

HF18FF-N

SMALL MEDIUM POWER RELAY



File No.: E133481



File No.: R50147087



File No.: CQC 09002030026 (DC type)

CQC 09002030027 (AC type)



Features

- With two, four groups of conversion contact form.
- 4Z The bifurcated type satisfies a small current of 1mA.
- Optional with gold-plated contact.
- Transparent dust cover type, meet IP50 protection level.
- Non-transparent shell type can meet the IP67 protection class.
- There are two installation methods: insert type and PCB welding type

RoHS compliant

CONTACT DATA

Contact arrangement	2Z ,4Z
Contact resistance	100mΩ max. (1A 6VDC)
Contact material	See"ORDERING INFORMATION"
Contact rating (Res. load)	7A 250VAC/ 30VDC (2Z)
	6A 250VAC/ 30VDC (4Z)
	3A 250VAC/ 30VDC (4ZB)
Least-Load	5mA 5VDC (2Z/4Z), 1mA 5VDC (4ZB)
Max.swtiching voltage	250VAC/30VDC
Max.switching current	7A (2Z) ,6A (4Z) ,3A (4ZB)
Max.switching power	1750 VA 210W (2Z) ,1500 VA 180W (4Z) ,750 VA 90W (4ZB)
Mechanical enduranc	1×10 ⁷ OPS
Electrical endurance	2Z,4Z,4ZB: 1X10 ⁶ OPS(Room temp.)

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

2) Please refer to the characteristic curves for detailed electrical endurance information.if you need other conditions,please contact us.

CHARACTERISTICS

Insulation resistance	1000MΩ(500VDC)	
Dielectric strength	Between coil & contacts	1000VAC 1min
	Between open contacts	2000VAC 1min
	Between contacts sets	2Z: 2000VAC 1min 4Z/4ZB: 1500VAC 1min
Operate time(at nomi. volt.)	20ms max.	
Release time(at nomi. volt.)	15ms(DC type)	
	25ms max.(AC type)	
Temperaturerise ²⁾	85K max.	
Shock resistance	Functional	100m/s ²
	Destructive	1000m/s ²
Vibration resistance	10Hz to 55Hz 1mm DA	
Humidity	5%RH to 85%RH	
Ambient temperature	-40℃ to 70℃	
Termination	DIP,SMT	
Unit weight	Approx. 36.6g	

COIL DATA

23℃

Nominal Voltage VAC	Pick-up Voltage ¹⁾ VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω
6	4.80	1.80	6.6	11 ×(1±10%)
12	9.60	3.60	13.2	44 ×(1±10%)
24	19.2	7.20	26.4	177 ×(1±10%)
36	28.8	10.8	39.6	400 ×(1±10%)
48	38.4	14.4	52.8	708 ×(1±10%)
60	48.0	18.0	66.0	1100 ×(1±10%)
110 ³⁾	80.0	33.0	121	3400 ×(1±15%)
120 ³⁾	88.0	36.0	132	4080 ×(1±15%)
220 ³⁾	160.0	66.0	242	13600 ×(1±15%)
230	176.0	72.0	253	16300 ×(1±15%)
240 ³⁾	176.0	72.0	264	16300 ×(1±15%)
277 ³⁾	221.6	83.1	304.7	23590 ×(1±15%)

Nominal Voltage VDC	Pick-up Voltage ¹⁾ VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	4.0	0.50	5.5	28 ×(1±10%)
6	4.8	0.60	6.6	40 ×(1±10%)
9	7.2	0.90	9.9	90 ×(1±10%)
12	9.6	1.20	13.2	160 ×(1±10%)
21	16.8	2.10	23.1	490 ×(1±10%)
24	19.2	2.40	26.4	640 ×(1±10%)
30	24.0	3.00	33.0	1000 ×(1±15%)
36	28.8	3.60	39.6	1440 ×(1±15%)
48	38.4	4.80	52.8	2560 ×(1±15%)
60	48.8	6.00	66.0	4000 ×(1±15%)
110 ³⁾	80.0	11.0	121.0	12250 ×(1±15%)
125 ³⁾	100.0	12.5	137.5	17360 ×(1±15%)
220	176.0	22.0	242.0	53360 ×(1±15%)

Notes: 1) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance , please apply rated voltage to coli.

2) Maximum voltage refers to the maxmum voltage which relay coil could endure in a short period oftime.

3) A110:Rated voltage (100~110) VAC; A120:Rated voltage(110~120) VAC; A220:Rated voltage(200~220) VAC; A240:Rated voltage(220~240) VAC; 110:Rated voltage(100~110) VDC; 125:Rated voltage(110~125) VDC;



HONGFA RELAY

ISO9001,IATF16949,ISO14001,ISO45001,IECQ QC 080000,ISO/EC 27001 CERTIFIED

2023 Rev. 1.01

CHARACTERISTICS

Construction	Dustproof type meets(IP50)Protection grade Transparent plastic seal type meets(IP54)Protection grade Non-transparent shell plastic sealing satisfaction (IP67)Protection grade
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Notes: 1) The above values are the initial values.
2) When measuring temperature rise, only test.

COIL

Coil power	DC type: Approx. (0.8 to 1.1) W AC type: Approx. (0.9 to 1.5) VA
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SAFETY APPROVAL RATINGS

UL/CUL	2Z	AgSnO ₂	7A 250VAC/30VDC,Resistive,70°C
	4Z	AgSnO ₂	6A 250VAC/30VDC,Resistive,70°C
	2Z	AgNi	7A 277VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4Z	AgNi	6A 277VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4ZB	AgNi	3A 277VAC/30VDC or 1mA 5VDC,Resistive,70°C
TÜV	2Z	AgNi or AgSnO ₂	7A 250VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4Z	AgNi or AgSnO ₂	6A 250VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4ZB	AgNi	3A 277VAC/30VDC or 5mA 5VDC,Resistive,70°C
CQC	2Z	AgNi or AgSnO ₂	7A 250VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4Z	AgNi or AgSnO ₂	6A 250VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4ZB	AgNi	3A 277VAC/30VDC or 1mA 5VDC,Resistive,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

	HF18FF	-N	/A	240	-2Z	B	1	S	3	G	D	(XXX)
Type	HF18FF: Button RF											
Series code	N: Meet the protection capability of IP5X and above											
Coil voltage form	A: AC(50HZ or 60HZ) Nil: DC											
Coil voltage	DC: 005 ~ 220VDC AC: 006 ~ 277VAC											
Contact arrangement	2Z: 2 Form C 4Z: 4 Form C											
Coaxial	B: Double contact ¹⁾ Nil: Single contact											
Mounting termination	1: Socket 2: PCB											
Encapsulation mode	S: Plastic seal type ³⁾ Nil: Non-plastic ²⁾											
Contact material	3: AgNi T: AgSnO ₂											
Contact plating	G: Gold plated Nil: No gold plated											
Component code	D: With LED Nil: Without Component											
Special Code⁴⁾	XXX: Customer special requiremen Nil: Standard 335: XXX											

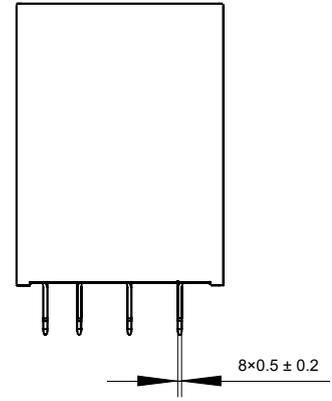
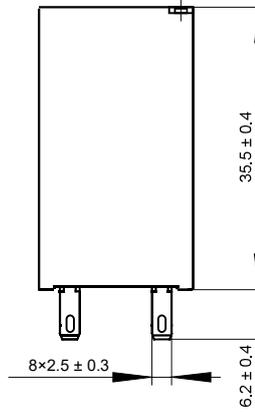
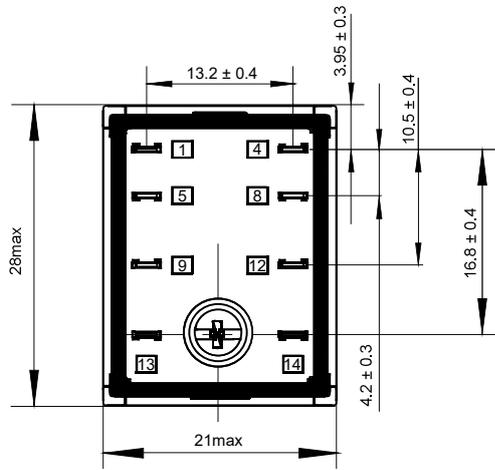
Notes: 1) "B"The double contact only has 4Z contact form, not 2Z contact form.And the double contacts must be gold-plated.
2) "None" Optional transparent case, meets (IP50) protection class, without feature number; Optional black case, meet (IP50) protection level meet the requirements of hot wire, with 335 feature number.
3) "S" optional transparent shell, meets (IP54) protection class, without feature number; Optional black case, meets (IP67) protection level meets the requirements of hot wire, with 335 feature number.
4) "XXX" Customer special requirements are reviewed by our company and identified in the form of a feature number.
5) "335" black housing to meet hot wire requirements.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

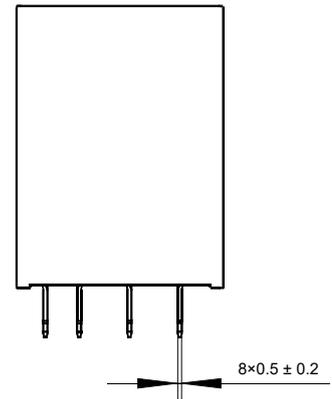
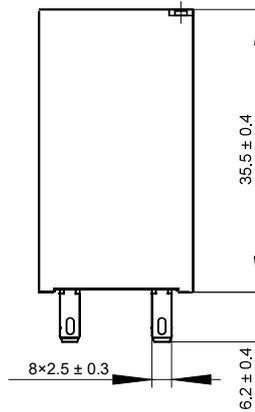
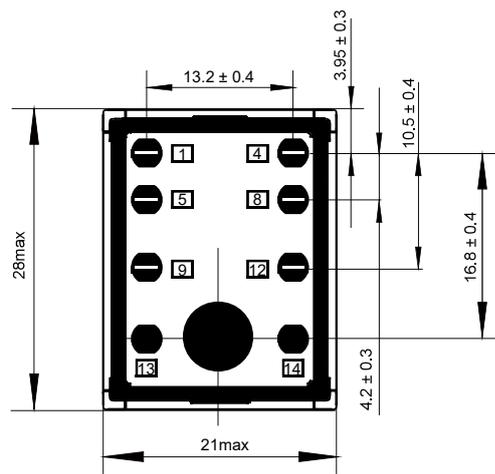
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Outline Dimensions

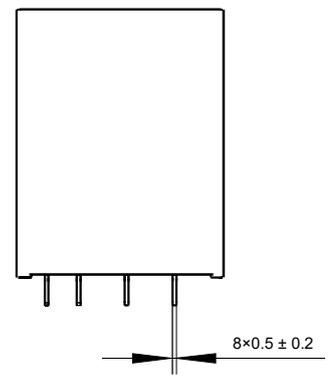
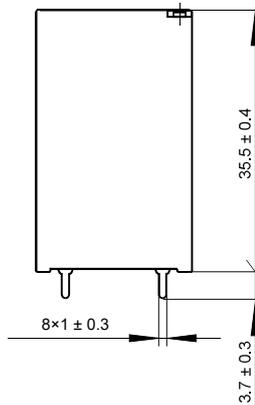
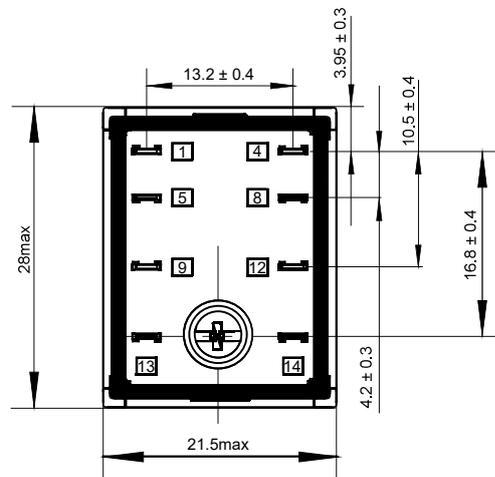
HF18FF-N/□□-2Z1□□□□



HF18FF-N/□□-2Z1S□□□□



HF18FF-N/□□-2Z2□□□□

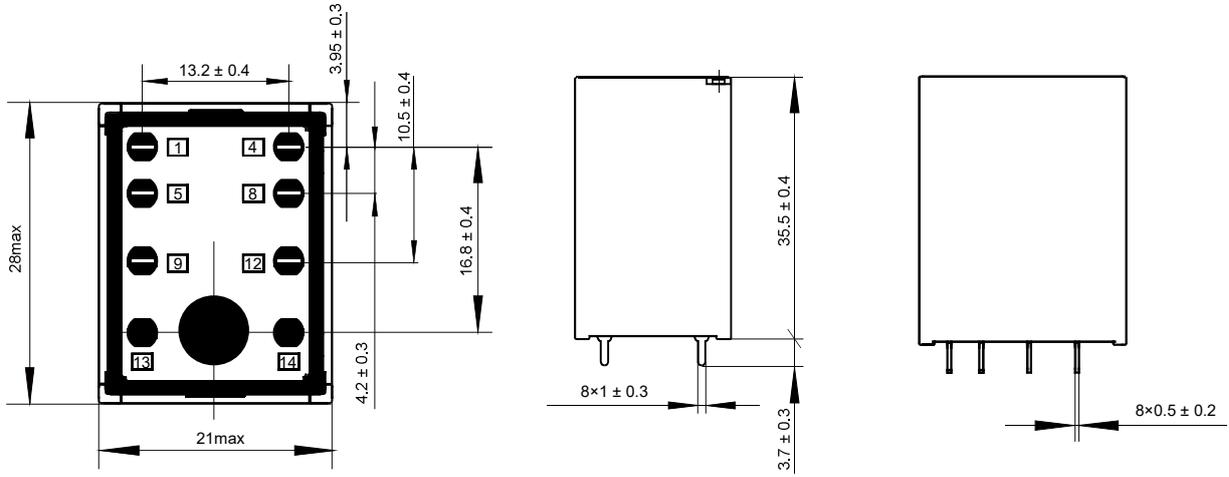


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

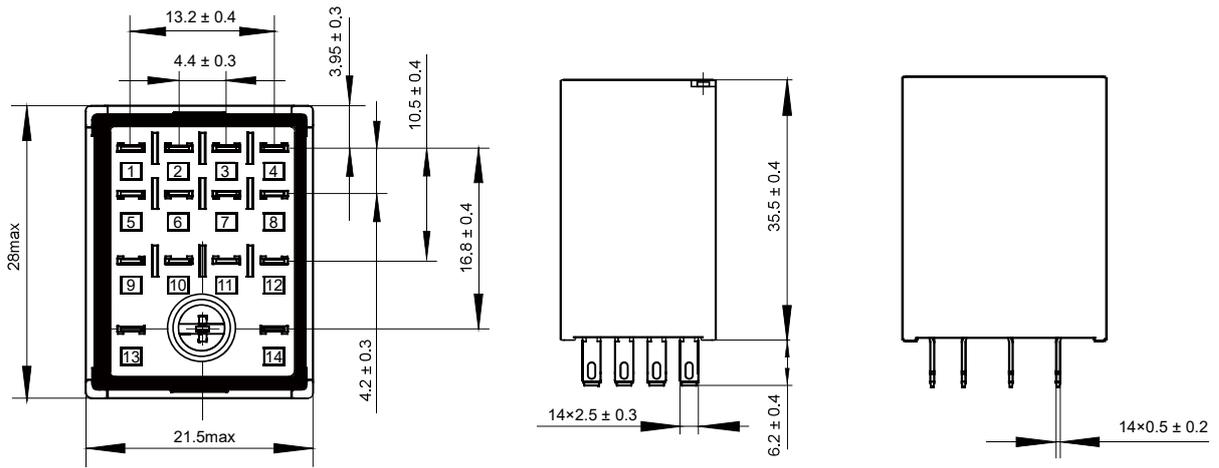
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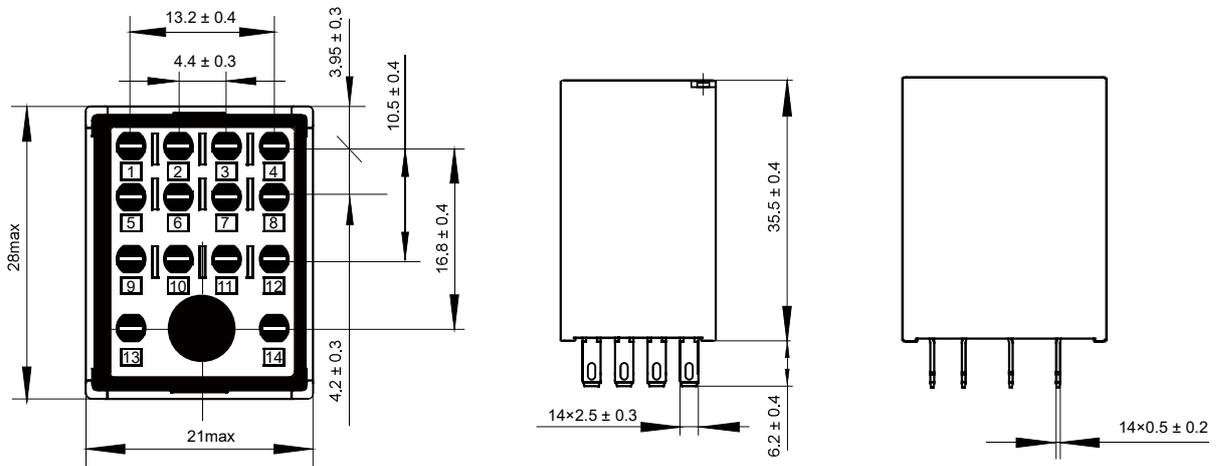
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HF18FF-N/□□-4Z1□□□, HF18FF-N/□□-4ZB1□□□



HF18FF-N/□□-4Z1S□□□, HF18FF-N/□□-4ZB1S□□□

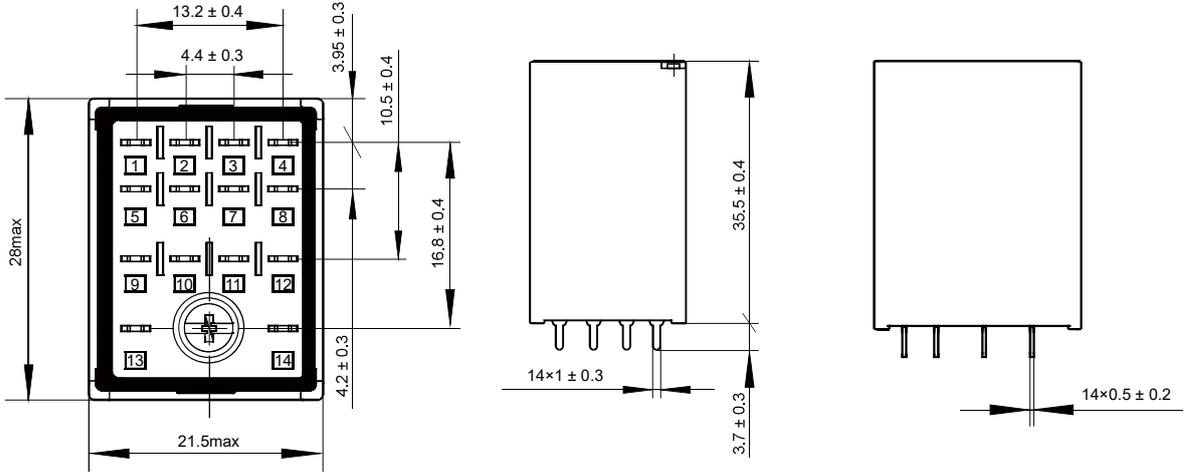


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

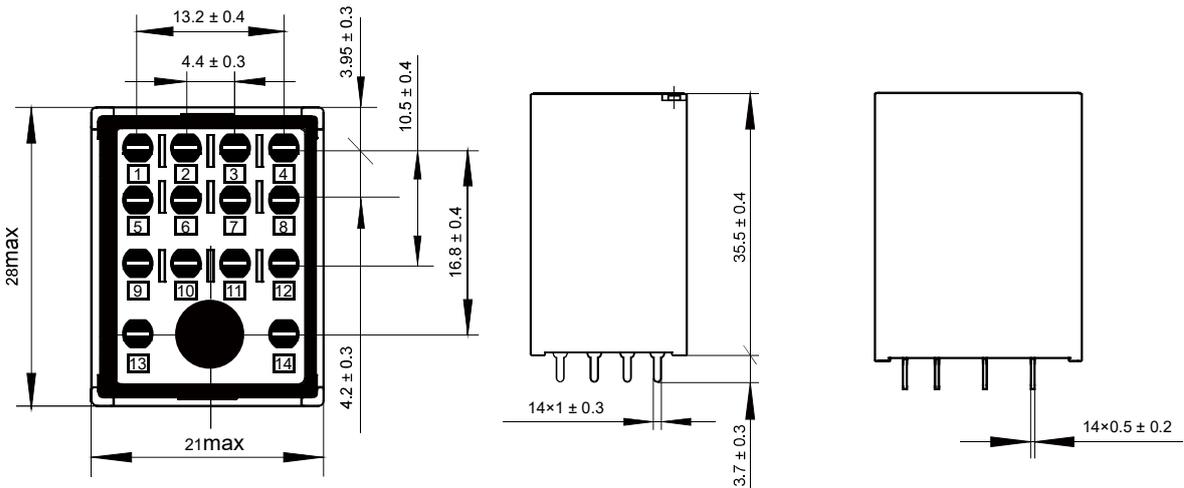
Unit: mm

Outline Dimensions

HF18FF-N/□□-4Z2□□□□, HF18FF-N/□□-4ZB2□□□□



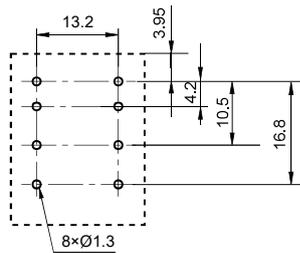
HF18FF-N/□□-4Z2S□□□□, HF18FF-N/□□-4ZB2S□□□□



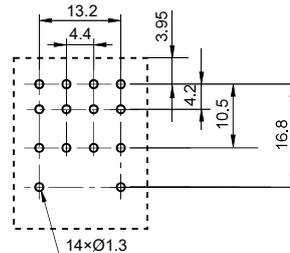
Pc Board Layout

(Bottom view)

2Z: 2 Form C



4Z: 4 Form C

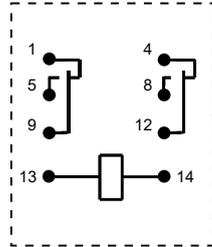


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

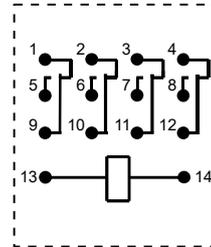
Unit: mm

Wiring Diagram (Bottom view)

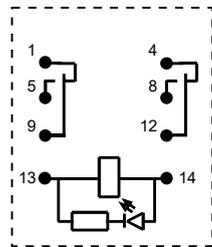
2Z: 2 Form C



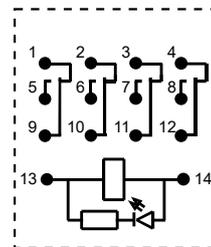
4Z: 4 Form C



2Z: 2 Form C (with LED)



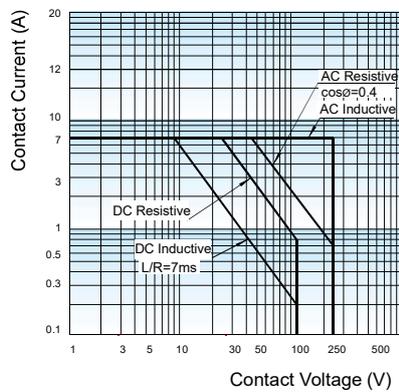
4Z: 4 Form C (with LED)



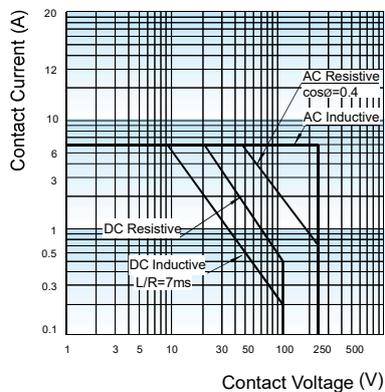
- Notes:** 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 3\text{mm}$; outline dimension $\geq 5\text{mm}$, tolerance should be $\pm 4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

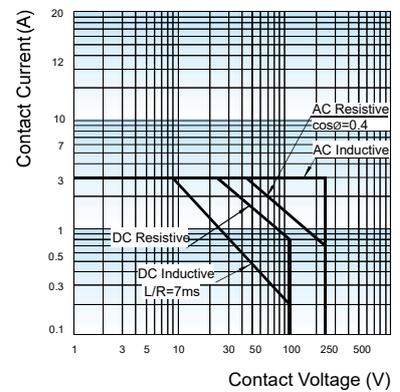
MAX. SWITCHING POWER
(2Z)



MAX. SWITCHING POWER
(4Z)

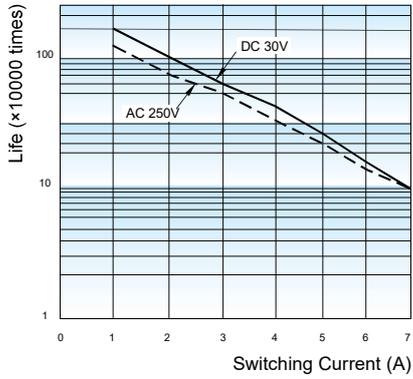


MAX. SWITCHING POWER
(4ZB)

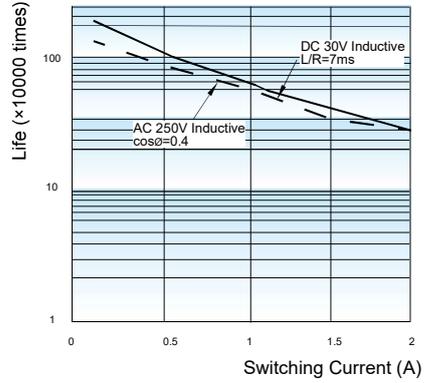


CHARACTERISTIC CURVES

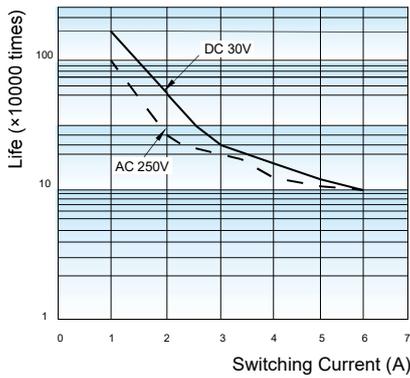
2Z RESISTIVITY ELECTRICAL DURABILITY DIAGRAM



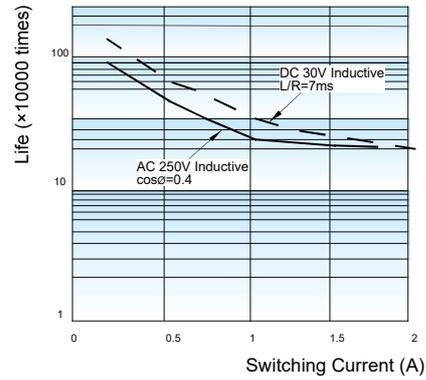
2Z INDUCTIVE ELECTRICAL DURABILITY CURVE



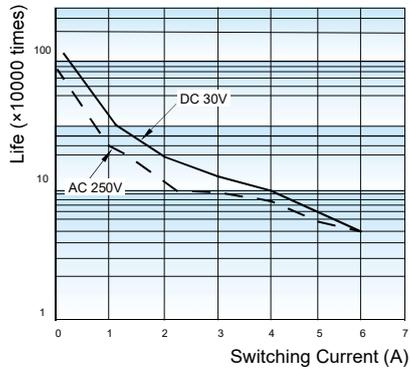
4Z RESISTIVITY ELECTRICAL DURABILITY DIAGRAM



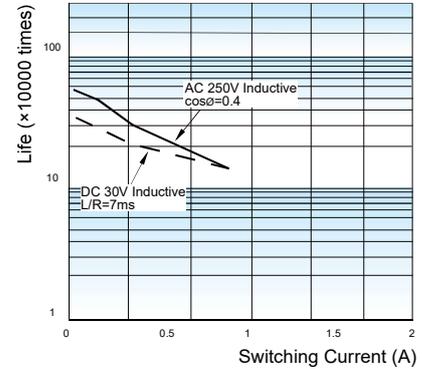
4Z INDUCTIVE ELECTRICAL DURABILITY CURVE



4ZB RESISTIVITY ELECTRICAL DURABILITY DIAGRAM



4ZB INDUCTIVE ELECTRICAL DURABILITY CURVE



Relay Sockets



CE

C^{RU} US

File No.: E253370

Features

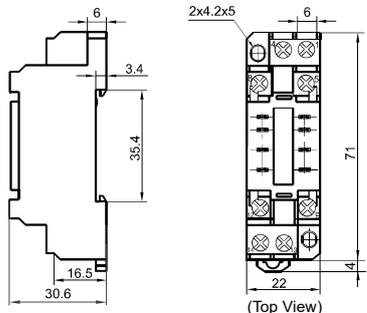
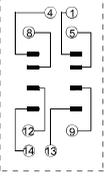
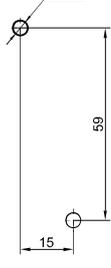
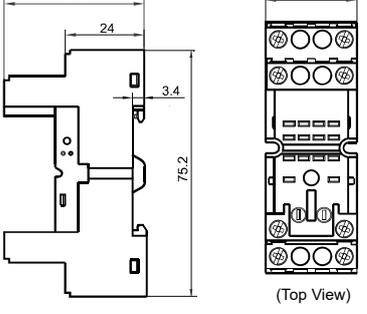
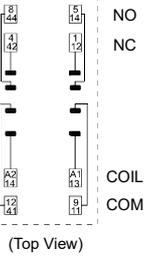
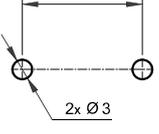
- The dielectric strength can reach 2000VAC, and the insulation resistance is 1000MΩ.
- Three mounting types are available: PCB mounting screw mounting and DIN rail mounting.
- With finger protection device.
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Components available: retainer, marker and plug-in module

CHARACTERISTICS

type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
18FF-2Z-C2	250VAC	7A	-40°C to 70°C	2000VAC	0.8N.m	7mm	Approx.36g
18FF-2Z-C4	250VAC	7A	-40°C to 70°C	2000VAC	0.6N.m	7mm	Approx.53g
18FF-2Z-C5	250VAC	7A	-40°C to 70°C	2000VAC	0.6N.m	7mm	Approx.64g
18FF-2Z-C10	250VAC	7A	-40°C to 70°C	2000VAC	—	10mm	Approx.57g
18FF-4Z-C2	250VAC	7A	-40°C to 70°C	2000VAC	0.8N.m	7mm	Approx.59g
18FF-4Z-C4	250VAC	7A	-40°C to 70°C	2000VAC	0.6N.m	7mm	Approx.64g
18FF-4Z-C5	250VAC	7A	-40°C to 70°C	2000VAC	0.6N.m	7mm	Approx.76g
18FF-4Z-C10	250VAC	7A	-40°C to 70°C	2000VAC	—	10mm	Approx.65g

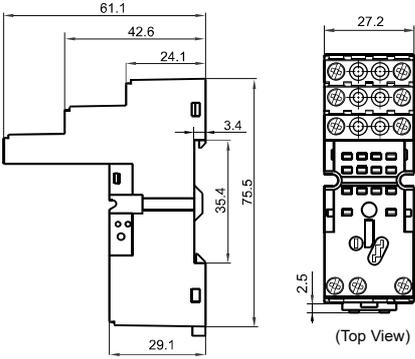
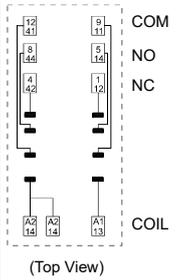
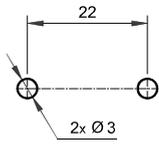
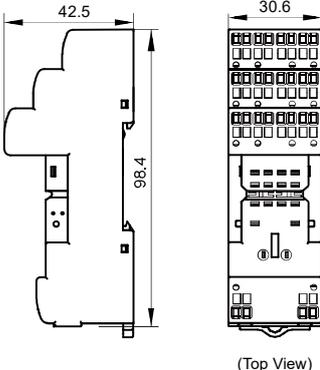
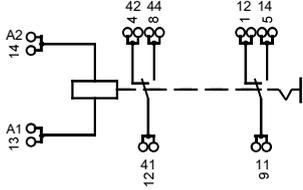
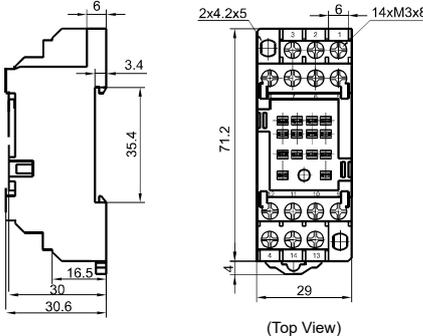
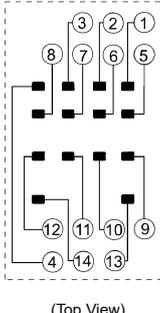
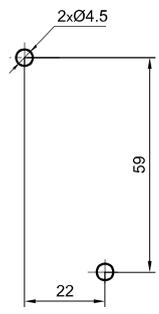
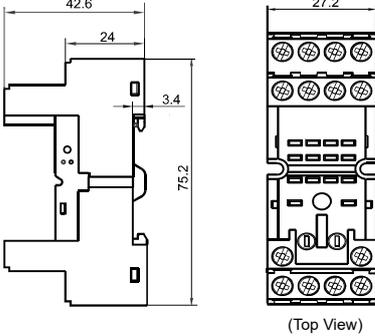
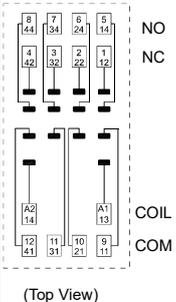
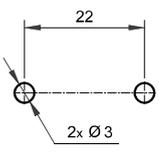
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
<p>18FF-2Z-C2</p>  <p>Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>metallic retainer 18FF-H2 18FF-H3 (be used in sets)</p>
<p>18FF-2Z-C4</p>  <p>Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA~HFHU*</p>

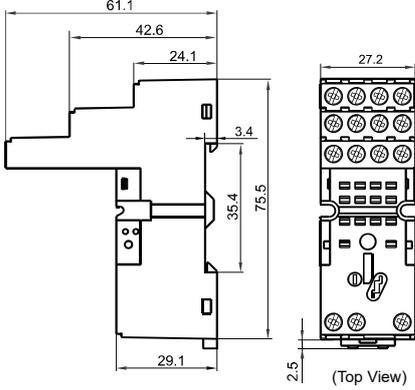
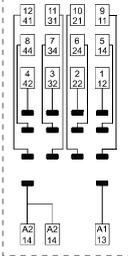
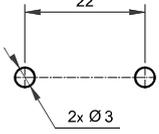
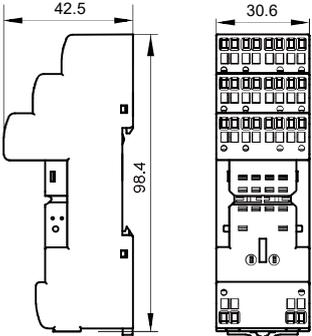
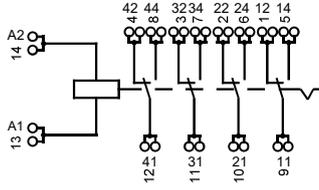
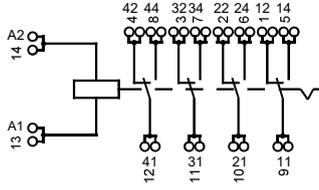
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
<p>18FF-2Z-C5</p>  <p>Screw Terminal, DIN rail or Screw mounting. With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA~HFHU*</p>
<p>18FF-2Z-C10</p>  <p>Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>			<p>retainer 18FF-H4 18FF-H5 jumper 18FF-J2 plug-in module HFAA~HFHU* marker 18FF-M1</p>
<p>18FF-4Z-C2</p>  <p>Screw Terminal, DIN rail or Screw mounting. With finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>metallic retainer 18FF-H2 (be used in sets)</p>
<p>18FF-4Z-C4</p>  <p>Screw Terminal, DIN rail or Screw mounting. With finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*</p>

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
<p>18FF-4Z-C5</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*</p>
<p>18FF-4Z-C10</p> 				<p>retainer 18FF-H4 18FF-H5 jumper 18FF-J2 plug-in module 18FF-M1 marker HFAA~HFHU*</p>

Notes: The socket and accessories, if you need accessories, please order by model or consult our sales staff.

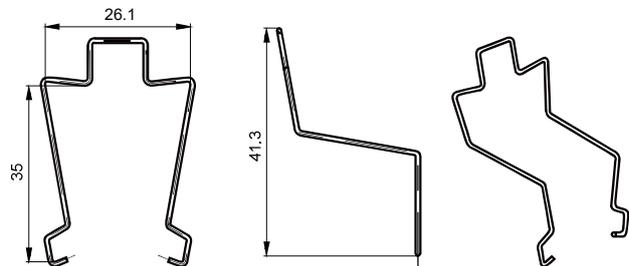
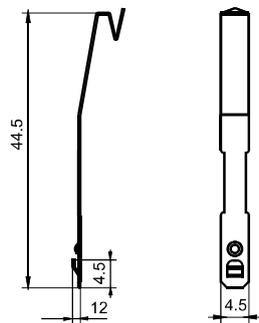
DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Retainer

18FF-H2(Metallic retainer)

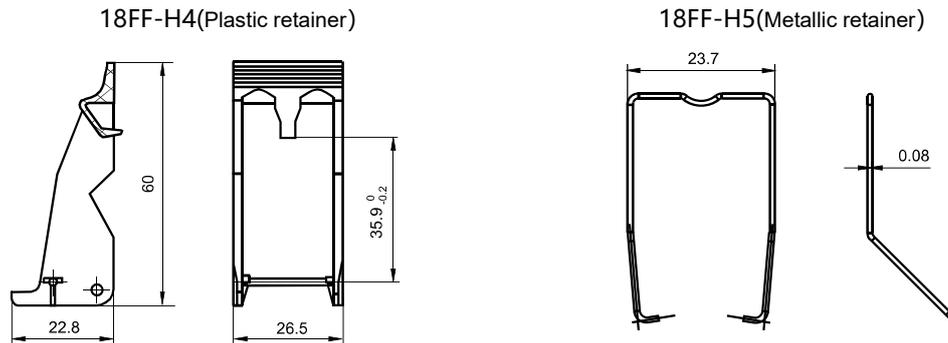
18FF-H3(Metallic retainer)



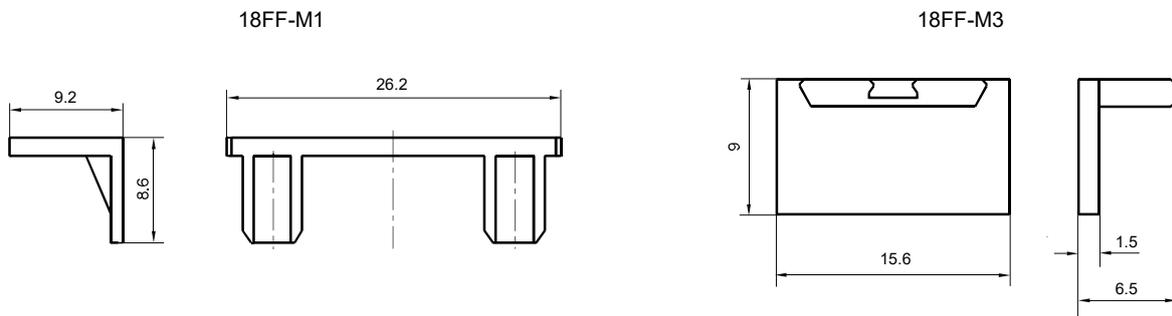
Remark: 18FF-H2 retainer is for specific series. Please be aware before ordering.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm



Marker



SELECTION OF PARTS

Type of Relay	Mounting termination	Socket	Retainer	Marker	Module
HF18FF-N/□□-2Z1□□□□	without button	18FF-2Z-C2	18FF-H2/H3	-	-
		18FF-2Z-C4			
		18FF-2Z-C5	18FF-H4/H5	18FF-M1	HFAA~HFHU
		18FF-2Z-C10			
HF18FF-N/□□-4Z1□□□□	without button	18FF-4Z-C2	18FF-H2	-	-
		18FF-4Z-C4			
		18FF-4Z-C5	18FF-H4/H5	18FF-M1	HFAA~HFHU
		18FF-4Z-C10			

Precautions For Use

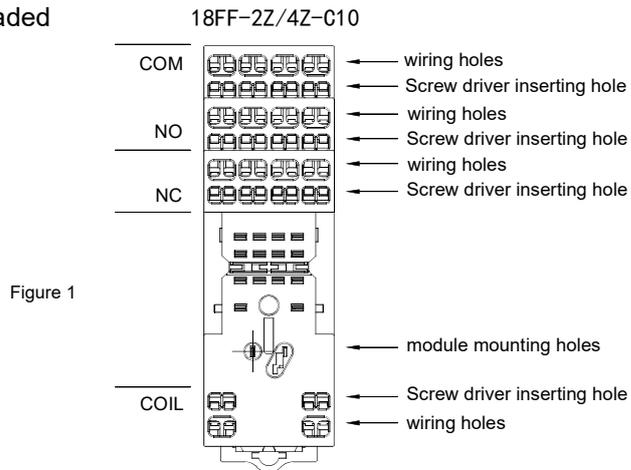
For your personal safety and the normal operation of the equipment, as well as to prevent fire, please note the following issues :

- 1.The rated current of the socket should be no less than the rated current of the relay.
- 2.Sockets are required to be firmly fixed to prevent the wiring from loosening and affecting the quality of wiring.
- 3.Be sure to disconnect power to the outlet before installation, disassembly, wiring, maintenance and inspection.
- 4.Prevent foreign objects such as wire shavings from falling inside this product when wiring.
- 5.Be sure to install the relay in place, and use accessories such as retainer if necessary to improve contact reliability. Do not use with incomplete connections.
- 6.Be sure to observe the relay ratings and do not overload the relay.
- 7.Before selecting a relay, make sure that the drive voltage matches the relay excitation voltage.

Precautions For Use

Precautions for the use of non-threaded terminal type sockets

1. Lead end socket description:



2. Things to be noticed when selecting soft wiring.

- The soft wiring can be divided into the following types.

0.5mm² above 1.5mm² below or AWG20 above AWG16 below the stranded wire or a single wire.

The front terminal of the wire needs to be peeled off 8mm to 9mm of insulation protection layer, the wire insulation protection layer diameter 2.8mm or less. Please be sure to use according to this size.

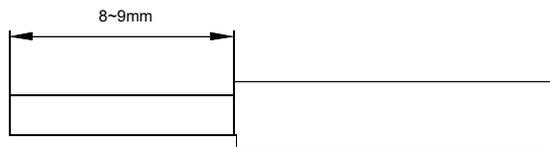


Figure 2

- If the protective layer is stripped too short, the wire may be pulled out, and if it is too long, it may be short-circuited to the neighboring wires. If using the stranded wire with cold crimped terminals, please twist the stranded wire tightly before use to avoid loosening the wire.

When wiring, use a screwdriver as shown in the figure.

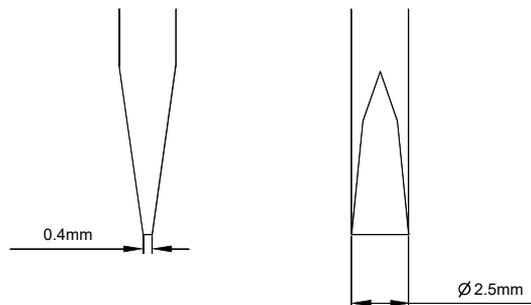


Figure 3

- The insertion position of the wire and the screwdriver and the insertion direction of the screwdriver are as shown in Figure 4.

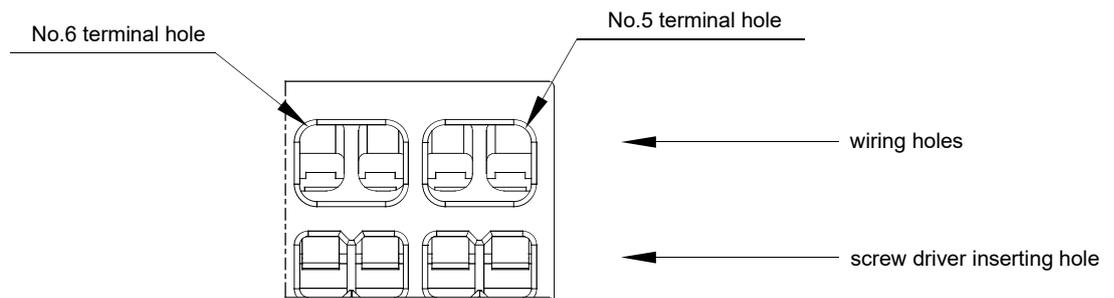


Figure 4

Precautions For Use

- When using stranded wires, use cold crimp terminals with or without plastic sleeves for the stranded wires.
- The method of Wiring as shown in figure 5.

Step 1. Insert the screwdriver into the screwdriver insertion hole (square hole) of the socket so that the screwdriver is inserted in a slightly angled direction until the head of the screwdriver is between the back of the spring terminal and the wall of the cover.

Step 2. Keep pushing the screwdriver in until it contacts the stop position inside the socket and the junction is released, keeping the screwdriver in that position. The screwdriver will not come off even if the hand is released.

Step 3. Keeping the screwdriver in the insertion hole, insert the wire or cold crimp terminal to the bottom of the wire insertion hole.

Step 4. Pull out the screwdriver and the wiring is completed.

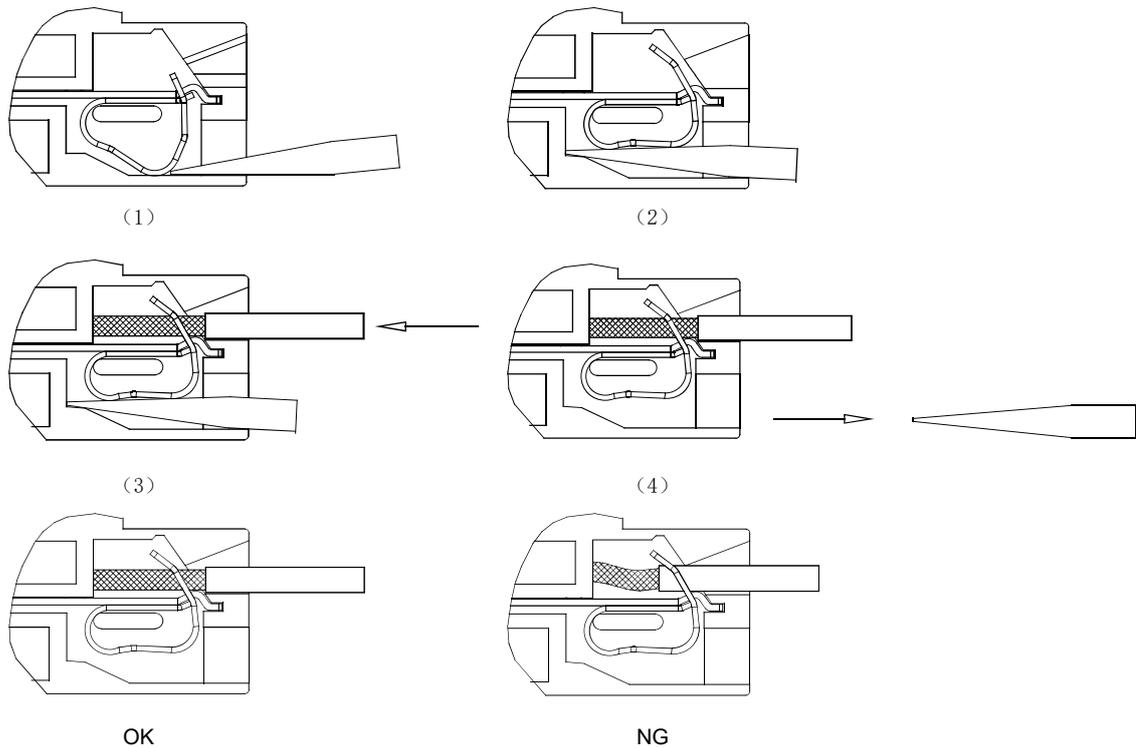


Figure 5

Note : When using wire with insulation protection diameter of 2mm or less, do not insert the insulated part of the wire into the spring clamp opening position .

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 HF18FF 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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