



File No.:E134517



File No.:40031410



File No.:CQC10002050943  
CQC18002203499



## Features

- 31A switching capacity
- Applicable to inverter used for photovoltaic power generation systems
- Ideal for UPS
- 1.5mm contact gap (compliant to European Photovoltaic Standard VDE0126)
- 1.8mm contact gap (compliant to IEC 62109-2-2011)
- The clearance distance between contact and coil is bigger than 6.4mm, the creepage distance is bigger than 8mm. (special code 477:7.5mm)
- Low coil holding voltage contributes to saving energy of equipment.
- UL insulation system: Class F

## CONTACT DATA

Contact gap	1.5mm	1.8mm	2.0mm	2.3mm
Contact arrangement	1A			
Contact resistance <sup>1)</sup>	≤100mΩ (1A 6VDC)			
Contact material	AgSnO <sub>2</sub>			
Contact rating	Resistive: 26A 250VAC Inductive: 31A 250VAC (cosφ=0.8) 0.1s:10s	Resistive: 26A 250VAC Inductive: 33A 250VAC (cosφ=0.8) 0.1s:10s	Resistive: 26A 250VAC Inductive: 31A 250VAC (cosφ=0.8) 0.1s:10s	Resistive: 26A 250VAC
Max. switching voltage	277VAC			
Max. switching current	31A	33A	31A	26A
Max. switching power	7750VA	8250VA	7750VA	7202VA
Mechanical endurance	1 x 10 <sup>6</sup> OPS	1 x 10 <sup>5</sup> OPS	1 x 10 <sup>5</sup> OPS	1 x 10 <sup>5</sup> OPS
Electrical endurance	HT type: 3 x 10 <sup>3</sup> OPS (26A 250VAC Resistive 75°C 1.5s on 1.5s off)	HT type: 3 x 10 <sup>3</sup> OPS (26A 250VAC Resistive 75°C 1.5s on 1.5s off)	HT type: 3 x 10 <sup>3</sup> OPS (26A 250VAC Resistive 75°C 1.5s on 1.5s off)	HT type: 3 x 10 <sup>3</sup> OPS (26A 250VAC Resistive Room temp. 1.5s on 1.5s off)

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

## COIL

Coil power	Approx. 1.4W
Holding voltage	35% to 120%U <sub>N</sub> (at 23°C) 45% to 80%U <sub>N</sub> (at 85°C)

Notes: 1)The coil holding voltage is the voltage of coil after being applied rated voltage for 100ms  
2)The relay coil does not allow applied more than maximum of holding voltage values for a long time (Eg: 120% U<sub>N</sub> at 23°C; 80% U<sub>N</sub> at 85°C), prevent overheating burned.

## COIL DATA at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. 1)	Drop-out Voltage VDC min. 1)	Max. Voltage VDC *2)	Coil Resistance Ω
9	6.3	0.9	10.8	58 x (1±10%)
12	8.4	1.2	14.4	103 x (1±10%)
18	12.6	1.8	21.6	230 x (1±10%)
24	16.8	2.4	28.8	410 x (1±10%)

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

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

## CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4500VAC 1min
	Between open contacts	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2/50μs)	
Operate time (at rated. volt.)	20ms max.	
Release time (at rated. volt.)	10ms max.	
Temperature rise (at rated. volt.)	95K max. (Contact load current 31A, rated voltage excitation, at 60°C)	
	70K max. (Contact load current 31A, 80% of rated voltage excitation, 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	
Ambient temperature	-40°C to 85°C (Apply holding voltage to coil, which is 45% to 80% that of rated voltage)	
Humidity	5% to 85% RH	
Termination	PCB	
Unit weight	Approx. 21g	
Construction	Flux proofed	

Notes: The data shown above are initial values.

## SAFETY APPROVAL RATINGS

UL/CUL	AgSnO <sub>2</sub>	26A 277VAC at 75°C
		22A 277VAC at 85°C
VDE	AgSnO <sub>2</sub>	26A 277VAC at 75°C
		22A 277VAC at 85°C 31A 250VAC cosφ=0.8 0.1s:10s 33A 250VAC cosφ=0.8 0.1s:10s (477)

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、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2019 Rev. 1.00

## ORDERING INFORMATION

Type	HF161F-W /	12	-H	T	(XXX)
Coil voltage	9, 12, 18, 24VDC				
Contact arrangement	H: 1 Form A				
Contact material	T: AgSnO <sub>2</sub>				
Special code <sup>3)</sup>	XXX: Customer special requirement		Nil: Standard		

**Notes:** 1) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

2) Flux-proofed relays can not be used in the environment with pollutants like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.

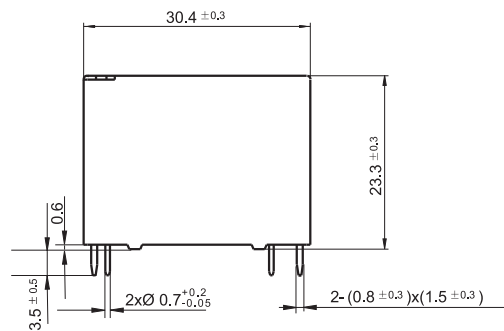
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (414) stands for product with coil terminal of 1.4X0.4; e.g. (477) stands for Contact gap: 1.8mm.(456) stands for Contact gap: 2.0mm.(704)stands for Contact gap: 2.3mm.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

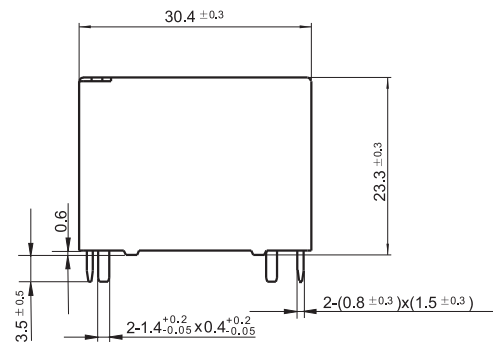
Unit: mm

### Outline Dimensions

#### Standard type



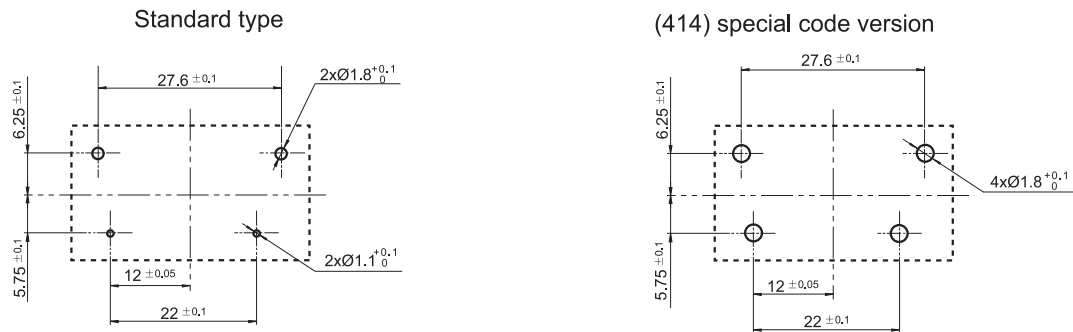
#### (414) special code version



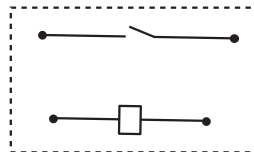
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

### PCB Layout (Bottom view)



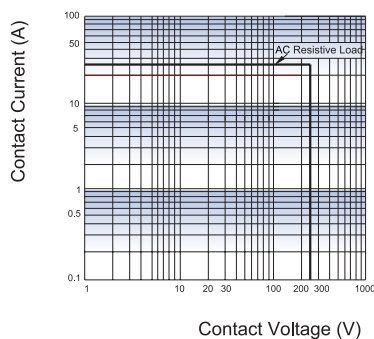
### Wiring Diagram



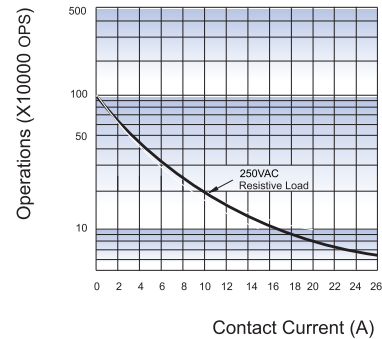
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be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

## CHARACTERISTIC CURVES

### MAXIMUM SWITCHING POWER



### ENDURANCE CURVE



**Test conditions:**  
at 75°C, 1.5s on 1.5s off.

### 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.

© Xiamen Hongfa Electroacoustic Co., Ltd. All rights of Hongfa are reserved.