

# HFA6D

# FORCIBLY GUIDED RELAY



File No.: E133481



## Features

- Forcibly guided contacts according to IEC 61810-3 (EN50205)
- Double contacts with low contact resistance
- Surge voltage (Contact - Coil; Contact - Contact): 6kV(1.2/50μs)
- Coil power: Approx. 0.4W
- UL insulation system: Class F available
- Outline Dimensions: (53.3×33×14.5) mm

RoHS compliant

## CONTACT DATA

Contact arrangement	4NO+2NC
Forcibly guided contacts Type (according to IEC 61810-3)	Type B
Contact resistance <sup>1)</sup>	30mΩ max.(1A 6VDC)
Contact material	AgSnO <sub>2</sub> +Au plated
Contact rating (Res. load)	6A 250VAC / 30VDC
Min.contact load <sup>2)</sup>	5V 10mA
Max.switching voltage	277VAC / 30VDC
Max.switching current	6A
Max.switching capacity	1662VA / 180W
Mechanical endurance <sup>3)</sup>	1×10 <sup>7</sup> ops
Electrical endurance	≥1×10 <sup>4</sup> ops (1NO:85°C, 1s on 9s off, 6A 250VAC, Resistive load)

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

2)Min. contact load is just a reference value in normal temperature, normal humidity, normal pressure environment and with relay pin up, which will vary depending on the power-on and off frequency, environmental conditions, expected lifespan, and installation direction. Thus, please have confirmation tests with actual load before use. And it is recommended to avoid using the relay when the temperature is below 0°C.

3)No loading test, no mechanical damage after the test.

## COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC <sup>1)</sup> max.	Drop-out Voltage VDC <sup>1)</sup> min.	Max. Allowable Voltage <sup>2)</sup> VDC	Coil Resistance Ω
5	3.75	1	6	64.1×(1±10%)
9	6.75	1.8	10.8	207.7×(1±10%)
12	9	2.4	14.4	369.2×(1±10%)
16	12	3.2	19.2	656.4×(1±10%)
18	13.5	3.6	21.6	830.8×(1±10%)
21	15.75	4.2	25.2	1130.8×(1±10%)
24	18	4.8	28.8	1476.9×(1±10%)
36	27	7.2	43.2	3085.7×(1±10%)
48 <sup>3)</sup>	36	9.6	57.6	5485.7×(1±10%)
60 <sup>3)</sup>	45	12	72	8571.4×(1±10%)
110 <sup>3)</sup>	82.5	22	132	28810×(1±10%)

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

2) Max. 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(500VDC)
Dielectric strength	Between open contacts	1500VAC 1min
	Between contact sets	4000VAC 1min
	Between coil & contacts	5000VAC 1min
Surge Voltage	Between contact sets	6kV(1.2×50μs)
	Between coil & contacts	6kV(1.2×50μs)
Operate time(at rated voltage)		35ms max.
Release time(at rated voltage)		12ms max.
Temperature rise		70K max.(All NO Contact load current 6A, rated voltage excitation, at 85℃)
Shock resistance	Functional	20g(NO)
	Destructive	100g
Vibration resistance		10Hz to 55Hz 2mm DA 55Hz to 200Hz, 10g(NO)
Humidity		5% to 85%RH
Ambient temperature		-40℃ to 85℃
Termination		PCB
Unit weight		Approx. 42g
Construction		Plastic sealed

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

## COIL

Coil power	Approx. 0.4W
Holding Voltage <sup>1)</sup>	55% to 100%U <sub>N</sub> (at 23°C)

Notes:1) The coil holding voltage is the voltage applied to coil 100ms after the rated voltage.

## SAFETY APPROVAL RATINGS

UL/CUL	6A 250VAC/ 6A 277VAC Resistive 85°C
	6A 24VDC/ 6A 30VDC Resistive 85°C
	B300 85°C R300 85°C

Notes: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

2025 Rev. 1.00

## ORDERING INFORMATION

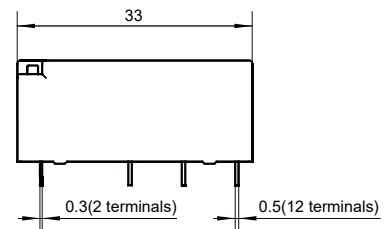
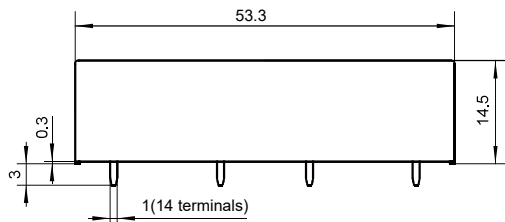
Type	HFA6D/	12	-4H2D	S	T	F	G	(XXX)
Coil voltage	5, 9, 12, 16, 18, 21, 24, 36, 48, 60, 110VDC							
Contact arrangement	4H2D: 4NO+2NC							
Construction	S: Plastic sealed							
Contact material	T: AgSnO <sub>2</sub>							
Insulation class	F: Class F							
Contact plating	G: Au plated							
Special code <sup>2)</sup>	XXX: Customer special requirement Nil: Standard							

**Notes:** 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB;  
 2) The customer special requirement express as special code after evaluating by Hongfa.  
 3) 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.

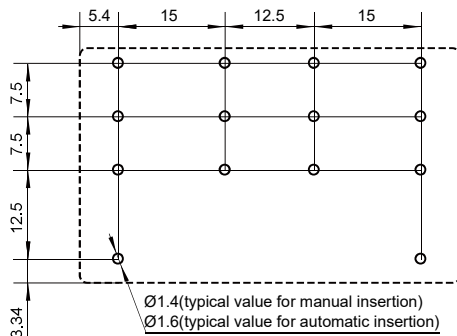
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

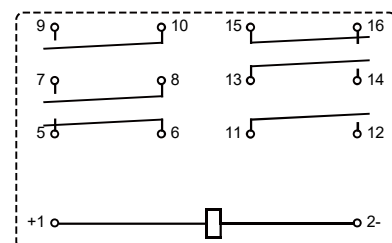
### Outline Dimensions



### PCB Layout(Bottom view)



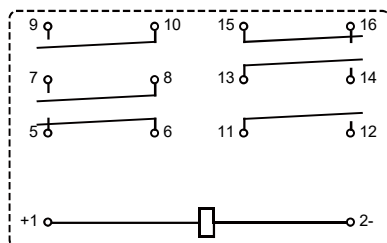
### Wiring Diagram(Bottom view)



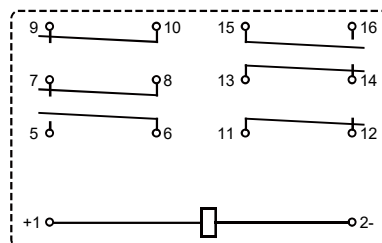
**Notes:** 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.  
 2) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1$ mm, tolerance should be  $\pm 0.2$ mm; outline dimension  $> 1$ mm and  $\leq 5$ mm, tolerance should be  $\pm 0.3$ mm; outline dimension  $> 5$ mm, tolerance should be  $\pm 0.4$ mm.  
 3) The tolerance without indicating for PCB layout is always  $\pm 0.1$ mm.

## CONTACT OPERATION TABLE

Non-energized(Bottom view)



Energized(Bottom view)



❖❖❖ The following table shows the state of the other contacts when 0V is applied to the coil in case of one NO contact being welded and when the rated voltage is applied to the coil in case of one NC contact being welded.

Contact No.		State of the other contacts					
Contact No.		5-6	7-8	9-10	12-11	14-13	16-15
Welded contact No.	5-6		✓	✓	✓	✓	
	7-8	✓		○	○	○	×
	9-10	✓	○		○	○	×
	12-11	✓					✓
	14-13	✓					✓
	16-15		○	○	✓	✓	

### Notes:

- 1) ✓: contact open (mechanically linked);
- 2) ○: contact open (not mechanically linked);
- 3) ×: contact closed;
- 4) Empty cells: either closed or open;
- 5) Contact gaps are shown at the initial state. If the contacts change state owing to switching, it is necessary to check the actual loading.

### 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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