

# HFA2

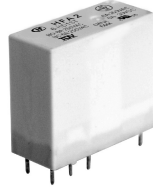
# SAFETY RELAY (RELAY WITH FORCIBLY GUIDED CONTACTS)



File No.:E134517



File No.:B 053286 0041



## Features

- Multi contact arrangements: 2 Form C (2Z type), 1NO+1NC (HD1 type), 1NO+1NC (HD2 type)
- Forcibly guided contacts according to IEC 61810-3
- 8A switching capability
- High insulation capability (1.2 / 50µs): 10kV surge voltage between coil & contacts and 6kV between contact sets
- UL insulation system: Class F available

RoHS compliant

## CONTACT DATA

Contact arrangement	2 Form C (2Z type) 1NO+1NC (HD1 type) 1NO+1NC (HD2 type)
Forcibly guided contacts Type (according to IEC61810-3)	HD1, HD2 type: Type A 2Z type: Type B
Contact resistance <sup>1)</sup>	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO <sub>2</sub>
Contact rating (Res. load)	6A 250VAC / 30VDC
Max. switching voltage	400VAC / 30VDC
Max. switching current	8A
Max. switching power	1500VA / 180W
Mechanical endurance	1 x 10 <sup>7</sup> OPS
Electrical endurance <sup>2)</sup>	1 x 10 <sup>5</sup> OPS (1NO: 6A 250VAC/30VDC, Resistive load, at 70°C, 1s on 9s off) 5 x 10 <sup>4</sup> OPS (1NC: 6A 250VAC/30VDC, Resistive load, at 70°C, 1s on 9s off)

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

2) Only 1 NO or NC is loaded in the test.

## COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC Max. <sup>1)</sup>	Drop-out Voltage VDC Min. <sup>1)</sup>	Max. Voltage VDC <sup>2)</sup>	Coil resistance Ω
5	3.80	0.5	7.5	35.7 x (1±10%)
6	4.50	0.6	9.0	51 x (1±10%)
9	6.80	0.9	13.5	116 x (1±10%)
12	9.00	1.2	18	206 x (1±10%)
15	11.3	1.5	22.5	321 x (1±10%)
18	13.5	1.8	27	483 x (1±10%)
21	15.8	2.1	31.5	630 x (1±10%)
24	18.0	2.4	36	823 x (1±10%)
36	27.0	3.6	54	1851 x (1±10%)
40	30.0	4.0	60	2286 x (1±10%)
48 <sup>2)</sup>	36.0	4.8	72	3291 x (1±15%)
60 <sup>2)</sup>	45.0	6.0	90	5142 x (1±15%)
80 <sup>2)</sup>	64.0	8.0	120	9143 x (1±15%)
110 <sup>2)</sup>	82.5	11.0	165	17285 x (1±15%)

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.

3) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

## CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1500VAC 1 min
	Between contact sets	3000VAC 1 min
Surge voltage	Between coil & contacts	10kV (1.2 / 50µs)
	Between open contacts	2.5kV (1.2 / 50µs)
	Between contact sets	6.0kV (1.2 / 50µs)
Operate time (at rated voltage)	15ms max.	
Release time (at rated voltage)	10ms max.	
Temperature rise (at rated voltage)	≤60K (Coil driving voltage: 1.1 times Un, Contact current -carrying: rated current, at 85°C)	
Vibration resistance	NO:10Hz to 55Hz 1.6mm DA 55Hz to 200Hz, 98m/s <sup>2</sup> NC:10Hz to 55Hz 0.4mm DA	
Shock resistance	Functional	NO:98m/s <sup>2</sup> NC: 49m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
Creepage distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Clearance distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 20g	
Construction	Plastic sealed	

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

2) UL insulation system: Class F, Class B.

## COIL

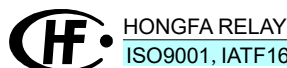
Coil power	Approx. 700mW
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## SAFETY APPROVAL RATINGS

UL/CUL	6A 250VAC / 277VAC / 30VDC at 70°C NO: Pilot duty A300, at 70°C NC: Pilot duty B300, at 70°C
TÜV	NO: 8A 250VAC at 85°C NC: 6A 250VAC at 85°C NO: 3A 240VAC(AC-15) at 55°C NC: 1.5A 240VAC(AC-15) at 55°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 2.00

## ORDERING INFORMATION

Type	HFA2 /		12	-2Z	S	T	F	G	(XXX)
Coil voltage	5, 6, 9, 12, 15, 18, 21, 24, 36, 40, 48, 60, 80, 110VDC								
Contact arrangement	<b>2Z:</b> 2 Form C <b>HD1:</b> 1NO+1NC (Type 1) <b>HD2:</b> 1NO+1NC (Type 2)								
Construction <sup>1)</sup>	<b>S:</b> Plastic sealed				<b>Nil:</b> Flux proofed				
Contact material	<b>T:</b> AgSnO <sub>2</sub>								
Insulation class	<b>F:</b> Class F			<b>Nil:</b> Class B					
Contact plating	<b>G:</b> Gold plated <sup>2)</sup>			<b>Nil:</b> No gold plated					
Special code <sup>3)</sup>	<b>XXX:</b> Customer special requirement				<b>Nil:</b> Standard				

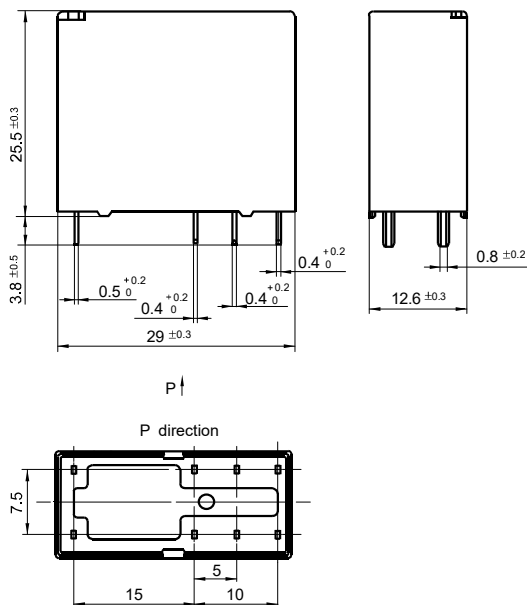
- Notes:**
- 1) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.
  - 2) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC. if customers have special requirement of load, please contact us for suggestion about suitable parts.
  - 3) Avoid contamination with organic solvents for the case using PC materials, otherwise chemical reactions may occur which may cause the shell to swell or crack
  - 4) The customer special requirement express as special code after evaluating by Hongfa.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

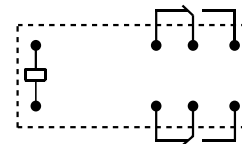
Unit: mm

HFA2/□□-2Z□T□(□□□)

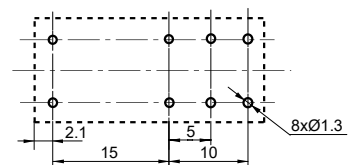
Outline Dimensions



Wiring Diagram



PCB Layout  
(Bottom view)

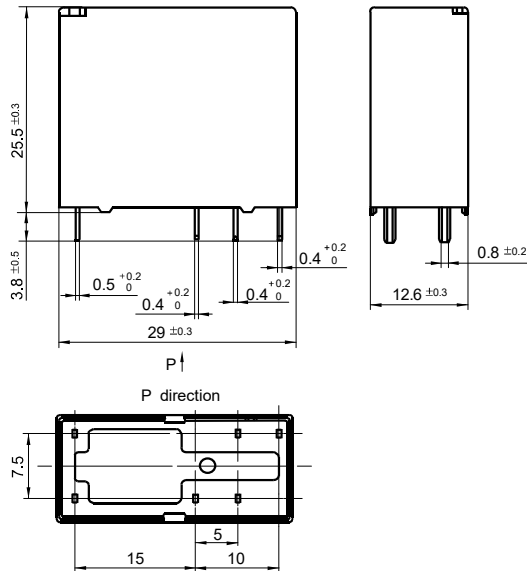


# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

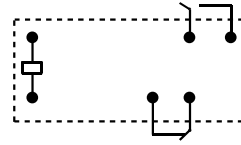
Unit: mm

HFA2/□□-HD1□T□(□□□)

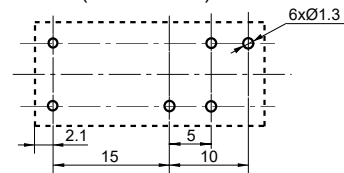
Outline Dimensions



Wiring Diagram

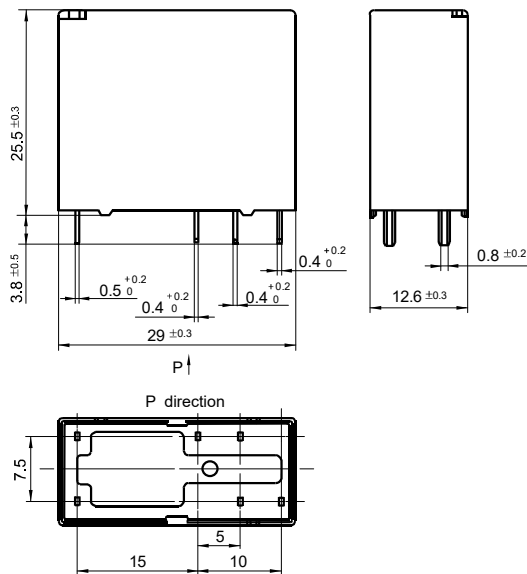


PCB Layout  
(Bottom view)

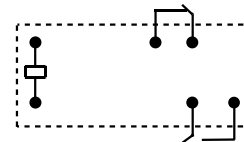


HFA2/□□-HD2□T□(□□□)

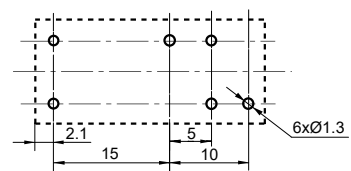
Outline Dimensions



Wiring Diagram



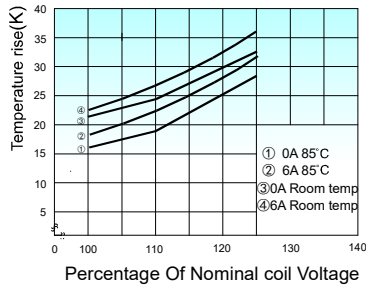
PCB Layout  
(Bottom view)



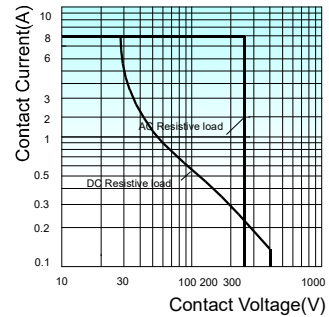
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should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

## CHARACTERISTIC CURVES

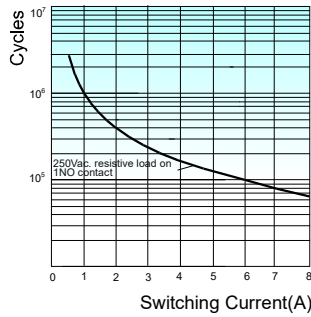
COIL TEMPERATURE RISE



LOAD BREAKING CAPACITY

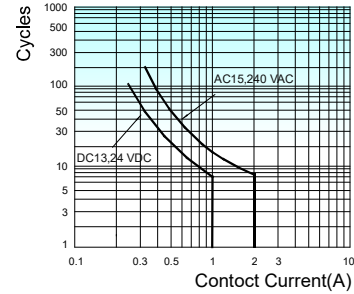


ELECTRICAL ENDURANCE



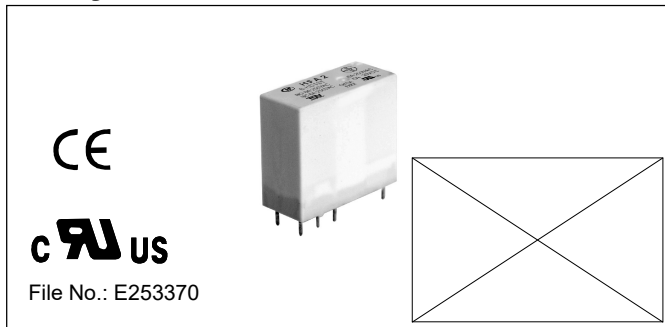
**Test conditions:**  
1NO, Resistive load, 250VAC,  
Room temp., 1s on 9s off.  
The data shown above are typical values.

INDUCTIVE DURABILITY CURVE



**Test conditions:**  
Connected to IEC61810-1 Appendix B Table  
B.3 method test, at room temperature, 1NO,  
1s on and 9s off.

## Relay Sockets



### Features

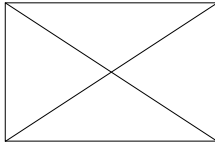
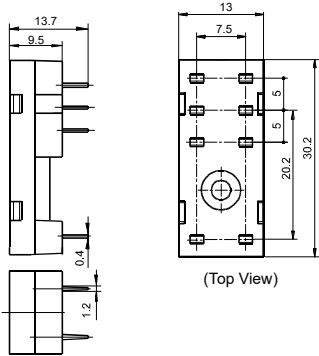
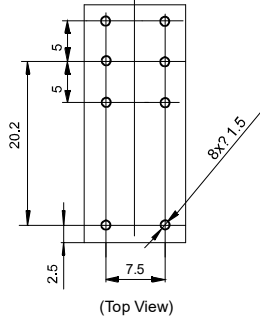
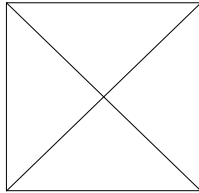
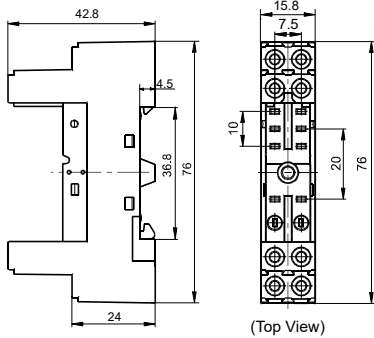
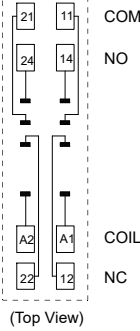
- the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

## CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength S.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40 °C to 70 °C	5000VAC	—	—
14FF-2Z-C2	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<p>14FF-2Z-A1</p>  <p>PCB terminal, PCB or Screw mounting</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>metallic retainer 14FF-H3</p> <p>remarks:the dielectric strength can reach 1500VAC that sockets mounted 14FF-H3</p>
<p>14FF-2Z-C2(767)</p>  <p>Screw terminal DIN rail or Screw mounting With finger protection device</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>plastic retainer 14FF-H6</p> <p>marker 14FF-M1</p> <p>plug-in module HFAA to HFHU*</p>

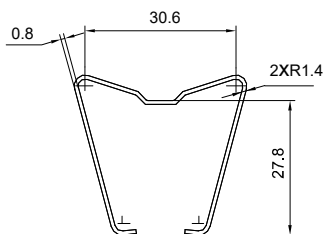
**Notes:** \* Please refer to the product datasheet if plug-in module is required.

## DIMENSION OF RELATED COMPONENT (AVAILABLE)

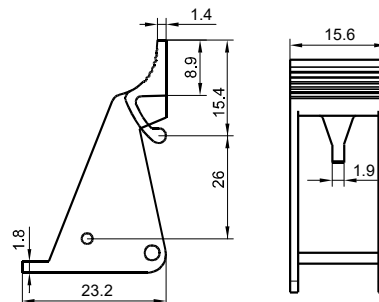
Unit: mm

### Retainer

14FF-H3 (Metallic retainer)

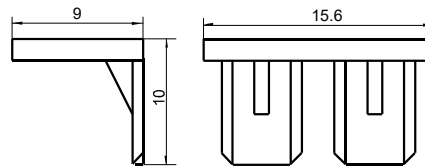


14FF-H6 (Plastic retainer)



Marker

14FF-M1



**Things to be noticed when selecting sockets:**

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF115FP relay. If you have any special requirements, please contact us.
4. Main outline dimension, outline dimension  $>50\text{mm}$ , tolerance should be  $\pm 1\text{mm}$ ;  $20\text{mm} < \text{outline dimension} \leq 50\text{mm}$ , tolerance should be  $\pm 0.5\text{mm}$ ;  $5\text{mm} < \text{outline dimension} \leq 20\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ ; outline dimension  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ .
5. DIN rail mounting: recommend to use standard rail  $35 \times 7.5 \times 1\text{mm}$ ,  $35 \times 15 \times 1\text{mm}$ .

**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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