

COIL DATA

at 23°C

1 coil latching Standard type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-M-L1	3	2.25	90	8.4
005-M-L1	5	3.75	250	14
006-M-L1	6	4.5	360	17
009-M-L1	9	6.75	810	25
012-M-L1	12	9.0	1440	34
015-M-L1	15	11.25	2220	42
024-M-L1	24	18.0	4000	56

2 coils latching Standard type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-M-L2	3	2.25	45	6
005-M-L2	5	3.75	125	10
006-M-L2	6	4.5	180	12
009-M-L2	9	6.75	405	18
012-M-L2	12	9.0	720	24
015-M-L2	15	11.25	1125	30
024-M-L2	24	18.0	2040	48

1 coil latching Sensitive type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-S-L1	3	2.4	60	6.9
005-S-L1	5	4.0	330	16
006-S-L1	6	4.8	480	19
009-S-L1	9	7.2	1080	29
012-S-L1	12	9.6	1920	39
015-S-L1	15	12.0	3000	43
024-S-L1	24	19.2	7680	78

2 coils latching Sensitive type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-S-L2	3	2.4	60	6.9
005-S-L2	5	4.0	167	11.5
006-S-L2	6	4.8	240	13.8
009-S-L2	9	7.2	540	20.8
012-S-L2	12	9.6	960	27.7
015-S-L2	15	12.0	1500	34.6
024-S-L2	24	19.2	3840	55.4

Notes: 1) When user's requirements can't be found in the above table, special order allowed.
2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

TYPICAL CONTACT LIFE EXPECTANCY

Voltage	Power	Electrical endurance	
		Resistive Load	Inductive Load (For AC $\cos\phi=0.7$)
50mVDC	50 μ W	5 x 10 ⁷ OPS	5 x 10 ⁷ OPS
30VDC	20W	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
30VDC	30W	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
30VDC	60W	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS
60VDC	20W	3 x 10 ⁶ OPS	--
60VDC	30W	5 x 10 ⁵ OPS	--
60VDC	60W	1 x 10 ⁵ OPS	--
30VAC	40VA	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
30VAC	80VA	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
30VAC	120VA	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS
60VAC	40VA	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
60VAC	80VA	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
60VAC	120VA	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS
125VAC	40VA	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
125VAC	80VA	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
125VAC	125VA	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS

SAFETY APPROVAL RATINGS

UL/CUL	AgPd/AgPd+Gold plated AgPd/Ag+Gold plated	0.5A 60VDC 2A 30VDC 1A 125VAC 2A 125VAC
	AgPd/Ag+Gold plated	3A 40VDC(40°C)
	Ag+Gold plated/ Ag+Gold plated	2A 30VDC 3A 30VDC(70°C) 1A 125VAC 2A 125VAC
TÜV	AgPd/AgPd+Gold plated AgPd/Ag+Gold plated Ag+Gold plated	2A 30VDC(70°C) 3A 30VDC(70°C) 1A 125VAC(70°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.

ORDERING INFORMATION

Type	HFD2 / 012 -S -L2 -A (XXX)			
Coil voltage	3, 5, 6, 9, 12, 15, 24, 48VDC ¹⁾			
Coil power	M: Standard S: Sensitive			
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable			
Contact material	A: AgPd/AgPd+Gold plated D: Ag+Gold plated/Ag+Gold plated Nil: AgPd/Ag+Gold plated ²⁾			
Special code ³⁾	XXX: Customer special requirement Nil: Standard			

Notes: 1) 48VDC coil voltage is only for single side stable & standard type.

2) XXX1/XXX2 : XXX1 stands for movable contact material, XXX2 stands for stationary contact material, for example, "A" means that the movable contact material is AgPd, stationary contact material AgPd+Gold plated.

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

4) Standard tube packing length is 527mm. Any special requirement needed, please contact us for more details.

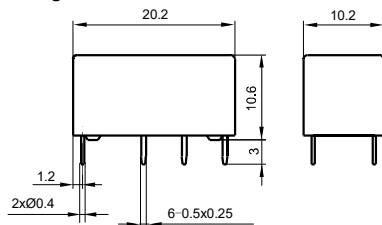
5) For products that should meet the explosion-proof requirements of "IEC 60079 series", please note [Ex] after the specification while placing orders. Not all products have explosion-proof certification, so please contact us if necessary, in order to select the suitable products.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PCB BOARD LAYOUT

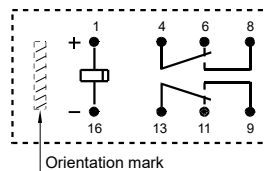
Unit: mm

Outline Dimensions

Single side stable
or 1 coil latching

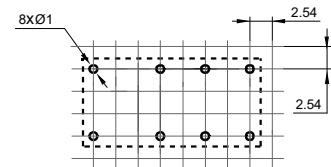


Wiring Diagram (Bottom view)



For latching, diagram shows the "reset" position
Energize terminals 1 and 16 to "set"
Reverse energize terminals 1 and 16 to "reset"

PCB Layout (Bottom view)



Matching 16 pin IC socket

2 coils latching

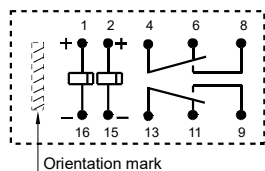
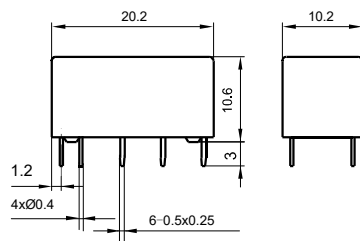
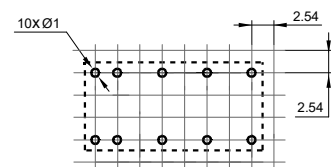


Diagram shows the "reset" position
Energize terminals 1 and 16 to "set"
Energize terminals 2 and 15 to "reset"



Matching 16 pin IC socket

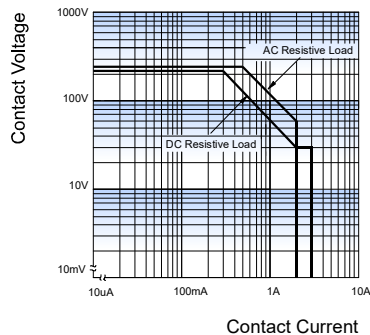
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

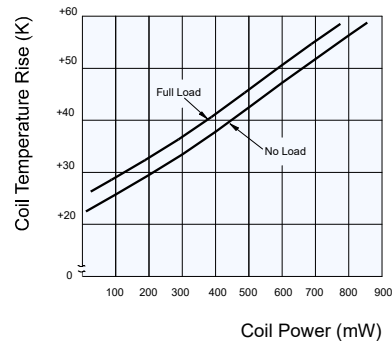
MAXIMUM SWITCHING POWER



Test conditions:

Resistive load, at 70°C, 1s on 9s off.

COIL TEMPERATURE RISE



Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) For 2 coil latching relay, do not energize voltage to "set" coil and "reset" coil simultaneously.
- 6) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 7) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 8) Regarding the plastic sealed relay, we should leave it cooling naturally untill below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 9) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".

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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