

# HFE20

## MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



File No.: 40031831



### Features

- 16A switching capability
- Latching relay
- Max.inrush current Capacitor 500A/2ms  
(Contact material: W+AgSnO<sub>2</sub>)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 15.7)mm

### CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance	20mΩ max. (at 1A 24VDC)
Contact material	AgSnO <sub>2</sub> , W+AgSnO <sub>2</sub>
Contact rating	1A,1B: 16A 250VAC, 1 x 10 <sup>5</sup> OPS(Resistive) 20A 250VAC, 2 x 10 <sup>4</sup> OPS(Resistive) 1.5HP 240VAC 4 x 10 <sup>4</sup> OPS(Motor) 8A 220VAC COSØ=0.4, 1x10 <sup>5</sup> OPS(Inductive) HFE20-1/X-1HD: 3300W 277VAC, 2 x 10 <sup>4</sup> OPS (Electronic rectifier) 1C: 16A 250VAC, 5 x 10 <sup>4</sup> OPS(Resistive)
Max. switching voltage	250VAC
Max. switching current	20A
Max. switching power	5000VA
Mechanical endurance	1 x 10 <sup>6</sup> OPS
Electrical endurance	See "Contact rating"

### CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4400VAC 1min
	Between open contacts	1000VAC 1min
Creepage distance		8mm
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		15ms max.
Shock resistance	Functional	98m/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		PCB
Termination		-40°C to 85°C
Unit weight		Approx. 13g
Construction		Plastic sealed, Flux proofed

**Notes:** The data shown above are initial values.

### COIL

Coil power	Single coil latching: Approx 400mW Double coils latching: Approx 600mW
------------	---

### COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
3	2.4	50	22.5
5	4.0	50	62.5
6	4.8	50	90
9	7.2	50	202.5
12	9.6	50	360
24	19.2	50	1440
3	2.4	50	15+15
5	4.0	50	42+42
6	4.8	50	60+60
9	7.2	50	135+135
12	9.6	50	240+240
24	19.2	50	886+886

### SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	20A 250VAC at 70°C 16A 250VAC at 85°C 1.5HP 250VAC at 40°C
	1 Form C	NO:20A 250VAC at 70°C 16A 250VAC at 85°C NC:16A 250VAC at 85°C
VDE	1 Form A	20A 250VAC(COSØ=1) at 70°C 16A 250VAC(COSØ=1) at 85°C 8A 250VAC (COSØ=0.4) at 85°C
	1 Form C	20A 250VAC(COSØ=1) at 70°C 16A 250VAC(COSØ=1) at 85°C 8A 250VAC (COSØ=0.4) at 85°C

**Notes:** Only some typical ratings are listed above. If more details are required, please contact us.

## ORDERING INFORMATION

Type	HFE20	- 3	/12	-1Z	S	T	-L2	-R	(XXX)
Version	1: 5mm pin 2: 3.5mm pin 3: 2.5mm pin								
Coil voltage	3, 5, 6, 9, 12, 24 VDC								
Contact form <sup>1)</sup>	1H: 1 Form A      1D: 1 Form B 1Z: 1 Form C (Only for HFE20-1, HFE20-2)								
Construction <sup>2)</sup>	S: Plastic sealed    Nil: Flux proofed								
Contact material	T: AgSnO <sub>2</sub> D: W+AgSnO <sub>2</sub> (Only for HFE20-1/XX-1H)								
Sort	L1: Single coil latching				L2: Double coils latching				
Polarity	R: Reverse polarity				Nil: Positive polarity				
Customer special code	(359): lamp load				(399): Special polarity (See Wiring Diagram)				

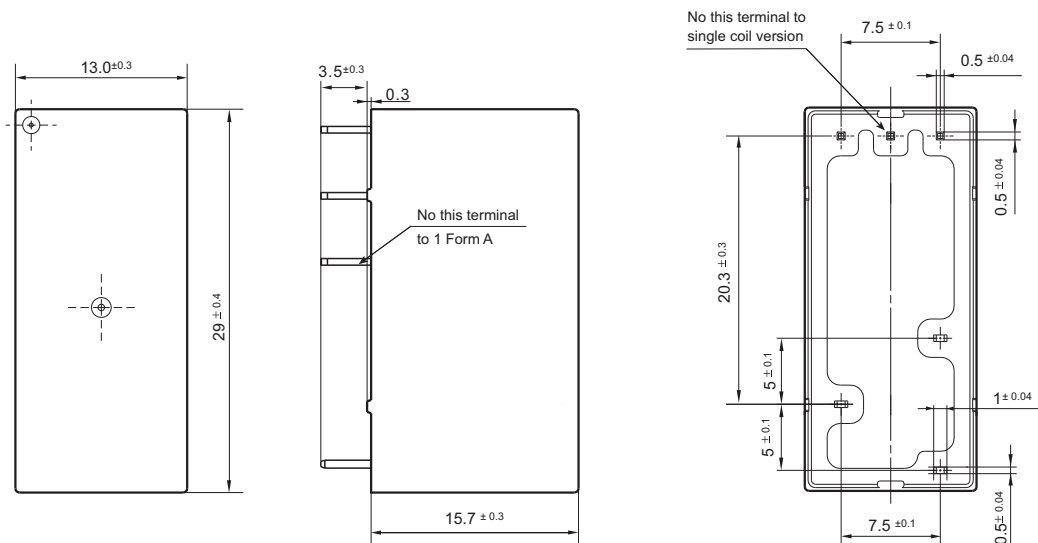
**Notes:** 1) 1H means that relay is on the "reset" status when delivery; 1D means that relay is on the "set" status when delivery  
 2) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

## OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

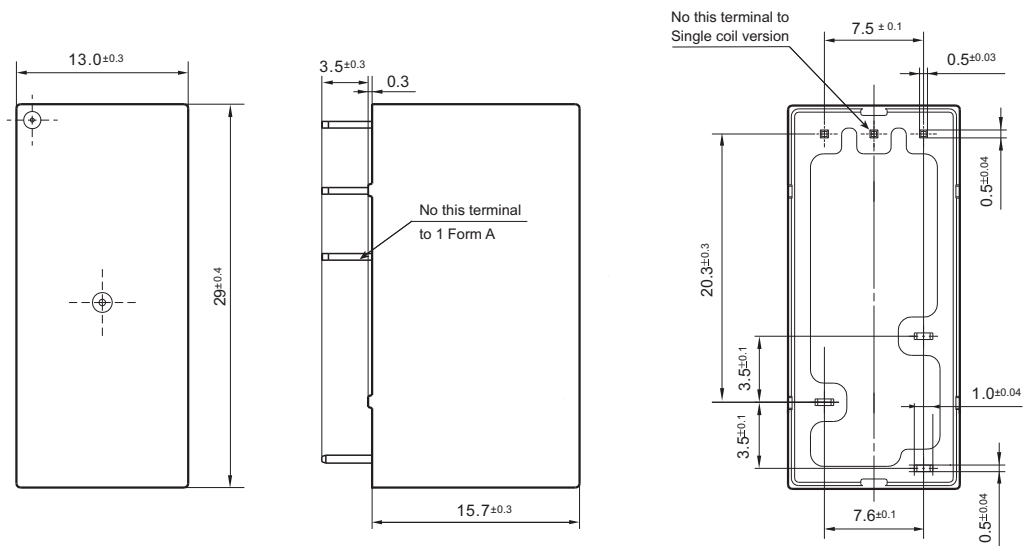
### Outline Dimensions

#### HFE20-1

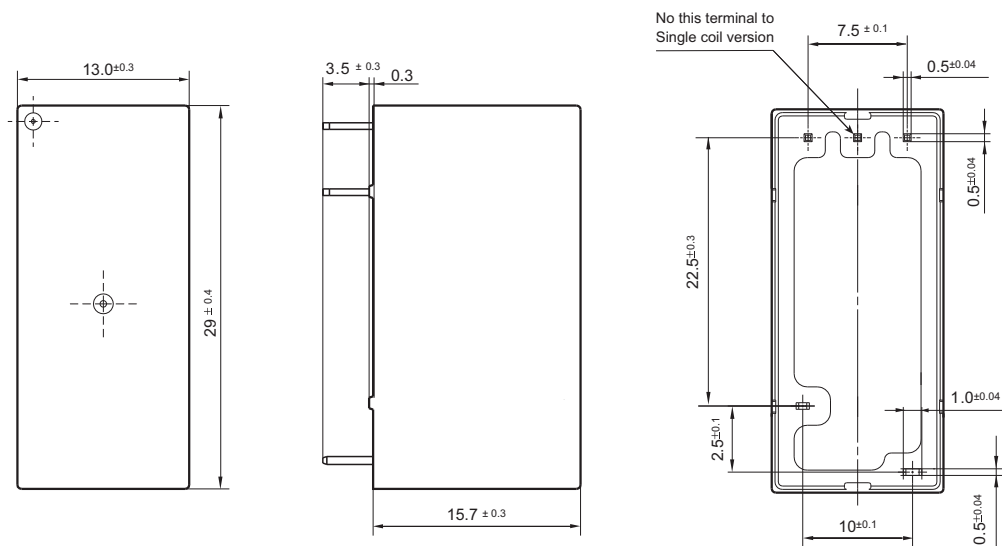


## Outline Dimensions

### HFE20-2

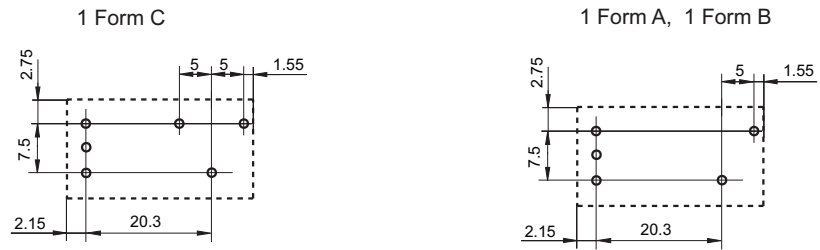


### HFE20-3

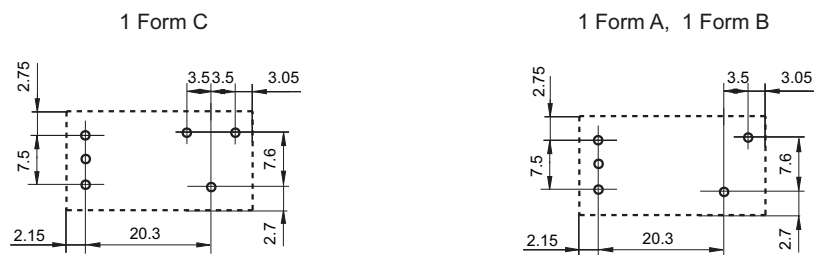


PCB Layout (Bottom view)

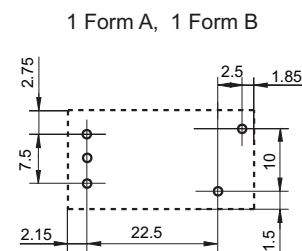
HFE20-1



HFE20-2

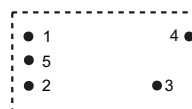


HFE20-3



Wiring Diagram (Bottom view)

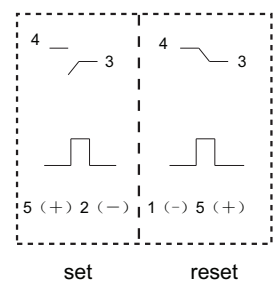
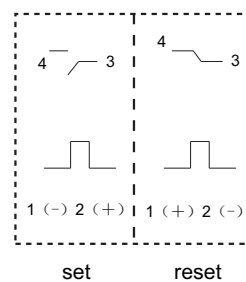
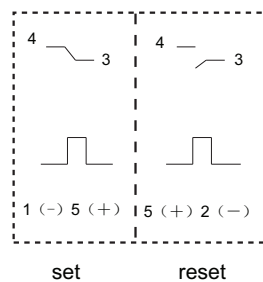
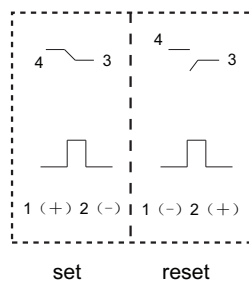
HFE20-3



Positive polarity

Single coil latching, 1 Form A Double coils latching, 1 Form A

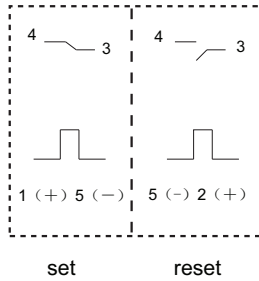
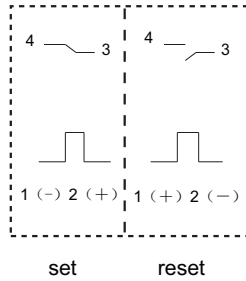
Single coil latching, 1 Form B Double coils latching, 1 Form B



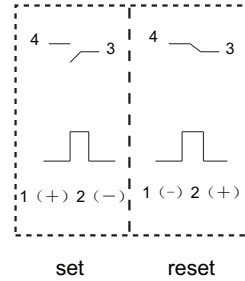
## Wiring Diagram (Bottom view)

### Reverse polarity

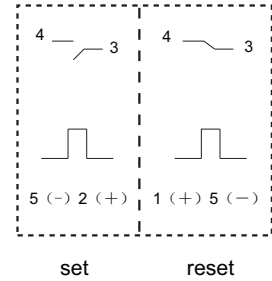
Single coil latching, 1 Form A Double coils latching, 1 Form A



Single coil latching, 1 Form B

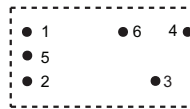


Single coils latching, 1 Form B



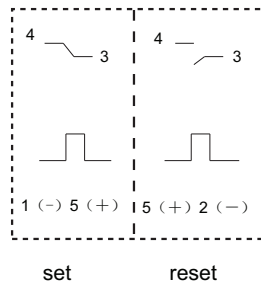
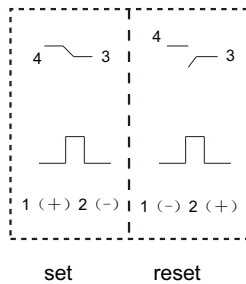
## Wiring Diagram (Bottom view)

HFE20-1  
HFE20-2

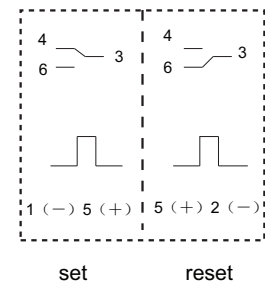
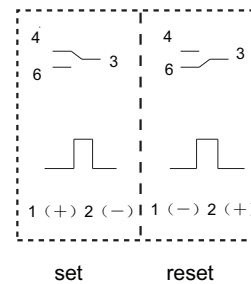


### Positive polarity

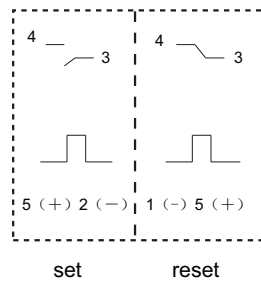
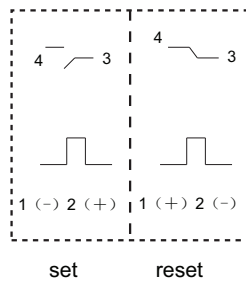
Single coil latching, 1 Form A Double coils latching, 1 Form A



Single coil latching, 1 Form C Double coils latching, 1 Form C



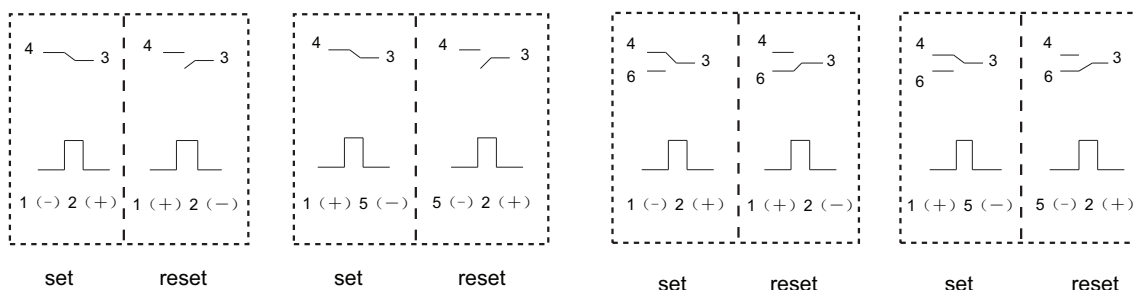
Single coil latching, 1 Form B Double coils latching, 1 Form B



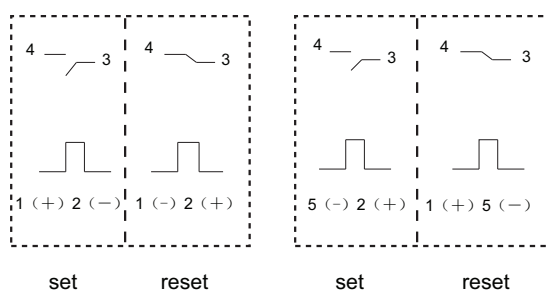
## Wiring Diagram (Bottom view)

### Reverse polarity

Single coil latching, 1 Form A Double coils latching, 1 Form A Single coil latching, 1 Form C Double coils latching, 1 Form C

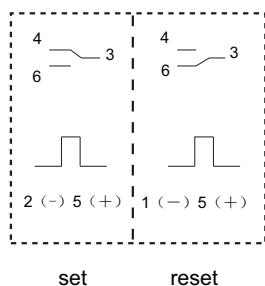


Single coil latching, 1 Form B Double coils latching, 1 Form B



### (399): Special polarity

Double coils latching



### Notice

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.

### Disclaimer

This datasheet is for the customers' reference. All the specifications are 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.