement	1A
Contact resistance <sup>(1)</sup>	10mΩ max.(6VDC 20A)
Contact material	AgSnO <sub>2</sub>
Contact rating (Res. load)	Making 20A, loading 40A,breaking 20A 277VAC
Max. switching voltage	277VAC
Max. switching current	43A
Max. switching power	11911VA
Mechanical endurance	1×10 <sup>5</sup> Ops
Electrical endurance	Min. 5×10 <sup>4</sup> Ops (85°C,1s on 9s off,Making20A, loading 40 A breaking 20 A, 277VAC,Res. load)

Notes: 1) The data shown above are initial values.

### COIL

Coil power	Standard:Approx. 3.8W (967):Approx. 1.6W
Holding voltage (Standstd)	40% to 70%U <sub>N</sub> (temperature 23°C) 40% to 55%U <sub>N</sub> (temperature 85°C)
Holding voltage (967)	50% to 100%U <sub>N</sub> (temperature 23°C) 55% to 70%U <sub>N</sub> (temperature 85°C)

- 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 to with voltage larger than maximum holding voltage.

### CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between open contacts	2500VAC 1min
	Between coil & contacts	4500VAC 1min
Surge Voltage		10kV(1.2/50μs)
Operate time (at rated. volt.)		20ms max.
Release time (at rated. volt.)		10ms max.
Temperature rise		70K max. (Contact load current 43A, Applied voltage of coil 100% rated voltage for 100ms holding voltage of coil 55% rated voltage, at 85°C)
Shock resistance	Functional	196m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85%RH
Ambient temperature		-40°C to 85°C (Apply holding voltage to coil)
Termination		PCB
Unit weight		Approx. 25g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.

### SAFETY APPROVAL RATINGS

UL/CUL TÜV CQC	Making 20 A loading 40 A breaking 20 A, 277 VAC, Resistive 85°C 40 A, 277 VAC, Resistive 85°C 43 A, 277 VAC, Resistive 85°C Making 10 A loading 43 A breaking 10 A, 277 VAC, Resistive 85°C
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- Notes: 1) All values unspecified are at room temperature.  
2) Only typical loads are listed above.Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000, ISO/IEC 27001 CERTIFIED

2024 Rev. 1.01

## COIL DATA

at 23°C

Standard

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance $\Omega$
6	4.2	0.3	6.6	$9.5 \times (1\pm 10\%)$
9	6.3	0.45	9.9	$21.3 \times (1\pm 10\%)$
12	8.4	0.6	13.2	$38 \times (1\pm 10\%)$
24	16.8	1.2	26.4	$152 \times (1\pm 10\%)$

(967)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance $\Omega$
6	4.5	0.3	6.6	$22.5 \times (1\pm 10\%)$
9	6.75	0.45	9.9	$50.6 \times (1\pm 10\%)$
12	9.0	0.6	13.2	$90 \times (1\pm 10\%)$
24	18	1.2	26.4	$360 \times (1\pm 10\%)$

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

## ORDERING INFORMATION

Type	HF161F-40W /12 -H T F (XXX)
Coil voltage	6,9,12,24VDC
Contact arrangement	H: 1 Form A
Contact material	T: AgSnO <sub>2</sub>
Insulation standard	F: Class F
Special code <sup>(1)</sup>	(967) stands for the coil power 1.6W and contact gap $\geq 1.8$ mm (912) stands for contact gap $\geq 2.1$ mm

**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<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, 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.

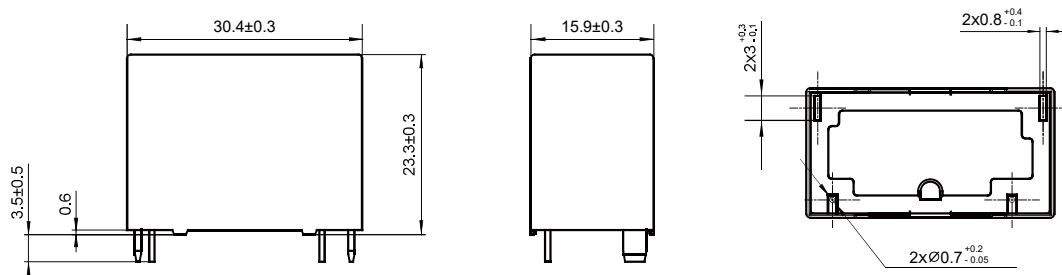
2) Water clearing or surface process is not suggested after the flux-proofed relays are assembled on PCB.

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

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

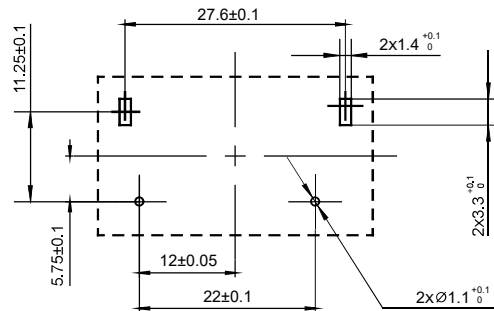
### Outline Dimensions



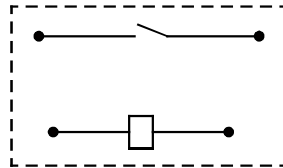
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

PCB Layout  
(Bottom view)



Wiring Diagram  
(Bottom view)



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .  
2) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .

### 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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