



HONGFA RELAY



INDUSTRIAL RELAYS & SOCKET KITS



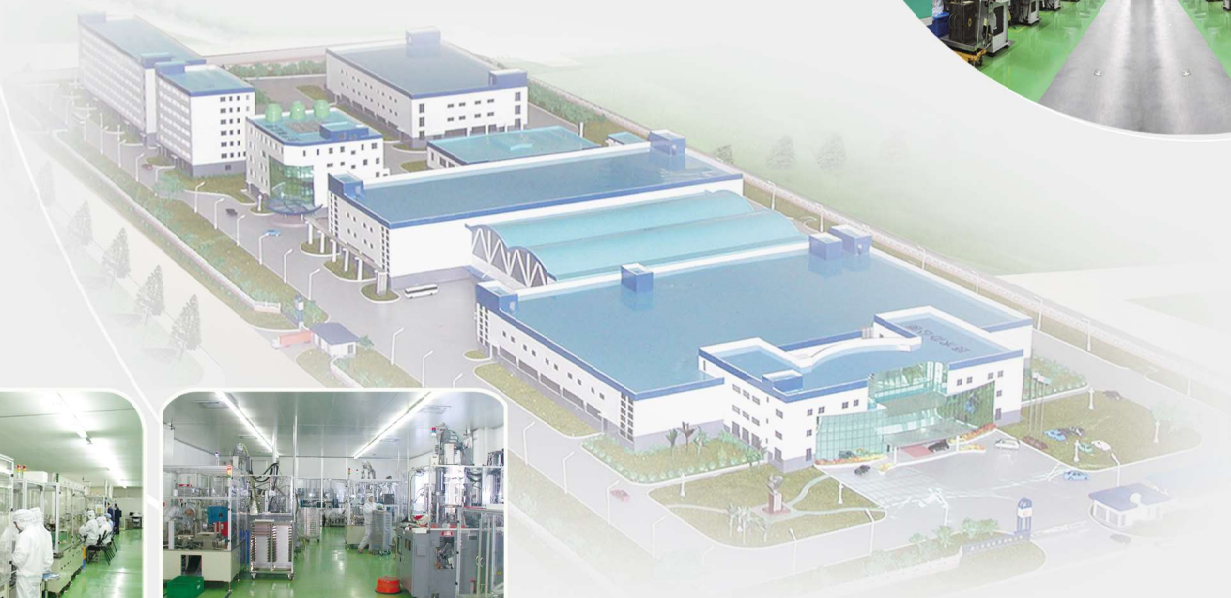
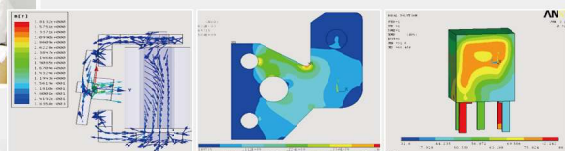
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RoHS compliant

ISO9001 ISO/TS16949 ISO14001 ISO45001 IECQ QC080000 ISO/IEC 27001 CERTIFIED

PROFESSIONAL RELAY MANUFACTURER





COMPANY INTRODUCTION

HONGFA

HONGFA (Stock code: 600885, SSE) always conforms to its business philosophy -- "Never rest on our laurels, make more progress" and uses this philosophy as the basis of its operational policy -- "Market-oriented concept, win by high quality". The following companies are fully or partially owned by HONGFA--Zhangzhou Hongfa, Jinhai, Xi'an Hongfa, Hongyuanda, Hongfa Automotive Electronics, Hongfa Signal Electronics, Hongfa Power Electronics, Hongzhou, Hongfa Wufeng, Hongfa Electrical Safety & Control, Hongfa Electric, Jinyue, Jinbo, Jinghe, Hongfa Industrial Robot, Hongfa Precision Machinery, Shanghai Hongfa, Beijing Hongfa, Sichuan Hongfa (Sales), Hongfa Hongkong, Hongfa Europe GmbH, Hongfa America Inc., KG Technologies Inc. HONGFA products include as relays, low-voltage devices, switchgears, precise parts, automatic equipment, etc..

HONGFA is now the leading relays sellers and manufacturer in China and is ranked No. 1 in the industry for overall economic efficiency. From 1995, HONGFA has continuously ranked among 'China Top-100 Electronic Components Enterprises' with a current position of the 9th and has received many awards: HONGFA has recognized as one of the China Top 100 Enterprises Of Electronic Information for the first time as the first finalist in relay, in 2014. HONGFA is authorized as "the Advanced Enterprise to implement High Technology in Torch Plan" by the Ministry of Science and Technology of PRC. HONGFA has been awarded "National foreign trade transforming and upgrading base (Automotive Components)" by the Ministry of Commerce of PRC and National Development and Reform Commission. HONGFA is the only company being awarded this honor in the Chinese relay industry.

HONGFA has a full set of quality assurance systems including ISO9001, ISO/TS16949, ISO14001, ISO45001, GJB9001A, IECQ QC 080000, ISO/IEC 27001. HONGFA has also been honorably awarded "High Quality Product exempt from National Inspection". HONGFA products are UL/CUL, VDE, TÜV, CQC and CCC approved. With high performance, top quality, competitive price and excellent technical services, HONGFA Relays have become the most perfect choice for the customers.

Since the establishment, HONGFA has been focusing on technology innovation. The technology and the equipment of all the mould tooling, parts manufacturing and products assembly and the production environment are in the leading position in Chinese relays industry. HONGFA Testing Centre is the biggest relays testing and analyzing laboratory with the most advanced technology in China, which is approved by CNAS, approved by America UL as a CTDLP lab, and approved by Germany VDE as a TDAP lab -For VDE's TDAP lab, there is only one in China and only six in the world. Hongfa is able to supply to the customers accurate, credible and authorized inspection data and test reports.

HONGFA has a wide range of relays, including Signal relays, Power relays, Automotive relays & modules, Latching relays, HVDC relays, Industrial relays, Safety relays. The company has the annual production capacity of 3.0 billion pieces of relays.

Now HONGFA has become the world leading relays research and manufacturing base. Hongfa people are looking forward to growing, developing and prospering with all the partners and customers worldwide together.

PERSEVERE FOR PROGRESS. 
STRIVE FOR EXCELLENCE!

WE ARE CONTROL EXPERT

Hongfa is a professional relay manufacturer and has a wide range of relays. Hongfa relays are UL/CUL, VDE, TÜV, CQC and CCC approved. They are widely used in those fields

like industrial control, automotive, telecom equipment, home appliances, metering instruments, security and alarm systems, medical appliances and aviation.

Relays



Power relays



Automotive relays



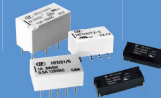
Industrial relays



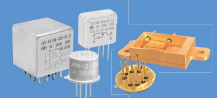
Latching relays



New energy relays



Signal relays



Hermetically sealed relays

Electric Switches



Low-voltage devices



L/H-voltage Complete Equipment



Vacuum interrupters

Other Products



Automation production line equipment

Industrial robot

Connectors



Power connectors

RF connectors

Capacitors



Fuse



Current sensor



Vacuum pumps



Snap-action switches



Oxygen sensors

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Notice

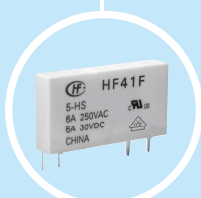
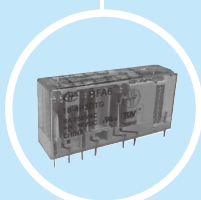
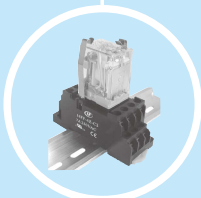
Dear Sir or Madam,

Many thanks for your choosing Hongfa products!

Please note the following important information:

1. Since all Hongfa products are RoHS compliant, we will remove the special code (551) or (555) from our current ordering types from April 1st, 2008. Please place your orders according to the newest ordering types. In the meantime, we hereby declare that all Hongfa products are RoHS compliant, no matter suffix (551) or (555) is used or not.
2. We have started to switch the old ordering type to the new one since 2005 (For example, the old ordering type is JQX-115F and the new one is HF115F). At the moment we strongly recommend that you should use the new ordering type for your orders. Please refer to "Comparative list between the old and new ordering type".
3. For the plastic sealed type, after welding, the relay should be cooled down below 40°C naturally, then start washing and surface handling, the temperature of washing liquid and surface handling cleanser should be controlled also below 40°C. When washing, please do not use washing liquid such as ultrasonic, gasoline, Freon etc. which may affect the relay structure and environment. For covers made from PC material, please prevent from contamination by some organic solvents; otherwise it is likely to bring to a chemic refaction which leads to bulging or crack.
4. For products that should satisfy the explosion-proof requirements of "IEC 60079 series" should remark [Ex] at the specification column while placing orders. Since not all of the products have explosion-proof certification, please contact us if you need any support to choose the suitable product.

Further more, all the data sheets are subject to change without notice. For updated information please visit our website: www.hongfa.com. Should you have any question, please feel free to contact us.



INDUSTRIAL & SAFETY RELAY SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
				—		HF49FD	1A (SPST-NO)	214	5	
				—		HF41F		51	5	
				—		HF118FK		242	10	
				—		HF118F		237	10	
				—		HF14FF		246	10	
				—		HF13F		170	15	
				—		HF14FW		249	15	
				—		HF115F		98	15	
				—		HF115F-A		222	15	
				—		HF115FK		218	15	
				—		HF118F	1B (SPST-NC)	237	10	
				—		HF115F		098	15	
				—		HF115F-A		222	15	
				—		HF14FW		249	15	
				—		HF41F	1C (SPDT)	051	5	
				—		HF118FK		242	10	
				—		HF118F		237	10	
				—		HF14FF		246	10	
				—		HF157F		111	12	
				—		HF13F		170	15	
				—		HF115F		098	15	
				—		HF115F-A		222	15	
				—		HF115FP		230	15	
				—		HF115FK		218	15	
				—		HF11F		163	30	
				—		HF115F	2A (DPST-NO)	98	10	
				—		HF115F-A		222	10	
				—		HF115FK		218	10	
				—		HF13F		170	10	
				—		HF140FF		252	10	
				—		HF140FF-V		264	10	
				—		HF140FF(新)		256	12	
				—		HF140FF-G		260	15	
				—		HF115F	2B	98	10	
				—		HF115F-A		222	10	
				—		HFA2	2C	24	5	
				—		HF18FZ		197	10	
				—		HF18FF/HF18FH		70	10	
				—		HF18FF-N		184	10	

How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS** (for instance, coil voltage, terminal style, etc.).

INDUSTRIAL & SAFETY RELAY SELECTION GUIDE

Terminals				Coil		Relay Type	Contact Form	Page	Switching Current	[A]
PCB	QC	Plug-in	Other	DC	AC					
						HF157F	2C	111	10	
						HF115F		98	10	
						HF115F-A		222	10	
						HF115FP		230	10	
						HF115FK		218	10	
						HF140FF		252	10	
						HF10F		143	10	
						HF10FF-Q		149	10	
						HF10FF-QV		159	10	
						HF13F		170	10	
						HF140FF(NEW)		256	10	
						HF18FF-G/HF18FH-G		177	12	
						HF140FF-G		260	15	
						HF10FF-QG		155	15	
						HF11F		163	30	
						HF18FF/HF18FH	3C	70	5	
						HF10F		143	8	
						HF10FF-Q		149	10	
						HF18FF-G/HF18FH-G		177	10	
						HF13F_3Z_4Z		167	15	
						HF10FF-QG		155	15	
						HF11F		163	30	
						HF18FZ	4C	197	5	
						HF18FF/HF18FH		70	5	
						HF18FF-N		184	5	
						HF13F_3Z_4Z		167	15	
						HF18FF-N	4ZB	184	2	
						HFA2	1A+1B	24	5	
						HFA2B		121	8	
						HFA3B	2A+1B	125	8	
						HFA4	2A+2B	34	5	
						HFA4G		136	5	
						HFA4B		132	8	
						HFA4A		129	8	




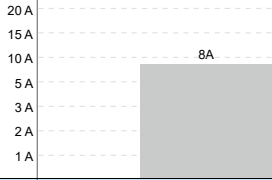
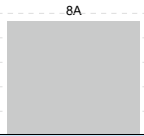
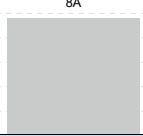
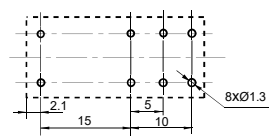
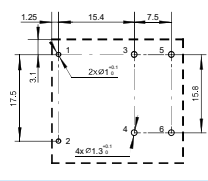
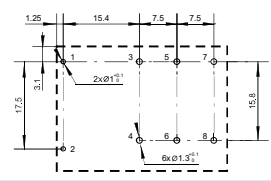
How to use the table: Please select the **CONTACT FORM**. Then choose the relay according to **SWITCHING CURRENT** and **OTHERS** (for instance, coil voltage, terminal style, etc.).

INDUSTRIAL & SAFETY RELAY SELECTION GUIDE

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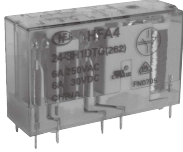

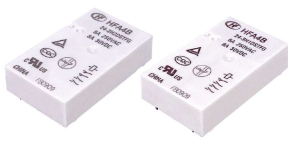
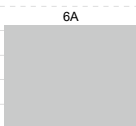


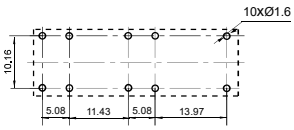
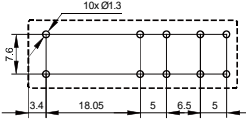
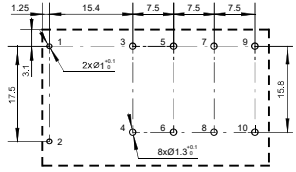
How to use the table: Please select the **CONTACT FORM**.Then choose the relay according to **SWITCHING CURRENT** and **OTHERS**(for instance,coil voltage, terminal style,etc.).

FORCE-GUIDED RELAYS SELECTION CHART

Type	HFA2	HFA2B	HFA3B
Appearance			
Dimensions(L x W x H) mm	29.0 x 12.6 x 25.5	26.6 x 25 x 10.2	34.2 x 25 x 10.2
Features	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Forcibly guided contacts according to IEC 61810-3 (EN50205) 8A switching capability Mechanical life: 1×10⁷ cycles 4kV dielectric strength (Contact - Coil; Contact - Contact) UL insulation system: Class F available 	<ul style="list-style-type: none"> Forcibly guided contacts according to IEC 61810-3 (EN50205) 8A switching capability Mechanical life: 1×10⁷ cycles 4kV dielectric strength (Contact - Coil; Contact - Contact) UL insulation system: Class F available
Contact Ratings			
Contact Form	2C, 1A+1B(1 Type), 1A+1B(2 Type)	1NO+1NC	2NO+1NC
Contact Material	AgSnO ₂	AgSnO ₂ +Au plated	AgSnO ₂ +Au plated
Max. Rated Switching Current			
Max. Switching Voltage	400VAC / 30VDC	400VAC(3.5A)/250VDC(0.4A)	400VAC(3.5A)/250VDC(0.4A)
Max. Switching Power	1500VA/ 180W	2000VA / 240W	2000VA / 240W
Rated Load (Resistive load)	6A 250VAC / 30VDC	8A 250VAC / 30VDC	8A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	5VDC to 110VDC	5VDC to 110VDC	5VDC to 110VDC
Nominal Operating Power	700mW	400mW	500mW
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	15ms / 10ms	20ms / 10ms	20ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	4 x 10 ⁷ OPS	4 x 10 ⁷ OPS
Electrical Endurance min.	1NO: 1 x 10 ⁵ OPS 1NC: 5 x 10 ⁴ OPS (70°C, 6A 250VAC/30VDC, 1s on 9s off)	5 x 10 ⁴ OPS(1NO:85°C, 1s on 9s off, 8A 250VAC, Resistive load)	5 x 10 ⁴ OPS(1NO:85°C, 1s on 9s off, 8A 250VAC, Resistive load)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 B 053286 0041 CQC16002150625 CQC18002199525	E133481 R50507878 CQC21002290220	E133481 R50507878 CQC21002290220
Cross Reference	TE: SR2M HENGSTLER: K-RBS DOLD: OA5669 ELESTA: SIR282	DOLD:OA5642	DOLD:OA5643
Page	24	121	125


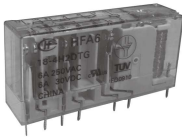

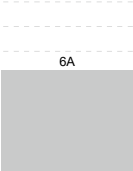
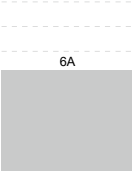
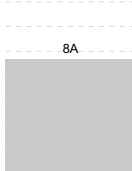
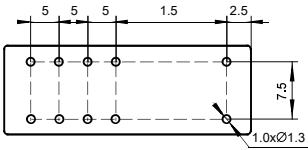
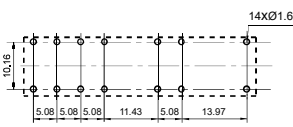
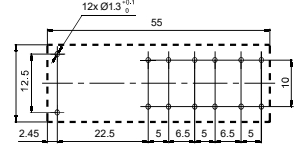
Notes: Specification and dimensions in this catalog are subject to change without notice.

FORCE-GUIDED RELAYS SELECTION CHART

Type	HFA4	HFA4A	HFA4B
Appearance			
Dimensions(L x W x H) mm	40.0 x 13.0 x 24.0	40.0 x 13 x 15.7	41.7 x 25 x 10.2
Features	<ul style="list-style-type: none"> Multi contact arrangements: 2NO+2NC, 3NO+1NC Forcibly guided contacts according to IEC 61810-3 6A switching capability Low input power: 360mW High insulation capability: 10kV surge voltage between input and output UL insulation system: Class F available 	<ul style="list-style-type: none"> Forcibly guided contacts according to IEC61810-3 (EN50205) 8A switching capability 4kV dielectric strength (between coil and contacts) UL insulation system: Class F available 	<ul style="list-style-type: none"> Forcibly guided contacts according to IEC 61810-3 (EN50205) 8A switching capability Mechanical life: 1×10⁷ cycles 4kV dielectric strength (Contact - Coil; Contact - Contact) UL insulation system: Class F available
Contact Ratings			
Contact Form	2A2B, 3A1B	2NO+2NC, 3NO+1NC	2NO+2NC, 3NO+1NC
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ +Au plated
Max. Rated Switching Current			
Max. Switching Voltage	400VAC / 30VDC	400VAC(3.5A, Resistive load)	400VAC(3.5A)/250VDC(0.4A)
Max. Switching Power	1500VA/ 180W	2000VA/240W	2000VA/240W
Rated Load (Resistive load)	6A 250VAC / 30VDC	8A 250VAC/30VDC	8A 250VAC/30VDC
Coil Ratings			
Rated Voltage	6VDC to 48VDC	5VDC to 110VDC	5VDC to 110VDC
Nominal Operating Power	360mW	800mW	650mW
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 10ms	20ms / 10ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	4 x 10 ⁷ OPS
Electrical Endurance min.	6A 30VDC: 1 x 10 ⁵ OPS 6A 250VAC: 1 x 10 ⁵ OPS (1NO: Resistive load, Room temp., 1s on 9s off)	1 x 10 ⁴ OPS (1NO: 85°C, 1s on 9s off, 8A 250VAC, Resistive load)	5 x 10 ⁴ OPS (1NO: 85°C, 1s on 9s off, 8A 250VAC, Resistive load)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 40034342 CQC16002150625 CQC18002199525	E133481 R50489710 CQC20002278708	E133481 R50507878 CQC21002290220
Cross Reference	OMRON: G7SA TE: SR4D/M PANASONIC: SFS	TE: SR4D/M	DOLD: OA5644
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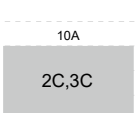
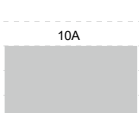

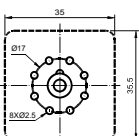
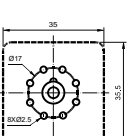
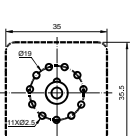
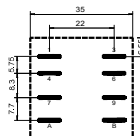
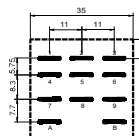
Notes: Specification and dimensions in this catalog are subject to change without notice.

FORCE-GUIDED RELAYS SELECTION CHART

Type	HFA4G	HFA6	HFA6A
Appearance			
Dimensions(L x W x H) mm	35.0x 12.6 x 25.5	50.0 x 13.0 x 24.0	55.0 x 16.5 x 15.7
Features	<ul style="list-style-type: none"> • 6A switching capability • Multi contact arrangements: 2NO+2NC, 3NO+1NC • Forcibly guided contacts according to IEC 61810-3 • High insulation capability: 6kV surge voltage between input and output • UL insulation system: Class F 	<ul style="list-style-type: none"> • Multi contact arrangements: 5NO+1NC, 4NO+2NC, 3NO+3NC • Forcibly guided contacts according to IEC 61810-3 • 6A switching capability • Low input power: 500mW • High insulation capability: 10kV surge voltage between input and output • UL insulation system: Class F available 	<ul style="list-style-type: none"> • Forcibly guided contacts according to IEC61810-3 (EN50205) • 8A switching capability • 4kV dielectric strength (between coil and contacts) • UL insulation system: Class F available
Contact Ratings			
Contact Form	2A+2B	5A1B, 4A2B, 3A3B	3A3B, 4A2B, 5A1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂ +Au plated
Max. Rated Switching Current			
Max. Switching Voltage	400VAC	400VAC / 30VDC	400VAC / 220VDC
Max. Switching Power	1500VA/ 180W	1500VA/ 180W	2000VA/ 240W
Rated Load (Resistive load)	6A 250VAC / 6A 24VDC	6A 250VAC / 30VDC	8A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	6VDC to 110VDC	6VDC to 48VDC	5VDC to 110VDC
Nominal Operating Power	1W	500mW	Approx. 1200mW(Standard) Approx. 800mW(Sensitive)
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	20ms / 10ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	6A 30VDC: 1 x 10 ⁵ OPS 6A 250VAC: 1 x 10 ⁵ OPS (1NO: Resistive load, Room temp., 1s on 9s off)	5 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E133481 R50527765 CQC21002303130	E134517 B0532860043 CQC16002150625 CQC18002199525	E133481 R50437848 CQC19002217420
Cross Reference	Dodl:OA5670	OMRON: G7SA TE: SR6 PANASONIC: SFS	TYCO:SR6 HENGSTLER:H-480
Page	136	41	138




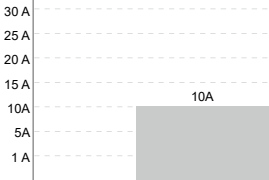

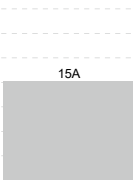
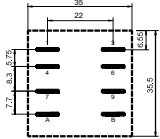
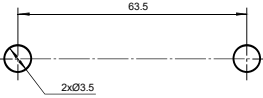
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF10F	HF10FF-Q	HF10FF-QG
Appearance			
Dimensions(L x W x H) mm	35.0 x 35.5 x 55.6	35.0 x 35.5 x 50	35.0 x 35.5 x 50
Features	<ul style="list-style-type: none"> • 10A switching capability • Multiple switching capability (2C, 3C type) • Standard electrontube terminal • With test button • Sockets available 	<ul style="list-style-type: none"> • 10A switching capability • Bridge transformation available, • Multiple switching capability (2C, 3C type) • QC terminal • Dust protected type • Multiple auxiliary functions available 	<ul style="list-style-type: none"> • 16A switching capability • Multiple switching capability (2C, 3C type) • QC terminal • High capacity
Contact Ratings			
Contact Form	2C, 3C	QZ, 2C, 3C	2C, 3C
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂ , AgCdO	AgSnO ₂ In ₂ O ₃
Max. Rated Switching Current			
Max. Switching Voltage	250VAC / 220VDC	250VAC / 30VDC	400VAC / 30VDC
Max. Switching Power	2500VA / 300W	2500VA / 300W	6400VA / 480W
Rated Load (Resistive load)	2C: 10A 250VAC / 30VDC 3C: (NO) 10A 250VAC / 30VDC (NC) 5A 250VAC / 30VDC	QZ/2C: 10A 250VAC / 30VDC 3C: (NO) 10A 250VAC / 30VDC (NC) 5A 250VAC / 30VDC	16A 400VAC/30VDC
Coil Ratings			
Rated Voltage	6VAC to 240VAC / 6VDC to 220VDC	6VAC to 240VAC / 6VDC to 220VDC	6VDC to 240VDC
Nominal Operating Power	DC:about 1.4W, AC:about 3.0VA	DC:about 1.4W, AC:about 3.0VA	DC:about 1.4W, AC:about 3.0VA
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2500VAC	2500VAC	2500VAC
Ambient Temperature	-40°C to 55°C	-40°C to 55°C	-40°C to 70°C
Operate / Release Time max.	30ms / 30ms(DC type)	30ms / 30ms	30ms / 30ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	See "CONTACT DATA"	See "CONTACT DATA"	1 x 10 ⁵ OPS(16A 400VAC/30VDC; Resistive load, Room temp., 1s on 9s off)
Layout (Bottom view)		 	 
Terminal Type	Octal and Undecal Type Plug	QC	QC
Approved Standards	UL/CUL	UL/CUL	UL/CUL
File No.	E134517	E134517	E134517
Cross Reference	OMRON: MK2/3 SCHNEIDER:RUM C2/C3 RUM F2/F3 FINDER:60.12/60.13 FEME:RCP/RCPT		
Page	143	149	155




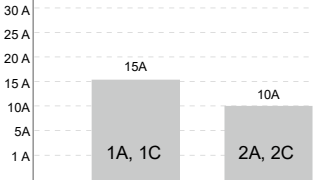
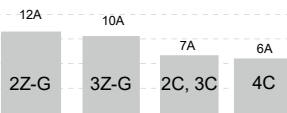
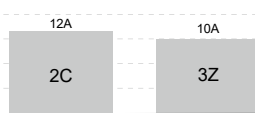
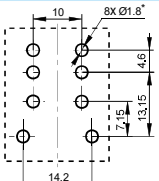
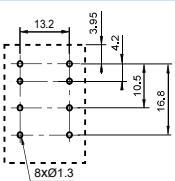
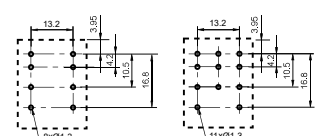
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF10FF-QV	HF11F	HF13F-3Z/4Z
Appearance			
Dimensions(L x W x H) mm	35.0 x 35.5 x 50	34.7 x 38.0 x 55.6	3C: 30.6x27.2x34.8 4C: 40.6x27.2x34.8
Features	<ul style="list-style-type: none"> • 10A switching capability • Bridge transformation available, Multiple switching capability (2C type) • QC terminal • Blowout magnet type • Dust protected type • Multiple auxiliary functions available 	<ul style="list-style-type: none"> • 30A/415VAC contact switching capability • With 1 Form C, 2 Form C, 3 Form C, QZ, QH contact structure • QC terminal • Flange mounting available, Sockets available • Impulse voltage up to 6kV (Between contact & coil) • UL insulation system: Class F 	<ul style="list-style-type: none"> • 15A contact switching capability • With 3 Form C, 4 Form C contact structure • QC terminal • LED available, Sockets available • Impulse voltage up to 4kV (Between contact & coil) • UL insulation system: Class F
Contact Ratings			
Contact Form	QZ, 2C	1C, 2C, 3C, QZ, QH	3C, 4C
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂	AgSnO ₂ In ₂ O ₃
Max. Rated Switching Current			
Max. Switching Voltage	250VAC / 220VDC	415VAC	250VAC
Max. Switching Power	2500VA / 300W	12450VA 840W	3750VA 420W
Rated Load (Resistive load)	QZ/2C: 10A 250VAC / 30VDC QZ: 10A 220VDC 2C: (NO) 5A 150VDC 2C:(NC) 2A 150VDC	1C, 2C, 3C: 25A 415VAC, 15A 28VDC QZ, QH: 30A 415VAC, 30A 28VDC	NO: 15A 250VAC, 15A 28VDC NC: 7.5A 250VAC, 7.5A 28VDC
Coil Ratings			
Rated Voltage	6VDC to 220VDC	12VDC to 220VDC 12VAC to 240VAC	12VDC to 110VDC 12VAC to 240VAC
Nominal Operating Power	DC: about 1.4W, AC: about 3.0VA	DC: about 1.5W, AC: about 2.5VA	3C DC: about 1.7W, AC: about 1.7VA 4C DC: about 2.0W, AC: about 2.9VA
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	2500VAC	2200VAC	2000VAC
Ambient Temperature	-40°C to 55°C	-40°C to 55°C	-40°C to 55°C
Operate / Release Time max.	30ms / 30ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	5 x 10 ⁶ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	See "CONTACT DATA"	See "CONTACT DATA"	1x10 ⁶ OPS (55°C)
Layout (Bottom view)			
Terminal Type	QC	QC	QC
Approved Standards	UL/CUL	UL/CUL	UL/CUL
File No.	E134517	E133481	E133481
Cross Reference			
Page	159	163	167




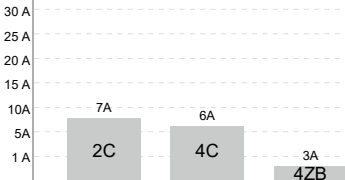
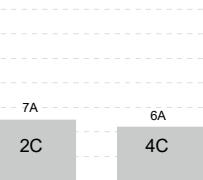
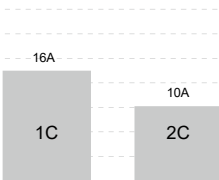
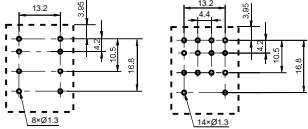
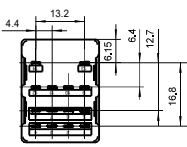
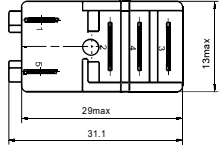
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF13F	HF18FF/HF18FH	HF18FF-G/HF18FH-G
Appearance			
Dimensions(L x W x H) mm	28.0 x 21.5 x 35.0	Without button type: 28.0 x 21.5 x 36.0 With button type: 28.0 x 21.5 x 37.0	28 x 21.5 x 36
Features	<ul style="list-style-type: none"> • 1C: 15A; 2C:10A switching capability • Various terminals available • Sockets available • Conform to the CE low voltage directive • 1 & 2 pole configurations • UL insulation system: Class F (2 form A/2 form C) 	<ul style="list-style-type: none"> • Multiple auxiliary functions available • 2 to 4 pole configurations • Various terminals available • Gold plated contact available • Transparent dust cover , various installation types • Automatic production • High capacity 	<ul style="list-style-type: none"> • Multiple auxiliary functions available • 2 to 4 pole configurations • Various terminals available • Gold plated contact available • Transparent dust cover , various installation types • Automatic production • High capacity
Contact Ratings			
Contact Form	1A, 2A, 1C, 2C	2C, 3C, 4C	2C, 3Z
Contact Material	AgNi, AgSnO ₂	AgNi, AgSnO ₂	See "ORDERING INFORMATION"
Max. Rated Switching Current			
Max. Switching Voltage	250VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC
Max. Switching Power	1A, 1C:3750VA / 450W 2A, 2C:2500VA / 300W	2Z-G:3000VA / 360W 3Z-G:2500VA / 300W 2C,3C:1750VA / 210W,4C:1500VA/ 180W	2C:3000VA/360W 3C:2500VA/300W
Rated Load (Resistive load)	1A, 1C:15A 250VAC / 30VDC 2A, 2C:10A 250VAC / 30VDC	2Z-G: 12A 250VAC / 30VDC 3Z-G: 10A 250VAC / 30VDC 2C, 3C: 7A 250VAC / 30VDC 4C: 6A 250VAC / 30VDC	2C:12A 250VAC/30VDC 3C:10A 250VAC/30VDC
Coil Ratings			
Rated Voltage	6VAC to 277VAC / 5VDC to 220VDC	6VAC to 277VAC / 5VDC to 220VDC	6VAC to 277VAC / 5VDC to 220VDC
Nominal Operating Power	1.2VA to 1.8VA, 0.9W to 1.1W	0.9VA to 1.5VA(AC type) 0.8W to 1.1W (DC type)	DC:about 0.8W to 1.1W AC:about 0.9VA to 1.5VA
Specifications			
Insulation Resistance	500MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	1500VAC	1500VAC	1500VAC
Ambient Temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
Operate / Release Time max.	25ms / 25ms(DC type)	20ms / 15ms(DC type) 20ms / 25ms(AC type)	20ms / 15ms(DC type), 25ms(DC with diode type), 25ms(AC type)
Mechanical Endurance min.	1 x 10 ⁷ OPS	2 x 10 ⁷ OPS	2 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS(Room temp.)
Layout (Bottom view)			
Terminal Type	PCB, Plug-in	PCB, Plug-in	PCB, Plug-in
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E133481 R50154518(2C type) CQC09002030028(DC type) CQC09002030029(AC type)	E133481 R50147087 CQC09002030026(DC type) CQC09002030027(AC type)	E133481 R50147087 CQC09002030026 (DC type) CQC09002030027 (AC type)
Cross Reference	OMRON: LY1/2 PANASONIC: HL FUJITSU: FRL260 NEC: KML SCHRACK: TM	OMRON: MY2/3/4 FINDER: 55.32/55.33/55.34 IDEC: RM2S/ RM4S SCHNEIDER: RXM2/3/4 TE: KHAU-11/17	
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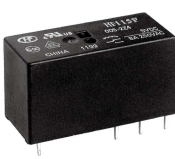
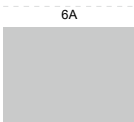
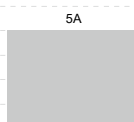
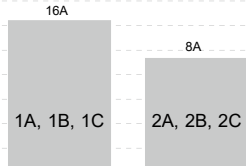
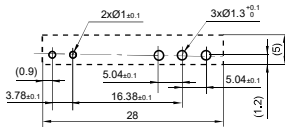
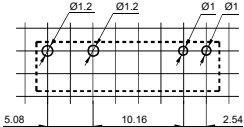
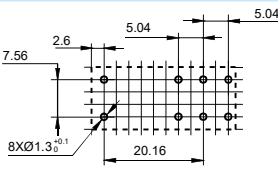
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF18FF-N	HF18FZ	HF157F
Appearance			
Dimensions(L x W x H) mm	21.5 x 28 x 35.5mm	Without button type: 28.0 x 21.5 x 36.0 With button type: 28.0 x 21.5 x 37.5	Without button type: 29.0 x13.0 x30.0 With button type: 29.0 x13.0 x35.5
Features	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Multiple switching capability (2C, 4C type) With LED Conform to the CE low voltage directive 2.0kV dielectric strength (between coil and contacts) High electrical life High mechanical life With test button Automatic production 	<ul style="list-style-type: none"> High capacity (1 pole:16A;2 pole:10A) Various types available 1/2 pole configurations 5kV dielectric strength (between coil and contacts) Sockets available
Contact Ratings			
Contact Form	2C, 4C	2C, 4C	1C, 2C
Contact Material	See "ORDERING INFORMATION"	AgNi	AgSnO ₂ Alloy
Max. Rated Switching Current			
Max. Switching Voltage	250VAC / 30VDC	277VAC / 30VDC	250VAC / 30VDC
Max. Switching Power	2C:1750VA 210W 4C:1500VA 180W 4ZB:750VA 90W	2C:1939VA / 210W 4C:1385VA / 150W	1C:4000VA / 480W 2C:2500VA / 300W
Rated Load (Resistive load)	2C: 7A 250VAC / 30VDC 4C: 6A 250VAC / 30VDC 4ZB: 3A 250VAC / 30VDC	2C: 7A 220VAC / 24VDC 5A 220VAC / 24VDC 4C: 6A 220VAC / 24VDC 5A 220VAC / 24VDC 3A 220VAC / 24VDC	1C:12A 250VAC / 30VDC 2C: 8A 250VAC / 30VDC
Coil Ratings			
Rated Voltage	6VAC to 277VAC / 5VDC to 220VDC	12VAC to 240VAC 6VDC to 220VDC	5VAC to 110VAC 6VDC to 240VDC
Nominal Operating Power	DC:about 0.8W to 1.1 W AC:about (0.9 to 1.5) VA	AC:about 0.9VA to1.5VA DC:about 0.8W to1.1W	0.9VA (AC type) 0.53W(DC type)
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	1000VAC	2000VAC	5000VAC
Ambient Temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
Operate / Release Time max.	20ms /15ms(DC type) 25ms(AC type)	20ms / 15ms(DC type) 20ms / 25ms(AC type)	15ms / 20ms(AC type) 10ms(DC type)
Mechanical Endurance min.	1 x 10 ⁷ OPS	5 x 10 ⁷ OPS(DC type), 2 x 10 ⁷ OPS(AC type)	AC:3 x 10 ⁷ OPS, DC:5 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS(Room temp.)	See "CONTACT DATA"	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB, Plug-in	Plug-in	Plug-in
Approved Standards	UL/CUL TÜV CQC	UL/CUL CQC VDE	UL/CUL TÜV CQC
File No.	E133481 R50147087 CQC09002030026 (DC type) CQC09002030027 (AC type)	E133481 40048406 CQC17002183722	E133481 R50403813 CQC18002189443
Cross Reference		OMRON: MY2/4-GS IDEC:RU2S/RU4S	OMRON: G2R-1/G2R-2 FINDER:46.61/46.52 IDEC:RJ1S/RJ2S
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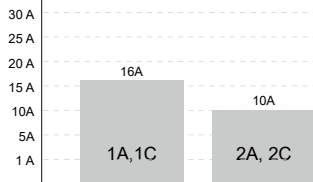
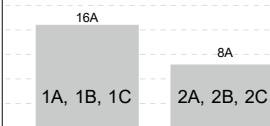
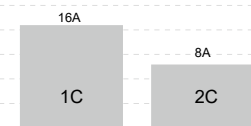
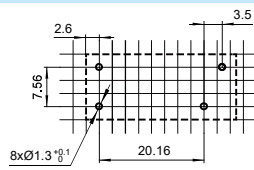
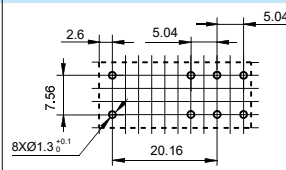
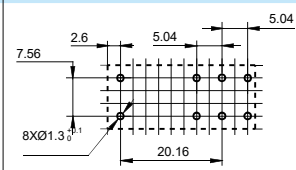
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF41F	HF49FD	HF115F	
Appearance				
Dimensions(L x W x H) mm	28.0 x 5.0 x 15.0	20.0 x 5.0 x 12.5	29.0 x 12.7 x 15.7	
Features	<ul style="list-style-type: none">Slim size (width 5mm)6A switching capability 4kV dielectric strength (between coil and contacts)Surge voltage up to 6kV (between coil and contacts)High sensitive: Approx.170m	<ul style="list-style-type: none">5A switching capability3kV dielectric strength (between coil and contacts)Slim size (width 5mm, height 12.5mm)High sensitive: Min. 120mW	<ul style="list-style-type: none">16A switching capabilityLow height: 15.7 mm5kV dielectric strength (between coil and contacts)Creepage distance: 10mmMeeting VDE 0700, 0631 reinforce insulationProduct in accordance to IEC 60335-1availablePlastic sealed and flux proofed types available	
Contact Ratings				
Contact Form	1A, 1C	1A	1A, 1B, 1C	2A, 2B, 2C
Contact Material	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi, AgCdO	
Max. Rated Switching Current				
Max. Switching Voltage	400VAC / 300VDC	250VAC / 125VDC(0.3A)	440VAC / 300VDC	
Max. Switching Power	1500VA / 180W	1250VA / 150W	3000VA/4000VA	2000VA
Rated Load (Resistive load)	6A 250VAC 6A 30VDC	5A 250VAC 5A 30VDC	16A 250VAC 12A 250VAC	8A 250VAC
Coil Ratings				
Rated Voltage	5VDC to 60VDC	5VDC to 24VDC	5VDC to 110VDC	
Nominal Operating Power	0.17W (48 to 60VDC: 0.21W)	0.12W to 0.18W	0.4W	
Specifications				
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ	
Dielectric Strength (Between coil and contacts)	4000VAC	3000VAC	5000VAC	
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	
Operate / Release Time max.	8ms / 4ms	10ms / 5ms	15ms / 8ms	
Mechanical Endurance min.	1 x 10 ⁷ OPS	2 x 10 ⁷ OPS	1 x 10 ⁷ OPS	
Electrical Endurance min.	1A: 6 x 10 ⁴ OPS (85°C) 1C: NO: 3 x 10 ⁴ OPS (85°C) NC: 1 x 10 ⁴ OPS (85°C)	1 x 10 ⁵ OPS (3A 250VAC/30VDC)	1 pole:1 x 10 ⁵ OPS 2 pole:5 x 10 ⁵ OPS	
Layout (Bottom view)				
Terminal Type	PCB	PCB	PCB	
Approved Standards	UL/CUL VDC CQC	UL/CUL TÜV CQC	UL/CUL VDE CQC	
File No.	E133481 40020043 CQC17002175724	E133481 R50149334 CQC17002175722	E134517 116934 CQC17002168381	
Cross Reference	PANASONIC: PF FUJITSU: FTR-LY SCHRACK:V23092/SNR FINDER:34,51	MRON: G6DN PANASONIC: APAN FUJITSU: MY/NY SCHRACK:PCN	OMRON: G2RL PANASONIC: LZ SCHRACK: RT FUJITSU: FTR-K1 FINDER: 41 SERIES RELPOL: RM84/85	
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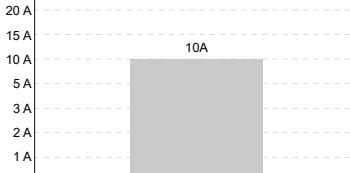
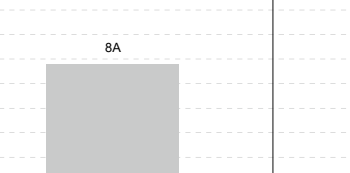
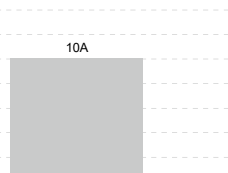
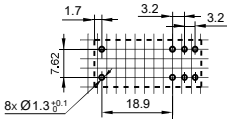
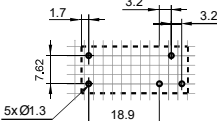
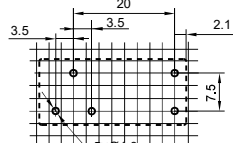
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF115FK	HF115F-A	HF115FP
Appearance			
Dimensions(L x W x H) mm	29.0 x 15.7 x 12.7	29.0 x 12.7 x 15.7	29.0 x 13.0 x 25.5
Features	<ul style="list-style-type: none"> • Low height: 15.7 mm • 16A switching capability • 5kV dielectric strength (between coil and contacts) • Creepage distance: 10mm • Meeting reinforce insulation • Flux proofed type • Product in accordance to IEC 60335-1 available • UL insulation system: Class F • Through-Hole Reflow Version available 	<ul style="list-style-type: none"> • AC voltage coil type • 16A switching capability • 1 & 2 pole configurations • 5kV dielectric strength (between coil and contacts) • Low height: 15.7 mm • Creepage distance: 10mm • Meeting VDE 0700, 0631 reinforce insulation • Product in accordance to IEC 60335-1 available • Plastic sealed and flux proofed types available 	<ul style="list-style-type: none"> • 1 pole 16A, 2 pole 8A, 1 CO & 2 CO contacts • 5kV dielectric, Creepage distance 8 mm (coil to contacts) • Meeting VDE 0700, 0631 reinforce insulation • DC/AC coil type relay, Coil power 400mW / 0.75VA • Manual test device • Type with mechanical indicator / electrical indicator • Sockets available
Contact Ratings			
Contact Form	1A, 1C, 2A, 2C	1A, 1B, 1C 2A, 2D, 2C	1C 2C
Contact Material	AgNi, AgSnO ₂	AgSnO ₂ , AgNi, AgCdO	AgNi
Max. Rated Switching Current			
Max. Switching Voltage	400VAC	440VAC / 300VDC	440VAC
Max. Switching Power	1A, 1C: 2500VA/3000VA / 4000VA 2A, 2C: 2000VA	3000VA/4000VA 2000VA	4000VA 2000VA
Rated Load (Resistive load)	1A, 1C: 10A/12A/16A 250VAC 2A, 2C: 8A 250VAC	16A 250VAC 12A 250VAC 8A 250VAC	16A 250VAC 8A 250VAC
Coil Ratings			
Rated Voltage	5VDC to 48VDC	24, 115, 230VAC	24VAC to 230VAC 12VDC to 110VDC
Nominal Operating Power	Standard type: Approx. 0.4W High power consumption type: Approx. 0.53W	0.75VA	0.75VA, 0.4W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 55°C	-40°C to 70°C	-40°C to 70°C
Operate / Release Time max.	10ms / 5ms	/	15ms / 8ms(DC type)
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁶ OPS	DC: 5 x 10 ⁶ OPS, AC: 1 x 10 ⁶ OPS
Electrical Endurance min.	See "CONTACT DATA"	5 x 10 ⁴ OPS	3 x 10 ⁴ OPS, 5 x 10 ⁴ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE	UL/CUL VDE
File No.	E134517 116934 CQC17002176308	E134517 116934 CQC17002176311	E133481 116934
Cross Reference		OMRON: G5RL-AC SCHRACK: RT RELPOL: RM84/85	SCHRACK: XT
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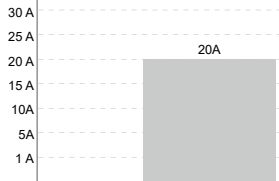
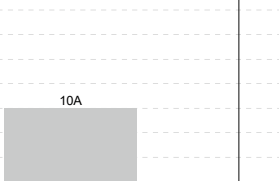
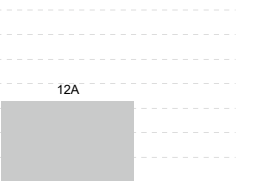
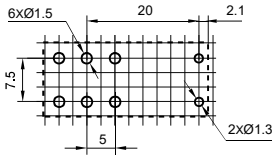
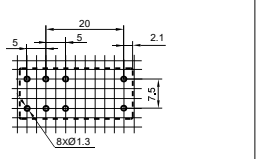
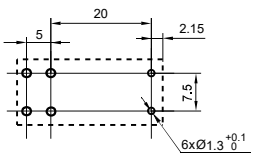
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF118F	HF118FK	HF14FF
Appearance			
Dimensions(L x W x H) mm	28.5 x 10.1 x 12.5	28.5 x 10.1 x 12.5	29.0 x 13.0 x 26.0
Features	<ul style="list-style-type: none"> • 10A switching capability • 5kV dielectric strength (between coil and contacts) • Low height: 12.5 mm • Creepage distance >8mm • Product in accordance to IEC 60335-1 available • Plastic sealed and flux proofed types available 	<ul style="list-style-type: none"> • 8A switching capability • 5kV dielectric strength (between coil and contacts) • Low height: 12.5 mm • Creepage distance >8mm • Meeting VDE 0700, 0631 reinforce insulation • Product in accordance to IEC 60335-1 available • Flux proofed types • Through-Hole Reflow Version available 	<ul style="list-style-type: none"> • 10A switching capability • 5kV dielectric strength (between coil and contacts) • Sockets available • Plastic sealed and flux proofed types available • UL insulation system: Class F available
Contact Ratings			
Contact Form	1A, 1B, 1C	1A, 1C	1A, 1C
Contact Material	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi	AgSnO ₂ , AgNi, AgCdO
Max. Rated Switching Current			
Max. Switching Voltage	440VAC / 300VDC	440VAC / 250VDC	277VAC / 30VDC
Max. Switching Power	2500VA/300W	2000VA/240W	2770VA / 300W
Rated Load (Resistive load)	10A 250VAC 10A 30VDC	8A 250VAC/30VDC	10A 277VAC/30VDC TV-5 120VAC
Coil Ratings			
Rated Voltage	5VDC to 60VDC	5VDC to 60VDC	3VDC to 60VDC
Nominal Operating Power	0.22W to 0.29W	0.22W to 0.29W	0.53W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 70°C
Operate / Release Time max.	10ms / 5ms	10ms / 5ms	15ms / 5ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS	1 x 10 ⁷ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS	1 x 10 ⁵ OPS
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL VDE CQC	UL/CUL TÜV CQC
File No.	E134517 40010480 CQC09002035071 CQC18002206322	E134517 40010480 CQC09002035071 CQC18002206322	E134517 R50140759 CQC10002046169
Cross Reference	OMRON: G6RN FUJITSU: JS SCHRACK: RYII	OMRON: G6RN FUJITSU: JS SCHRACK: RYII	OMRON: G2R PANASONIC: JR1/JR1A FUJITSU: VS NEC: CH P&B: RKA/RKS
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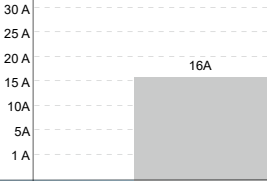
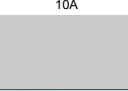
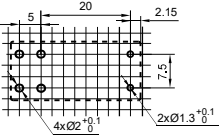
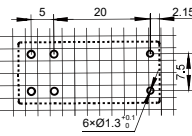
Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF14FW	HF140FF	HF140FF(NEW)
Appearance			
Dimensions(L x W x H) mm	29.0 x 13.0 x 26.5	29.0 x 13.0 x 26.3	29.0x12.7x26.0
Features	<ul style="list-style-type: none"> • 20A switching capability • 4kV dielectric strength (between coil and contacts) • Meeting VDE 0700, 0631 reinforce insulation • 1 Form A and 1 Form C configurations • Sockets available • Plastic sealed and flux proofed types available 	<ul style="list-style-type: none"> • 10A switching capability • 5kV dielectric strength (between coil and contacts) • Standard: Creepage distance >8mm • 2.0mm contact gap available • Plastic sealed and flux proofed types available • UL insulation system: Class F available 	<ul style="list-style-type: none"> • 12A switching capability • 5kV dielectric strength (between coil and contacts) • 1.5mm/2.0mm contact gap available • Plastic sealed and flux proofed types available • Sockets available • UL insulation system: Class F
Contact Ratings			
Contact Form	1A, 1B, 1C	2A, 2C	2A, 2C
Contact Material	AgSnO ₂ , AgCdO	AgSnO ₂ , AgNi, AgCdO	AgSnO ₂
Max. Rated Switching Current			
Max. Switching Voltage	277VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC
Max. Switching Power	5540VA / 480W	2500VA / 240W	3000VA / 360W
Rated Load (Resistive load)	Resistive: 16A 277VAC/24VDC 1HP 240VAC TV-8 125VAC (NO contact)	5A 250VAC, 10A 250VAC 8A 30VDC	12A/10A 250VAC 8A 30VDC
Coil Ratings			
Rated Voltage	5VDC to 60VDC	3VDC to 60VDC	3VDC to 110VDC
Nominal Operating Power	0.53W, 0.72W	0.53W, 0.8W, 1.4W	0.8W, 1.4W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	5000VAC	5000VAC
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Operate / Release Time max.	15ms / 5ms	15ms / 5ms	20ms / 5ms
Mechanical Endurance min.	1 x 10 ⁷ OPS	Standard type: 1 x 10 ⁷ OPS W type(1.5mm): 5 x 10 ⁵ OPS W type(2.0mm): 3 x 10 ⁵ OPS	W type: 5 x 10 ⁵ OPS W(456) type: 3 x 10 ⁵ OPS
Electrical Endurance min.	1 x 10 ⁵ OPS	Standard type: 1 x 10 ⁵ OPS W type(1.5mm): 1 x 10 ⁵ OPS W type(2.0mm): 3 x 10 ⁴ OPS	NO 3 x 10 ⁴ OPS, NC 1 x 10 ⁴ OPS (12A 250VAC, 1s on 9s off) 2.5x 10 ⁴ OPS (8A 30VDC, 1s on 9s off)
Layout (Bottom view)			
Terminal Type	PCB	PCB	PCB
Approved Standards	UL/CUL VDE CQC	UL/CUL TÜV CQC	UL/CUL TÜV CQC
File No.	E134517 40023508 CQC10002046170	E134517 R50149131	E134517 R50149131 CQC10002046173
Cross Reference	OMRON: G2R PANASONIC: JR1AF FUJITSU: FBR610 P&B: RKA/RKS	OMRON: G2R/G2RG PANASONIC: JR2/JR2A FUJITSU: FBR-F1/VSB NEC: TPP&B: RKA/RKS	
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Notes: Specification and dimensions in this catalog are subject to change without notice.

INDUSTRIAL RELAYS SELECTION CHART

Type	HF140FF-G	HF140FF-V	
Appearance			
Dimensions(L x W x H) mm	29.0x12.7x26.0	28.5 x 29 x 23	
Features	<ul style="list-style-type: none"> • 16A switching capability • 5kV dielectric strength (between coil and contacts) • 2.0mm contact gap available • Plastic sealed and flux proofed types available • Sockets available • UL insulation system: Class F 	<ul style="list-style-type: none"> • 10A switching capability • 5kV dielectric strength(between coil and contacts) • Standard: Creepage distance > 8mm • 2 poles are connected in series to achieve DC 500V • 10A DC high voltage opening and closing • Contact Gap: 3.0mm(When wired in 2-pole series) • UL insulation system: Class F available 	
Contact Ratings			
Contact Form	2A, 2C	2A	
Contact Material	AgSnO ₂	AgSnO ₂	
Max. Rated Switching Current			
Max. Switching Voltage	250VAC	500VDC	
Max. Switching Power	4000VA	5000W	
Rated Load (Resistive load)	16A 250VAC	10A 500VDC	
Coil Ratings			
Rated Voltage	3VDC to 110VDC	3VDC to 110VDC	
Nominal Operating Power	0.8W, 1.4W	0.8W, 1.4W	
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	
Dielectric Strength (Between coil and contacts)	5000VAC	5000VAC	
Ambient Temperature	-40°C to 85°C	-40°C to 85°C	
Operate / Release Time max.	20ms / 15ms	15ms / 5ms	
Mechanical Endurance min.	W type: 1 x 10 ⁵ OPS	1 x 10 ⁶ OPS	
Electrical Endurance min.	NO 3 x 10 ⁴ OPS, NC 1 x 10 ⁴ OPS (Resistive load, 1s on 9s off)	1 x 10 ⁴ OPS	
Layout (Bottom view)			
Terminal Type	PCB	PCB	
Approved Standards	UL/CUL TÜV CQC	UL/CUL TÜV CQC	
File No.	E134517 R50149131 CQC10002046173	E133481 R50507878 CQC21002290220	
Cross Reference		OMRON: G2RG-X	
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Notes: Specification and dimensions in this catalog are subject to change without notice.

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PLUG-IN MODULE ❖❖❖

INDUSTRIAL RELAYS ❖❖❖

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Features

- Forcibly guided contacts according to IEC 61810-3
- 8A switching capability
- DIN rail , PCB mounting type available
- Extremely narrow(only15.8mm)
- Products with finger protection are available
- Ensure secure retention and easy ejection of relays, Ensure relays are securely mounted on or easily removed from sockets.

RoHS compliant

Module

Protect signal input devices, prevent misoperation of relays. Power indicator, fly-wheel diode, induced current absorption, overvoltage protection.

Relay

Force-guided relays;
Maximum 8A switching capability;
High insulation capability (1.2 / 50μs):
10kV surge voltage between coil & contacts
and 6kV between contact sets;
DC coil, 2 poles;
Forcibly guided contacts according to IEC 61810-3.

Retainer

Prevent relay from loosening or falling out in vibration environment;
Quickly remove the relay.

Marker

Mark or post signs.

Wiring hole

For wire connection, suit for both rigid and flexible wire compression terminals.

Socket marking

Marked with main electrical performance, load range, applicable tools, matching relays.

Matching socket

DIN rail mount or screw (Ø3.5) mount.



File No.:
E253370(Socket) , E133481(Relay)



File No.:
B0532860041(Relay)



HONGFA RELAY

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

2024 Rev. 1.00

CONTACT DATA

Contact arrangement	HD1	HD2	2C
Contact rating (Res. load)	A type Force guided		B type Force guided
Max. switching voltage	400VAC/30VDC		
Max. switching current	8A		
Max. switching power	1500VA/180W		

CHARACTERISTICS

Insulation resistance		1000MΩ (500VAC)
Dielectric strength (RMS)	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	3000VAC 1min
Operate time (at nomi. volt.)		15ms max. (DC type)
Release time (at nomi. volt.)		10ms max. (DC type)
Humidity (RH)		5% to 85%RH
Storage temperature		-40°C to 85°C
Overvoltage category		III
Conductor cross-section		0.5mm ² to 2.5mm ²

COIL DATA

23°C

Nominal Voltage VDC	Pick-up ¹⁾ Voltage VDC max.	Drop-out ¹⁾ Voltage VDC min	Max. ²⁾ Allowable Voltage VDC	Coil voltage Ω
5	3.80	0.5	7.5	35.7 x (1±10%)
6	4.50	0.6	9	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 ⁽³⁾	36.0	4.8	72	3291 x (1±12%)
60 ⁽³⁾	45.0	6.0	90	5142 x (1±12%)
80 ⁽³⁾	64.0	8.0	120	9143 x (1±12%)
110 ⁽³⁾	82.5	11.0	165	17285 x (1±12%)

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).

ORDERING INFORMATION

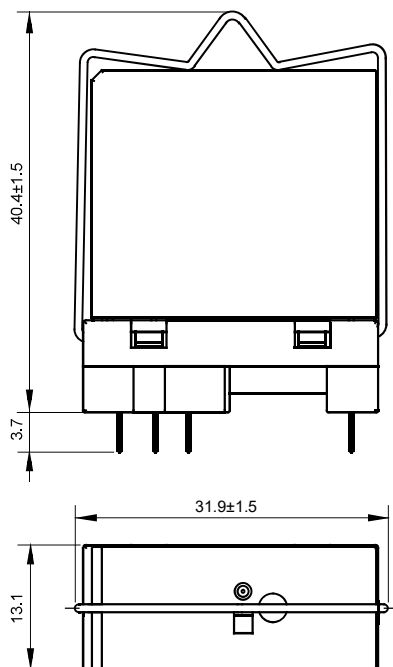
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Relay module	HFA2: Relay type AS: module
Relay coil voltage	5, 6, 9, 12, 15, 18, 21, 24, 36, 40, 48, 60, 80, 110VDC
Contact arrangement	HD1: 1 Form A + 1 Form B (1 type) HD2: 1 Form A + 1 Form B (2 type) 2Z: 2 Form C
Construction	S: Plastic sealed Nil: Fluxproofed
Contact material	T: AgSnO ₂
UL insulation system	F: Class F Nil: Class B
Contact plating	G: Gold plate (Min. contact load 10mA 5VDC) Nil: No gold plated
Matching socket	A1: PCB terminal C2, C3: Screw terminal C10: Push in terminal
Matching retaining clip	H6 for socket C2, C10 H11 for socket A1
Special code	XXX: The customer special requirement Nil: Standard type

OUTLINE DIMENSIONS, WIRING DIAGRAM

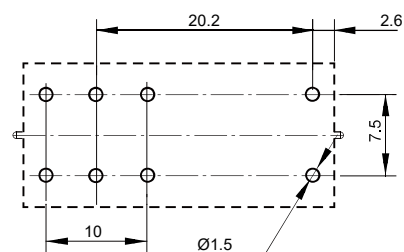
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Outline Dimensions

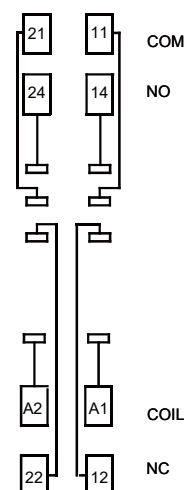
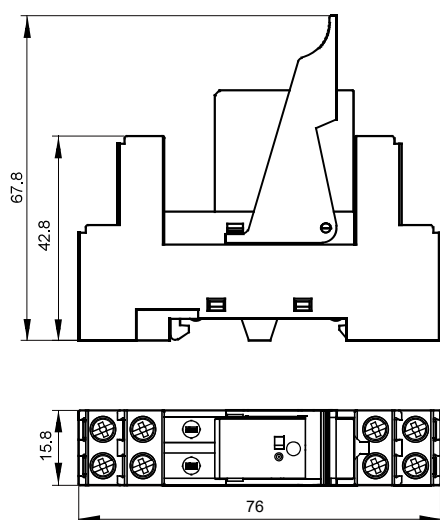
HFA2-AS/□-□□□□□-A1-H11



Wiring Diagram(Bottom view)



HFA2-AS/□-□□□□□-C2(767)-H6



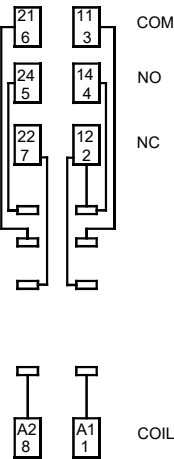
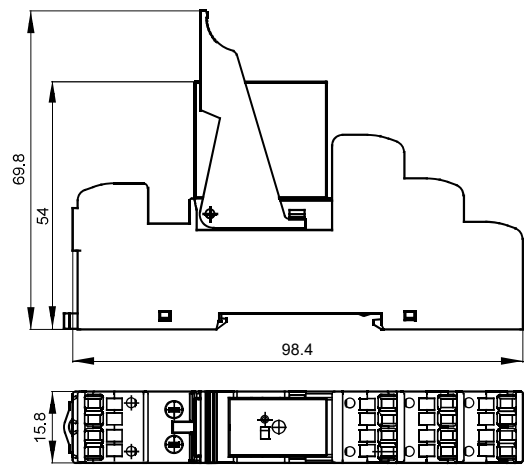
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

Outline Dimensions

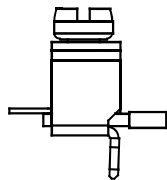
Wiring Diagram(Top view)

HFA2-AS/□-□□□□□-C10-H6



COMPONENT ORDERING INFORMATION

Screw terminal



P/N	module type	relay type	socket type	retainer type	Min. packing quantity	unit weight
—	HFA2-AS/24-2ZSTFG-C2(767)-H6	HFA2/24-2ZSTFG	14FF-2Z-C2(767)	14FF-H6	10pcs	Approx. 61.2g

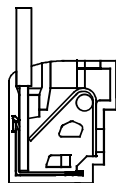
Note: Pleasecontact us for any information.

PCB terminal

P/N	module type	relay type	socket type	retainer type	Min. packing quantity	unit weight
—	HFA2-AS/24-2ZSTFG-A1-H11	HFA2/24-2ZSTFG	14FF-2Z-A1	14FF-H11	10pcs	Approx. 22.8g

Note: Pleasecontact us for any information.

Push in terminal



P/N	module type	relay type	socket type	retainer type	Min. packing quantity	unit weight
—	HFA2-AS/24-2ZSTFG-C10-H6	HFA2/24-2ZSTFG	14FF-2Z-C10	14FF-H6	10pcs	Approx. 56.4g

Note: Pleasecontact us for any information.

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.
8. The main external dimension, when the external dimension > 50mm, the tolerance is $\pm 1\text{mm}$; When the $20\text{mm} < \text{dimensions}$ are between $\leq 50\text{mm}$, the tolerance is $\pm 0.5\text{mm}$; When the overall dimension of $5\text{mm} < \text{between}$ $\leq 20\text{mm}$, the tolerance is $\pm 0.4\text{mm}$, and when the external dimension is $\leq 5\text{mm}$, the tolerance is $\pm 0.3\text{mm}$;
9. For rail installation, it is recommended to use DIN standard $35 \times 7.5 \times 1$, $35 \times 15 \times 1$ standard rails.

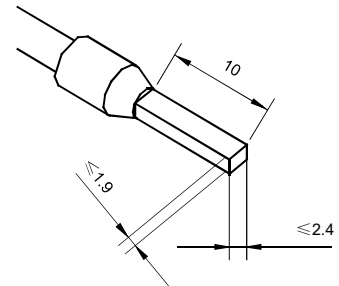
Relay module of screw terminal

Maximum torque 0.8N.m, The type of the screwdriver head is PH1.

Relay module of push interterminal

Conductor cross-section

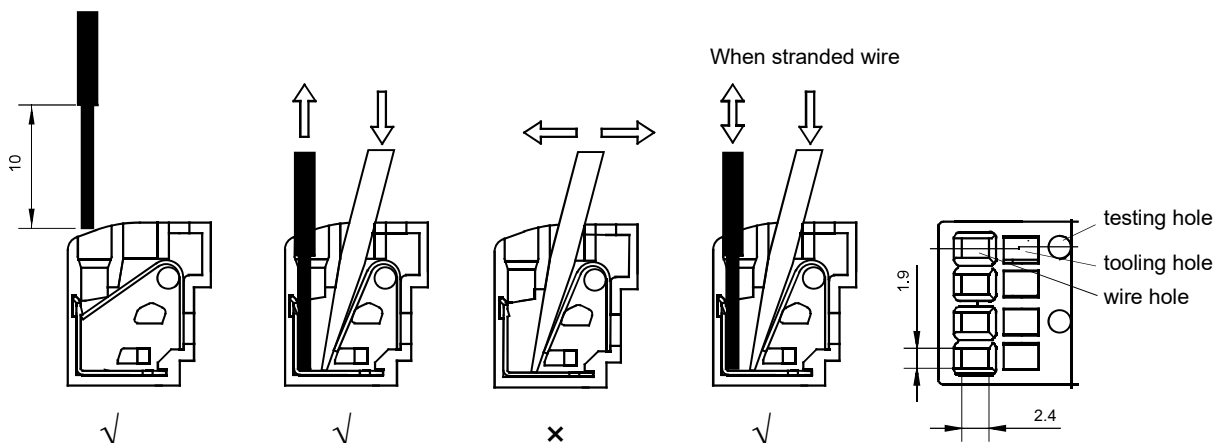
Solid wire	$1 \times 0.5/0.75/1.0/1.5/2.5 \text{ mm}^2$	
	$2 \times 0.5/0.75/1.0/1.5 \text{ mm}^2$	
Stranded wire	Stranded wires without ferrule	$1 \times 0.5/0.75/1.0/1.5/2.5 \text{ mm}^2$
		$2 \times 0.5/0.75/1.0/1.5 \text{ mm}^2$
	Stranded wires with ferrule	$1 \times 0.5/0.75/1.0/1.5 \text{ mm}^2$
		$2 \times 0.5/0.75/1.0 \text{ mm}^2$



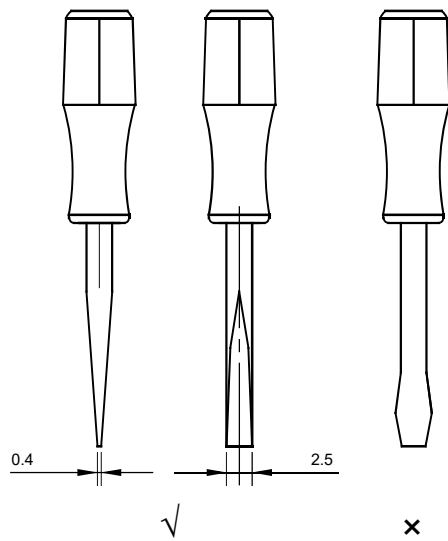
About push in socket

- Do not insert wires into the tooling hole.
- When inserting the screwdriver into the hole, please insert it at an angle.
- Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage to the socket.
- Do not forcibly bend or pull on the wire. Otherwise it may result in a broken wire.
- Do not insert more than one wire into one wiring hole.
- To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4. The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Range of wire	Stripped length min
0.5 to 2.5 mm^2 / AWG20 to 14	10mm



PRECAUTIONS FOR USE



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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HFA2

FORCE-GUIDED RELAY



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 ¹⁾	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	6A 250VAC / 30VDC
Min.contact load ²⁾	Gold plated:5VDC 10mA No gold plated:5VDC 100mA
Max. switching voltage	400VAC / 30VDC
Max. switching current	8A
Max. switching power	1500VA / 180W
Mechanical endurance ³⁾	1 x 10 ⁷ OPS
Electrical endurance ⁴⁾	1 x 10 ⁵ OPS (1NO: 6A 250VAC/30VDC, Resistive load, at 70°C, 1s on 9s off) 5 x 10 ⁴ OPS (1NC: 6A 250VAC/30VDC, Resistive load, at 70°C, 1s on 9s off)

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.

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

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC Max. ¹⁾	Drop-out Voltage VDC Min. ¹⁾	Max. Voltage VDC ²⁾	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	36.0	4.8	72	3291 x (1±15%)
60	45.0	6.0	90	5142 x (1±15%)
80	64.0	8.0	120	9143 x (1±15%)
110	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.



HONGFA RELAY

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

2024 Rev. 1.00

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 max. (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 ² NC:10Hz to 55Hz 0.4mm DA
Shock resistance	Functional	NO:98m/s ² NC: 49m/s ²
	Destructive	980m/s ²
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
------------	---------------

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.

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	2Z: 2 Form C HD1: 1NO+1NC (Type 1) HD2: 1NO+1NC (Type 2)							
Construction ¹⁾	S: Plastic sealed Nil: Flux proofed							
Contact material	T: AgSnO ₂							
Insulation class	F: Class F Nil: Class B							
Contact plating	G: Gold plated Nil: No gold plated							
Special code ³⁾	XXX: Customer special requirement Nil: Standard							

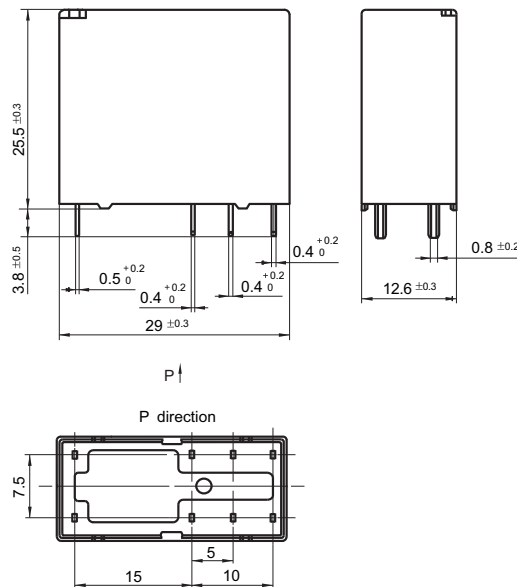
- Notes:** 1) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.
2) Avoid contamination with organic solvents for the case using PC materials, otherwise chemical reactions may occur which may cause the shell to swell or crack
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

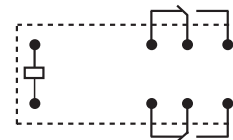
Unit: mm

HFA2/□□-2Z□T□(□□□)

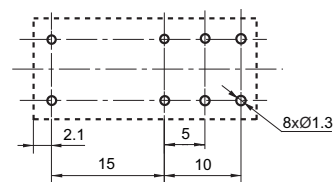
Outline Dimensions



Wiring Diagram



PCB Layout
(Bottom view)

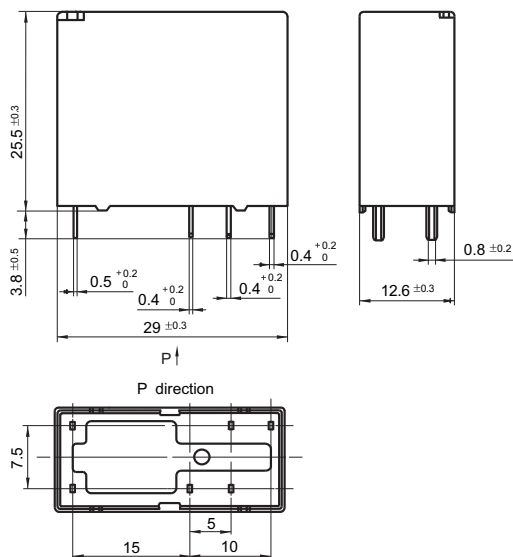


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

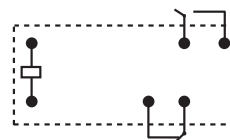
Unit: mm

HFA2/□□-HD1□T□(□□□)

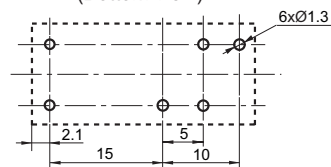
Outline Dimensions



Wiring Diagram

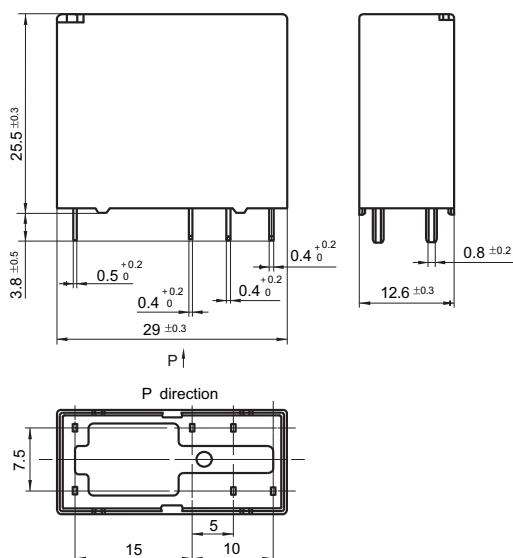


PCB Layout
(Bottom view)

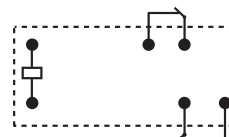


HFA2/□□-HD2□T□(□□□)

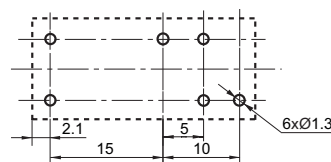
Outline Dimensions



Wiring Diagram



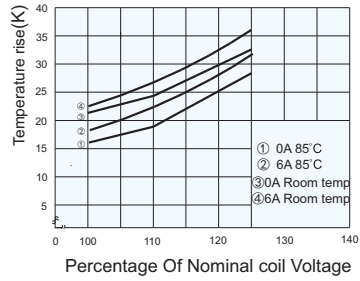
PCB Layout
(Bottom view)



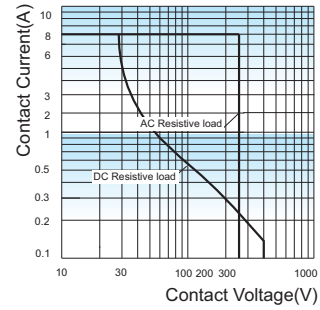
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

CHARACTERISTIC CURVES

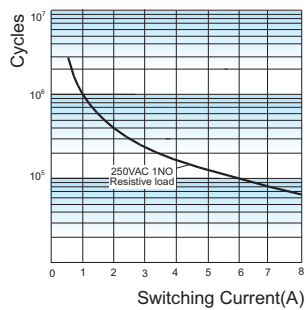
COIL TEMPERATURE RISE



LOAD BREAKING CAPACITY

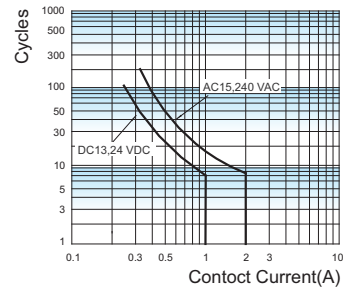


ELECTRICAL ENDURANCE



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


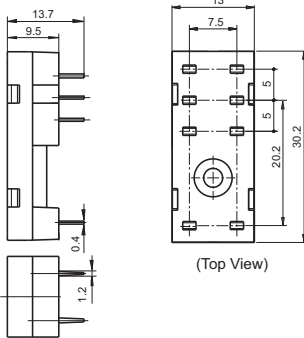
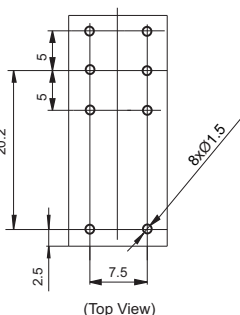

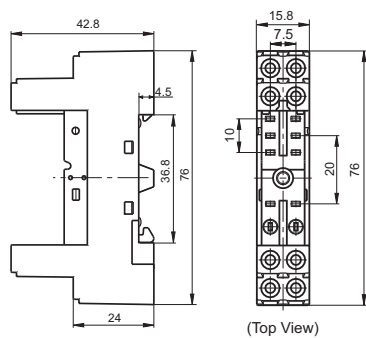
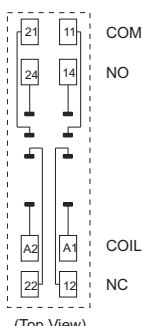
- the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength S.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40℃ to 70℃	5000VAC	—	—
14FF-2Z-C2	250VAC	10A	-40℃ to 70℃	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>

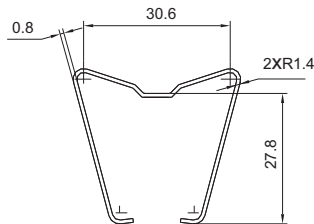
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

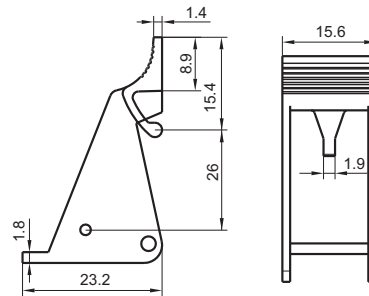
Unit: mm

Retainer

14FF-H3 (Metallic retainer)

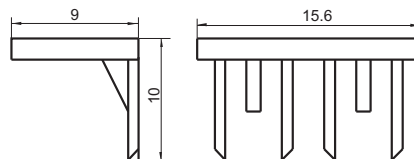


14FF-H6 (Plastic retainer)



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

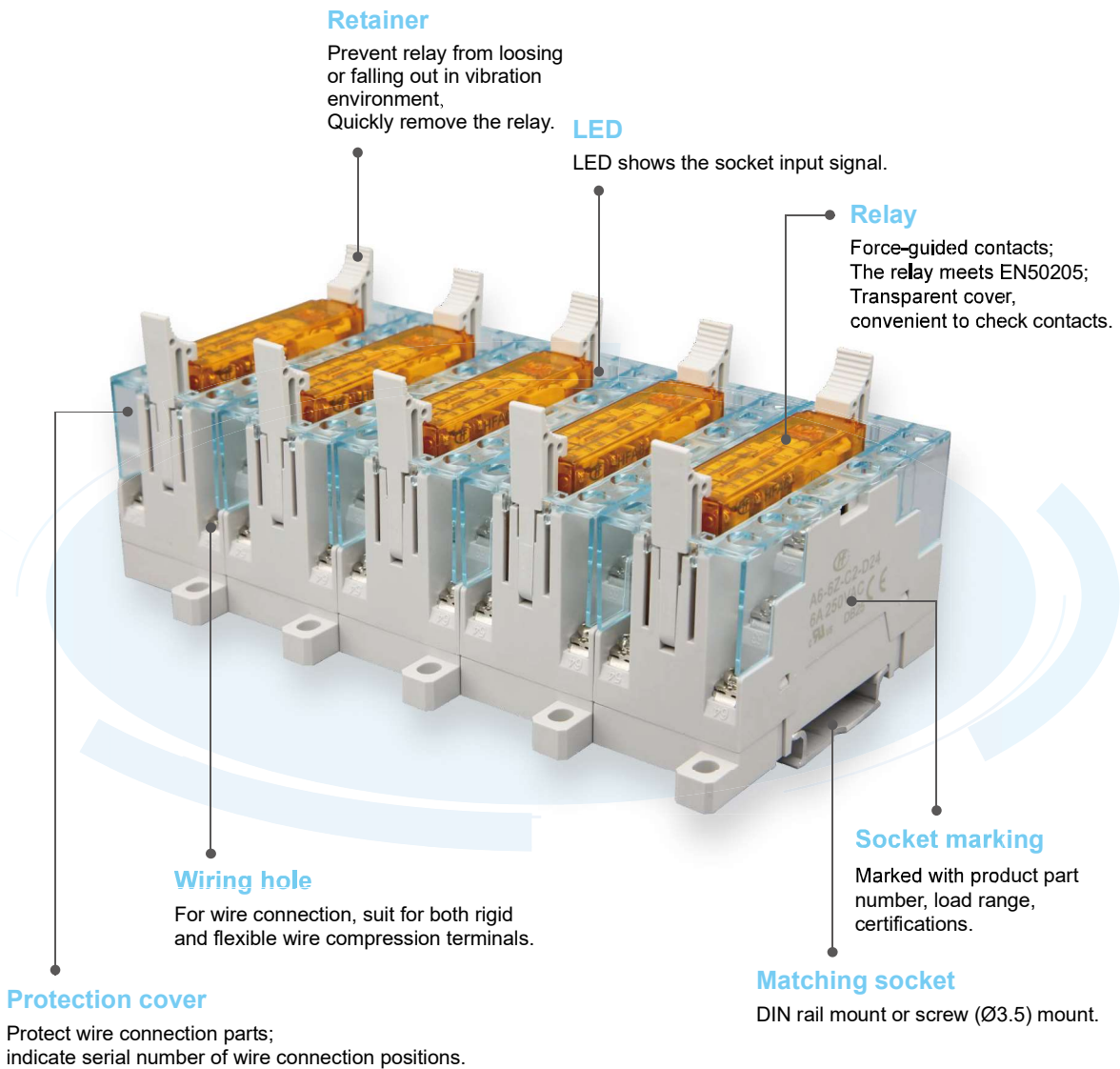
The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the 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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Features

- Multi contact forms are in option: 2 Form A+2 Form B, 3 Form A+1 Form B, 3 Form A+3 Form B, 4 Form A+2 Form B, 5 Form A+1 Form B
- Forcibly guided contacts according to EN50205
- 2500VAC insulation(I/O), 1000MΩ insulation resistance
- Gasket screw, DIN rail mounting
- 6A contact switching ability
- UL insulation system: Class F available

RoHS compliant



File No.:
E253370(Relay)



File No.:
40034342(Relay)



HONGFA RELAY

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

2024 Rev. 1.00

HFA4-AS

RELAY MODULE

CONTACT DATA

Contact arrangement	2H2D, 3H1D
Structure(EN50205)	A type Force guided
Contact rating(Res. load)	6A 250VAC/30VDC
Max. switching voltage	250VAC/30VDC
Max. switching current	6A

COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min	Max. Allowable Voltage VDC	Coil voltage Ω
6	4.5	0.6	7.8	100×(1±10%)
9	6.8	0.9	11.7	225×(1±10%)
12	9.0	1.2	15.6	400×(1±10%)
18	13.5	1.8	23.4	900×(1±10%)
24	18.0	2.4	31.2	1600×(1±10%)
36	27.0	3.6	46.8	3600×(1±10%)
48	36.0	4.8	62.4	6400×(1±10%)

CHARACTERISTICS

Insulation resistance	Contact	1000M Ω (500VAC)
resistance		130m Ω max.(1A 6VDC)
Dielectric strength(RMS)	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	2500VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		20ms max.
Vibration resistance		10 Hz to 55 Hz, DA 1.5mm
Shock resistance		98 m/s ² (10 g), 6 ms
Humidity (RH)		5% to 85% RH
Storage temperature		-25°C to 55°C
Coil Terminal		Gasket screw terminal
Installation Method		DIN rail or screw
Unit weight		Approx. 69g

ORDERING INFORMATION

	HFA4-AS	/24	-2H2D	T	G	F	(XXX)	-C2	-D24
Relay module	HFA4: Relay type AS: module								
Relay coil voltage	6, 9, 12, 18, 24, 36, 48 VDC								
Contact arrangement	2H2D: 2 Form A +2 Form B 3H1D: 3 Form A +1 Form B								
Contact material	T: AgSnO ₂								
Contact plating	G: Gold plated								
UL insulation system	F: Class F Nil: Class B								
Special code	XXX: The customer special requirement Nil: Standard type								
Terminal and Installation method	C2: Gasket screw,DIN rail mounting								
Input voltage	D24: applicable rated relay coil voltage: 6,9,12,18,24 VDC D60: applicable rated relay coil voltage: 36,48,60 VDC A110: applicable rated relay coil voltage: 48 VDC								

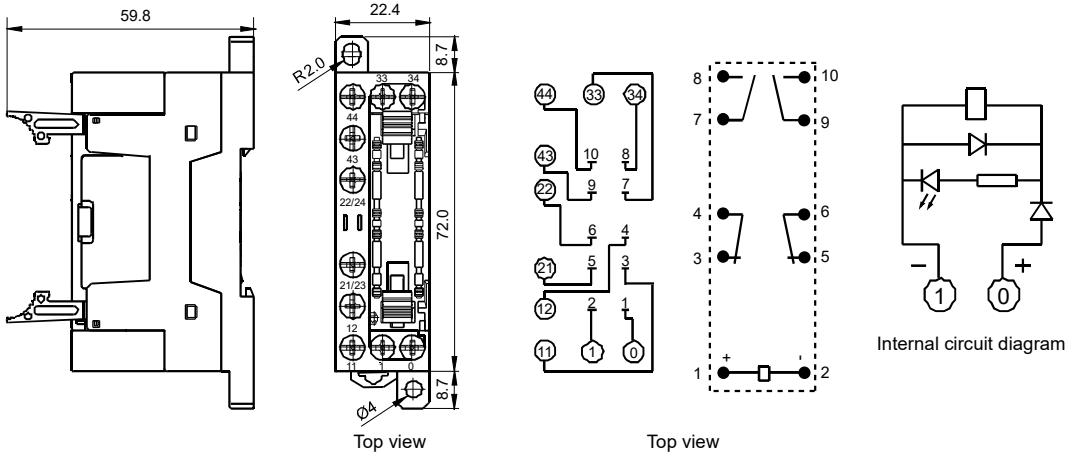
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

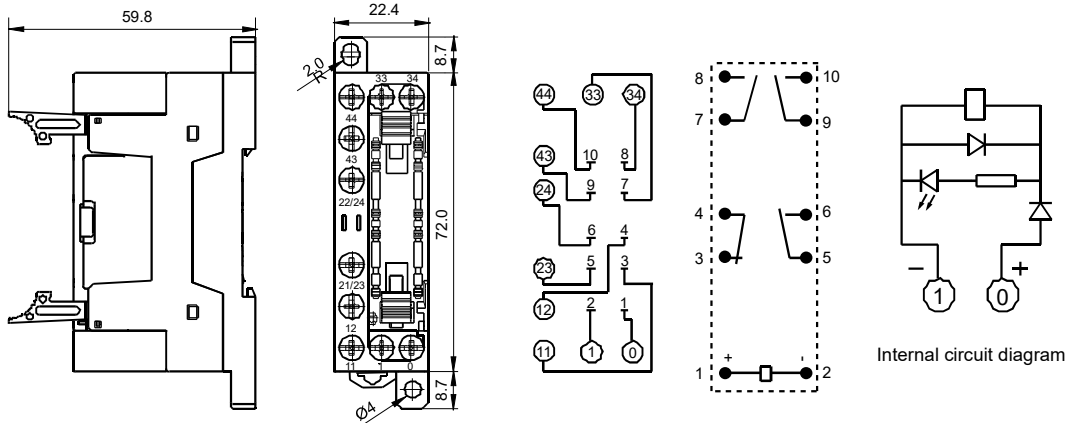
Outline Dimensions

Wiring Diagram

HFA4-AS/24-2H2DTGF(XXX)-C2-D24

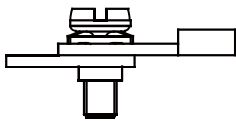


HFA4-AS/24-3H1DTGF(XXX)-C2-D24



COMPONENT ORDERING INFORMATION

Gasket screw terminal



P/N	module type	relay type	socket type
—	HFA4-AS/24-2H2DTGF-C2-D24	HFA4/24-2H2DTGF	A4-4Z-C2-D24
—	HFA4-AS/24-3H1DTGF-C2-D24	HFA4/24-3H1DTGF	

Note: Please contact us for any information.

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.
8. The main external dimension, when the external dimension > 50mm, the tolerance is $\pm 1\text{mm}$; When the $20\text{mm} < \text{dimensions}$ are between $50\text{mm} \leq$, the tolerance is $\pm 0.5\text{mm}$; When the overall dimension of $5\text{mm} < \text{between} \leq 20\text{mm}$, the tolerance is $\pm 0.4\text{mm}$, and when the external dimension is $\leq 5\text{mm}$, the tolerance is $\pm 0.3\text{mm}$;
9. For rail installation, it is recommended to use DIN standard $35 \times 7.5 \times 1$, $35 \times 15 \times 1$ standard rails.

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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HFA4

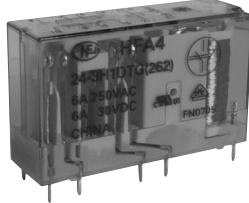
FORCE-GUIDED RELAY



File No.:E134517



File No.:40034342



Features

- Multi contact arrangements: 2NO+2NC, 3NO+1NC
- Forcibly guided contacts according to IEC 61810-3
- 6A switching capability
- Low input power: 360mW
- High insulation capability: 10kV surge voltage between input and output
- UL insulation system: Class F available

RoHS compliant

CONTACT DATA

Contact arrangement	2NO+2NC (2H2D type) 3NO+1NC (3H1D type)
Forcibly guided contacts Type (according to IEC61810-3)	Type A
Contact resistance ¹⁾	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	6A 250VAC / 30VDC
Min.contact load ²⁾	5VDC 10mA
Max. switching voltage	400VAC / 30VDC
Max. switching current	6A
Max. switching power	1500VA/180W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance ¹⁾	1 x 10 ⁵ OPS (1NO: 6A 30VDC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (1NO: 6A 250VAC, Resistive load, Room temp., 1s on 9s off)

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

Coil power	Approx. 360mW
------------	---------------

COIL DATA at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC ²⁾	Coil resistance Ω
6	4.5	0.6	7.8	100 x (1±10%)
9	6.8	0.9	11.7	225 x (1±10%)
12	9.0	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
36	27.0	3.6	46.8	3600 x (1±10%)
48	36.0	4.8	62.4	6400 x (1±10%)

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.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1500VAC 1 min
	Between contact sets	2500VAC 1 min (7-8/9-10) 4000VAC 1 min (Other)
Surge voltage	Between coil & contacts	10kV (1.2 / 50μs)
	Between contact sets	5kV (1.2 / 50μs)
Operate time (at rated voltage)		20ms max.
Release time (at rated voltage)		20ms 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/NC:10Hz to 55Hz, 1.5mm DA NO:55Hz to 200Hz, 98m/s ² NC:55Hz to 200Hz, 49m/s ²
Shock resistance	Functional	100m/s ²
	Destructive	980m/s ²
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		Flux proofed

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

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

SAFETY APPROVAL RATINGS

UL/CUL	6A 277VAC / 250VAC / 125VAC at 85°C 6A 30VDC at 85°C Pilot duty: 2A 240VAC at room temp.
VDE	6A 250VAC at 85°C 6A 30VDC at 85°C AC-15: 1.5A 240VAC at room temp. AC-15: 2A 240VAC at room temp.

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

2) 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

2024 Rev. 1.00

ORDERING INFORMATION

Type	HFA4 / 24 -2H2D T G F (XXX)
Coil voltage	6, 9, 12, 18, 24, 36, 48VDC
Contact arrangement	2H2D: 2NO+2NC 3H1D: 3NO+1NC
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated
Insulation class	F: Class F Nil: Class B
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

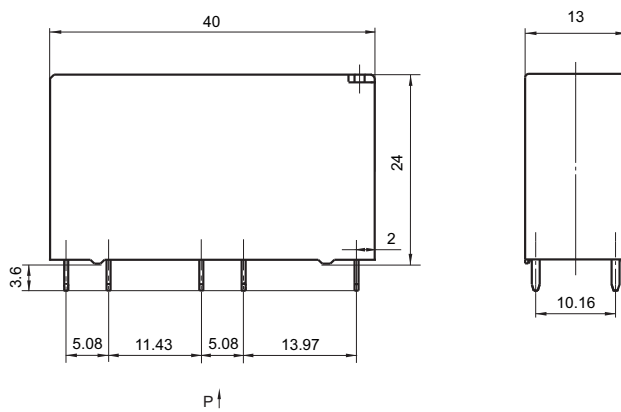
Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.
2) This product is a soldering flux type products, when the product into the PCB plate welding does not allow for cleaning.
3) Avoid contamination with organic solvents for the case using PC 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.(310)Means Construction meets the requirement of IEC61810-1 RT III.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

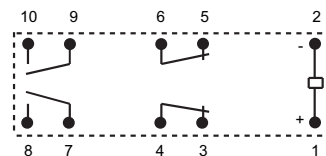
Unit: mm

HFA4/□□-2H2DTG(□□□)

Outline Dimensions



Wiring Diagram
(Bottom view)



PCB Layout
(Bottom view)

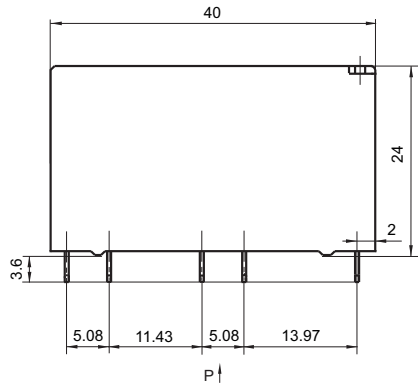


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

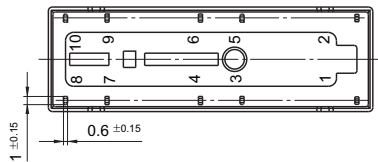
Unit: mm

HFA4/□□-3H1DTG(□□□)

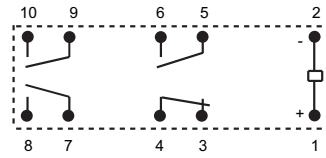
Outline Dimensions



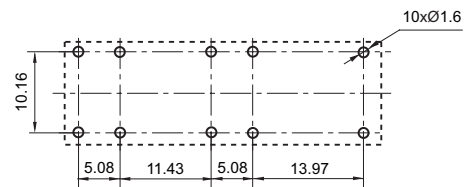
P direction



Wiring Diagram
(Bottom view)



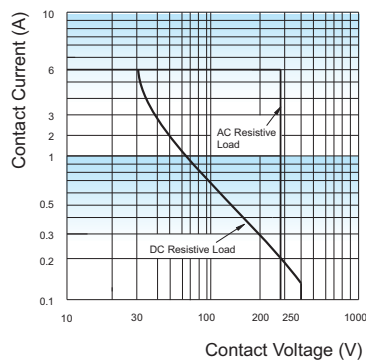
PCB Layout
(Bottom view)



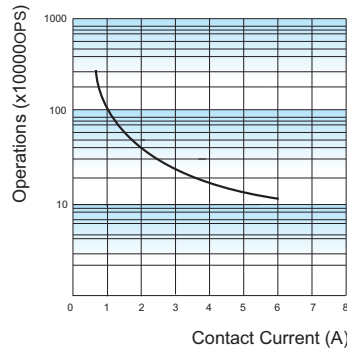
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE

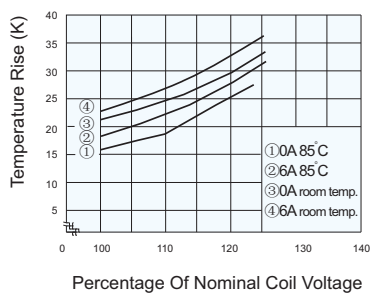


Test conditions:

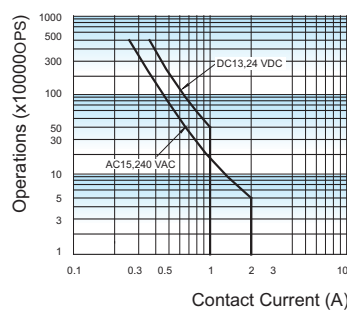
1NO, Resistive load, 250VAC,
Room temp., 1s on 9s off.

The data shown above are typical values.

COIL TEMPERATURE RISE



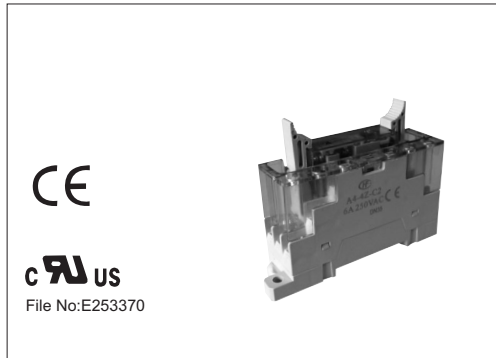
INDUCTIVE DURABILITY CURVE



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 dielectric strength (between coil and contacts) can reach 2500VAC and the insulation resistance is 1000 MΩ
- DIN rail or Screw mounting
- With diode to protect the coil and to Suppress reverse overvoltage
- With finger protection device
- Built-in retainer and extractor

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Applicable coil voltage of relay	Ambient Temperature	Torque*	Max.wire cross section mm ²	Wire Strip Length	Unit weight	Notes
A4-4Z-C2-D24	250VAC	6A	(6 to 24)VDC	-25 °C to 55°C	1.0N·m	2 x1.5	7mm	Approx. 49g	With LED
A4-4Z-C2-D60	250VAC	6A	(36 to 60)VDC	-25 °C to 55°C	1.0N·m	2 x1.5	7mm	Approx. 49g	With LED
A4-4Z-C2-A110	250VAC	6A	48VDC	-25 °C to 55°C	1.0N·m	2 x1.5	7mm	Approx. 49g	With LED

Notes: *Refers to wire-assembled torque.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND CIRCUIT DIAGRAM

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Circuit Diagram
<p>Screw Terminal, DIN rail mounting, With finger protection device</p>	<p>(Top View)</p>	<p>(Top View)</p>	<p>With LED</p>

Notes: 1. Main outline dimension, outline dimension > 50mm, tolerance should be $\pm 1\text{mm}$; 20mm < outline dimension $\leq 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; 5mm < outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.4\text{mm}$; outline dimension $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.
2. DIN rail mounting: recommend to use standard rail 35×7.5×1mm, 35×15×1mm.

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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CONTACT DATA

Contact arrangement	3H3D, 4H2D, 5H1D
Structure(EN50205)	A type Force guided
Contact rating(Res. load)	6A 250VAC/30VDC
Max. switching voltage	250VAC/30VDC
Max. switching current	6A

COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min	Max. Allowable Voltage VDC	Coil voltage Ω
6	4.5	0.6	6.6	72×(1±10%)
9	6.8	0.9	9.9	162×(1±10%)
12	9.0	1.2	13.2	288×(1±10%)
18	13.5	1.8	21.78	6448×(1±10%)
24	18.0	2.4	26.4	1152×(1±10%)
36	27.0	3.6	39.6	2592×(1±10%)
48	36.0	4.8	52.8	4608×(1±10%)

CHARACTERISTICS

Insulation resistance		1000MΩ (500VAC)
Contact resistance		130mΩ max. (1A 6VDC)
Dielectric strength (RMS)	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	2500VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		20ms max.
Vibration resistance		10 Hz to 55 Hz, DA 1.5mm
Shock resistance		98 m/s ² (10 g), 6 ms
Humidity (RH)		5% to 85% RH
Storage temperature		-25°C to 55°C
Coil Terminal		Gasket screw terminal
Installation Method		DIN rail or screw
Unit weight		Approx. 69g

ORDERING INFORMATION

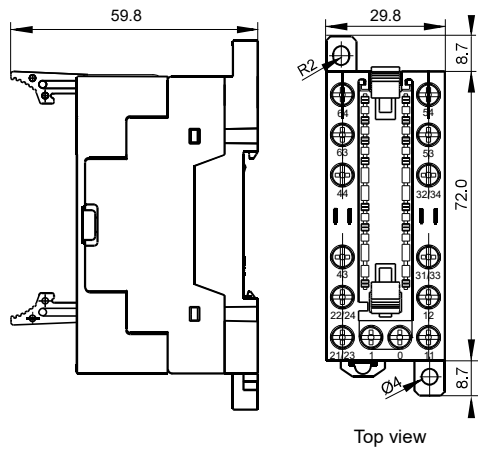
	HFA6-AS	/24	-3H3D	T	G	F	(XXX)	-C2	-D24
Relay module	HFA6: Relay type AS: module								
Relay coil voltage	6, 9, 12, 18, 24, 36, 48 VDC								
Contact arrangement	3H3D: 3 Form A +3 Form B 4H2D: 4 Form A +2 Form B 5H1D: 5 Form A +1 Form B								
Contact material	T: AgSnO ₂								
Contact plating	G: Gold plated								
UL insulation system	F: Class F Nil: Class B								
Special code	XXX: The customer special requirement Nil: Standard type								
Terminal and Installation method	C2: Gasket screw,DIN rail mounting								
Input voltage	D24: applicable rated relay coil voltage: 6,9,12,18,24 VDC D60: applicable rated relay coil voltage: 36,48,60 VDC								

OUTLINE DIMENSIONS, WIRING DIAGRAM

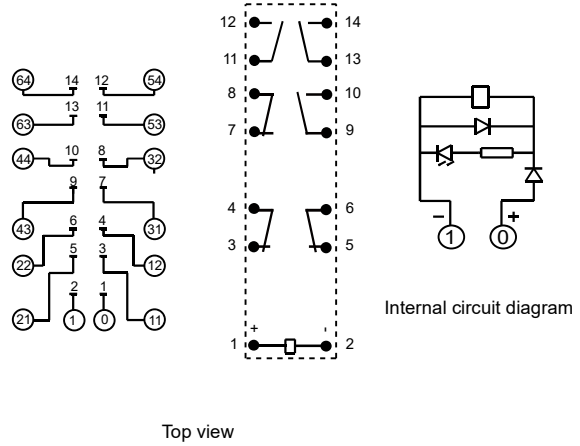
Unit: mm

Outline Dimensions

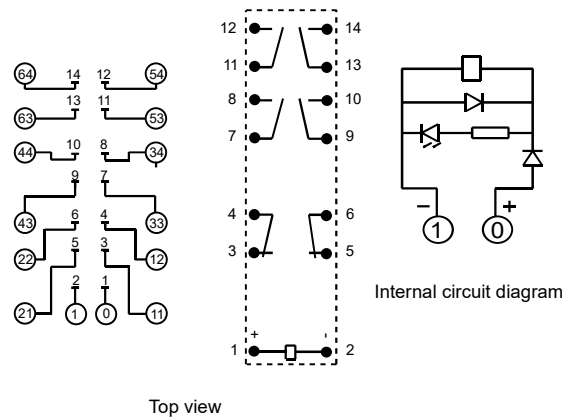
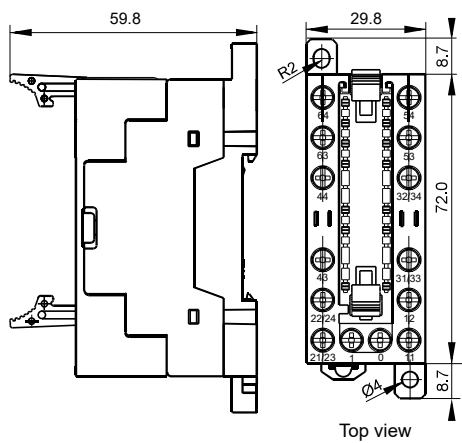
HFA6-AS/24-3H3DTGF(XXX)-C2-D24



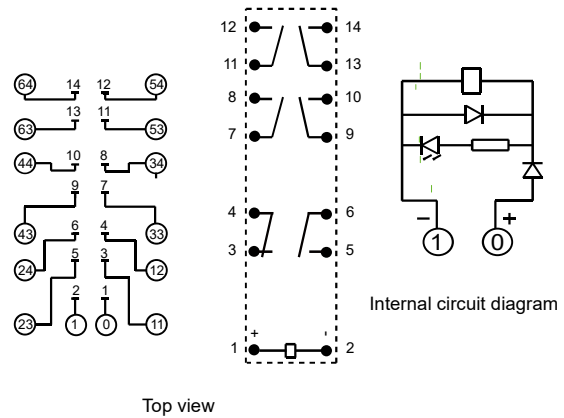
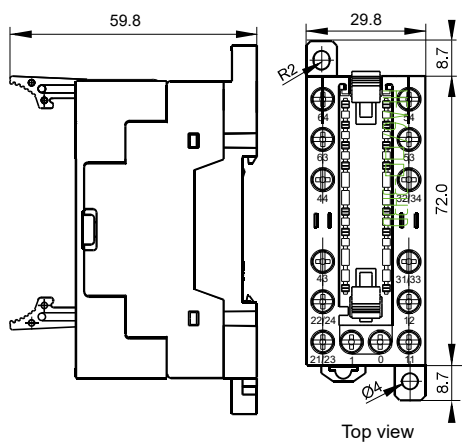
Wiring Diagram



HFA6-AS/24-4H2DTGF(XXX)-C2-D24

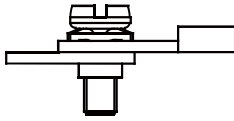


HFA6-AS/24-5H1DTGF(XXX)-C2-D24



COMPONENT ORDERING INFORMATION

Gasket screw terminal



P/N	module type	relay type	socket type
—	HFA6-AS/24-3H3DTGF-C2-D24	HFA6/24-3H3DTGF	A6-6Z-C2-D24
—	HFA6-AS/24-4H2DTGF-C2-D24	HFA6/24-4H2DTGF	
—	HFA6-AS/24-5H1DTGF-C2-D24	HFA6/24-5H1DTGF	

Note: Please contact us for any information.

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.
8. The main external dimension, when the external dimension > 50mm, the tolerance is $\pm 1\text{mm}$; When the $20\text{mm} < \text{dimensions}$ are between $50\text{mm} \leq$, the tolerance is $\pm 0.5\text{mm}$; When the overall dimension of $5\text{mm} < \text{between} \leq 20\text{mm}$, the tolerance is $\pm 0.4\text{mm}$, and when the external dimension is $\leq 5\text{mm}$, the tolerance is $\pm 0.3\text{mm}$;
9. For rail installation, it is recommended to use DIN standard $35 \times 7.5 \times 1$, $35 \times 15 \times 1$ standard rails.

Disclaimer

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HFA6

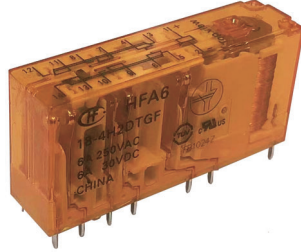
FORCE-GUIDED RELAY

CE US

File No.:E134517



File No.:B 053286 0043



Features

- Multi contact arrangements: 5NO+1NC, 4NO+2NC, 3NO+3NC
- Forcibly guided contacts according to IEC 61810-3
- 6A switching capability
- Low input power: 500mW
- High insulation capability: 10kV surge voltage between input and output
- UL insulation system: Class F available

RoHS compliant

CONTACT DATA

Contact arrangement	5NO+1NC (5H1D type) 4NO+2NC (4H2D type) 3NO+3NC (3H3D type)
Forcibly guided contacts Type(according to IEC61810-3)	Type A
Contact resistance ¹⁾	100mΩ (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	6A 250VAC / 30VDC
Min.contact load ²⁾	5VDC 10mA
Max. switching voltage	400VAC / 30VDC
Max. switching current	6A
Max. switching power	1500VA/180W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (1NO: 6A 30VDC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (1NO: 6A 250VAC, Resistive load, Room temp., 1s on 9s off)

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

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC ²⁾	Coil resistance Ω
6	4.5	0.6	6.6	72 x (1±10%)
9	6.8	0.9	9.9	162 x (1±10%)
12	9.0	1.2	13.2	288 x (1±10%)
18	13.5	1.8	21.78	648 x (1±10%)
24	18.0	2.4	26.4	1152 x (1±10%)
36	27.0	3.6	39.6	2592 x (1±10%)
48	36.0	4.8	52.8	4608 x (1±10%)

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.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1500VAC 1 min
	Between contact sets	2500VAC 1 min (11-12/13-14) 4000VAC 1 min (Other)
Surge voltage	Between coil & contacts	10kV (1.2 / 50μs)
	Between contact sets	5kV (1.2 / 50μs)
Operate time (at rated voltage)		20ms max.
Release time (at rated voltage)		20ms max.
Temperature rise (at rated voltage)		≤70K (Coil driving voltage: 1.1 times Un, Contact current -carrying: rated current, at 85 °C)
Vibration resistance		NO/NC:10Hz to 55Hz 1.5mm DA NO:55Hz to 200Hz, 98m/s ² NC:55Hz to 200Hz, 49m/s ²
Shock resistance	Functional	100m/s ²
	Destructive	980m/s ²
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. 23g
Construction		Flux proofed

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

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

COIL

Coil power	Approx. 500mW
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SAFETY APPROVAL RATINGS

UL/CUL	6A 277VAC / 250VAC / 125VAC at 85°C 6A 30VDC at 85°C Pilot duty: 1.5A 240VAC 3A 120VAC
TÜV	6A 277VAC / 30VDC 1.5A /2A 240VAC(AC-15)

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

2) 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

2024 Rev. 1.00

ORDERING INFORMATION

Type	HFA6 / 24 -5H1D T G F (XXX)
Coil voltage	6, 9, 12, 18, 24, 36, 48VDC
Contact arrangement	5H1D: 5NO+1NC 3H3D: 3NO+3NC 4H2D: 4NO+2NC
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated
Insulation class	F: Class F Nil: Class B
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

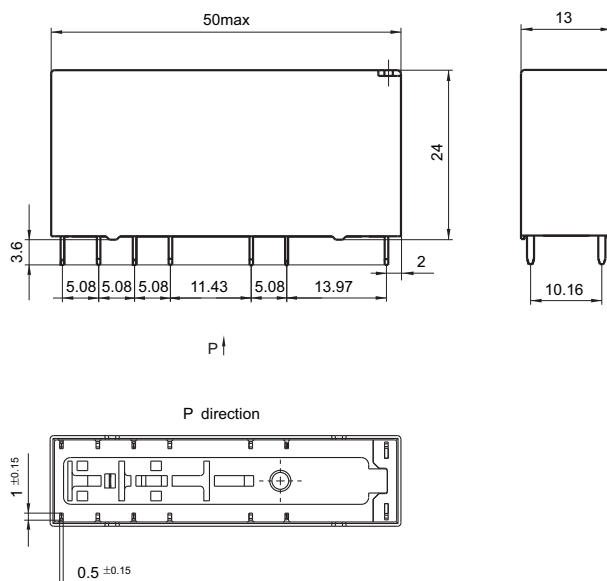
Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) Avoid contamination with organic solvents 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

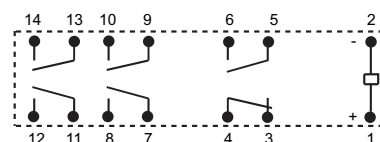
Unit: mm

HFA6/□□-5H1DT□ (□□□)

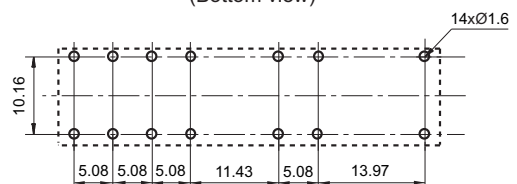
Outline Dimensions



Wiring Diagram
(Bottom view)



PCB Layout
(Bottom view)

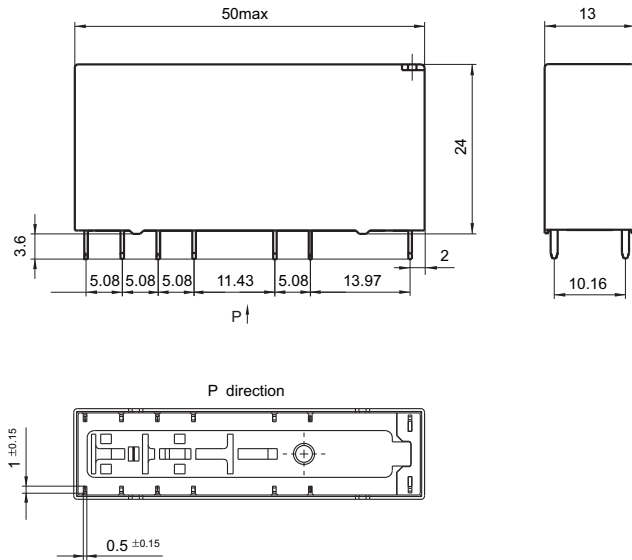


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

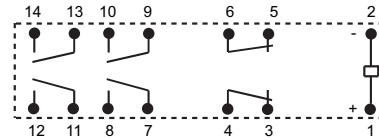
HFA6/□□-4H2DT□ (□□□)

Outline Dimensions



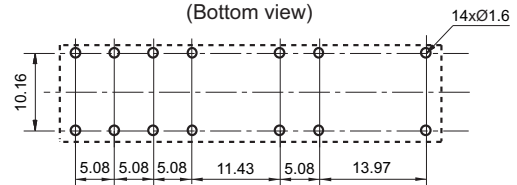
Wiring Diagram

(Bottom view)



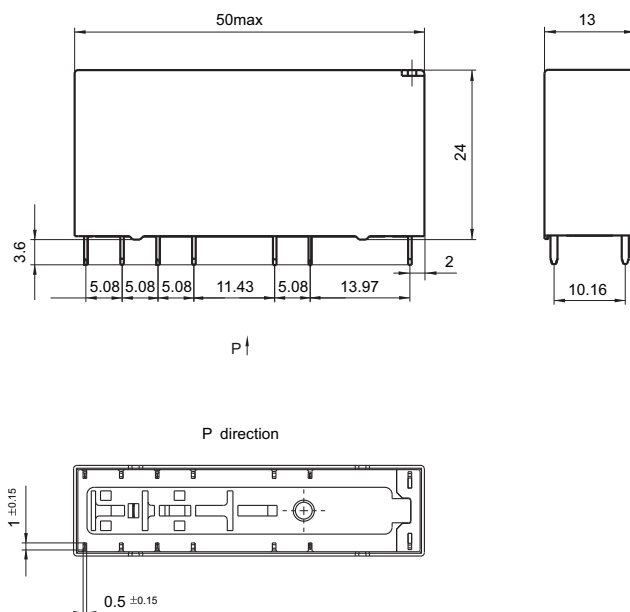
PCB Layout

(Bottom view)



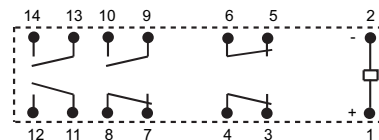
HFA6/□□-3H3DT□ (□□□)

Outline Dimensions



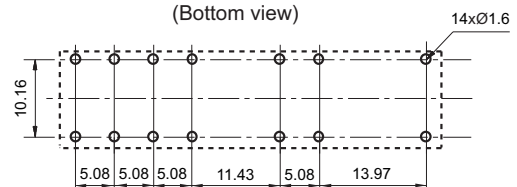
Wiring Diagram

(Bottom view)



PCB Layout

(Bottom view)

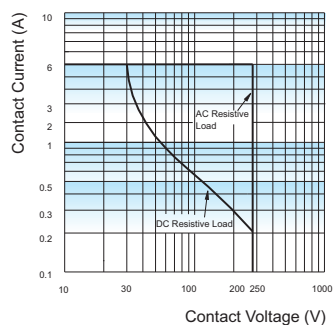


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

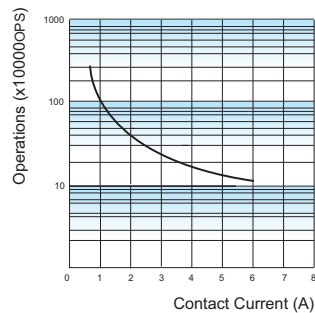
2) The tolerance without indicating for PCB layout is always ±0.1mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

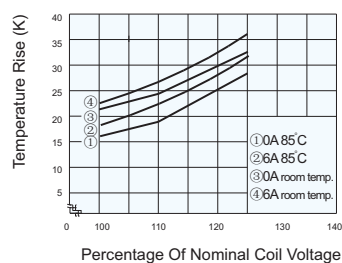


ENDURANCE CURVE

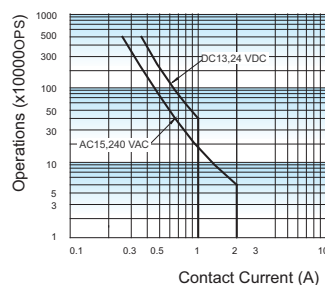


Test conditions:
1NO, Resistive load, 250VAC,
Room temp., 1s on 9s off
The data shown above are typical values.

COIL TEMPERATURE RISE




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



File No.: E253370

CE

Screw Terminal,
DIN rail mounting,
With finger protection device



Features

- The dielectric strength (between coil and contacts) can reach 2500VAC and the insulation resistance is 1000 MΩ
- DIN rail or Screw mounting
- With diode to protect the coil and to Suppress reverse overvoltage
- With finger protection device
- Built-in retainer and extractor

CHARACTERISTICS


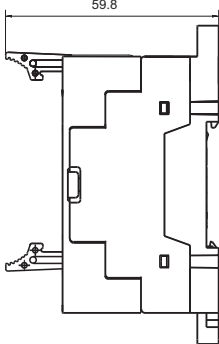
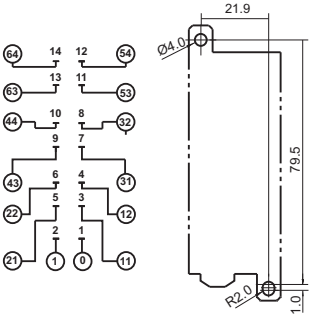
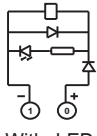
Unit: mm

Type	Nominal Voltage	Nominal Current	Applicable coil voltage of relay	Ambient Temperature	Torque*	Max.wire cross section mm²	Wire Strip Length	Unit weight	Notes
A6-6Z-C2-D24	250VAC	6A	(6 to 24)VDC	-25 °C to 55°C	1.0N · m	2 x1.5	7mm	Approx. 63g	With LED
A6-6Z-C2-D60	250VAC	6A	(36 to 60)VDC	-25 °C to 55°C	1.0N · m	2 x1.5	7mm	Approx. 63g	With LED

Notes: *Refers to wire-assembled torque.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Components Available
<div><div>A6-6Z-C2-X</div><div></div></div>	<div><div></div><div>(Bottom view)</div></div>	<div><div></div><div>(Bottom view)</div></div>	<div><p>With LED</p></div>

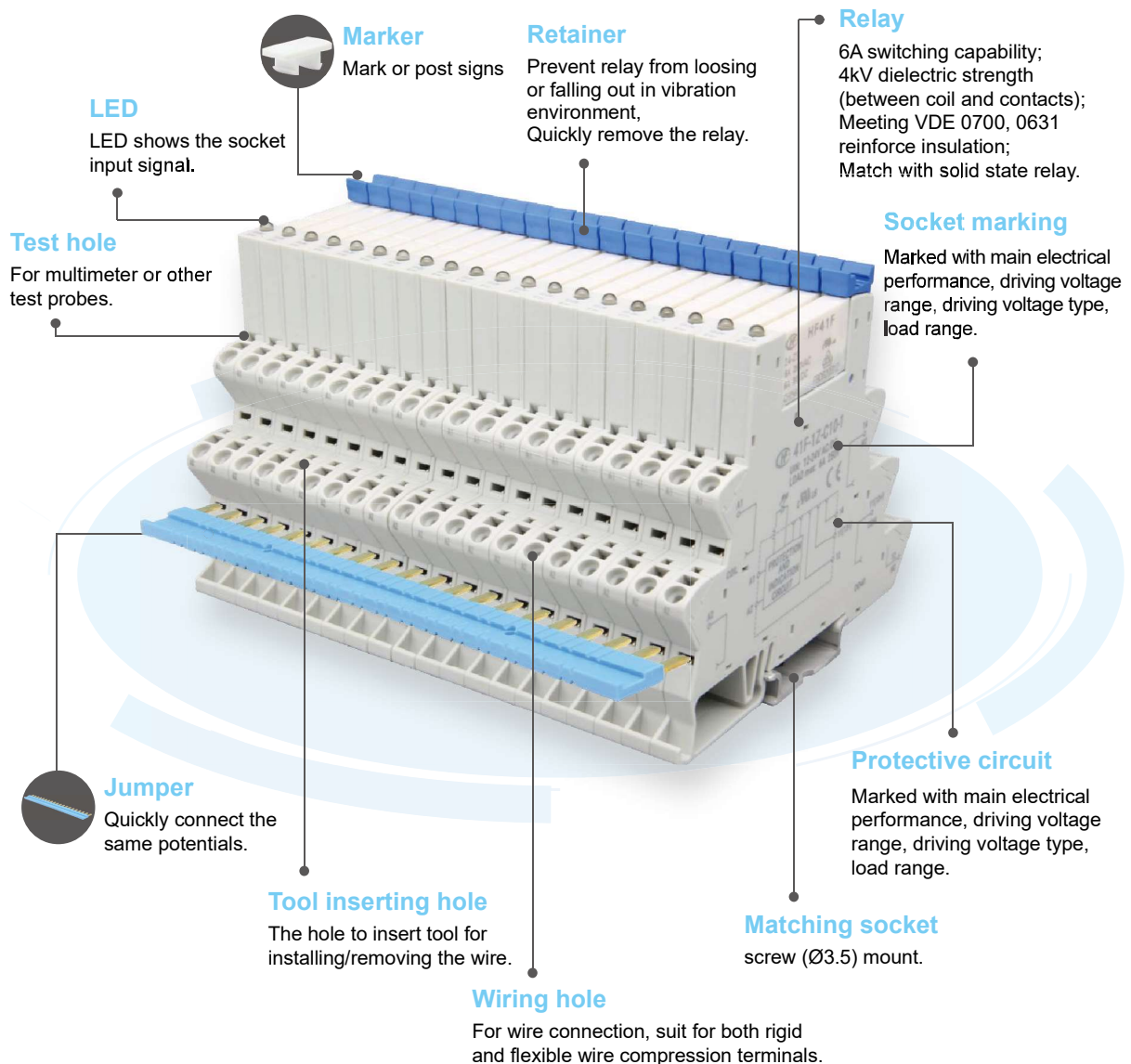
Disclaimer
The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to 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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Features

- 4000VAC insulation, 1000MΩ insulation resistance
- DIN rail mounting type
- Extremely narrow (only 6.2mm)
- Products with finger protection are available
- Ensure secure retention and easy ejection of relays, Ensure relays are securely mounted on or easily removed from sockets.
- Built-in protection circuit can indicate the power status, protect the circuit, and expand the input voltage range of relays.

RoHS compliant



File No.:
E253370(Socket), E133481(Relay)



File No.: 40020043
(Socket+41F-1Z-C2-□)



File No.:
CQC17002175724(Relay)



HONGFA RELAY

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

2024 Rev. 1.00

CONTACT DATA

Contact arrangement	1C
Contact rating(Res. load)	6A 250VAC/30VDC(4C)
Max. switching voltage	400VAC/125VDC
Max. switching current	6A

CHARACTERISTICS

Insulation resistance		1000MΩ (500VAC)
Dielectric strength (RMS)	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		25ms max.
Humidity (RH)		5% to 85%RH
Ambient temperature		-40°C to 85°C
Indicator lamp		green LED
Overvoltage category		III
Pollution degree		2
Conductor cross-section		0.5mm² to 1.5mm²

Notes:1) Kits should not continuously be powered on at full load for more than 300h for a long term. If you have any questions, please contact us.

COIL DATA

23°C

part number of kit	coil input voltage of kit	Operating temperature
HF41F-AS/12-Z□□□-□-1	12VAC/DC	-40°C to 70°C
HF41F-AS/18-Z□□□-□-1	18VAC/DC	
HF41F-AS/24-Z□□□-□-1	24VAC/DC	
HF41F-AS/48-Z□□□-□-2	48VAC/DC	
HF41F-AS/60-Z□□□-□-2	60VAC/DC	-40°C to 55°C
HF41F-AS/60-Z□□□-□-3	110~125VAC/DC	
HF41F-AS/60-Z□□□-□-4	220~240VAC/DC	
HF41F-AS/12-Z□□□-□-5	12VDC	-40°C to 70°C
HF41F-AS/18-Z□□□-□-5	18VDC	
HF41F-AS/24-Z□□□-□-5	24VDC	

ORDERING INFORMATION

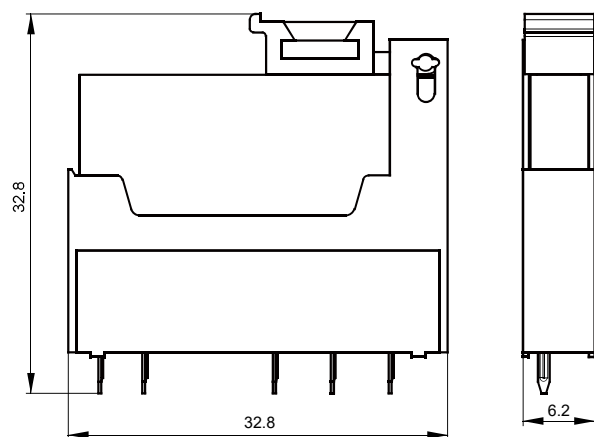
HF41F-AS /□ -Z □ □ □ -□ -□ (XXX)	
Relay module	HF41F: Relay AS: module
Relay coil voltage	12,18,24,48,60VDC
Contact arrangement	Z: 1 Form C
Construction	S: Plastic sealed Nil: Flux proofed
Contact material	T: AgSnO ₂ Nil: AgNi
Contact plating	Nil: No gold plated G: Gold plated
Matching socket	A1: PCB terminal C2: Screw terminal C4: Cage spring relay terminal C10: Push in terminal
Applicable relay coil and input voltage of socket	A1: Nil 1: Adapted relay coil voltage: (12-24)VDC, input voltage of socket: (12-24)VAC/DC 2: Adapted relay coil voltage: (48-60)VDC, input voltage of socket: (48-60)VAC/DC 3: Adapted relay coil voltage: 60VDC, input voltage of socket: (110-125)VAC/DC 4: Adapted relay coil voltage: 60VDC, input voltage of socket: (220-240)VAC/DC 5: Adapted relay coil voltage: (6-24) VDC, input voltage of socket: (6-24)VDC
Special code	XXX: The customer special requirement Nil: Standard type

OUTLINE DIMENSIONS, WIRING DIAGRAM

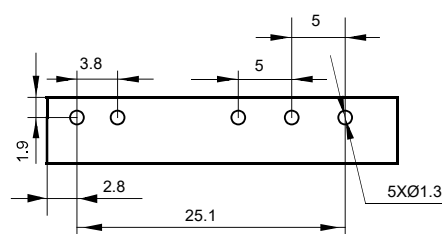
Unit: mm

Outline Dimensions

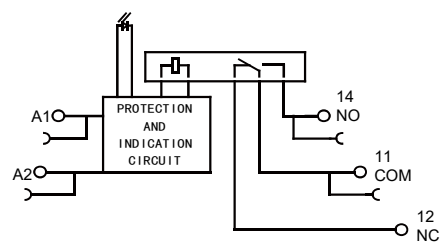
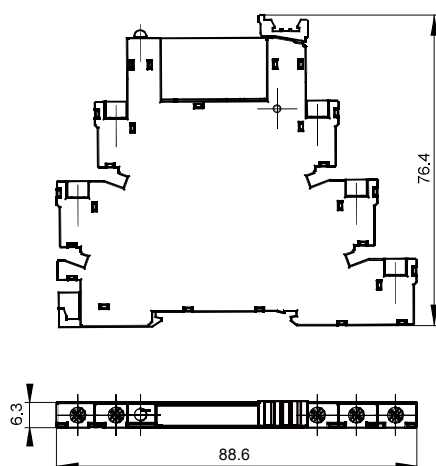
HF41F-AS/□-Z□□□-A1



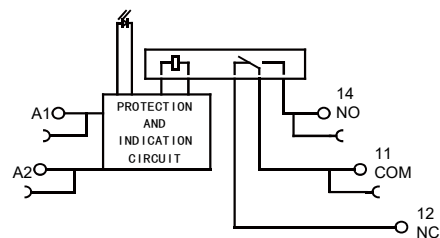
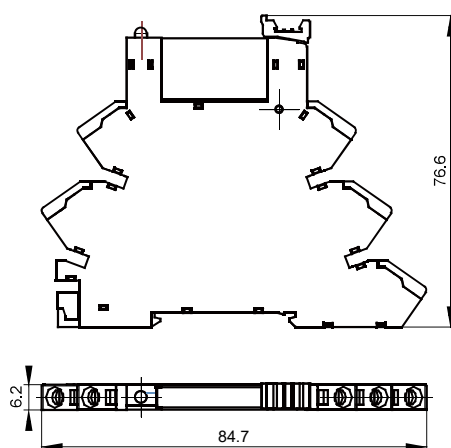
Wiring Diagram(Bottom view)



HF41F-AS/□-Z□□□-C2-□



HF41F-AS/□-Z□□□-C4-□

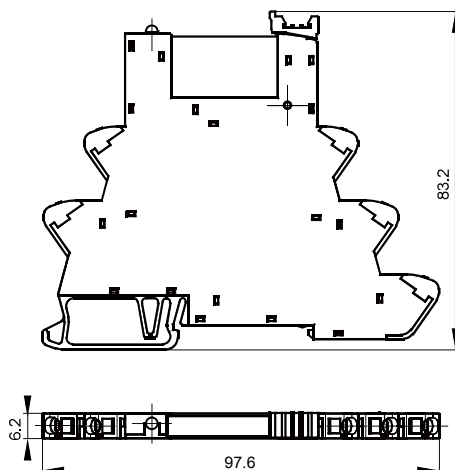


OUTLINE DIMENSIONS, WIRING DIAGRAM

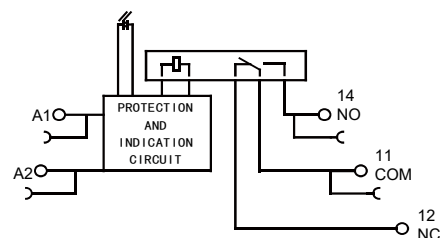
Unit: mm

Outline Dimensions

HF41F-AS/□-Z□□□-C10-□

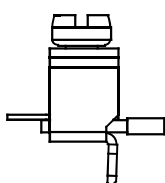


Wiring Diagram(Bottom view)



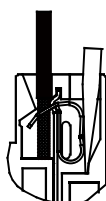
COMPONENT ORDERING INFORMATION

Screw terminal




P/N	module type	relay type	socket type	Min. packing quantity	unit weight
44240050053	HF41F-AS/12-ZT-C2-1	HF41F/12-ZT	41F-1Z-C2-1	10pcs	Approx. 31.2g
44240050054	HF41F-AS/24-ZT-C2-1	HF41F/24-ZT			Approx. 31.2g
44240050055	HF41F-AS/60-ZT-C2-2	HF41F/60-ZT	41F-1Z-C2-2		Approx. 30.0g
44240050056	HF41F-AS/60-ZT-C2-3		41F-1Z-C2-3		Approx. 31.5g
44240050057	HF41F-AS/60-ZT-C2-4		41F-1Z-C2-4		Approx. 31.8g
44240050058	HF41F-AS/12-ZT-C2-5	HF41F/12-ZT	41F-1Z-C2-5		Approx. 31.2g
44240050059	HF41F-AS/24-ZT-C2-5	HF41F/24-ZT			Approx. 31.2g
44240050062	HF41F-AS/12-ZT-C2-5(012)	HF41F/12-ZT	41F-1Z-C2-5(012)		Approx. 31.2g
44240050063	HF41F-AS/24-ZT-C2-5(012)	HF41F/24-ZT			Approx. 31.2g

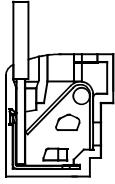
Cage Spring terminal



P/N	module type	relay type	socket type	Min. packing quantity	unit weight
44240050048	HF41F-AS/12-ZT-C4-1	HF41F/12-ZT	41F-1Z-C4-1	10pcs	Approx. 30.7g
44240050049	HF41F-AS/24-ZT-C4-1	HF41F/24-ZT			Approx. 30.7g
44240050050	HF41F-AS/60-ZT-C4-2	HF41F/60-ZT	41F-1Z-C4-2		Approx. 29.5g
44240050051	HF41F-AS/60-ZT-C4-3		41F-1Z-C4-3		Approx. 30.1g
44240050052	HF41F-AS/60-ZT-C4-4		41F-1Z-C4-4		Approx. 31.0g
44240050060	HF41F-AS/12-ZT-C4-5	HF41F/12-ZT	41F-1Z-C4-5		Approx. 30.7g
44240050061	HF41F-AS/24-ZT-C4-5	HF41F/24-ZT			Approx. 30.7g

COMPONENT ORDERING INFORMATION

Push in terminal 



P/N	module type	relay type	socket type	Min. packing quantity	unit weight
44240210001	HF41F-AS/12-ZT-C10-1	HF41F/12-ZT	41F-1Z-C10-1	10pcs	Approx. 27.8g
44240210002	HF41F-AS/24-ZT-C10-1	HF41F/24-ZT			Approx. 27.8g
44240210003	HF41F-AS/60-ZT-C10-2	HF41F/60-ZT	41F-1Z-C10-2		Approx. 27.8g
44240210004	HF41F-AS/60-ZT-C10-3		41F-1Z-C10-3		Approx. 28.1g
44240210005	HF41F-AS/60-ZT-C10-4		41F-1Z-C10-4		Approx. 28.1g
44240210006	HF41F-AS/12-ZT-C10-5	HF41F/12-ZT	41F-1Z-C10-5		Approx. 27.4g
44240210007	HF41F-AS/24-ZT-C10-5	HF41F/24-ZT			Approx. 27.4g

Precautions when choosing components:

1. The main external dimension, when the external dimension > 50mm, the tolerance is $\pm 1\text{mm}$; When the 20mm dimensions are between 50mm, the tolerance is $\pm 0.5\text{mm}$; When the 5mm < dimensions are between $\leq 20\text{mm}$, The tolerance is $\pm 0.4\text{mm}$, and when the overall dimension is $\leq 5\text{mm}$, the tolerance is $\pm 0.3\text{mm}$;
2. For rail installation, it is recommended to use DIN standard 35×7.5×1, 35×15×1 standard rails.

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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HF41F

SUBMINIATURE POWER RELAY



File No.: E133481



File No.: 40020043



File No.: CQC17002175724



Features

- Slim size (width 5mm)
- 6A switching capability 4kV dielectric strength (between coil and contacts)
- Surge voltage up to 6kV (between coil and contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- High sensitive: Approx.170mW
- Sockets available
- 1 Form A and 1 Form C configurations

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance ¹⁾	No gold plated:100mΩ max. (at 1A 6VDC) Gold plated: 30mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	6A 250VAC / 30VDC
Max. switching voltage	400VAC / 300VDC
Max. switching current	6A
Max. switching power	1500VA / 180W
Min.contact load ²⁾	Gold plated:5VDC 10mA No gold plated:5VDC 100mA
Mechanical endurance ³⁾	1 x 10 ⁷ OPS
Electrical endurance	H type: 6 x 10 ⁴ OPS (6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) Z type: 3 x 10 ⁴ OPS (NO, 6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) 1 x 10 ⁴ OPS (NC, 6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off)

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

COIL

Coil power	5VDC to 24VDC: Approx. 170mW 48VDC, 60VDC: Approx. 210mW
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SAFETY APPROVAL RATINGS

UL/CUL	6A 30VDC at 85°C 6A 277VAC at 85°C R300 B300
VDE	6A 30VDC at 85°C 6A 250VAC at 85°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.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1000VAC 1 min
Operate time (at rated.volt.)		8ms max.
Release time (at rated.volt.)		4ms max.
Shock resistance*1)	Functional	49m/s ²
	Destructive	980m/s ²
Vibration resistance*1)		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 5g
Construction		Plastic sealed, Flux proofed

Notes: 1) *Index is that of relay without socket and is not in relay length direction.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.
4) Please do not install a SPDT(1 Form C) type relay on either of the smallest sides or facing downward.
5) UL insulation system: Class A.

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ²⁾	Drop-out Voltage VDC min. ²⁾	Max. Voltage VDC ³⁾	Coil Resistance Ω
5	3.75	0.25	7.5	147 x (1±10%)
6	4.50	0.30	9.0	212 x (1±10%)
9	6.75	0.45	13.5	476 x (1±10%)
12	9.00	0.60	18	848 x (1±10%)
18	13.5	0.90	27	1906 x (1±15%)
24	18.0	1.20	36	3390 x (1±15%)
48 ⁴⁾	36.0	2.40	72	10600 x (1±15%)
60 ⁴⁾	45.0	3.00	90	16600 x (1±15%)

Notes: 1) When require pick-up voltage ≤ 70% nominal voltage, special order allowed .
2) The data shown above are initial values.
3) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
4) 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).



HONGFA RELAY

ISO9001, ISO/TS16949 , ISO14001, ISO45001, IECQ QC 080000, ISO/IEC 27001 CERTIFIED

2023 Rev. 1.01

ORDERING INFORMATION

Type	HF41F /	12	-H	8	S	T	G	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC							
Contact arrangement	H: 1 Form A		Z: 1 Form C					
Version ¹⁾	8: Flat pack version		Nil: Vertical version					
Construction ²⁾³⁾	S: Plastic sealed		Nil: Flux proofed					
Contact material	T: AgSnO ₂		Nil: AgNi					
Contact plating ⁴⁾	G: Gold plated		Nil: No gold plated					
Special code ⁴⁾	XXX: Customer special requirement			Nil: Standard				

Notes:1) We recommend flux proofed types for the flat pack version.

2) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

3) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (210) stands for pick-up voltage less than 70% of nominal voltage. e.g. (414) stands for wide coil pin type.

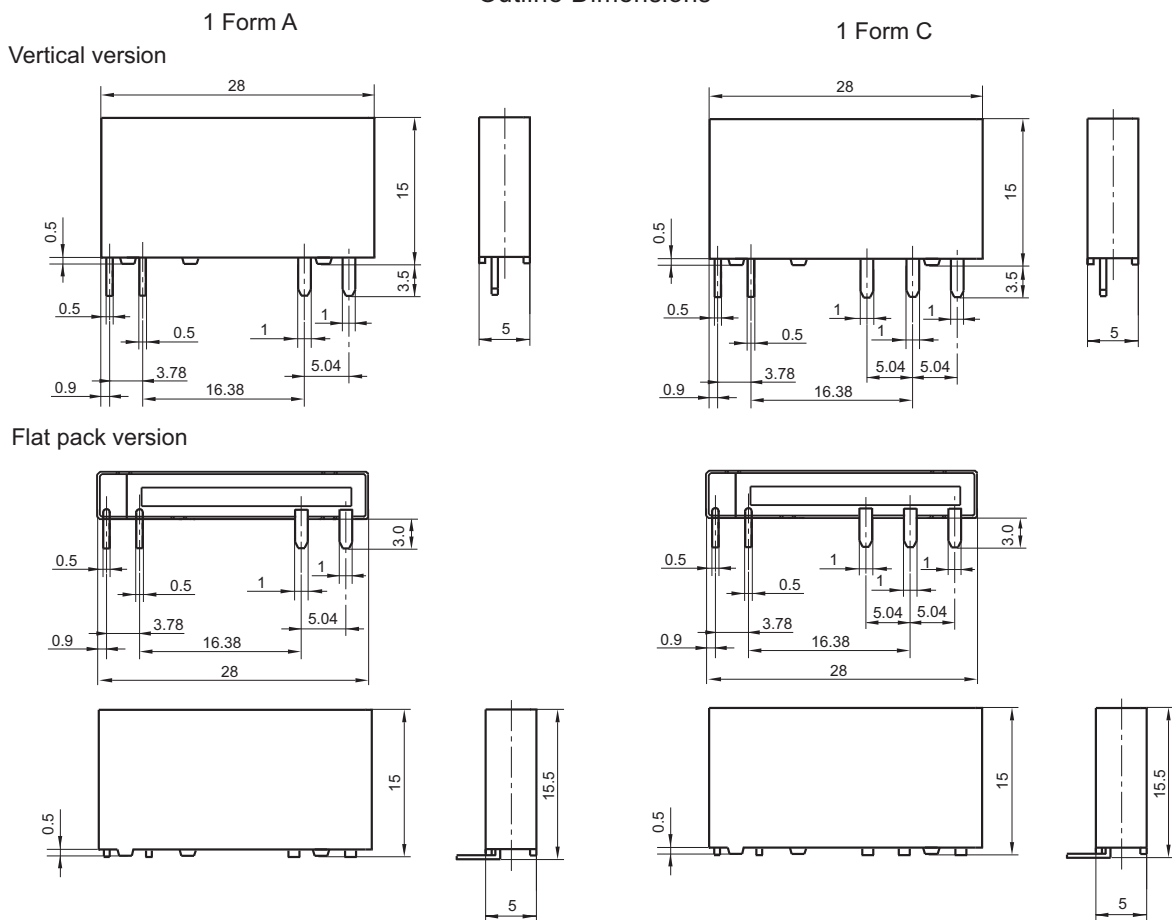
5) Standard tube packing length is 550mm. Any special requirement needed, please contact us for more details.

6) 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 PC BOARD LAYOUT

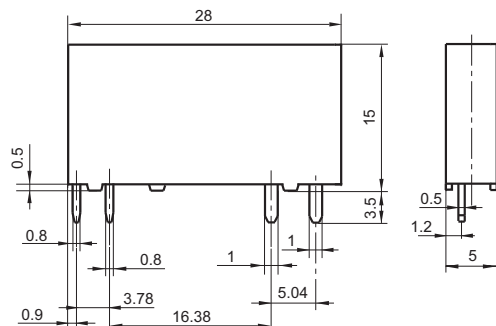
Unit: mm

Outline Dimensions

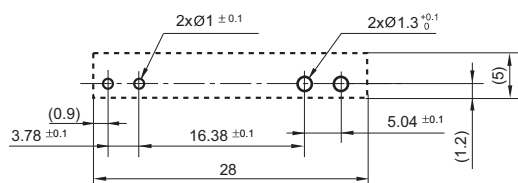


Unit: mm

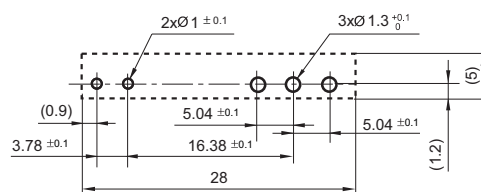
1 Form A
Special code: (414)

[illegible]

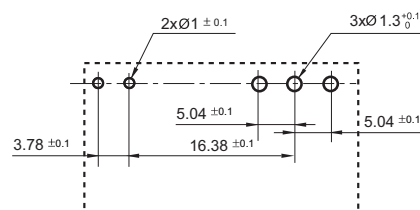
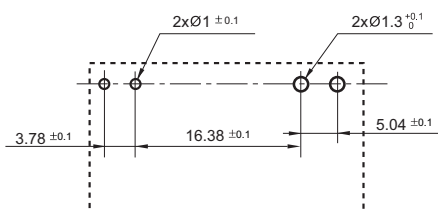
1 Form A



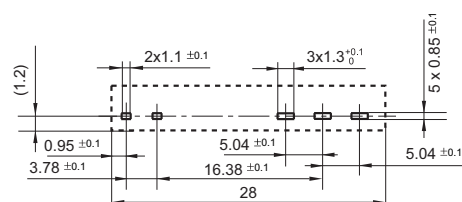
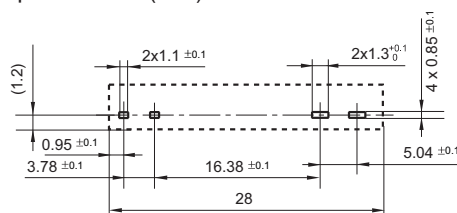
1 Form C



Flat pack version

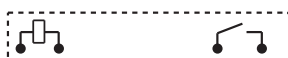


Special code: (414)



Wiring Diagram (Bottom view)

1 Form A



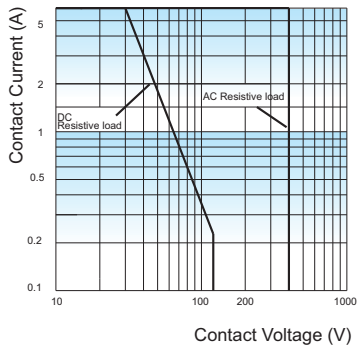
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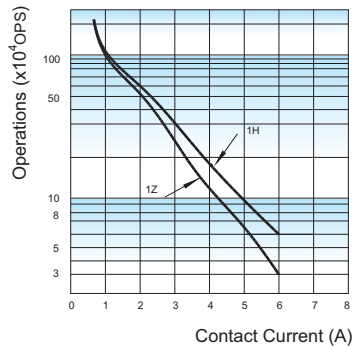
53

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

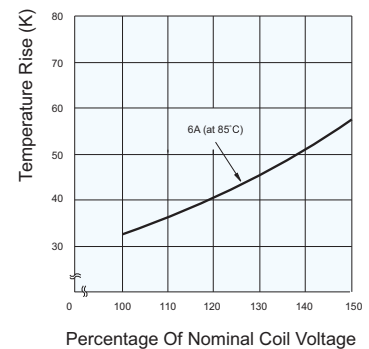


ENDURANCE CURVE



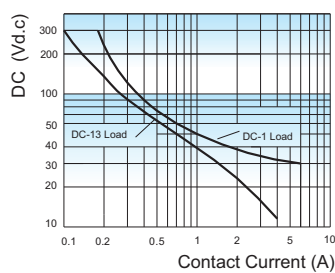
Test conditions:
NO, AgNi, Resistive load, 250VAC,
Flux proofed, Room temp., the typical
value of test 1s on 9s off.

COIL TEMPERATURE RISE



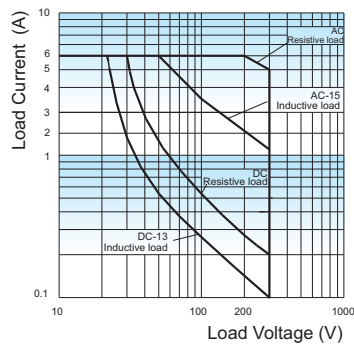
Test conditions:
6A 85°C
(Typical curve of 24VDC standard type)

LOAD SWITCHING CAPACITY CURVE

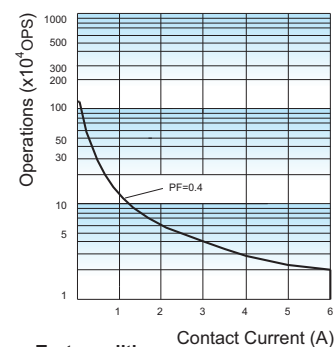


Test conditions: NO, Room temp.

BREAKING CAPACITY TRIP CURVE AC INDUCTIVE LOAD ENDURANCE CURVE

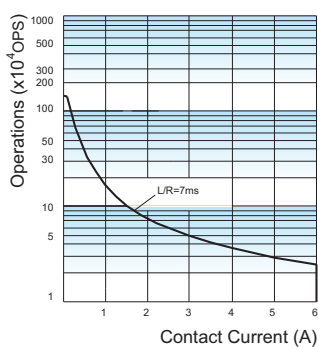


Test conditions:
Room temp., Plastic sealed, 1s on 9s off.



Test conditions:
NO, AgNi, Plastic sealed, Room temp.,
250VAC

DC INDUCTIVE LOAD ENDURANCE CURVE



Test conditions:
NO, AgNi, Plastic sealed, Room temp.,
24VDC

Notes: Characteristic data is not guaranteed value but measured values of samples from production line.

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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Relay Sockets

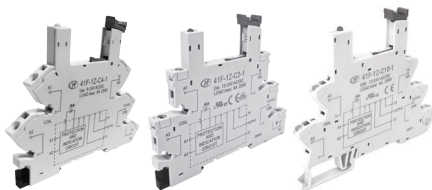
CE

cULus

File No.: E253370



File No.: 40020043
(Only 41F-1Z-C2)



Features

- The dielectric strength can reach 4000VAC and the insulation resistance is 1000MΩ
- With finger protection device
- Ensure secure retention and easy ejection of relays
- Built-in protection circuit can indicate the power status, protect the circuit and expand the range of relay input voltage
- Components available: marker, jumper and separator
- Environmental friendly product (RoHS compliant)

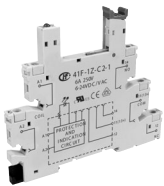
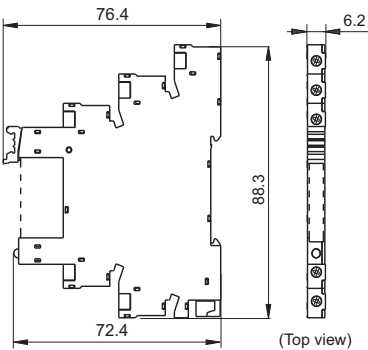
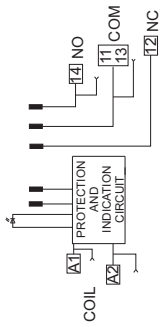
CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Input Voltage	Relay's Applicable Rated Voltage	Polarity of Input Voltage	Wire Strip Length	Screw Torque	Unit weight
41F-1Z-C2-1	250VAC	6A	-40 °C to 70 °C	(12 to 24)VAC/DC	(12 to 24)VDC	No requirement	7mm	0.5N · m	Approx.27g
41F-1Z-C2-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)VAC/DC	(48 to 60)VDC	No requirement	7mm	0.5N · m	Approx.25g
41F-1Z-C2-3	250VAC	6A	-40 °C to 55 °C	(110 to 125)VAC/DC	60V DC	No requirement	7mm	0.5N · m	Approx.27g
41F-1Z-C2-4	250VAC	6A	-40 °C to 55 °C	(220 to 240)VAC/DC	60V DC	No requirement	7mm	0.5N · m	Approx.27g
41F-1Z-C2-5	250VAC	6A	-40 °C to 70 °C	(6 to 24)VDC	(6 to 24)VDC	Requirement	7mm	0.5N · m	Approx.24g
41F-1Z-C2-5(012)	250VAC	6A	-40 °C to 70 °C	(6 to 24)VDC	(6 to 24)VDC	No requirement	7mm	0.5N · m	Approx.24g
41F-1Z-C4-1	250VAC	6A	-40 °C to 70 °C	(12 to 24)VAC/DC	(12 to 24)VDC	No requirement	7mm	---	Approx.25g
41F-1Z-C4-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)VAC/DC	(48 to 60)VDC	No requirement	7mm	---	Approx.24g
41F-1Z-C4-3	250VAC	6A	-40 °C to 55 °C	(110 to 125)VAC/DC	60VDC	No requirement	7mm	---	Approx.25g
41F-1Z-C4-4	250VAC	6A	-40 °C to 55 °C	(220 to 240)VAC/DC	60VDC	No requirement	7mm	---	Approx.25g
41F-1Z-C4-5	250VAC	6A	-40 °C to 70 °C	(6 to 24)VDC	(6 to 24)VDC	Requirement	7mm	---	Approx.23g
41F-1Z-C10-1	250VAC	6A	-40 °C to 70 °C	(12 to 24)VAC/DC	(12 to 24)VDC	No requirement	10mm	---	Approx.22.5g
41F-1Z-C10-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)VAC/DC	(48 to 60)VDC	No requirement	10mm	---	Approx.22.5g
41F-1Z-C10-3	250VAC	6A	-40 °C to 55 °C	(110 to 125)VAC/DC	60VDC	No requirement	10mm	---	Approx.23.1g
41F-1Z-C10-4	250VAC	6A	-40 °C to 55 °C	(220 to 240)VAC/DC	60VDC	No requirement	10mm	---	Approx.23.1g
41F-1Z-C10-5	250VAC	6A	-40 °C to 70 °C	(6 to 24)VDC	(6 to 24)VDC	Requirement	10mm	---	Approx.22.4g
41F-1Z-A1	250VAC	6A	-40 °C to 70 °C	(6 to 60)VDC	(6 to 60)VDC	Requirement	---	---	Approx.2.9g
41F-1Z-A2-1	250VAC	6A	-40 °C to 70 °C	(6 to 24)V DC	(6 to 24)V DC	Requirement	---	---	Approx.4g
41F-1Z-A2-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)V DC	(48 to 60)V DC	Requirement	---	---	Approx.4g

Notes: 1) When the 41F-1Z-C2/C4-1 socket is applied to the relay of 12VDC nominal voltage, the relay of which pick-up voltage =70% nominal voltage should be required and the special order of relay allowed. 41F-1Z-C2/C4-4 is not allowed in continuous electricity conditions.
2) Socket 41F-1Z-C2/C4/C10-5 coil feet are A1-, A2+, if customers need special requirements please specify when ordering.

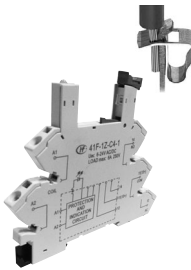
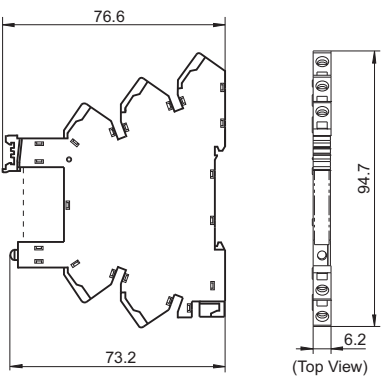
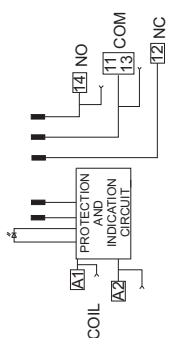
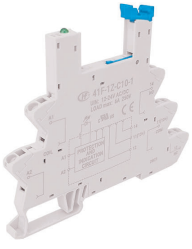
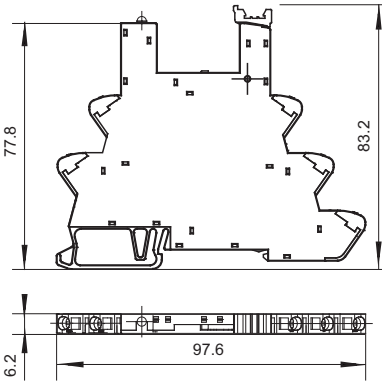
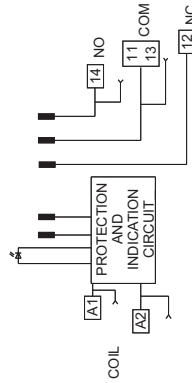

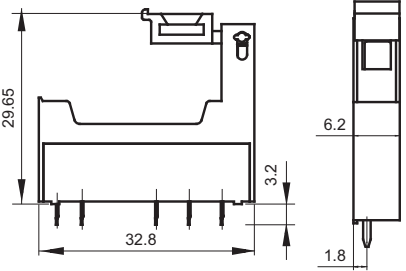
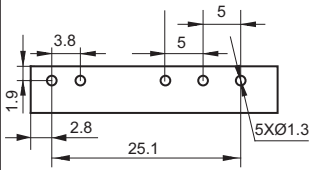
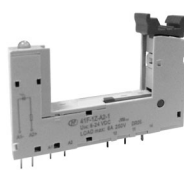
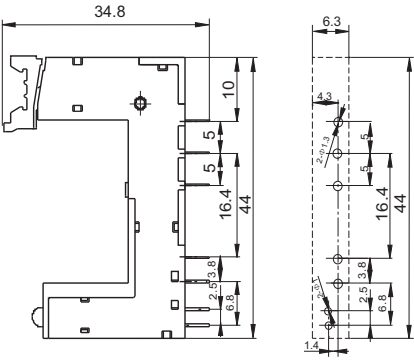
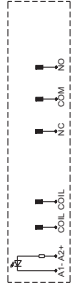
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Components Available
41F-1Z-C2-1/2/3/4/5  Screw terminal, DIN rail mounting, With finger protection device Certified by VDE and UL/CUL	 (Top view)		Marker 41F-M 41F-M1 Jumper 41F-J1(blue) 41F-J1R(red) 41F-J1B(black) Separator 41F-S

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Components Available
<p>41F-1Z-C4-1/2/3/4/5</p>  <p>Spring-loaded terminal, DIN rail mounting, With finger protection device</p>	 <p>(Top View)</p>		<p>Marker 41F-M 41F-M1</p> <p>Jumper 41F-J1(blue) 41F-J1R(red) 41F-J1B(black)</p> <p>Separator 41F-S</p>
<p>41F-1Z-C10-1/2/3/4/5</p> 			<p>Marker 41F-M 41F-M1</p> <p>Jumper 41F-J1(blue) 41F-J1R(red) 41F-J1B(black)</p> <p>Separator 41F-S</p>
<p>41F-1Z-A1</p> 			<p>No requirement</p>
<p>41F-1Z-A2-1/2</p>  <p>PCB terminal, PCB mounting</p>			<p>*Marker 41F-M</p>

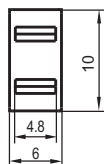
Notes: * If need accesscry,please order with type.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

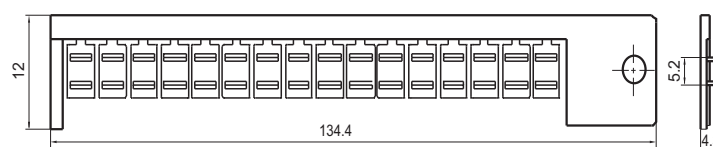
Unit: mm

Marker

41F-M

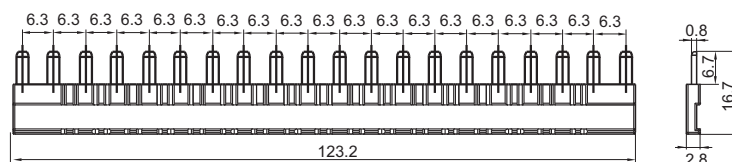


41F-M1



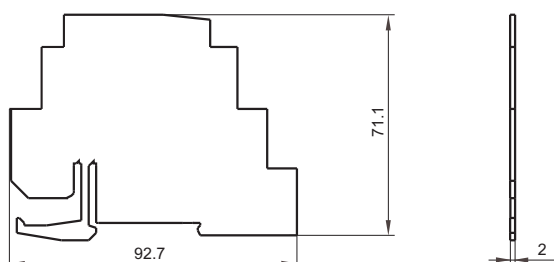
Jumper

41F-J1(blue)、41F-J1R(red)、41F-J1B(black)



Separator

41F-S



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. As for 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 HF41F 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 $35 \times 7.5 \times 1\text{mm}$, $35 \times 15 \times 1\text{mm}$.

Precautions For Use

41F-1Z-C2-1/2/3/4/5

41F-1Z-C4-1/2/3/4/5

1. Please use the quick-break fuse with rating of 15Amp. for short-circuit protection.
2. It may cause failure, fire or malfunction, when the sockets is continuously applied the power to for a long term In case of exceeding the upper limit ambient temperature. So please ensure that the ambient temperature is within the upper limit when using sockets.

Operating temperature upper limit: 55°C: 41F-1Z-C2-3/4
41F-1Z-C4-3/4

Operating temperature upper limit: 70°C: 41F-1Z-C2-1/2/5
41F-1Z-C4-1/2/5

3. Things to be noticed when selecting soft wiring.

1) 41F-1Z-C2-1/2/3/4/5

The soft wiring can be divided into the following types.

- Twisted line or single wire below 2.5mm² or below AGW14.
- Within 2 roots when the twisted below 1.5mm² or below AGW16.

Be sure to use this size that the front end of the wire needs to be stripped of the 7mm~8mm insulation protection layer. (Figure 1)

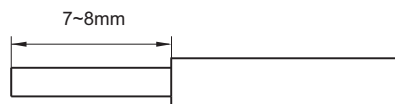


Figure 1

- Use the recommended screwdriver specifications when wiring.

Plus driver: Shaft Diameter - 3.5mm.

Single driver: Figure 2.

- Recommended tightening torque: 0.5N·m

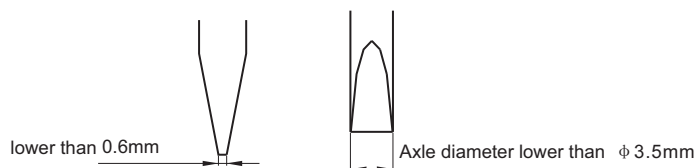


Figure 2.

b) 41F-1Z-C4-1/2/3/4/5

The soft wiring can be divided into the following types.

Twisted line or single wire greater than 0.5mm² or less than 2.5mm² or greater than AWG 20 and less than AWG14.

Be sure to use this size that the front end of the wire needs to be stripped of the 7mm~8mm insulation protection layer.

Use the recommended screwdriver specifications when wiring.

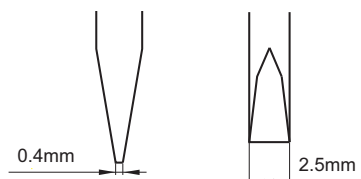


Figure 3.

Precautions For Use

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

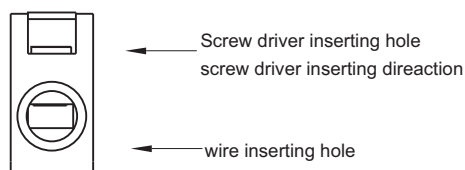


Figure 4

Please use cold pressed terminals when selecting twisted line.

The method of Wiring as shown in figure 5.

Step 1. Insert screwdriver into socket with screwdriver patchhole.

Step 2. Push the screwdriver in until it touches the stop position inside the socket, and keep the screwdriver in this position.

Step 3. Please keep the screwdriver in this position, and wires inserted into the terminal insertion hole bottom.

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

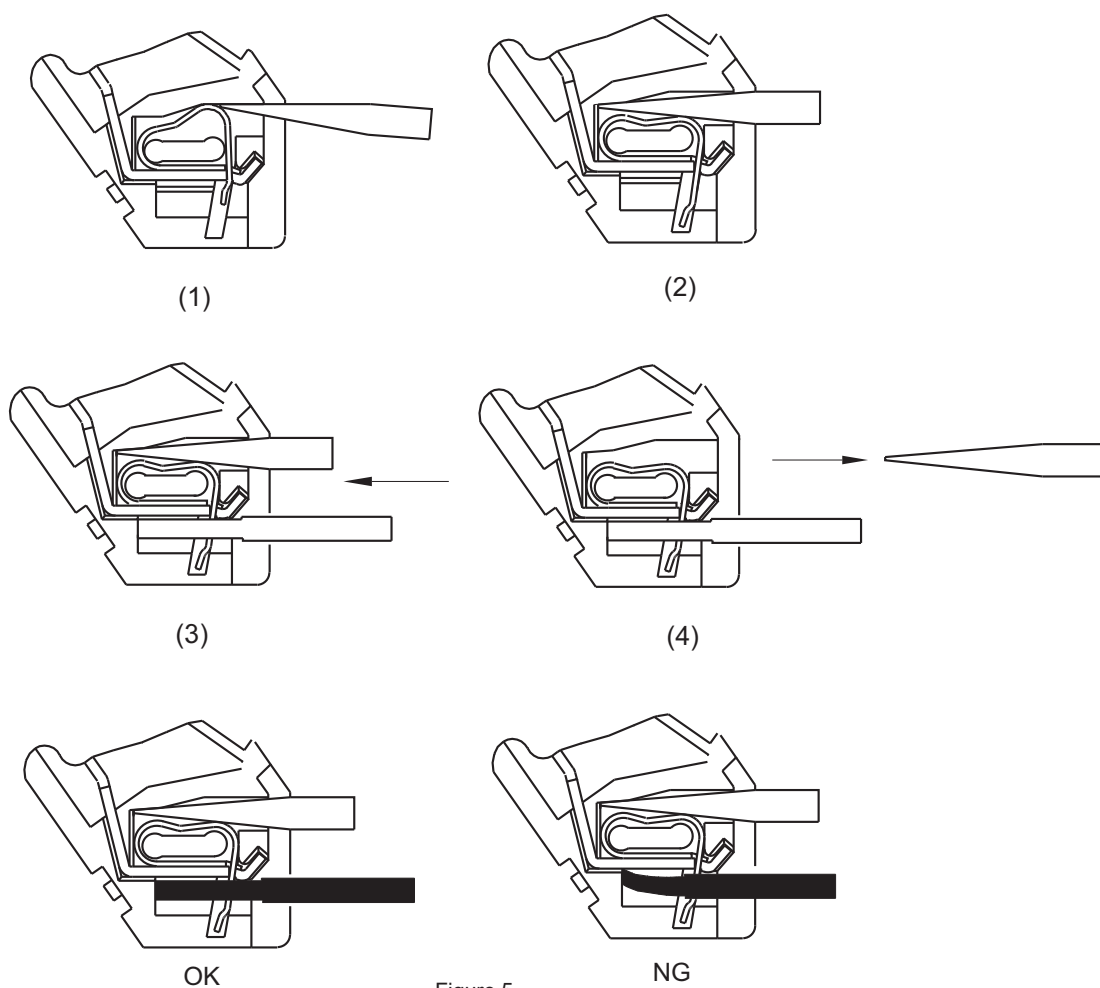


Figure 5

Do not insert the wire insulation.

Precautions For Use

41F-1Z-C10-1/2/3/4/5

1. Please use the quick-break fuse with rating of 15Amp. for short-circuit protection.
2. It may cause failure, fire or malfunction, when the sockets is continuously applied the power to for a long term In case of exceeding the upper limit ambient temperature. So please ensure that the ambient temperature is within the upper limit when using sockets.

Operating temperature upper limit* 55°C* 41F-1Z-C10-3/4

Operating temperature upper limit* 70°C* 41F-1Z-C10-1/2/5

3. Things to be noticed when selecting soft wiring.

The soft wiring can be divided into the following types.

Be sure to use this size that the front end of the wire needs to be stripped of the 8mm~10mm insulation protection layer.

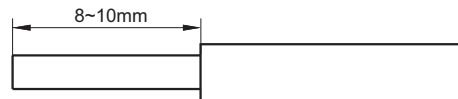


Figure 1

- * If the stripping protective layer is too short, it may cause the wire to be pulled out. If it is too long, it may have a short circuit with the adjacent wire. If the stranded wire of cold pressed terminal is used, please tighten the wire of stranded wire before use to avoid loose wire.

Use the recommended screwdriver specifications when wiring.*

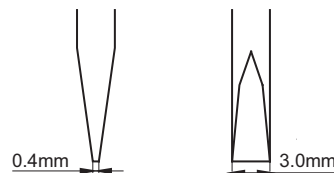


Figure 2

- * The insertion position of the wire and the screwdriver and the insertion direction of the screwdriver are as shown in Figure 3.

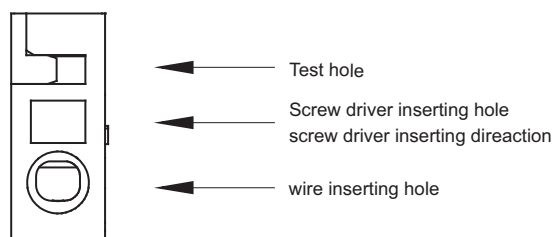


Figure 3

Precautions For Use

- Please use cold pressed terminals when selecting twisted line.
- The method of Wiring as shown in figure 4.

Insert the wire into the wire insertion hole (circular hole) in the direction of (1) arrow, and insert the wire straight into the bottom, as shown in (2).

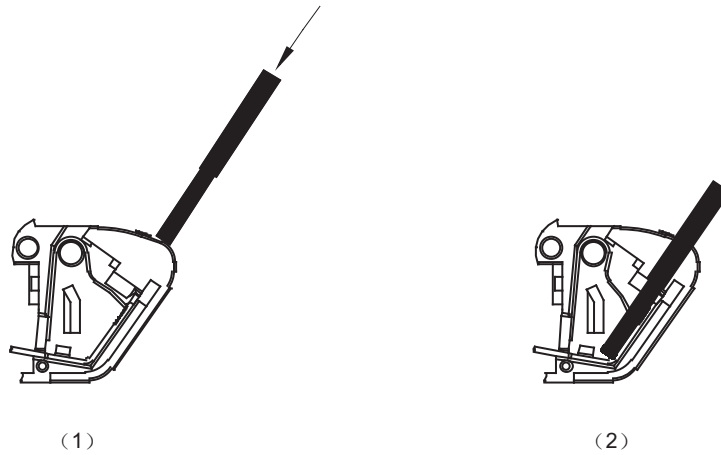


Figure 4

- The method of Wiring as stitching in figure 5.

Insert the wire into the wire insertion hole (circular hole) in the direction of (1) arrow, and insert the wire straight into the bottom, as shown in (2).

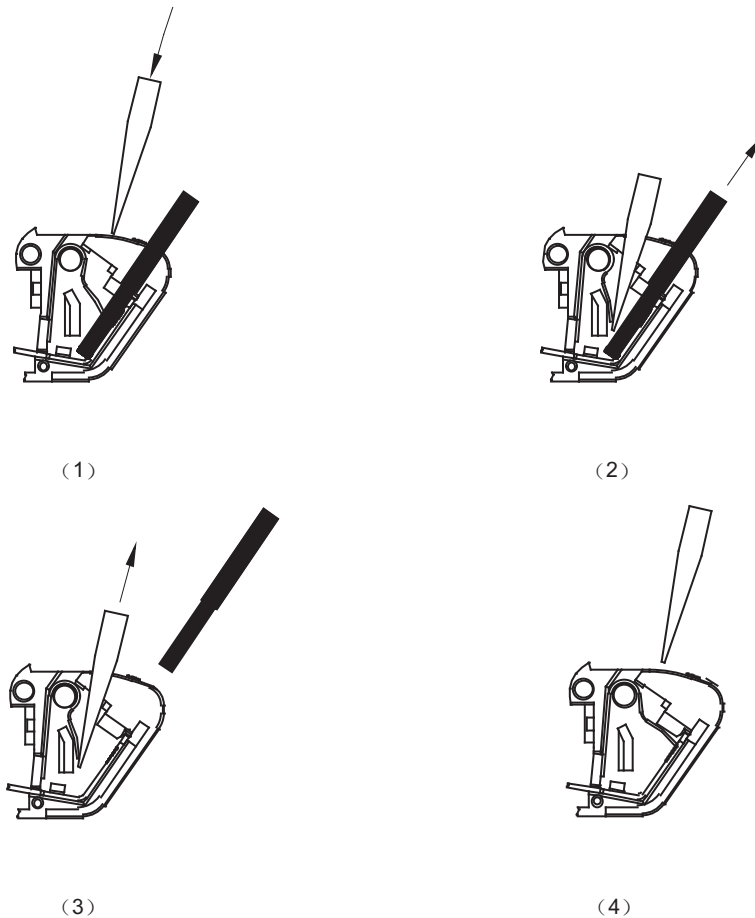


Figure 5

Precautions For Use

4. Mounting relay.

Presents the socket anti-stripping spring in an open state (see Figure 7), and aligns the relay to the main socket cavity (Figure 8). Then turn the buckle counterclockwise and press the relay gently until it is fully plugged into the socket (Figure 9).

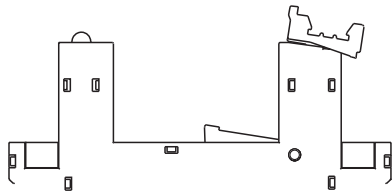


Figure 7

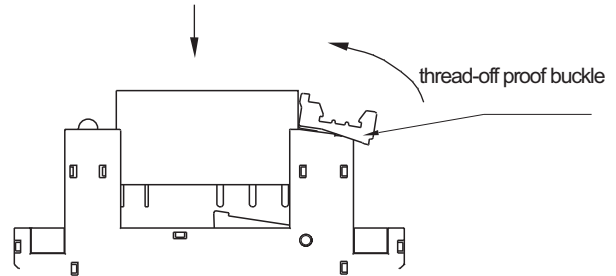


Figure 8

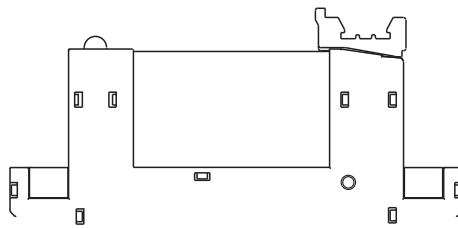
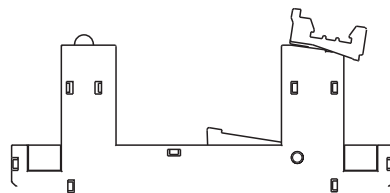
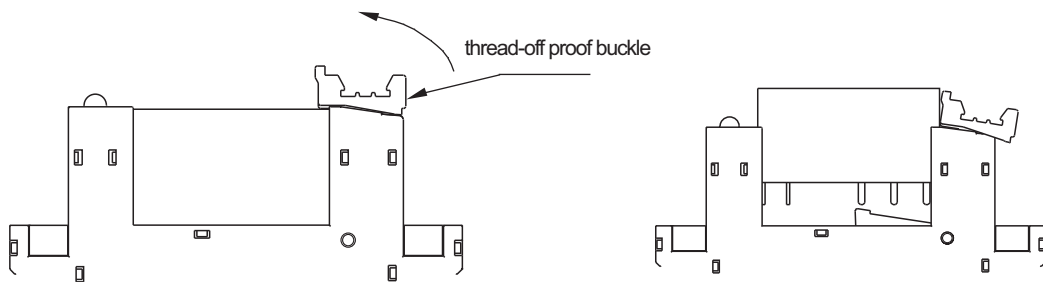


Figure 9

5. Disassembly relay.

Disconnect the relay by pulling the anti lock buckle of the socket clockwise (please refer to the pictures attached for more details)



Precautions For Use

6. Installation socket.

Insert the A of the socket into the rail and press it in the direction of the arrow.(Figure 11)

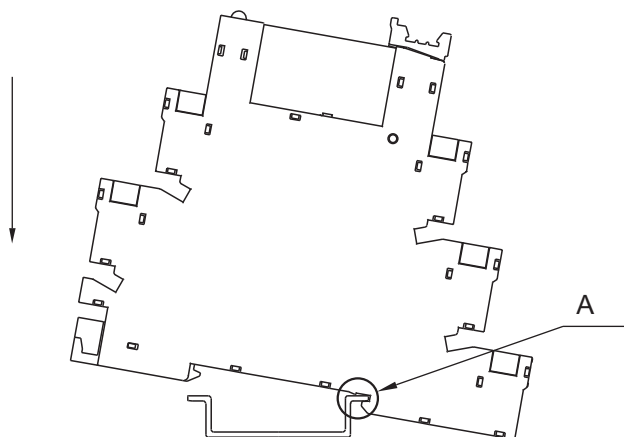


Figure 11

7. Disassembly socket.

Insert a screwdriver into B, turn in the direction of the arrow, lift the socket and remove the socket.(Figure 12)

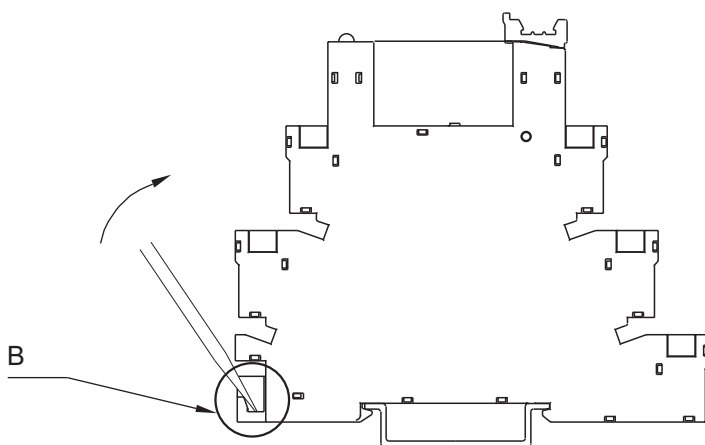


Figure 11

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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Features

- 5000VAC insulation, 1000MΩ insulation resistance
- DIN rail or Screw mounting type available
- With 2 or 4 sets of changeover contact options
- Products with finger protection are available
- Gold plated contact product selection

RoHS compliant

Wiring hole

For wire connection, suit for both rigid and flexible wire compression terminals.

Retainer

Prevent relay from loosening or falling out in vibration environment. Quickly remove the relay.

Relay

Suitable for different application environments and loads. AC and DC coil, LED, working indicator board, sealed type, anti-explosive design, high load, long lifecycle



Socket marking

Marked with main electrical performance, load range.

Matching socket

DIN rail mount or screw (Ø3.5) mount



File No.:
E253370(Socket), E133481(Relay)



File No.:
R 50147087(Relay)



File No.:
CQC09002030026(DC Relay)
CQC09002030027(AC Relay)



HONGFA RELAY

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

2024 Rev. 1.00

COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min	Max. Allowable Voltage VDC
5	4.0	0.50	5.5
6	4.8	0.60	6.6
9	7.2	0.90	9.9
13	9.6	1.20	13.2
21	16.8	2.10	23.1
24	19.2	2.40	26.4
30	24.0	3.00	33.0
36	28.8	3.60	39.6
48	38.4	4.80	52.8
60	48.0	6.00	66.0
110	80.0	11.0	121.0
125	100.0	12.5	137.5
220	176.0	22.0	242.0

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min	Max. Allowable Voltage VAC
6	4.80	1.80	6.6
12	9.60	3.60	13.2
24	19.2	7.20	26.4
36	28.8	10.8	39.6
48	38.4	14.4	52.8
60	48.0	18.0	66.0
110	80.0	33.0	121.0
120	88.0	36.0	132.0
220	160.0	66.0	242.0
240	176.0	72.0	264.0
277	221.6	83.1	304.7

CONTACT DATA

Contact arrangement	2C,4C
Contact rating (Res. load)	7A 250VAC/30VDC(2C) 6A 250VAC/30VDC(4C)
Max. switching voltage	250VAC/30VDC
Max. switching current	7A (2C), 6A (4C)

CHARACTERISTICS

Insulation resistance	1000MΩ (500VAC)
Dielectric strength (RMS)	Between coil & contacts 1500VAC 1min
	Between open contacts 1000VAC 1min
	Between contact sets 1500VAC 1min
Operate time (at nomi. volt.)	20ms max.
Release time (at nomi. volt.)	15ms(DCtype max.) 25ms(DC with freewheeling diode type max.) 25ms(ACtype max.)
Humidity(RH)	5% to 85%RH
Ambient temperature	-40°C to 70°C

ORDERING INFORMATION

HF18FF-AS / <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> Z 1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - C <input type="checkbox"/> - H <input type="checkbox"/> (XXX)	
Relay module	HF18FF: type without button AS: module
Coil Power	A: AC(50HZ or 60HZ) Nil: DC
Relay coil voltage	DC: 005~220VDC AC: 006~277VAC
Contact arrangement	2Z: 2 Form C 4Z: 4 Form C
Installation method	1: Plug-in
Contact material	3: AgNi T: AgSnO ₂
Contact plating	Nil: No gold plated G: Au plated
Component code	Nil: Without component D: With LED J: Freewheeling diode DJ: With LED, freewheeling diode
Matching socket	C2、C4、C5、C10 for 2Z C2、C4、C5、C10 for 4Z
Matching retaining clip	H2 for C2 H5 for C4,C5,C10
Special code	XXX: The customer special requirement Nil: Standard type

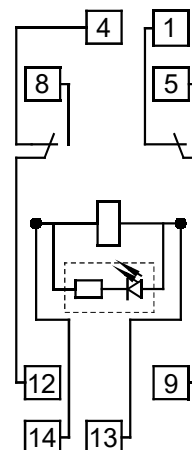
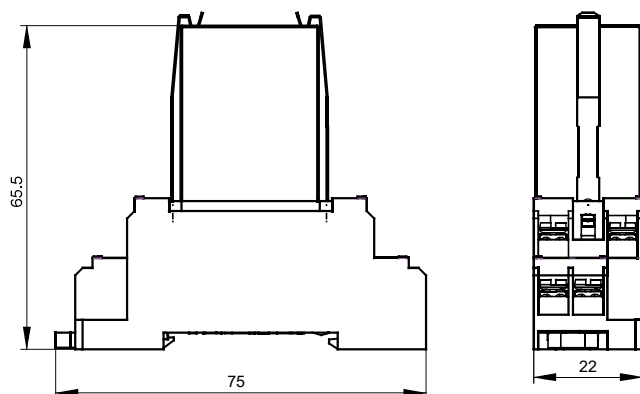
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

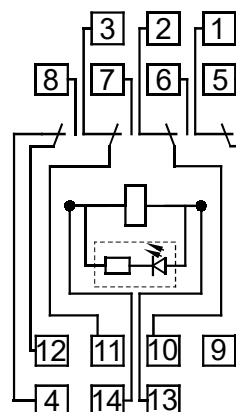
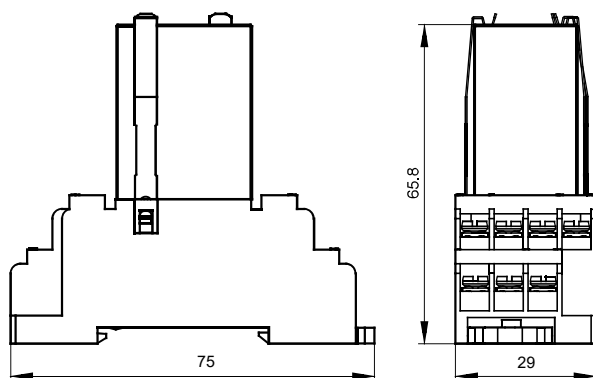
Outline Dimensions

Wiring Diagram(Bottom view)

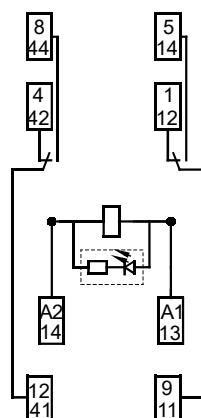
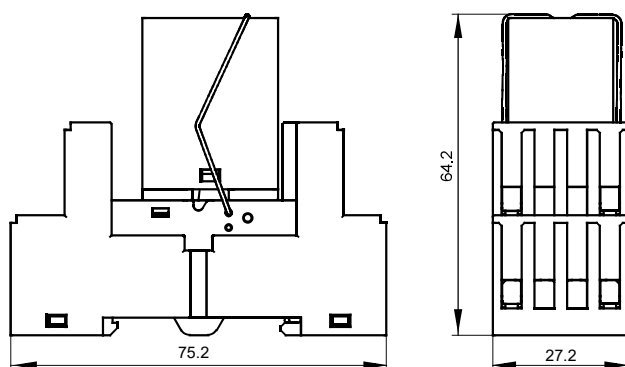
HF18FF-AS/□□-2Z1□□□-C2-H2



HF18FF-AS/□□-4Z1□□□-C2-H2



HF18FF-AS/□□-2Z1□□□-C4-H5



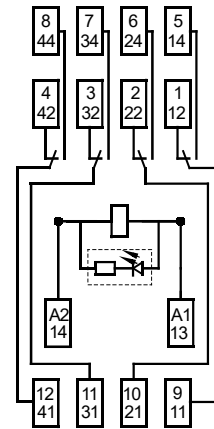
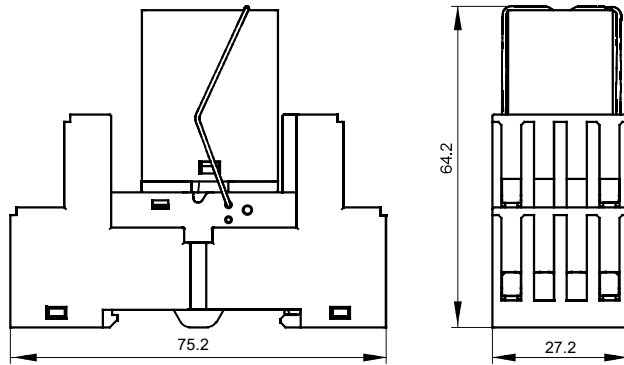
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

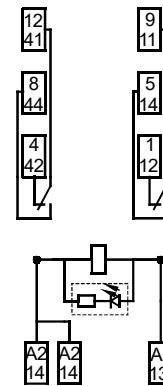
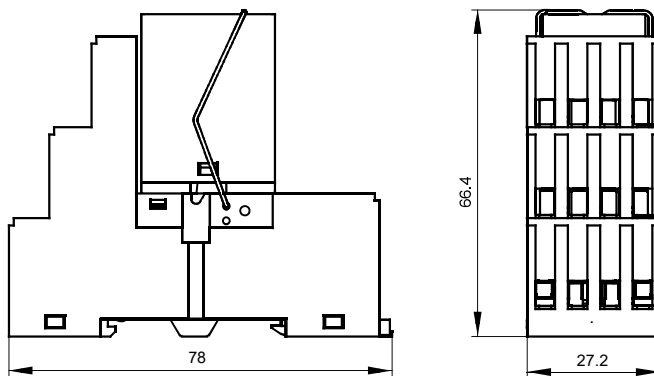
Outline Dimensions

Wiring Diagram(Bottom view)

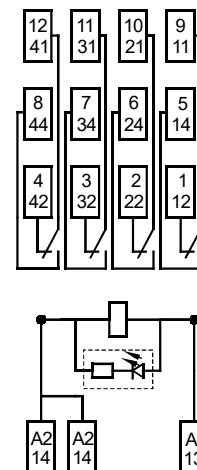
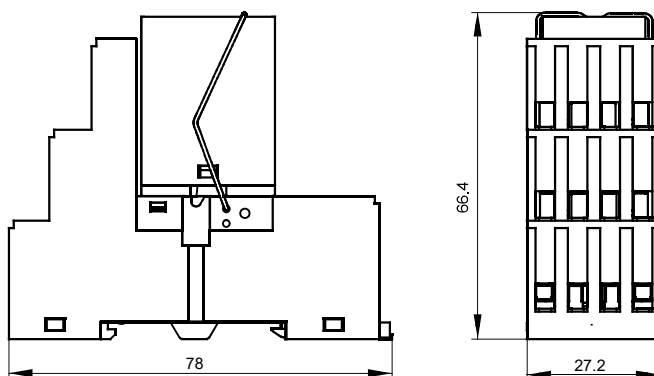
HF18FF-AS/□□-4Z1□□□-C4-H5



HF18FF-AS/□□-2Z1□□□-C5-H5



HF18FF-AS/□□-4Z1□□□-C5-H5



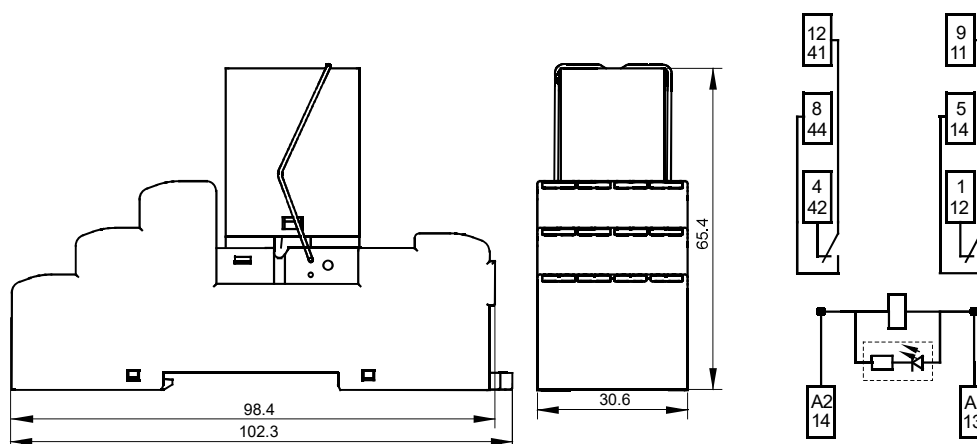
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

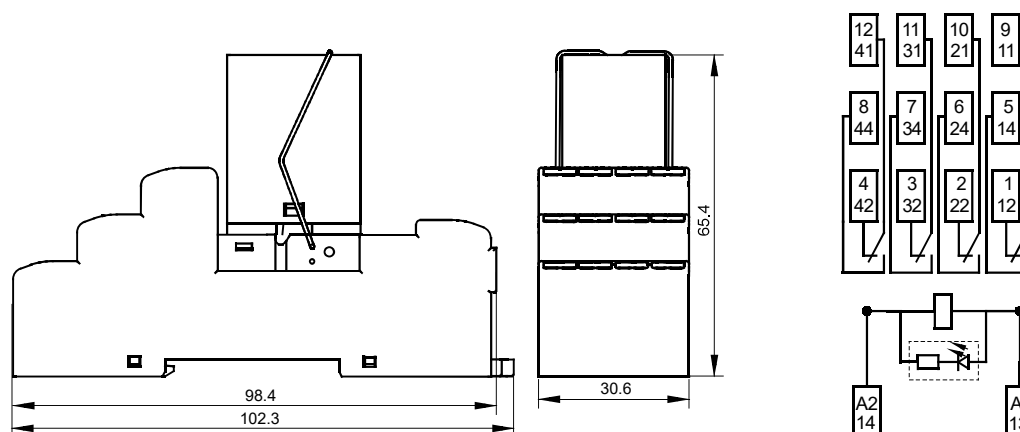
Outline Dimensions

Wiring Diagram(Bottom view)

HF18FF-AS/□□-2Z1□□□-C10-H5

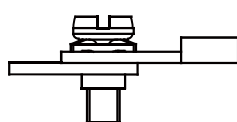


HF18FF-AS/□□-4Z1□□□-C10-H5



COMPONENT ORDERING INFORMATION

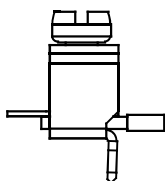
Gasket screw Relay



P/N	module type	relay type	socket type	retainer type
——	HF18FF-AS/012-2Z13D-C2-H2	HF18FF/012-2Z13D	18FF-2Z-C2	18FF-H2
——	HF18FF-AS/024-2Z13D-C2-H2	HF18FF/024-2Z13D		
——	HF18FF-AS/A110-2Z13D-C2-H2	HF18FF/A110-2Z13D		
——	HF18FF-AS/A220-2Z13D-C2-H2	HF18FF/A220-2Z13D		
——	HF18FF-AS/012-4Z13D-C2-H2	HF18FF/012-4Z13D	18FF-4Z-C2	
——	HF18FF-AS/024-4Z13D-C2-H2	HF18FF/024-4Z13D		
——	HF18FF-AS/A110-4Z13D-C2-H2	HF18FF/A110-4Z13D		
——	HF18FF-AS/A220-4Z13D-C2-H2	HF18FF/A220-4Z13D		

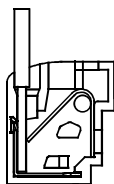
COMPONENT ORDERING INFORMATION

Screw terminal



P/N	module type	relay type	socket type	retainer type
——	HF18FF-AS/012-2Z13D-C4-H5	HF18FF/012-2Z13D	18FF-2Z-C4	18FF-H5
——	HF18FF-AS/024-2Z13D-C4-H5	HF18FF/024-2Z13D		
——	HF18FF-AS/A110-2Z13D-C4-H5	HF18FF/A110-2Z13D		
——	HF18FF-AS/A220-2Z13D-C4-H5	HF18FF/A220-2Z13D		
——	HF18FF-AS/012-4Z13D-C4-H5	HF18FF/012-4Z13D	18FF-4Z-C4	
——	HF18FF-AS/024-4Z13D-C4-H5	HF18FF/024-4Z13D		
——	HF18FF-AS/A110-4Z13D-C4-H5	HF18FF/A110-4Z13D		
——	HF18FF-AS/A220-4Z13D-C4-H5	HF18FF/A220-4Z13D		
——	HF18FF-AS/012-2Z13D-C5-H5	HF18FF/012-2Z13D	18FF-2Z-C5	
——	HF18FF-AS/024-2Z13D-C5-H5	HF18FF/024-2Z13D		
——	HF18FF-AS/A110-2Z13D-C5-H5	HF18FF/A110-2Z13D		
——	HF18FF-AS/A220-2Z13D-C5-H5	HF18FF/A220-2Z13D		
——	HF18FF-AS/012-4Z13D-C5-H5	HF18FF/012-4Z13D	18FF-4Z-C5	
——	HF18FF-AS/024-4Z13D-C5-H5	HF18FF/024-4Z13D		
——	HF18FF-AS/A110-4Z13D-C5-H5	HF18FF/A110-4Z13D		
——	HF18FF-AS/A220-4Z13D-C5-H5	HF18FF/A220-4Z13D		

Push-in type



P/N	module type	relay type	socket type	retainer type
——	HF18FF-AS/012-2Z13D-C10-H5	HF18FF/012-2Z13D	18FF-2Z-C10	18FF-H5
——	HF18FF-AS/024-2Z13D-C10-H5	HF18FF/024-2Z13D		
——	HF18FF-AS/A110-2Z13D-C10-H5	HF18FF/A110-2Z13D		
——	HF18FF-AS/A220-2Z13D-C10-H5	HF18FF/A220-2Z13D		
——	HF18FF-AS/012-4Z13D-C10-H5	HF18FF/012-4Z13D	18FF-4Z-C10	
——	HF18FF-AS/024-4Z13D-C10-H5	HF18FF/024-4Z13D		
——	HF18FF-AS/A110-4Z13D-C10-H5	HF18FF/A110-4Z13D		
——	HF18FF-AS/A220-4Z13D-C10-H5	HF18FF/A220-4Z13D		

Notes: Please contact us for any information.

Precautions when choosing components:

1. The main external dimension, when the external dimension > 50mm, the tolerance is $\pm 1\text{mm}$; When the 20mm dimensions are between 50mm, the tolerance is $\pm 0.5\text{mm}$; When the 5mm < dimensions are between $\leq 20\text{mm}$, The tolerance is $\pm 0.4\text{mm}$, and when the overall dimension is $\leq 5\text{mm}$, the tolerance is $\pm 0.3\text{mm}$;
2. For rail installation, it is recommended to use DIN standard $35 \times 7.5 \times 1$, $35 \times 15 \times 1$ standard rails.

Disclaimer

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HF18FF/HF18FH MINIATURE INTERMEDIATE POWER RELAY



File No.:E133481



File No.:R50147087



File No.:CQC09002030026 (DC type)

CQC09002030027 (AC type)



Features

- Multiple auxiliary functions available
- 2 to 4 pole configurations
- Various terminals available
- Gold plated contact available
- Transparent dust cover ,various installation types
- Automatic production
- High capacity

RoHS compliant

CONTACT DATA

Contact arrangement	2C, 3C,4C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)
Contact material	see"ORDERING INFORMATION"
Contact rating (Res. load)	7A 250VAC/30VDC(2Z/3Z) 6A 250VAC/30VDC(4Z)
Max. switching voltage	250VAC / 30VDC
Max. switching current	7A(2Z/3Z),6A(4Z)
Max. switching power	1750VA/210W(2Z/3Z) 1500VA/180W(4Z)
Mechanical endurance	2 x 10 ⁷ OPS
Electrical endurance ²⁾	1 x 10 ⁵ OPS(room temperature)

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.

COIL

Coil power	DC type: Approx. 0.8W to 1.1W; AC type: Approx. 0.9VA to 1.5VA
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CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1500VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		DC type:15ms max.
		AC type:25ms max.
		DC type (with diode): 25ms max.
Temperature rise (no-load, at nomi.volt.) ²⁾		85K max.
Shock resistance	Functional	100m/s ²
	Destructive	1000m/s ²
Vibration resistance		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB, Plug-in
Unit weight		Approx. 35.6g
Construction		Dust protected

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

2) When testing the Temperature rise,please separate test each relay.

SAFETY APPROVAL RATINGS

UL/CUL	2 Form C/3 Form C	7A 250VAC/30VDC Resistive at 70°C
	4 Form C	6A 250VAC/30VDC Resistive at 70°C
TÜV	2 Form C/3 Form C	7A 250VAC/30VDC
	4 Form C	6A 250VAC/30VDC
CQC	2 Form C/3 Form C	7A 250VAC/30VDC
	4 Form C	6A 250VAC/30VDC

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

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



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000 CERTIFIED

2024 Rev. 1.00

COIL DATA						at 23°C
Voltage Code	Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω	
005	5	4.0	0.5	5.5	28 x (1±10%)	
006	6	4.8	0.6	6.6	40 x (1±10%)	
009	9	7.2	0.9	9.9	90 x (1±10%)	
012	12	9.6	1.2	13.2	160 x (1±10%)	
021	21	16.8	2.1	23.1	490 x (1±10%)	
024	24	19.2	2.4	26.4	640 x (1±10%)	
030	30	24.0	3.0	33.0	1000 x (1±10%)	
036	36	28.8	3.6	39.6	1440 x (1±10%)	
048	48	38.4	4.8	52.8	2560 x (1±15%)	
060	60	48.0	6.0	66.0	4000 x (1±15%)	
110	110	80.0	11.0	121.0	12250 x (1±15%)	
125	125	100.0	12.5	137.5	17360 x (1±15%)	
220	220	176.0	22.0	242.0	53360 x (1±15%)	

Voltage Code	Nominal Voltage VAC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω	
6	6	4.8	1.8	6.6	11 x (1±10%)	
12	12	9.6	3.6	13.2	44 x (1±10%)	
24	24	19.2	7.2	26.4	177 x (1±10%)	
36	36	28.8	10.8	39.6	400 x (1±10%)	
48	48	38.4	14.4	52.8	708 x (1±10%)	
60	60	48.0	18.0	66.0	1100 x (1±10%)	
110	110 ³⁾	80.0	33.0	121	3400 x (1±15%)	
120	120 ³⁾	88.0	36.0	132	4080 x (1±15%)	
220	220 ³⁾	160.0	66.0	242	13600 x (1±15%)	
230	230	176.0	72.0	253	16300 x (1±15%)	
240	240 ³⁾	176.0	72.0	264	16300 x (1±15%)	
277	277	221.6	83.1	304.7	23590 x (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 coil.

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) A110:Nominal Voltage(100~110)VAC; A120:Nominal Voltage(110~120)VAC; A220:Nominal Voltage(200~220)VAC; A240:Nominal Voltage(220~240)VAC; 110:Nominal Voltage(100~110)VAC; 125:Nominal Voltage(110~125)VAC

4) When the 240VAC specification coil test coil temperature rises, the installation pitch needs to be ≥6mm.

ORDERING INFORMATION

Type		HF18FF: without button HF18FH: with button	/A		240	-2Z	1	3	G	D	(XXX)
Coil voltage form		A: AC(50Hz or 60Hz) Nil: DC									
Coil voltage		See "COIL DATA"									
Contact arrangement		2Z: 2 Form C 3Z: 3 Form C 4Z: 4 Form C									
Mounting Termination (See the following)		1: Socket 2: PCB 5 ¹⁾ : Flange-Mounting									
Contact material		3: AgNi T: AgSnO ₂									
Contact plating		Nil: No gold plated G: Gold plated									
Component code ⁵⁾		Nil: Without Component D: with LED J: with diode DJ: with LED and diode									
Special code ⁶⁾		XXX: Customer special requirement Nil: Standard									

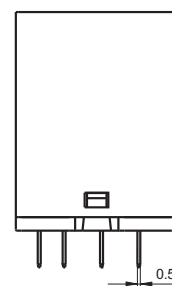
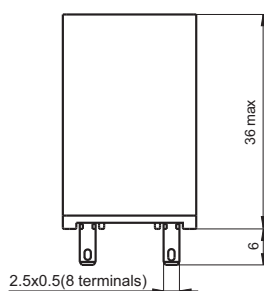
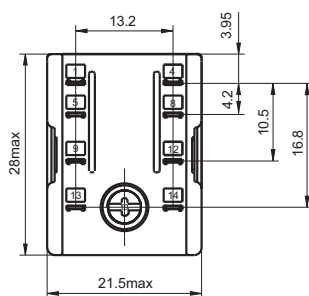
- Notes:** 1) HF18FH without Flange-Mounting Termination, Please choose HF18FF when ordering.
 2) Free-wheeling diode is available for DC coil relay, CR circuit is available for AC coil relay.
 3) The customer's special requirement express as special code after evaluating by Hongfa.
 4) We can provide (136) Economic model relays, the specific performance is subject to the Specifications Data Sheet, please contact us.
 5) For coil specifications of 110VDC and above, it is recommended that the customer add the coil protection measures in the circuit.
 6) 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.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

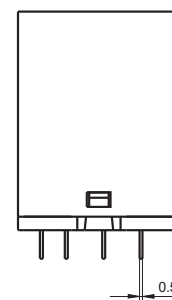
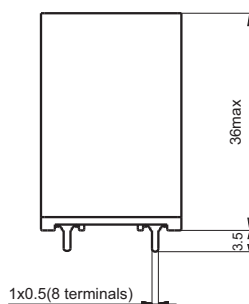
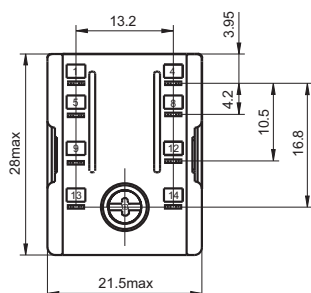
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Outline Dimensions

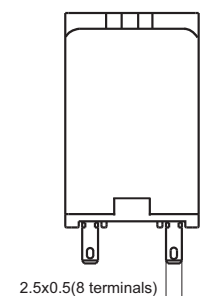
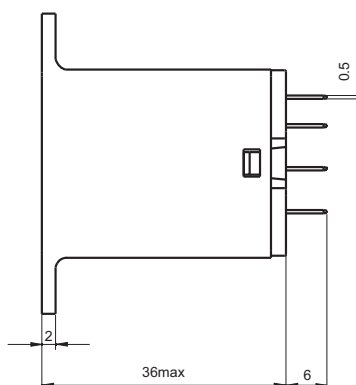
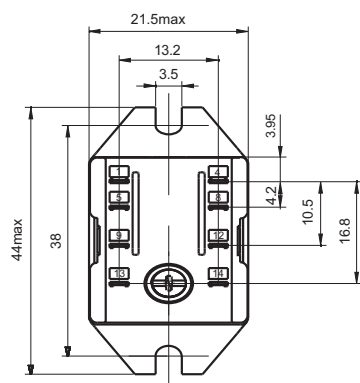
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HF18FF/□□-2Z2□□□□



HF18FF/□□-2Z5□□□□

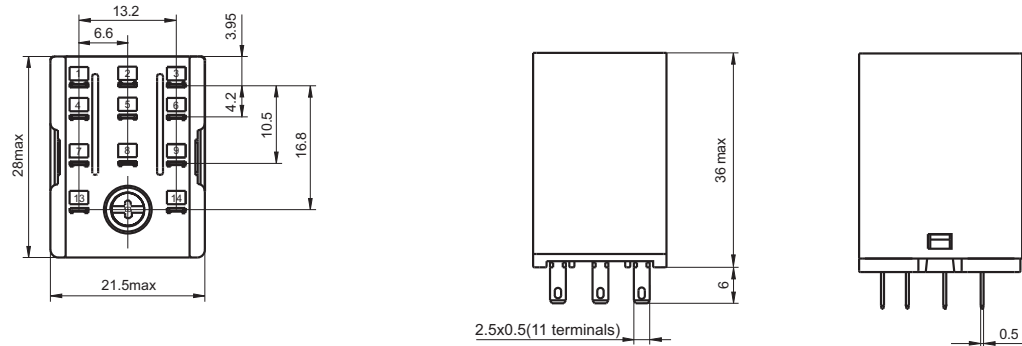


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

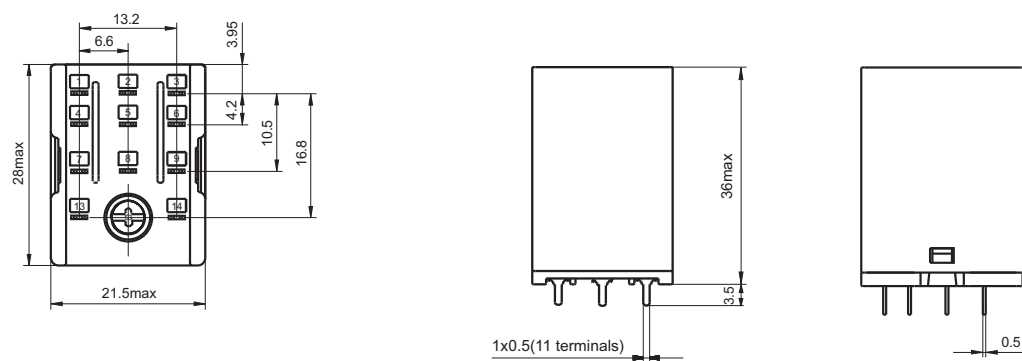
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Outline Dimensions

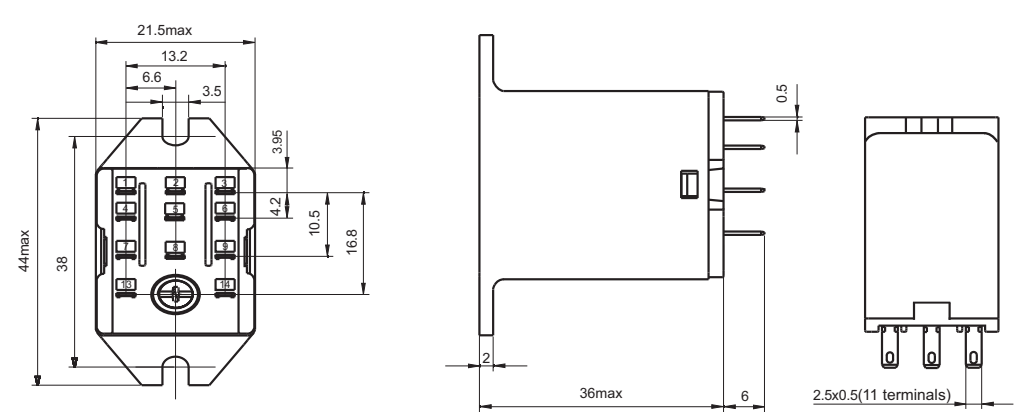
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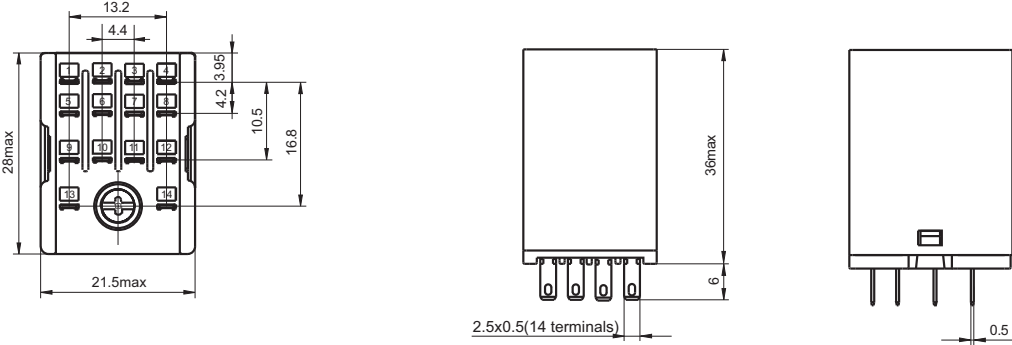


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

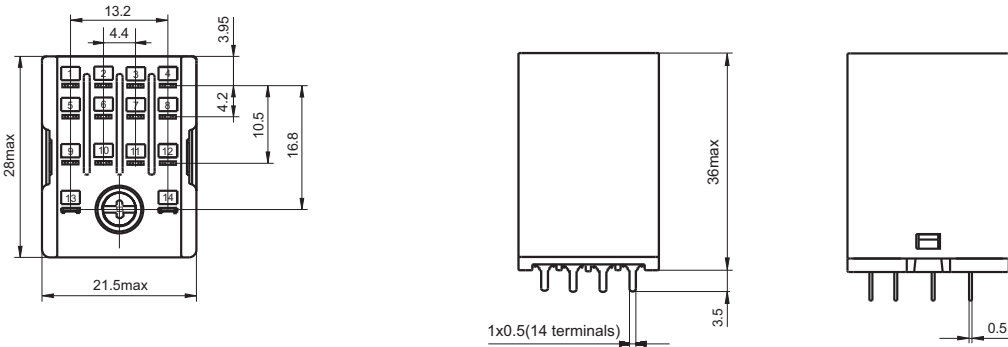
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Outline Dimensions

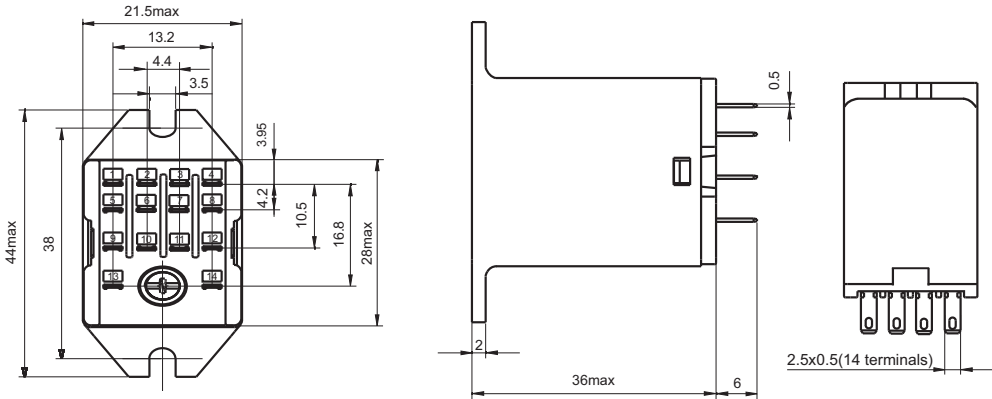
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HF18FF/□□-4Z5□□□□

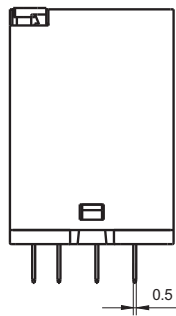
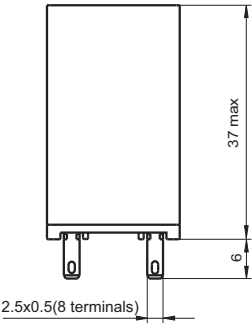
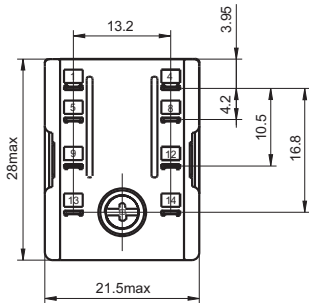


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

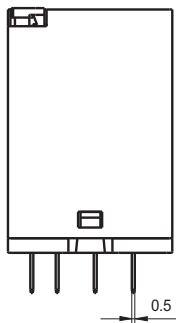
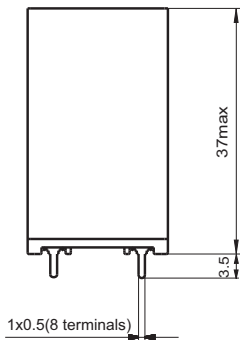
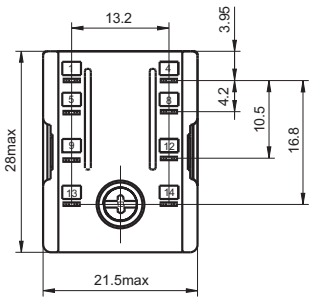
Unit: mm

Outline Dimensions

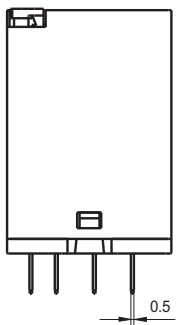
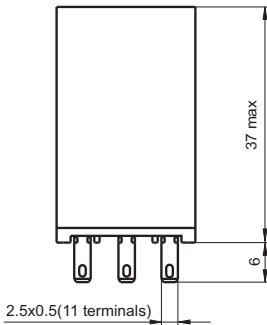
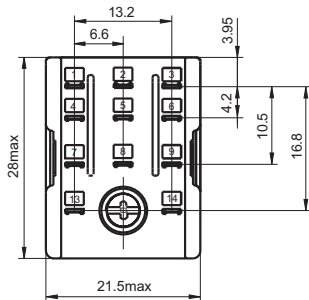
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HF18FH/□□-2Z2□□□□



HF18FH/□□-3Z1□□□□

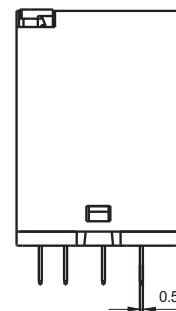
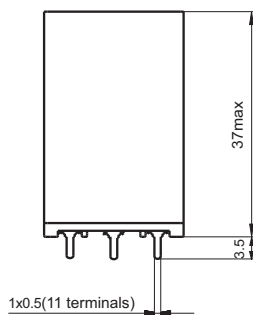
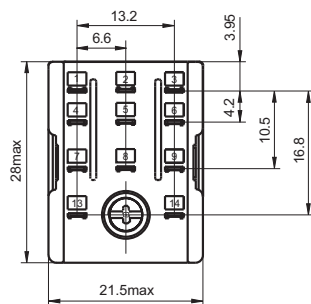


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

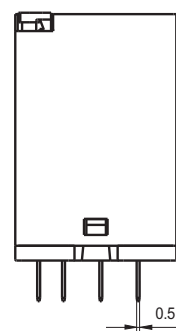
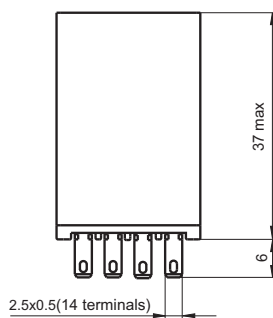
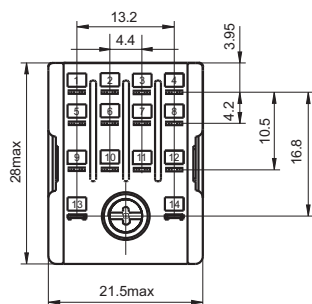
Unit: mm

Outline Dimensions

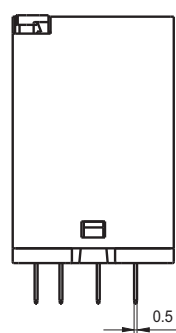
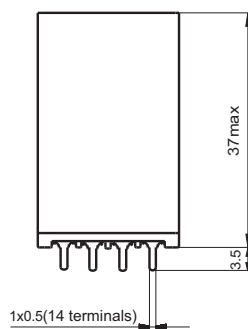
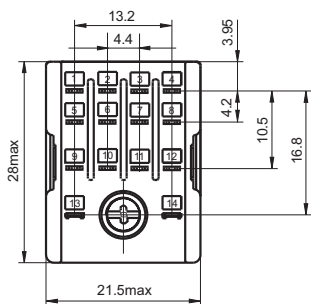
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HF18FH/□□-4Z1□□□□



HF18FH/□□-4Z2□□□□

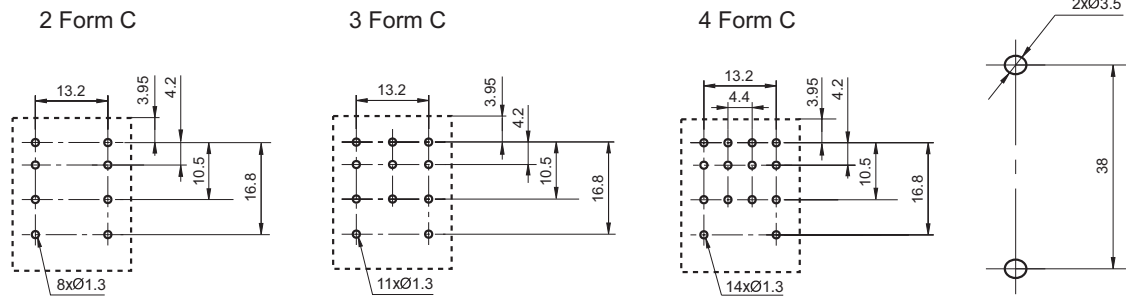


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

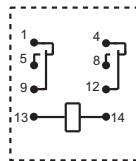
PCB Layout
(Bottom view)

Mounting Holes

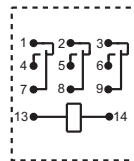


Wiring Diagram
(Bottom view)

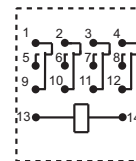
2 Form C



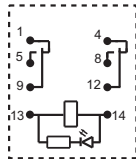
3 Form C



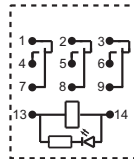
4 Form C



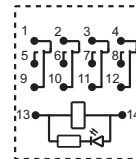
2 Form C (With LED)



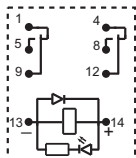
3 Form C (With LED)



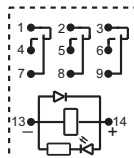
4 Form C (With LED)



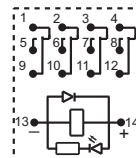
2 Form C
(DC, With fly-wheel diode)



3 Form C
(DC, With fly-wheel diode)



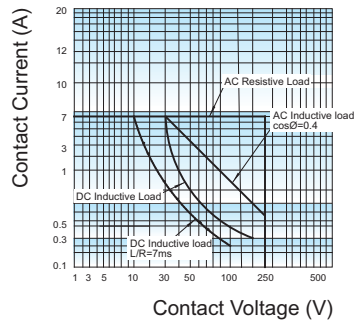
4 Form C
(DC, With fly-wheel diode)



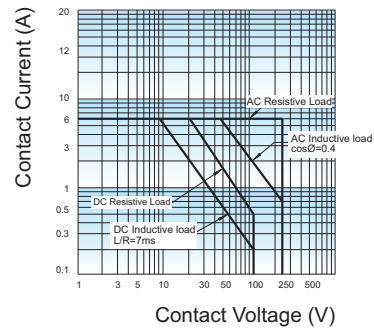
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) DC products with fly-wheel diode, please confirm the positive and negative terminals before wiring.

CHARACTERISTIC CURVES

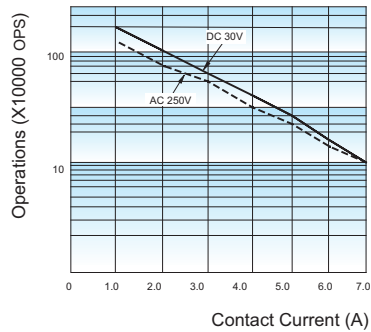
MAXIMUM SWITCHING POWER
(2 Form C/3 Form C)



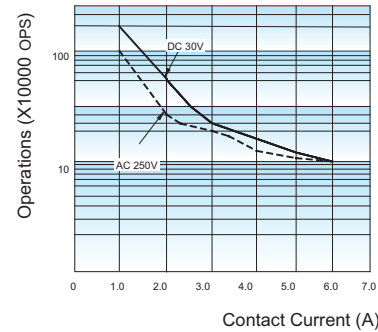
MAXIMUM SWITCHING POWER
(4 Form C)



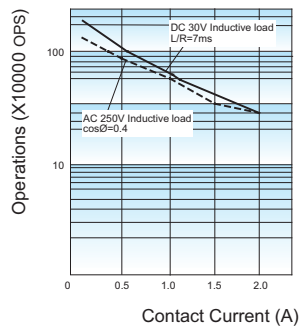
RES. LOAD ENDURANCE CURVE
(2 Form C/3 Form C)



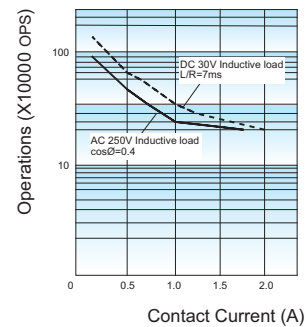
RES. LOAD ENDURANCE CURVE
(4 Form C)



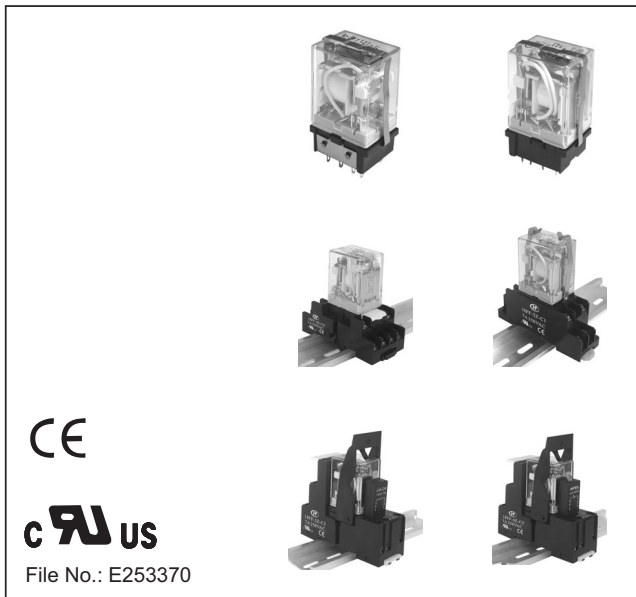
INDUCTIVE LOAD ENDURANCE CURVE
(2 Form C/3 Form C)



INDUCTIVE LOAD ENDURANCE CURVE
(4 Form C)



Relay Sockets



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

RoHS compliant

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
18FF-2Z-A2	250VAC	7A	-40 °C to 70 °C	2000VAC	—	*	Approx.8g
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-C8	250VAC	7A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx.41g
18FF-2Z-C9	250VAC	7A	-40 °C to 70 °C	2000VAC	—	7mm	Approx.70g
18FF-2Z-C10	300VAC/DC	10A	-40 °C to 70 °C	2000VAC	—	10mm	Approx.57g
18FF-2Z-C10/P	300VAC/DC	10A	-40 °C to 70 °C	2000VAC	—	10mm	Approx.58g
18FF-3Z-C4	250VAC	7A*	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx.59g
18FF-3Z-C5	250VAC	7A*	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx.71g
18FF-4Z-A2	250VAC	7A*	-40 °C to 70 °C	2000VAC	—	*	Approx.8g
18FF-4Z-C1	250VAC	7A*	-40 °C to 70 °C	2000VAC	0.8N · m	7mm	Approx.58g
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-C8	250VAC	7A*	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx.51g
18FF-4Z-C9	250VAC	7A*	-40 °C to 70 °C	2000VAC	—	7mm	Approx.81g
18FF-4Z-C10	300VAC/DC	6A*	-40 °C to 70 °C	2000VAC	—	10mm	Approx.65g
18FF-4Z-C10/P	300VAC/DC	6A*	-40 °C to 70 °C	2000VAC	—	10mm	Approx.66g

Remark: For sockets marked *, their group of current totally should be not more than 20A.


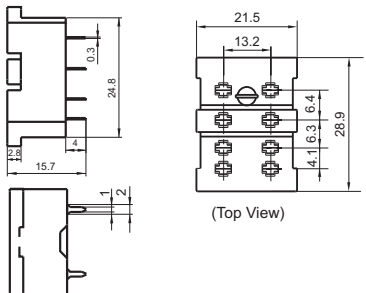
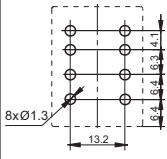

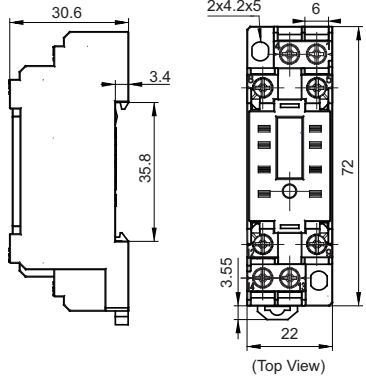
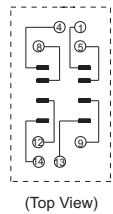
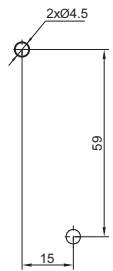

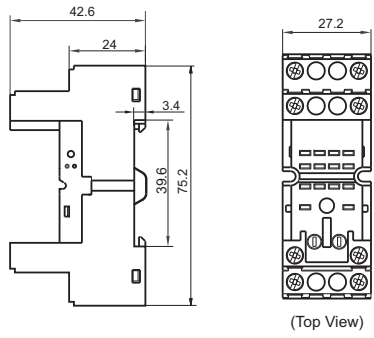
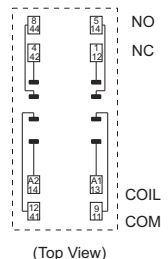
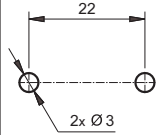
CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
18FZ-2Z-C2	250VAC	7A	-40 °C to 70 °C	2000VAC	0.8N · m	7mm	Approx.30g
18FZ-4Z-C2	250VAC	5A	-40 °C to 70 °C	2000VAC	0.8N · m	7mm	Approx.44g
18FF-2Z-C2(734)	250VAC	12A	-40 °C to 70 °C	2000VAC	0.8N · m	7mm	Approx.36g
18FF-2Z-C4(734)	250VAC	12A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx.53g
18FF-2Z-C5(734)	250VAC	12A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx.64g
18FF-3Z-C5(734)	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx.71g

Remark: For sockets marked *, their group of current totally should be not more than 20A.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


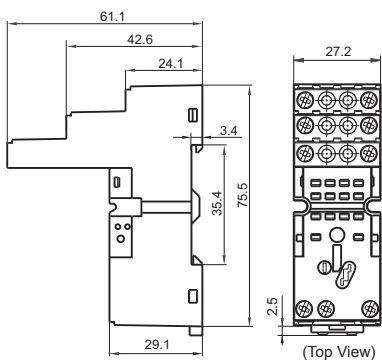
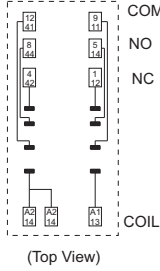
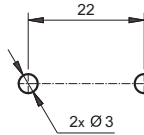

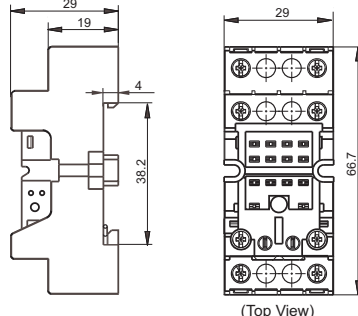
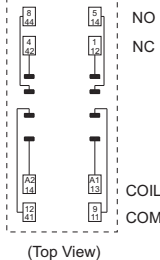
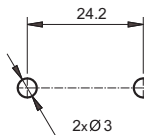

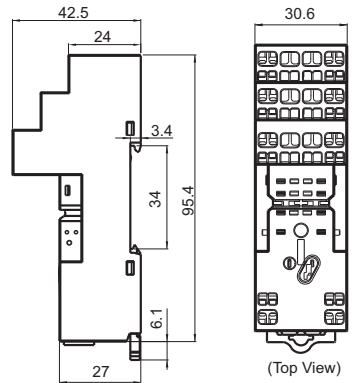
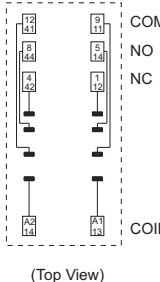

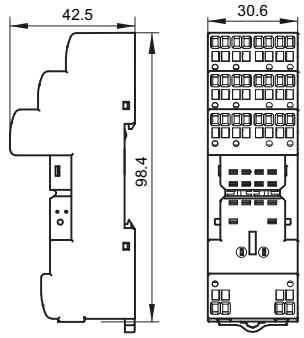
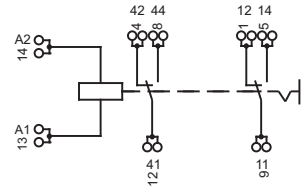
Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-2Z-A2  PCB Terminal, PCB mounting Applicable for 2 poles	 (Top View)			Metallic retainer 18FF-H1
18FF-2Z-C2 18FF-2Z-C2(734)  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)
18FF-2Z-C4 18FF-2Z-C4(734)  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*

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

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


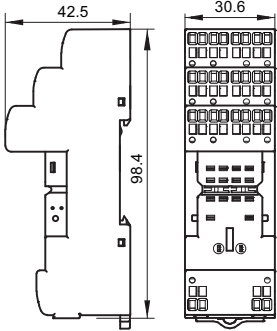
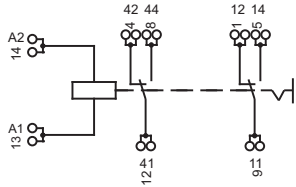

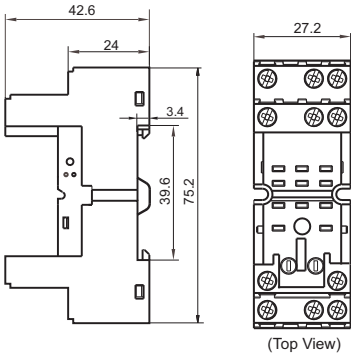
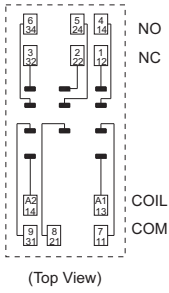

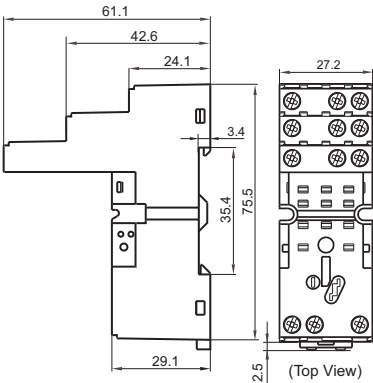
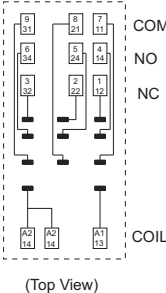
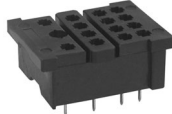
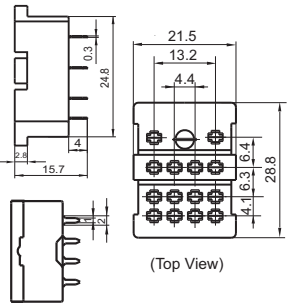
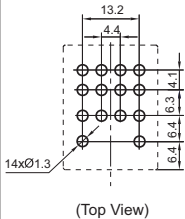
Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-2Z-C5 18FF-2Z-C5(734)  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*
18FF-2Z-C8  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M3 Plug-in module HFAA to HFHU*
18FF-2Z-C9  Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Plug-in module HFAA ~ HFHU* Marker 18FF-M3
18FF-2Z-C10 	 (Top View)			Retainer* 18FF-H4 18FF-H5 Jumper* 18FF-J2 Marker* 18FF-M1 Plug-in module* HFAA~HFHU

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


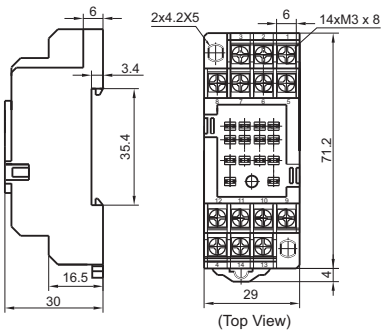
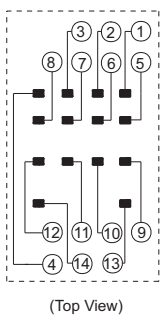
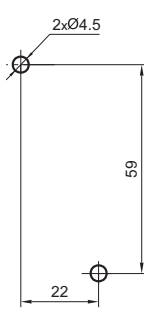

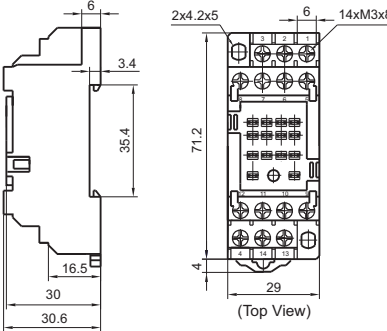
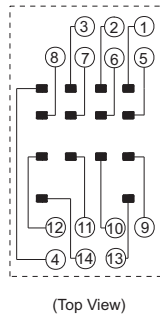
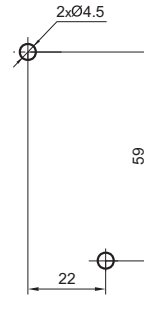

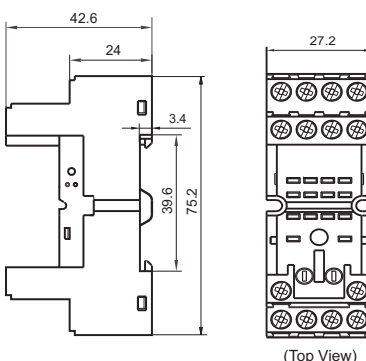
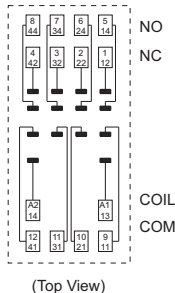
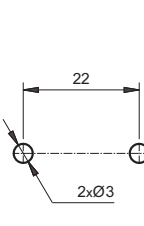

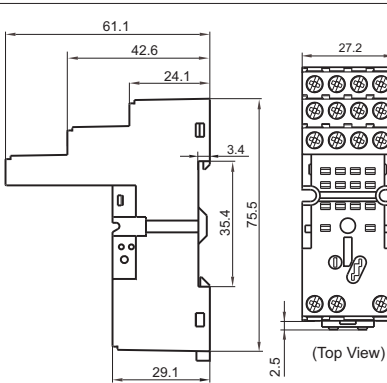
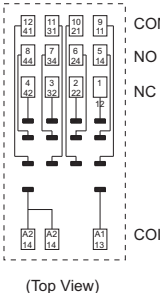
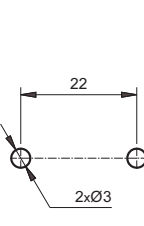
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	PCB Layout	Components Available
18FF-2Z-C10/P 			Retainer* 18FF-H4 18FF-H5 Jumper* 18FF-J2 Marker* 18FF-M1 Plug-in module* HFAA~HFHU
18FF-3Z-C4  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles			Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*
18FF-3Z-C5 18FF-3Z-C5(734)  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles			Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*
18FF-4Z-A2  PCB Terminal, PCB mounting Applicable for 4 poles			Metallic retainer 18FF-H1

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


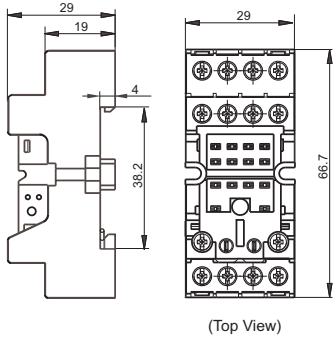
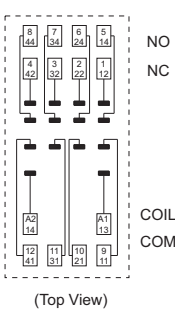
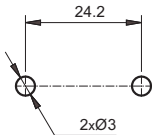

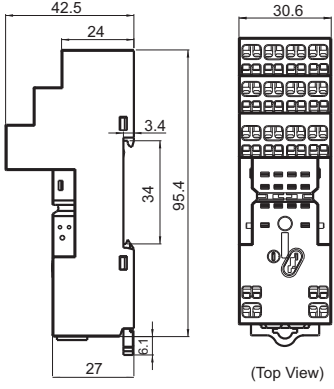
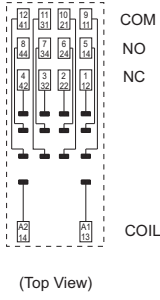

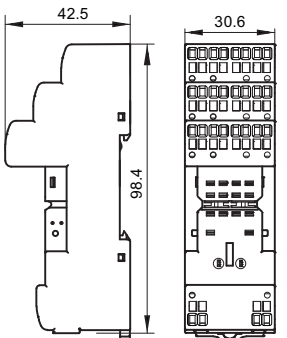
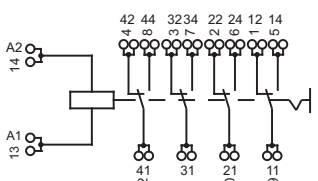

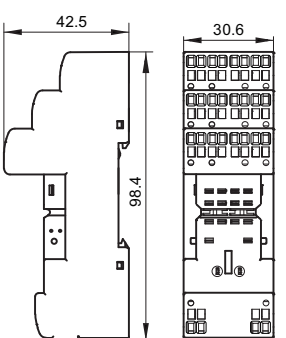
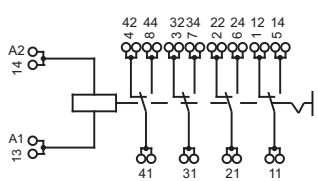
Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-4Z-C1  Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)
18FF-4Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)
18FF-4Z-C4  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*
18FF-4Z-C5  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*

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

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


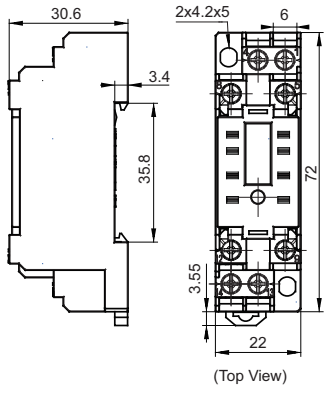
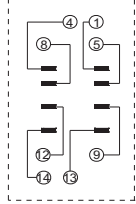
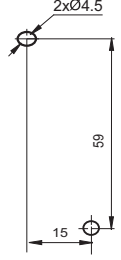

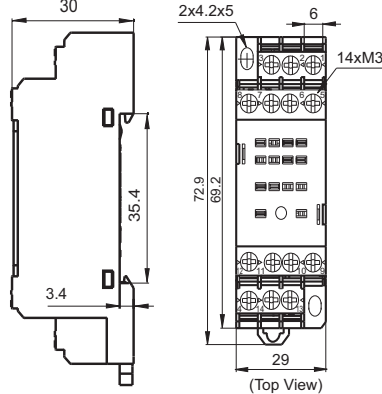
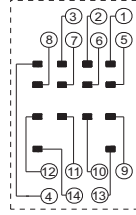
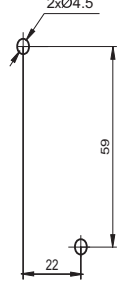
Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-4Z-C8  <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</p> <p>*Metallic retainer 18FF-H5</p> <p>Marker 18FF-M3</p> <p>*Plug-in module HFAA to HFHU</p>
18FF-4Z-C9  <p>Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>Plastic retainer 18FF-H4</p> <p>Metallic retainer 18FF-H5</p> <p>Plug-in module HFAA ~ HFHU*</p> <p>Marker 18FF-M3</p>
18FF-4Z-C10 				<p>Retainer* 18FF-H4 18FF-H5</p> <p>Jumper* 18FF-J2</p> <p>Marker* 18FF-M1</p> <p>Plug-in module* HFAA~HFHU</p>
18FF-4Z-C10/P 				<p>Retainer* 18FF-H4 18FF-H5</p> <p>Jumper* 18FF-J2</p> <p>Marker* 18FF-M1</p> <p>Plug-in module* HFAA~HFHU</p>

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

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FZ-2Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (Used in pairs)
18FZ-4Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		* Metallic retainer 18FF-H2 (be used in sets)

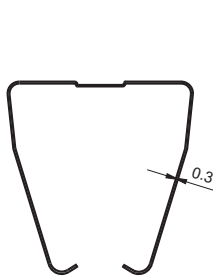
Notes: * Please refer to the product datasheet if Plug-in module is required.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

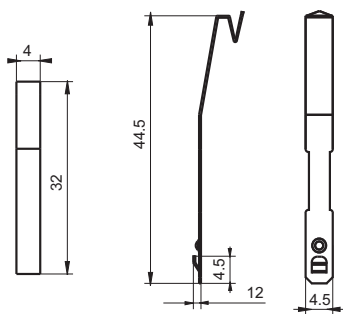
Unit: mm

Retainer

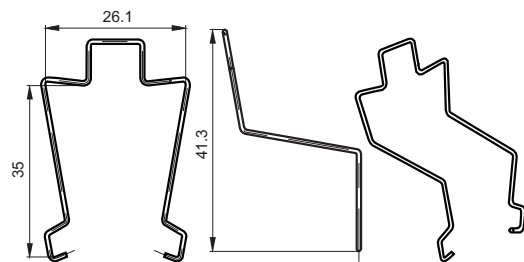
18FF-H1 (Metallic retainer)



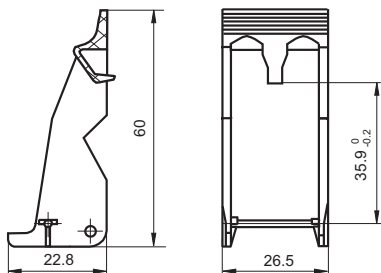
18FF-H2 (Metallic retainer)



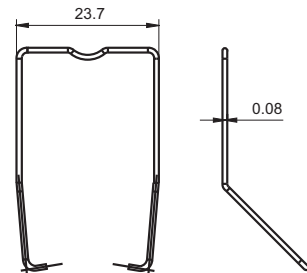
18FF-H3 (Metallic retainer)



18FF-H4 (Plastic retainer)



18FF-H5 (Metallic retainer)



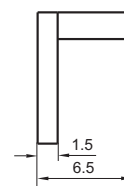
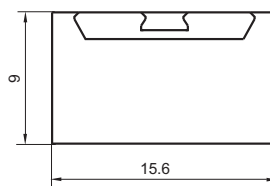
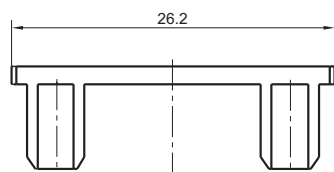
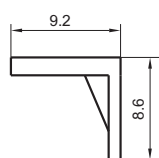
DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Marker

18FF-M1

18FF-M3



SELECTION OF PARTS

Type of Relay	Mounting termination	Socket	Retainer	Marker	Module	
HF18FF/□□-2Z1□□□	Without button	18FF-2Z-A2	18FF-H1	-	-	
		18FF-2Z-C1	18FF-H2/H3			
		18FF-2Z-C2				
		18FZ-2Z-C2				
		18FF-2Z-C4	18FF-H4/H5	18FF-M1	HFAA~HFHU	
		18FF-2Z-C5		18FF-M3		
		18FF-2Z-C8				
		18FF-2Z-C9				18FF-M1
18FF-3Z-C4						
18FF-3Z-C5						
HF18FF/□□-3Z1□□□		18FF-4Z-A2	18FF-H1	-	-	
		18FF-4Z-C1	18FF-H2			
		18FF-4Z-C2				
		18FZ-4Z-C2				
HF18FF/□□-4Z1□□□		18FF-4Z-C4	18FF-H4/H5	18FF-M1	HFAA~HFHU	
		18FF-4Z-C5		18FF-M3		
		18FF-4Z-C8				
		18FF-4Z-C9				
	HF18FH/□□-2Z1□□□	With button	18FF-2Z-C4	18FF-H4/H5	18FF-M1	HFAA~HFHU
			18FF-2Z-C5		18FF-M3	
18FF-2Z-C8						
18FF-2Z-C9			18FF-M1			
18FF-3Z-C4						
18FF-3Z-C5					18FF-H4/H5	
18FF-4Z-C4			18FF-M3			
18FF-4Z-C5						
18FF-4Z-C8	18FF-M1					
18FF-4Z-C9			18FF-M3			
HF18FH/□□-3Z1□□□	With button		18FF-2Z-C4(734)	18FF-H2/H3	-	-
			18FF-2Z-C2(734)			
18FF-2Z-C4(734)		18FF-H4/H5	18FF-M1	HFAA~HFHU		
18FF-2Z-C5(734)						
18FF-3Z-C5(734)						
18FF-2Z-C4(734)						
18FF-2Z-C5(734)						
18FF-3Z-C5(734)						
HF18FH-G/□□-2Z1□□□	With button	18FF-2Z-C4(734)	18FF-H4/H5	18FF-M1	HFAA~HFHU	
18FF-2Z-C5(734)						
18FF-3Z-C5(734)						
HF18FH-G/□□-3Z1□□□	With button	18FF-2Z-C4(734)	18FF-H4/H5	18FF-M1	HFAA~HFHU	
18FF-2Z-C5(734)						
18FF-3Z-C5(734)						

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 the use of non-threaded terminal type sockets

- 1.Lead end socket description :

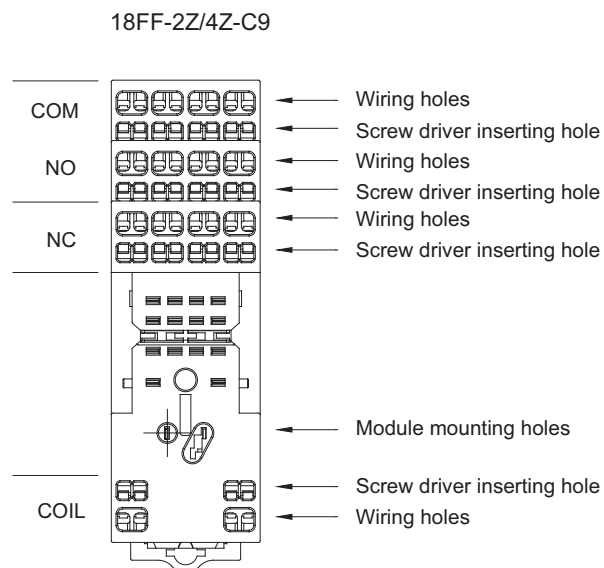


Figure 1

- 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.

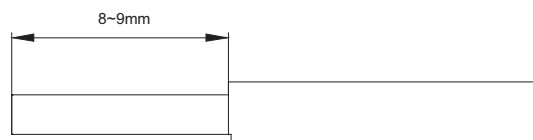


Figure 2

Precautions For Use

- 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.

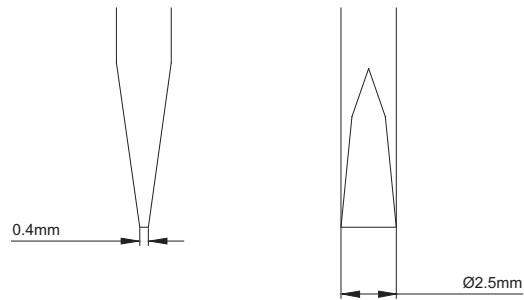


Figure 3

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

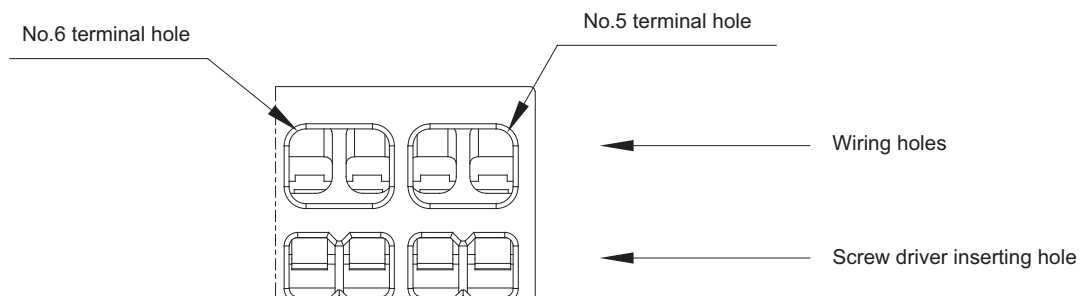


Figure 4

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.

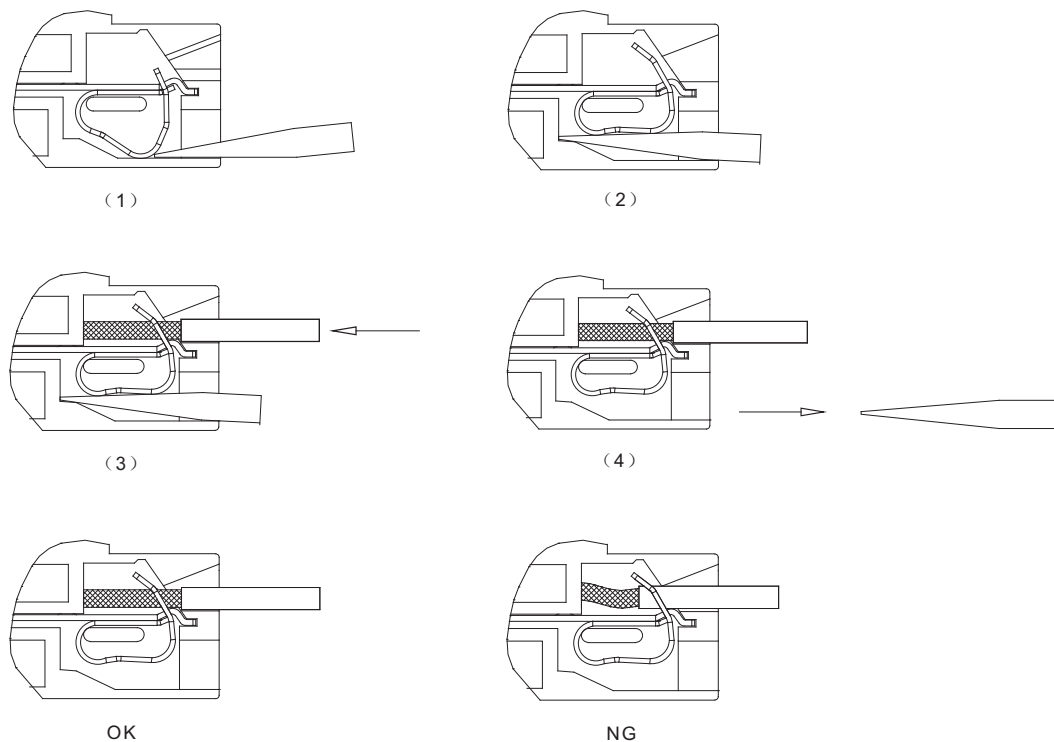


Figure 5

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:

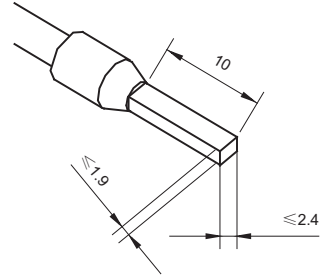
1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with Markers is furnished with a marker; as for other related 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 $35 \times 7.5 \times 1\text{mm}$, $35 \times 15 \times 1\text{mm}$.

Precautions For Use

18FF-2Z/4Z-C10
18FF-2Z/4Z-C10/P

Applicable conductor cross section

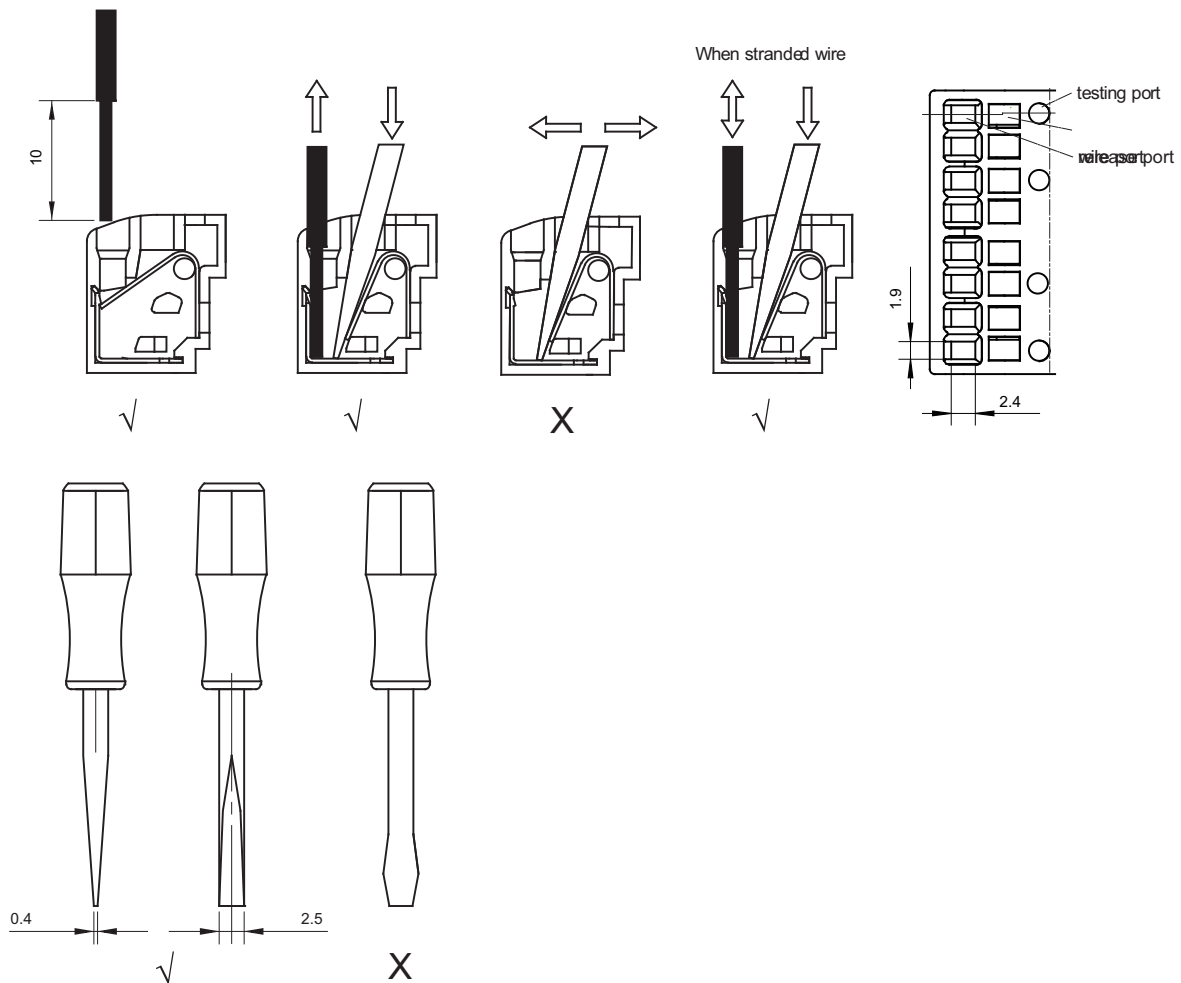
solid wire		1x0.5/0.75/1.0/1.5/2.5 mm ²
		2x0.5/0.75/1.0/1.5 mm ²
Multi-stranded	Multi-stranded wire without standard sleeve	1x0.5/0.75/1.0/1.5/2.5 mm ²
		2x0.5/0.75/1.0/1.5 mm ²
	Multi-stranded wire with standard sleeve	1x0.5/0.75/1.0/1.5 mm ²
		2x0.5/0.75/1.0 mm ²



Regarding push in socket

- The screwdriver insertion hole must not be wired.
 - When inserting the screwdriver into the hole, please insert it at an angle.
 - Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage the socket.
 - Do not forcibly bend or pull on the wire. Otherwise it may result broken wire.
 - Do not insert more than one wires into one wiring hole.
 - To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4.
- The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Recommended Wires	Film peel (when bar terminals are not used)
0.5~2.5mm ² / AWG20~14	≥10mm



Precautions For Use

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. Relevant accessories must be selected separately. Please indicate the model of the selected accessories when ordering;
3. 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 $\pm 0.3\text{mm}$.
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1\text{mm}$, $35 \times 15 \times 1\text{mm}$. When installed vertically, the coil terminal at the bottom please .

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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Features

- 5000VAC insulation(I/O),8mm creepage distance,1000MΩ insulation resistance
- DIN rail , PCB mounting type available
- Extremely narrow (only15.8mm)
- Products with finger protection are available
- Ensure secure retention and easy ejection of relays, Ensure relays are securely mounted on or easily removed from sockets.

RoHS compliant

Tool hole/button

The hole to insert tool for installing/removing the wire or models with pushbuttons.

Test hole

For multimeter or other test probes.

Retainer

Prevent relay from loosening or falling out in vibration environment;
Quickly remove the relay.

Relay

Maximum 16A switching capability;
5kV dielectric strength (between coil and contacts);
Meeting VDE 0700
0631 reinforce insulation;
DC/AC coil, LED, test button, transparent cover, 1 pole/2pole contact;
Solid state relay is featured with long lifecycle.

Wiring hole

For wire connection, suit for both rigid and flexible wire compression terminals.

Module

Protect signal input devices, prevent misoperation of relays;
Power indicator, fly-wheel diode, induced current absorption, overvoltage protection.

Marker

Mark or post signs.

Socket marking

Marked with main electrical performance, load range, applicable tools, matching relays.

Matching socket

DIN rail mount or screw (Ø3.5) mount.



File No.:
E253370(Socket), E134517(Relay)



File No.:
116934(Relay)



File No.:
CQC17002168381(Relay)



HONGFA RELAY

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

2023 Rev. 2.00

CONTACT DATA

Contact arrangement	1C	2C
Contact rating (Res. load)	16A 250VAC	8A 250VAC
Max. switching voltage	440VAC	
Max. switching current	16A	8A

CHARACTERISTICS

Insulation resistance	1000MΩ (500VAC)	
Dielectric strength (RMS)	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	8ms max.	
Humidity (RH)	5% to 85%RH	
Storage temperature	- 40°C to 85°C	
Overvoltage category	III	
Conductor cross-section	0.5mm ² to 2.5mm ²	

COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min	Max. ¹⁾ Allowable Voltage VDC	Coil voltage Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48 ²⁾	33.60	4.8	72	5760 x (1±15%)
60 ²⁾	42.00	6.0	90	7500 x (1±15%)
110 ²⁾	77.00	11.0	165	25200 x (1±15%)

Notes: (1) Max. voltage refers to the maximum voltage which relay coil could endure in a short period of time;

(2) 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).

ORDERING INFORMATION

HF115F-AS / □ -1Z S 3 A F --□ -□ (XXX)	
Relay module	HF115F: Relay type AS: module
Relay coil voltage	5, 6, 9, 12, 18, 24, 48, 60, 110 VDC
Contact arrangement	1H: 1 Form A (1 pole16A) 1D: 1 Form B (1 pole16A) 1Z: 1 Form C (1 pole16A) 2H: 2 Form A 2D: 2 Form B 2Z: 2 Form C
Construction	S: Plastic sealed Nil:Fluxproofed
Structure	3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A
Contact material	A: AgSnO ₂ AG: AgSnO ₂ +Au plated B: AgNi BG: AgNi+Au plated Nil: AgCdO
UL insulation system	F: Class F
Matching socket	A1: PCB terminal C2,C3: Screw terminal C10: Push in terminal
Matching retaining clip	H4 for socket C2,C3,C10 H1 for socket A1
Special code	XXX: The customer special requirement Nil: Standard type

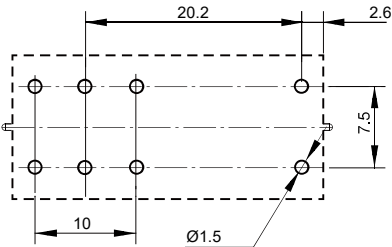
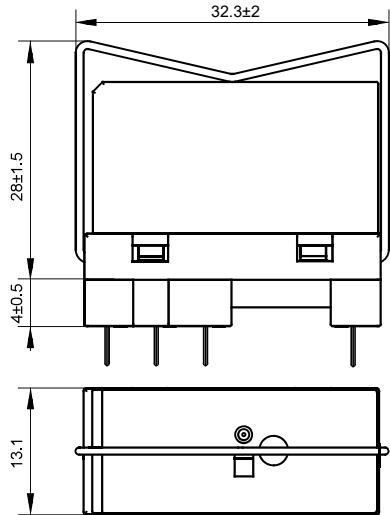
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

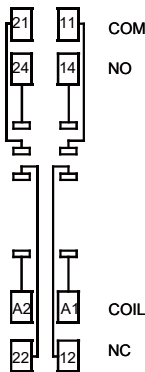
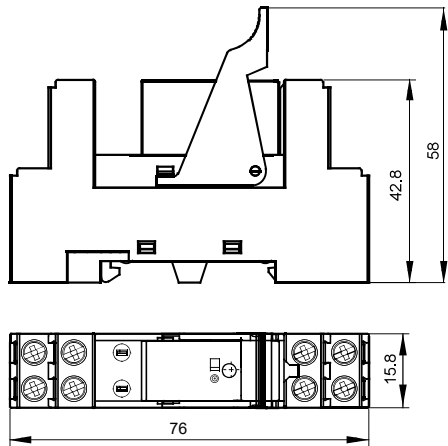
Outline Dimensions

Wiring Diagram(Bottom view)

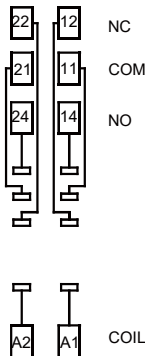
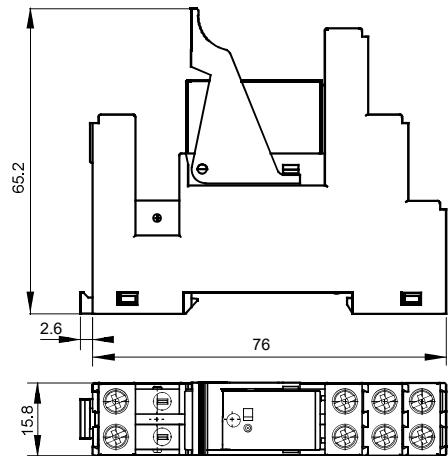
HF115F-AS/□-□□4□□-A1-H1



HF115F-AS/□-□□4□□-C2-H4



HF115F-AS/□-□□4□□-C3-H4



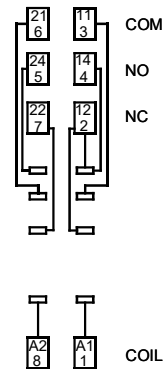
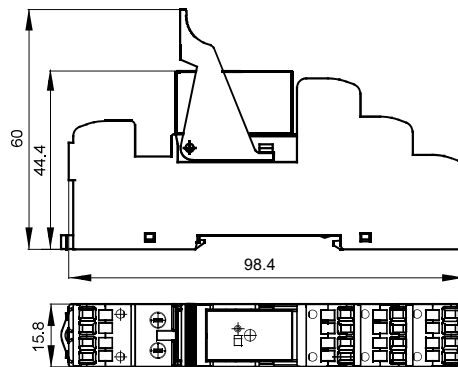
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

Outline Dimensions

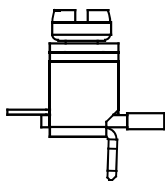
Wiring Diagram(Top view)

HF115F-AS/□-□□4□□-C10-H4



COMPONENT ORDERING INFORMATION

Screw terminal



P/N	module type	relay type	socket type	retainer type	Min. packing quantity	unit weight
—	HF115F-AS/024-2Z4BF-C2-H4	HF115F/024-2Z4BF	14FF-2Z-C2	14FF-H4	10pcs	Approx. 54.7g
—	HF115F-AS/024-2Z4BF-C3-H4	HF115F/024-2Z4BF	14FF-2Z-C3	14FF-H4		Approx. 60.5g

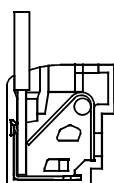
Note: Pleasecontact us for any information.

PCB terminal

P/N	module type	relay type	socket type	retainer type	Min. packing quantity	unit weight
—	HF115F-AS/024-2Z4BF-A1-H1	HF115F/024-2Z4BF	14FF-2Z-A1	14FF-H1	10pcs	Approx. 16.4g

Note: Pleasecontact us for any information.

Push in terminal



P/N	module type	relay type	socket type	retainer type	Min. packing quantity	unit weight
—	HF115F-AS/024-2Z4BF-C10-H4	HF115F/024-2Z4BF	14FF-2Z-C10	14FF-H4	10pcs	Approx. 50g

Note: Pleasecontact us for any information.

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.
- 8、The main external dimension, when the external dimension > 50mm, the tolerance is $\pm 1\text{mm}$; When the $20\text{mm} < \text{dimensions}$ are between $50\text{mm} \leq$, the tolerance is $\pm 0.5\text{mm}$; When the overall dimension of $5\text{mm} < \text{between} \leq 20\text{mm}$, the tolerance is $\pm 0.4\text{mm}$, and when the external dimension is $\leq 5\text{mm}$, the tolerance is $\pm 0.3\text{mm}$;
- 9、For rail installation, it is recommended to use DIN standard $35 \times 7.5 \times 1$, $35 \times 15 \times 1$ standard rails.

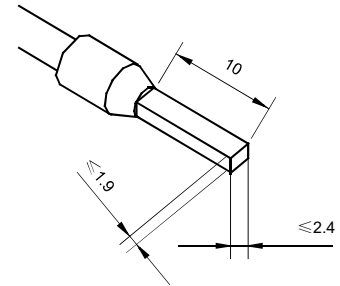
Relay module of screw terminal

Maximum torque 0.8N.m, The type of the screwdriver head is PH1.

Relay module of push interterminal

Conductor cross-section

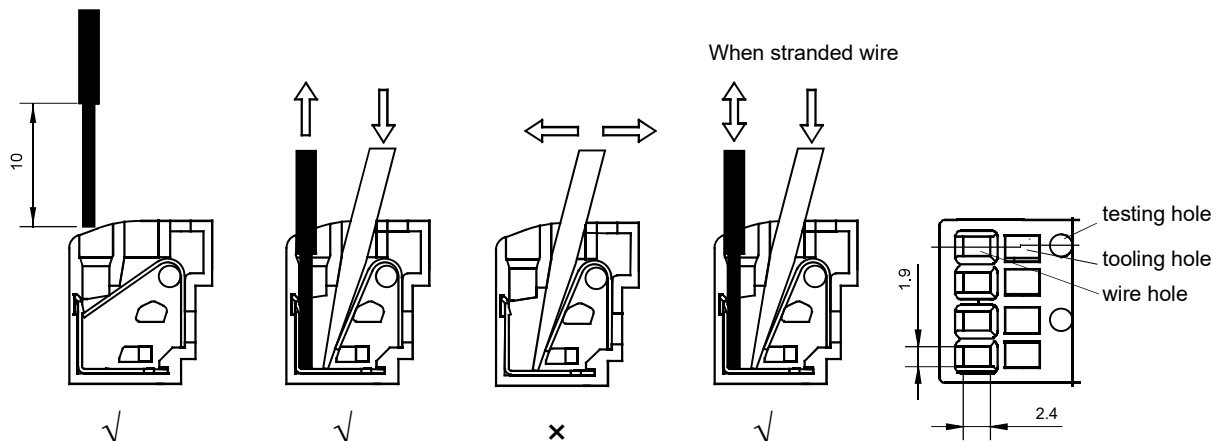
Solid wire	$1 \times 0.5/0.75/1.0/1.5/2.5 \text{ mm}^2$	
	$2 \times 0.5/0.75/1.0/1.5 \text{ mm}^2$	
Stranded wire	Stranded wires without ferrule	$1 \times 0.5/0.75/1.0/1.5/2.5 \text{ mm}^2$
		$2 \times 0.5/0.75/1.0/1.5 \text{ mm}^2$
	Stranded wires with ferrule	$1 \times 0.5/0.75/1.0/1.5 \text{ mm}^2$
		$2 \times 0.5/0.75/1.0 \text{ mm}^2$



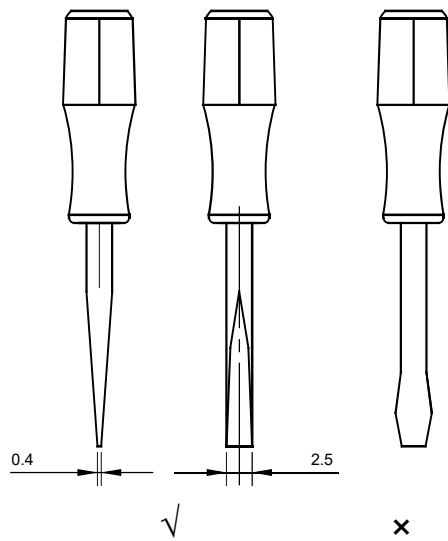
About push in socket

- Do not to insert wires to tooling hole .
- When inserting the screwdriver into the hole, please insert it at an angle.
- Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage the socket.
- Do not forcibly bend or pull on the wire. Otherwise it may result broken wire.
- Do not insert more than one wires into one wiring hole.
- To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4, The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Range of wire	Stripped length min
0.5 to 2.5mm ² / AWG20 to 14	10mm



PRECAUTIONS FOR USE



Disclaimer

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HF115F

MINIATURE HIGH POWER RELAY



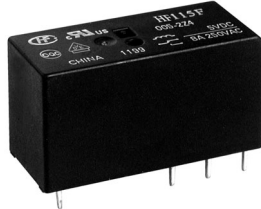
File No.:E134517



File No.:116934



File No.:CQC17002168381



Features

- Low height: 15.7 mm
- 16A switching capability
- 5kV dielectric strength (between coil and contacts)
- Contact gap: $\geq 0.75\text{mm}$, with optional specifications
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available

RoHS compliant

CONTACT DATA

Contact arrangement	1A, 1B, 1C	2A, 2B, 2C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage ²⁾	440VAC / 300VDC	
Max. switching current	12A / 16A	8A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H3B type: 1 x 10 ⁵ OPS (16A 250VAC, Resistive load, Room temp., 1s on 9s off) 2H4B type: 5 x 10 ⁴ OPS (8A 250VAC, Resistive load, Room temp., 1s on 9s off)	

Notes: 1) The data shown above are initial values,
2) see maximum switching power curve.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		8ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not in relay length direction.
3) UL insulation system: Class F, Class B.



HONGFA RELAY

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

2023 Rev. 2.01

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.1)	Drop-out Voltage VDC min.1)	Max. Voltage VDC 2)	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48 ³⁾	33.60	4.8	72	5760 x (1±15%)
60 ³⁾	42.00	6.0	90	7500 x (1±15%)
110 ³⁾	77.00	11.0	165	25200 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 $\geq 48\text{V}$, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

VDE

Contact material	Specifications	Ratings	Ambient Temperature
AgCdO	HF115F....2(H;Z)(S)4(G)(F)	8A 250VAC	70°C
	HF115F....1H(S)(1;2)(G)(F)	12A 250VAC	70°C
		10A 250VAC	70°C
	HF115F....1Z(S)(1;2)(G)(F)	12A 250VAC	70°C
	HF115F....1H(S)3(G)(F)	16A 250VAC	70°C
		10A 250VAC	70°C
		9A 250VAC COSØ =0.4	70°C
	HF115F....1Z(S)3(G)(F)	16A 250VAC	70°C
		9A 250VAC COSØ =0.4	70°C
AgNi	HF115F....2(H;Z)(S)4B(G)(F)	5A 400VAC	85°C
		8A 250VAC	85°C
	HF115F....1H(S)(1;2)B(G)(F)	12A 250VAC	85°C
	HF115F....1Z(S)(1;2)B(G)(F)	12A 250VAC	85°C
	HF115F....1H(S)3B(G)(F)	16A 250VAC	85°C
		9A 250VAC COSØ =0.4	70°C
	HF115F....1Z(S)3B(G)(F)	16A 250VAC (NO only)	85°C
		12A 250VAC	85°C
		9A 250VAC COSØ =0.4 (NO only)	70°C
		10(4)A 250VAC (NO only)	65°C
		12(2)A 250VAC (NO only)	65°C
AgSnO ₂	HF115F....2(H;Z)(S)4A(G)(F)	8A 250VAC	85°C
	HF115F....1(H;Z)(S)(1;2)A(G)(F)	12A 250VAC	85°C
	HF115F....1H(S)3A(G)(F)	16A 250VAC	85°C
		9A 250VAC COSØ =0.4	70°C
	HF115F....1Z(S)3A(G)(F)	16A 250VAC (NO only)	85°C
		9A 250VAC COSØ =0.4 (NO only)	70°C

UL/CUL

Version 1 or 2 (AgCdO)	12A 277VAC	Version 3 (AgSnO ₂)	16A 277 VAC
	1/2HP 250VAC		1/3HP 125VAC
	1/3HP 125VAC		1/2HP 250VAC
Version 1 or 2 (AgSnO ₂)	12A/ 277VAC	Version 4 (AgCdO)	B300
	B300		R300
	R300		10A 250VAC
Version 3 (AgCdO)	12A 277VAC	Version 4 (AgSnO ₂)	8A 277VAC
	16A 277 VAC		1/2HP 250VAC
	9A 250VAC 105°C		1/4HP 125VAC
	1HP 250VAC	Version 4 (AgNi)	8A 277VAC
	1/2HP 125VAC		10A 250VAC
Version 3 (AgNi)	TV-5 125VAC	Version 4 (AgNi)	1/2HP 250VAC
	16A 277VAC		1/4HF 250VAC
Version 3 (AgNi)	5FLA, 30LRA 250VAC	Version 4 (AgNi)	8A 277VAC
			10A 250VAC

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	HF115F / 012 -1H S 1 A F (XXX)						
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60, 110VDC						
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C 2H: 2 Form A 2D: 2 Form B 2Z: 2 Form C						
Construction ¹⁾²⁾	S: Plastic sealed			Nil: Flux proofed			
Version	1: 3.5mm 1 pole 12A 3: 5.0mm 1 pole 16A			2: 5.0mm 1 pole 12A 4: 5.0mm 2 pole 8A			
Contact material ³⁾	A: AgSnO ₂ B: AgNi AG: AgSnO ₂ + Au plated			Nil: AgCdO G: AgCdO+ Au plated BG: AgNi+ Au plated			
Insulation standard	F: Class F Nil: Class B						
Special code ⁴⁾	XXX: Customer special requirement			Nil: Standard			

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommend for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
- 4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT); (253) stands for Reflow soldering version, for 1 pole type.(AL2)indicates that the contact gap of the product is ≥0.75mm, plastic sealed typ(Only for HF115F 2H).
- 5) Two packing methods available: plastic tray package, tube package,Standard tube packing length is 616mm. Any special requirement needed, please contact us for more details.
- 6) 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.

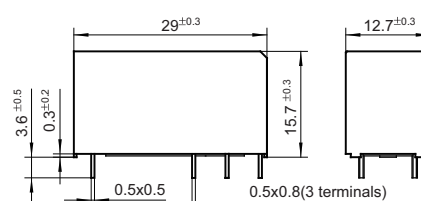
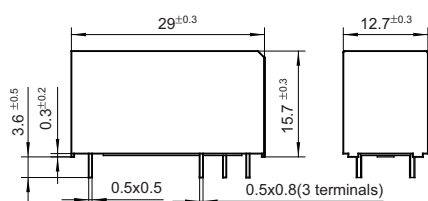
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

3.5mm Pinning (HF115F/□□□-1□-□-1-□□)

5mm Pinning (HF115F/□□□-□□-□-2/3/4-□□)



Wiring Diagram (Bottom view)

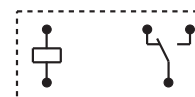
3.5/5mm Pinning, 1 Pole, 12A, HF115F/□□□-1□-□-1/2-□□



1 Form A

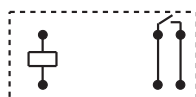


1 Form B

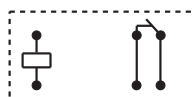


1 Form C

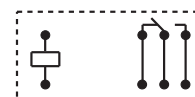
5mm Pinning, 1 Pole, 16A, HF115F/□□□-1□-□-3-□□



1 Form A

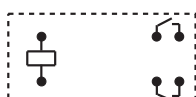


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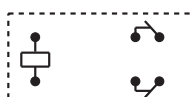


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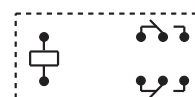
5mm Pinning, 2 Pole, 8A, HF115F/□□□-2□-□-4-□□



2 Form A



2 Form B



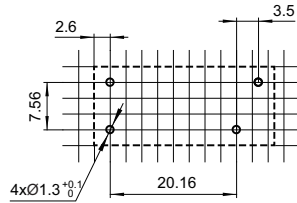
2 Form C

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

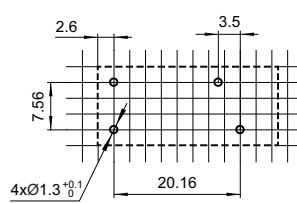
Unit: mm

PCB Layout (Bottom view)

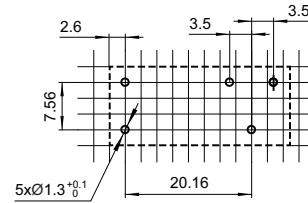
3.5 Pinning, 1 Pole, 12A, HF115F/□□□-1□-□-1□□



1 Form A

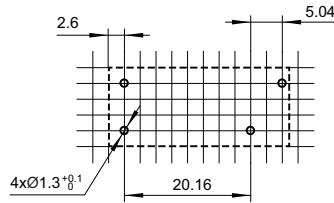


1 Form B

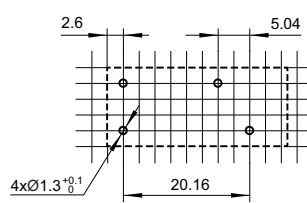


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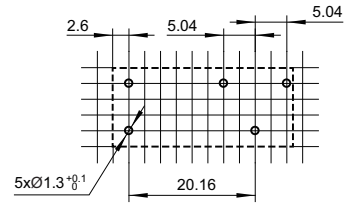
5mm Pinning, 1 Pole, 12A, HF115F/□□□-1□-□-2□□



1 Form A

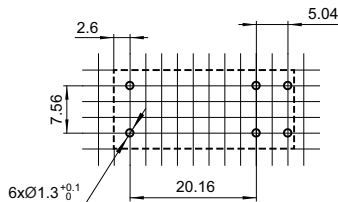


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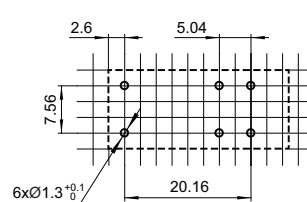


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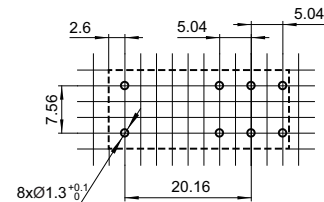
5mm Pinning, 1 Pole, 16A, HF115F/□□□-1□-□-3□□



1 Form A

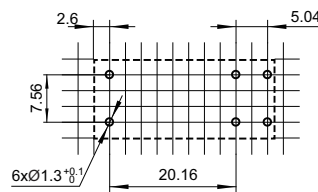


1 Form B

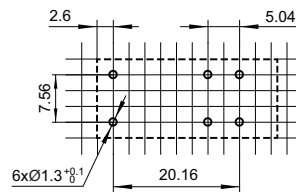


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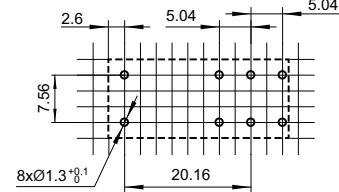
5mm Pinning, 2 Pole, 8A, HF115F/□□□-2□-□-4□□



2 Form A



2 Form B

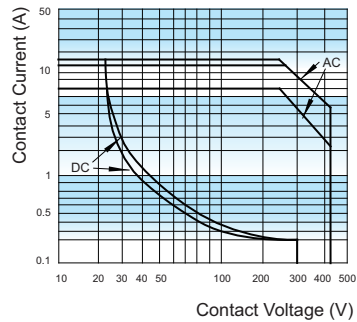


2 Form C

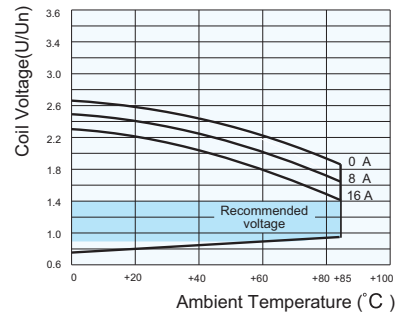
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm .

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

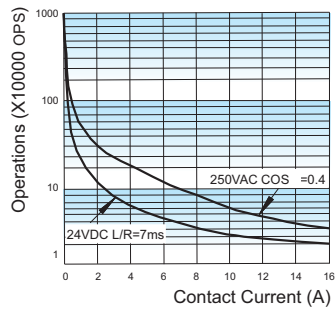


COIL OPERATING RANGE (DC) *



Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life. An energising voltage over the above range may damage the insulation of relay coil.

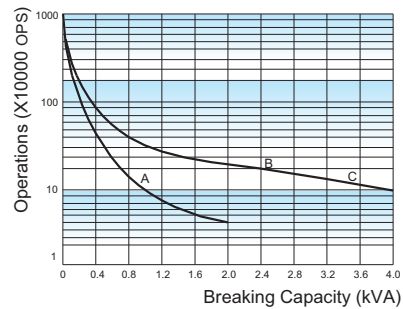
ENDURANCE CURVE(Inductive)



Remark:

1. Curve: 1H3A type
2. Test conditions:
NO, 85°C , 1s on 9s off, Flux proofed.

ENDURANCE CURVE(Resistive)



Remark:

1. Curve A: 2H4B type
Curve B: 1H1B type(or 1H2B type)
Curve C: 1H3B type
2. Test conditions:
NO, Resistive load, 250VAC,
Flux proofed, Room temp., 1s on 9s off.

Relay Sockets

CE

cULus

File No.: E253370



Features

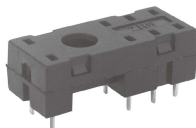
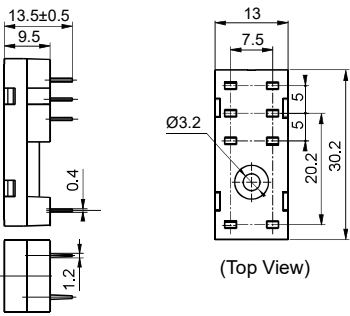
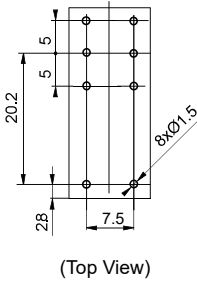

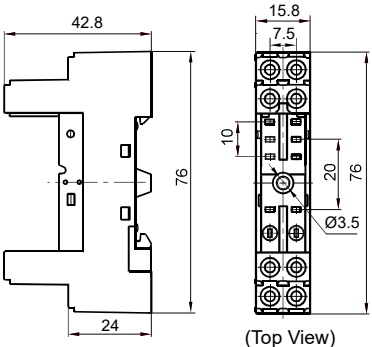
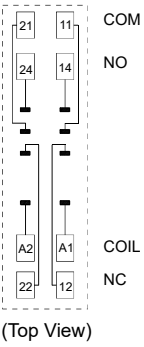
- The insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
14FF-2Z-A1	250VAC	10A	-40°C ~ 70°C	5000VAC	—	*	Approx.3g
14FF-2Z-C2	250VAC	10A	-40°C ~ 70°C	5000VAC	0.6N·m	7mm	Approx.39g
14FF-2Z-C3	250VAC	10A	-40°C ~ 70°C	5000VAC	0.6N·m	7mm	Approx.45g
14FF-2Z-C4	250VAC	10A	-40°C ~ 70°C	5000VAC	—	9mm	Approx.42g
14FF-2Z-C10	300VAC/DC	10A	-40°C ~ 70°C	5000VAC	—	10mm	Approx.36g
14FF-2Z-C10/P	300VAC/DC	10A	-40°C ~ 70°C	5000VAC	—	10mm	Approx.37g

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


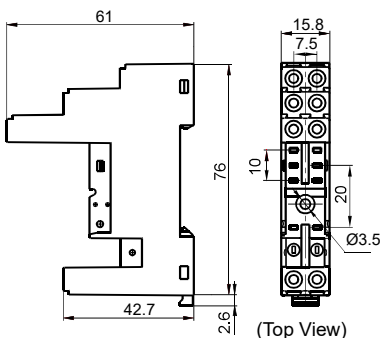
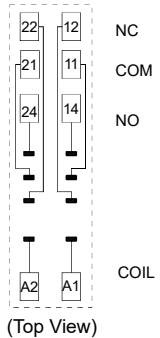

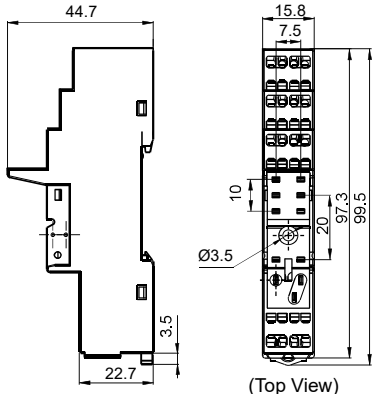
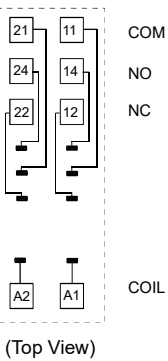

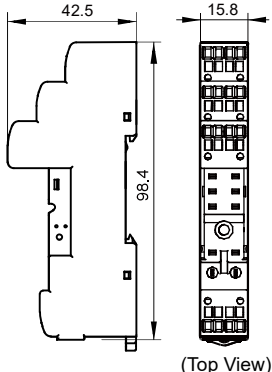
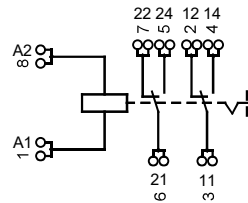

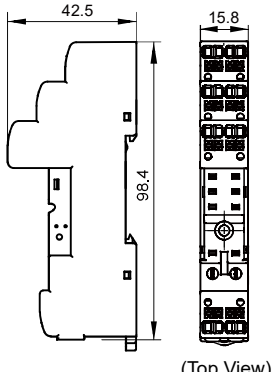
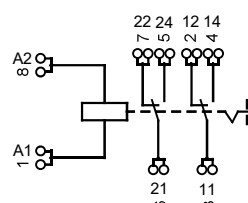
Unit: mm

Socket	Outline Dimensions	Wiring Diagram/PCB Layout	Components Available
14FF-2Z-A1  PCB terminal, PCB or Screw mounting When it used with HF115F、 HF115F-A、HF115FP and relay type 3, two pole of socket load must connect in parallel.	 (Top View)	 (Top View)	Metallic retainer 14FF-H1 Remarks:the dielectric strength can reach 1500VAC that sockets mounted 14FF-H1
14FF-2Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX- 3XXX, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.	 (Top View)	 (Top View)	Plastic retainer: 14FF-H4 Marker: 14FF-M1 Plug-in module: HFAA to HFHU*

Notes: If need accesscry,please order with type.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Components Available
14FF-2Z-C3  Screw Terminal, DIN rail or Screw mounting, With finger protection device When it used with HF115F, HF115F-A, HF115FP and relay type 3, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.	 (Top View)	 (Top View)	Retainer: 14FF-H4 Marker: 14FF-M1 Plug-in module: HFAA~HFHU*
14FF-2Z-C4  Spring-loaded terminal DIN rail mounting With finger protection device When it used with HF115F, HF115F-A, HF115FP and relay type 3, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.	 (Top View)	 (Top View)	Retainer: 14FF-H4 Marker: 14FF-M1 Plug-in module: HFAA~HFHU*
14FF-2Z-C10 	 (Top View)		Retainer: 14FF-H4 14FF-H7 Marker: 14FF-M1 Plug-in module: HFAA~HFHU
14FF-2Z-C10/P 	 (Top View)		Retainer: 14FF-H4 14FF-H7 Marker: 14FF-M1 Plug-in module: HFAA~HFHU

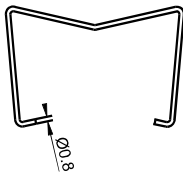
Notes: If need accessory, please order with type.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

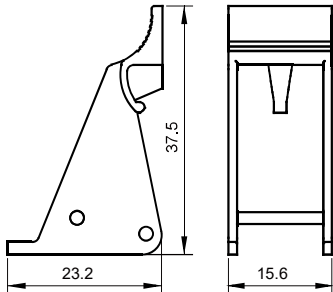
Unit: mm

Retainer

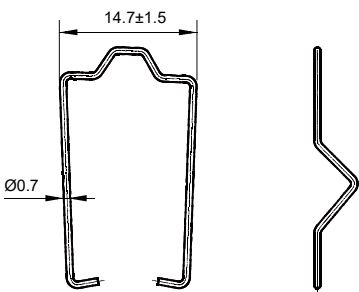
14FF-H1 (Metallic retainer)



14FF-H4 (Plastic retainer)

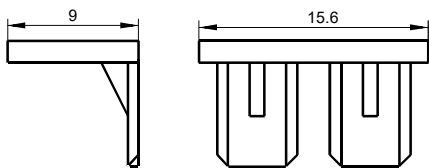


14FF-H7 (Metallic retainer)



Marker

14FF-M1



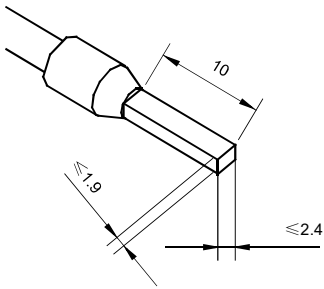
Precautions For Use

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.

Applicable conductor cross section

solid wire	1×0.5/0.75/1.0/1.5/2.5 mm ²	
	2×0.5/0.75/1.0/1.5 mm ²	
Multi-stranded wire	Multi-stranded wire without standard sleeve	1×0.5/0.75/1.0/1.5/2.5 mm ²
		2×0.5/0.75/1.0/1.5 mm ²
	Multi-stranded wire with standard sleeve	1×0.5/0.75/1.0/1.5 mm ²
		2×0.5/0.75/1.0 mm ²



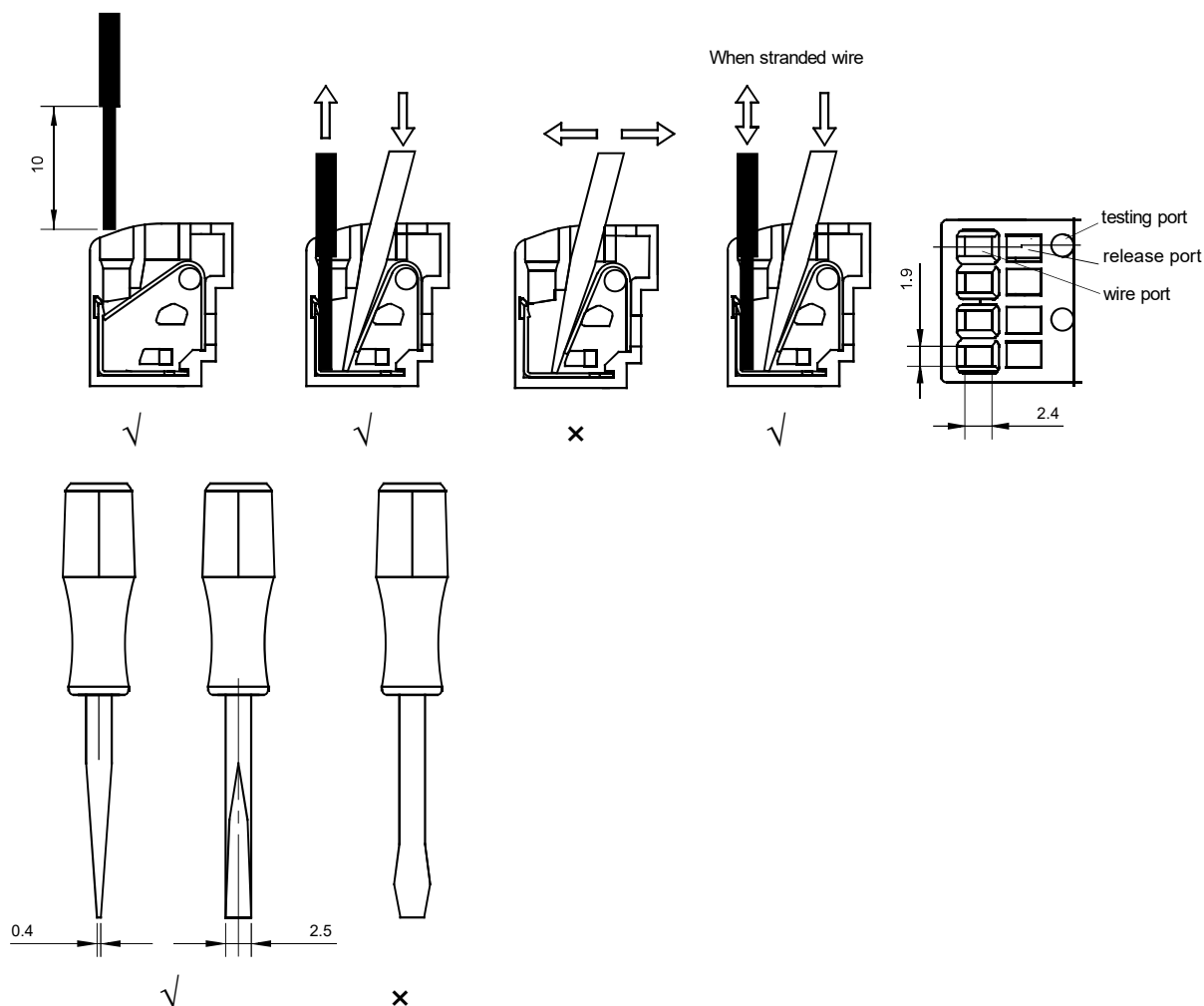
Precautions For Use

Regarding push in socket

- The screwdriver insertion hole must not be wired.
- When inserting the screwdriver into the hole, please insert it at an angle.
- Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage the socket.
- Do not forcibly bend or pull on the wire. Otherwise it may result broken wire.
- Do not insert more than one wires into one wiring hole.
- To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4.

The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Recommended Wires	Film peel (when bar terminals are not used)
0.5~2.5mm ² /AWG20~14	≥10mm



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 > 50mm, tolerance should be ±1mm; 20mm < outline dimension ≤ 50mm, tolerance should be ±0.5mm; 5mm < outline dimension ≤ 20mm, tolerance should be ±0.4mm, outline dimension ≤ 5mm, tolerance should be ±0.3mm;
5. DIN rail mounting: recommend to use standard rail 35×7.5×1mm, 35×15×1mm. When installed vertically, the coil terminal at the bottom please .

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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Features

- 5000VAC insulation, 1000MΩ insulation resistance
- DIN rail or Screw mounting type available
- With 2 or 4 sets of changeover contact options
- Products with finger protection are available

RoHS compliant

Tool hole/button

The hole to insert tool for installing/removing the wire or models with pushbuttons.

Test hole

For multimeter or other test probes.

Retainer

Prevent relay from loosening or falling out in vibration environment. Quickly remove the relay.

Relay

1C(16A), 2C(10A) High capacity; 5kV dielectric strength (between coil and contacts); With bi-directional LEDs, renewable diodes, RCs, Marker, buttons; Plug-in Terminal arrangement for more reliable.

Wiring hole

For wire connection, suit for both rigid and flexible wire compression terminals.

Module

Protect signal input devices, prevent misoperation of relays; Power indicator, fly-wheel diode, induced current absorption, overvoltage protection.

Marker

Mark or post signs.

Socket marking

Marked with main electrical performance, load range, applicable tools, matching relays.

Matching socket

DIN rail mount or screw (Ø3.5) mount.



File No.: E253370(Socket), E133481(Relay)



File No.: R50403813(Relay)



File No.: CQC18002189443(Socket)



HONGFA RELAY

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

2024 Rev. 1.01

CONTACT DATA

Contact arrangement	1C, 2C
Contact rating (Res. load)	12A 250VAC/30VDC(1C) 8A 250VAC/30VDC(2C)
Max. switching voltage	250VAC/30VDC
Max. switching current	16A (1C), 10A (2C)

CHARACTERISTICS

Insulation resistance		1000MΩ (500VAC)
Dielectric strength(RMS)	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	3000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		10ms max.(DCtype) 20ms max.(AC with built-in freewheeling diode, RC circuit)
Humidity (RH)		5% to 85%RH
Ambient temperature		-40℃ to 70℃

COIL DATA

23°C

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min	Max. Allowable Voltage VAC
5	3.5	0.50	5.5
6	4.2	0.60	6.6
12	8.4	1.20	13.2
24	16.8	2.40	26.4
36	25.2	3.60	39.6
48	33.6	4.80	52.8
60	42	6.00	66.0
100 ~ 110	77	11.0	110 ~ 121

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min	Max. Allowable Voltage VAC
6	4.80	1.80	6.6
12	9.60	3.60	13.2
24	19.2	7.20	26.4
48	38.4	14.4	52.8
60	48.0	18.0	66.0
110	88.0	33.0	121.0
115	92.0	34.5	126.5
120	96.0	36.0	132.0
220	176.0	66.0	242.0
230	184.0	69.0	253.0
240	192.0	72.0	264.0

ORDERING INFORMATION

	HF157F-AS	/A	024	-2Z	2	5	F	D	2	-C2	-H1
Relay module	HF157F: Relay AS: module										
Coil Power	A: AC(50HZ or 60HZ) Nil: DC										
Relay coil voltage	DC: 005 to 110VDC AC: 006 to 240VAC										
Contact arrangement	1Z: 1 Form C 2Z: 2 Form C										
Termination	2: QC terminal										
Contact material	5: AgSnO ₂ InO ₃										
Matching retaining clip	F: Class F										
Component code	D: With LED DJ: With LED, freewheeling diode(1: "-") DJ1: With LED, freewheeling diode(1: "+") DE: With LED, with CR circuit										
Mounting termination	1: With test button type 2: Without test button type										
Matching socket	1Z: C2 2Z: C1, C2										
UL insulation system	H1 for socket C1,C2										

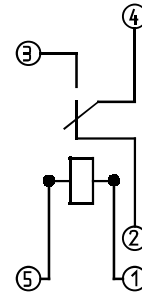
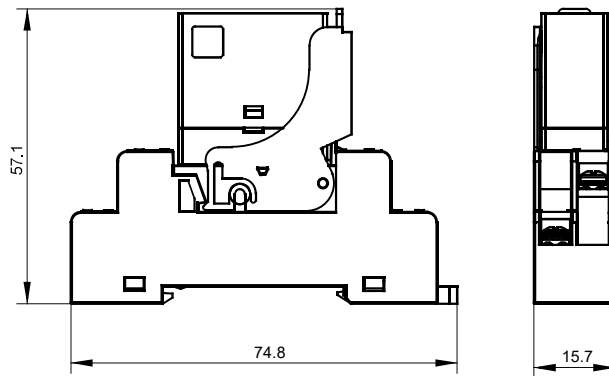
OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

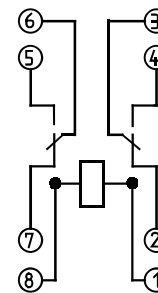
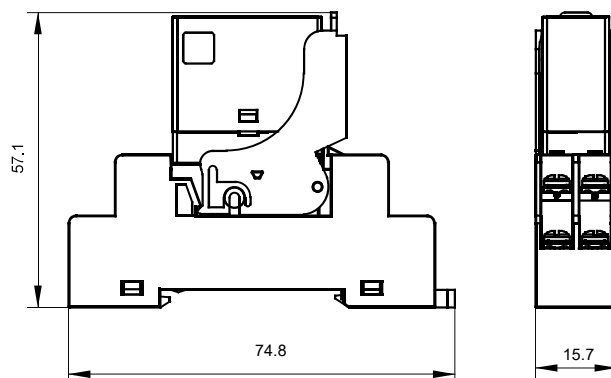
Outline Dimensions

Wiring Diagram(Top view)

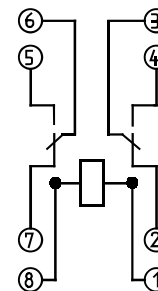
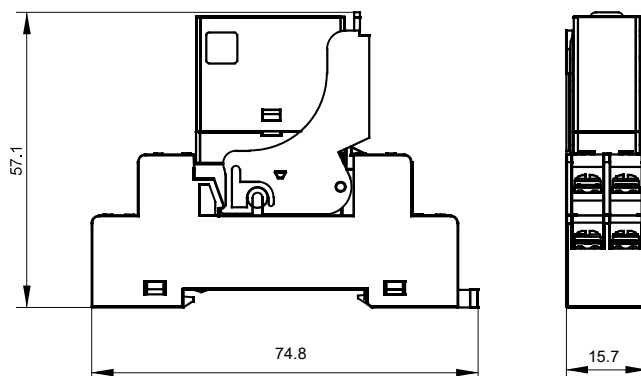
HF157F-AS/□□□□-1Z25F□□-C2-H1



HF157F-AS/□□□□-2Z25F□□-C1-H1

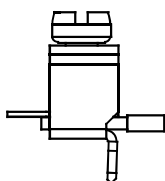


HF157F-AS/□□□□-2Z25F□□-C2-H1



COMPONENT ORDERING INFORMATION

Screw terminal



P/N	module type	relay type	socket type	retainer type
——	HF157F-AS/A24-1Z25FDJ2-C2-H1	HF157F/A24-1Z25FDJ2	157F-1Z-C2	157F-H1
——	HF157F-AS/24-1Z25FDJ2-C2-H1	HF157F/24-1Z25FDJ2		
——	HF157F-AS/A60-1Z25FDJ2-C2-H1	HF157F/A60-1Z25FDJ2		
——	HF157F-AS/60-1Z25FDJ2-C2-H1	HF157F/60-1Z25FDJ2		
——	HF157F-AS/A24-2Z25FDJ2-C2-H1	HF157F/A24-2Z25FDJ2	157F-2Z-C2	
——	HF157F-AS/24-2Z25FDJ2-C2-H1	HF157F/24-2Z25FDJ2		
——	HF157F-AS/A60-2Z25FDJ2-C2-H1	HF157F/A60-2Z25FDJ2		
——	HF157F-AS/60-2Z25FDJ2-C2-H1	HF157F/60-2Z25FDJ2		

Note: Please contact us for any information.

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.
- 8、The main external dimension, when the external dimension > 50mm, the tolerance is $\pm 1\text{mm}$; When the $20\text{mm} < \text{dimensions}$ are between $50\text{mm} \leq$, the tolerance is $\pm 0.5\text{mm}$; When the overall dimension of $5\text{mm} < \text{between} \leq 20\text{mm}$, the tolerance is $\pm 0.4\text{mm}$, and when the external dimension is $\leq 5\text{mm}$, the tolerance is $\pm 0.3\text{mm}$;
- 9、For rail installation, it is recommended to use DIN standard $35 \times 7.5 \times 1$, $35 \times 15 \times 1$ standard rails.

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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HF157F

MINIATURE INTERMEDIATE POWER RELAY



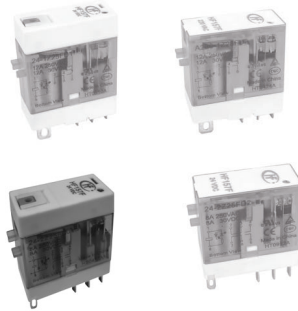
File No.:E133481



File No.:R50403813



File No.:CQC18002189443



Features

- High capacity (1 pole:16A;2 pole:10A)
- Various types available
- 1/2 pole configurations
- 5kV dielectric strength (between coil and contacts)
- Sockets available

CONTACT DATA

Contact arrangement	1C,2C
Contact resistance ¹⁾	100mΩ (1A 6VDC)
Contact material	AgSnO ₂ Alloy
Contact rating(Res. load)	1Z:12A 250VAC/30VDC 2Z:8A 250VAC/30VDC
Max. switching voltage	250VAC/30VDC
Max. switching current	1Z: 16A 2Z: 10A
Max. switching power	1Z:4000VA/480W 2Z:2500VA/300W
Mechanical endurance	AC:3 x 10 ⁷ OPS DC:5 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (1Z:12A 250VAC/30VDC, Resistive load, Room temp, 1s on 9s off, NO or NC) (2Z:8A 250VAC/30VDC, Resistive load, Room temp, 1s on 9s off, NO or NC)

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	3000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		20ms max. (AC、With diode or RC circuit) DC: 10ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		Plug-in
Unit weight		Approx. 23.5g(button type) Approx.22g (without button type)
Construction		Dust protected

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

COIL

Coil power	DC: 0.53W; AC: 0.9VA
------------	----------------------

COIL DATA at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC ¹⁾	Drop-out Voltage VDC ¹⁾	Max. Allowable Voltage VDC ²⁾	Coil Resistance Ω
5	3.5	0.5	5.5	47.2 x (1±10%)
6	4.2	0.6	6.6	67.9 x (1±10%)
12	8.4	1.2	13.2	271 x (1±10%)
24	16.8	2.4	26.4	1080 x (1±10%)
36	25.2	3.6	39.6	2445 x (1±10%)
48	33.6	4.8	52.8	4340 x (1±10%)
60	42	6	66	6792 x (1±10%)
100~110	77	11	110~121	18870 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC ¹⁾	Drop-out Voltage VAC ¹⁾	Max. Allowable Voltage VAC ²⁾	Coil Resistance Ω
6	4.8	1.8	6.6	16 x (1±10%)
12	9.6	3.6	13.2	62.5 x (1±10%)
24	19.2	7.2	26.4	243x (1±10%)
48	38.4	14.4	52.8	1085 x (1±10%)
60	48	18	66	1750 x (1±10%)
110	88	33	121	5270x (1±10%)
115	92	34.5	126.5	6030 x (1±10%)
120	96	36	132	6400 x (1±10%)
220	176	66	242	21530 x (1±10%)
230	184	69	253	24100 x (1±10%)
240	192	72	264	25570 x (1±10%)

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.



HONGFA RELAY

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

2024 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	1 Form C	12A 250VAC/30VDC Resistive load 70°C 16A 250VAC/30VDC Resistive load 70°C
	2 Form C	8A 250VAC/30VDC Resistive load 70°C 10A 250VAC/30VDC Resistive load 70°C
TÜV	1 Form C	12A 250VAC/30VDC Resistive load 70°C 16A 250VAC/30VDC Resistive load 70°C
	2 Form C	8A 250VAC/30VDC Resistive load 70°C 10A 250VAC/30VDC Resistive load 70°C

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

ORDERING INFORMATION

Type		HF157F / A 24 -1Z 2 5 F D 2 (XXX)
Coil voltage form	A: AC Nil: DC	
Coil voltage	AC: 6 to 240VAC DC: 5 to 110VDC	
Contact arrangement	1Z: 1 Form C 2Z: 2 Form C	
Termination	2: QC	
Contact material	5: AgSnO ₂ Alloy	
Insulation standard	F: Class F	
Component code ¹⁾	D: With LED	
	DJ1: With diode(1:"+")	
	DJ: With LED and diode(1:"-")	
	DE: LED、RC circuit	
Mounting termination	1:button type 2:Without button type	
Customer special code ²⁾	XXX: Customer special requirement Nil: Standard	

Notes:1) Assembled component with "J"freewheel diode, applied in DC coil type, with "E" RC circuit board, applied in AC coil type.

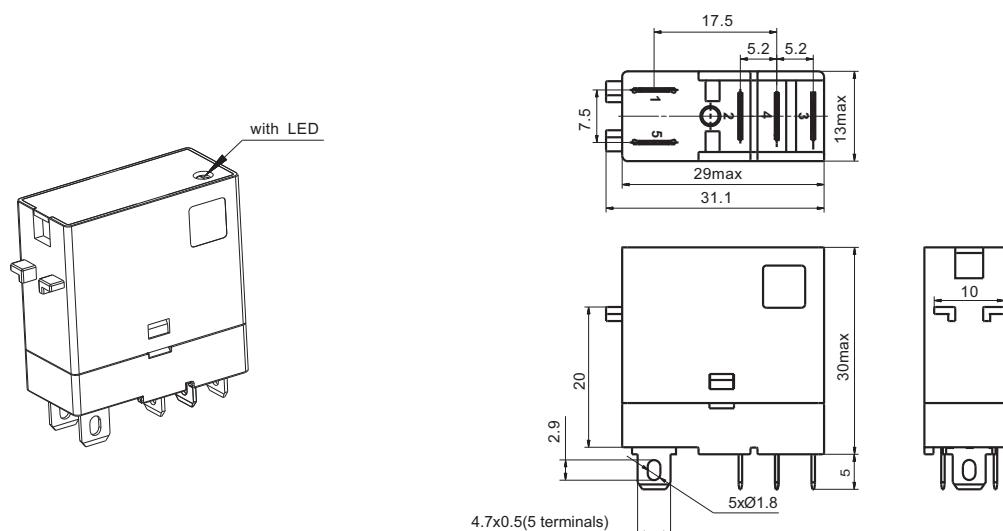
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

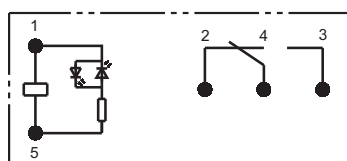
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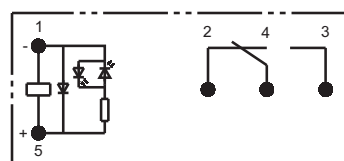
Wiring Diagram

(Bottom view)

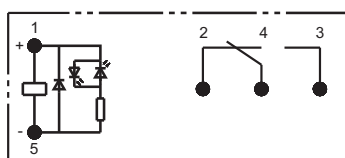
HF157F/□□□□-1Z25FD2(□□□)
(With LED)



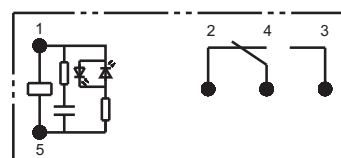
HF157F/□□□□-1Z25FDJ2(□□□)
(With LED, fly-wheel diode 1: "-")



HF157F/□□□□-1Z25FDJ12(□□□)
(With LED, fly-wheel diode 1: "+")



HF157F/□□□□-1Z25FDE2(□□□)
(With LED, RC circuit)

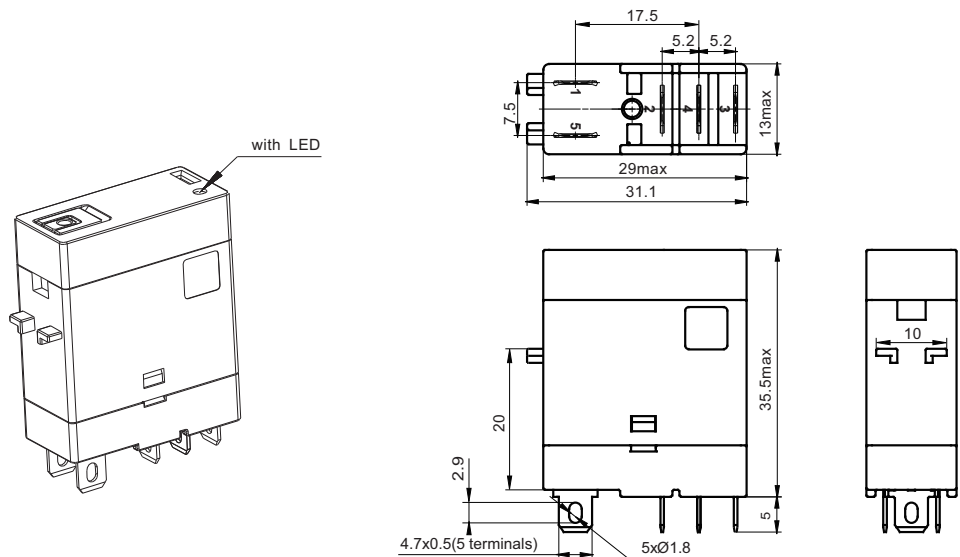


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

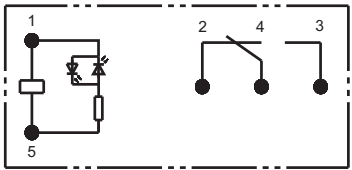
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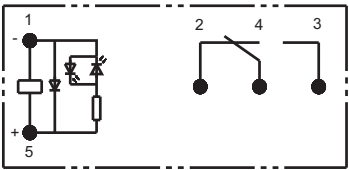
Wiring Diagram

(Bottom view)

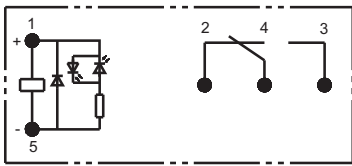
HF157F/□□□□-1Z25FD1(□□□)
(With LED)



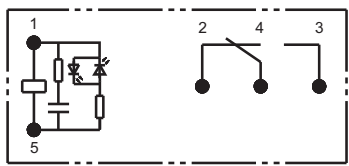
HF157F/□□□□-1Z25FDJ1(□□□)
(With LED,fly-wheel diode1:"-")



HF157F/□□□□-1Z25FDJ11(□□□)
(With LED,fly-wheel diode1:"+")



HF157F/□□□□-1Z25FDE1(□□□)
(With LED,RC circuit)

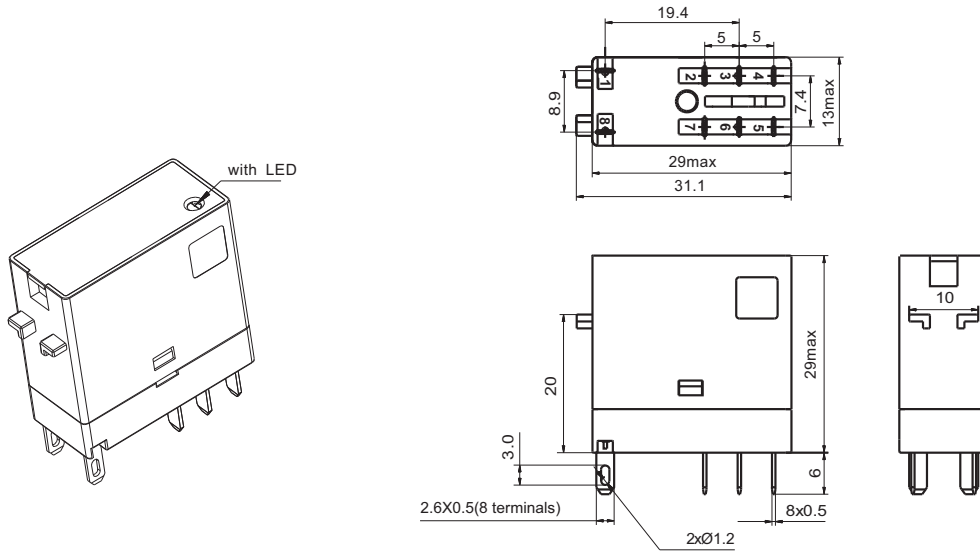


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

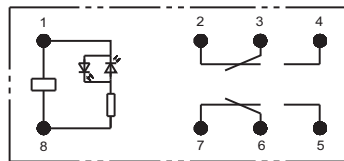
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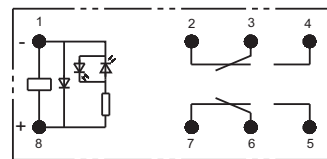
Wiring Diagram

(Bottom view)

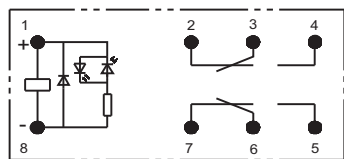
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(With LED)



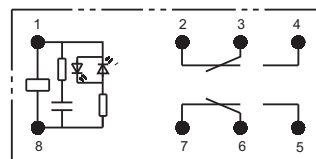
HF157F/□□□□-2Z25FDJ2(□□□)
(With LED, fly-wheel diode 1: "-")



HF157F/□□□□-2Z25FDJ12(□□□)
(With LED, fly-wheel diode 1: "+")



HF157F/□□□□-2Z25FDE2(□□□)
(With LED, RC circuit)

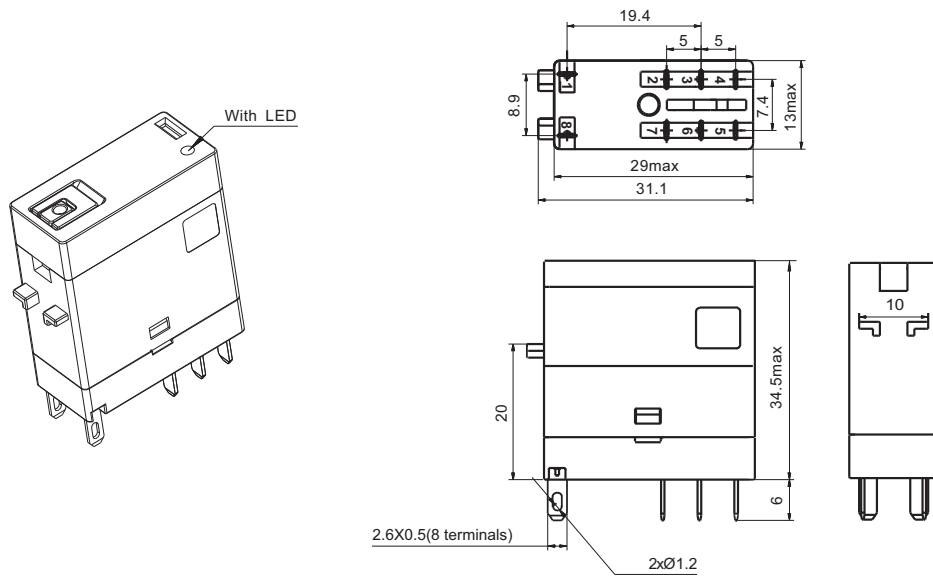


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

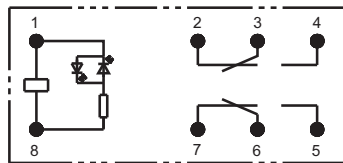
Outline Dimensions

HF157F/□□□□-2Z25FD1 (□□□)

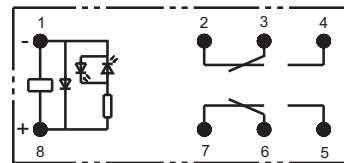


Wiring Diagram (Bottom view)

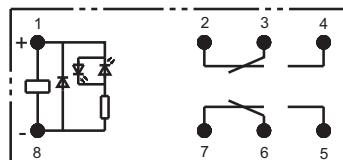
HF157F/□□□□-2Z25FD1(□□□)
(With LED)



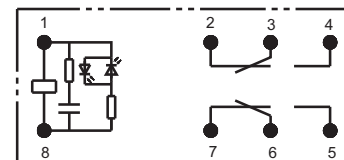
HF157F/□□□□-2Z25FDJ1(□□□)
(With LED,fly-wheel diode1:"-")



HF157F/□□□□-2Z25FDJ11(□□□)
(With LED,fly-wheel diode1:"+")

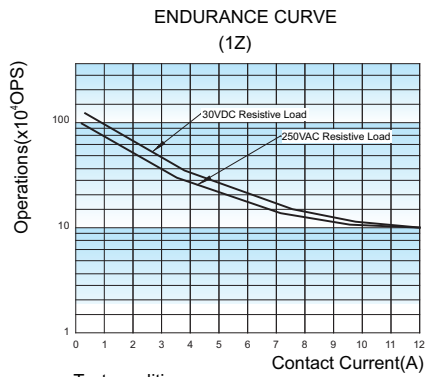
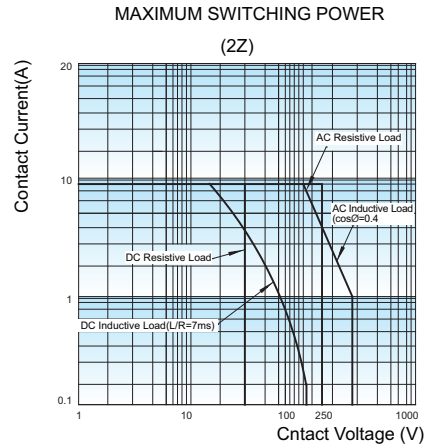
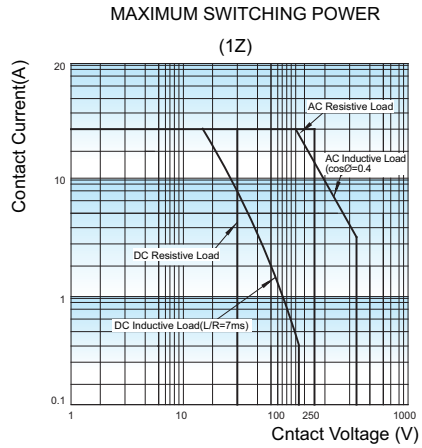


HF157F/□□□□-2Z25FDE1(□□□)
(With LED,RC circuit)

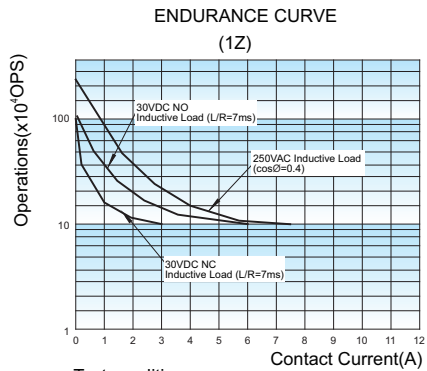
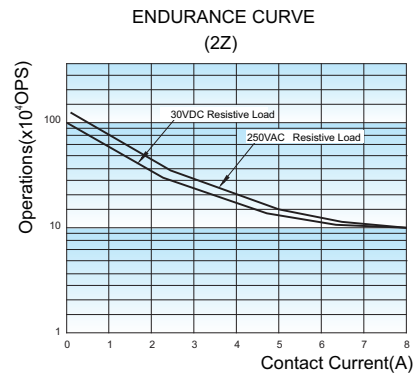


Remark:1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

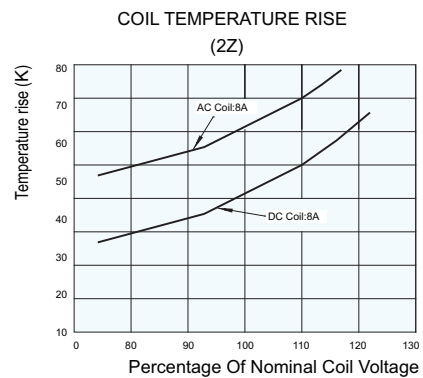
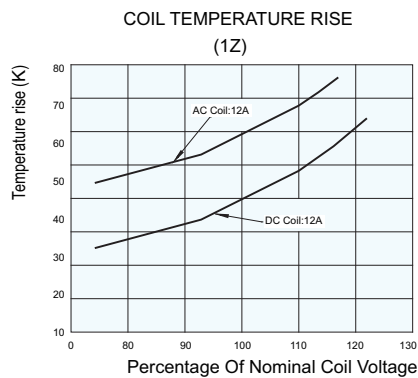
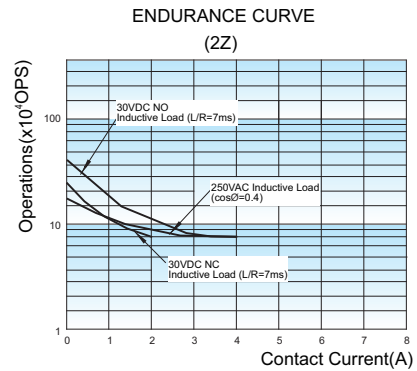
CHARACTERISTIC CURVES



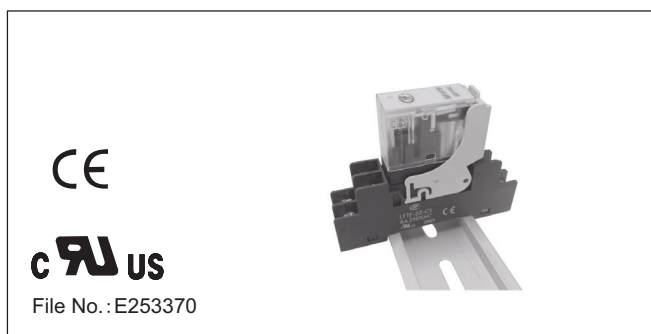
Test conditions:
NO or NC, Resistive Load, Room temp., 1s on 9s off.



Test conditions:
NO or NC, Inductive Load, Room temp., 1s on 9s off.



Relay Socket



Features


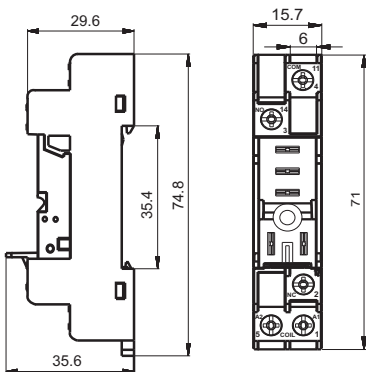
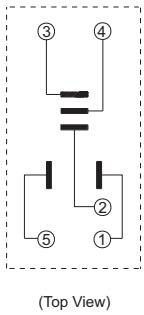
- The dielectric strength can reach 4000VAC(I/O), and the insulation resistance is 1000MΩ
- Two mounting types are available: screw mounting and DIN rail mounting.
- Components available: Plastic retainer(Collocation marker), Metallic reainer.
- Applicable for:HF157F

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
157F-1Z-C2	250VAC/VDC	12A	-40 °C ~ 70 °C	4000VAC (Between coil & contacts)	1.0N · m	7mm	Approx.28.0g
				1000VAC (Homopolar contacts)			
				3000VAC (Heterospolar contacts)			
157F-2Z-C1	250VAC/VDC	8A/10A	-40 °C ~ 70 °C	4000VAC (Between coil & contacts)	1.0N · m	7mm	Approx.28.2g
				1000VAC (Homopolar contacts)			
				3000VAC (Heterospolar contacts)			
157F-2Z-C2	250VAC/VDC	8A/10A	-40 °C ~ 70 °C	4000VAC (Between coil & contacts)	1.0N · m	7mm	Approx.28.6g
				1000VAC (Homopolar contacts)			
				3000VAC (Heterospolar contacts)			
157F-2Z-C10	300VAC/VDC	10A	-40 °C ~ 70 °C	5000VAC (Between coil & contacts)	—	10mm	Approx.36.0g
				1000VAC (Homopolar contacts)			
				3000VAC (Heterospolar contacts)			
157F-2Z-C10/P	300VAC/VDC	10A	-40 °C ~ 70 °C	5000VAC (Between coil & contacts)	—	10mm	Approx.37.0g
				1000VAC (Homopolar contacts)			
				3000VAC (Heterospolar contacts)			
157F-2Z-A1	300VAC/VDC	8A	-40 °C ~ 70 °C	5000VAC (Between coil & contacts)	—	—	Approx.4.4g
				1000VAC (Homopolar contacts)			
				3000VAC (Heterospolar contacts)			

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


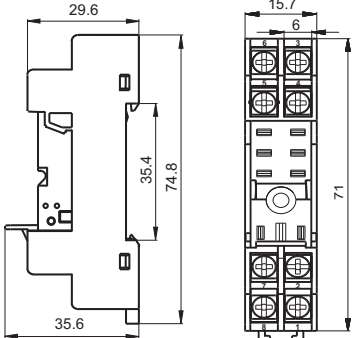
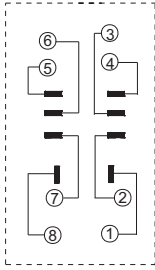

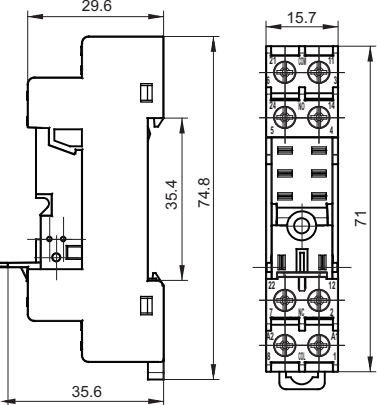
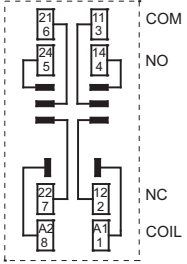

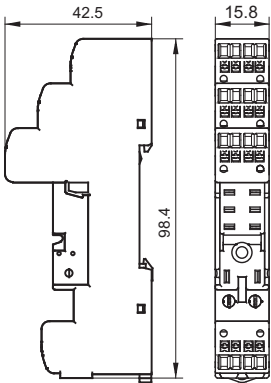
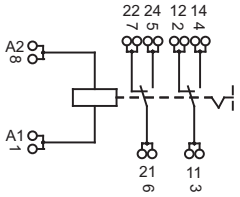

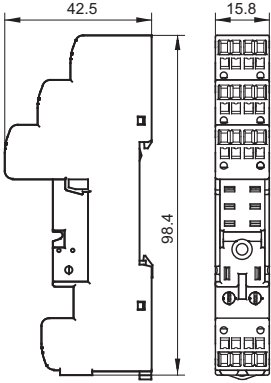
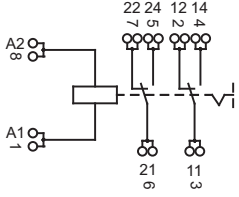
Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<p>157F-1Z-C2</p>  <p>DIN rail or Screw mounting</p>		 <p>(Top View)</p>	<p>Plastic retainer 157F-H1 Metallic retainer 157F-H2</p>

Notes: * If need accesscry,please order with type.


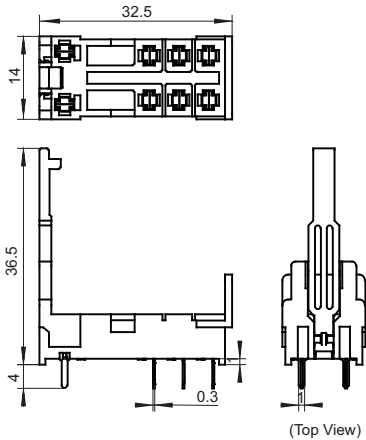
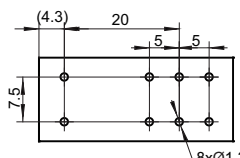
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<p>157F-2Z-C1</p>  <p>DIN rail or Screw mounting</p>		 <p>(Top View)</p>	<p>Plastic retainer 157F-H1 Metallic retainer 157F-H2</p>
<p>157F-2Z-C2</p>  <p>DIN rail or Screw mounting</p>		 <p>(Top View)</p>	<p>Plastic retainer 157F-H1 Metallic retainer 157F-H2</p>
<p>157F-2Z-C10</p> 			<p>Metallic retainer 157F-H2 Marker 14FF-M1 Module HFAA~HFHU</p>
<p>157F-2Z-C10/P</p> 			<p>Metallic retainer 157F-H2 Marker 14FF-M1 Module HFAA~HFHU</p>

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<p>157F-2Z-A1</p>  <p>PCB terminal, PCB mounting Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	Nil

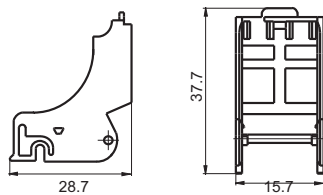
Notes: * If need accessory, please order with type.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

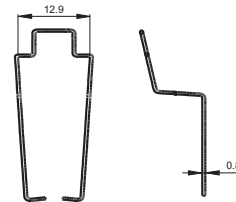
Unit: mm

Retainer

157F-H1 (Plastic retainer)



157F-H2 (Metallic retainer)



SELECTION OF PARTS

Type of Relay	Mounting termination	Socket	Retainer	Marker	Modules
HF157F/□□□-1Z2□□□1	With button	157F-1Z-C2	157F-H1	14FF-M1	-
HF157F/□□□-1Z2□□□2	Without button	157F-1Z-C2	157F-H1	14FF-M1	-
			157F-H2	-	-
HF157F/□□□-2Z2□□□1	With button	157F-2Z-C1	157F-H1	14FF-M1	-
HF157F/□□□-2Z2□□□2	Without button	157F-2Z-C1	157F-H1	14FF-M1	-
			157F-H2	-	-

Things to be noticed when selecting sockets:

- 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.
- 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.
- The above is only an example of typical socket and related component type which is suitable to HF157F relay. If you have any special requirements, please contact us.
- Main outline dimension, outline dimension > 50mm, tolerance should be $\pm 1\text{mm}$; 20mm < outline dimension $\leq 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; 5mm < outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.4\text{mm}$; outline dimension $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.
- DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

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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HFA2B

Forcibly Guided RELAY



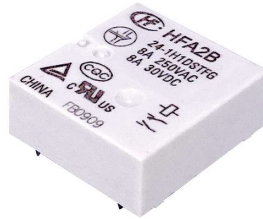
File No.:E133481



File No.:R50507878



File No.:CQC21002290220



Features

- Forcibly guided contacts according to IEC 61810-3 (EN50205)
- 8A switching capability
- Mechanical life: 1×10^7 cycles
- 4kV dielectric strength (Contact - Coil; Contact - Contact)
- UL insulation system: Class F available
- Outline dimensions: (26.6×25×10.2) mm

RoHS compliant

CONTACT DATA

Contact arrangement	1NO+1NC
Forcibly guided contacts Type (according to EN50205)	Type A
Contact resistance ¹⁾	100mΩ max.(at 6VDC 100mA)
Contact material	AgSnO ₂ +Au plated
Contact rating (Res. load)	8A 250VAC/ 30VDC
Min.contact load ²⁾	5V 10mA
Max.swtiching voltage	400VAC(at 3.5A Res. Load)
Max.switching current	8A
Max.switching capacity	2000VA / 240W
Contact rating DC-13	NO:4A 24VDC (1s on 9s off)
Contact rating AC-15	NO:3A 250VAC (1s on 9s off)
Mechanical endurance ³⁾	1×10^7 cycles
Electrical endurance	5×10^4 OPS(1NO:85°C,1s on 9s off, 8A 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.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between open contacts	1500VAC 1min
	Between contact sets	4000VAC 1min
	Between coil & contacts	4000VAC 1min
Surge voltage	Between contact sets	6kV(1.2/50μs)
	Between coil & contacts	6kV(1.2/50μs)
Operate time(at rated voltage)		20ms max.
Release time(at rated voltage)		10ms max.
Temperature rise (at rated voltage)		70K max (NO Contact load current 8A, rated voltage excitation,at 85°C)
Shock resistance	Functional	10g(NO)
	Destructive	100g
Vibration resistance		10Hz to 200Hz 5g(NO)
Humidity		5% to 85%RH
Ambient temperature		-40℃ to 85℃
Termination		PCB
Unit weight		Approx. 12g
Construction		Plastic sealed

Notes:The data shown above are initial values.

COIL

Coil power	Approx. 0.4W
Holding Voltage ¹⁾	50% to 100%U _N (at 23°C) 60% to 100%U _N (at 85°C)

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

SAFETY APPROVAL RATINGS

UL/CUL	8A 250/277VAC cos(phi)=1 85°C
	8A 30VDC L/R=0 85°C
	NO: B300 Q300 85°C
	NC: Q300 85°C
TÜV	NO: 3.5A 400VAC cos(phi)=1 85°C
	8A 250/277VAC cos(phi)=1 85°C
	8A 30VDC L/R=0 85°C
	NO: 3A 250VAC(AC-15) 85°C 4A 24VDC(DC-13) 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

2024 Rev. 1.00

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC ¹⁾ max.	Drop-out Voltage VDC ¹⁾ min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	3.5	0.5	6.5	65 ×(1±10%)
6	4.2	0.6	7.8	90 ×(1±10%)
9	6.3	0.9	11.7	210 ×(1±10%)
12	8.4	1.2	15.6	370 ×(1±10%)
15	10.5	1.5	19.5	570 ×(1±10%)
18	12.6	1.8	23.4	810 ×(1±10%)
21	14.7	2.1	27.3	1050 ×(1±10%)
24	16.8	2.4	31.2	1450 ×(1±10%)
36	25.2	3.6	46.8	3250 ×(1±10%)
48 ³⁾	33.6	4.8	62.4	6000 ×(1±10%)
60 ³⁾	42	6	78	9250 ×(1±10%)
110 ³⁾	77	11	143	31000 ×(1±10%)

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).

ORDERING INFORMATION

Type	HFA2B/	12	-1H1D	S	T	F	G	(XXX)
Coil voltage	5,6,9,12,15,18,21, 24,36,48,60,110 VDC							
Contact arrangement	1H1D: 1NO+1NC							
Construction	S: Plastic sealed							
Contact material	T: AgSnO ₂							
Insulation class	F: Class F							
Contact plating	G: Au plated							
Special code	XXX: Customer special requiremen; Nil: Standard							

Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface precess is involved in assembling relays on PCB.

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

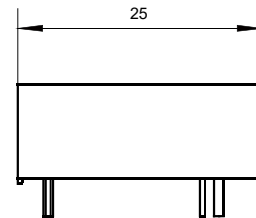
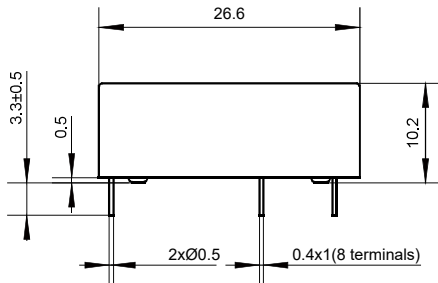
3) Please avoid using the relay in an environment containing organic silicon,otherwise the entry of organic silicon into the relay may acceleration contact failure.If there are harmful substances and elements such as water vapor,H₂S,SO₂,NO₂,Cl,P,dust,etc., as well as unknown harmful substances and elements,In 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

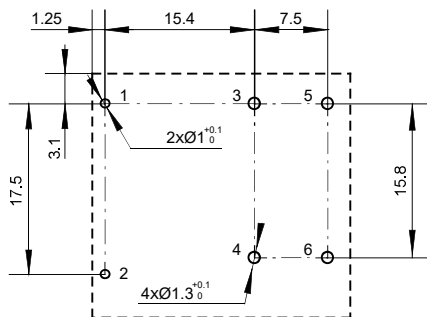
Unit: mm

HFA2B/□□-1H1DSTFG

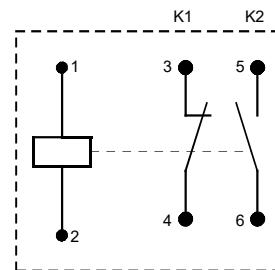
Outline Dimensions



PCB Layout (Bottom view)



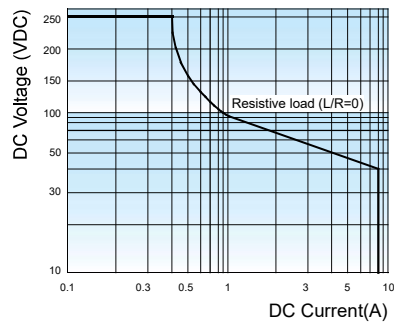
Wiring Diagram (Bottom view)



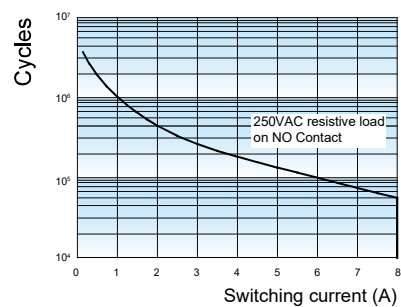
Notes: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm;
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

Max.DC load breaking capacity



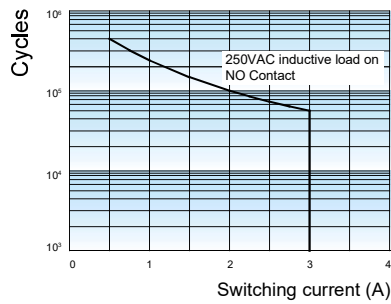
Electrical Endurance



Test condition:
250VAC, 85°C, 1s on 9s off.

CHARACTERISTIC CURVES

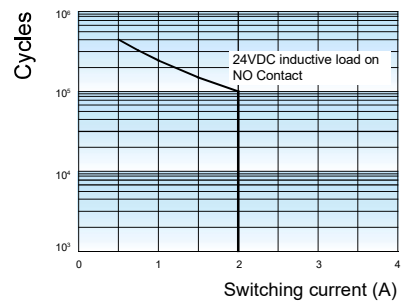
AC-15 Electrical Endurance



Notes:

- 1) The AC-15 electrical endurance test load according to IEC 60947-5-1.
- 2) The test condition: 250VAC, 85°C, 1s on 9s off.

DC-13 Electrical Endurance



Notes:

- 1) The DC-13 electrical endurance test load according to IEC 60947-5-1.
- 2) The test condition: 24VDC, 85°C, 1s on 9s off.

Disclaimer

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HFA3B

Forcibly Guided RELAY



File No.:E133481



File No.:R50507878



File No.:CQC21002290220



Features

- Forcibly guided contacts according to IEC 61810-3 (EN50205)
- 8A switching capability
- Mechanical life: 1×10^7 cycles
- 4kV dielectric strength (Contact - Coil; Contact - Contact)
- UL insulation system: Class F available
- Outline dimensions: (34.2×25×10.2) mm

RoHS compliant

CONTACT DATA

Contact arrangement	2NO+1NC
Forcibly guided contacts Type (according to EN50205)	Type A
Contact resistance ¹⁾	100mΩ max.(at 6VDC 100mA)
Contact material	AgSnO ₂ +Au plated
Contact rating (Res. load)	8A 250VAC/ 30VDC
Min.contact load ²⁾	5V 10mA
Max.swtiching voltage	400VAC(at 3.5A Res. Load)
Max.switching current	8A
Max.switching capacity	2000VA / 240W
Contact rating DC-13	1NO:4A 24VDC (1s on 9s off)
Contact rating AC-15	1NO:3A 250VAC (1s on 9s off)
Mechanical endurance ³⁾	1×10^7 cycles
Electrical endurance	5×10^4 OPS(1NO:85°C,1s on 9s off, 8A 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.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between open contacts	1500VAC 1min
	Between contact sets	4000VAC 1min
	Between coil & contacts	4000VAC 1min
Surge voltage	Between contact sets	6kV(1.2/50μs)
	Between coil & contacts	6kV(1.2/50μs)
Operate time(at rated voltage)		20ms max.
Release time(at rated voltage)		10ms max.
Temperature rise (at rated voltage)		70K max (All NO Contact load current 8A, rated voltage excitation,at 85°C)
Shock resistance	Functional	10g(NO)
	Destructive	100g
Vibration resistance		10Hz to 200Hz 5g(NO)
Humidity		5% to 85%RH
Ambient temperature		-40℃ to 85℃
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed

Notes:The data shown above are initial values.

COIL

Coil power	Approx. 0.5W
Holding Voltage ¹⁾	50% to 100%UN(at 23°C) 60% to 100%UN(at 85°C)

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

SAFETY APPROVAL RATINGS

UL/CUL	8A 250/277VAC cos(phi)=1 85°C
	8A 30VDC L/R=0 85°C
	NO: B300 Q300 85°C
	NC: Q300 85°C
TÜV	NO: 3.5A 400VAC cos(phi)=1 85°C
	8A 250/277VAC cos(phi)=1 85°C
	8A 30VDC L/R=0 85°C
	NO: 3A 250VAC(AC-15) 85°C 4A 24VDC(DC-13) 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

2024 Rev. 1.00

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC ¹⁾ max.	Drop-out Voltage VDC ¹⁾ min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	3.5	0.5	6.5	50 ×(1±10%)
6	4.2	0.6	7.8	70 ×(1±10%)
9	6.3	0.9	11.7	160 ×(1±10%)
12	8.4	1.2	15.6	290 ×(1±10%)
15	10.5	1.5	19.5	450 ×(1±10%)
18	12.6	1.8	23.4	650 ×(1±10%)
21	14.7	2.1	27.3	840 ×(1±10%)
24	16.8	2.4	31.2	1150 ×(1±10%)
36	25.2	3.6	46.8	2590 ×(1±10%)
48 ³⁾	33.6	4.8	62.4	4600 ×(1±10%)
60 ³⁾	42	6	78	7100 ×(1±10%)
110 ³⁾	77	11	143	24000 ×(1±10%)

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).

ORDERING INFORMATION

Type	HFA3B/	12	-2H1D	S	T	F	G	(XXX)
Coil voltage	5,6,9,12,15,18,21, 24,36,48,60,110 VDC							
Contact arrangement	2H1D: 2NO+1NC							
Construction	S: Plastic sealed							
Contact material	T: AgSnO ₂							
Insulation class	F: Class F							
Contact plating	G: Au plated							
Special code	XXX: Customer special requiremen Nil: Standard							

Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface precess is involved in assembling relays on PCB.

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

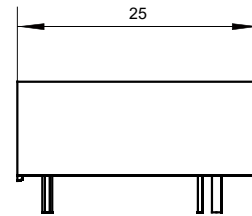
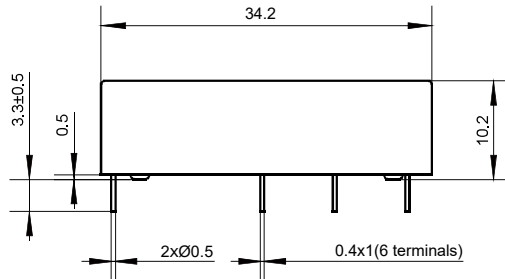
3) Please avoid using the relay in an environment containing organic silicon,otherwise the entry of organic silicon into the relay may acceleration contact failure.If there are harmful substances and elements such as water vapor,H₂S,SO₂,NO₂,Cl,P,dust,etc., as well as unknown harmful substances and elements,In 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

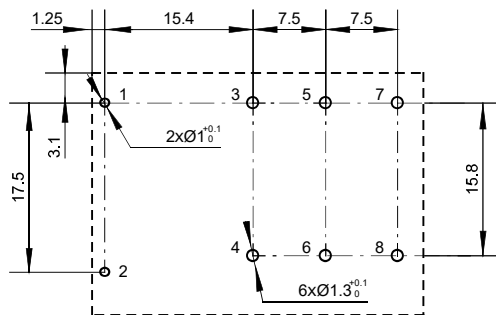
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HFA3B/□□-2H1DSTFG

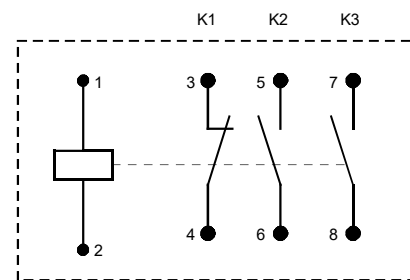
Outline Dimensions



PCB Layout
(Bottom view)



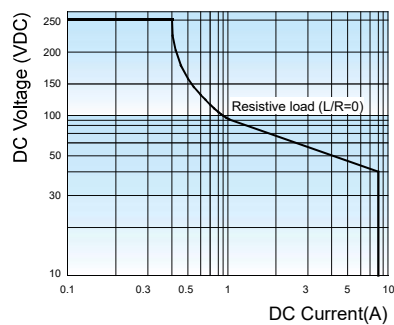
Wiring Diagram
(Bottom view)



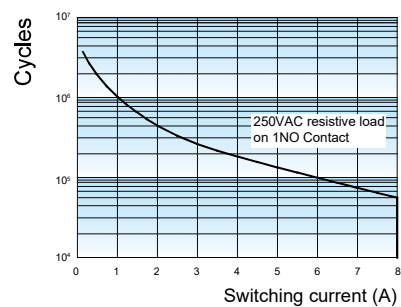
Notes: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm;
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

Max.DC load breaking capacity



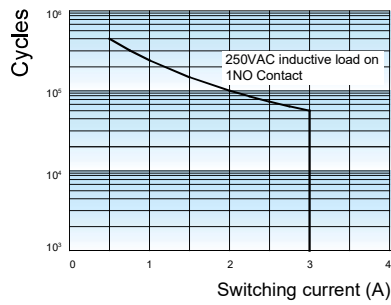
Electrical Endurance



Test condition:
250VAC, 85°C, 1s on 9s off.

CHARACTERISTIC CURVES

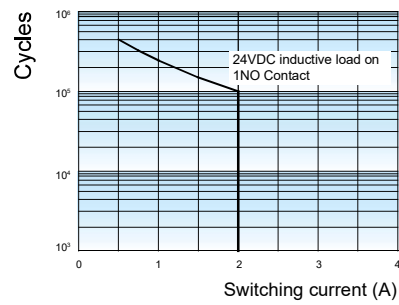
AC-15 Electrical Endurance



Notes:

- 1) The AC-15 electrical endurance test load according to IEC 60947-5-1.
- 2) The test condition: 250VAC, 85°C, 1s on 9s off.

DC-13 Electrical Endurance



Notes:

- 1) The DC-13 electrical endurance test load according to IEC 60947-5-1.
- 2) The test condition: 24VDC, 85°C, 1s on 9s off.

Disclaimer

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HFA4A

FORCE-GUIDED RELAY



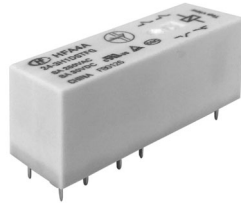
File No.:E133481



File No.:R50489710



File No.:CQC20002278708



Features

- Forcibly guided contacts according to IEC61810-3 (EN50205)
- 8A switching capability
- 4kV dielectric strength(between coil and contacts)
- UL insulation system: Class F available
- Dimensions(LxWxH): 40.0mm x13mm x15.7mm

RoHS compliant

CONTACT DATA

Contact arrangement	2NO+2NC 3NO+1NC
Forcibly guided contacts Type (according to EN50205)	Type A
Contact resistance ¹⁾	100mΩ(at 6VDC 100mA)
Contact material	AgSnO ₂ + Au plated
Contact rating (Res. load)	8A 250VAC/30VDC
Max. switching voltage	400VAC(at 3.5A Res.Load)
Max. switching current	8A
Min.contact load ²⁾	5VDC 10mA
Max. switching capacity	2000VA /240W
Contact rating DC-13	1NO:3A 24VDC(1sON:9sOFF)
Contact rating AC-15	1NO:3A 250VAC(1sON:9sOFF)
Mechanical endurance ³⁾	1 x 10 ⁷ ops
Electrical endurance	1 x 10 ⁴ OPS (1NO: 85°C, 1s on 9s off, 8A 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

Coil power	Approx. 800mW
Holding Voltage ¹⁾	50% to 100%U _N (at 23°C) 60% to 100%U _N (at 85°C)

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

SAFETY APPROVAL RATINGS

UL/CUL	8A 250VAC cos(phi)=1 85°C 8A 30VDC L/R=0 85°C NO:B300 R300 85°C NO:3.5A 400VAC
TÜV	8A 250VAC cos(phi)=1 85°C 8A 30VDC L/R=0 85°C NO:3A 250VAC(AC-15) 85°C NO:3A 24VDC(DC-13) 85°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.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between contacts sets	2500VAC 1min
	Between open contacts	1500VAC 1 min
Surge voltage (Between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at rated voltage)		20ms max.
Release time (at rated voltage)		10ms max.
Temperature rise (at rated voltage)		70K max. (2NO Contact load current 8A, rated voltage excitation, at 85°C)
Shock resistance	Functional	10g(NO)
	Destructive	100g
Vibration resistance		10Hz to 200Hz 10g(NO)
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 15g
Construction		Plastic sealed

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

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC Max. ¹⁾	Drop-out Voltage VDC Min. ¹⁾	Max. Voltage VDC ²⁾	Coil resistance Ω
5	3.8	0.5	7.5	31 x (1±10%)
6	4.5	0.6	9	45 x (1±10%)
9	6.8	0.9	13.5	101 x (1±10%)
12	9	1.2	18	180 x (1±10%)
15	11.3	1.5	22.5	281 x (1±10%)
18	13.5	1.8	27	405x (1±10%)
21	16	2.1	31.5	551 x (1±10%)
24	18	2.4	36	720 x (1±10%)
36	27	3.6	54	1620x (1±10%)
40	30	4	60	2000x (1±10%)
48	36	4.8	72	2880x (1±10%)
60	45	6	90	4500 x (1±15%)
85	63.8	8.5	127.5	9031 x (1±15%)
110	83	11	165	15125x (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.



HONGFA RELAY

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

2024 Rev. 1.00

ORDERING INFORMATION

Type	HFA4A /	12-	2H2D	S	T	F	G	(XXX)
Coil voltage	5,6,9,12,15,18,21,24, 36,40,48,60,85,110VDC							
Contact arrangement	2H2D: 2NO+2NC 3H1D: 3NO+1NC							
Construction	S: Plastic sealed							
Contact material	T: AgSnO ₂							
Insulation standard	F: Class F							
Contact plating	G: Au plated							
Special code ³⁾	XXX: Customer special requirement			Nil: Standard				

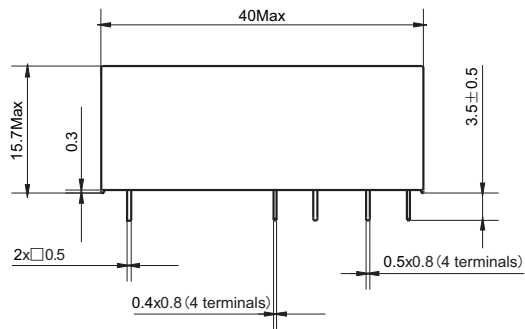
Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.
 2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB
 3) The customer special requirement express as special code after evaluating by hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

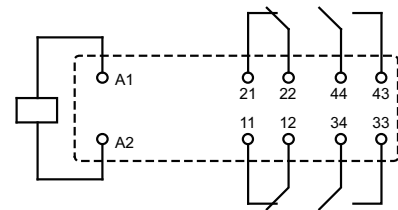
HFA4A/□□-2H2D STFG(□□□)

Outline Dimensions



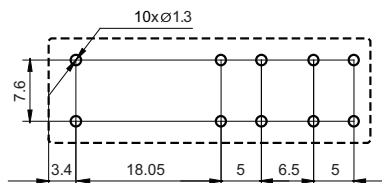
Wiring Diagram

(Bottom view)



PCB Layout

(Bottom view)

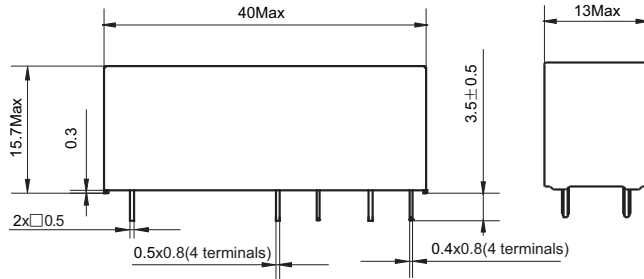


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

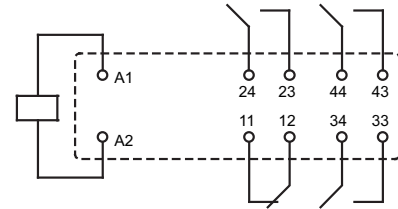
Unit: mm

HFA4A/□□-3H1D STFG(□□□)

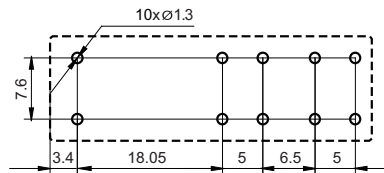
Outline Dimensions



Wiring Diagram
(Bottom view)



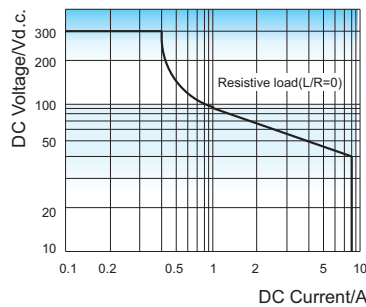
PCB Layout
(Bottom view)



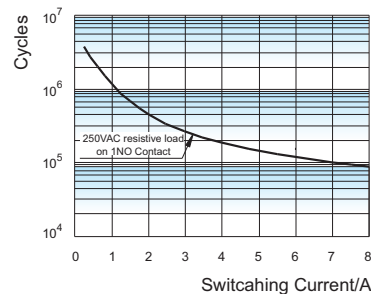
- Remark: 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.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

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Max.DC load breaking capacity



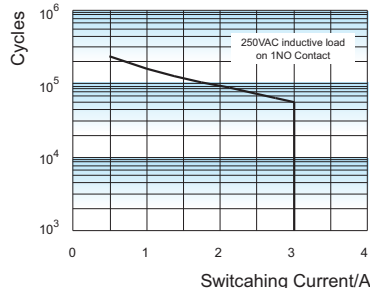
Electrical Endurance



Test conditions:

250VAC, Room temp.,
1s on 9s off.

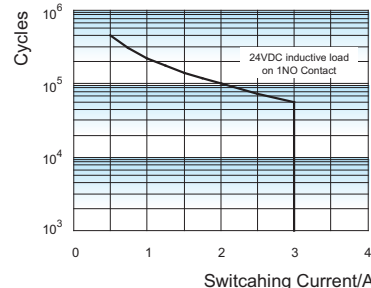
AC-15 Electrical Endurance



Note:

- 1) AC-15 electrical standard test according to IEC 60947-5-1;
- 2) The test condition: 250VAC, 85°C, 1s ON:9s OFF.

DC-13 Electrical Endurance



Note:

- 1) DC-13 electrical standard test according to IEC 60947-5-1;
- 2) The test condition: 24VDC, 85°C, 1s ON:9s OFF.

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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HFA4B

Forcibly Guided RELAY



File No.:E133481



File No.:R50507878



File No.:CQC21002290220



Features

- Forcibly guided contacts according to IEC 61810-3 (EN50205)
- 8A switching capability
- Mechanical life: 1×10^7 cycles
- 4kV dielectric strength (Contact - Coil; Contact - Contact)
- UL insulation system: Class F available
- Outline dimensions: (41.7×25×10.2) mm

RoHS compliant

CONTACT DATA

Contact arrangement	2NO+2NC ,3NO+1NC
Forcibly guided contacts Type (according to EN50205)	Type A
Contact resistance ¹⁾	100mΩ max.(at 6VDC 100mA)
Contact material	AgSnO ₂ +Au plated
Contact rating (Res. load)	8A 250VAC/ 30VDC
Min.contact load ²⁾	5V 10mA
Max.switching voltage	400VAC(at 3.5A Res. Load)
Max.switching current	8A
Max.switching capacity	2000VA / 240W
Contact rating DC-13	1NO:4A 24VDC (1s on 9s off)
Contact rating AC-15	1NO:3A 250VAC (1s on 9s off)
Mechanical endurance ³⁾	1×10^7 cycles
Electrical endurance	5×10^4 ops(1NO:85°C,1s on 9s off, 8A 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.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between open contacts	1500VAC 1min
	Between contact sets	4000VAC 1min
	Between coil & contacts	4000VAC 1min
Surge voltage	Between contact sets	6kV(1.2/50μs)
	Between coil & contacts	6kV(1.2/50μs)
Operate time(at rated voltage)		20ms max.
Release time(at rated voltage)		10ms max.
Temperature rise (at rated voltage)		70K max. (All NO Contact load current 8A, rated voltage excitation,at 85℃)
Shock resistance	Functional	10g(NO)
	Destructive	980m/s ²
Vibration resistance		10Hz to 200Hz 5g(NO)
Humidity		5% to 85%RH
Ambient temperature		-40℃ to 85℃
Termination		PCB
Unit weight		Approx. 15.5g
Construction		Plastic sealed

Notes:The data shown above are initial values.

COIL

Coil power	Approx. 0.65W
Holding Voltage ¹⁾	50% to 100%U _N (at 23°C) 60% to 100%U _N (at 85°C)

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

SAFETY APPROVAL RATINGS

UL/CUL	8A 250/277VAC cos(φ)=1 85°C 8A 30VDC L/R=0 85°C NO: B300 Q300 85°C NC: Q300 85°C NO: 3.5A 400VAC cos(φ)=1 85°C
	8A 250/277VAC cos(φ)=1 85°C 8A 30VDC L/R=0 85°C NO: 3A 250VAC(AC-15) 85°C 4A 24VDC(DC-13) 85°C
TÜV	

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

2024 Rev. 1.00

COIL DATA					at 23°C
Nominal Voltage VDC	Pick-up Voltage VDC ¹⁾	Drop-out Voltage VDC ¹⁾	Max. Voltage VDC ²⁾	Coil Resistance Ω	
5	3.5	0.5	6.5	38 ×(1±10%)	
6	4.2	0.6	7.8	55 ×(1±10%)	
9	6.3	0.9	11.7	125 ×(1±10%)	
12	8.4	1.2	15.6	220 ×(1±10%)	
15	10.5	1.5	19.5	350 ×(1±10%)	
18	12.6	1.8	23.4	500 ×(1±10%)	
21	14.7	2.1	27.3	680 ×(1±10%)	
24	16.8	2.4	31.2	900 ×(1±10%)	
36	25.2	3.6	46.8	2000 ×(1±10%)	
48 ³⁾	33.6	4.8	62.4	3600 ×(1±10%)	
60 ³⁾	42	6	78	5600 ×(1±10%)	
110 ³⁾	77	11	143	18500 ×(1±10%)	

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).

ORDERING INFORMATION							
Type	HFA4B/	12	-2H2D	S	T	F	G (XXX)
Coil voltage	5,6,9,12,15,18,21, 24,36,48,60,110 VDC						
Contact arrangement	2H2D: 2NO+1NC 3H1D: 3NO+1NC						
Construction	S: Plastic sealed						
Contact material	T: AgSnO ₂						
Insulation class	F: Class F						
Contact plating	G: Au plated						
Special code	XXX: Customer special requiremen			Nil: Standard			

Notes:1) Contact is recommended for suitable condition and specifications if water cleaning or surface precess is involved in assembling relays on PCB.

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

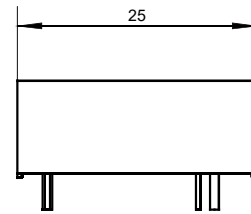
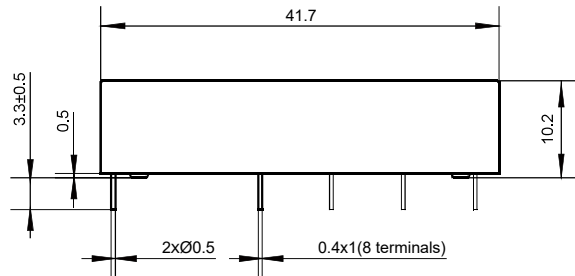
3) Please avoid using the relay in an environment containing organic silicon,otherwise the entry of organic silicon into the relay may acceleration contact failure.If there are harmful substances and elements such as water vapor,H₂S,SO₂,NO₂,Cl,P,dust,etc. , as well as unknown harmful substances and elements,In 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

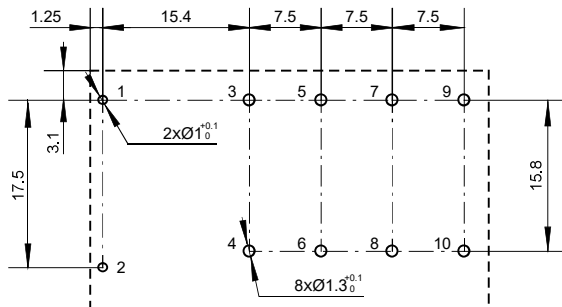
Unit: mm

HFA4B/□□-2H2DSTFG

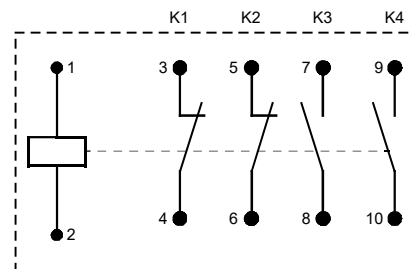
Outline Dimensions



PCB Layout
(Bottom view)

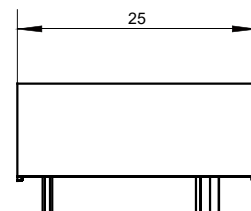
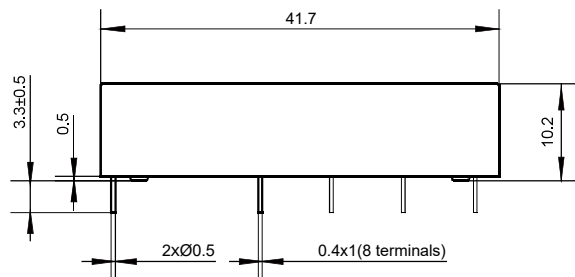


Wiring Diagram
(Bottom view)

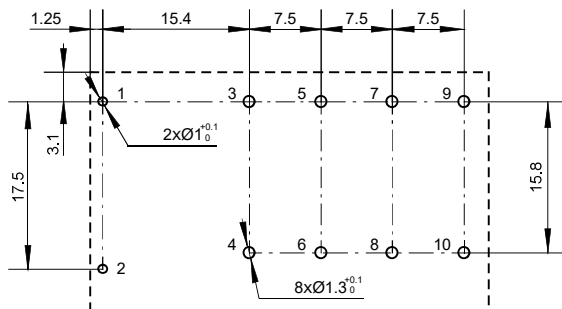


HFA4B/□□-3H1DSTFG

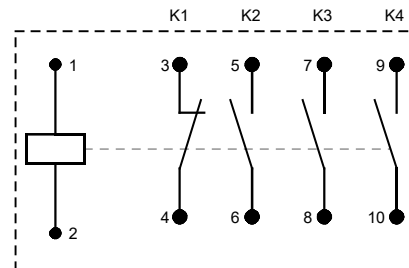
Outline Dimensions



PCB Layout
(Bottom view)



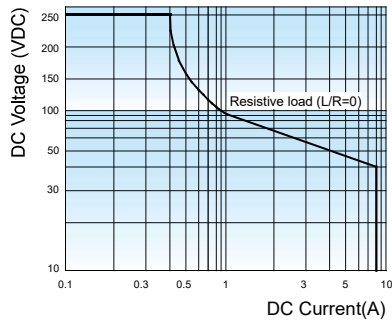
Wiring Diagram
(Bottom view)



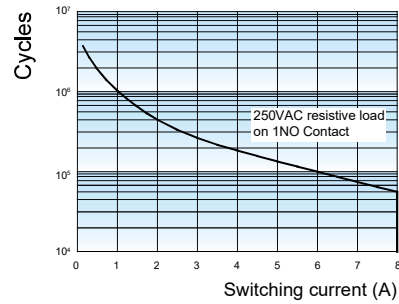
Notes: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm;
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

Max.DC load breaking capacity

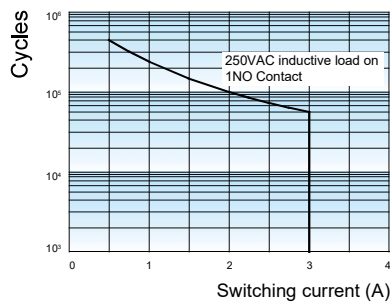


Electrical Endurance



Test condition:
250VAC, 85°C, 1s on 9s off.

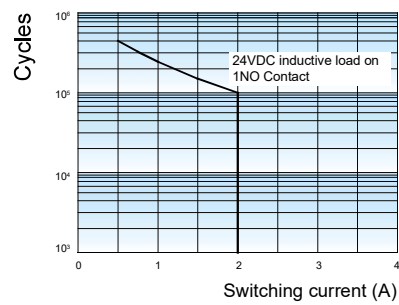
AC-15 Electrical Endurance



Notes:

- 1) The AC-15 electrical endurance test load according to IEC 60947-5-1.
- 2) The test condition: 250VAC, 85°C, 1s on 9s off.

DC-13 Electrical Endurance



Notes:

- 1) The DC-13 electrical endurance test load according to IEC 60947-5-1.
- 2) The test condition: 24VDC, 85°C, 1s on 9s off.

Disclaimer

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HFA4G

MINIATURE HIGH POWER RELAY



File No.: E133481



File No.: R50527765



File No.: CQC21002322054



Features

- 6A switching capability;
- Multi contact arrangements: 2NO+2NC, 3NO+1NC;
- Forcibly guided contacts according to IEC 61810-3;
- High insulation capability: 6kV surge voltage between input and output;
- UL insulation system: Class F;
- Outline dimensions: (35×12.6×25.5)mm.

RoHS compliant

CONTACT DATA

Contact arrangement	2NO+2NC
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating(Res.)	6A 250VAC, 6A 24VDC
Min.contact load ²⁾	5VDC 10mA
Max.swtiching voltage	30VDC/400VAC
Max.switching current	6A
Max.switching power	180W/1500VA
Mechanical endurance	1×10 ⁷ OPS
Electrical endurance ³⁾	1×10 ⁵ OPS (6A 250VAC, 1NO Resistive load, Room temp., 1s on 9s off)

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.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between open contacts	1500VAC 1min
	Between contact sets	3000VAC 1min
	Between coil & contacts	4000VAC 1min
Surge Voltage		6kV(1.2×50μs)
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		10ms max.
Shock resistance	Functional	NO: 98m/s ² ,NC: 49m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA 55Hz to 200Hz, NO:10g,NC:5g
Humidity		5% to 85%RH
Ambient temperature		-40℃ to 85℃
Termination		PCB
Unit weight		Approx. 25g
Construction		Flux proofed

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

COIL

Coil power	Approx. 1W
Holding Voltage ¹⁾	50% to 120%U _N (at 23°C) 60% to 80%U _N (at 85°C)

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

COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance Ω
6	4.20	0.6	6.5	36×(1±10%)
12	8.40	1.2	7.8	150×(1±10%)
20	14.0	2.0	11.7	400×(1±10%)
24	16.8	2.4	15.6	580×(1±10%)
48	33.6	4.8	23.4	2300×(1±10%)
60	42.0	6.0	31.2	3600×(1±10%)
110	77.0	11	62.4	12100×(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.

SAFETY APPROVAL RATINGS

UL	1NO	6A 250VAC Resistive load 85°C 6A 24VDC Resistive load 85°C B300/R300 85°C
	1NC	6A 250VAC Resistive load 85°C
TÜV	1NO	6 A 250VAC Resistive load 85°C 6 A 24VDC Resistive load 85°C 3A 400VAC Resistive load 85°C AC-15 3A 250VAC 85°C DC-13 4A 24VDC 85°C
	1NC	6A 250VAC Resistive load 85°C AC-15 1A 250VDC 85°C DC-13 3A 24VDC 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

2023 Rev. 2.01

ORDERING INFORMATION

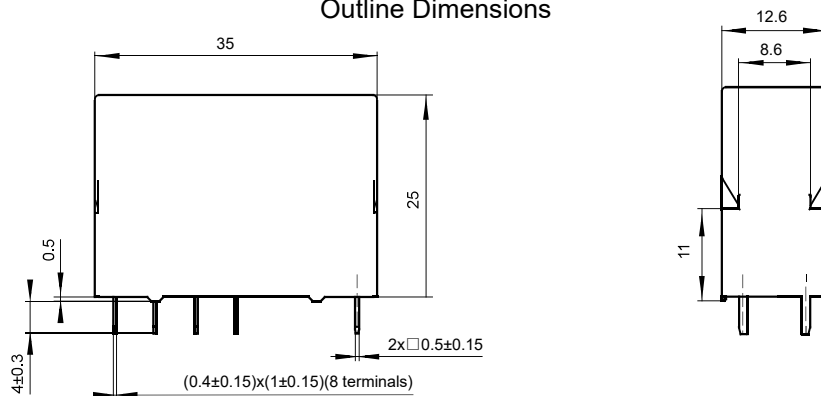
Type	HFA4G/	12	-2H2D	1	S	T	F	G	(XXX)
Coil voltage	6,12,20,24,48,60,110VDC								
Contact arrangement	2H2D: 2NO+1NC								
Structure	1: 1 type								
Construction	S: Plastic sealed								
Contact material	T: AgSnO ₂								
Insulation class	F: Class F								
Contact plating	G: Au plated								
Special code ²⁾	XXX: Customer special requiremen 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.

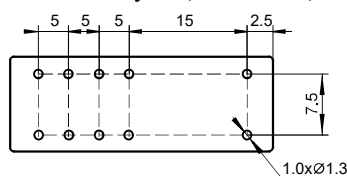
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

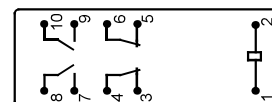
Outline Dimensions



PCB Layout(Bottom view)



Wiring Diagram(Bottom view)



Notes: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
2) The tolerance without indicating for PCB layout is always ± 0.1 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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HFA6A

FORCE-GUIDED RELAY



File No.:E133481



File No.:R50437848



File No.:CQC19002217420



Features

- Forcibly guided contacts according to IEC61810-3 (EN50205)
- 8A switching capability
- 4kV dielectric strength(between coil and contacts)
- UL insulation system: Class F available
- Dimensions(LxWxH): 55.0mm x16.5mm x15.7mm

RoHS compliant

CONTACT DATA

Contact arrangement	3NO+3NC, 4NO+2NC, 5NO+1NC
Forcibly guided contacts Type (according to EN50205)	Type A
Contact resistance ¹⁾	$\leq 2\Omega$ (at 6VDC 10mA), $\leq 100m\Omega$ (at 6V 1A)
Contact material	AgSnO ₂ + Au plated
Contact rating (Res. load)	8A 250VAC/30VDC
Max. switching voltage	400VAC /220VDC(at 0.2A Res.Load)
Max. switching current	8A
Max. switching capacity	2000VA /240W
Min.contact load ²⁾	5VDC 10mA
Contact rating DC-13	2NO:6A 24VDC(1s on 9s off)
Contact rating AC-15	2NO:5A 250VAC(1s on 9s off)
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance ³⁾	$\geq 5 \times 10^4$ OPS (1NO: 8A 250VAC, Resistive load, 85°C, 1s on 9s off)

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.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between contacts sets	3000VAC 1min
	Between open contacts	1500VAC 1 min
Surge voltage (Between coil & contacts)		6kV (1.2 / 50μs)
Operate time (at rated voltage)		20ms max.
Release time (at rated voltage)		20ms max.
Temperature rise (at rated voltage)		70K max. (2NO Contact load current 8A, rated voltage excitation, at 85°C)
Shock resistance	Functional	10g(NO)
	Destructive	980m/s ²
Vibration resistance		10Hz to 200Hz 10g(NO)
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 25g
Construction		Plastic sealed

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



HONGFA RELAY

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

2024 Rev. 1.00

COIL DATA

at 23°C

Standard:

Nominal Voltage VDC	Pick-up Voltage VDC Max. ¹⁾	Drop-out Voltage VDC Min. ¹⁾	Max. Voltage VDC ²⁾	Coil resistance Ω
5	3.75	0.5	6	20.8 x (1±10%)
6	4.50	0.6	7.2	30 x (1±10%)
9	6.75	0.9	10.8	67.5 x (1±10%)
12	9.00	1.2	14.4	120 x (1±10%)
15	11.3	1.5	18	188 x (1±10%)
18	13.5	1.8	21.6	270 x (1±10%)
21	15.8	2.1	25.2	368 x (1±10%)
24	18.0	2.4	28.8	480 x (1±10%)
36	27.0	3.6	43.2	1080x (1±10%)
40	30.0	4.0	48	1333 x (1±10%)
48	36.0	4.8	57.6	1920x (1±10%)
50	37.5	5.0	60	2083 x (1±15%)
60	45.0	6.0	72	3000 x (1±15%)
110	82.5	11.0	132	10083x (1±15%)

Sensitive:

Nominal Voltage VDC	Pick-up Voltage VDC Max. ¹⁾	Drop-out Voltage VDC Min. ¹⁾	Max. Voltage VDC ²⁾	Coil resistance Ω
5	3.80	0.5	6	31.2x (1±10%)
6	4.50	0.6	7.2	45 x (1±10%)
9	6.75	0.9	10.8	101.3 x (1±10%)
12	9.00	1.2	14.4	180 x (1±10%)
15	11.3	1.5	18	281 x (1±10%)
18	13.5	1.8	21.6	405 x (1±10%)
21	15.8	2.1	25.2	550 x (1±10%)
24	18.0	2.4	28.8	720 x (1±10%)
36	27.0	3.6	43.2	1620x (1±10%)
40	30.0	4.0	48	2000 x (1±10%)
48	36.0	4.8	57.6	2880 x (1±10%)
50	37.5	5.0	60	3125 x (1±15%)
60	45.0	6.0	72	4500 x (1±15%)
110	82.5	11.0	132	15125x (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.

COIL

Coil power	Approx. 1200mW(Standard) Approx. 800mW(Sensitive)
Holding Voltage ¹⁾	50% to 100%U _N (at 23°C) 60% to 100%U _N (at 85°C)

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

SAFETY APPROVAL RATINGS

UL/CUL	8A 250VAC COS(phi)=1 at 85°C 8A 30VDC L/R=0 at 85°C NO:B300 R300 at 85°C NC:C300 R300 at 85°C
TÜV	8A 250VAC COS(phi)=1 at 85°C 8A 30VDC L/R=0 at 85°C 5A 250VAC(AC-15) at 40°C 6A 24VDC(DC-13) at 40°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	HFA6A /	18-	4H2D	S	1	L	T	F	G(XXX)
Coil voltage	5,6,9,12,15,18,21,24,36, 48,50,60,110VDC								
Contact arrangement	3H3D: 3NO+3NC 4H2D: 4NO+2NC 5H1D: 5NO+1NC								
Construction	S:Plastic sealed								
Version	1:Standard 2:Type V version(only for 4H2D)								
Coil power	L: Sensitive(0.8W) Nil: Standard(1.2W)								
Contact material	T: AgSnO ₂								
Insulation standard	F: Class F								
Contact plating	G:Au plated								
Special code ³⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

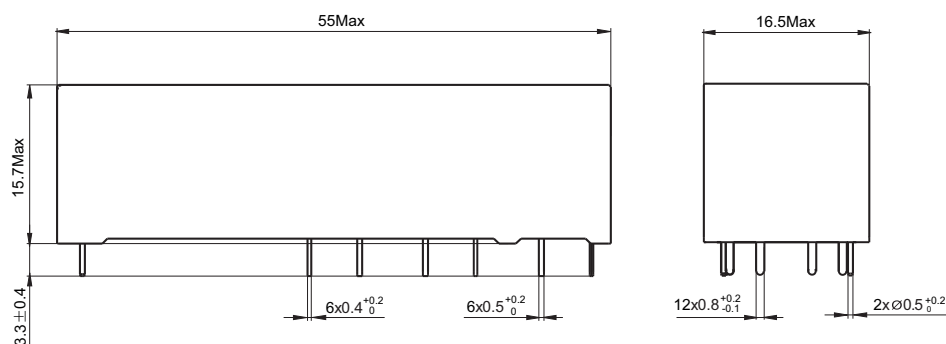
3) The customer special requirement express as special code after evaluating by hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

HFA6A/□□-3H3D□□1□□(□□)

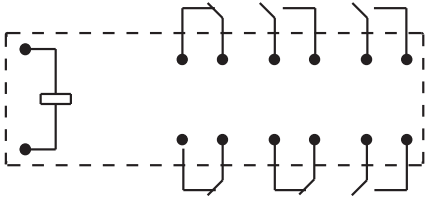
Outline Dimensions



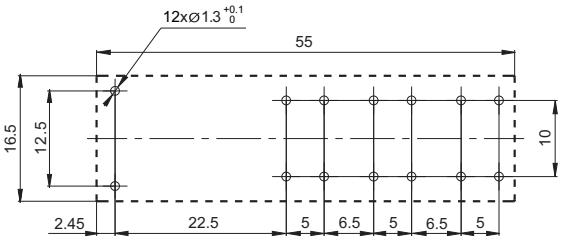
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram
(Bottom view)

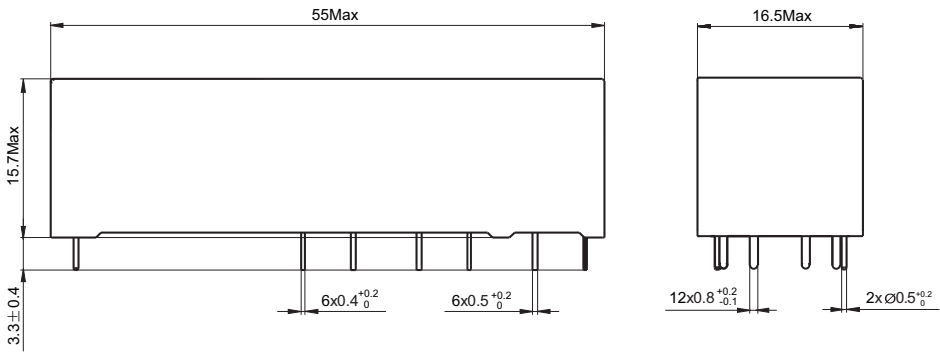


PCB Layout
(Bottom view)

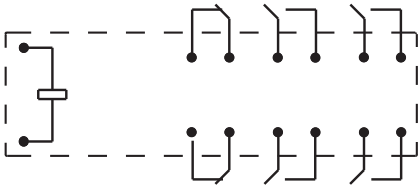


HFA6A/□□-4H2D□□1□□(□□)

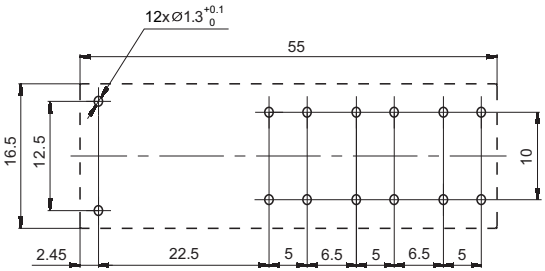
Outline Dimensions



Wiring Diagram
(Bottom view)



PCB Layout
(Bottom view)

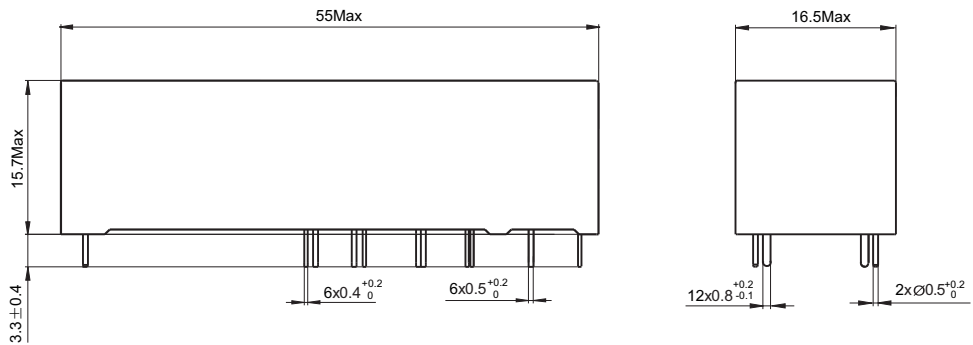


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

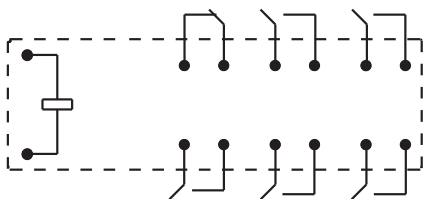
Unit: mm

HFA6A/□□-5H1D□□1□□(□□)

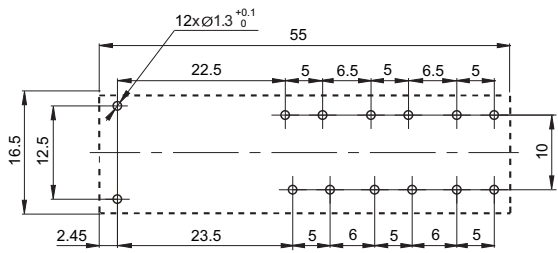
Outline Dimensions



Wiring Diagram
(Bottom view)

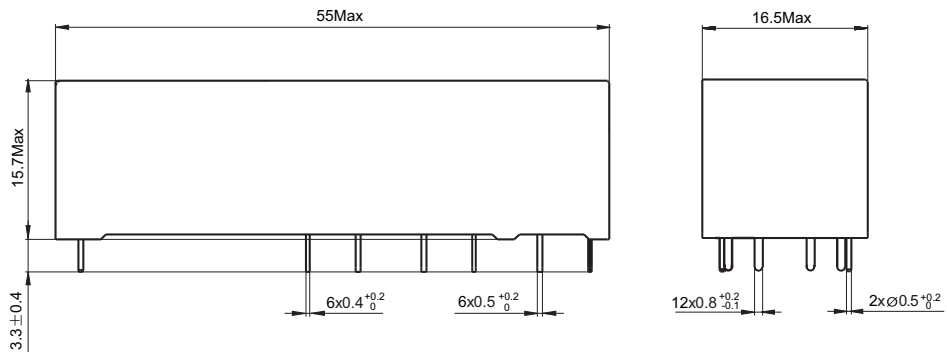


PCB Layout
(Bottom view)



HFA6A/□□-4H2D□□2□□(□□)

Outline Dimensions

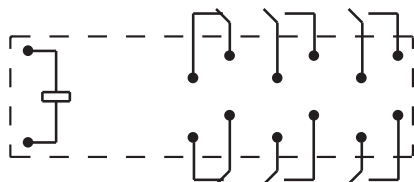


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

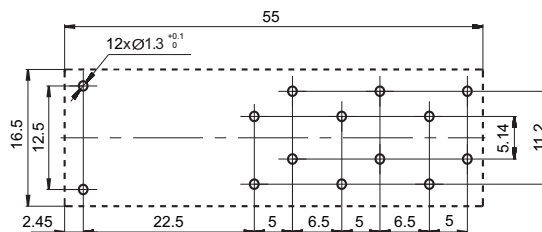
Wiring Diagram

(Bottom view)



PCB Layout

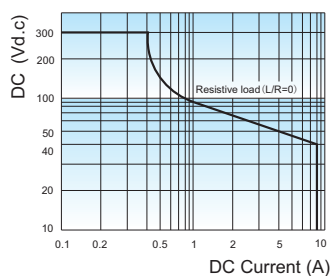
(Bottom view)



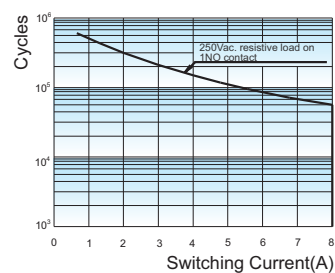
- Remark: 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.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

CHARACTERISTIC CURVES

MAX.DC LOAD BREAKING CAPACITY

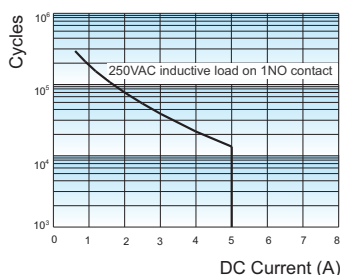


ELECTRICAL ENDURANCE

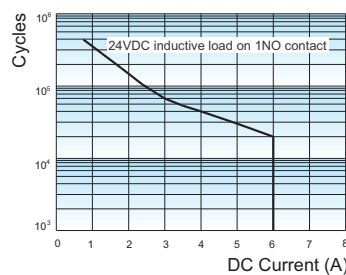


Test conditions:
250VAC, 85°C, 1s on 9s off

AC-15 ELECTRICAL ENDURANCE



DC-13 ELECTRICAL ENDURANCE



Note:

- 1) AC-15 electrical endurance test load according to Table B.3 of IEC 61810-1.
- 2) The test condition: 250VAC, 85°C, 1s on 9s off.

Note:

- 1) DC-13 electrical endurance test load according to Table B.3 of IEC 61810-1.
- 2) The test condition: 24VDC, 85°C, 1s on 9s off.

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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HF10F

MINIATURE HIGH POWER RELAY



File No.:E134517



Features

- 10A switching capability
- Multiple switching capability (2C, 3C type)
- Standard electrontube terminal
- With test button
- Sockets available

RoHS compliant

CONTACT DATA

Contact arrangement	2C, 3C
Contact resistance	100mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating (Res. load)	2C: 10A 250VAC / 30VDC 3C: (NO) 10A 250VAC / 30VDC (NC) 5A 250VAC / 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	2 Form C type: 1 x 10 ⁵ ops (10A 250VAC/30VDC; Resistive load, Room temp., 1s on 9s off) 3 Form C type: 1 x 10 ⁵ ops (NO:10A 250VAC/30VDC; NC: 5A 250VAC/30VDC; Resistive load, Room temp., 1s on 9s off)

Notes: The data shown above are initial values.

CHARACTERISTICS

Insulation resistance		1000MΩ (500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	2000VAC 1min
Operate time (at nomi. volt.)		30ms(DC) max.
Release time (at nomi. volt.)		30ms(DC) max.
Temperature rise (at nomi. volt.)		100K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 55°C
Termination		Standard electrontube terminal
Unit weight		Approx.90g
Construction		Dust protected

COIL

Coil power	DC type: Approx.1.4W; AC type: Approx. 3.0VA
------------	---

SAFETY APPROVAL IS PENDING

UL/CUL	10A 250VAC/30VDC 1/3HP 120VAC 1/3HP 240VAC 1/2HP 277VAC
--------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VAC min.	Max. ²⁾ Voltage VAC	Coil Resistance Ω
006	4.80	0.60	7.20	23.5 x (1±10%)
012	9.60	1.20	14.4	120 x (1±10%)
024	19.2	2.40	28.8	470 x (1±10%)
048	38.4	4.80	57.6	1800 x (1±10%)
060	48.0	6.00	72.0	2790 x (1±10%)
100	80.0	10.0	120	7500 x (1±10%)
110	88.0	11.0	132	
120	96.0	12.0	144	
220	176	22.0	264	37000 x (1±10%)



HONGFA RELAY

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

2024 Rev. 1.01

COIL DATA				23°C
Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage ²⁾ VAC	Coil Resistance Ω
006	4.80	1.80	7.20	3.9 x (1±10%)
012	9.60	3.60	14.4	16.9 x (1±10%)
024	19.2	7.20	28.8	72 x (1±10%)
048	38.4	14.4	57.6	290x (1±10%)
110	88.0	33.0	132	1700 x (1±10%)
120	96.0	36.0	144	
110/120	88.0	36.0	132	
220	176	36.0	264	6500 x (1±10%)
230	184	69.0	276	
220/240	176	72.0	264	
240	192	72.0	288	

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

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

ORDERING INFORMATION									
Type	HF10F	F	/230	A	-2Z	D	T	G	(XXX)
Button Function	F: Standard type without button H: With test button type								
Coil voltage	See "COIL DATA"Nominal Voltage								
Coil voltage form	A: AC D: DC								
Contact arrangement	2Z: 2 Form C 3Z: 3 Form C								
Combined component code	D: With LED type DJ: With LED and diode type(only for DC type) Nil: Standard								
Contact material	T: AgSnO ₂ Nil: AgCdO								
Contact plating	G: Gold plated Nil: No gold plated								
Special code ¹⁾	XXX: Customer special requirement Nil: Standard								

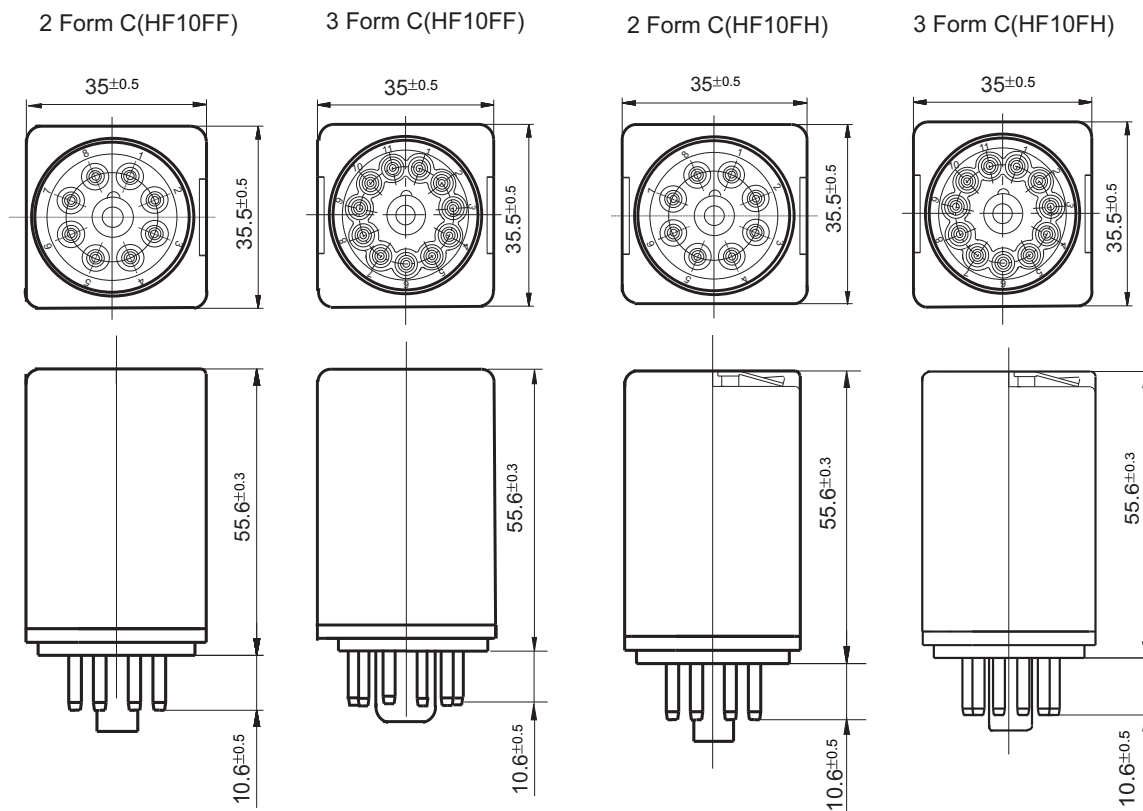
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

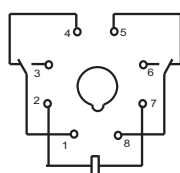
(Bottom view)



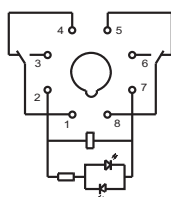
Wiring Diagram

(Bottom view)

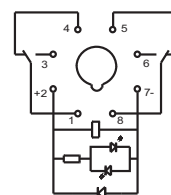
2 Form C
(HF10FF/HF10FH)



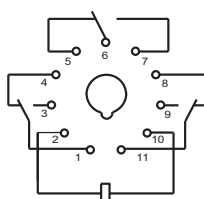
2 Form C
(HF10FF/HF10FH With LED)



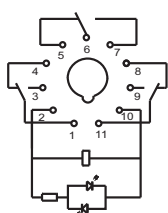
2 Form C
(HF10FF/HF10FH With LED, With fly-wheel diode)



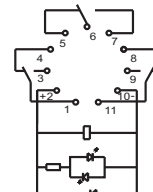
3 Form C
(HF10FF/HF10FH)



3 Form C
(HF10FF/HF10FH With LED)



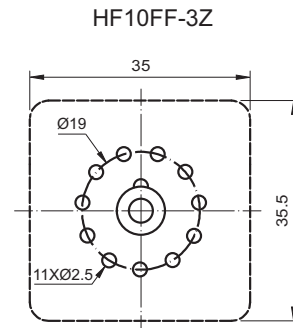
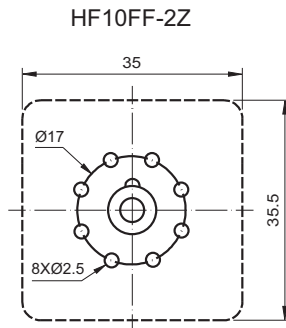
3 Form C
(HF10FF/HF10FH With LED, With fly-wheel diode)



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

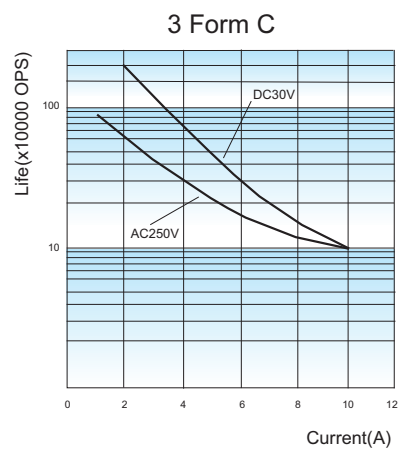
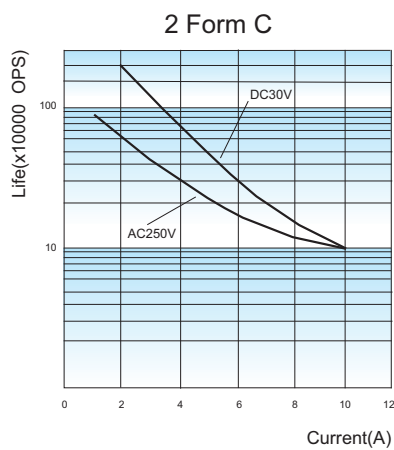
Unit: mm

PCB Layout
(Bottom view)

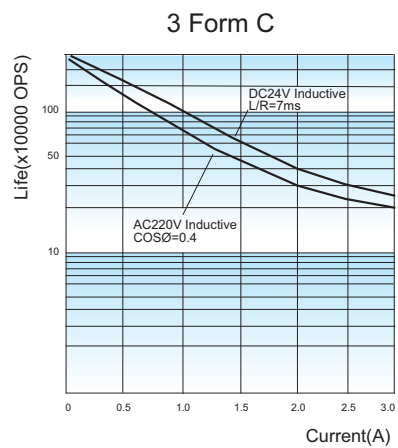
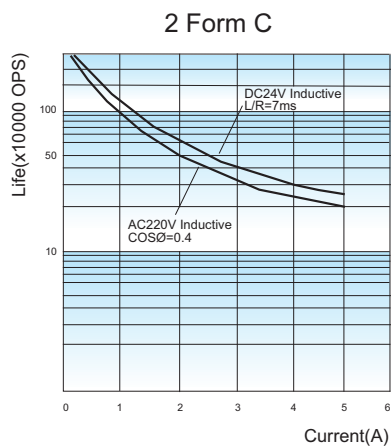


CHARACTERISTIC CURVES

RESISTIVE ENDURANCE CURVE



INDUCTIVE ENDURANCE CURVE



Relay Sockets



Features

- The dielectric strength can reach 2000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: screw mounting and DIN rail mounting.
- With finger protection device are available
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Components available: metallic retainer, plug-in modules
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

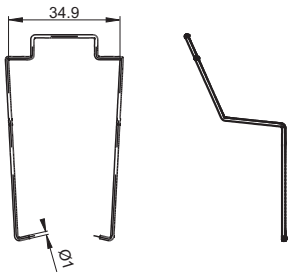
Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
10FF-2Z-C3	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx. 49g
10FF-2Z-C4	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx. 61g
10FF-3Z-C3	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx. 56g
10FF-3Z-C4	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm	Approx. 65g

DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Retainer

10FF-H1 (Metallic retainer)


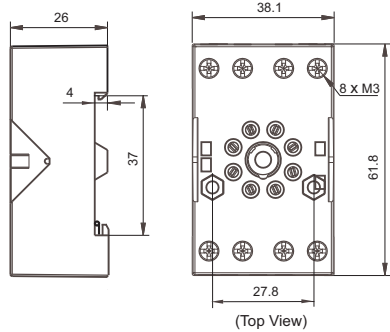
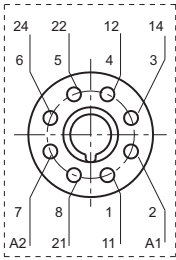
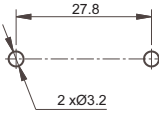

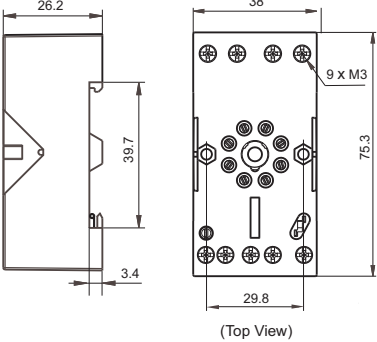
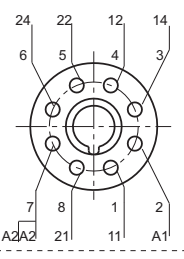
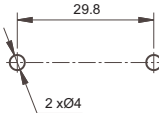

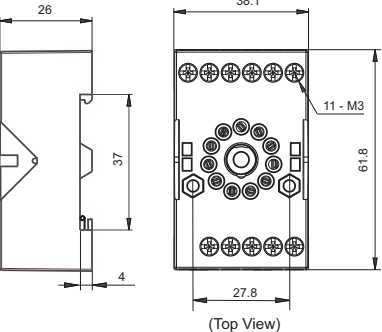
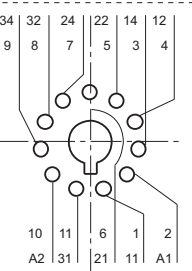
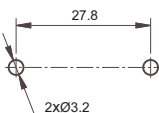

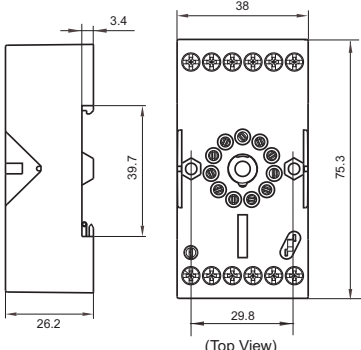
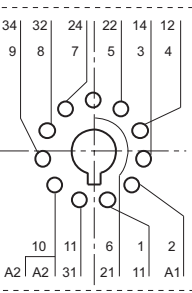
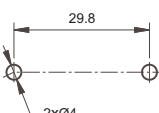


Things to be noticed when selecting sockets:

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. As for 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 HF10FF relay. If you have any special requirements, please contact us.
4. Main outline dimension, outline dimension>50mm ,tolerance should be ± 1mm; 20mm<outline dimension ≤50mm, tolerance should be ± 0.5mm; 5mm<outline dimension ≤20mm, tolerance should be ± 0.4mm; outline dimension≤5mm, tolerance should be ± 0.3mm.
5. DIN rail mounting: recommend to use standard rail 35×7.5×1mm, 35×15×1mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
<p>10FF-2Z-C3</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>Metallic retainer 10FF-H1</p>
<p>10FF-2Z-C4</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>Metallic retainer 10FF-H1</p> <p>Plug-in module HFFAA to HFFHU*</p>
<p>10FF-3Z-C3</p>  <p>Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>Metallic retainer 10FF-H1</p>
<p>10FF-3Z-C4</p>  <p>Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>Metallic retainer 10FF-H1</p> <p>Plug-in module HFFAA to HFFHU*</p>

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

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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HF10FF-Q

MINIATURE HIGH POWER RELAY



File No.:E134517



Features

- 10A switching capability
- Bridge transformation available, Multiple switching capability (2C, 3C type)
- QC terminal
- Dust protected type
- Multiple auxiliary functions available

RoHS compliant

CONTACT DATA

Contact arrangement	QZ,2C, 3C
Contact resistance	100mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating (Res. load)	QZ/2C: 10A 250VAC / 30VDC 3C: (NO) 10A 250VAC / 30VDC (NC) 5A 250VAC / 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	QZ/2 Form C type: 1 x 10 ⁵ ops (10A 250VAC/30VDC; Resistive load, Room temp., 1s on 9s off) 3 Form C type:1 x 10 ⁵ ops (NO:10A 250VAC/30VDC; NC: 5A 250VAC/30VDC; Resistive load, Room temp., 1s on 9s off)

Notes: The data shown above are initial values.

CHARACTERISTICS

Insulation resistance		1000MΩ (500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	2000VAC 1min
Operate time (at nomi. volt.)		30ms(DC) max.
Release time (at nomi. volt.)		30ms(DC) max.
Temperature rise (at nomi. volt.)		100K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 55°C
Termination		QC terminal
Unit weight		Approx.90g
Construction		Dust protected

COIL

Coil power	DC type: Approx.1.4W; AC type: Approx. 3.0VA
------------	---

COIL DATA at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VAC min.	Max. ²⁾ Voltage VAC	Coil Resistance Ω
006	4.80	0.60	7.20	23.5 x (1±10%)
012	9.60	1.20	14.4	120 x (1±10%)
024	19.2	2.40	28.8	470 x (1±10%)
048	38.4	4.80	57.6	1800 x (1±10%)
060	48.0	6.00	72.0	2790 x (1±10%)
100	80.0	10.0	120	7500 x (1±10%)
110	88.0	11.0	132	
120	96.0	12.0	144	
220	176	22.0	264	37000 x (1±10%)

SAFETY APPROVAL IS PENDING

UL/CUL	10A 250VAC/30VDC 1/3HP 120VAC 1/3HP 240VAC 1/2HP 277VAC
--------	--



HONGFA RELAY

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

2024 Rev. 1.00

COIL DATA				at 23°C
Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. ²⁾ Voltage VAC	Coil Resistance Ω
006	4.80	1.80	7.20	3.9 x (1±10%)
012	9.60	3.60	14.4	16.9 x (1±10%)
024	19.2	7.20	28.8	72 x (1±10%)
048	38.4	14.4	57.6	290x (1±10%)
110	88.0	33.0	132	1700 x (1±10%)
120	96.0	36.0	144	
110/120	88.0	36.0	132	
220	176	36.0	264	6500 x (1±10%)
230	184	69.0	276	
220/240	176	72.0	264	
240	192	72.0	288	

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

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

ORDERING INFORMATION			
Type	HF10F	F	-Q /230 A -2Z D T G (XXX)
Button Function	F: Standard type without button		
Terminal arrangement	Q: QC terminal		
Coil voltage	See "COIL DATA"Nominal Voltage		
Coil voltage form	A: AC D: DC		
Contact arrangement	QZ: Bridge transformation 2Z: 2 Form C 3Z: 3 Form C		
Combined component code	D: With LED type DJ: With LED and diode type(only for DC type) Nil: Standard		
Contact material	T: AgSnO ₂ Nil: AgCdO		
Contact plating	G: Gold plated Nil: No gold plated		
Special code ¹⁾	XXX: Customer special requirement Nil: Standard		

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

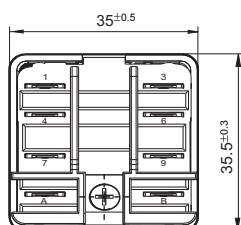
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

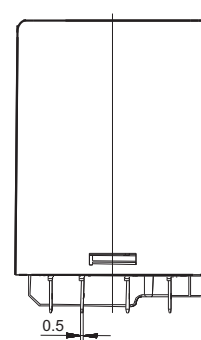
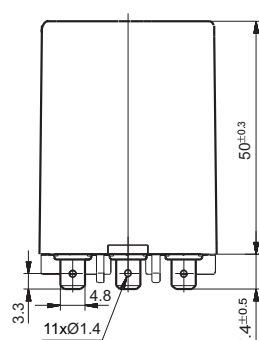
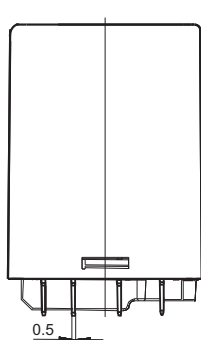
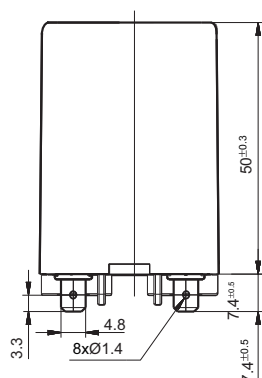
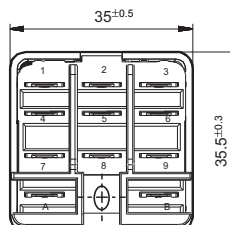
Outline Dimensions

(Bottom view)

QZ/2 Form C
(HF10FF-Q)



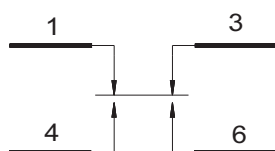
3 Form C
(HF10FF-Q)



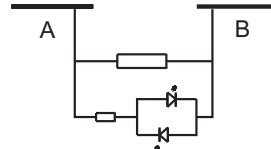
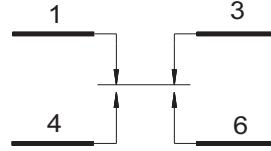
Wiring Diagram

(Bottom view)

QZ
(HF10FF-Q)



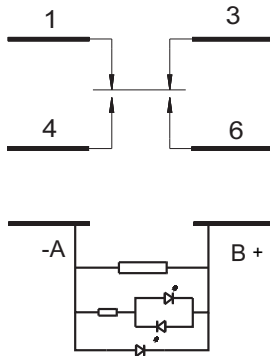
QZ
(HF10FF-Q With LED)



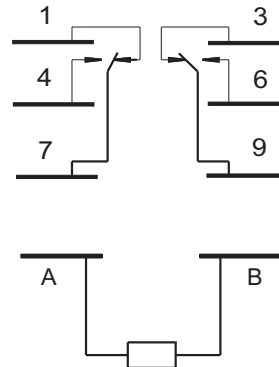
Wiring Diagram

(Bottom view)

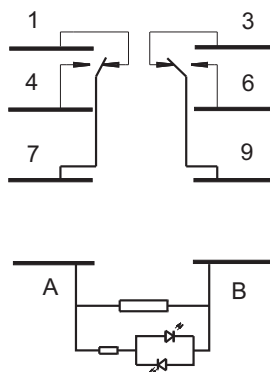
QZ
(HF10FF-Q With LED, With fly-wheel diode)



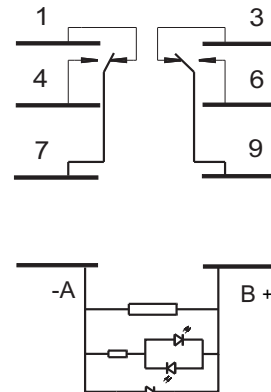
2 Form C
(HF10FF-Q)



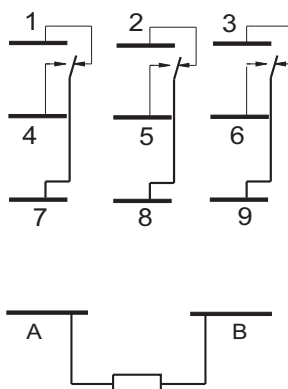
2 Form C
(HF10FF-Q With LED)



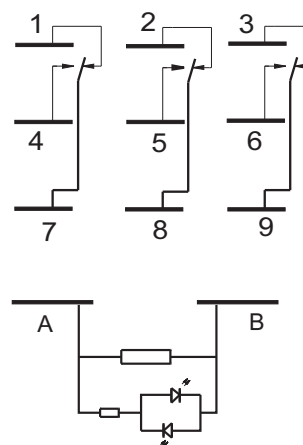
2 Form C
(HF10FF-Q With LED, With fly-wheel diode)



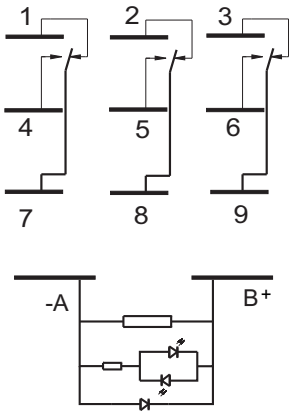
3 Form C
(HF10FF-Q)



3 Form C
(HF10FF-Q With LED)

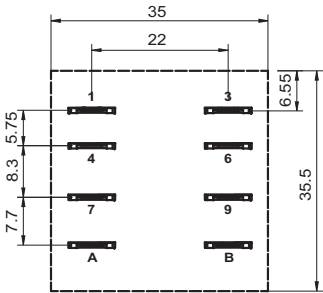


3 Form C
(HF10FF-Q With LED, With fly-wheel diode)

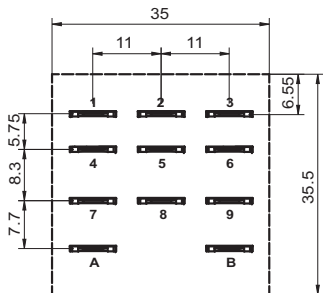


PCB Layout
(Bottom view)

HF10FF-Q-2Z/HF10FF-Q-QZ

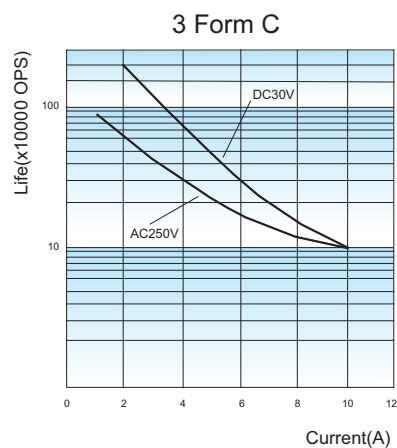
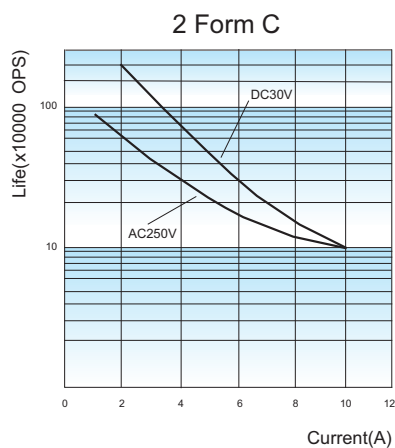


HF10FF-Q-3Z

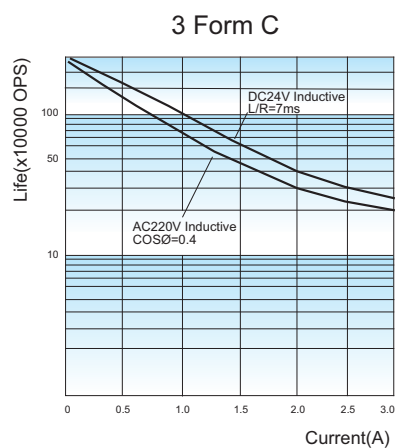
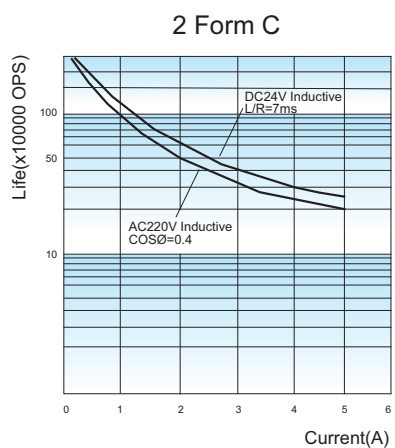


CHARACTERISTIC CURVES

RESISTIVE ENDURANCE CURVE



INDUCTIVE ENDURANCE CURVE



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HF10FF-QG

MINIATURE HIGH POWER RELAY

cULus
File No.:E134517



Features

- 16A switching capability
- Multiple switching capability (2C, 3C type)
- QC terminal
- High capacity

RoHS compliant

CONTACT DATA

Contact arrangement	2C, 3C
Contact resistance	100mΩ max. (at 1A 24VDC)
Contact material	AgSnO ₂ In ₂ O ₃
Contact rating (Res. load)	2C/3C: 10A 400VAC / 30VDC
Max. switching voltage	400VAC / 30VDC
Max. switching current	16A
Max. switching power	6400VA / 480W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	2 Form C/3 Form C type: 1 x 10 ⁵ ops (16A 400VAC/30VDC; Resistive load, Room temp., 1s on 9s off)

Notes: The data shown above are initial values.

SAFETY APPROVAL IS PENDING

UL/CUL	16A 400VAC/30VDC
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COIL

Coil power	DC type: Approx.1.4W; AC type: Approx. 3.0VA
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COIL DATA at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VAC min.	Max. ²⁾ Voltage VAC	Coil Resistance Ω
006	4.80	0.60	7.20	23.5 x (1±10%)
012	9.60	1.20	14.4	120 x (1±10%)
024	19.2	2.40	28.8	470 x (1±10%)
048	38.4	4.80	57.6	1800 x (1±10%)
060	48.0	6.00	72.0	2790 x (1±10%)
100	80.0	10.0	120	7500 x (1±10%)
110	88.0	11.0	132	
120	96.0	12.0	144	
220	176	22.0	264	37000 x (1±10%)

CHARACTERISTICS

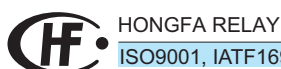
Insulation resistance		1000MΩ (500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	2000VAC 1min
Operate time (at nomi. volt.)		30ms(DC) max.
Release time (at nomi. volt.)		30ms(DC) max.
Temperature rise (at nomi. volt.)		100K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		QC terminal
Unit weight		Approx.90g
Construction		Dust protected

COIL DATA at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VAC min.	Max. ²⁾ Voltage VAC	Coil Resistance Ω
006	4.80	1.80	7.20	3.9 x (1±10%)
012	9.60	3.60	14.4	16.9 x (1±10%)
024	19.2	7.20	28.8	72 x (1±10%)
048	38.4	14.4	57.6	290x (1±10%)
110	88.0	33.0	132	1700 x (1±10%)
120	96.0	36.0	144	
110/120	88.0	36.0	132	
220	176	66.0	264	6500 x (1±10%)
230	184	69.0	276	
220/240	176	72.0	264	
240	192	72.0	288	

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

2)Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

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

2024 Rev. 1.01

ORDERING INFORMATION

	HF10F	F	-Q	G	/230	A	-2Z	D	5	(XXX)
Type										
Button Function	F: Standard type(without button)									
Terminal arrangement	Q: QC terminal									
Type code	G: High capacity									
Coil voltage	See "COIL DATA"Nominal Voltage									
Coil voltage form	A: AC D: DC									
Contact arrangement	2Z: 2 Form C 3Z: 3 Form C									
Combined component code	D: With LED type DJ: With LED and diode type(only for DC type) Nil: Standard									
Contact material	5: AgSnO ₂ In ₂ O ₃									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

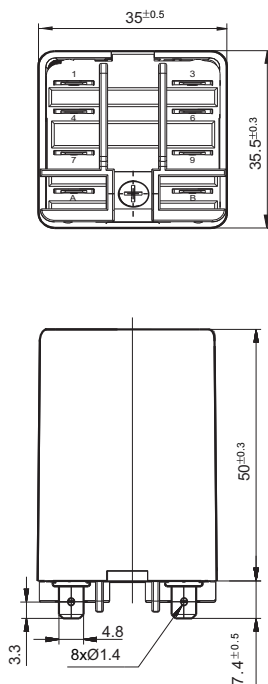
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

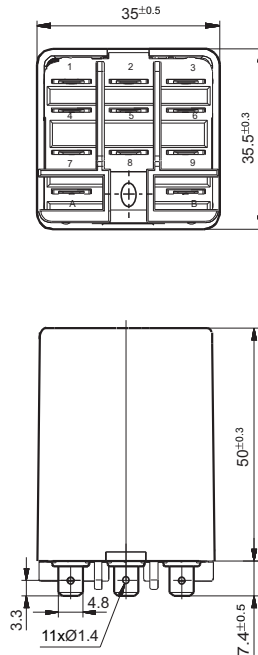
Outline Dimensions

(Bottom view)

2 Form C(HF10FF-QG)



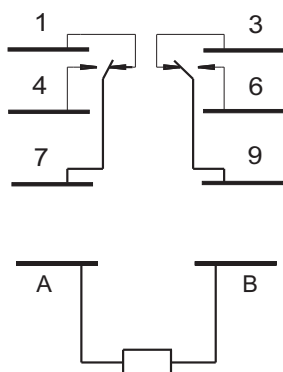
3 Form C(HF10FF-QG)



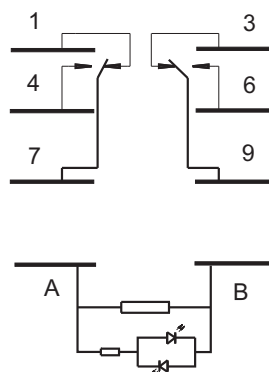
Wiring Diagram

(Bottom view)

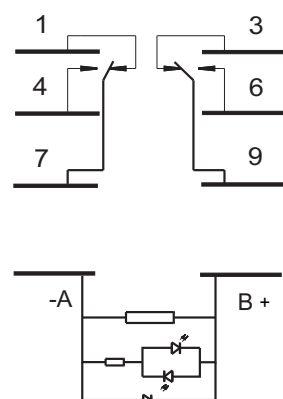
2 Form C(HF10FF-QG)



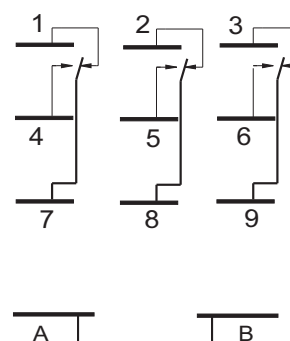
2 Form C(HF10FF-QG With LED)



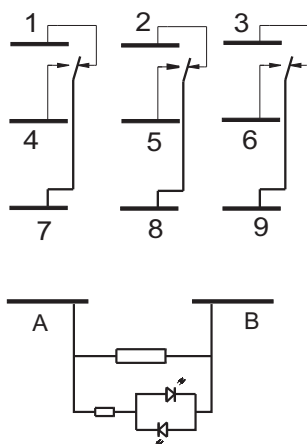
2 Form C
(HF10FF-QG With LED, With fly-wheel diode)



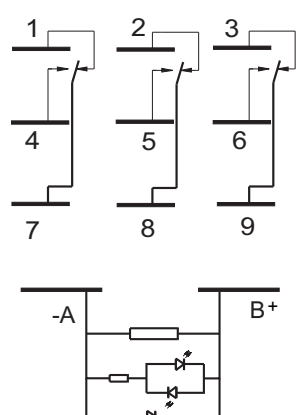
3 Form C
(HF10FF-QG)



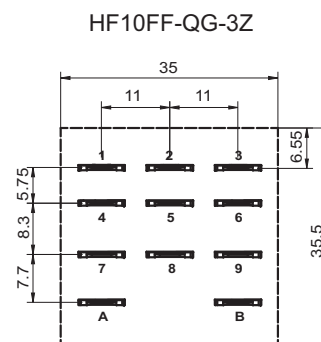
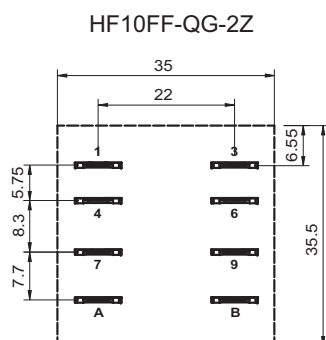
3 Form C
(HF10FF-QG With LED)



3 Form C
(HF10FF-QG With LED, With fly-wheel diode)



PCB Layout
(Bottom view)



Disclaimer

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HF10FF-QV

MINIATURE HIGH POWER RELAY



File No.:E134517



Features

- 10A switching capability
- Bridge transformation available, Multiple switching capability (2C type)
- QC terminal
- Blowout magnet type
- Dust protected type
- Multiple auxiliary functions available

RoHS compliant

CONTACT DATA

Contact arrangement	QZ, 2C
Contact resistance	100mΩ max. (at 1A 24VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating (Res. load)	QZ/2 Form C:10A 250VAC 30VDC QZ:10A 220VDC 2 Form C: (NO) 5A 150VDC 2 Form C:(NC) 2A 150VDC
Max. switching voltage	250VAC / 220VDC
Max. switching current	10A
Max. switching power	2500VA / 2200W
Mechanical endurance	5 x 10 ⁵ ops
Electrical endurance	QZ type: 1 x 10 ⁵ ops (10A 220VDC; Resistive load, Room temp., 1s on 9s off) 2 Form C type: 1 x 10 ⁴ ops (NO:5A 150VDC;NC: 2A 150VDC; Resistive load, Room temp., 1s on 9s off, Moving spring connect load positive)

Notes: The data shown above are initial values.

CHARACTERISTICS

Insulation resistance		1000MΩ (500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	2000VAC 1min
Operate time (at nomi. volt.)		30ms(DC) max.
Release time (at nomi. volt.)		30ms(DC) max.
Temperature rise (at nomi. volt.)		100K max
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 55°C
Termination		QC terminal
Unit weight		Approx.90g
Construction		Dust protected

COIL

Coil power	DC type: Approx. 1.4W; AC type: Approx. 3.0VA
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VAC min.	Max. ²⁾ Voltage VAC	Coil Resistance Ω
006	4.80	0.60	7.20	23.5 x (1±10%)
012	9.60	1.20	14.4	120 x (1±10%)
024	19.2	2.40	28.8	470 x (1±10%)
048	38.4	4.80	57.6	1800 x (1±10%)
060	48.0	6.00	72.0	2790 x (1±10%)
100	80.0	10.0	120	7500 x (1±10%)
110	88.0	11.0	132	
120	96.0	12.0	144	
220	176	22.0	264	37000 x (1±10%)

SAFETY APPROVAL IS PENDING

UL/CUL	10A 250VAC/30VDC QZ:10A 220VDC 2 Form C: (NO) 5A 150VDC 2 Form C:(NC) 2A 150VDC
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HONGFA RELAY

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

2024 Rev. 1.01

COIL DATA				at 23°C
Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. ²⁾ Voltage VAC	Coil Resistance Ω
006	4.80	1.80	7.20	3.9 x (1±10%)
012	9.60	3.60	14.4	16.9 x (1±10%)
024	19.2	7.20	28.8	72 x (1±10%)
048	38.4	14.4	57.6	290x (1±10%)
110	88.0	33.0	132	1700 x (1±10%)
120	96.0	36.0	144	
110/120	88.0	36.0	132	
220	176	36.0	264	6500 x (1±10%)
230	184	69.0	276	
220/240	176	72.0	264	
240	192	72.0	288	

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

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

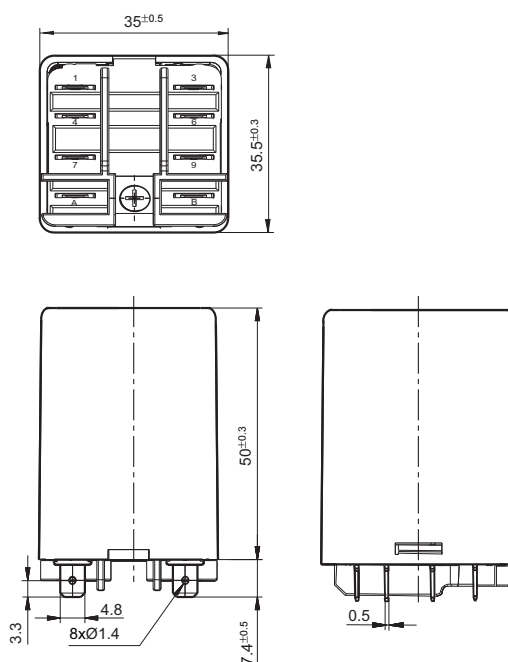
ORDERING INFORMATION			
Type	HF10F	F	-Q V /230 A -2Z D T G (XXX)
Button Function	F: Standard type without button		
Terminal arrangement	Q: QC terminal		
Arc blowout	V: Blowout magnet		
Coil voltage	See "COIL DATA"Nominal Voltage		
Coil voltage form	A: AC D: DC		
Contact arrangement	QZ: Bridge transformation 2Z: 2 Form C		
Combined component code	D: With LED type DJ: With LED and diode type(only for DC type) Nil: Standard		
Contact material	T: AgSnO ₂ Nil: AgCdO		
Contact plating	G: Gold plated Nil: No gold plated		
Special code ¹⁾	XXX: Customer special requirement Nil: Standard		

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

Outline Dimensions

(Bottom view)

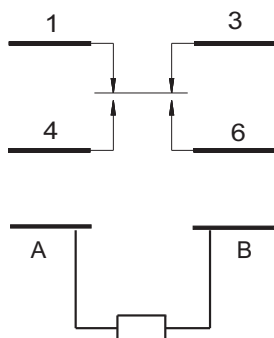
QZ/2 Form C(HF10FF-QV)



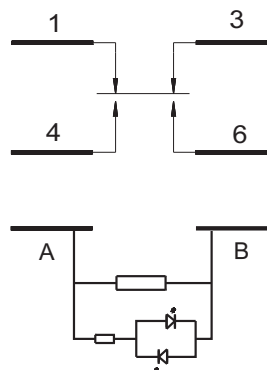
Wiring Diagram

(Bottom view)

QZ(HF10FF-QV)



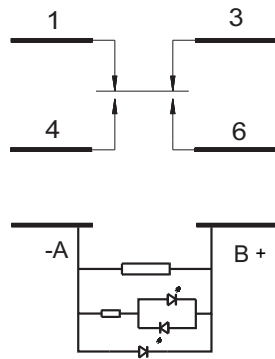
QZ(HF10FF-QV With LED)



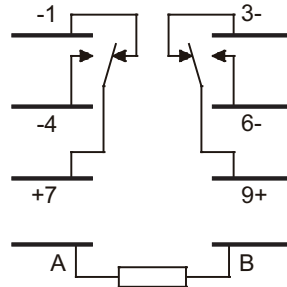
Wiring Diagram

(Bottom view)

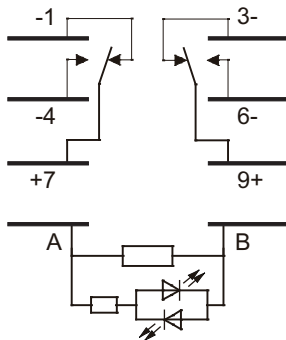
QZ
(HF10FF-QV With LED, With fly-wheel diode)



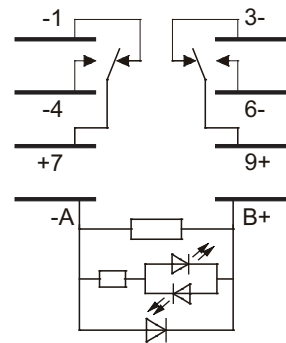
2 Form C(HF10FF-QV)



2 Form C(HF10FF-QV With LED)



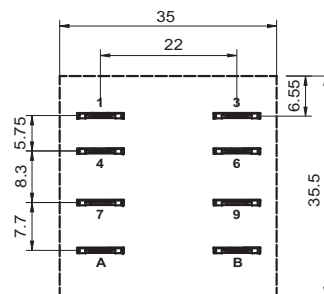
2 Form C
(HF10FF-QV With LED, With fly-wheel diode)



PCB Layout

(Bottom view)

HF10FF-QV-2Z/HF10FF-QV-QZ



Disclaimer

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HF11F

MINIATURE HIGH POWER RELAY



File No.: E133481



Features

- 30A/415VAC contact switching capability
- With 1 Form C, 2 Form C, 3 Form C, QZ, QH contact structure
- QC terminal
- Flange mounting available, Sockets available
- Impulse voltage up to 6kV(Between contact & coil)
- UL insulation system: Class F

RoHS compliant

CONTACT DATA

Contact arrangement ¹⁾	1C, 2C, 3C,QZ, QH
Contact resistance ²⁾	50mΩ max.(at 6VDC 100mA)
Contact material	AgSnO ₂
Contact gap	0.6mm min.
Contact rating (Res.load)	1 Form C,2 Form C, 3 Form C: 25A 415VAC,15A 28VDC QZ,QH:30A 415VAC,30A 28VDC
Max. switching voltage	415VAC
Max. switching current	30A
Max. switching power	12450VA 840W
Min. Capacity ³⁾	5VDC 100mA
Mechanical endurance	1×10 ⁷ OPS
Electrical endurance	415VAC Resistive load : 5×10 ⁴ OPS (55℃) 28VDC Resistive load : 10×10 ⁴ OPS (55℃)

Notes: 1) 3Z is same polarity.

2) The data shown above are initial values.

3) Min. contact load is reference value. Please perform the confirmation test with the actual load before usage since reference value may change according to switching frequencies, environmental conditions and expected life cycles.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between coil & contacts	2200VAC 1min
	Between open contacts	1600VAC 1min
	Between contacts sets	2200VAC 1min
Impulse voltage (Between contact & coil)		6kV(1.2/50μs)
Operate time(at nomi. volt.)		20ms max.
Release time(at nomi. volt.)		20ms max.
Temperaturerise		100K max.(at 55℃)
Shock resistance	Functional	10g
	Destructive	100g
Vibration resistance		10Hz to 35Hz DA 1mm
Humidity		5% to 85%RH
Ambient temperature		-40℃ to 55℃
Termination		QC terminal
Unit weight		Approx.98g
Construction		Dust protected

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

2)Apply holding voltage to coil, which is 70% that of rated voltage.

COIL DATA

at 23℃

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance Ω
12	9.6	1.2	13.2	100×(1±10%)
24	19.2	2.4	26.4	400×(1±10%)
110	88	11	121	8400×(1±10%)
220	176	22	242	33600×(1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC	Coil Resistance Ω
12	9.6	3.6	13.2	17.7×(1±15%)
24	19.2	7.2	26.4	72×(1±15%)
120	96	36	132	1700×(1±15%)
240	192	72	264	7200×(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.

COIL

Coil power	DC type: Approx. 1.5W AC type: Approx. 2.5VA
------------	---

SAFETY APPROVAL RATINGS

UL/CUL	1 Form C, 2 Form C, 3 Form C	25A 415VAC, 15A 28VDC
	QZ, QH	30A 415VAC, 30A 28VDC

Notes: 1) All values unspecified are at 55℃.



HONGFA RELAY

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

2023 Rev. 1.00

ORDERING INFORMATION

	HF11F	/A	12	-1Z	2	F	T	F
Type								
Coil form	A: AC NIL: DC							
Coil voltage	DC: 12, 24, 110, 220 AC: 12, 24, 120, 240							
Contact arrangement	1Z: 1 Form C 2Z: 2 Form C 3Z: 3 Form C QZ: 1 Form Z QH: 1 Form X							
Terminals	2: QC terminal (4.75x0.5mm) 5: QC terminal (6.35x0.8mm)							
Installation method	F: Flange mounting NIL: Standard							
Contact material	T: AgSnO ₂							
Insulation standard	F: Class F							

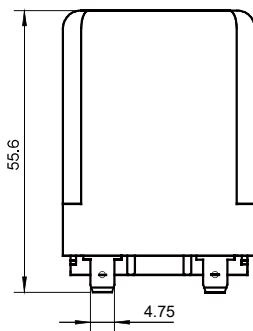
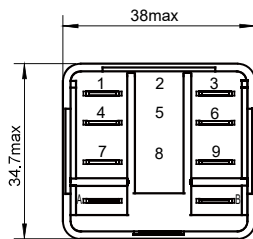
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

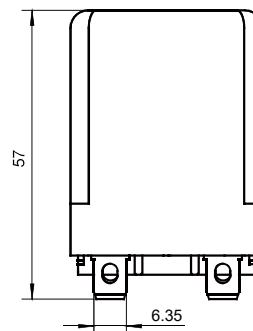
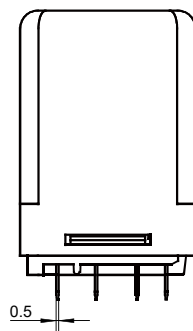
Unit: mm

Outline Dimensions

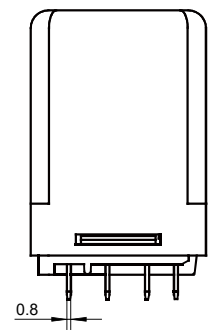
Standard cover



"2" type terminal



"5" type terminal

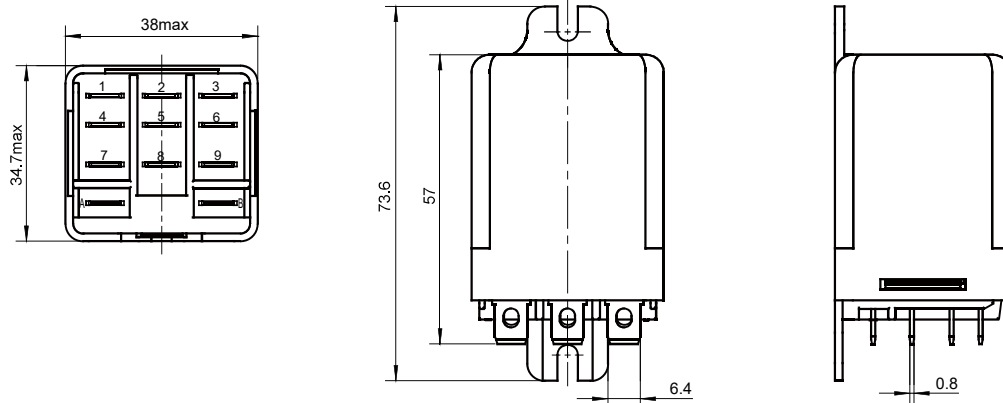


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

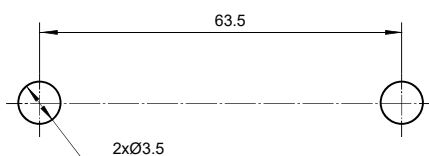
Unit: mm

Outline Dimensions

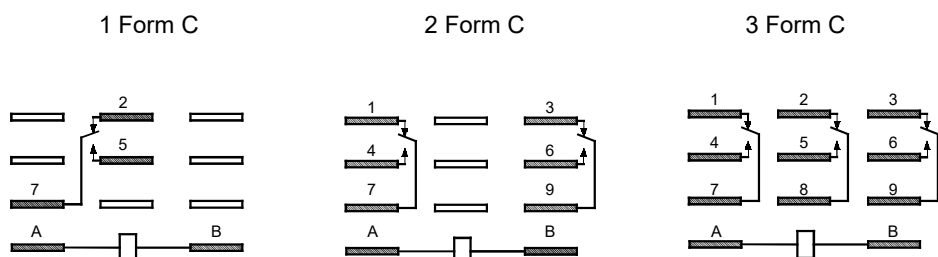
Flange cover



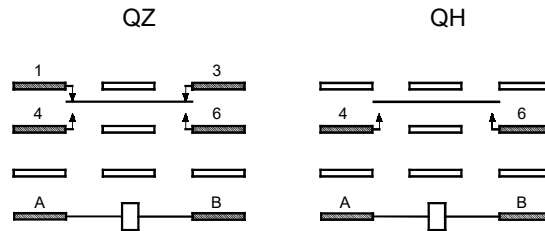
PCB Layout (Bottom view)



Wiring Diagram (Bottom view)



Wiring Diagram
(Bottom view)



- Notes:** 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 $\pm 0.1\text{mm}$.

Disclaimer

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HF13F/3Z, 4Z

MINIATURE HIGH POWER RELAY



c **RL** US

File No.: E133481

Features

- 15A contact switching capability
- With 3Z, 4Z contact structure
- QC terminal
- LED available, Sockets available
- Impulse voltage up to 4kV (Between contact & coil)
- UL insulation system: Class F

RoHS compliant

CONTACT DATA

Contact arrangement	3C, 4C
Contact resistance ¹⁾	50mΩ max.(at 6VDC 100mA)
Contact material	AgSnO ₂ In ₂ O ₃
Contact gap	0.5mm min.
Contact rating (Res.load)	NO: 15A 250VAC, 15A 28VDC NC: 7.5A 250VAC, 7.5A 28VDC
Max. switching voltage	250VAC
Max. switching current	15A
Max. switching power	3750VA 420W
Min. Capacity ²⁾	5VDC 100mA
Mechanical endurance	1×10 ⁷ OPS
Electrical endurance	1×10 ⁵ OPS (55°C)

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

2) Min. contact load is reference value. Please perform the confirmation test with the actual load before usage since reference value may change according to switching frequencies, environmental conditions and expected life cycles.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between coil & contacts	2000VAC 1min
	Between open contacts	1500VAC 1min
	Between contacts sets	2000VAC 1min
Impulse voltage (Between contact & coil)		4kV(1.2/50μs)
Operate time(at nomi. volt.)		20ms max.
Release time(at nomi. volt.)		20ms max.
Temperature rise		100K(at 55°C) max.
Shock resistance	Functional	10g
	Destructive	30g
Vibration resistance		10Hz to 35Hz DA 1mm
Humidity		5% to 85%RH
Ambient temperature		-40°C to 55°C
Termination		QC terminal
Unit weight		3 Form C: Approx.54g 4 Form C: Approx.71g
Construction		Dust protected

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

COIL DATA

23°C

3 From C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance Ω
12	9.6	1.2	13.2	80×(1±10%)
24	19.2	2.4	26.4	320×(1±10%)
48	38.4	4.8	52.8	1280×(1±10%)
110	88	11	121	6720×(1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC	Coil Resistance Ω
12	9.6	3.6	13.2	30×(1±10%)
24	19.2	7.2	26.4	110×(1±10%)
48	38.4	14.4	52.8	460×(1±10%)
120	96	36	132	2880×(1±10%)
230	184	69	253	9600×(1±15%)
240	192	72	264	11300×(1±15%)

4 From C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance Ω
12	9.6	1.2	13.2	75.8×(1±10%)
24	19.2	2.4	26.4	303×(1±10%)
48	38.4	4.8	52.8	1210×(1±10%)
110	88	11	121	6370×(1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC	Coil Resistance Ω
12	9.6	3.6	13.2	20×(1±10%)
24	19.2	7.2	26.4	80×(1±10%)
48	38.4	14.4	52.8	310×(1±10%)
120	96	36	132	2100×(1±10%)
230	184	69	253	7350×(1±15%)
240	192	72	264	8000×(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.



HONGFA RELAY

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

2023 Rev. 1.00

COIL

Coil power	3 Form C	DC: Approx. 1.7 W, AC: Approx. 1.7 W
	4 Form C	DC: Approx. 2.0 W, AC: Approx. 2.9 VA

SAFETY APPROVAL RATINGS

UL/CUL	3 Form C, 4 Form C	NO: 15A 250VAC/28VDC
		NC: 7.5A 250VAC/28VDC

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

ORDERING INFORMATION

Type	HF13F	/A	012	-4Z	1	5	D
Coil form	A: AC Nil: DC						
Coil voltage	DC: 012, 024, 048, 110						
	AC: 012, 024, 048, 120, 230, 240						
Contact arrangement	3Z: 3 Form C 4Z: 4 Form C						
Terminals	1: QC						
Contact material	5: AgSnO ₂ In ₂ O ₃						
Component	D: LED						

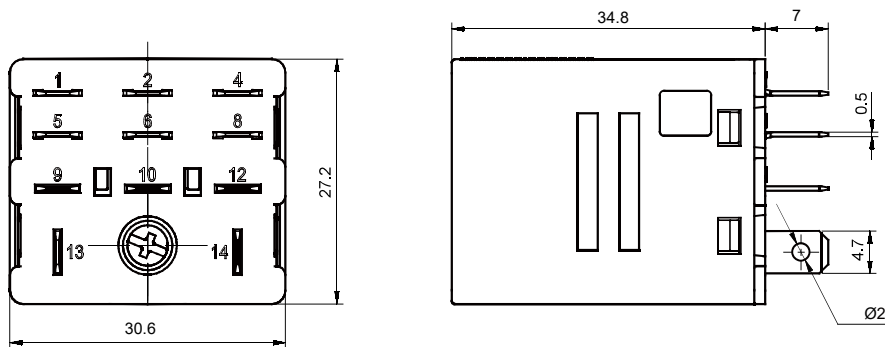
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

3 Form C

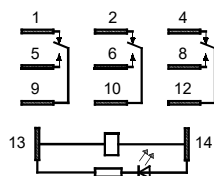
Outline Dimensions



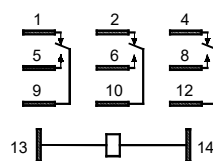
Wiring Diagram

(Bottom view)

With LED



No LED

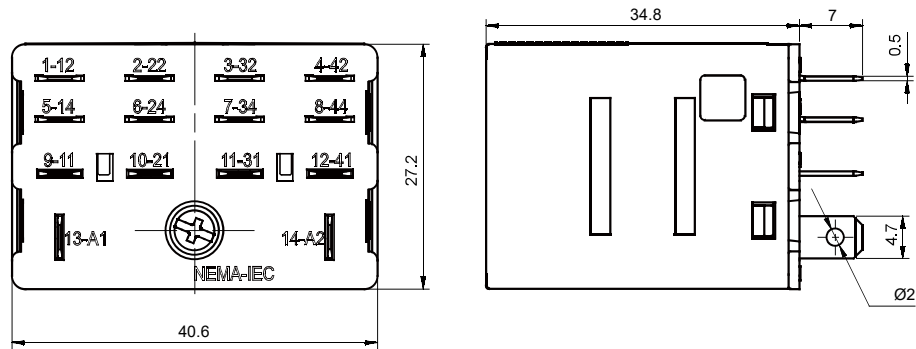


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

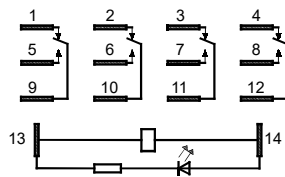
4 Form C

Outline Dimensions

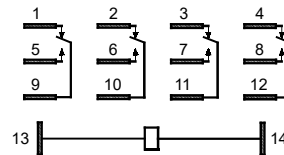


Wiring Diagram (Bottom view)

With LED



No 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 $\pm 4\text{mm}$.

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HF13F

MINIATURE INTERMEDIATE POWER RELAY



File No.:E133481



File No.:R50154518



File No.:CQC09002030028 (DC type)

CQC09002030029 (AC type)



Features

- 1C: 15A; 2C:10A switching capability
- Various terminals available
- Sockets available
- Conform to the CE low voltage directive
- 1 & 2 pole configurations
- UL insulation system: Class F(2 form A/2 form C)

RoHS compliant

CONTACT DATA

Contact arrangement	1A,1C	2A,2C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)	
Contact material	See"ORDERING INFORMATION"	
Contact rating (Res. load)	15A 250VAC/30VDC	10A 250VAC/30VDC
Max. switching voltage	250VAC / 30VDC	
Max. switching current	15A	10A
Max. switching power	3750VA/450W	2500VA/300W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1 Form C type: 1 x 10 ⁵ OPS (15A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	1Form C type: 1 x 10 ⁵ OPS (15A 30VDC, Resistive load, Room temp., 1s on 9s off)	
	2 Form C type: 1 x 10 ⁵ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	2 Form C type: 1 x 10 ⁵ OPS (10A 30VDC, Resistive load, Room temp., 1s on 9s off)	

Notes: The data shown above are initial values.

CHARACTERISTICS

Insulation resistance		500MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1500VAC 1min
Operate time (at nomi. volt.)		25ms max.
Release time (at nomi. volt.)		25ms max.
Temperature rise (no-load, at nomi.volt.)		60K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB, Plug-in
Unit weight		Approx. 37g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	DC type: Approx. 0.9W to 1.1W AC type: Approx. 1.2VA to 1.8VA
------------	--

COIL DATA

at 23°C

1 Pole				
Nominal Voltage VDC	Pick-up Voltage VDC max. ²⁾	Drop-out Voltage VDC min. ²⁾	Max. Voltage VDC ³⁾	Coil Resistance Ω
5	4.0	0.5	5.5	27.5x(1±10%)
6	4.8	0.6	6.6	40x(1±10%)
9	7.2	0.9	9.9	90x(1±10%)
12	9.6	1.2	13.2	160x(1±10%)
21	16.8	2.1	23.1	490x(1±10%)
24	19.2	2.4	26.4	650x(1±10%)
30	24.0	3.0	33.0	1000x(1±10%)
36	28.8	3.6	39.6	1440x(1±10%)
48	38.4	4.8	52.8	2600x(1±15%)
60	48.0	6.0	66.0	4000x(1±15%)
110	88.0	11.0	121	11000x(1±15%)
125	100.0	12.5	137.5	14000x(1±15%)
220	176.0	22.0	242	53750x(1±15%)
Nominal Voltage VAC	Pick-up Voltage VAC max. ²⁾	Drop-out Voltage VAC min. ²⁾	Max. Voltage VAC ³⁾	Coil Resistance Ω
6	4.80	1.8	6.6	11.5x(1±10%)
12	9.60	3.6	13.2	46x(1±10%)
24	19.2	7.2	26.4	184x(1±10%)
36	28.8	10.8	39.6	410x(1±10%)
48	38.4	14.4	52.8	735x(1±10%)
60	48.0	18.0	66.0	1100x(1±10%)
120 ⁴⁾	96.0	36.0	132	4550x(1±15%)
200	160	66.0	220	12950x(1±15%)
220	176	72.0	242	14400x(1±15%)
240 ⁴⁾	176	72.0	264	14400x(1±15%)
277	221.6	83.1	304.7	23590x(1±15%)



HONGFA RELAY

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

2023 Rev. 2.00

COIL DATA

at 23°C

2 Pole

Nominal Voltage VDC	Pick-up Voltage VDC max. ²⁾	Drop-out Voltage VDC min. ²⁾	Max. Voltage VDC ³⁾	Coil Resistance Ω
5	4.0	0.5	5.5	27.5x(1±10%)
6	4.8	0.6	6.6	40x(1±10%)
9	7.2	0.9	9.9	90x(1±10%)
12	9.6	1.2	13.2	160x(1±10%)
21	16.8	2.1	23.1	490x(1±10%)
24	19.2	2.4	26.4	640x(1±10%)
30	24.0	3.0	33.0	1000x(1±10%)
36	28.8	3.6	39.6	1440x(1±10%)
48	38.4	4.8	52.8	2560x(1±15%)
60	48.0	6.0	66.0	4000x(1±15%)
110 ⁴⁾	80.0	11.0	121	12250x(1±15%)
125	100	12.5	137.5	17360x(1±15%)
220	176	22.0	242	53360x(1±15%)

Nominal Voltage VAC	Pick-up Voltage VAC max. ²⁾	Drop-out Voltage VAC min. ²⁾	Max. Voltage VAC ³⁾	Coil Resistance Ω
6	4.8	1.8	6.6	11x(1±10%)
12	9.6	3.6	13.2	44x(1±10%)
24	19.2	7.2	26.4	177x(1±10%)
36	28.8	10.8	39.6	400x(1±10%)
48	38.4	14.4	52.8	708x(1±10%)
60	48.0	18.0	66.0	1100x(1±10%)
100	80.0	30.0	110	3400x(1±15%)
110 ⁴⁾	80.0	33.0	121	3400x(1±15%)
120 ⁴⁾	88.0	36.0	132	4080x(1±15%)
200	160	60.0	220	13600x(1±15%)
220 ⁴⁾	160	66.0	242	13600x(1±15%)
240 ⁴⁾	176	72.0	264	16300x(1±15%)
277	221.6	83.1	304.7	23590x(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 coil.

2) The data shown above are initial values.

3) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

4) A110:Nominal Voltage(100~110)VAC; A120:Nominal Voltage(110~120)VAC; A220:Nominal Voltage(200~220)VAC; A240:Nominal Voltage(220~240)VAC; 110:Nominal Voltage(100~110)VAC.

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	1 Form C/1 Form A	15A 250VAC
			15A 30VDC
		2 Form C/2 Form A	10A 250VAC
			10A 30VDC
	AgNi	2 Form C/2 Form A	1/3HP,240VAC/ 120VAC
			10A 250VAC
TÜV	AgSnO ₂	2 Form C/2 Form A	10A 30VDC
			10A 250VAC,70°C
	AgNi	2 Form C/2 Form A	10A 30VDC,70°C
			10A 250VAC,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	HF13F / A 012 -2Z 1 3 D (XXX)
Coil voltage form	A: AC Nil: DC
Coil voltage	DC: 5VDC to 220VDC AC: 6VAC to 277VAC
Contact arrangement	1H: 1 Form A 2H: 2 Form A 1Z: 1 Form C 2Z: 2 Form C
Mounting termination ¹⁾	1: Socket 2: PCB 5: Flange-Mounting
Contact material	3: AgNi T: AgSnO 3G: AgNi+Au plated TG: AgSnO+Au plated
LED	D: With LED Nil: Without LED J: with free wheeling diode DJ: with light emitting diode and with free wheeling diode
Special code ²⁾	XXX: Customer special requirement Nil: Standard

Notes: 1)No 1H2/1Z2 type products.

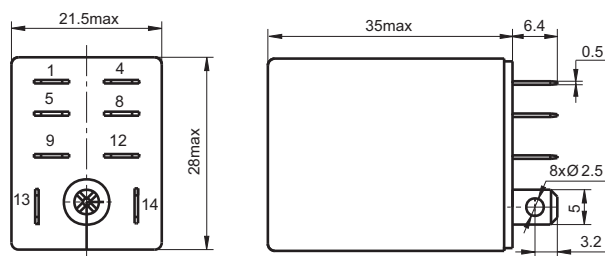
2)The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

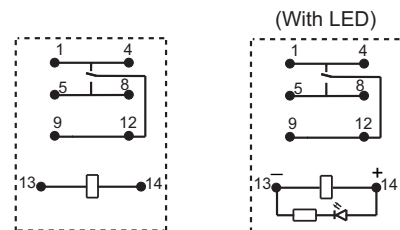
Unit: mm

HF13F/□□□□-1Z1□

Outline Dimensions



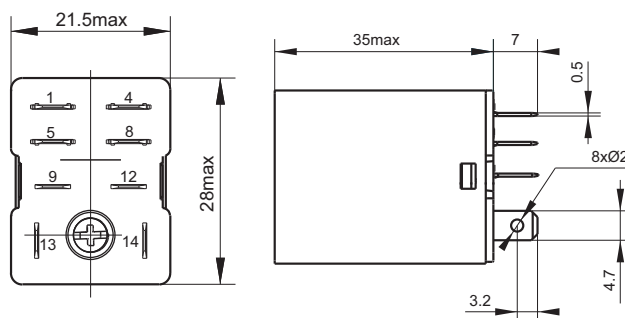
Wiring Diagram
(Bottom view)



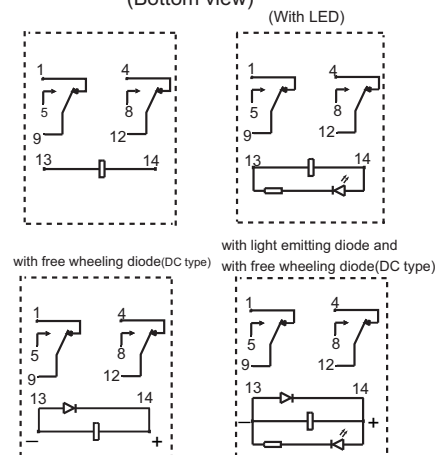
Remark: For AC parts with diode, the positive and negative pole markings on wiring diagram are not applicable.

HF13F/□□□□-2Z1□

Outline Dimensions



Wiring Diagram
(Bottom view)



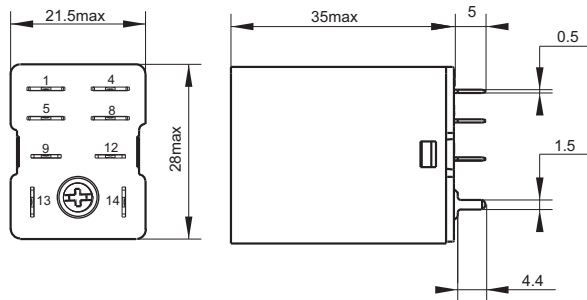
Remark: Fly-wheel products need to distinguish between the cathode. Only with LED products do not need to distinguish between the cathode. Only DC relays have freewheeling diodes.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

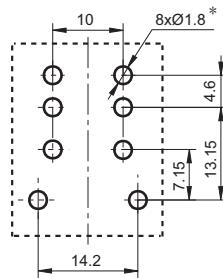
Unit: mm

HF13F/□□□□-2Z2□

Outline Dimensions

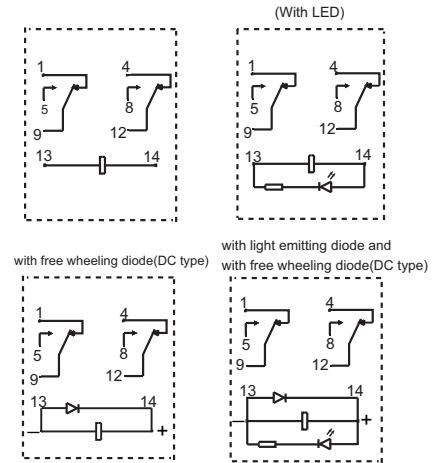


PCB Layout (Bottom view)



*: Please adjust the site of this diameter according to the actual application.

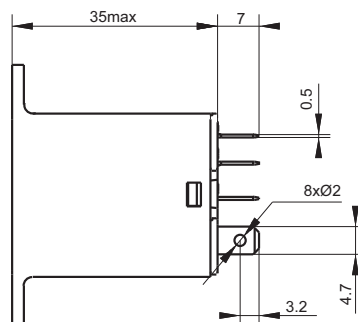
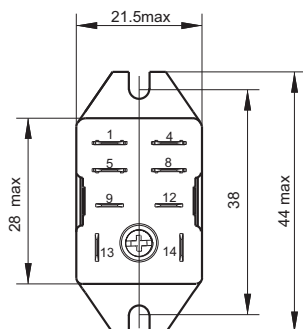
Wiring Diagram (Bottom view)



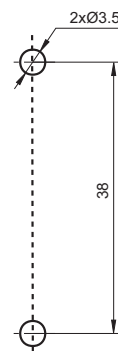
Remark: Fly-wheel products need to distinguish between the cathode. Only with LED products do not need to distinguish between the cathode. Only DC relays have freewheeling diodes.

HF13F/□□□□-2Z5□

Outline Dimensions



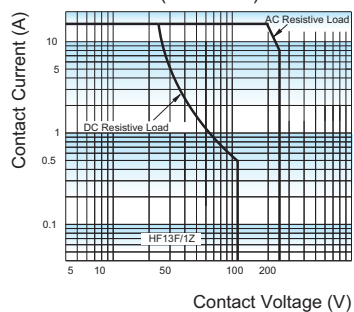
Mounting holes



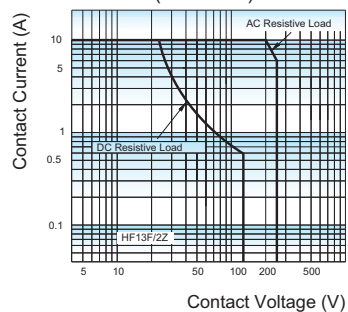
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension 1mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

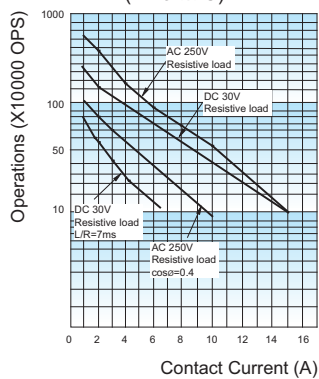
MAXIMUM SWITCHING POWER
(1 Form C)



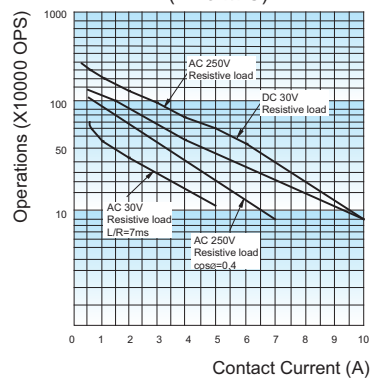
MAXIMUM SWITCHING POWER
(2 Form C)



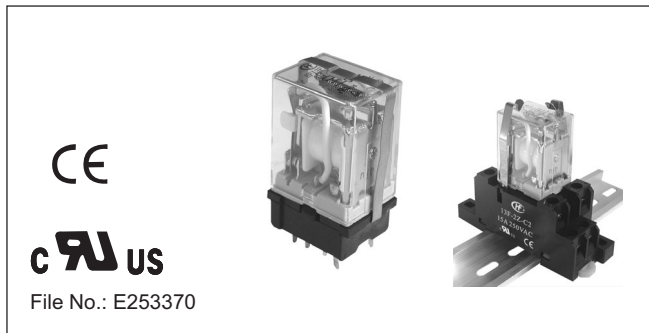
ENDURANCE CURVE
(1 Form C)



ENDURANCE CURVE
(2 Form C)



Relay Sockets



Features

- The dielectric strength can reach 2000VAC and the insulation resistance is 1000 MΩ
- Three mounting types are available: PCB mounting, screw mounting and DIN rail mounting.
- With finger protection device
- Components available: metallic retainer


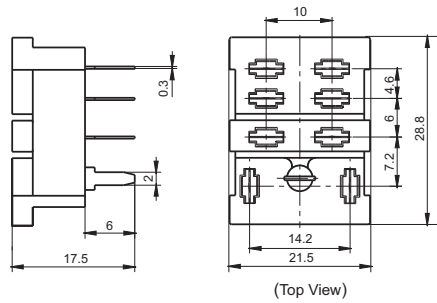
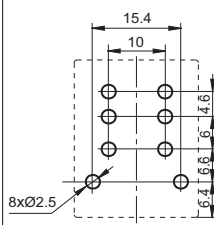

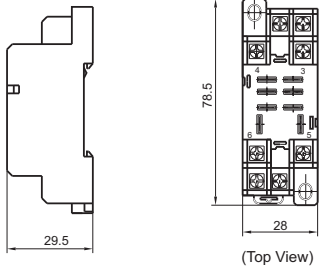
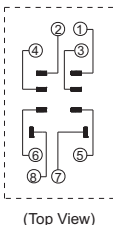
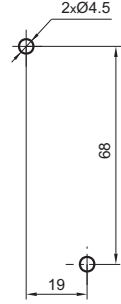

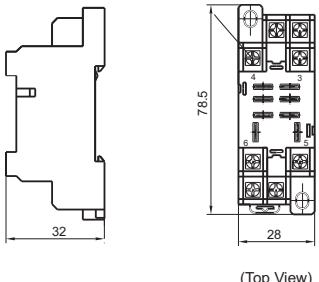
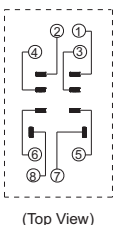
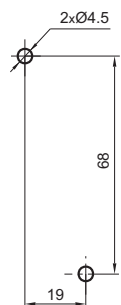
RoHS compliant

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
13F-2Z-A2	250VAC	10A/15A	-40 °C to 70°C	2000VAC	—	—	Approx. 9g
13F-2Z-C1	250VAC	10A/15A	-40 °C to 70°C	2000VAC	1.0N·m	7mm	Approx. 51g
13F-2Z-C2	250VAC	10A/15A	-40 °C to 70°C	2000VAC	1.0N·m	7mm	Approx. 52g

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

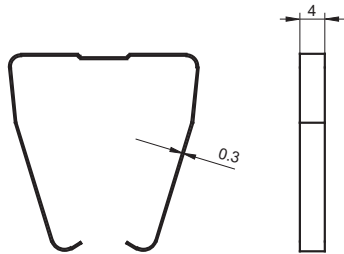
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
13F-2Z-A2  PCB terminal, PCB mounting	 (Top View)			Metallic retainer 18FF-H1
13F-2Z-C1  Screw terminal, DIN rail or Screw mounting, Without finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)
13F-2Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FF-H2 (be used in sets)

DIMENSION OF RELATED COMPONENT (AVAILABLE)

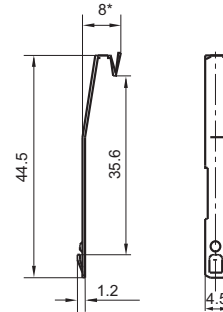
Unit: mm

Retainer

18FF-H1 (Metallic retainer)



18FF-H2 (Metallic retainer)



Notes: 18FF-H2 retainer has to be used in sets,
please pay special attention while placing the
order.

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. 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 HF13F relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$ mm, $35 \times 15 \times 1$ 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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HF18FF-G/HF18FH-G MINIATURE INTERMEDIATE POWER RELAY



File No.:E133481



File No.:R50147087



File No.:CQC09002030026 (DC type)

CQC09002030027 (AC type)



Features

- Multiple auxiliary functions available
- 2 to 4 pole configurations
- Various terminals available
- Gold plated contact available
- Transparent dust cover ,various installation types
- Automatic production
- High capacity

RoHS compliant

CONTACT DATA

Contact arrangement	2C, 3C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)
Contact material	see"ORDERING INFORMATION"
Contact rating (Res. load)	12A 250VAC/30VDC(2Z-G) 10A 250VAC/30VDC(3Z-G)
Max. switching voltage	250VAC / 30VDC
Max. switching current	12A(2Z-G) , 10A(3Z-G)
Max. switching power	3000VA/360W(2Z-G),2500VA/300W(3Z-G)
Mechanical endurance	2 x 10 ⁷ OPS
Electrical endurance ²⁾	1 x 10 ⁵ OPS(room temperature)

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.

COIL

Coil power	DC type: Approx. 0.8W to 1.1W; AC type: Approx. 0.9VA to 1.5VA
------------	---

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1500VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		DC type:15ms max.
		AC type:25ms max.
		DC type (with diode): 25ms max.
Temperature rise (no-load, at nomi.volt.) ²⁾		85K max.
Shock resistance	Functional	100m/s ²
	Destructive	1000m/s ²
Vibration resistance		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB, Plug-in
Unit weight		Approx. 35.6g
Construction		Dust protected

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

2) When testing the Temperature rise,please separate test each relay.

SAFETY APPROVAL RATINGS

UL/CUL	2 Form C-G	12A 250VAC/30VDC Resistive at 70°C
	3 Form C-G	10A 250VAC/30VDC Resistive at 70°C
TÜV	2 Form C-G	12A 250VAC/30VDC
	3 Form C-G	10A 250VAC/30VDC
CQC	2 Form C-G	12A 250VAC/30VDC
	3 Form C-G	10A 250VAC/30VDC

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

2) 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

2024 Rev. 1.00

COIL DATA						at 23°C
Voltage Code	Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω	
005	5	4.0	0.5	5.5	28 x (1±10%)	
006	6	4.8	0.6	6.6	40 x (1±10%)	
009	9	7.2	0.9	9.9	90 x (1±10%)	
012	12	9.6	1.2	13.2	160 x (1±10%)	
021	21	16.8	2.1	23.1	490 x (1±10%)	
024	24	19.2	2.4	26.4	640 x (1±10%)	
030	30	24.0	3.0	33.0	1000 x (1±10%)	
036	36	28.8	3.6	39.6	1440 x (1±10%)	
048	48	38.4	4.8	52.8	2560 x (1±15%)	
060	60	48.0	6.0	66.0	4000 x (1±15%)	
110	110	80.0	11.0	121.0	12250 x (1±15%)	
125	125	100.0	12.5	137.5	17360 x (1±15%)	
220	220	176.0	22.0	242.0	53360 x (1±15%)	

Voltage Code	Nominal Voltage VAC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω	
6	6	4.8	1.8	6.6	11 x (1±10%)	
12	12	9.6	3.6	13.2	44 x (1±10%)	
24	24	19.2	7.2	26.4	177 x (1±10%)	
36	36	28.8	10.8	39.6	400 x (1±10%)	
48	48	38.4	14.4	52.8	708 x (1±10%)	
60	60	48.0	18.0	66.0	1100 x (1±10%)	
110	110 ³⁾	80.0	33.0	121	3400 x (1±15%)	
120	120 ³⁾	88.0	36.0	132	4080 x (1±15%)	
220	220 ³⁾	160.0	66.0	242	13600 x (1±15%)	
230	230	176.0	72.0	253	16300 x (1±15%)	
240	240 ³⁾	176.0	72.0	264	16300 x (1±15%)	
277	277	221.6	83.1	304.7	23590 x (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 coil.

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) A110:Nominal Voltage(100~110)VAC; A120:Nominal Voltage(110~120)VAC; A220:Nominal Voltage(200~220)VAC; A240:Nominal Voltage(220~240)VAC; 110:Nominal Voltage(100~110)VAC; 125:Nominal Voltage(110~125)VAC

4) When the 240VAC specification coil test coil temperature rises, the installation pitch needs to be ≥6mm.

ORDERING INFORMATION

HF18FF		-G	/A	240	-2Z	1	3	G	D	(XXX)
Type	HF18FF: Without button									
	HF18FH: With button									
series code		G: High capacity								
Coil voltage form		A: AC(50Hz or 60Hz) Nil: DC								
Coil voltage		See "COIL DATA"								
Contact arrangement		2Z: 2 Form C 3Z: 3 Form C								
Mounting Termination (See the following)		1: Socket 2: PCB 5 ¹⁾ : Flange-Mounting								
Contact material		3: AgNi T: AgSnO ₂								
Contact plating		Nil: No gold plated G: Gold plated								
Component code⁵⁾		Nil: Without Component D: with LED J: with diode DJ: with LED and diode								
Special code⁶⁾		XXX: Customer special requirement Nil: Standard								

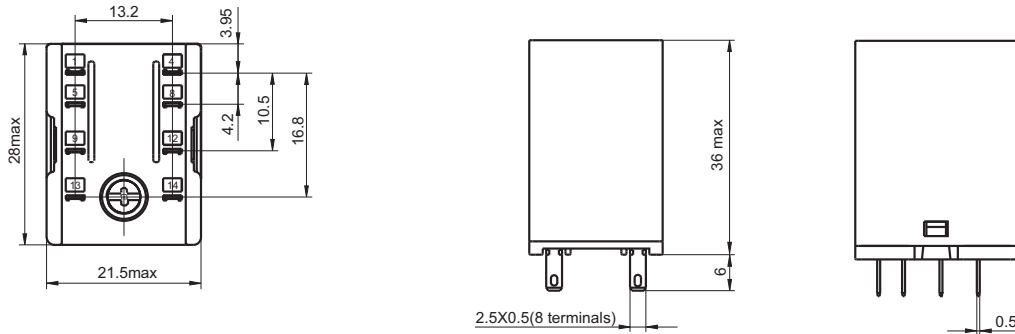
- Notes:** 1) HF18FH without Flange-Mounting Termination, Please choose HF18FF when ordering.
 2) Free-wheeling diode is available for DC coil relay, CR circuit is available for AC coil relay.
 3) The customer's special requirement express as special code after evaluating by Hongfa.
 4) We can provide (136) Economic model relays, the specific performance is subject to the Specifications Data Sheet, please contact us.
 5) For coil specifications of 110VDC and above, it is recommended that the customer add the coil protection measures in the circuit.
 6) 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.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

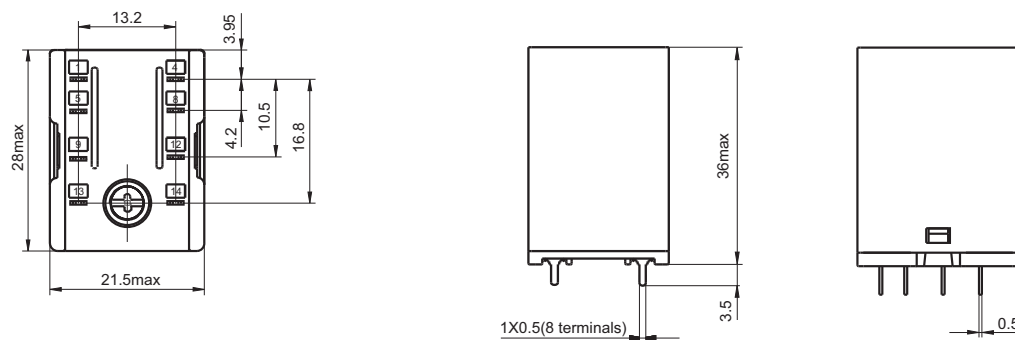
Unit: mm

Outline Dimensions

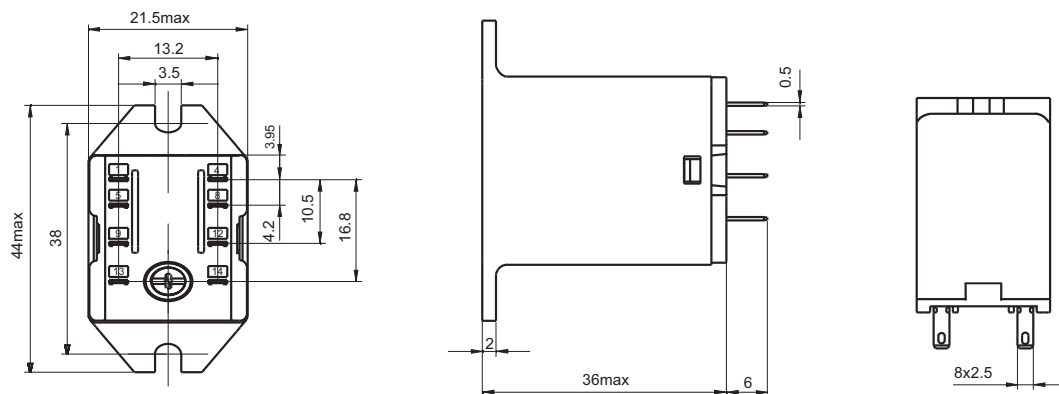
HF18FF-G/□□-2Z1□□□□



HF18FF-G/□□-2Z2□□□□



HF18FF-G/□□-2Z5□□□□

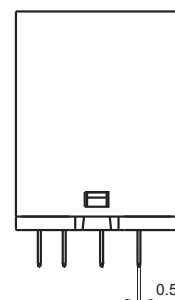
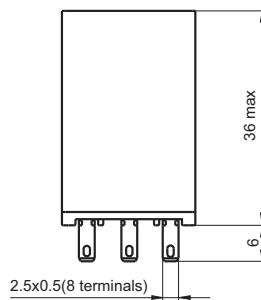
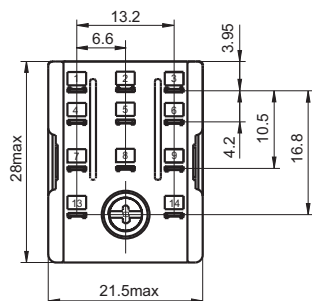


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

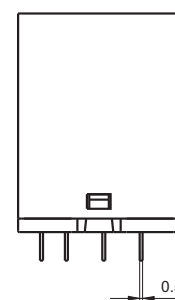
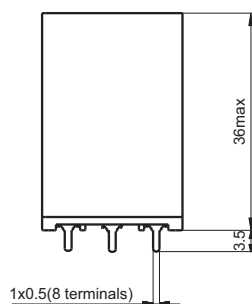
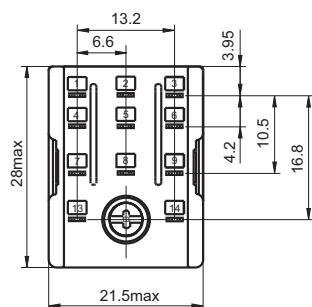
Unit: mm

Outline Dimensions

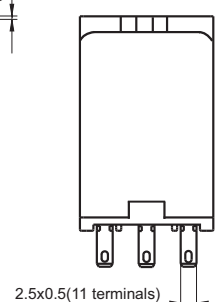
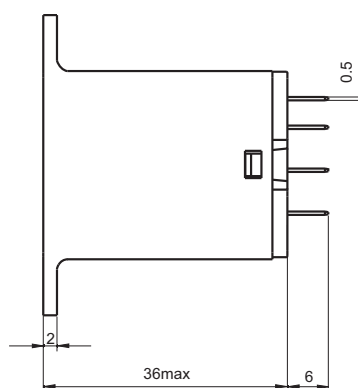
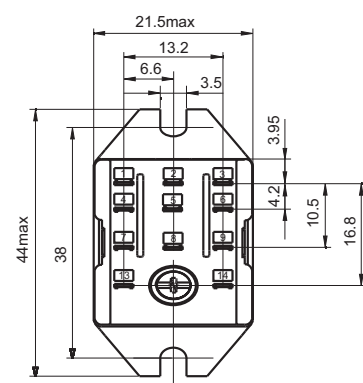
HF18FF-G/□□-3Z1□□□□



HF18FF-G/□□-3Z2□□□□



HF18FF-G/□□-3Z5□□□□

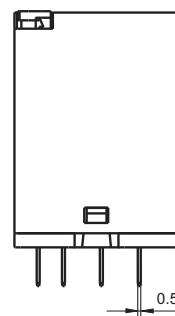
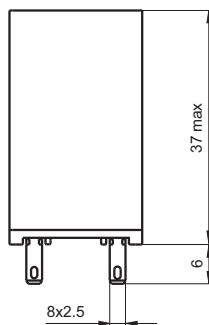
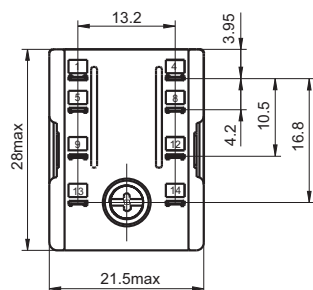


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

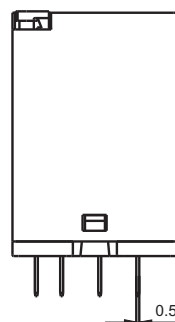
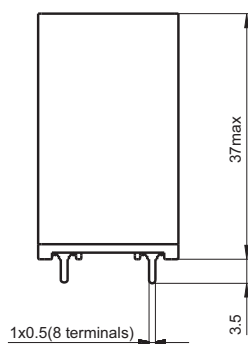
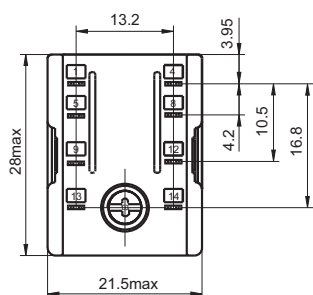
Unit: mm

Outline Dimensions

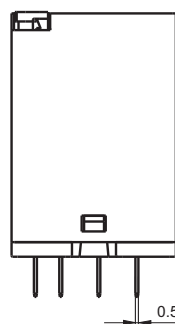
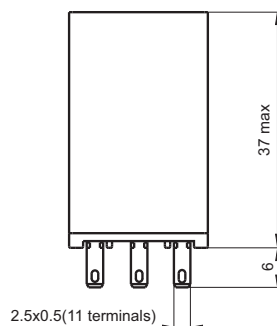
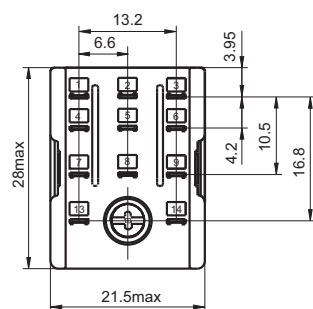
HF18FH-G/□□-2Z1□□□□



HF18FH-G/□□-2Z2□□□□



HF18FH-G/□□-3Z1□□□□

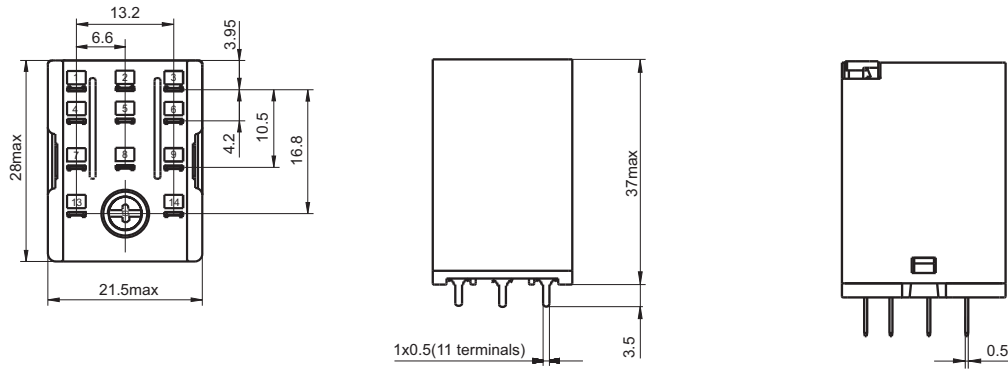


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

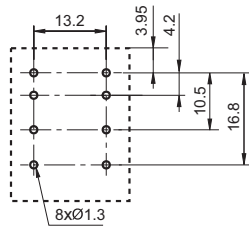
HF18FH-G/□□-3Z2□□□□



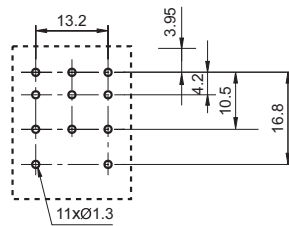
PCB Layout

(Bottom view)

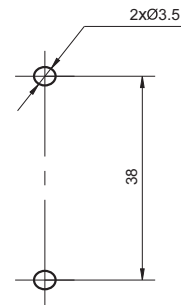
2 Form C



3 Form C



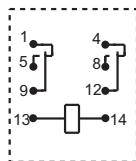
Mounting Holes



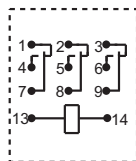
Wiring Diagram

(Bottom view)

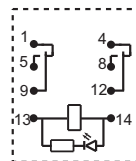
2 Form C



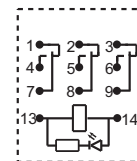
3 Form C



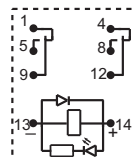
2 Form C (With LED)



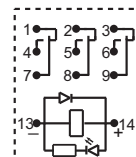
3 Form C (With LED)



2 Form C
(DC, With fly-wheel diode)



3 Form C
(DC, With fly-wheel diode)



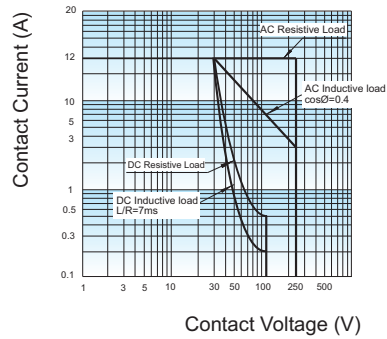
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

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

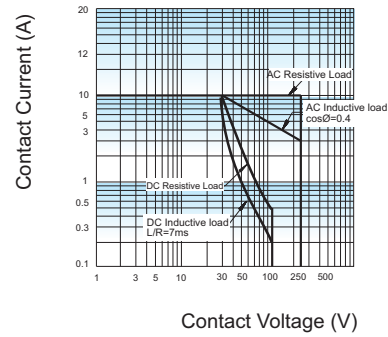
3) DC products with fly-wheel diode, please confirm the positive and negative terminals before wiring.

CHARACTERISTIC CURVES

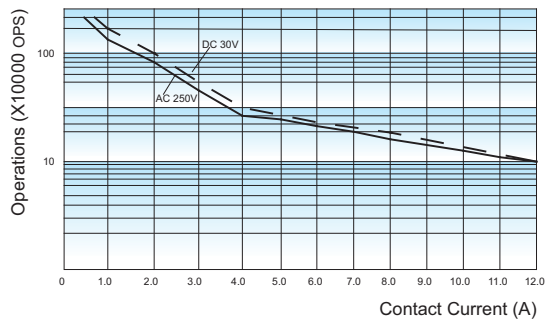
MAXIMUM SWITCHING POWER
(2 Form C)



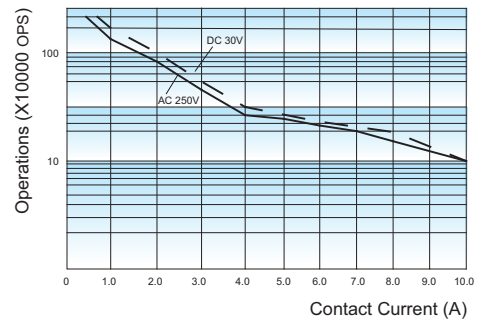
MAXIMUM SWITCHING POWER
(3 Form C)



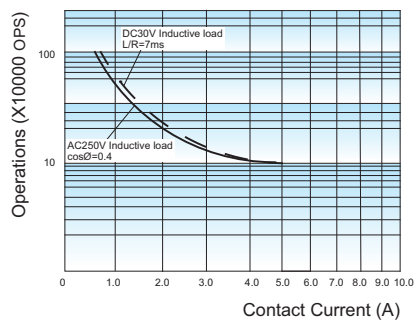
RES. LOAD ENDURANCE CURVE
(2 Form C)



RES. LOAD ENDURANCE CURVE
(3 Form C)



INDUCTIVE LOAD ENDURANCE CURVE
(2 Form C/3 Form C)



HF18FF-N

SMALL MEDIUM POWER RELAY

c us

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.
- 4 Form C 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	2C, 4C
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	See"ORDERING INFORMATION"
Contact rating (Res. load)	7A 250VAC/ 30VDC (2 Form C) 6A 250VAC/ 30VDC (4 Form C) 3A 250VAC/ 30VDC (4ZB)
Least-Load	5mA 5VDC (2 Form C/4 Form C), 1mA 5VDC (4ZB)
Max.swtiching voltage	250VAC/30VDC
Max.switching current	7A(2 Form C),6A(4 Form C),3A(4ZB)
Max.switching power	1750VA 210W(2 Form C),1500VA 180W (4 Form C),750 VA 90W(4ZB)
Mechanical enduranc	1×10 ⁷ OPS
Electrical endurance	2 Form C,4 Form C,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	2 Form C: 2000VAC 1min 4 Form C/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

at 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 8096 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	2 Form C	AgSnO ₂	7A 250VAC/30VDC,Resistive,70°C
	4 Form C	AgSnO ₂	6A 250VAC/30VDC,Resistive,70°C
	2 Form C	AgNi	7A 277VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4 Form C	AgNi	6A 277VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4ZB	AgNi	3A 277VAC/30VDC or 1mA 5VDC,Resistive,70°C
TÜV	2 Form C	AgNi or AgSnO ₂	7A 250VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4 Form C	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	2 Form C	AgNi or AgSnO ₂	7A 250VAC/30VDC or 5mA 5VDC,Resistive,70°C
	4 Form C	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 : 005VDC to 220VDC AC : 006VAC to 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 Code ⁴⁾	XXX : Customer special requiremen Nil : Standard 335 : XXX											

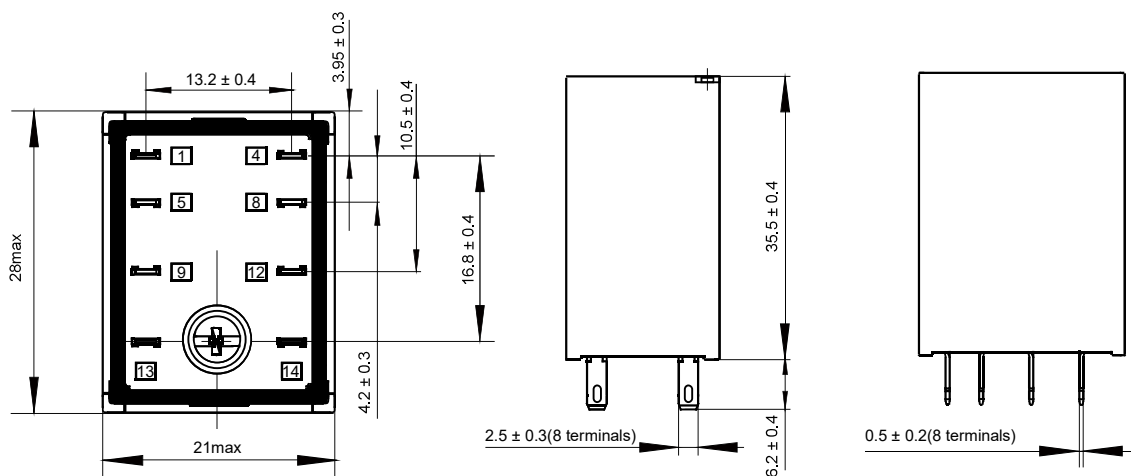
Notes: 1) "B"The double contact only has 4Z contact form, not 2Z contact form.And the double contacts must be gold-plated.
2) "None" Optional transparent case, meets (IP50) protection class, without feature number; Optional black case, meet (IP50) protection level meet the requirements of hot wire, with 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

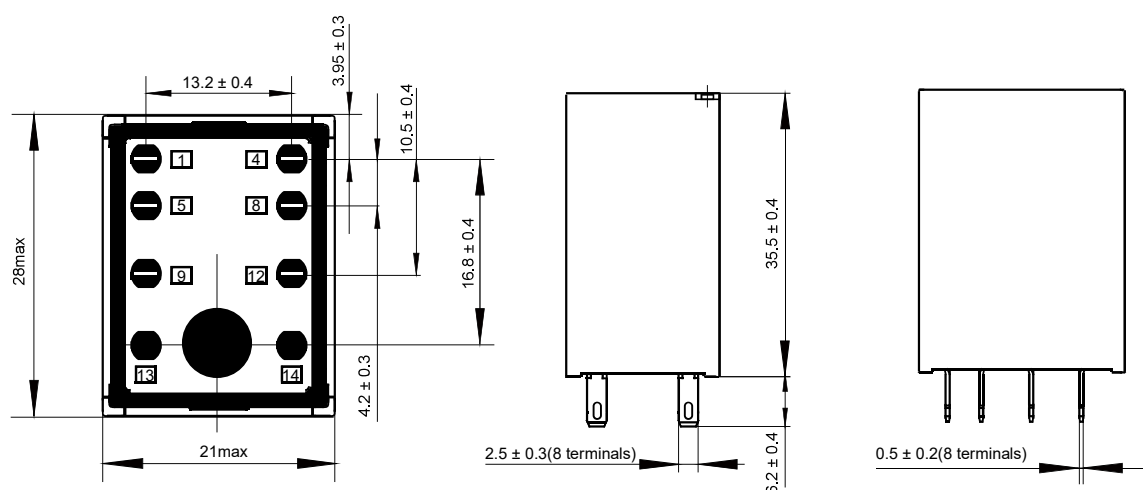
Unit: mm

Outline Dimensions

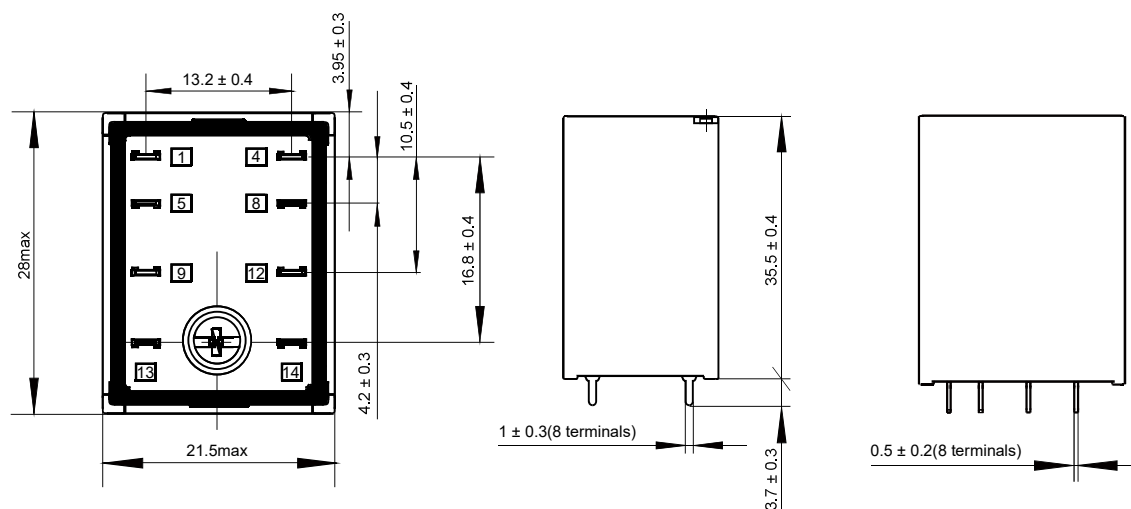
HF18FF-N/□□-2Z1□□□□



HF18FF-N/□□-2Z1S□□□□



HF18FF-N/□□-2Z2□□□□

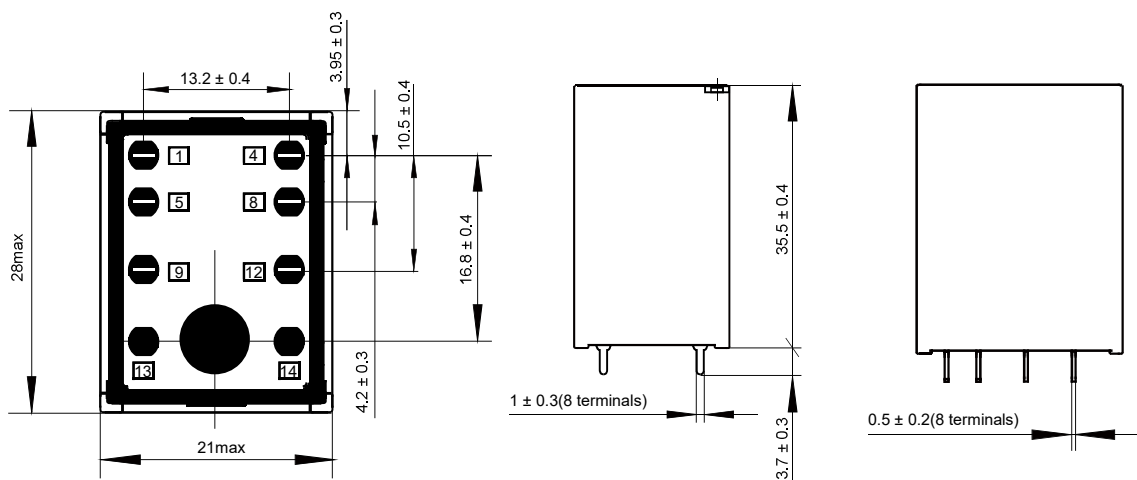


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

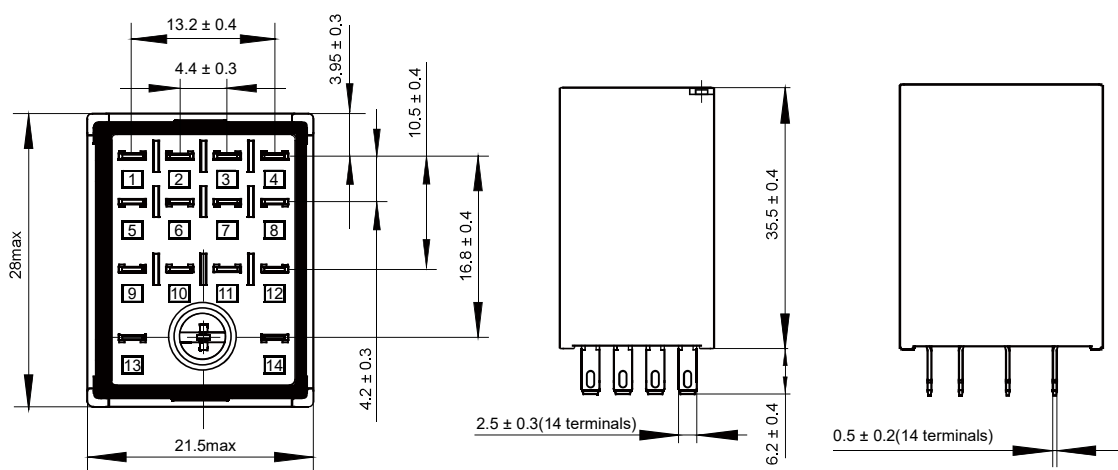
Unit: mm

Outline Dimensions

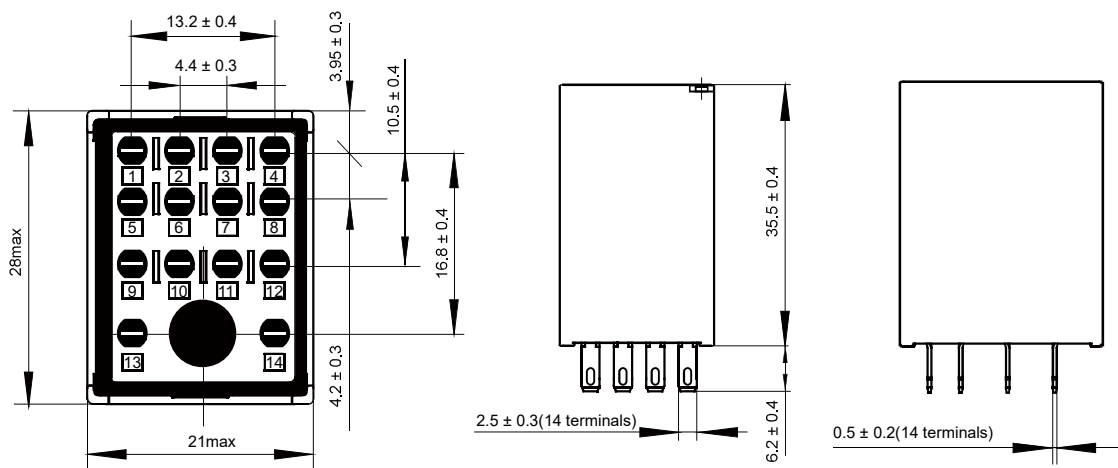
HF18FF-N/□□-2Z2S□□□□



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



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

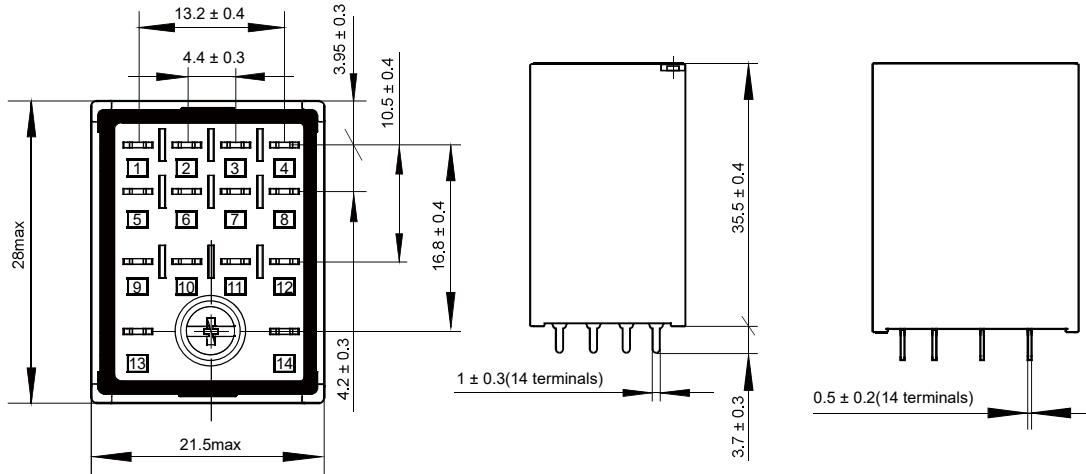


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

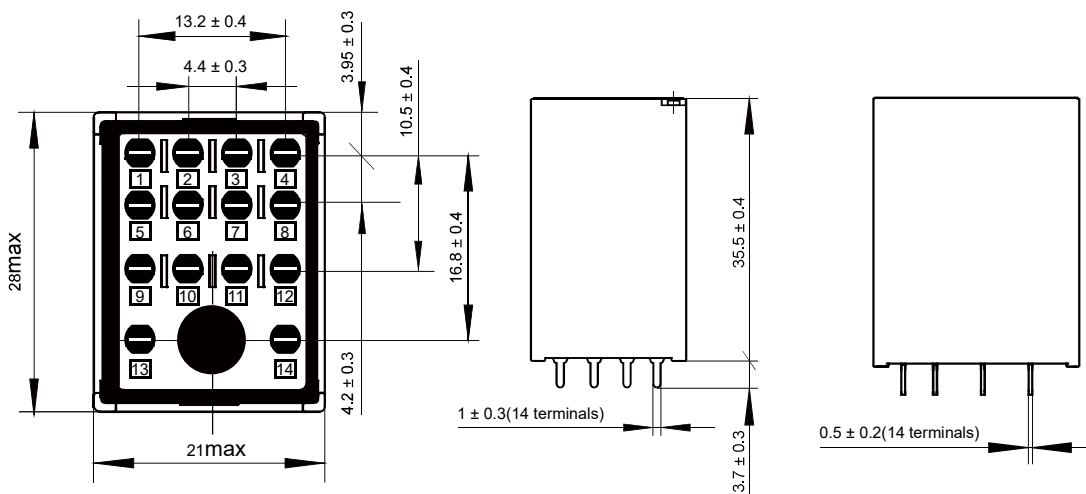
Unit: mm

Outline Dimensions

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



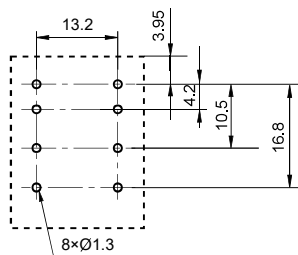
HF18FF-N/□□-4Z2S□□□, HF18FF-N/□□-4ZB2S□□□



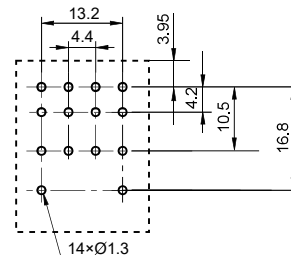
Pc Board Layout

(Bottom view)

2Z: 2 Form C



4Z: 4 Form C



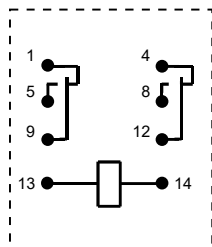
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

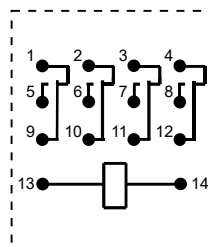
Wiring Diagram

(Bottom view)

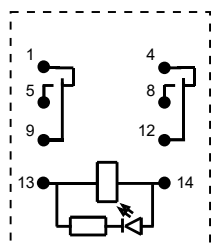
2Z: 2 Form C



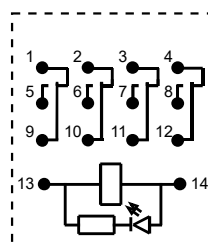
4Z: 4 Form C



2Z: 2 Form C (with LED)



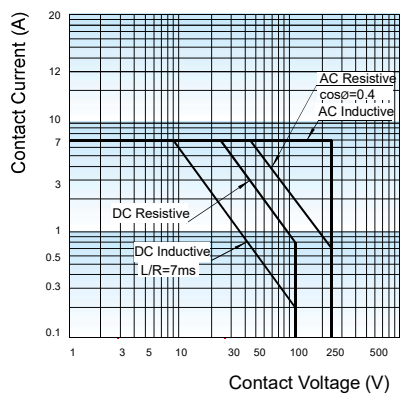
4Z: 4 Form C (with LED)



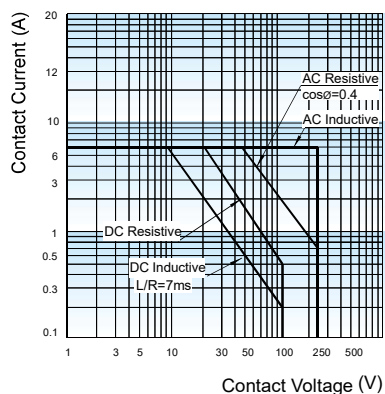
Notes: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 3\text{mm}$; outline dimension $\geq 5\text{mm}$, tolerance should be $\pm 4\text{mm}$.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

CHARACTERISTIC CURVES

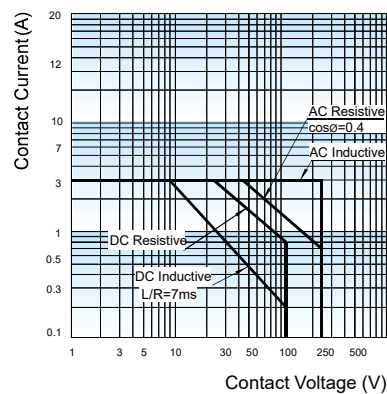
MAX.SWITCHING POWER
(2 Form C)



MAX.SWITCHING POWER
(4 Form C)

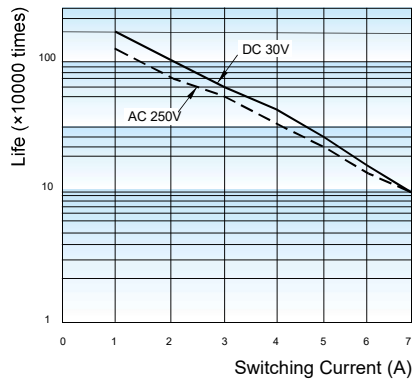


MAX.SWITCHING POWER
(4ZB)

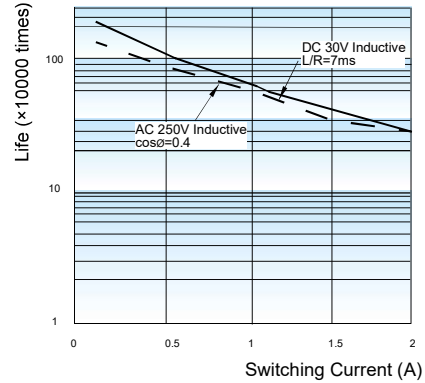


CHARACTERISTIC CURVES

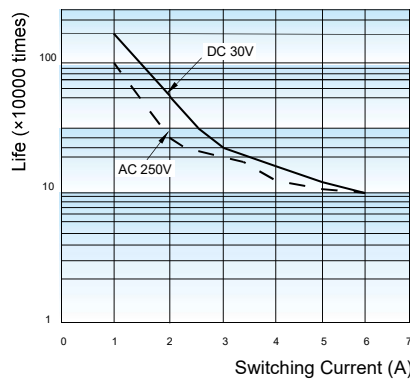
2 Form C
RESISTIVITY ELECTRICAL DURABILITY DIAGRAM



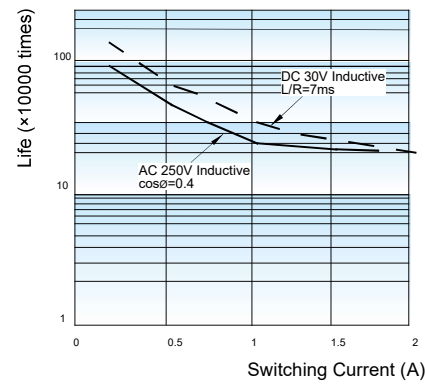
2 Form C
INDUCTIVE ELECTRICAL DURABILITY CURVE



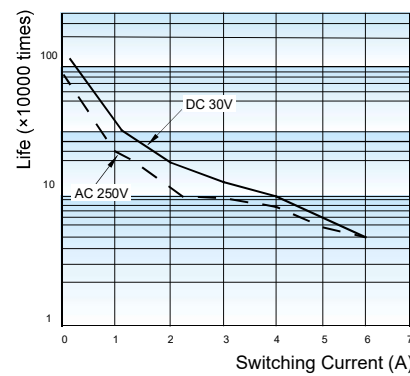
4 Form C
RESISTIVITY ELECTRICAL DURABILITY DIAGRAM



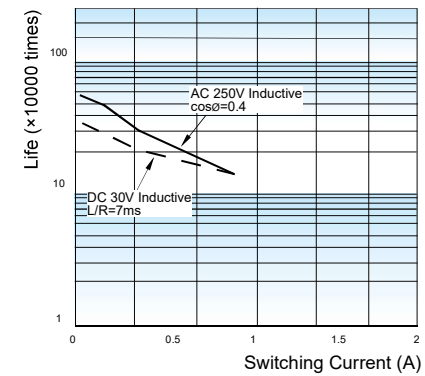
4 Form C
INDUCTIVE ELECTRICAL DURABILITY CURVE



4ZB
RESISTIVITY ELECTRICAL DURABILITY DIAGRAM



4ZB
INDUCTIVE ELECTRICAL DURABILITY CURVE

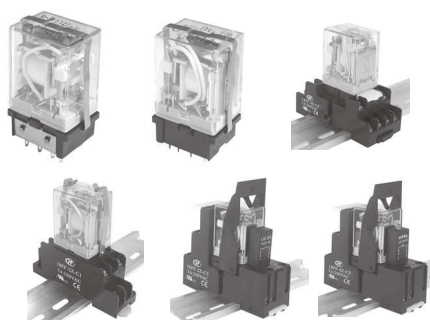


Relay Sockets

CE

C^{RU} US

File No.: E253370



Features


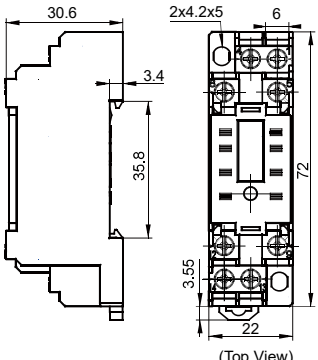
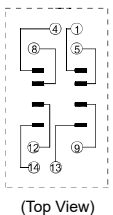
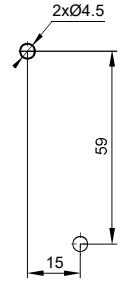

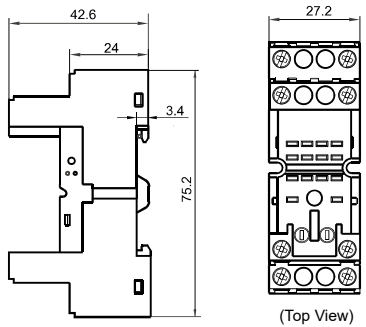
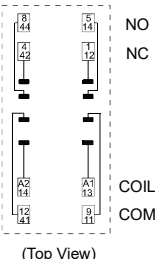
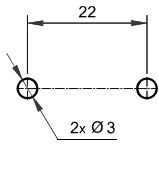
- The dielectric strength can reach 2000VAC, and the insulation resistance is 1000MΩ.
- Three mounting types are available: PCB mounting screw mounting and DIN rail mounting.
- With finger protection device.
- Many kinds of plug-in modules are available with the function of energizing indication and 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 ~ 70°C	2000 VAC	0.8N.m	7mm	Approx. 36g
18FF-2Z-C4	250VAC	7A	-40°C ~ 70°C	2000 VAC	0.6N.m	7mm	Approx. 53g
18FF-2Z-C5	250VAC	7A	-40°C ~ 70°C	2000 VAC	0.6N.m	7mm	Approx. 64g
18FF-2Z-C10	300VAC/DC	10A	-40°C ~ 70°C	2000 VAC	—	10mm	Approx. 57g
18FF-2Z-C10/P	300VAC/DC	10A	-40°C ~ 70°C	2000 VAC	—	10mm	Approx. 58g
18FF-4Z-C2	250VAC	7A	-40°C ~ 70°C	2000 VAC	0.8N.m	7mm	Approx. 59g
18FF-4Z-C4	250VAC	7A	-40°C ~ 70°C	2000 VAC	0.6N.m	7mm	Approx. 64g
18FF-4Z-C5	250VAC	7A	-40°C ~ 70°C	2000 VAC	0.6N.m	7mm	Approx. 76g
18FF-4Z-C10	300VAC/DC	6A*	-40°C ~ 70°C	2000 VAC	—	10mm	Approx. 65g
18FF-4Z-C10/P	300VAC/DC	6A*	-40°C ~ 70°C	2000 VAC	—	10mm	Approx. 66g


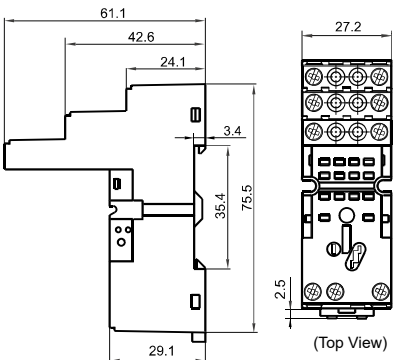
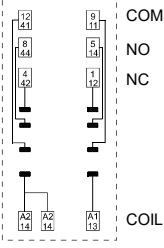
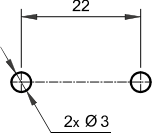

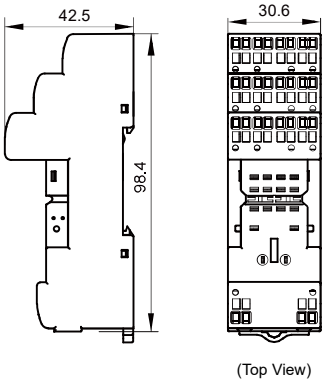
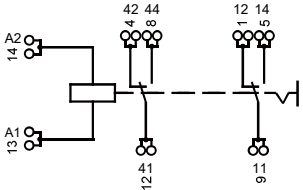

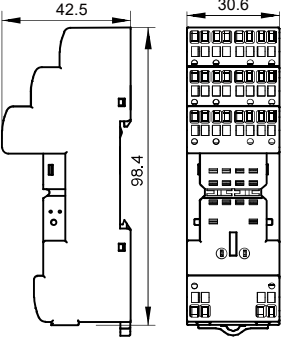
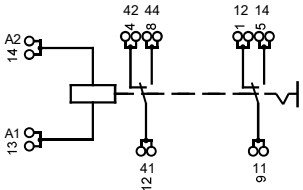

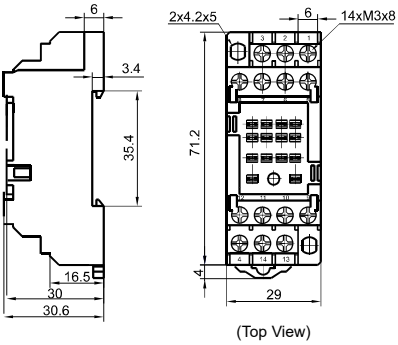
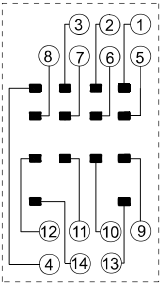
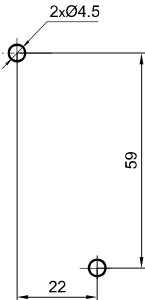
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

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


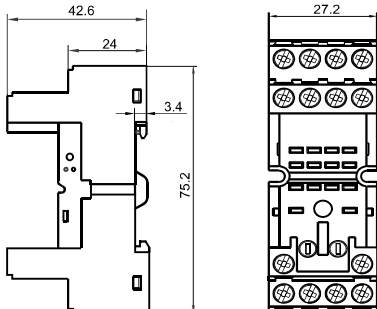
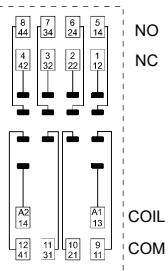
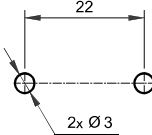

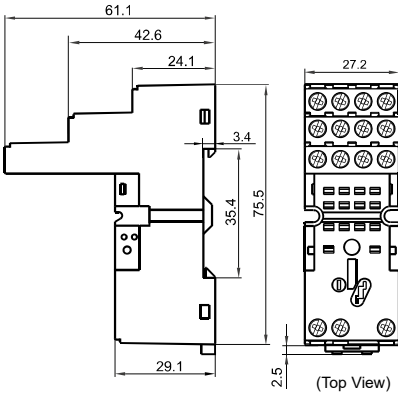
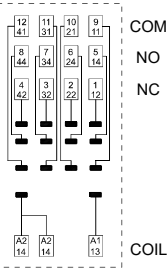
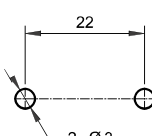

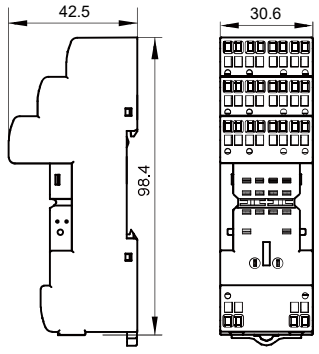
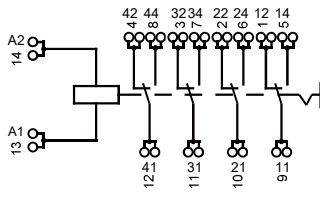

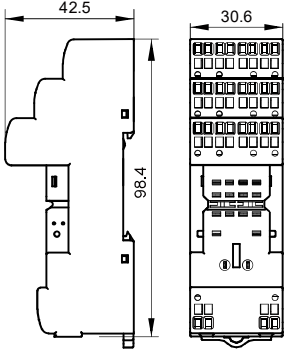
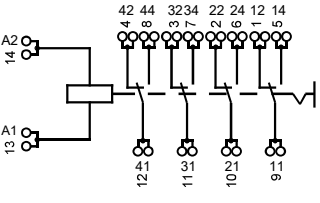
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-2Z-C5  <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>		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA~HFHU*
18FF-2Z-C10  <p>Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>			Retainer 18FF-H4 18FF-H5 Jumper 18FF-J2 Plug-in module HFAA~HFHU* Marker 18FF-M1
18FF-2Z-C10/P 				Retainer 18FF-H4 18FF-H5 Jumper 18FF-J2 Marker 18FF-M1 Plug-in module HFAA~HFHU
18FF-4Z-C2  <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>		Metallic retainer 18FF-H2 (be used in sets)

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-4Z-C4  <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>		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU
18FF-4Z-C5  <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>		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU
18FF-4Z-C10 				Retainer 18FF-H4 18FF-H5 Jumper 18FF-J2 Marker 18FF-M1 Plug-in module HFAA to HFHU
18FF-4Z-C10/P 				Retainer 18FF-H4 18FF-H5 Jumper 18FF-J2 Marker 18FF-M1 Plug-in module HFAA to HFHU

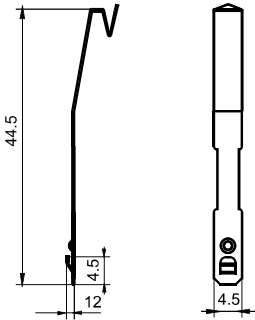
Notes: The socket and accessories, if you need accessories, please order by model or consult our sales staff.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

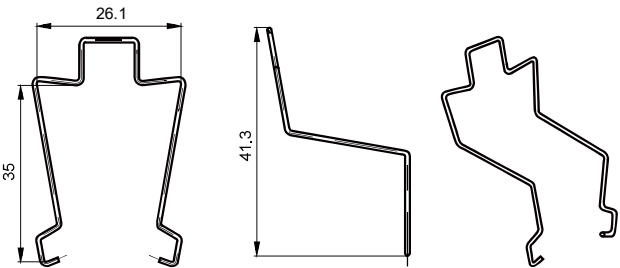
Unit: mm

Retainer

18FF-H2(Metallic retainer)

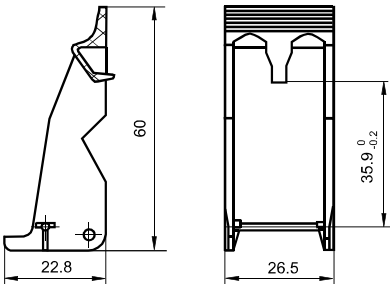


18FF-H3(Metallic retainer)

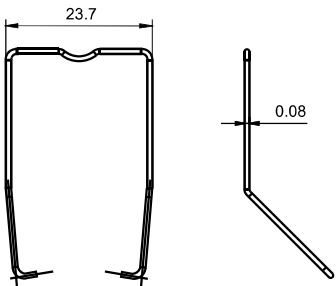


Remark: 18FF-H2 retainer is for specific series.Please be aware before ordering.

18FF-H4(Plastic retainer)

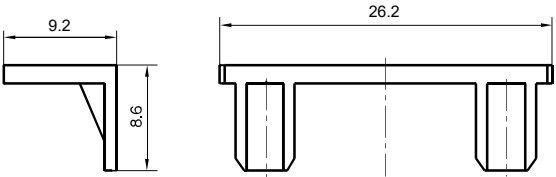


18FF-H5(Metallic retainer)

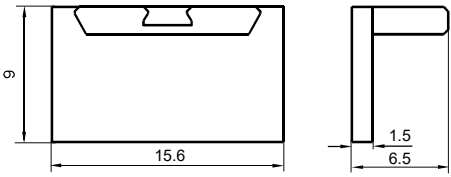


Marker

18FF-M1



18FF-M3



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-H4/H5	18FF-M1	HFAA~HFHU		
		18FF-2Z-C5					
		18FF-2Z-C10					
18FF-2Z-C10/P		18FF-H2	—	—			
18FF-4Z-C2							
18FF-4Z-C4					18FF-H4/H5	18FF-M1	HFAA~HFHU
18FF-4Z-C5							
18FF-4Z-C10							
18FF-4Z-C10/P							
HF18FF-N/□□-4Z1□□□□							

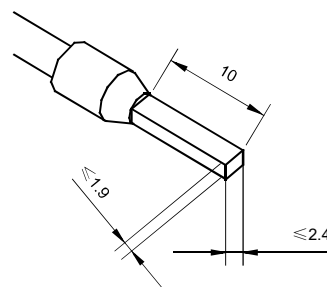
Precautions For Use

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.

Applicable conductor cross section

solid wire	1×0.5/0.75/1.0/1.5/2.5 mm ²	
	2×0.5/0.75/1.0/1.5 mm ²	
Multi-stranded wire	Multi-stranded wire without standard sleeve	1×0.5/0.75/1.0/1.5/2.5 mm ²
		2×0.5/0.75/1.0/1.5 mm ²
	Multi-stranded wire with standard sleeve	1×0.5/0.75/1.0/1.5 mm ²
		2×0.5/0.75/1.0 mm ²

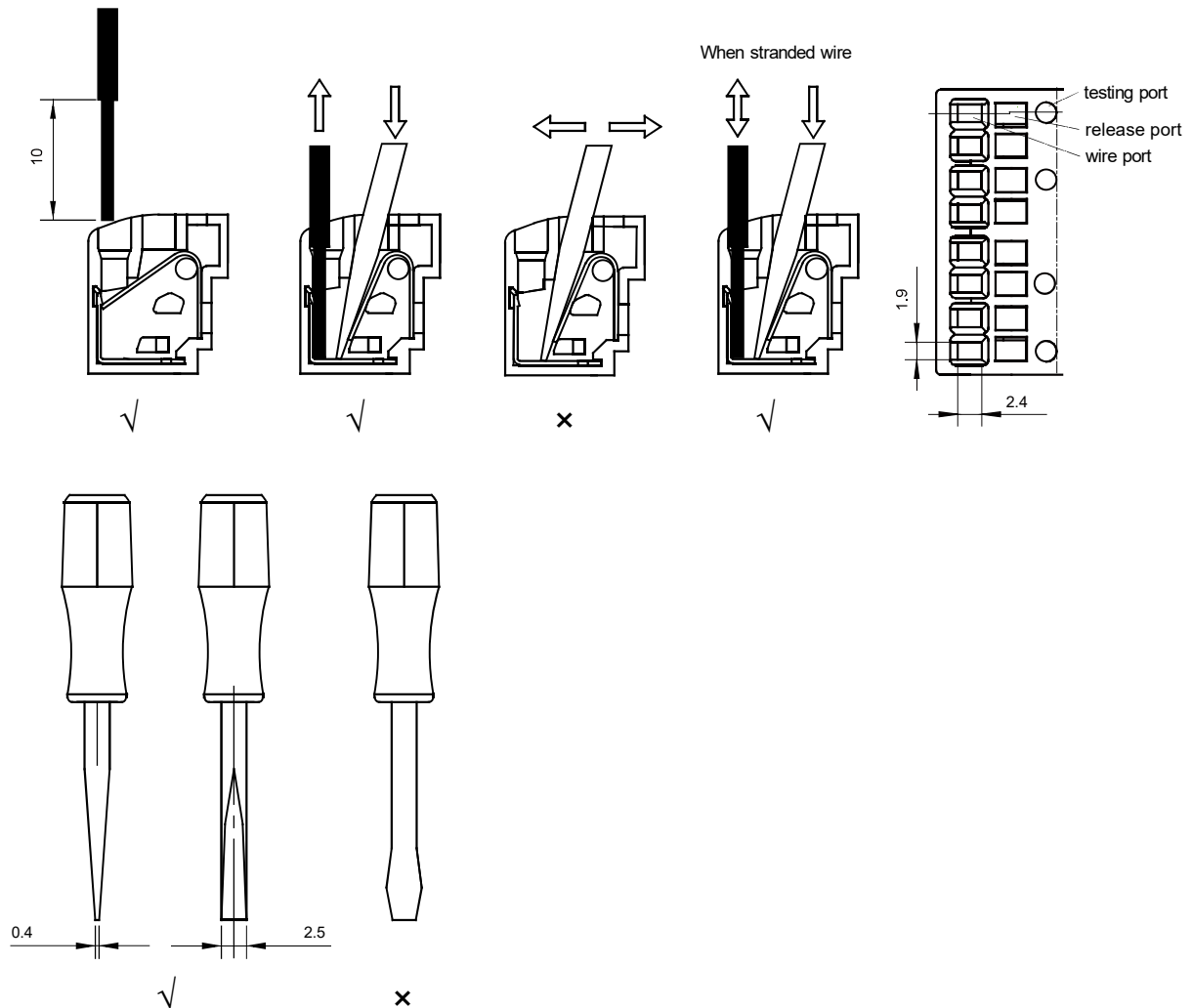


Regarding push in socket

- The screwdriver insertion hole must not be wired.
 - When inserting the screwdriver into the hole, please insert it at an angle.
 - Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage the socket.
 - Do not forcibly bend or pull on the wire. Otherwise it may result broken wire.
 - Do not insert more than one wires into one wiring hole.
 - To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4.
- The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Recommended Wires	Film peel (when bar terminals are not used)
0.5~2.5mm ² /AWG20~14	≥10mm

Precautions For Use



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. Relevant accessories must be selected separately. Please indicate the model of the selected accessories when ordering;
3. 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 $\pm 0.3\text{mm}$;
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1\text{mm}$, $35 \times 15 \times 1\text{mm}$. When installed vertically, the coil terminal at the bottom please .

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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HF18FZ

MINIATURE INTERMEDIATE POWER RELAY



File No: E133481



File No: 40048406



File No: CQC17002183722



Features

- Multiple switching capability (2C, 4C type)
- With LED
- Conform to the CE low voltage directive
- 2.0kV dielectric strength(between coil and contacts)
- High electrical life
- High mechanical life
- With test button
- Automatic production

RoHS compliant

CONTACT DATA

Contact arrangement	2C	4C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)	
Contact material	See"ORDERING INFORMATION"	
Contact rating (Res. load)	7A 220VAC/24VDC	5A 220VAC/24VDC
	5A 220VAC/24VDC	3A 220VAC/24VDC
Max. switching voltage	277VAC / 30VDC	
Max. switching current	7A	5A
Max. switching power	1939VA/ 210W	1385VA/ 150W
Mechanical endurance	5 x 10 ⁷ OPS(DC type)	
	2 x 10 ⁷ OPS(AC type)	
Electrical endurance ²⁾	2 Form C:1 x 10 ⁵ OPS(7A 277VAC or 7A 30VDC, Resistive load,Room temp.,1s on 9s off) 5A 250VAC or 30VDC 0.5s on 1.5s off 5x10 ⁵ OPS	
	4 Form C:1 x 10 ⁵ OPS(5A 277VAC or 5A 30VDC, Resistive load,Room temp.,1s on 9s off) 3A 250VAC or 30VDC 0.5s on 1.5s off 2x10 ⁵ OPS	

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.

COIL

Coil power	DC type: Approx. 0.8W to 1.1W; AC type: Approx. 0.9VA to 1.5VA
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CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2000VAC 1min(2 Form C) 1500VAC 1min(4 Form C)
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		DC type: 15ms max.
		AC type: 25ms max.
Temperature rise		85K max.
Shock resistance	Functional	200m/s ² (NO), 100m/s ² (NC)
	Destructive	1000m/s ²
Vibration resistance		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		Plug-in
Unit weight		Approx. 39.4g
Construction		Dust protected

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

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
6	4.8	0.60	6.6	41 x (1±15%)
12	9.6	1.20	13.2	165 x (1±15%)
24	19.2	2.40	26.4	662 x (1±15%)
48	38.4	4.80	52.8	2725 x (1±15%)
100/110	80.0	11.0	110/121	11440 x (1±15%)
220	170.0	22.0	242	53780 x (1±15%)

Nominal Voltage VAC	Pick-up Voltage VAC max. ¹⁾	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω
12	9.60	3.60	13.2	46 x (1±15%)
24	19.2	7.20	26.4	180 x (1±15%)
48	38.4	14.4	52.8	788 x (1±15%)
100/110	80.0	33.0	110/121	3750 x (1±15%)
110/120	88.0	36.0	121/132	4430 x (1±15%)
200/220	160.0	66.0	220/242	12950 x (1±15%)
220/240	176.0	72.0	242/264	15920 x (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 coil.

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

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

2024 Rev. 2.00

SAFETY APPROVAL RATINGS

UL/CUL	2 Form C	7A 277VAC or 7A 30VDC
	4 Form C	5A 277VAC or 5A 30VDC Resistive at 70°C
CQC	2 Form C	7A 277VAC or 7A 30VDC Resistive at 70°C
	4 Form C	5A 277VAC or 5A 30VDC Resistive at 70°C
VDE	2 Form C	7A 277VAC or 7A 30VDC Resistive at 70°C
	4 Form C	5A 277VAC or 5A 30VDC Resistive at 70°C

Notes: 1) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF18FZ/	A	12	-2Z	2	3	J	1	(XXX)
Coil voltage form	A: AC(50Hz or 60Hz) Nil: DC								
Coil voltage	See "COIL DATA"								
Contact arrangement	2Z: 2 Form C 4Z: 4 Form C								
Termination	2: Socket								
Contact material	3: AgNi								
Custom component code	Nil: Without Component J: With free-wheeling diode(Only DC coil specifications) ¹⁾								
Interface function code	1: No LED no button 2: With LED no button 3: With LED and button								
Special code ²⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Free-wheeling diode is available only for DC coil relay.

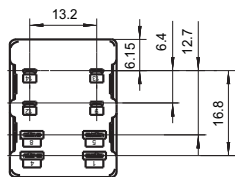
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS

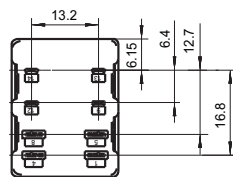
Unit: mm

Outline Dimensions

HF18FZ/□□□□-2Z2□□□1□
HF18FZ/□□□□-2Z2□□□2□



HF18FZ/□□□□-2Z2□□□3□

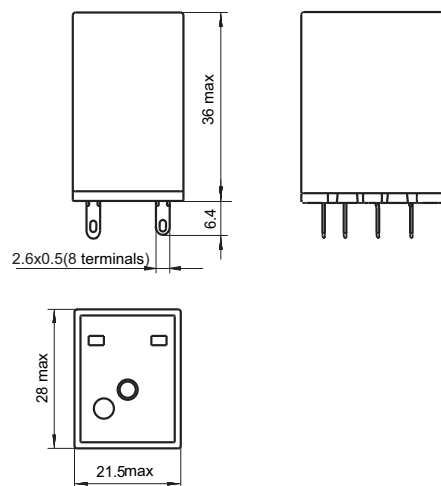


OUTLINE DIMENSIONS

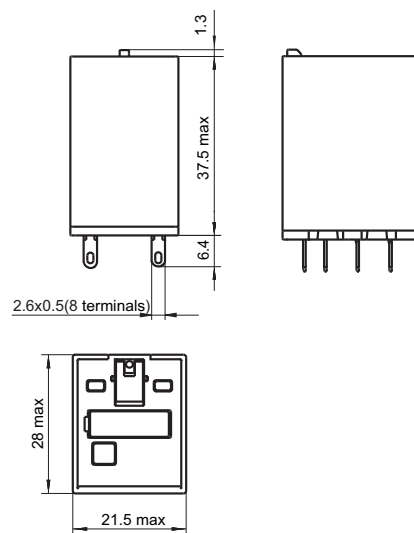
Unit: mm

Outline Dimensions

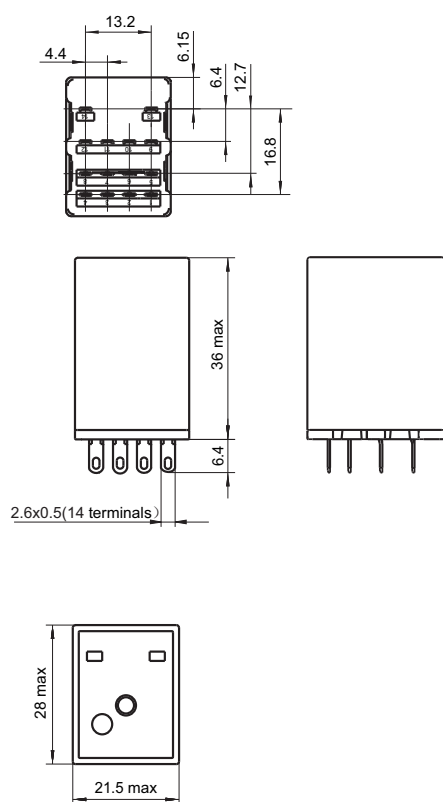
HF18FZ/□□□□-2Z2□□□1□
HF18FZ/□□□□-2Z2□□□2□



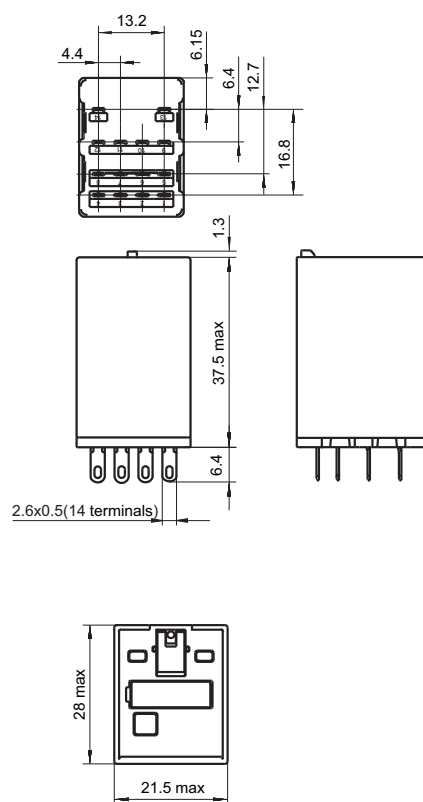
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HF18FZ/□□□□-4Z2□□□1□
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HF18FZ/□□□□-4Z2□□□3□

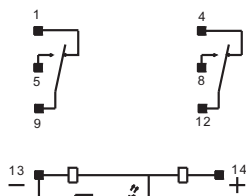


Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

WIRING DIAGRAM(BOTTOM VIEW)

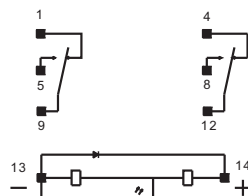
HF18FZ/□□□-2Z232
HF18FZ/□□□-2Z233

2 Form C(DC,With LED)
(Without 220VDC)



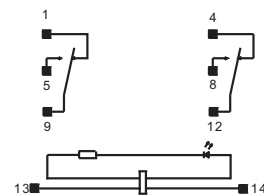
HF18FZ/□□□-2Z23J2
HF18FZ/□□□-2Z23J3

2 Form C
(DC, With fly-wheel diode and LED)
(Without 220VDC)



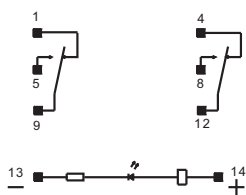
HF18FZ/A□□□-2Z232
HF18FZ/A□□□-2Z233

2 Form C
(AC, With LED)



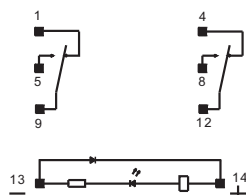
HF18FZ/220-2Z232
HF18FZ/220-2Z233

2 Form C(DC, With LED)
(220VDC)



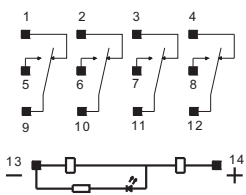
HF18FZ/220-2Z23J2
HF18FZ/220-2Z23J3

2 Form C
(DC, With fly-wheel diode and LED)
(220VDC)



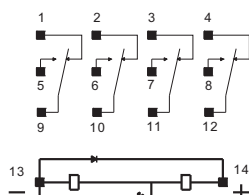
HF18FZ/□□□-4Z232
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4 Form C
(DC, With LED)
(Without 220VDC)



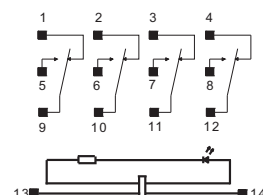
HF18FZ/□□□-4Z23J2
HF18FZ/□□□-4Z23J3

4 Form C
(DC, With fly-wheel diode and LED)
(Without 220VDC)



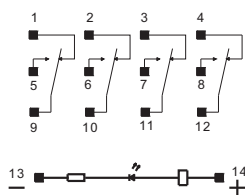
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HF18FZ/A□□□-4Z233

4 Form C
(AC, With LED)



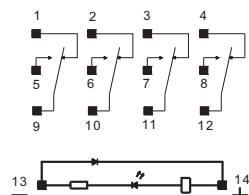
HF18FZ/220-4Z232
HF18FZ/220-4Z233

4 Form C
(DC, With LED)
(220VDC)



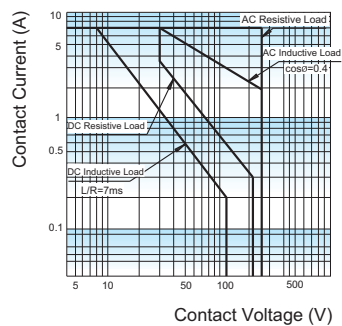
HF18FZ/220-4Z23J2
HF18FZ/220-4Z23J3

4 Form C
(DC, With fly-wheel and LED)
(220VDC)

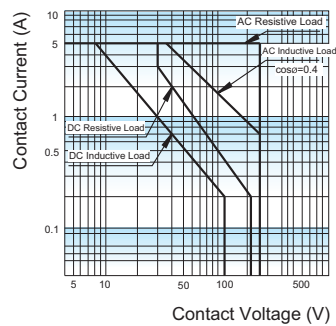


CHARACTERISTIC CURVES

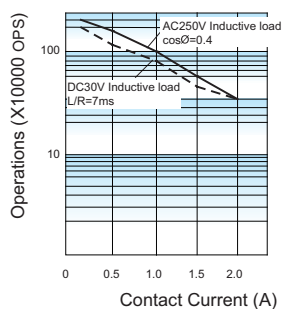
MAXIMUM SWITCHING POWER
(2 Form C)



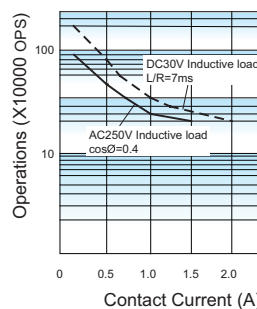
MAXIMUM SWITCHING POWER
(4 Form C)



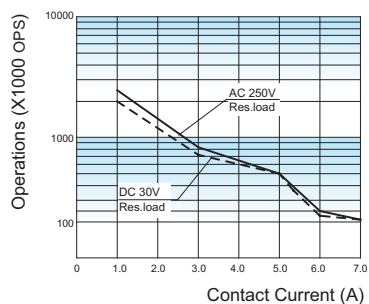
INDUCTIVE LOAD ENDURANCE CURVE
(2 Form C)



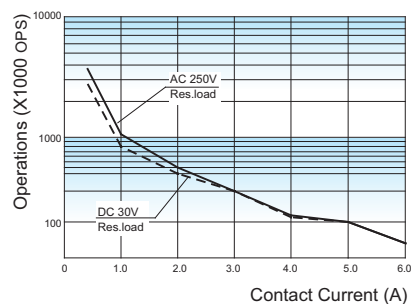
INDUCTIVE LOAD ENDURANCE CURVE
(4 Form C)



RES. LOAD ENDURANCE CURVE
(2 Form C)



RES. LOAD ENDURANCE CURVE
(4 Form C)



Relay Sockets



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

RoHS compliant


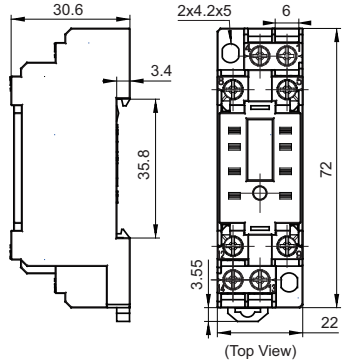
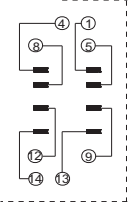
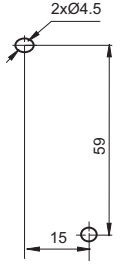

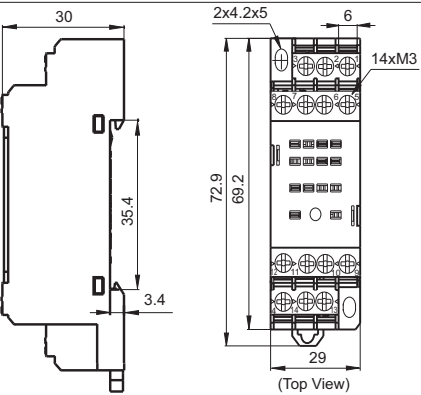
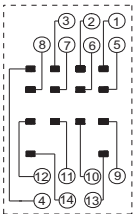
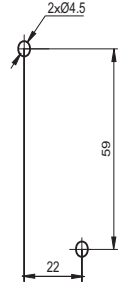

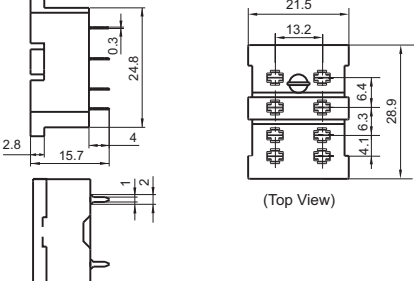
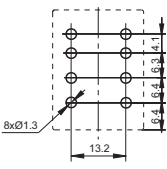

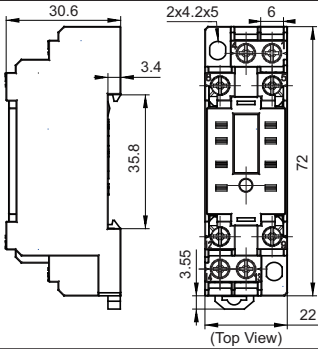
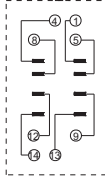
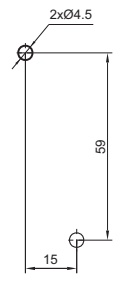

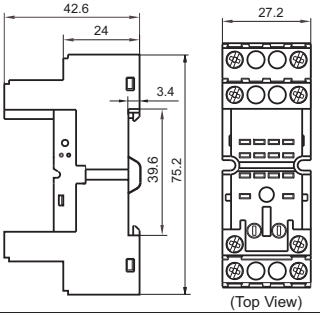
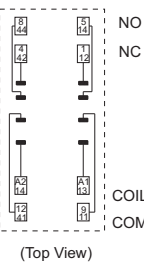
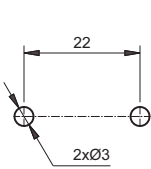
CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight Approx.
18FZ-2Z-C2	250VAC	7A	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.30g
18FZ-4Z-C2	250VAC	5A	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.44g
18FF-2Z-A2	250VAC	7A	-40 °C ~ 70 °C	2000VAC	—	—	Approx.8g
18FF-2Z-C2	250VAC	7A	-40 °C ~ 70 °C	2000VAC	0.8N · m	7mm	Approx.36g
18FF-2Z-C4	250VAC	7A	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.53g
18FF-2Z-C5	250VAC	7A	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.64g
18FF-2Z-C8	250VAC	7A	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.41g
18FF-2Z-C9	250VAC	7A	-40 °C ~ 70 °C	2000VAC	—	7mm	Approx.70g
18FF-2Z-C10	300VAC/DC	10A	-40 °C ~ 70 °C	2000VAC	—	10mm	Approx.57g
18FF-2Z-C10/P	300VAC/DC	10A	-40 °C ~ 70 °C	2000VAC	—	10mm	Approx.58g
18FF-4Z-A2	250VAC	7A*	-40 °C ~ 70 °C	2000VAC	—	—	Approx.8g
18FF-4Z-C1	250VAC	7A*	-40 °C ~ 70 °C	2000VAC	0.8N · m	7mm	Approx.58g
18FF-4Z-C2	250VAC	7A*	-40 °C ~ 70 °C	2000VAC	0.8N · m	7mm	Approx.59g
18FF-4Z-C4	250VAC	7A*	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.64g
18FF-4Z-C5	250VAC	7A*	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.76g
18FF-4Z-C8	250VAC	7A*	-40 °C ~ 70 °C	2000VAC	0.6N · m	7mm	Approx.51g
18FF-4Z-C9	250VAC	7A*	-40 °C ~ 70 °C	2000VAC	—	7mm	Approx.81g
18FF-4Z-C10	300VAC/DC	6A*	-40 °C ~ 70 °C	2000VAC	—	10mm	Approx.65g
18FF-4Z-C10/P	300VAC/DC	6A*	-40 °C ~ 70 °C	2000VAC	—	10mm	Approx.66g

Remark: For sockets marked *, their group of current totally should be not more than 20A.


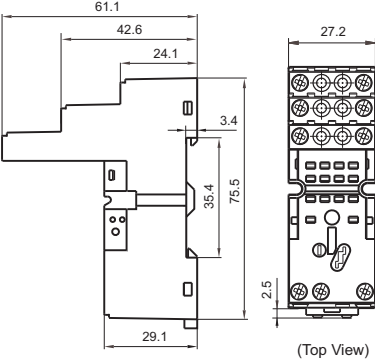
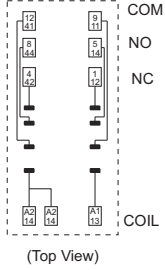
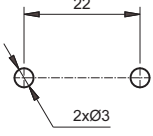

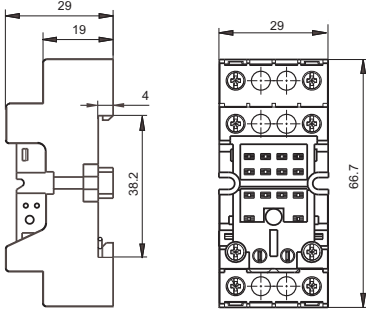
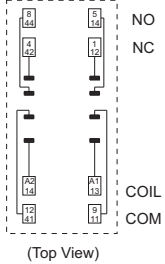
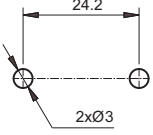

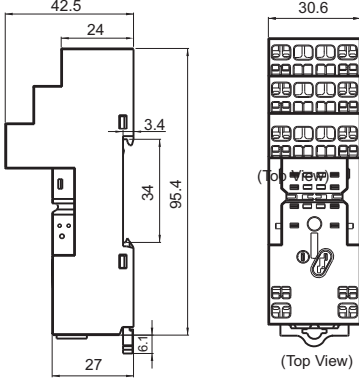
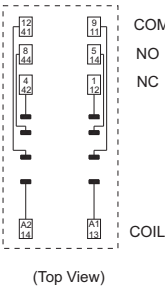

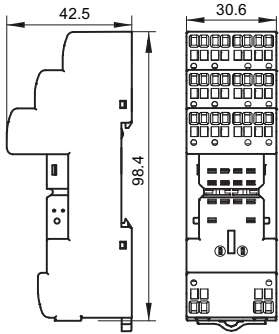
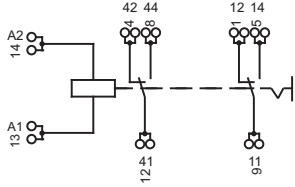
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FZ-2Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FZ-H1 18FF-H2 (be used in sets)
18FZ-4Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		Metallic retainer 18FZ-H1 18FF-H2 (be used in sets)
18FF-2Z-A2  PCB Terminal, PCB mounting Applicable for 2 poles	 (Top View)			Metallic retainer 18FF-H1
18FF-2Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Metallic retainer 18FZ-H1 18FF-H2 (be used in sets)
18FF-2Z-C4  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*


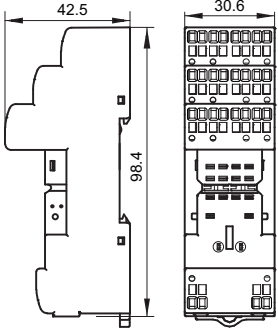
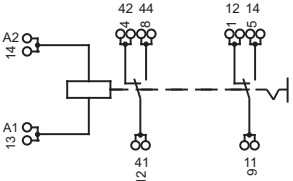

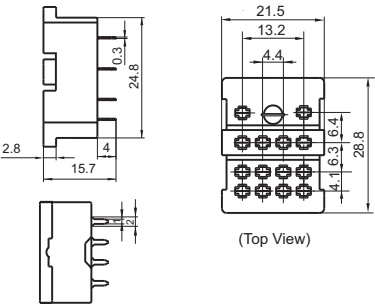
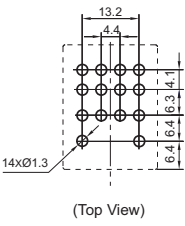

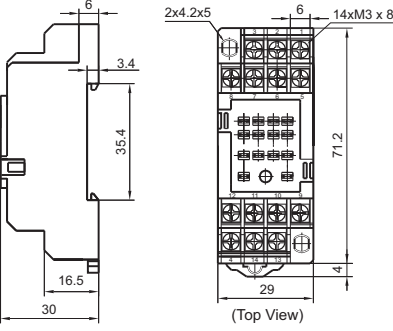
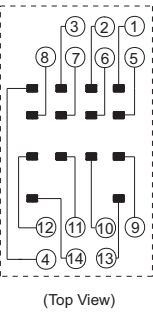

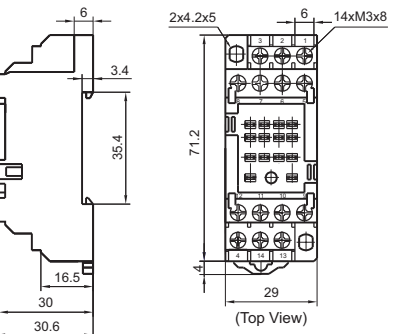
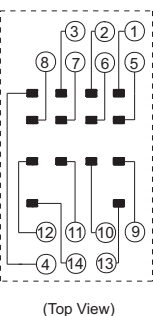
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

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</p> <p>Marker 18FF-M1</p> <p>Plug-in module HFAA to HFHU*</p>
<p>18FF-2Z-C8</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</p> <p>Marker 18FF-M3</p> <p>Plug-in module HFAA to HFHU</p>
<p>18FF-2Z-C9</p>  <p>Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>Plastic retainer 18FF-H4</p> <p>Metallic retainer 18FF-H5</p> <p>Plug-in module HFAA ~ HFHU*</p> <p>Marker 18FF-M3</p>
<p>18FF-2Z-C10</p> 	 <p>(Top View)</p>			<p>Retainer* 18FF-H4 18FF-H5</p> <p>Jumper* 18FF-J2</p> <p>Marker* 18FF-M1</p> <p>Plug-in module* HFAA~HFHU</p>


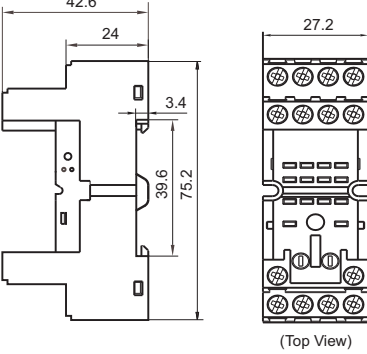
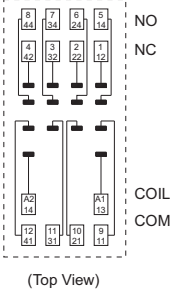
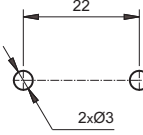

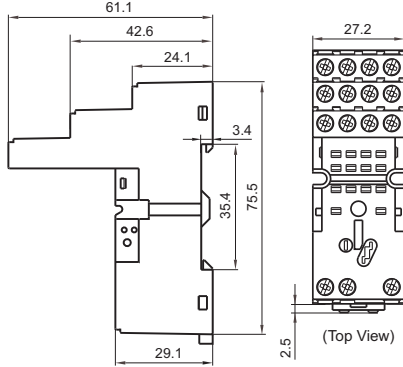
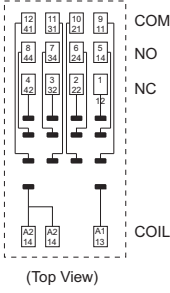
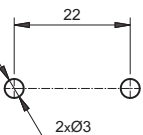

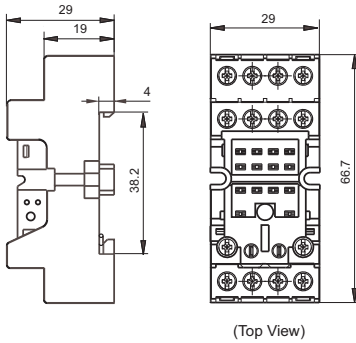
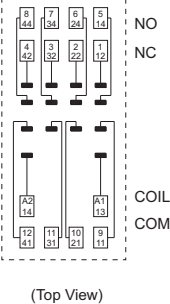
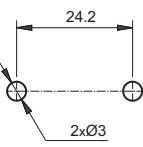

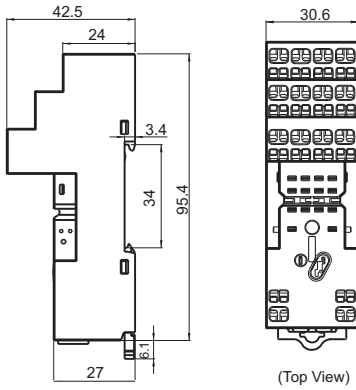
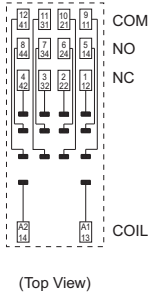
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	PCB Layout	Components Available
<p>18FF-2Z-C10/P</p> 			<p>Retainer*</p> <p>18FF-H4</p> <p>18FF-H5</p> <p>Jumper*</p> <p>18FF-J2</p> <p>Marker*</p> <p>18FF-M1</p> <p>Plug-in module*</p> <p>HFAA~HFHU</p>
<p>18FF-4Z-A2</p>  <p>PCB Terminal, PCB mounting Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>Metallic retainer</p> <p>18FF-H1</p>
<p>18FF-4Z-C1</p>  <p>Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>Metallic retainer</p> <p>18FZ-H1</p> <p>18FF-H2 (be used in sets)</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</p> <p>18FZ-H1</p> <p>18FF-H2 (be used in sets)</p>


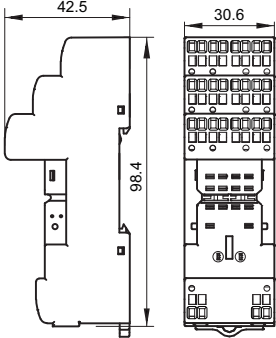
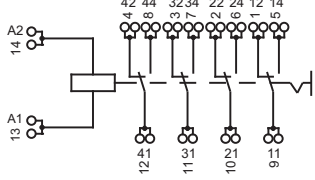

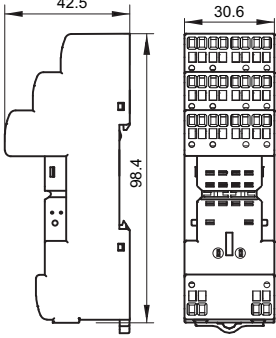
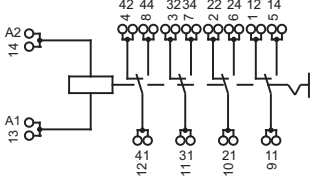
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-4Z-C4  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*
18FF-4Z-C5  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Marker 18FF-M1 Plug-in module HFAA to HFHU*
18FF-4Z-C8  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		*Plastic retainer 18FF-H4 *Metallic retainer 18FF-H5 Marker 18FF-M3 *Plug-in module HFAA to HFHU
18FF-4Z-C9  Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		Plastic retainer 18FF-H4 Metallic retainer 18FF-H5 Plug-in module HFAA ~ HFHU* Marker 18FF-M3

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

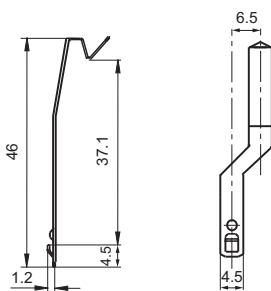
Socket	Outline Dimensions	PCB Layout	Components Available
18FF-4Z-C10 			Retainer* 18FF-H4 18FF-H5 Jumper* 18FF-J2 Marker* 18FF-M1 Plug-in module* HFAA~HFHU
18FF-4Z-C10/P 			Retainer* 18FF-H4 18FF-H5 Jumper* 18FF-J2 Marker* 18FF-M1 Plug-in module* HFAA~HFHU

DIMENSION OF RELATED COMPOENT (AVAILABLE)

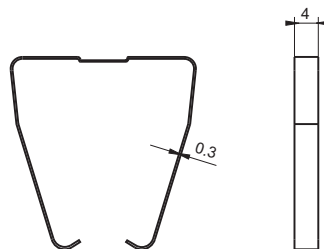
Unit: mm

Retainer

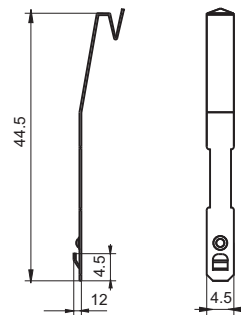
18FZ-H1(Metallic retainer)



18FF-H1(Metallic retainer)

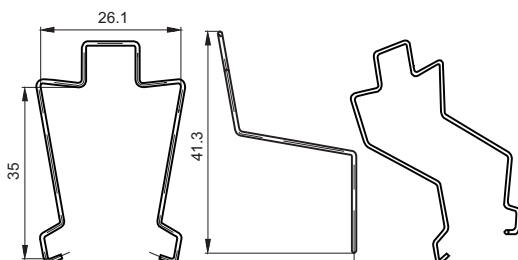


18FF-H2 (Metallic retainer)

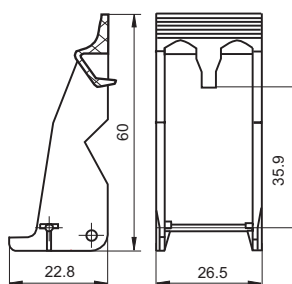


Remark: This retainer is for specific series. Please be aware before ordering.

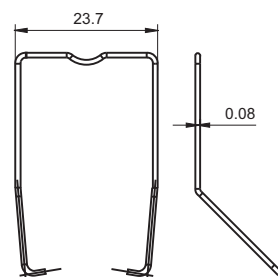
18FF-H3(Metallic retainer)



18FF-H4 (Plastic retainer)



18FF-H5 (Metallic retainer)



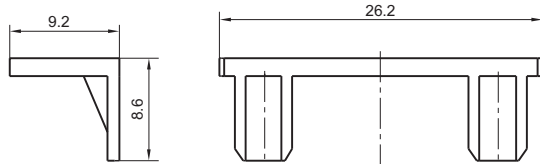
Remark: This retainer is for specific series. Please be aware before ordering.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

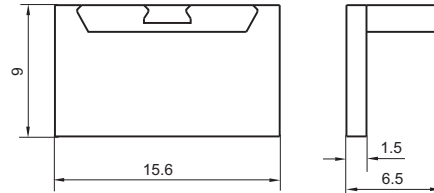
Unit: mm

Marker

18FF-M1



18FF-M3



SELECTION OF PARTS

Type of Relay	Mounting termination	Socket	Retainer	Marker	Module	
HF18FZ/□□-2Z□□□1/2□	Without button	18FF-2Z-A2	18FF-H1	-	-	
		18FF-2Z-C2	18FF-H2/H3			
		18FZ-2Z-C2				
		18FF-2Z-C4	18FF-H4/H5	18FF-M1	HFAA~HFHU	
		18FF-2Z-C5		18FF-M3		
		18FF-2Z-C8				
		18FF-2Z-C9				
HF18FZ/□□-4Z□□□1/2□		18FF-4Z-A2	18FF-H1	-	-	
		18FF-4Z-C1	18FF-H2			
		18FF-4Z-C2				
		18FZ-4Z-C2				
		18FF-4Z-C4	18FF-H4/H5	18FF-M1	HFAA~HFHU	
		18FF-4Z-C5		18FF-M3		
		18FF-4Z-C8				
		18FF-4Z-C9				
HF18FZ/□□-2Z□□□3□	With button	18FF-2Z-C2	18FZ-H1	-	-	
		18FZ-2Z-C2				
		18FF-2Z-C4	18FF-H4	18FF-M1	HFAA~HFHU	
		18FF-2Z-C5		18FF-M3		
		18FF-2Z-C8				
		18FF-2Z-C9				
		HF18FZ/□□-4Z□□□3□	18FF-4Z-C1	18FZ-H1	-	-
			18FF-4Z-C2			
			18FZ-4Z-C2			
			18FF-4Z-C4	18FF-H4	18FF-M1	HFAA~HFHU
			18FF-4Z-C5		18FF-M3	
18FF-4Z-C8						
18FF-4Z-C9						

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 the use of non-threaded terminal type sockets

- 1.Lead end socket description :

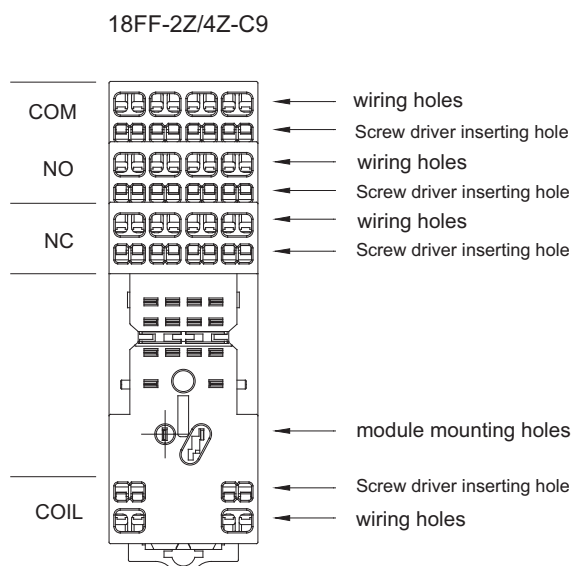


Figure 1

- 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.

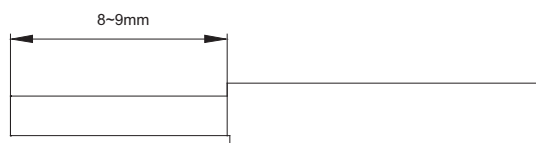


Figure 2

Precautions For Use

- 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.

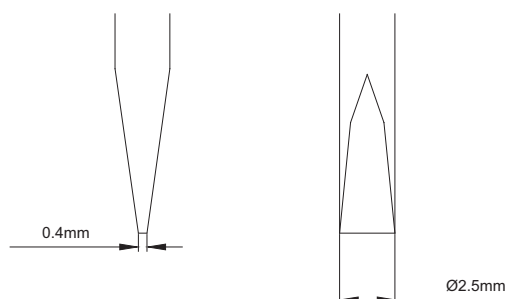


Figure 3

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

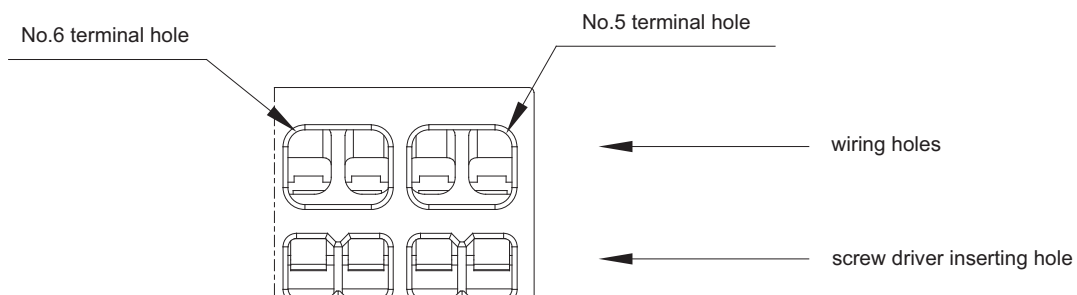


Figure 4

Precautions For Use

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.

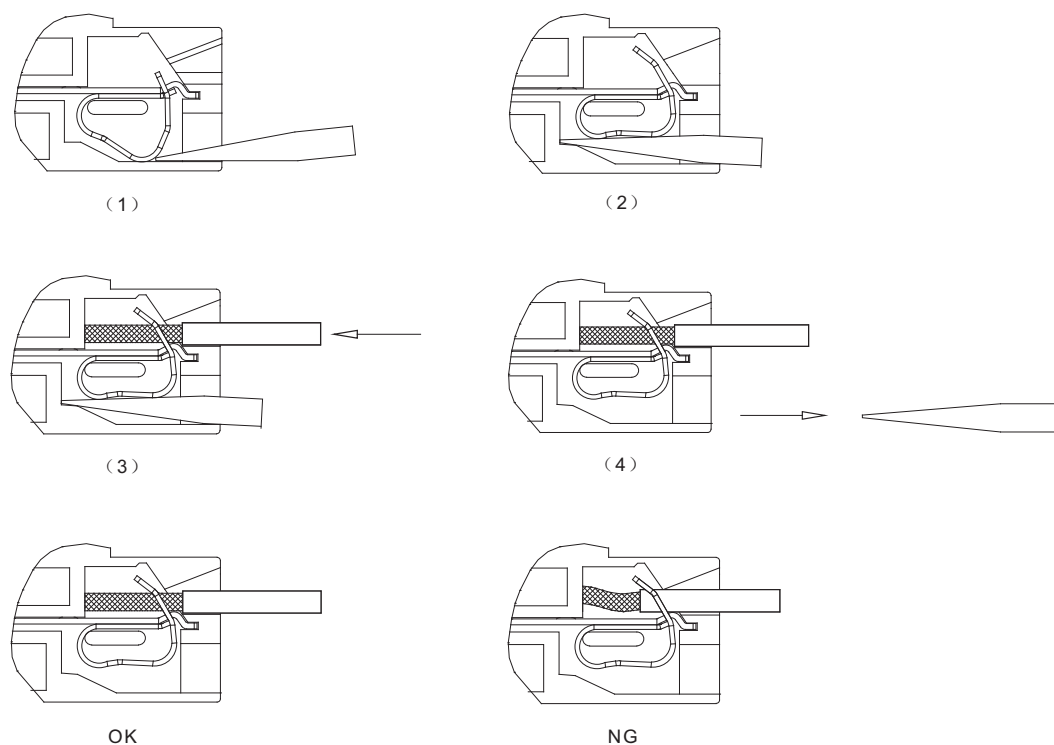


Figure 5

Notes: 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:

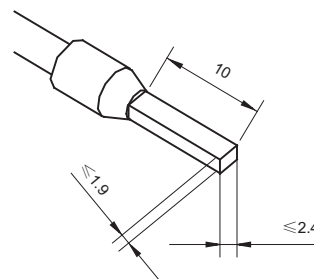
1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with Markers is furnished with a Marker; as for other related 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 $35 \times 7.5 \times 1\text{mm}$, $35 \times 15 \times 1\text{mm}$.

Precautions For Use

18FF-2Z/4Z-C10
18FF-2Z/4Z-C10/P

Applicable conductor cross section

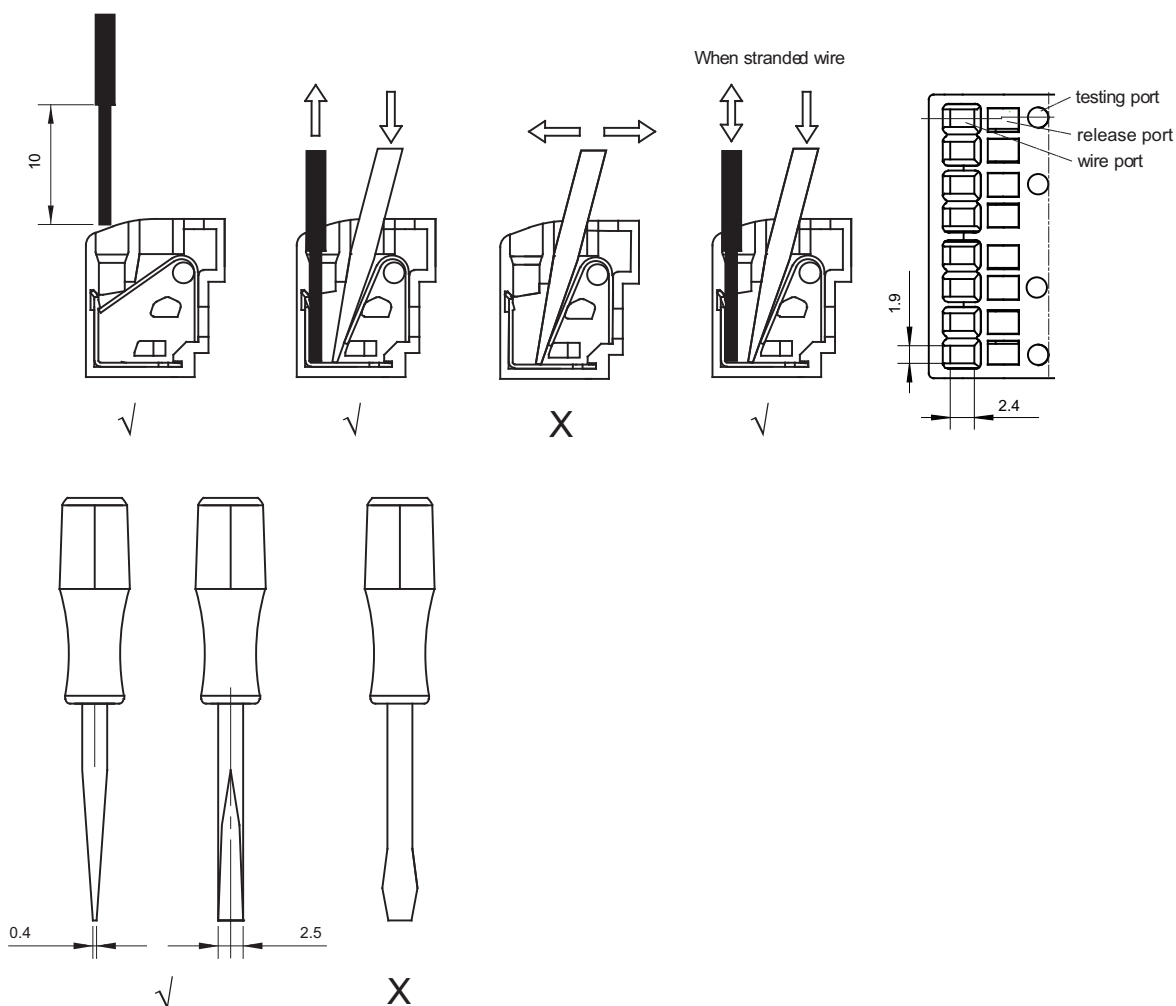
solid wire	1x0.5/0.75/1.0/1.5/2.5 mm ²	
	2x0.5/0.75/1.0/1.5 mm ²	
Multi-stranded	Multi-stranded wire without standard sleeve	1x0.5/0.75/1.0/1.5/2.5 mm ²
		2x0.5/0.75/1.0/1.5 mm ²
	Multi-stranded wire with standard sleeve	1x0.5/0.75/1.0/1.5 mm ²
		2x0.5/0.75/1.0 mm ²



Regarding push in socket

- The screwdriver insertion hole must not be wired.
 - When inserting the screwdriver into the hole, please insert it at an angle.
 - Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage the socket.
 - Do not forcibly bend or pull on the wire. Otherwise it may result broken wire.
 - Do not insert more than one wires into one wiring hole.
 - To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4.
- The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Recommended Wires	Film peel (when bar terminals are not used)
0.5~2.5mm ² / AWG20~14	≥10mm



Precautions For Use

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. Relevant accessories must be selected separately. Please indicate the model of the selected accessories when ordering;
3. 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 $\pm 0.3\text{mm}$.
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1\text{mm}$, $35 \times 15 \times 1\text{mm}$.
When installed vertically, the coil terminal at the bottom please .

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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HF49FD

MINIATURE POWER RELAY



File No. : E133481



File No. : 40033644



File No. : R50149334



File No.:CQC17002175722



Features

- 5A switching capability
- 3kV dielectric strength (between coil and contacts)
- Slim size (width 5mm, height 12.5mm)
- High sensitive: Min. 120mW
- Meets IEC61131-2 reinforce insulation
- Creepage/clearance distance: Min. 3.5mm
- Sockets available

RoHS compliant

CONTACT DATA

Contact arrangement	1A
Contact Resistance ¹⁾ (at 1A 6VDC)	No gold plated: 100mΩ max. Gold plated: 50mΩ max.
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	5A 250VAC/30VDC
Max. switching voltage	250VAC /125VDC(at 0.3A)
Max. switching current	5A
Max. switching power	1250VA / 150W
Min. contact load ²⁾	No gold plated: 5VDC 10mA Gold plated: 5VDC 1mA
Mechanical endurance ³⁾	2 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (3A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) 5 x 10 ⁴ OPS (5A 250VAC/30VDC, Resistive load, AgNi, Room temp., 1s on 9s off)

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

2) Min. contact load is just a reference value in normal temperature, normal humidity and normal pressure environment, which will vary depending on the power-on and off frequency, environmental conditions and expected lifespan. 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.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage(between coil & contacts) ⁴⁾		6kV (1.2 / 50μs)
Operate time (at rated.volt.)		10ms max.
Release time (at rated.volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5%RH to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 3g
Construction		Plastic sealed

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

2) Please find coil temperature curve in the characteristic curves below.

3) UL insulation system: Class F, Class B, Class A.

4) Contact refers to the mov.-contact.



HONGFA RELAY

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

2023 Rev. 1.00

COIL

Coil power	Approx. 120mW (at 5VDC to 18VDC) Approx. 180mW (at 24VDC)
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ²⁾	Drop-out Voltage VDC min. ²⁾	Max. Voltage VDC ³⁾	Coil Resistance Ω
5	3.50	0.25	6.0	208 x (1±10%)
6	4.20	0.30	7.2	300 x (1±10%)
9	6.30	0.45	10.8	675 x (1±10%)
12	8.40	0.60	14.4	1200 x (1±10%)
18	12.6	0.90	21.6	2700 x (1±15%)
24	16.8	1.20	28.8	3200 x (1±15%)

Notes: 1) All above data are tested when the relays terminals are downward position. Other positions of the terminals, the pick-up and drop-out voltages will have ±5% tolerance. For example, when the relay terminals are transverse position, the max. pick-up voltage change is 75% of nominal voltage.

2) The data shown above are initial values.

3) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

4) 24VDC 120mW type are also available, please see ordering information for more details.

SAFETY APPROVAL RATINGS

UL/CUL	1H1 type	AgSnO ₂	3A 250VAC COSφ=1 at 85°C 3A 30VDC L/R =0ms at 85°C
		AgNi	5A 250VAC COSφ=1 5A 30VDC L/R =0ms
	1H2 type	AgNi	3A 250VAC COSφ=1 at 85°C 3A 30VDC L/R =0ms at 85°C 5A 250VAC COSφ=1 5A 30VDC L/R =0ms
VDE			5A 250VAC COSφ=1 at 85°C 5A 30VDC L/R =0ms at 85°C
TÜV			5A 250VAC COSφ=1 at 70°C 5A 30VDC L/R =0ms at 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.

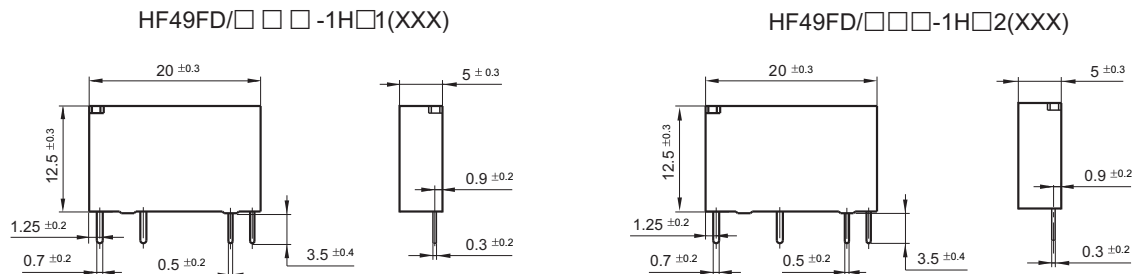
ORDERING INFORMATION

	HF49FD / 012 -1H 1 2 G T F L (XXX)									
Type										
Coil voltage	5, 6, 9, 12, 18, 24VDC									
Contact arrangement	1H: 1 Form A									
Contact version	1: Single contact 2: Bifurcated contact(Only for gold plated)									
Space between terminals	(See the following) 1: 5.08mm 2: 7.62mm									
Contact plating	G: Gold plated Nil: No gold plated (Only for single contact)									
Contact material	T: AgSnO ₂ (Only for single contact) Nil: AgNi									
Insulation standard	F: Class F B: Class B Nil: Class A									
Coil power	L: Sensitive (Only for 24VDC) Nil: Standard									
Special code ²⁾	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) If customer need to fix HF49FD in 49F socket (HF49FD+49F socket) in application, please choose HF49FD relay with suffix (009) or suffix (086).
4) Standard tube packing length is 546mm. 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.

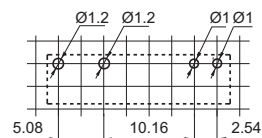
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Outline Dimensions

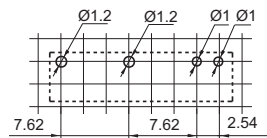


PCB Layout (Bottom view)

HF49FD/□□□-1H□1(XXX)



HF49FD/□□□-1H□2(XXX)



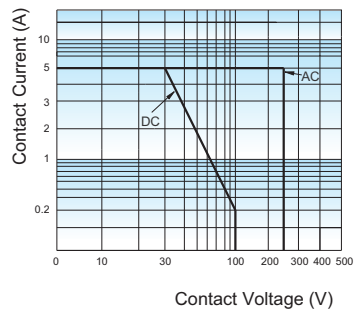
Wiring Diagram (Bottom view)



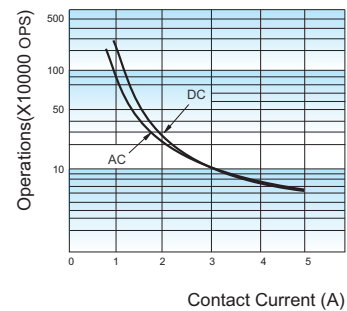
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



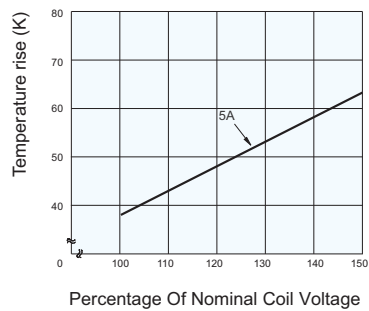
ENDURANCE CURVE



Test conditions:

1H1 type: AgNi, Resistive load, 250VAC/30VDC,
Room temp., 1s on 9s off.

COIL TEMPERATURE RISE

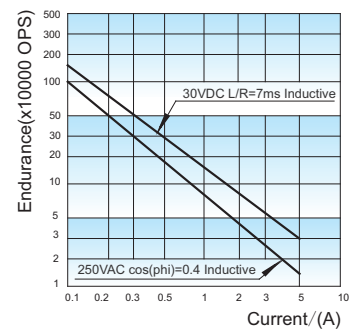


Percentage Of Nominal Coil Voltage

Test conditions:

5A 85°C
(Typical curve of 24VDC standard type)

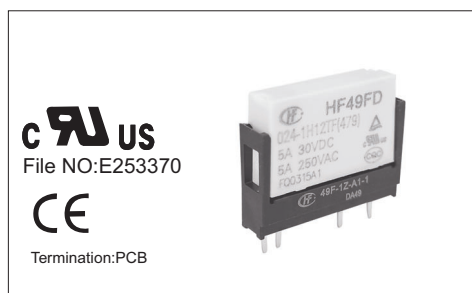
ELECTRICAL ENDURANCE CURVE OF INDUCTIVE LOAD



Test conditions:

1H1: Room temp, 1s on 9s off.

Relay Socket



CHARACTERISTICS

- Ambient temperature : $-40^{\circ}\text{C} \sim 70^{\circ}\text{C}$
- Rated Voltage: 250VAC
- Rated Current: 5A (Each pole)
- Dielectric strength: 3000VAC min. (Between I/O)
- Remove the relay card: 49F-B
- Retainer: 49F-1Z-A1-1 Applicable for HF49FD/□□□-1H□□1(009)
49F-1Z-A1-2 Applicable for HFHF49FD/□□□-1H□□2(009)

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	PCB Layout	Accessory Available
49F-1Z-A1-1			Remove the relay card: 49F-B
49F-1Z-A1-2			Remove the relay card: 49F-B

Notes: * If need accesscry,please order with type.

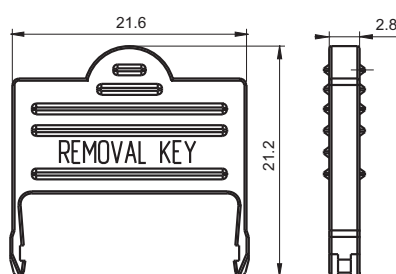
ACCESSORY

Unit: mm

Plastic retainer
Type:49F-B



Notes:1) If need accesscry, please order with type.



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;If need markers ,please order with type.
3. The above only lists typical socket and related accessory models suitable for HF49FD relay products, please contact us if you have any special requirements
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. PCB mounting.

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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HF115FK

MINIATURE HIGH POWER RELAY



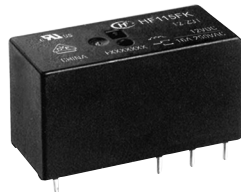
File No.:E134517



File No.:116934



File No.:CQC17002176308



Features

- Low height: 15.7 mm
- 16A switching capability
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting reinforce insulation
- Flux proofed type
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Through-Hole Reflow Version available

RoHS compliant

CONTACT DATA

Contact arrangement	1A, 1C	2A, 2C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating (Res. load)	10A/12A/16A 250VAC	8A 250VAC
Max. switching voltage	400VAC	
Max. switching current	10A / 12A / 16A	10A
Max. switching power	2500VA/3000VA/4000VA	2000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	H3(P)T type: 1 x 10 ⁵ OPS (NO: 16A 277VAC, Resistive Load at 40°C, 1s on 9s off)	
	Z1PT(875) type: 1 x 10 ⁵ OPS (NO:10A 250VAC, Resistive Load at 40°C, 1s on 9s off)	
	Z3(P)T type: 5 x 10 ⁴ OPS (NO: 16A 250VAC, Resistive Load at 85°C, 1s on 9s off)	
	2Z4(P)T type: 5 x 10 ⁴ OPS (NO: 8A 250VAC, Resistive Load at 85°C, 1s on 9s off)	
	Z33 type: 1 x 10 ⁵ OPS (NO: 16A 277VAC, Resistive Load at 40°C, 1s on 9s off)	
	2Z43 type: 5 x 10 ⁴ OPS (NO: 8A 277VAC, Resistive Load at 40°C, 1s on 9s off)	

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

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2 x 50μs)	
Operate time (at rated. volt.)	10ms max.	
Release time (at rated. volt.)	5ms max.	
Shock resistance *	Functiona	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	10Hz to 150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 13g	
Construction	Flux proofed	

Notes: 1) The data shown above are initial values.
2) * Index is not in relay length direction.

COIL

Coil power	Approx. 400mW(Standard type)
	Approx. 530mW(high power consumption type)

COIL DATA

at 23°C

Standard type				
Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC * ²⁾	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48	33.60	4.8	72	5760 x (1±15%)

High power consumption type

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC * ²⁾	Coil Resistance Ω
5	3.50	0.5	7.5	47 x (1±10%)
6	4.20	0.6	9.0	68 x (1±10%)
9	6.30	0.9	13.5	153 x (1±10%)
12	8.40	1.2	18	271 x (1±10%)
18	12.60	1.8	27	611 x (1±10%)
24	16.80	2.4	36	1086 x (1±10%)
48	33.60	4.8	72	4347 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.



HONGFA RELAY

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

2024 Rev. 1.00

SAFETY APPROVAL RATINGS

Standard type			High power consumption type	
UL/CUL	AgSnO ₂	Z1T: 12A 250VAC at 85°C Z2T: 12A 250VAC at 85°C Z3T: 16A 250VAC at 85°C Z24T: 8A 250VAC at 85°C	UL/CUL	Z1PT: 12A 277VAC 85°C 16A 277VAC room temperature TV8 NO room temperature Z2PT: 12A 277VAC 85°C 6A 277VAC room temperature TV8 NO room temperature Z3PT: 16A 277VAC 85°C TV8 NO room temperature Z24PT: 8A 250VAC 85°C
	AgNi	Z13: 12A 250VAC at 40°C Z23: 12A 250VAC at 40°C Z33: 16A 250VAC at 40°C Z243: 8A 250VAC at 40°C		
VDE	AgSnO ₂	Z1T: 12A 250VAC at 85°C Z2T: 12A 250VAC at 85°C Z3T: 16A 250VAC at 85°C Z24T: 8A 250VAC at 85°C	VDE	Z1PT: 12A 277VAC 85°C Z2PT: 12A 277VAC 85°C Z3PT: 16A 277VAC 85°C Z24PT: 8A 250VAC 85°C
	AgNi	Z13: 12A 250VAC at 85°C Z23: 12A 250VAC at 85°C Z33: 16A 250VAC at 85°C Z243: 8A 250VAC at 85°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	HF115FK / 12 -H S 3 P T (XXX)							
Coil voltage	5, 6, 9, 12, 18, 24, 48 VDC							
Contact arrangement	H: 1 Form A Z: 1 Form C 2H: 2 Form A 2Z: 2 Form C							
Construction	S: Plastic sealed ¹⁾ Nil: Flux proofed							
Version	1: 3.5mm 1 pole 12A 2: 5.0mm 1 pole 12A 3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A							
Coil type	P: high power consumption type Nil: Standard							
Contact material ^{2) 3)}	T: AgSnO ₂ 3: AgNi (Standard)							
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard (875): 1 pole 10A(Only 1 version high power consumption type) (170): Meeting TV-8(Only 1 pole high power consumption type)							

Notes: 1) Only applicable to HF115FK 1 pole.

2) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

3) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT). (253) means Through-Hole Reflow Version(valid for Flux proofed only).

5) Two packing methods available: plastic tray package, tube package, Standard tube packing length is 616mm. Any special requirement needed, please contact us for more details.

6) For the products that need to meet the explosion-proof requirements of "IEC 60079 series", please note [Ex] after the model and specification when placing the order for the plastic type specification, and note [Exd] after the model and specification when placing the order for the non-plastic type specification. Our company will print the "Ex" or "Exd" logo on the product shell to distinguish them. Because not all products of the specification have explosion-proof certification, please contact us if necessary to determine the appropriate product.

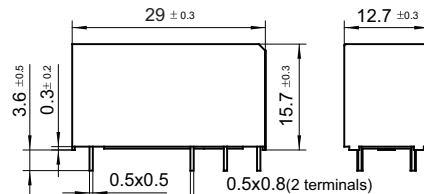
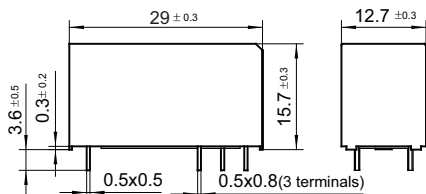
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

3.5mm Pinning (HF115FK/ □□□ -1-□)

5mm Pinning (HF115FK/ □□□ -□ -2/3/4-□)

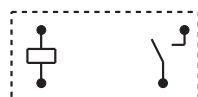


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

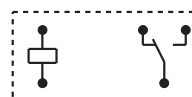
Unit: mm

Wiring Diagram (Bottom view)

3.5/5mm Pinning, 1 Pole, 12A/16A, HF115FK/ □□□ -1/2-□

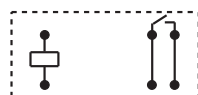


1 Form A

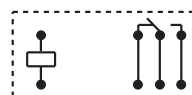


1 Form C

5mm Pinning, 1 Pole, 16A, HF115FK/ □□□ -3-□



1 Form A

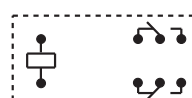


1 Form C

5mm Pinning, 2 Pole, 8A, HF115FK/ □□□ -2□ -4-□



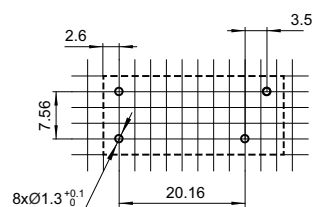
2 Form A



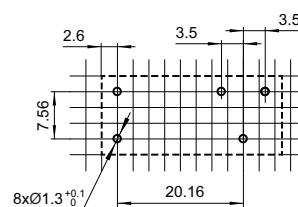
2 Form C

PCB Layout(Bottom view)

3.5mm Pinning, 1 Pole, 12A, HF115FK/ □□ -□ -□ -1-□□

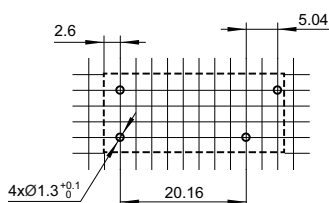


1 Form A

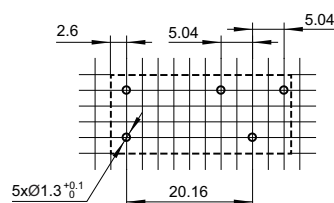


1 Form C

5mm Pinning, 1 Pole, 12A, HF115FK/ □□ -□ -□ -2-□□

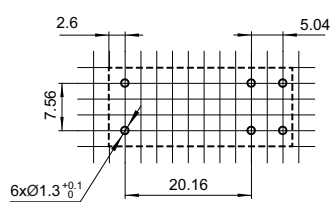


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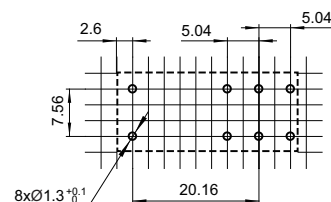


1 Form C

5mm Pinning, 1 Pole, 16A, HF115FK/ □□ -□ -□ -3-□□



1 Form A

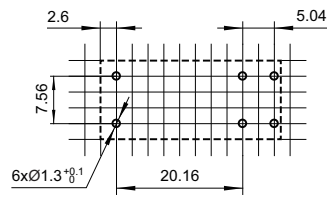


1 Form C

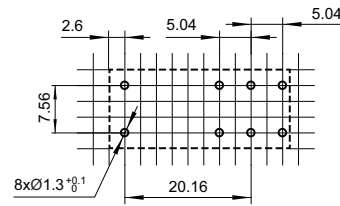
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

5mm Pinning, 2 Pole, 8A, HF115FK/ □□ -2□ -□ -4-□□



2 Form A

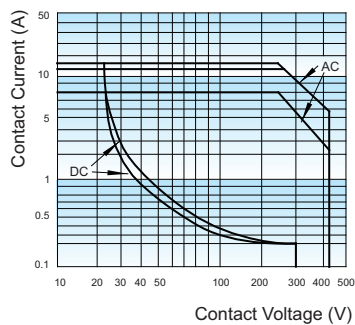


2 Form C

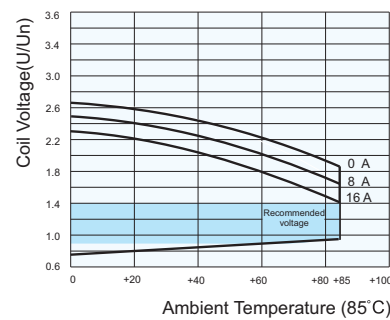
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

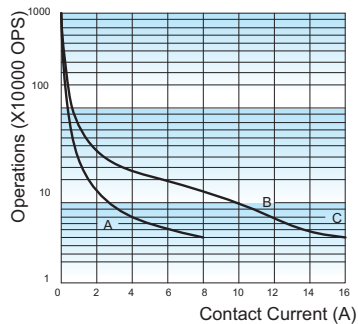


COIL OPERATING RANGE (DC) *



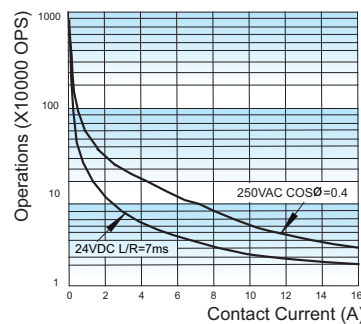
Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
 An energising voltage over the above range may damage the insulation of relay coil.

ENDURANCE CURVE



Notes:
 1) Curve A: 2Z4T type
 Curve B: Z2T type (or Z2T type)
 Curve C: Z3T type
 2) Test conditions:
 NO, resistive load, 250VAC, flux proofed,
 at 85°C, 1s on 9s off.

ENDURANCE CURVE



Notes:
 1) Curve : H3T type
 2) Test conditions:
 NO, at 85°C, 1s on 9s off, flux proofed.

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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HF115F-A

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC1702176311



Features

- AC voltage coil type
- 16A switching capability
- 1 & 2 pole configurations
- 5kV dielectric strength (between coil and contacts)
- Low height: 15.7 mm
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F

RoHS compliant

CONTACT DATA

Contact arrangement	1A, 1B, 1C	2A, 2B, 2C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)	
Contact material	See"ORDERING INFORMATION"	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	440VAC / 300VDC	
Max. switching current	12A / 16A	8A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 x 10 ⁶ ops	
Electrical endurance	1H3B type: 5 x 10 ⁴ ops (16A 250VAC, Resistive load, Room temp., 1s on 9s off) 2H4B type: 5 x 10 ⁴ ops (8A 250VAC, Resistive load, Room temp., 1s on 9s off)	

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

COIL

Coil power	Approx. 0.75VA
------------	----------------

COIL DATA (at 50Hz) at 23°C

Nominal Voltage VAC	Pick-up Voltage VAC max. ¹⁾	Drop-out Voltage VAC min. ¹⁾	Coil Current mA	Coil DC Resistance Ω
24	18.00	3.60	31.6	350 x (1±10%)
115	86.30	17.30	6.6	8100 x (1±15%)
230	172.50	34.50	3.2	32500 x (1±15%)

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

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Temperature rise (at nomi. volt.)	85K max.	
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	10Hz to150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB	
Unit weight	Approx. 13.5g	
Construction	Plastic sealed, Flux proofed	

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

2) * Index is not that of relay length direction.

SAFETY APPROVAL RATINGS

UL/CUL	12A 250VAC 16A 250VAC 8A 250VAC
VDE (AgNi, AgNi+Au)	12A 250VAC at 70°C 16A 250VAC at 70°C 8A 250VAC at 70°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	12A 250VAC at 70°C 8A 250VAC at 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.



HONGFA RELAY

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

2023 Rev. 2.01

ORDERING INFORMATION

Type	HF115F-A / 024 -1H S 1 A F (XXX)
Coil voltage	24, 115, 230VAC
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C 2H: 2 Form A 2D: 2 Form B 2Z: 2 Form C
Construction ^{1) 2)}	S: Plastic sealed Nil: Flux proofed
Version	1: 3.5mm 1 pole 12A 2: 5.0mm 1 pole 12A 3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A
Contact material ³⁾	A: AgSnO ₂ B: AgNi Nil: AgCdO G: AgCdO+Au plated AG: AgSnO ₂ +Au plated BG: AgNi+Au plated
Insulation standard	F: Class F
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

- Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

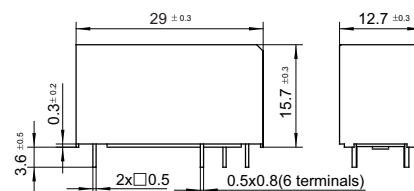
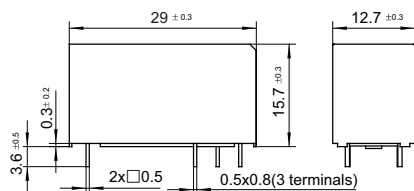
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

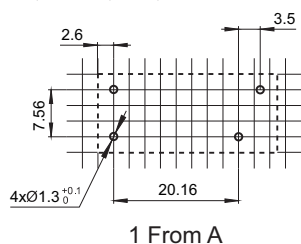
3.5mm Pinning (HF115F-A/□□□-□□-□-1-□□)

5mm Pinning (HF115F-A/□□□-□□-□-2/3/4-□□)

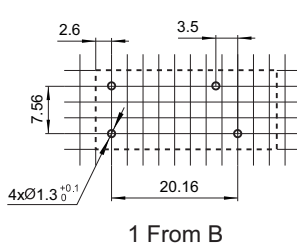


PCB Layout (Bottom view)

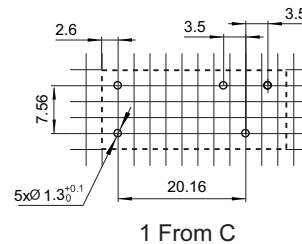
3.5mm, 1 Pole, 12A, HF115F-A/□□□-1□-□-1-□□



1 From A

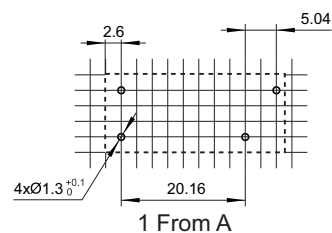


1 From B

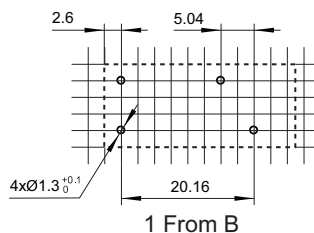


1 From C

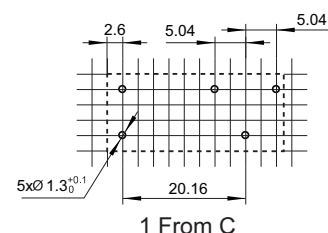
5mm, 1 Pole, 12A, HF115F-A/□□□-1□-□-2-□□



1 From A



1 From B



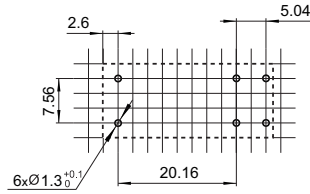
1 From C

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

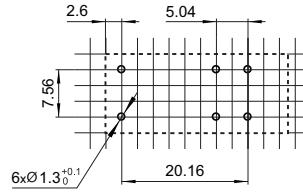
Unit: mm

PCB Layout (Bottom view)

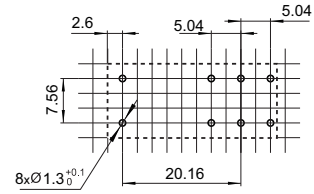
5mm,1 Pole,16A,HF115F-A/□□□-1□-□-3-□□



1 From A

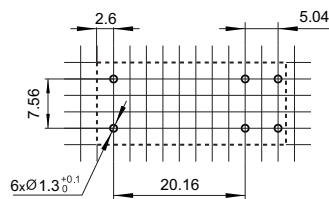


1 From B

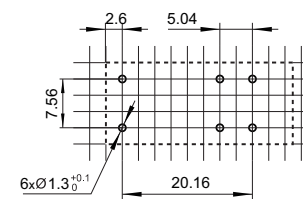


1 From C

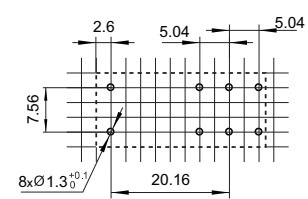
5mm,2 Pole,8A,HF115F-A/□□□-2□-□-4-□□



2 From A



2 From B

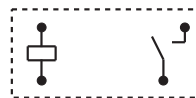


2 From C

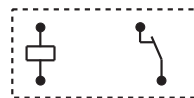
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm .

Wiring Diagram (Bottom view)

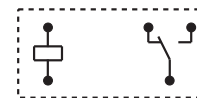
HF115F-A/□□□-□□-□-1/2-□□, 3.5/5mm Pinning, 1 Pole, 12A



1 Form A



1 Form B

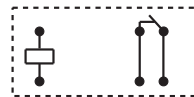


1 Form C

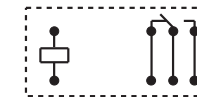
HF115F-A/□□□-□□-□-3-□□, 5mm Pinning, 1 Pole, 16A



1 Form A

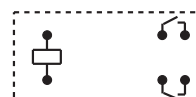


1 Form B

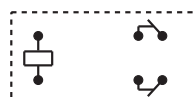


1 Form C

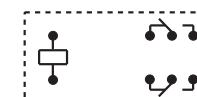
HF115F-A/□□□-□□-□-4-□□, 5mm Pinning, 2 Pole, 8A



2 Form A



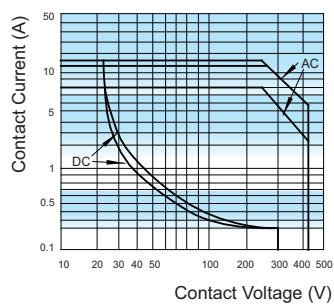
2 Form B



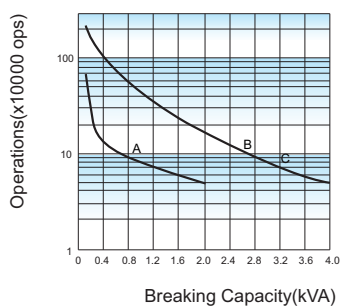
2 Form C

CHARACTERISTIC CURVES

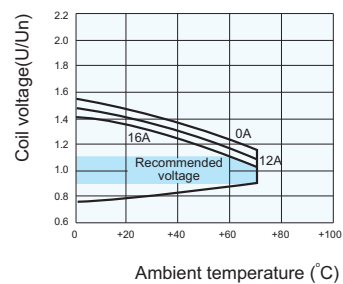
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL OPERATING RANGE (AC) *



Notes:

- 1) Curve A: 2H4B type
Curve B: 1H1B(or 1H2B) type
Curve C: 1H3B type
- 2) Test conditions:
NO, Resistive load, 250VAC
Flux proofed, Room temp., 1s on 9s off.

Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the abver range may damage the insulation of relay coil.

Relay Sockets

CE

C_{UL} US

File No.: E253370



Features

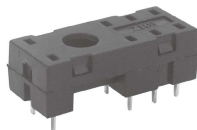
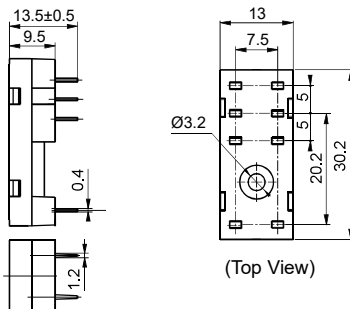
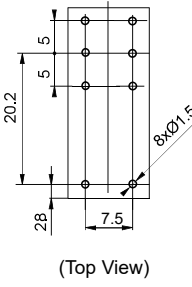

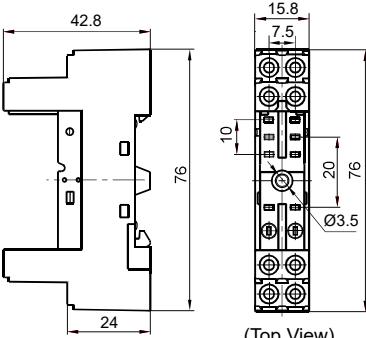
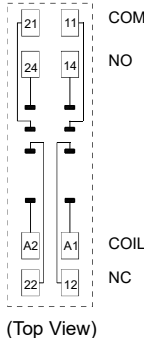
- The insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
14FF-2Z-A1	250VAC	10A	-40°C ~ 70°C	5000VAC	—	*	Approx.3g
14FF-2Z-C2	250VAC	10A	-40°C ~ 70°C	5000VAC	0.6N·m	7mm	Approx.39g
14FF-2Z-C3	250VAC	10A	-40°C ~ 70°C	5000VAC	0.6N·m	7mm	Approx.45g
14FF-2Z-C4	250VAC	10A	-40°C ~ 70°C	5000VAC	—	9mm	Approx.42g
14FF-2Z-C10	300VAC/DC	10A	-40°C ~ 70°C	5000VAC	—	10mm	Approx.36g
14FF-2Z-C10/P	300VAC/DC	10A	-40°C ~ 70°C	5000VAC	—	10mm	Approx.37g

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


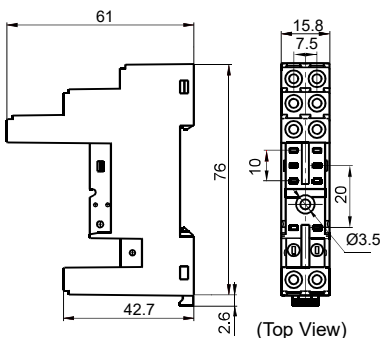
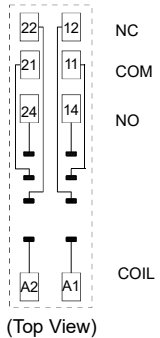

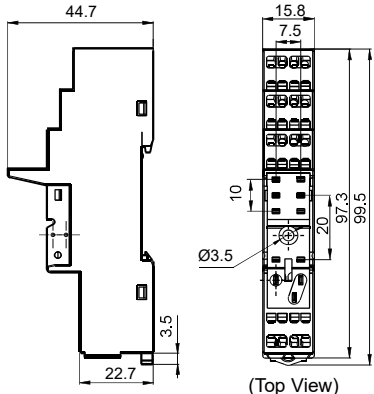
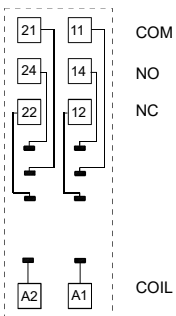

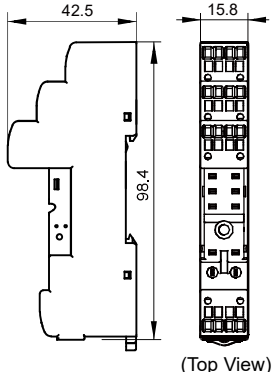
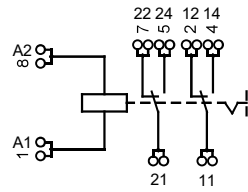

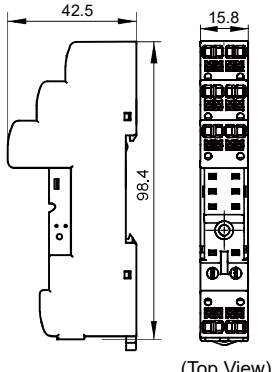
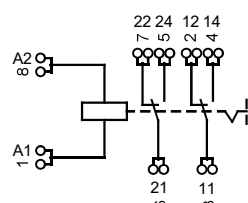
Unit: mm

Socket	Outline Dimensions	Wiring Diagram/PCB Layout	Components Available
<p>14FF-2Z-A1</p>  <p>PCB terminal, PCB or Screw mounting</p> <p>When it used with HF115F、 HF115F-A、HF115FP and relay type 3, two pole of socket load must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>Metallic retainer 14FF-H1</p> <p>Remarks:the dielectric strength can reach 1500VAC that sockets mounted 14FF-H1</p>
<p>14FF-2Z-C2</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX- 3XXX, "21"- "11", "24"- "14", "22"- "12" of socket must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>Plastic retainer: 14FF-H4</p> <p>Marker: 14FF-M1</p> <p>Plug-in module: HFAA to HFHU*</p>

Notes: If need accesscry,please order with type.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Components Available
14FF-2Z-C3  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device When it used with HF115F, HF115F-A, HF115FP and relay type 3, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	Retainer: 14FF-H4 Marker: 14FF-M1 Plug-in module: HFAA~HFHU*
14FF-2Z-C4  <p>Spring-loaded terminal DIN rail mounting With finger protection device When it used with HF115F, HF115F-A, HF115FP and relay type 3, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	Retainer: 14FF-H4 Marker: 14FF-M1 Plug-in module: HFAA~HFHU*
14FF-2Z-C10 	 <p>(Top View)</p>		Retainer: 14FF-H4 14FF-H7 Marker: 14FF-M1 Plug-in module: HFAA~HFHU
14FF-2Z-C10/P 	 <p>(Top View)</p>		Retainer: 14FF-H4 14FF-H7 Marker: 14FF-M1 Plug-in module: HFAA~HFHU

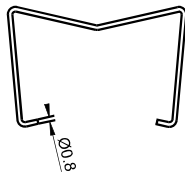
Notes: If need accessory, please order with type.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

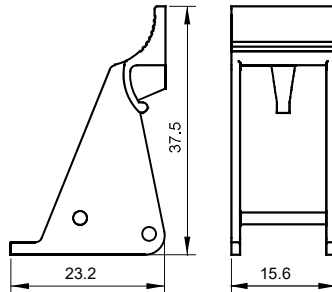
Unit: mm

Retainer

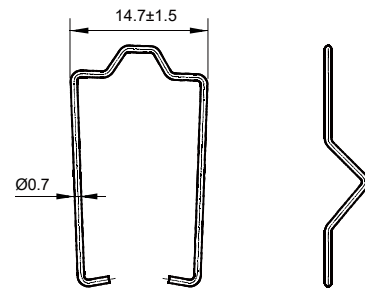
14FF-H1 (Metallic retainer)



14FF-H4 (Plastic retainer)

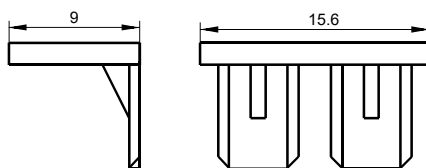


14FF-H7 (Metallic retainer)



Marker

14FF-M1



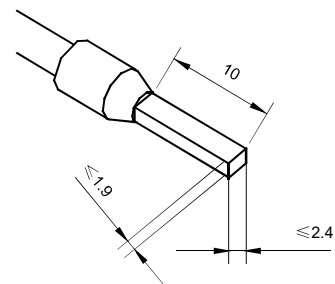
Precautions For Use

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.

Applicable conductor cross section

solid wire	1×0.5/0.75/1.0/1.5/2.5 mm ²	
	2×0.5/0.75/1.0/1.5 mm ²	
Multi-stranded wire	Multi-stranded wire without standard sleeve	1×0.5/0.75/1.0/1.5/2.5 mm ²
		2×0.5/0.75/1.0/1.5 mm ²
	Multi-stranded wire with standard sleeve	1×0.5/0.75/1.0/1.5 mm ²
		2×0.5/0.75/1.0 mm ²



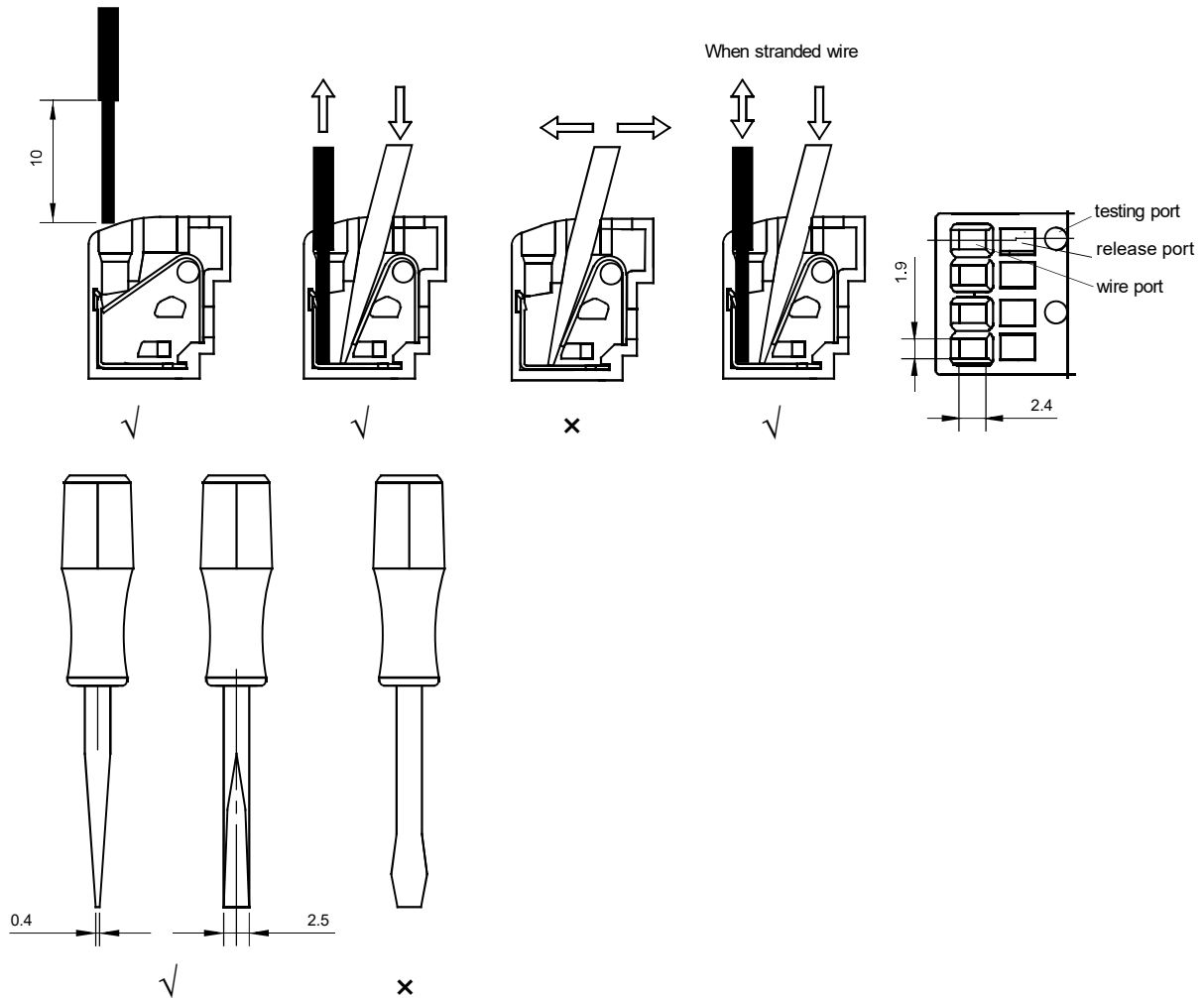
Precautions For Use

Regarding push in socket

- The screwdriver insertion hole must not be wired.
- When inserting the screwdriver into the hole, please insert it at an angle.
- Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage the socket.
- Do not forcibly bend or pull on the wire. Otherwise it may result broken wire.
- Do not insert more than one wires into one wiring hole.
- To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4.

The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Recommended Wires	Film peel (when bar terminals are not used)
0.5~2.5mm ² /AWG20~14	≥10mm



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 > 50mm, tolerance should be ±1mm; 20mm < outline dimension ≤ 50mm, tolerance should be ±0.5mm; 5mm < outline dimension ≤ 20mm, tolerance should be ±0.4mm, outline dimension ≤ 5mm, tolerance should be ±0.3mm;
5. DIN rail mounting: recommend to use standard rail 35×7.5×1mm, 35×15×1mm. When installed vertically, the coil terminal at the bottom please .

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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HF115FP

MINIATURE POWER RELAY



File No.: E133481



File No.: 116934



Features

- 1 pole 16A, 2 pole 8A, 1 CO & 2 CO contacts
- 5kV dielectric, Creepage distance 8 mm (coil to contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- DC/AC coil type relay, Coil power 400mW / 0.75VA
- Manual test device
- Type with mechanical indicator / electrical indicator
- Sockets available

CONTACT DATA

Contact arrangement	1C	2C
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)	
Contact material	AgNi	
Contact rating (Res. load)	16A 250VAC	8A 250VAC
Max. switching voltage	440VAC	
Max. switching current	16A	8A
Max. switching power	4000VA	2000VA
Mechanical endurance	DC type: 5 x 10 ⁶ OPS AC type: 1 x 10 ⁶ OPS	
Electrical endurance	1Z3B type: 3 x 10 ⁴ OPS (16A 250VAC, Resistive load, at 70°C, 1s on 9s off) 2Z4B type: 5 x 10 ⁴ OPS (8A 250VAC, Resistive load, at 70°C, 1s on 9s off)	

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Operate time (at nomi. volt.)		DC type: 15ms max.
Release time (at nomi. volt.)		DC type: 8ms max.
Temperature rise (at nomi. volt.)		DC type: 60K max. AC type: 85K max.
Shock resistance*	Functiona	98m/s ²
	Destructive	980m/s ²
Vibration resistance*	NO	10Hz to 150Hz 10g
	NC	length direction: 10Hz to 150Hz 2g other direction: 10Hz to 150Hz 5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB
Unit weight		Approx. 16g
Mounting distance		5mm, packing of sockets

Notes: 1) The data shown above are initial values.
2) *Index is not that of relay length direction.
3) UL insulation system: Class A

COIL

Coil power	DC type: Approx. 400mW;
	AC type: Approx. 0.75VA

Notes: The data shown above don't include the power of electronic indicating circuit when the relay picks-up.

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC ²⁾	Coil Resistance Ω
12	8.4	1.2	18	360 x (1±10%)
24	16.8	2.4	36	1440 x (1±10%)
48 ³⁾	33.6	4.8	72	5760 x (1±15%)
110 ³⁾	77.0	11.0	165	25200 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).

AC type(50Hz)

Nominal Voltage VAC	Pick-up Voltage VAC max. ¹⁾	Drop-out Voltage VAC min. ¹⁾	Coil Current mA	Coil DC Resistance Ω
24	18.0	3.6	31.6	350 x (1±10%)
115	86.3	17.25	6.6	8100 x (1±15%)
230	172.5	34.5	3.2	32500 x (1±15%)

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

SAFETY APPROVAL RATINGS

UL/CUL	1 Form C	16A 250VAC at 70°C
	2 Form C	8A 250VAC at 70°C
VDE	1 Form C	16A 250VAC at 70°C
	2 Form C	8A 250VAC at 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.



HONGFA RELAY

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

2024 Rev. 1.00

ORDERING INFORMATION

Type	HF115FP /	024	-1Z	3	B	(XXX)
Coil voltage	012 to 110: 12, 24, 48, 110 VDC A24 to A230: 24, 115, 230 VAC					
Contact arrangement	1Z: 1 Form C 2Z: 2 Form C					
Version	3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A					
Contact material	B: AgNi					
Special code ²⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

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

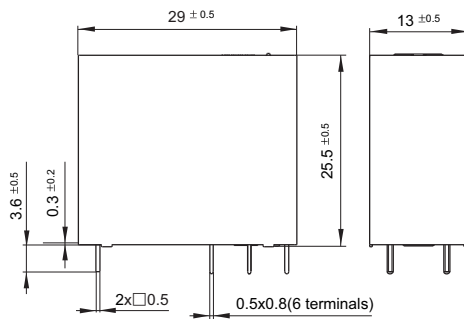
For example:(A29) represents a finished product width ≤12.8mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

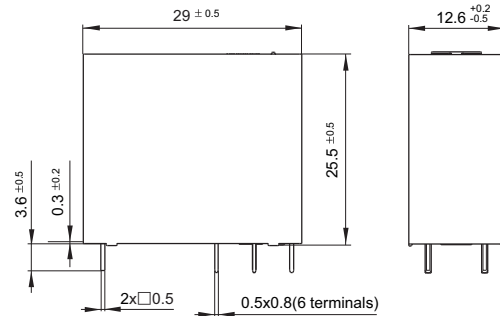
Unit: mm

Outline Dimensions

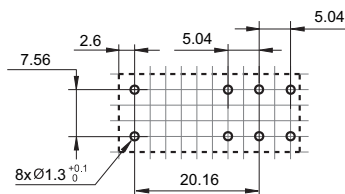
Standard type



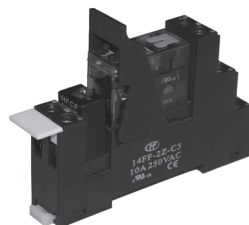
A29 type



PCB Layout (Bottom view)



DIN rail Socket



Solder Socket



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

2) The tolerance without indicating for PCB layout is always ±0.1mm.

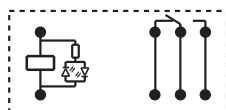
3) The width of the gridding is 2.52mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

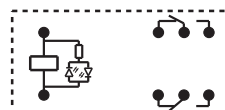
Unit: mm

Wiring Diagram (Bottom view)

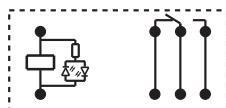
HF115FP/□□□-1Z3B



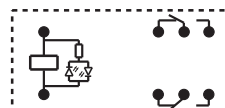
HF115FP/□□□-2Z4B



HF115FP/A□□□-1Z3B



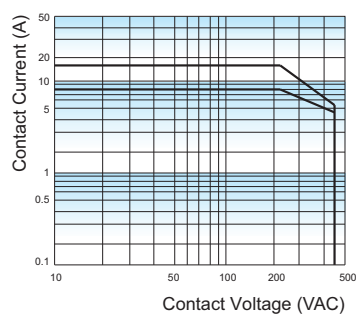
HF115FP/A□□□-2Z4B



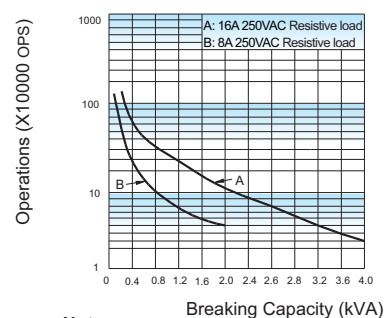
Remark: DC coil with a parallel diode is available but the coil terminal is different in positive or cathode.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



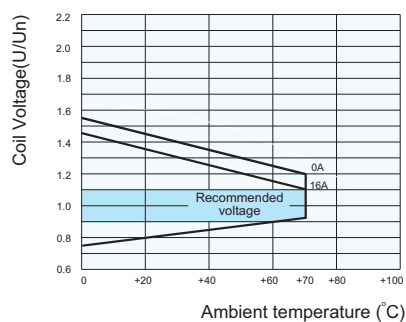
ENDURANCE CURVE



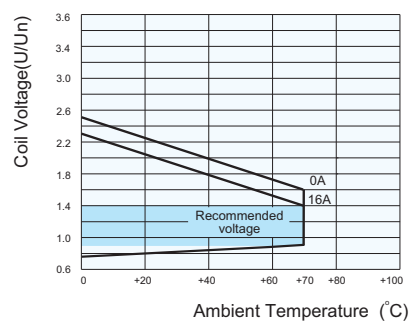
Notes:

- 1) Curve A: 1Z3B type
Curve B: 2Z4B type
- 2) Test conditions:
NO, Flux proofed, Room temp., 1s on 9s off

COIL OPERATING RANGE (AC) *



COIL OPERATING RANGE (DC) *



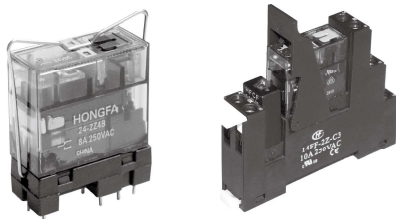
Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life. An energising voltage over the above range may damage the insulation of relay coil.

Relay Sockets

CE

C_{RU} US

File No.: E253370



Features

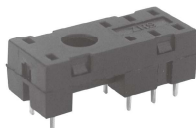
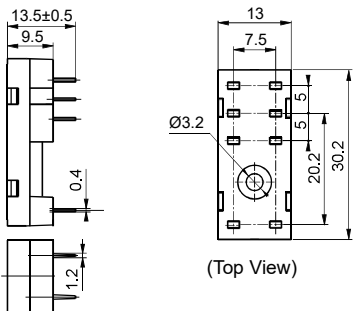
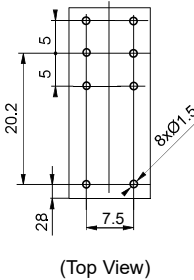

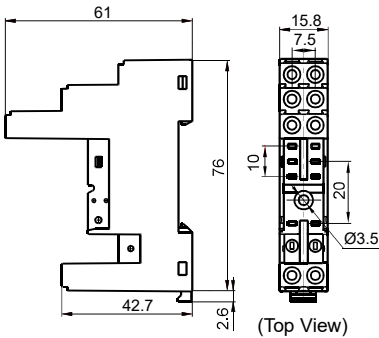
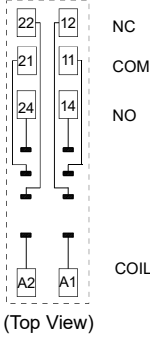
- The insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length	Unit weight
14FF-2Z-A1	250VAC	10A	-40°C ~ 70°C	5000VAC	—	*	Approx.3g
14FF-2Z-C2	250VAC	10A	-40°C ~ 70°C	5000VAC	0.6N·m	7mm	Approx.39g
14FF-2Z-C3	250VAC	10A	-40°C ~ 70°C	5000VAC	0.6N·m	7mm	Approx.45g
14FF-2Z-C4	250VAC	10A	-40°C ~ 70°C	5000VAC	—	9mm	Approx.42g
14FF-2Z-C10	300VAC/DC	10A	-40°C ~ 70°C	5000VAC	—	10mm	Approx.36g
14FF-2Z-C10/P	300VAC/DC	10A	-40°C ~ 70°C	5000VAC	—	10mm	Approx.37g

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT


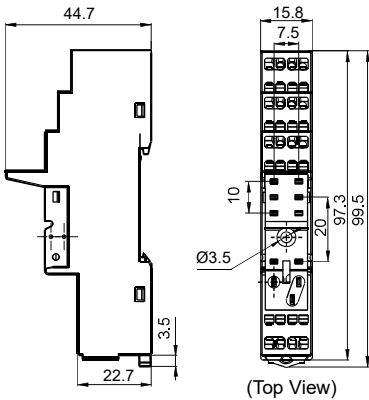
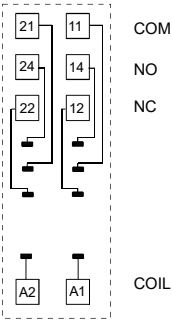

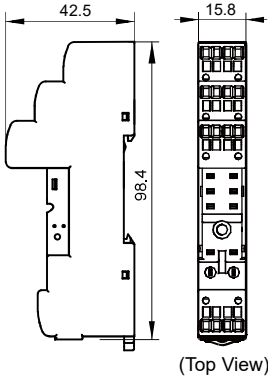
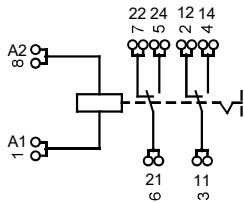

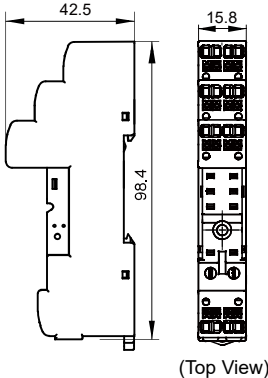
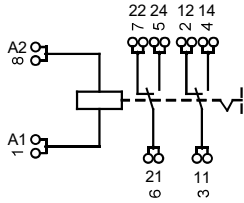
Unit: mm

Socket	Outline Dimensions	Wiring Diagram/PCB Layout	Components Available
14FF-2Z-A1  PCB terminal, PCB or Screw mounting When it used with HF115F、 HF115F-A、HF115FP and relay type 3, two pole of socket load must connect in parallel.	 (Top View)	 (Top View)	Metallic retainer 14FF-H1 Remarks:the dielectric strength can reach 1500VAC that sockets mounted 14FF-H1
14FF-2Z-C3  Screw Terminal, DIN rail or Screw mounting, With finger protection device When it used with HF115F, HF115F-A, HF115FP and relay type 3, "21"- "11", "24"- "14", "22"- "12" of socket must connect in parallel.	 (Top View)	 (Top View)	Retainer: 14FF-H4 Marker: 14FF-M1 Plug-in module: HFAA~HFHU*

Notes: If need accesscry,please order with type.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Components Available
14FF-2Z-C4  <p>Spring-loaded terminal DIN rail mounting With finger protection device</p> <p>When it used with HF115F、 HF115F-A、HF115FP and relay type 3, "21"- "11", "24"- "14", "22"- "12" of socket must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>Retainer: 14FF-H4</p> <p>Marker: 14FF-M1</p> <p>Plug-in module: HFAA~HFHU*</p>
14FF-2Z-C10 	 <p>(Top View)</p>		<p>Retainer: 14FF-H6 14FF-H8</p> <p>Marker: 14FF-M1</p> <p>Plug-in module: HFAA~HFHU</p>
14FF-2Z-C10/P 	 <p>(Top View)</p>		<p>Retainer: 14FF-H6 14FF-H8</p> <p>Marker: 14FF-M1</p> <p>Plug-in module: HFAA~HFHU</p>

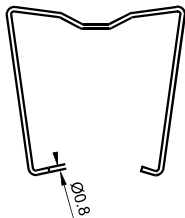
Notes: If need accesscry,please order with type.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

Unit: mm

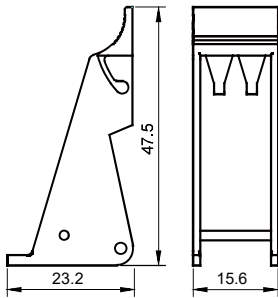
Retainer

14FF-H3 (metallic retainer)



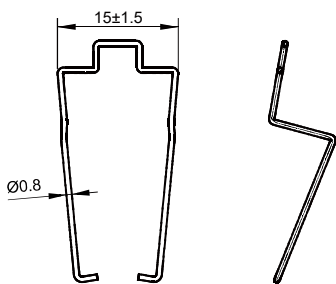
Applicable for HF115FP, HF140FF-G etc..

14FF-H6 (Plastic retainer)



Applicable for HF115FP, HF140FF-G etc.

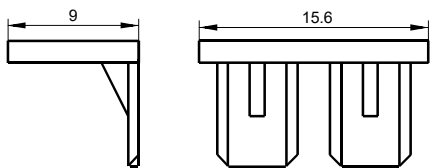
14FF-H8 (metallic retainer)



Applicable for HF115FP, HF14FW, HF140FF-G etc.

Marker

14FF-M1



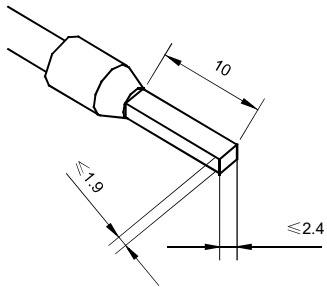
Precautions For Use

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.

Applicable conductor cross section

solid wire	1×0.5/0.75/1.0/1.5/2.5 mm ²	
	2×0.5/0.75/1.0/1.5 mm ²	
Multi-stranded wire	Multi-stranded wire without standard sleeve	1×0.5/0.75/1.0/1.5/2.5 mm ²
		2×0.5/0.75/1.0/1.5 mm ²
	Multi-stranded wire with standard sleeve	1×0.5/0.75/1.0/1.5 mm ²
		2×0.5/0.75/1.0 mm ²



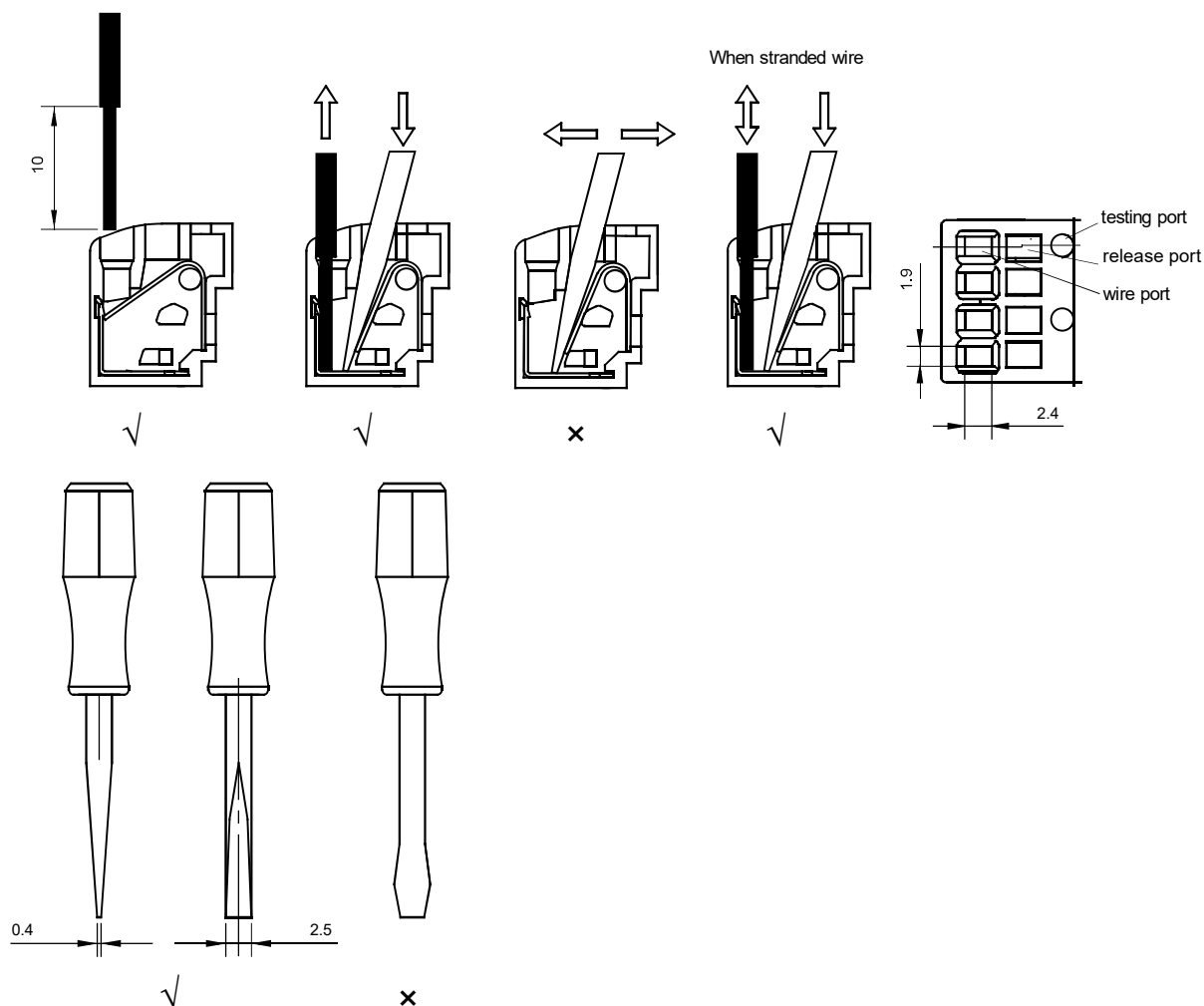
Precautions For Use

Regarding push in socket

- The screwdriver insertion hole must not be wired.
- When inserting the screwdriver into the hole, please insert it at an angle.
- Do not twist or wiggle the screwdriver when it is in the hole, as this may cause damage the socket.
- Do not forcibly bend or pull on the wire. Otherwise it may result broken wire.
- Do not insert more than one wires into one wiring hole.
- To prevent smoke and fire from the wiring material, check the power supply rating and that the wire sleeves used are in accordance with DIN 46228-4.

The conductors used comply with GB/T 5023.3-2008 (IEC 60227-3) standard.

Recommended Wires	Film peel (when bar terminals are not used)
0.5~2.5mm ² /AWG20~14	≥10mm



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 > 50mm, tolerance should be ±1mm; 20mm < outline dimension ≤ 50mm, tolerance should be ±0.5mm; 5mm < outline dimension ≤ 20mm, tolerance should be ±0.4mm, outline dimension ≤ 5mm, tolerance should be ±0.3mm;
5. DIN rail mounting: recommend to use standard rail 35×7.5×1mm, 35×15×1mm. When installed vertically, the coil terminal at the bottom please .

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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HF118F

MINIATURE HIGH POWER RELAY



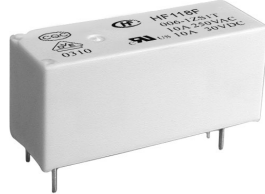
File No.: E134517



File No.: 40010480



File No.: CQC09002035071
CQC18002206322



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Low height: 12.5 mm
- Creepage distance >8mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Sockets available
- Plastic sealed and flux proofed types available
- Through-Hole Reflow Version available

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact material	See ordering info.
Contact resistance ¹⁾	100mΩ max.(at 1A 6VDC)
Contact rating (Res. load)	10A 250VAC/30VDC
Max. switching voltage	440VAC / 300VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1H type: 1 x 10 ⁵ OPS (8A 250VAC, Resistive load, AgNi, at 85°C, 5s on 5s off)

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. vot.)		10ms max.
Release time (at nomi. vot.)		5ms max.
Temperature rise (at nomi. Volt.)		55K max.
Shock resistance *	Functional	NC: 49m/s ² NO: 98m/s ²
	Destructive	980m/s ²
Vibration resistance *	NC (no coil voltage)	10Hz to 55Hz 0.8mm DA
	NO	10Hz to 55Hz 1.65mm DA
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Termination		PCB
Unit weight		Approx. 8g
Construction		Plastic sealed, Flux proofed

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

2) * Index is not in relay length direction.

COIL

Coil power	Approx. 220mW to 290mW
------------	------------------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	3.50	0.5	7.5	113 x (1±10%)
6	4.20	0.6	9.0	164 x (1±10%)
9	6.30	0.9	13.5	360 x (1±10%)
12	8.40	1.2	18.0	620 x (1±10%)
18	12.60	1.8	27.0	1295 x (1±10%)
24	16.80	2.4	36.0	2350 x (1±15%)
48 ³⁾	33.60	4.8	72.0	8000 x (1±15%)
60 ³⁾	42.00	6.0	90.0	12500 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).



HONGFA RELAY

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

2023 Rev. 2.00

SAFETY APPROVAL RATINGS

UL/CUL (AgNi, AgSnO ₂)	version 1,3,5,6	10A 250VAC at 85°C 10A 30VDC at 85°C B300 at 85°C R300 at 85°C 1/2HP 240VAC at 85°C AgSnO ₂ : 1/3HP 120VAC at 85°C
VDE (AgNi, AgNi+Au)	1H (;S) (1;3;5) (-;G) 1D (;S) (1;3;6) (-;G) 1Z (-;S) (1;3) (-;G)	10A 250VAC at 85°C 8A 250VAC at 85°C 10A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1H (-;S) (1;3;5), T.(-;G) 1D (-;S) (1;3;6), T.(-;G) 1Z (-;S) (1;3), T.(-;G) 1H (-;S) (1;3;5), T.(-;G) 1Z (-;S) (1;3), T.(-;G)	10A 250VAC at 85°C 8A 250VAC at 85°C 10A 250VAC at 85°C AC-15 (Make: 30A 250VAC COS Ø=0.7 at 85°C Break: 3A 250VAC COS Ø=0.4 at 85°C) NO: AC-15 (Make: 30A 250VAC COS Ø=0.7 at 85°C Break: 3A 250VAC COS Ø=0.4 at 85°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	HF118F / 012 -1H S 5 G (XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C
Construction ^{1) 2)}	S: Plastic sealed Nil: Flux proofed
Version (See Wiring Diagram below)	1: 3.2mm 1 Form C 3: 3.2mm 1 Form C, double pinning 5: 5mm, 1 Form A 6: 5mm, 1 Form B
Contact material ³⁾	T: AgSnO ₂ G: AgNi+Au plated TG: AgSnO ₂ +Au plated Nil: AgNi
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

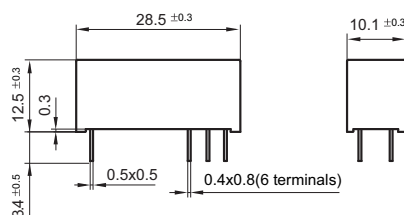
Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT); e.g.(253) stands for Reflow soldering version.
5) Standard tube packing length is 600mm. Any special requirement needed, please contact us for more details.
6) 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 PC BOARD LAYOUT

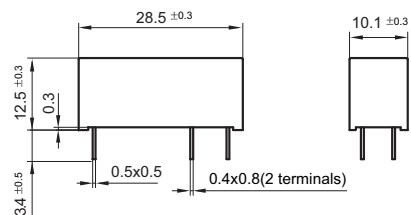
Unit: mm

Outline Dimensions

3.2mm pinning



5mm pinning



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

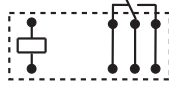
Unit: mm

Wiring Diagram (Bottom view)

1 Form C, Version 1



1 Form C, Version 3



1 Form A, Version 5

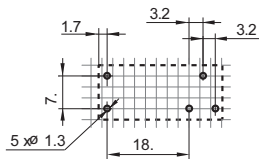


1 Form B, Version 6

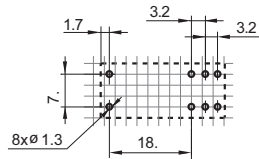


PCB Layout (Bottom view)

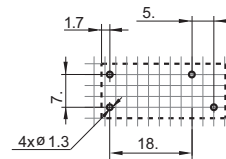
Version 1



Version 3



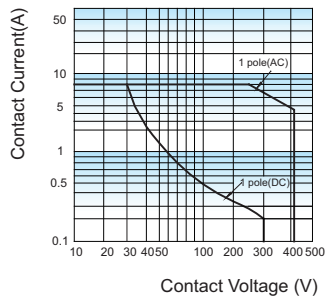
Version 5/6



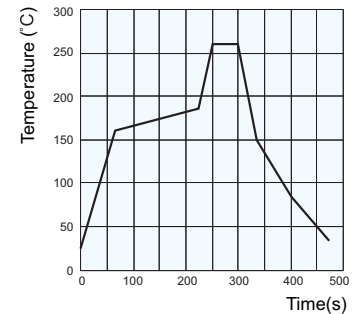
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

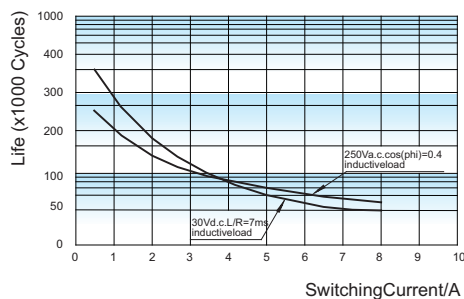
MAXIMUM SWITCHING POWER



REFLOW WELDING TEMPERATURE (Reflow soldering version)



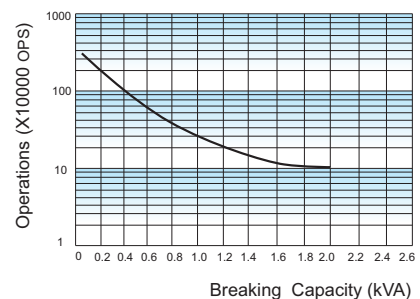
INDUCTIVE ENDURANCE CURVE



Notes:

- 1) Test conditions:
 NO, Room temp., 1s on 9s off.

ENDURANCE CURVE



Notes:

- 1) Curve: 1Z1 type
 2) Test conditions:
 NO, Resistive load, 250VAC
 Flux proofed, Room temp., 1s on 9s off.

Relay Sockets



Features


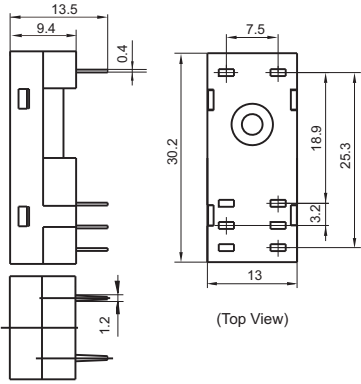
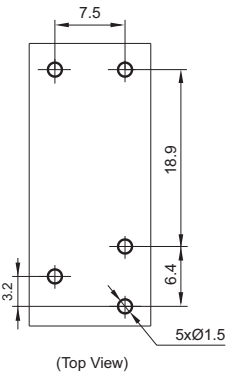

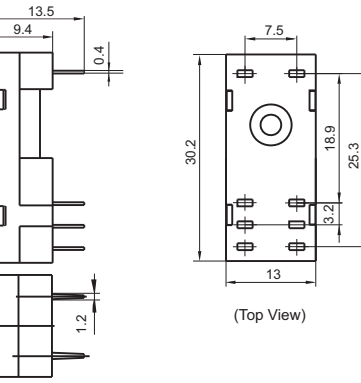
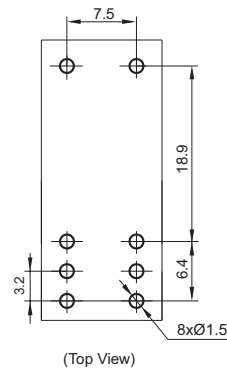
- The dielectric strength can reach 5000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: PCB and screw mounting.
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Unit weight
118F-1Z-A1-1	250VAC	10A	-40 °C to 70°C	5000VAC	Approx.3g
118F-2Z-A1	250VAC	10A	-40 °C to 70°C	5000VAC	Approx.3g

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

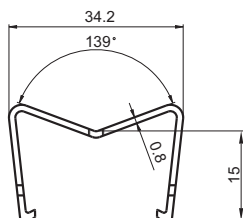
Socket	Outline Dimensions	Wiring Diagram	Components Available
<p>118F-1Z-A1-1</p>  <p>PCB terminal, PCB or Screw mounting Applicable for HF118F/XXX-1XX1XX</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>Metallic retainer 118F-H1</p>
<p>118F-2Z-A1</p>  <p>PCB terminal, PCB or Screw mounting Applicable for HF118F/XXX-1XX3XX</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>Metallic retainer 118F-H1</p>

DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Retainer

118F-H1 (Metallic retainer)



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. As for 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 HF118F 1 poles 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 $\pm 0.3\text{mm}$.

Disclaimer

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HF118FK

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40010480



File NO.:CQC09002035071
CQC18002206322



Features

- 8A switching capability
- 5kV dielectric strength (between coil and contacts)
- Low height: 12.5 mm
- Creepage distance >8mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Flux proofed types
- Through-Hole Reflow Version available

CONTACT DATA

Contact arrangement	1A,1C
Contact material	See "ORDERING INFORMATION"
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact rating (Res. load)	8A 250VAC/30VDC
Max. switching voltage	440VAC / 250VDC
Max. switching current	8A
Max. switching power	2000VA / 240W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	H type:1 x 10 ⁶ ops (8A 250VAC, Resistive load, at 85°C ,5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. vot.)		10ms max.
Release time (at nomi. vot.)		5ms max.
Temperature rise (at nomi. Volt.)		55K max.
Shock resistance *	Functional	NC: 49m/s² NO: 98m/s²
	Destructive	980m/s²
Vibration resistance *	NC (no coil voltage)	10Hz to 55Hz 0.8mm DA
	NO	10Hz to 55Hz 1.65mm DA
Ambient temperature		-40 to 85°C
Humidity		5% to 85% RH
Termination		PCB
Unit weight		Approx. 8g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not in relay length direction.

COIL

Coil power	Approx. 220mW to 290mW
------------	------------------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC ¹⁾ max.	Drop-out Voltage VDC ¹⁾ min.	Max Allowable Voltage VDC ²⁾	Coil Resistance Ω
5	3.50	0.5	7.5	113 x (1±10%)
6	4.20	0.6	9.0	164 x (1±10%)
9	6.30	0.9	13.5	360 x (1±10%)
12	8.40	1.2	18.0	620 x (1±10%)
18	12.60	1.8	27.0	1295 x (1±10%)
24	16.80	2.4	36.0	2350 x (1±15%)
48 ³⁾	33.60	4.8	72.0	8000 x (1±15%)
60 ³⁾	42.00	6.0	90.0	12500 x (1±15%)

Notes: 1) The data show above are initial values.
2) Maximum voltage refers to the maximum voltage Which relay coil could endurance 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).



HONGFA RELAY

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

2023 Rev. 2.00

SAFETY APPROVAL RATINGS

UL/CUL (AgNi,AgSnO ₂)	version1,5	NO: 8A 250VAC at 85°C NO/NC: 8A 250VAC at 85°C B300 AgNi: R300
VDE (AgSnO ₂ ,AgSnO ₂ +Au)	H5T.(-;G)	8A 250VAC at 85°C
	Z1T.(-;G)	8A 250VAC at 85°C
	H5T.(-;G)	AC-15(Make: 15A 250VAC COSØ = 0.7 at 85°C Break: 1.5A 250VAC COSØ = 0.4 at 85°C)
VDE (AgNi,AgNi+Au)	H53.(-;G)	8A 250VAC at 85°C
	Z13.(-;G)	8A 250VAC at 85°C
	H53.(-;G)	AC-15(Make: 30A 250VAC COSØ = 0.7 at 85°C Break: 3A 250VAC COSØ = 0.4 at 85°C)
	Z13.(-;G)	NO: AC-15(Make: 30A 250VAC COSØ = 0.7 at 85°C Break: 3A 250VAC COSØ = 0.4 at 85°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

	HF118FK /	12	-Z	1	T	G	(XXX)
Type							
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC						
Contact arrangement	H: 1 Form A Z: 1 Form C						
Version (See Wiring Diagram below)	1: 3.2mm 1 pole 8A, only 1 Form C 5: 5mm 8A, only 1 Form A						
Contact material	T: AgSnO ₂ 3:AgNi						
Contact plating	G: Gold plated Nil: Standard						
Customer special code	XXX:Customer special requirement Nil: Standard						

Notes: 1) Flux proof relays cannot be used in polluted environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Water cleaning or surface process is not allowed in assembling relays on PCB.

3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

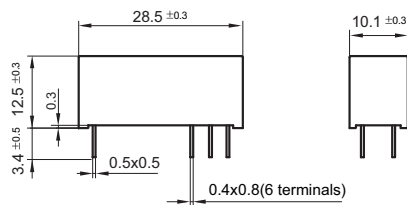
4) The customer special requirement express as special code evaluating by Hongfa. E.g.(335) standards for product in accordance to IEC 60335-1(GWT); e.g.(253) means Through-Hole Reflow Version(valid for Flux proofed only).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

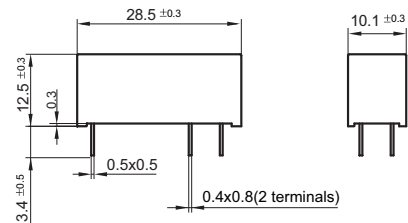
Unit: mm

Outline Dimensions

3.2mm pinning



5mm pinning



Wiring Diagram (Bottom view)

Version 1



Version 5

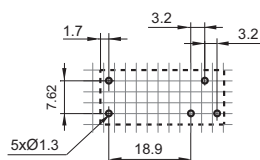


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

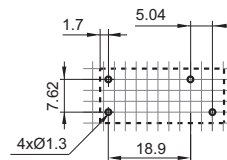
Unit: mm

PCB Layout (Bottom view)

Version 1



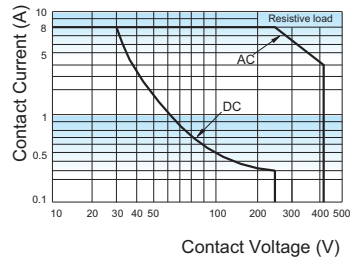
Version 5



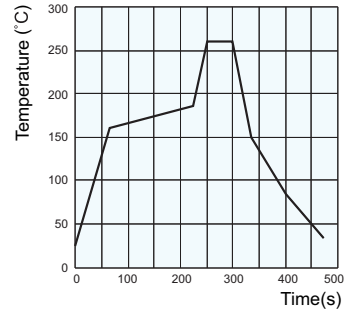
- Remark: 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.
- 2) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, 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 $\pm 0.4\text{mm}$.
- 3) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
- 4) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

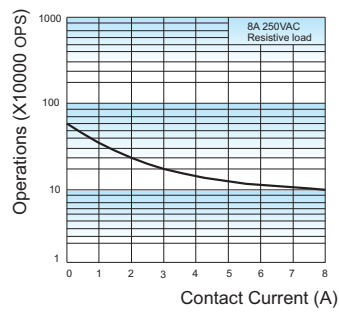
MAXIMUM SWITCHING POWER



REFLOW WELDING TEMPERATURE
(Reflow soldering version)



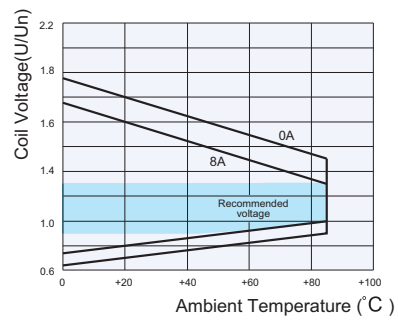
ENDURANCE CURVE



Test conditions:

NO, Resistive load, 250VAC
Flux proofed, 85°C, 5s on 5s off.

COIL OPERATING RANGE (DC) *



Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.

An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

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HF14FF

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R50140759



File No.:CQC10002046169



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available

RoHS compliant

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance ¹⁾	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating	Resistive: 10A 277VAC/30VDC TV-5 120VAC
Max. switching voltage	277VAC / 30VDC
Max. switching current	10A
Max. switching power	2770VA / 300W
Mechanical endurance	5 x 10 ⁶ OPS
Electrical endurance	1 x 10 ⁵ OPS (10A 277VAC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (10A 30VDC, Resistive load, Room temp., 1s on 9s off)

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

2) For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB
Unit weight		Approx. 18g
Construction		Plastic sealed, Flux proofed

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

2) Please find coil temperature curve in the characteristic curves below.

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



HONGFA RELAY

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

2024 Rev. 1.00

COIL

Coil power	Approx. 530mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ²⁾	Drop-out Voltage VDC min. ²⁾	Max. Voltage VDC ³⁾	Coil Resistance Ω
3	2.25	0.3	4.2	17 x (1±10%)
5	3.75	0.5	7.0	47 x (1±10%)
6	4.50	0.6	8.4	68 x (1±10%)
9	6.75	0.9	12.6	160 x (1±10%)
12	9.00	1.2	16.8	275 x (1±10%)
18	13.5	1.8	25.2	620 x (1±10%)
24	18.0	2.4	33.6	1100 x (1±10%)
48	36.0	4.8	67.2	4170 x (1±10%)
60	45.0	6.0	84.0	7000 x (1±10%)

Notes: 1) When requiring pick-up voltage < 75% of nominal voltage, special order allowed.

2) The data shown above are initial values.

3) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

4) 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 coil.

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂ AgNi	10A 277VAC General purpose 10A 30VDC Resistive 1/3HP 250VAC 1/4HP 125VAC TV-5 120VAC
TÜV	AgSnO ₂	10A 250VAC 10A 30VDC
CQC	AgSnO ₂ AgNi	10A 250VAC 10A 30VDC

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

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

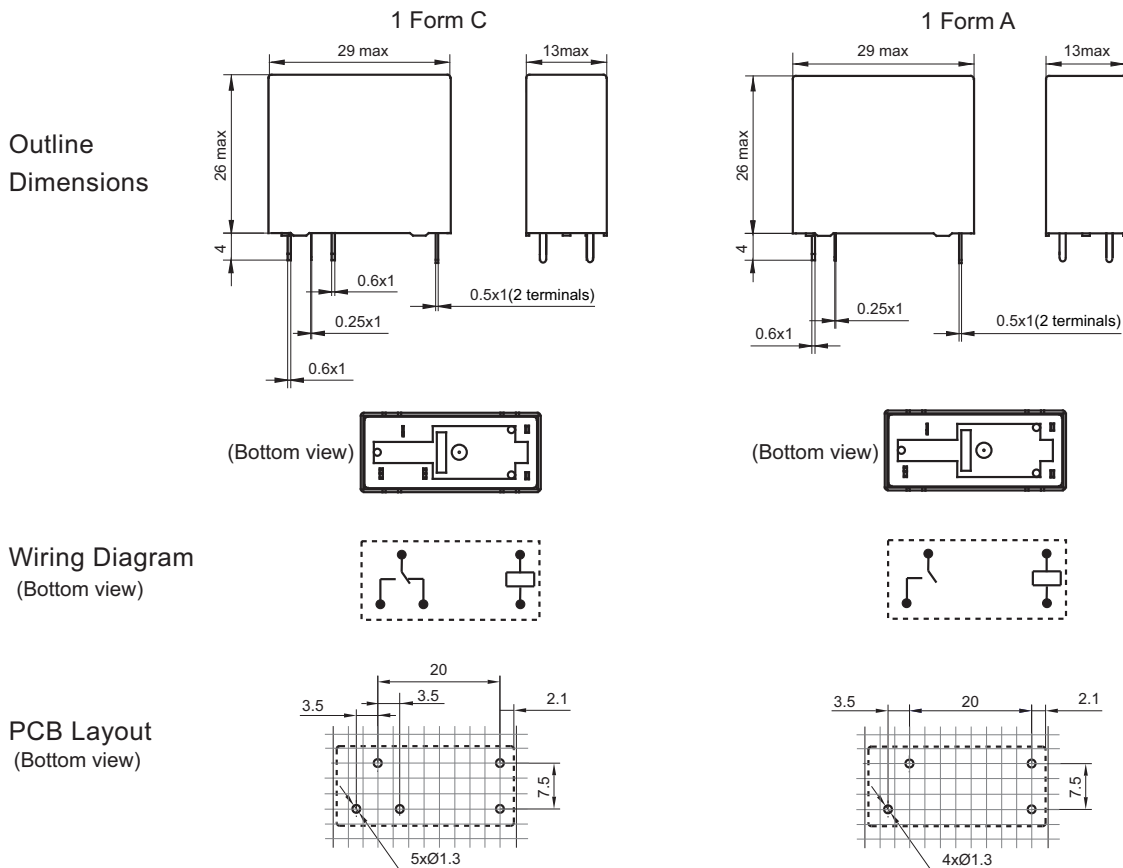
ORDERING INFORMATION

Type	HF14FF /	012	-1H	S	T	F	(XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48, 60VDC						
Contact arrangement	1H: 1 Form A 1Z: 1 Form C						
Construction ¹⁾	S: Plastic sealed(No smoky-gray cover) Nil: Flux proofed						
Contact material	T: AgSnO ₂ 3: AgNi						
Insulation standard	F: Class F Nil: Class B						
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard						

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The standard type is made of black cover. If smoke cover is required, please add a special suffix (611) when ordering. Please take note that smoke cover is only available for flux proofed type.
- 4) The customer special requirement express as special code after evaluating by Hongfa.
- 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 PC BOARD LAYOUT

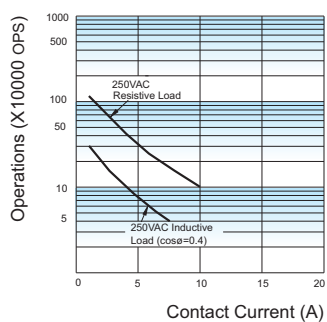
Unit: mm



- 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 and pin size is always $\pm 0.1\text{mm}$.
- 3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

ENDURANCE CURVE

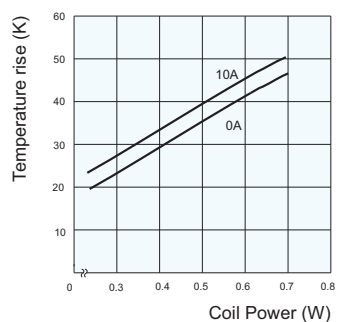


Test conditions:

NO, Resistive load,

Flux proofed, Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

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HF14FW

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40023508



File No.:CQC10002046170



Features

- 20A switching capability
- 4kV dielectric strength (between coil and contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- 1 Form A and 1 Form C configurations
- Sockets available
- Plastic sealed and flux proofed types available

RoHS compliant

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance ²⁾	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating	Resistive: 16A 277VAC/24VDC 1HP 240VAC TV-8 125VAC (NO contact)
Max. switching voltage	277VAC / 30VDC
Max. switching current	20A
Max. switching power	5540VA / 480W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (NO or NC, 16A 277VAC, Resistive load, Room temp., 1s on 9s off) 5 x 10 ⁴ OPS (NO or NC, 16A 24VDC, Resistive load, Room temp., 1s on 9s off)

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

2) For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at rated. volt.)		15ms max.
Release time (at rated. volt.)		5ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 18.5g
Construction		Plastic sealed, Flux proofed

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

2) Please find coil temperature curve in the characteristic curves below.

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

COIL

Coil power	Standard: Approx.720mW Sensitive: Approx.530mW
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COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC ³⁾ max. ³⁾	Drop-out Voltage VDC ³⁾ min. ³⁾	Max. Voltage VDC ⁴⁾	Coil Resistance Ω
5	3.6	0.5	5.5	36 x (1±10%)
6	4.3	0.6	6.6	50 x (1±10%)
9	6.5	0.9	9.9	115 x (1±10%)
12	8.6	1.2	13.2	200 x (1±10%)
18	13.0	1.8	19.8	460 x (1±10%)
24	17.3	2.4	26.4	820 x (1±10%)
48	34.6	4.8	52.8	3300 x (1±10%)
60	43.2	6.0	66.0	5100 x (1±10%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC ³⁾ max. ³⁾	Drop-out Voltage VDC ³⁾ min. ³⁾	Max. Voltage VDC ⁴⁾	Coil Resistance Ω
5	3.60	0.5	7.0	47 x (1±10%)
6	4.30	0.6	8.4	68 x (1±10%)
9	6.50	0.9	12.6	160 x (1±10%)
12	8.60	1.2	16.8	275 x (1±10%)
18	13.0	1.8	25.2	620 x (1±10%)
24	17.3	2.4	33.6	1100 x (1±10%)
48	34.6	4.8	67.2	4170 x (1±10%)
60	43.2	6.0	84.0	7000 x (1±10%)

Notes: 1) When requiring pick-up voltage < 72% of nominal voltage, special order allowed.

2) Suggesting to use the sensitive type.

3) The data shown above are initial values.

4) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

5) 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 coil.



HONGFA RELAY

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

2024 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	Standard, Sensitive	AgSnO ₂	20A/16A/12A 277VAC Resistive 1HP (8 FLA) 240VAC TV-8 125VAC 16A 240VAC General Use 20A/16A/12A 24VDC 10FLA 60LRA 250VAC
	(136)	AgSnO ₂	20A 125VAC Resistive 20A 277VAC/250VAC/125VAC General Use 16A 277VAC/250VAC/125VAC Resistive 20A 30VDC Resistive 1/2HP 250VAC/125VAC TV-10 125VAC 10FLA 60LRA 250VAC
VDE (Coil power is 530mW)	AgSnO ₂	1 Form A	20A 250VAC at 70°C 16A 30VDC at 70°C
		1 Form C	16A 250VAC at 70°C 16A 30VDC at 70°C NO:20A 250VAC at 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

	HF14FW /		012	-H	S	P	T	F	(XXX)
Type									
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC								
Contact arrangement	H: 1Form A		Z: 1 Form C						
Construction ¹⁾	S: Plastic sealed(No smoky-gray or transparent cover) Nil: Flux proofed								
Coil power	P: Standard		Nil: Sensitive						
Contact material	T: AgSnO ₂								
Insulation standard	F: Class F		Nil: Class B						
Special code ⁴⁾	XXX: Customer special requirement		Nil: Standard						

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

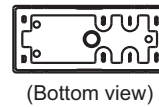
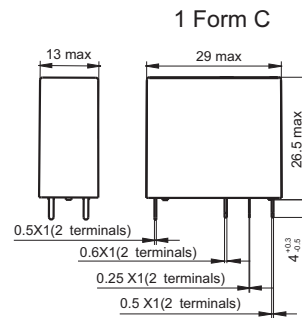
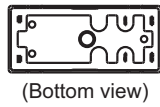
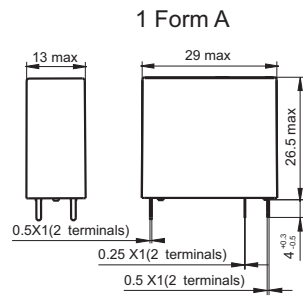
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The standard type is made of black cover. If smoky-gray or transparent cover is required, please add a special suffix (611) when ordering. Please take note that smoky-gray or transparent cover is only available for flux proofed.

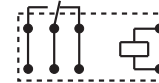
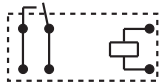
4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

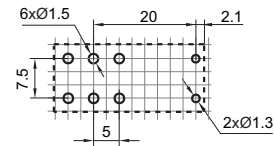
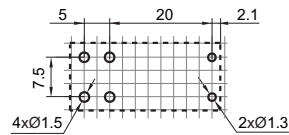
Outline Dimensions



Wiring Diagram (Bottom view)



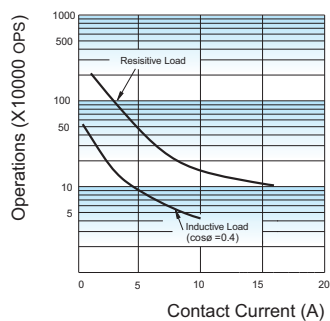
PCB Layout (Bottom view)



- 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 $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

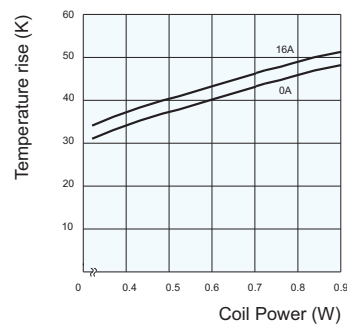
ENDURANCE CURVE



Test conditions:

No contact, Resistive load,
 Flux proofed, Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



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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HF140FF MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC10002046173



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Standard: Creepage distance >8mm
- 2.0mm contact gap available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available

RoHS compliant

CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance ¹⁾	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgNi, AgCdO
Contact rating (Res. load)	10A 250VAC 8A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 240W
Mechanical endurance	Standard: 1 x 10 ⁷ OPS W type(1.5mm): 5 x 10 ⁵ OPS W type(2.0mm): 3 x 10 ⁵ OPS
Electrical endurance	Standard type:1x10 ⁵ OPS (10A 250VAC NO or NC,Resistive load, Room temp.,1s on 9s off) 1.5 Gap type:NO 3x10 ⁴ OPS,NC 1x10 ⁴ OPS (10A 250VACResistive load, Room temp.,1s on 9s off) 2.0 Gap type:NO 3x10 ⁴ OPS, (10A 250VAC,Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (8A 30VDC,NO or NC, Resistive load,Room temp.,1s on 9s off)

Notes: 1) The data shown above are initial values.
2) For plastic sealed type, the venting-hole should be excised in electrical endurance test.

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC ²⁾	Coil Resistance Ω
3	2.25	0.3	3.9	17 x (1±10%)
5	3.75	0.5	6.5	47 x (1±10%)
6	4.50	0.6	7.8	68 x (1±10%)
9	5.75	0.9	11.7	160 x (1±10%)
12	9.00	1.2	15.6	275 x (1±10%)
18	13.50	1.8	23.4	620 x (1±10%)
24	18.00	2.4	31.2	1100 x (1±10%)
48	36.00	4.8	62.4	4170 x (1±10%)
60	45.00	6.0	78.0	7000 x (1±10%)



HONGFA RELAY

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

2024 Rev. 1.00

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between contacts sets	3000VAC 1min
	Between open contacts	Standard:1000VAC 1min W type(1.5mm):2000VAC 1min W type(2.0mm):2500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2/50 μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mmDA
Termination		PCB
Unit weight		Approx. 18g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Standard: Approx. 530mW W type(1.5mm): Approx. 800mW W type(2.0mm): Approx. 1.4W
------------	--

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.

COIL DATA

at 23°C

W Type (1.5mm)

Nominal Voltage VDC	Pick-up Voltage VDC ²⁾ max.	Drop-out Voltage VDC ²⁾ min.	Max. Voltage VDC ³⁾	Coil Resistance Ω
3	2.25	0.3	3.3	11.3 x (1±10%)
5	3.75	0.5	5.5	31 x (1±10%)
6	4.50	0.6	6.6	45 x (1±10%)
9	6.75	0.9	9.9	101 x (1±10%)
12	9.00	1.2	13.2	180 x (1±10%)
18	13.5	1.8	19.8	405 x (1±10%)
24	18.0	2.4	26.4	720 x (1±10%)
48	36.0	4.8	52.8	2880 x (1±10%)
60	45.0	6.0	66.0	4500 x (1±10%)

W Type (2.0mm)

Nominal Voltage VDC	Pick-up Voltage VDC ²⁾ max.	Drop-out Voltage VDC ²⁾ min.	Max. Voltage VDC ³⁾	Coil Resistance Ω
5	3.75	0.5	5.5	18 x (1±10%)
6	4.50	0.6	6.6	26 x (1±10%)
9	6.75	0.9	9.9	58 x (1±10%)
12	9.00	1.2	13.2	102 x (1±10%)
24	18.0	2.4	26.4	410 x (1±10%)
48	36.0	4.8	52.8	1650 x (1±10%)

Notes: 1) When require pick-up voltage < 75% of nominal voltage, special order allowed.

2) The data shown above are initial values.

3) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

4) In order to meet the stated product performance, please apply rated voltage to coil.

5) For the CO version whose contact gap is 1.5 mm, the operation voltage $\leq 85\%$ of rated voltage, the coil resistance tolerance is (1±15%).

SAFETY APPROVAL RATINGS

UL/CUL	Standard	AgNi	10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C	
		AgSnO ₂	2 Form A	10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
			2 Form C	10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
	W type	AgSnO ₂	2 Form A	12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
TÜV		AgNi	2 Form A	12A 250VAC
		AgSnO ₂	2 Form C	10A 250VAC
			2 Form A	12A 250VAC
VDE	W type	AgSnO ₂	2HT 2ZT	10A 250VAC
CQC		AgSnO ₂	2HT 2ZT	12A 250VAC
		AgNi	2H3 2Z3	

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

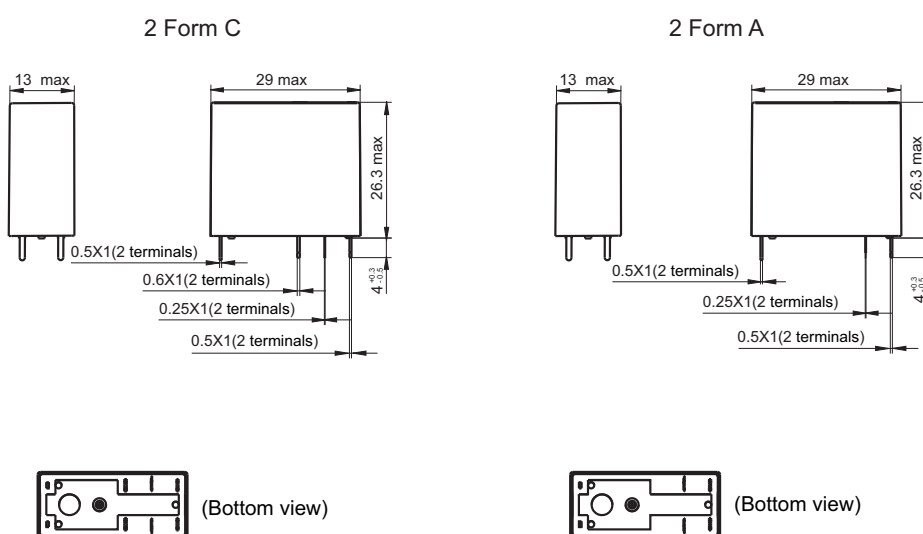
Type	HF140FF/	012	-2H	S	W	T	G	F	(XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48, 60VDC								
Contact arrangement	2H: 2 Form A 2Z: 2 Form C								
Construction ^{1) 2)}	S: Plastic sealed (No smoky-gray cover) Nil: Flux proofed								
Contact Gap	W: Large contact gap ³⁾ Nil: Standard								
Contact material	T: AgSnO ₂ 3: AgNi								
Contact plating	G: Gold plated Nil: No gold plated								
Insulation standard	F: Class F Nil: Class F								
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard								

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) There are two specifications to W type: 1.5mm contact gap and 2.0mm contact gap. The default W type is 1.5mm. So please add the special code "(456)" when releasing order, if 2.0mm contact gap is required. (Only for 2 Form A).
- 4) The standard type is made of black cover. If smoke cover is required, please add a special suffix when ordering. Please take note that smoky-gray cover is only available for flux proofed types.
- 5) The customer special requirement express as special code after evaluating by Hongfa. e.g. (456) means contact gap can reach 2.0mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



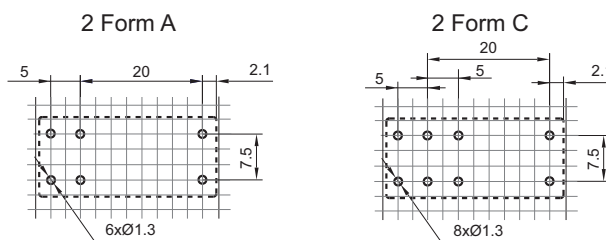
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Bottom view)



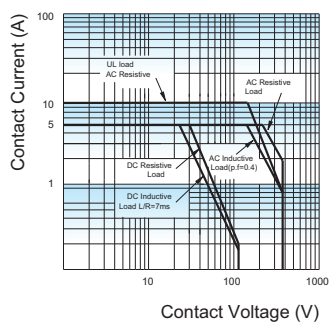
PCB Layout (Bottom view)



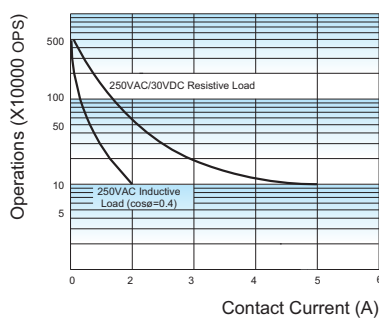
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm .

CHARACTERISTIC CURVES

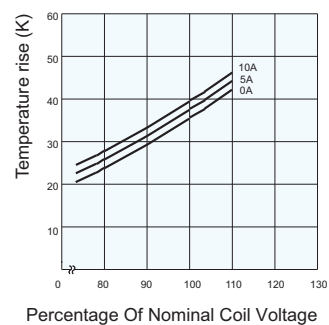
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

NO, Resistive load, Flux proofed,
 Room temp., 1s on 9s off.

Disclaimer

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HF140FF(NEW)

MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC10002046173



Features

- 12A switching capability
- 5kV dielectric strength
(between coil and contacts)
- 1.5mm/2.0mm contact gap available
- Plastic sealed and flux proofed types available
- Sockets available
- UL insulation system:Class F

RoHS compliant

CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	12A/10A 250VAC, 8A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	12A
Max. switching power	3000VA / 360W
Mechanical endurance	W(456) type: 3 x 10 ⁵ OPS W type: 5 x 10 ⁵ OPS
Electrical endurance	NO 3 x 10 ⁴ OPS, NC 1 x 10 ⁴ OPS (12A 250VAC, 1s on 9s off) 3 x 10 ⁴ ops (8A 30VDC, 1s on 9s off)

Notes: 1) The data shown above are initial values.
2) For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between contacts sets	3000VAC 1min
	Between open contacts	2500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2/50 μs)
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mmDA
Termination		PCB
Unit weight		Approx. 19g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Z type product Operate time ≤ 20ms.

SAFETY APPROVAL RATINGS

UL	12A 250VAC AC Resistive load 85°C 1/3HP 125VAC NO/NC,40°C 3/4HP 250/240VAC,NO,40°C TV-5, 125VAC,40°C
TÜV	12A 250VAC AC Resistive load 85°C
CQC	12A 250VAC AC Resistive load 85°C

Notes: Only typical loads are listed above. Other load specifications can be available upon request.

COIL

Coil power	W type(1.5mm): Approx. 0.8W W type(2.0mm): Approx. 1.4W
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HONGFA RELAY

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

2023 Rev. 1.01

COIL DATA

at 23°C

W Type (1.5mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance Ω
3	2.25	0.3	3.3	11.3 x (1±10%)
5	3.75	0.5	5.5	31 x (1±10%)
6	4.5	0.6	6.6	45 x (1±10%)
9	6.75	0.9	9.9	101 x (1±10%)
12	9	1.2	13.2	180 x (1±10%)
15	11.25	1.5	16.5	280 x (1±10%)
18	13.5	1.8	19.8	405 x (1±10%)
24	18	2.4	26.4	720 x (1±10%)
36	27	3.6	39.6	1620x (1±10%)
48	36	4.8	52.8	2880 x (1±10%)
60	45	6	66.0	4500 x (1±10%)
110	82.5	11	121.0	15100 x (1±10%)

W Type (2.0mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Ω
3	2.25	0.3	3.3	6x (1±10%)
5	3.75	0.5	5.5	18 x (1±10%)
6	4.5	0.6	6.6	26 x (1±10%)
9	6.75	0.9	9.9	58 x (1±10%)
12	9	1.2	13.2	102 x (1±10%)
15	11.25	1.5	16.5	160 x (1±10%)
18	13.5	1.8	19.8	230 x (1±10%)
24	18	2.4	26.4	410 x (1±10%)
36	27	3.6	39.6	925x (1±10%)
48	36	4.8	52.8	1650 x (1±10%)
60	45	6	66.0	2570 x (1±10%)
110	82.5	11	121.0	8068 x (1±10%)

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) In order to meet the stated product performance, please apply rated voltage to coil.

4) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

5) For the CO version whose contact gap is 1.5 mm/2.0mm, the operation voltage $\leq 85\%$ of rated voltage, the coil resistance tolerance is (1±15%).

ORDERING INFORMATION

Type	HF140FF /	012	-2H	S	W	T	G	F	(XXX)
Coil voltage	3, 5, 6, 9, 12, 15, 18, 24, 36, 48, 60, 110VDC								
Contact arrangement	2H: 2 Form A 2Z: 2 Form C								
Construction	S: Plastic sealed Nil: Flux proofed								
Contact Gap	W: Large contact gap								
Contact material	T: AgSnO ₂								
Contact plating	G: Gold plated Nil: No gold plated								
Insulation standard	F: Class F Nil: Class F								
Special code	XXX: Customer special requirement Nil: Standard								

Notes:1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).

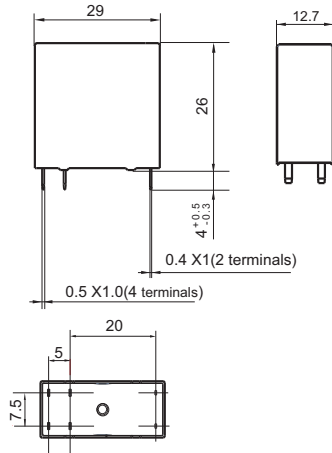
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) There are two specifications to W type: 1.5mm contact gap and 2.0mm contact gap. The default W type is 1.5mm. So please add the special code "(456)" when releasing order, if 2.0mm contact gap is required.

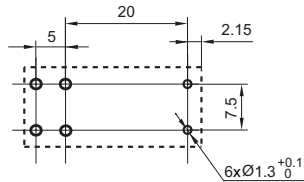
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(456) means contact gap can reach 2.0mm.

Outline Dimensions

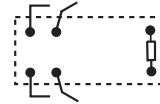
2 Form A



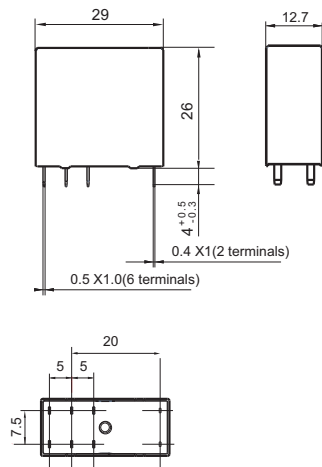
PCB Layout (Bottom view)



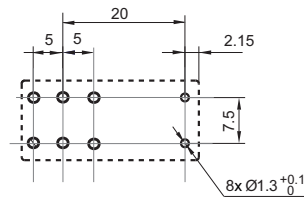
Wiring Diagram (Bottom view)



2 Form C



PCB Layout (Bottom view)



Wiring Diagram (Bottom view)



Remark: 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.

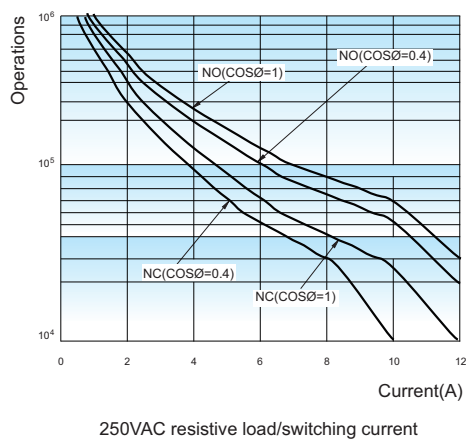
2) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

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

3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

ENDURANCE CURVE



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.

HF140FF-G

MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC10002046173



Features

- 16A switching capability
- 5kV dielectric strength
(between coil and contacts)
- 2.0mm contact gap available
- Plastic sealed and flux proofed types available
- Sockets available
- UL insulation system:Class F

RoHS compliant

CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	16A 250VAC
Max. switching voltage	250VAC
Max. switching current	16A
Max. switching power	4000VA
Mechanical endurance	W type: 1 x 10 ⁵ OPS
Electrical endurance	W type(1.5mm)-2ZWTF: NO 3 x 10 ⁴ OPS, NC 1 x 10 ⁴ OPS (Resistive load,1s on 9s off)
	W type(2.0mm)-2ZWTF(456): NO 3 x 10 ⁴ OPS, NC 6 x 10 ³ OPS (Resistive load,1s on 9s off)

Notes: 1) The data shown above are initial values.
2) For plastic sealed type, the venting-hole should be excised in electrical endurance test.
3) Large gap (W type) products: the ambient temperature of the relay is -40°C ~ 75°C; (When used at 75°C ~ 85°C, step-down maintenance is required: applying rated voltage for 200ms firstly to ensure stable connection, then reduce to and maintain 45- 65% of rated voltage.)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between contacts sets	3000VAC 1min
	Between open contacts	W type:2500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2/50 μs)
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		15ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mmDA
Termination		PCB
Unit weight		Approx. 19g
Construction		Plastic sealed, Flux proofed

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

SAFETY APPROVAL RATINGS

UL	16A 250VAC Resistive at 85°C 1/3HP 125VAC NO/NC,40°C 3/4HP 250/240VAC,NO,40°C TV-5, 125VAC,40°C
TÜV	16A 250VAC Resistive at 85°C
CQC	16A 250VAC Resistive at 85°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.

COIL

Coil power	W type(1.5mm): Approx. 800mW W type(2.0mm): Approx. 1.4W
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HONGFA RELAY

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

2024 Rev. 1.00

COIL DATA

at 23°C

W Type (1.5mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance Ω
3	≤ 2.40	≥ 0.15	3.3	11.3 x (1 \pm 10%)
5	≤ 4.00	≥ 0.25	5.5	31 x (1 \pm 10%)
6	≤ 4.80	≥ 0.30	6.6	45 x (1 \pm 10%)
9	≤ 7.20	≥ 0.45	9.9	101 x (1 \pm 10%)
12	≤ 9.60	≥ 0.60	13.2	180 x (1 \pm 10%)
15	≤ 12.0	≥ 0.75	16.5	280 x (1 \pm 10%)
18	≤ 14.4	≥ 0.90	19.8	405 x (1 \pm 10%)
24	≤ 19.2	≥ 1.20	26.4	720 x (1 \pm 10%)
36	≤ 28.8	≥ 1.80	39.6	1620x (1 \pm 10%)
48	≤ 38.4	≥ 2.40	52.8	2880 x (1 \pm 10%)
60	≤ 48.0	≥ 3.00	66.0	4500 x (1 \pm 10%)
110	≤ 88.0	≥ 5.50	121.0	15100 x (1 \pm 10%)

W Type (2.0mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance Ω
3	≤ 2.40	≥ 0.15	3.3	6x (1 \pm 10%)
5	≤ 4.00	≥ 0.25	5.5	18 x (1 \pm 10%)
6	≤ 4.80	≥ 0.30	6.6	26 x (1 \pm 10%)
9	≤ 7.20	≥ 0.45	9.9	58 x (1 \pm 10%)
12	≤ 9.60	≥ 0.60	13.2	102 x (1 \pm 10%)
15	≤ 12.0	≥ 0.75	16.5	160 x (1 \pm 10%)
18	≤ 14.4	≥ 0.90	19.8	230 x (1 \pm 10%)
24	≤ 19.2	≥ 1.20	26.4	410 x (1 \pm 10%)
36	≤ 28.8	≥ 1.80	39.6	925x (1 \pm 10%)
48	≤ 38.4	≥ 2.40	52.8	1650 x (1 \pm 10%)
60	≤ 48.0	≥ 3.00	66.0	2570 x (1 \pm 10%)
110	≤ 88.0	≥ 5.50	121.0	8068 x (1 \pm 10%)

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) In order to meet the stated product performance, please apply rated voltage to coil.

4) For the CO version whose contact gap is 1.5 mm/2.0mm, the operation voltage $\leq 85\%$ of rated voltage, the coil resistance tolerance is (1 \pm 15%).

ORDERING INFORMATION

Type	HF140FF-G/ 024 -2Z S W T G F (XXX)
Coil voltage	3,5,6,9,12,15,18,24,36,48,60,110VDC
Contact arrangement	2H: 2 Form A 2Z: 2 Form C
Construction	S: Plastic sealed Nil: Flux proofed
Contact Gap	W: Large contact gap
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated Nil: No gold plated
Insulation standard	F: Class F Nil: Class F
Special code	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

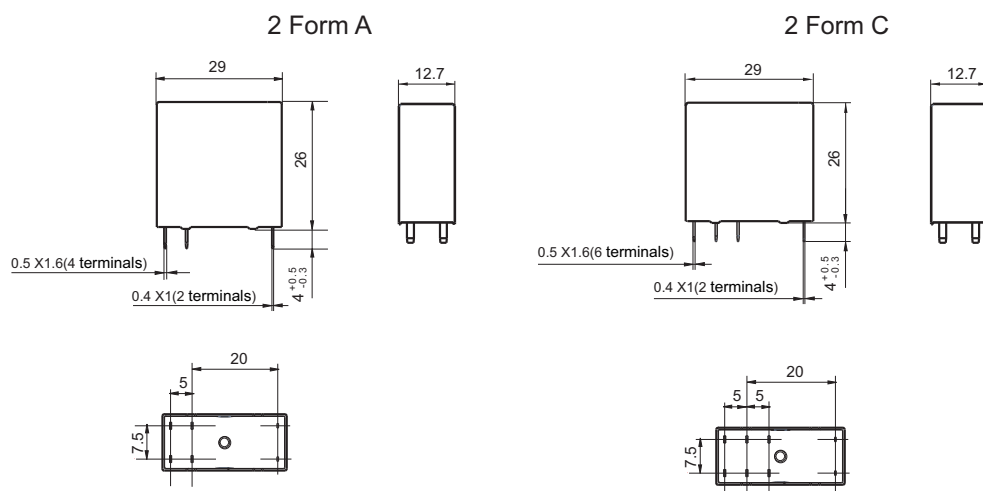
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB. SO₂, NO₂, dust, etc).

3) There are two specifications to W type: 1.5mm contact gap and 2.0mm contact gap. The default W type is 1.5mm. So please add the special code "(456)" when releasing order, if 2.0mm contact gap is required.

4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (456) means contact gap can reach 2.0mm.

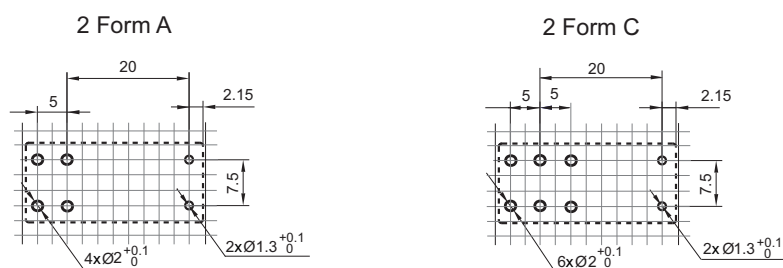
Outline Dimensions



Wiring Diagram (Bottom view)

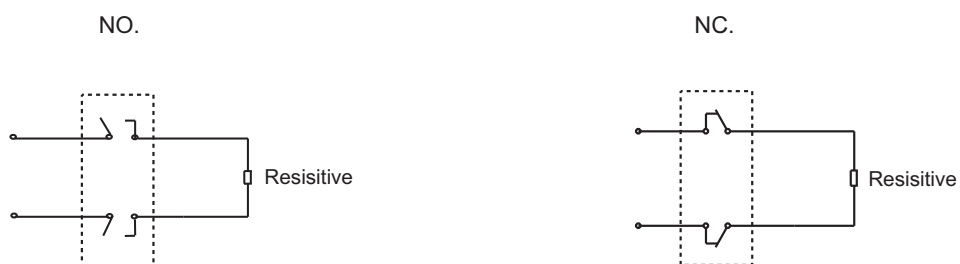


PCB Layout (Bottom view)



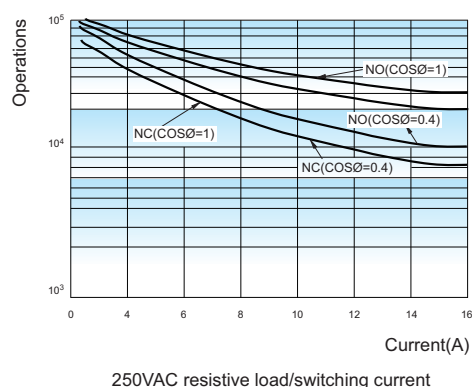
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
- 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
- 3) The width of the gridding is 2.5mm .

ELECTRICAL DURABILITY WIRING DIAGRAM



CHARACTERISTIC CURVES

ENDURANCE CURVE



Disclaimer

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HF140FF-V

MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC10002046173



Features

- 10A switching capability
- 5kV dielectric strength(between coil and contacts)
- Standard:Creepage distance >8mm
- 2 poles are connected in series to achieve DC 500V
10A DC high voltage opening and closing
- Contact Gap:3.0mm(When wired in 2-pole series)
- UL insulation system: Class F available

RoHS compliant

CONTACT DATA

Contact arrangement	2A
Contact resistance ¹⁾	100mΩ max. (1A 6VDC)
Contact material	AgSnO ₂
Contact rating	10A 500VDC
Max. switching voltage	500VDC
Max. switching current	10A
Max. switching power	5000W
Mechanical endurance	1×10 ⁶ OPS (Switching frequency18000 OPS/h)
Electrical endurance	2 poles in series: 10A 500VDC, 1×10 ⁴ OPS 2 poles in series: 1A 500VDC, 3×10 ⁴ OPS

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

2) Please refer to the performance graph for detailed electric durability information, and contact us if you have any other requirements.

CHARACTERISTICS

Insulation resistance		1000 MΩ (500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	2500VAC 1min
	Between contacts & contacts	3000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85%RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10 Hz to 55 Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 28g
Construction		dust protected type

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

COIL

Coil power	Approx. 800mW
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COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC ²⁾	Coil Resistance Ω
3	2.4	0.3	3.9	11.3×(1±10%)
5	4.0	0.5	6.5	31×(1±10%)
6	4.8	0.6	7.8	45×(1±10%)
9	7.2	0.9	11.7	101×(1±10%)
12	9.6	1.2	15.6	180×(1±10%)
15	12	1.5	19.5	280×(1±10%)
18	14.4	1.8	23.4	405×(1±10%)
24	19.2	2.4	31.2	720×(1±10%)
36	28.8	3.6	46.8	1620×(1±10%)
48	38.4	4.8	62.4	2880×(1±10%)
60	48	6.0	78	4500×(1±10%)
110	88	11	143	15125×(1±10%)

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 coil.

2) Max. voltage refers to the maximum voltage which relay coil could endure in a short period of time

SAFETY APPROVAL RATINGS

UL/CUL	10A 500VDC 1A 500VDC
TÜV	10A 500VDC 1A 500VDC
CQC	10A 500VDC 1A 500VDC

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

2) 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

2024 Rev. 1.00

ORDERING INFORMATION

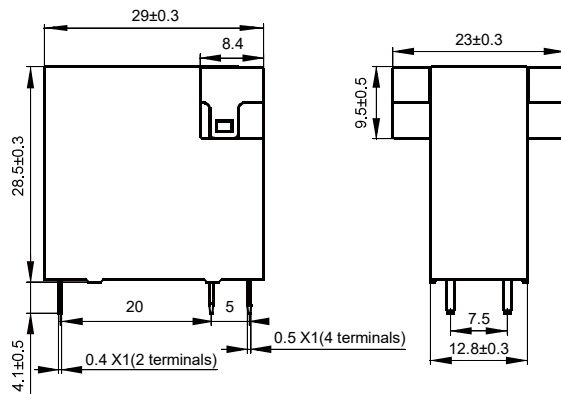
Type	HF140FF-V/	012	-2H	W	T	F	(XXX)
Coil voltage	3, 5, 6, 9, 12, 15, 18, 24, 36, 48, 60, 110 VDC						
Contact arrangement	2H: 2 Form A						
Contact Gap	W: Large contact gap						
Contact material	T: AgSnO ₂						
Insulation standard	F: Class F						
Special code ¹⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

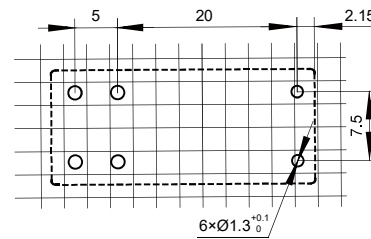
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

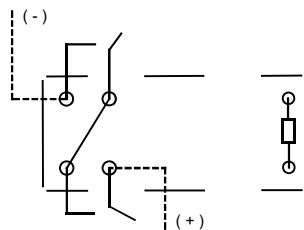
Outline Dimensions



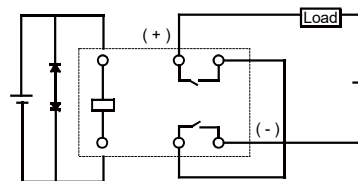
PCB Layout
(Bottom view)



Wiring Diagram
(Bottom view)



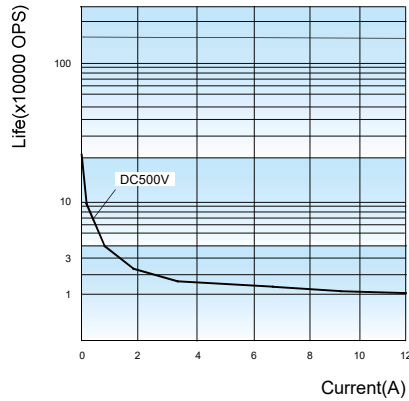
Circuit diagram



- Remark: 1) The pin dimension of the product outline drawing is the size before 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 ≤ 1 mm, tolerance should be ± 2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 3 mm; outline dimension > 5 mm, tolerance should be ± 4 mm.
- 3) The tolerance without indicating for PCB layout is always ± 1 mm.
- 4) Circuit diagram: Please note that the switch section has polarity; the diode and Zener diode are for coil surge absorption, and the coil has no polarity.

CHARACTERISTIC CURVES

ENDURANCE CURVE



PRECAUTIONS FOR USE

- About use

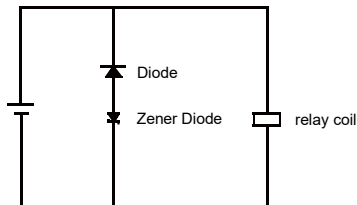
- 1) This product is an anti-solder type structure, so it cannot be cleaned as a whole.

- About installation

- 1) This product has polarity in the switch section. Please note that miswiring may result in failure to cut off.
- 2) This product is designed and manufactured on the premise of using 2-pole series wiring, so do not use it if it is only level 1.
- 3) The relay should be installed in a dry place with little dust and toxic gases. High temperature, high humidity and toxic gases may cause deterioration of performance due to condensation and corrosive substances, resulting in failure and burnout of the relay body.

- About the operation coil and diode connection

- 1) Please connect the diode and Zener diode to the relay coil (see the following figure).
- 2) Diodes are for coil surge absorption. Using only diode may affect the switching performance, so please use it in combination with Zener diode.
- 3) The coil is not polarized, so when installing the diode, please make its polarity opposite to the applied voltage to the coil.
- 4) The recommended Zener voltage of the Zener diode is 3 times the rated voltage of the coil.



Disclaimer

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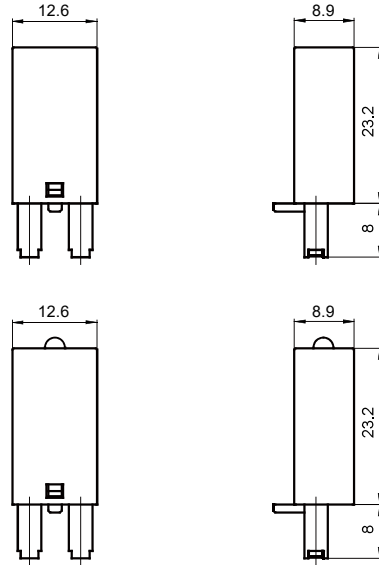
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HFAA to HFHU

PLUG-IN MODULES



OUTLINE DIMENSIONS



SPECIFICATIONS FOR MODULES

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFAA		(6 to 220)VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFAB		(6 to 220)VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFBC (R) HFBC (G)		(6 to 24)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFBD (R) HFBD (G)		(24 to 60)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFBE (R) HFBE (G)		110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage

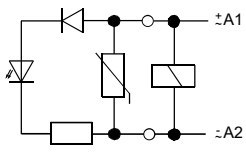
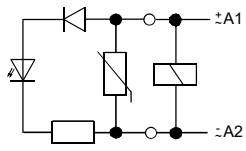
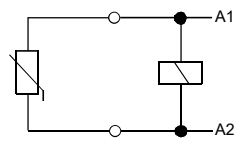
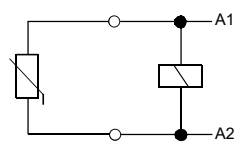
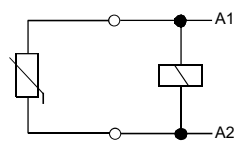
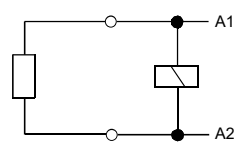


HONGFA RELAY

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

2024 Rev. 1.00

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFCH (R) HFCH (G)		(6 to 24)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFCG (R) HFCG (G)		(24 to 60)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFCH (R) HFCH (G)		110 VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFDI		(6 to 24)V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● Starting with RC to protect the coil and to absorb instant starting surge current
HFDJ		(24 to 60)V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● Starting with RC to protect the coil and to absorb instant starting surge current
HFDK		(110 to 230)V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● Starting with RC to protect the coil and to absorb instant starting surge current
HFEL (R) HFEL (G)		(6 to 24)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With LED to show the coil in voltage
HFEM (R) HFEM (G)		(24 to 60)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With LED to show the coil in voltage
HFEN (R) HFEN (G)		(110 to 230)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With LED to show the coil in voltage
HFFO (R) HFFO (G)		(6 to 24)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● Use voltage dependent resistor to protect coil ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFP (R) HFFP (G)		(24 to 60)V AC/DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● Use voltage dependent resistor to protect coil ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFFQ (R) HFFQ (G)		(110 to 230)V AC/DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● Use voltage dependent resistor to protect coil ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFGR		24VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFGS		115VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFGT		230VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFHU		(110 to 230)VAC	Resistor	<ul style="list-style-type: none"> ● With resistor to protect the coil and to spread around current and to spread around current

Notes: 1) When there is LED in the module, please indicate (R) or (G) to show the color of the light, for example HFBC(R) or HFBC (G). (R) means red light while (G) means green light.

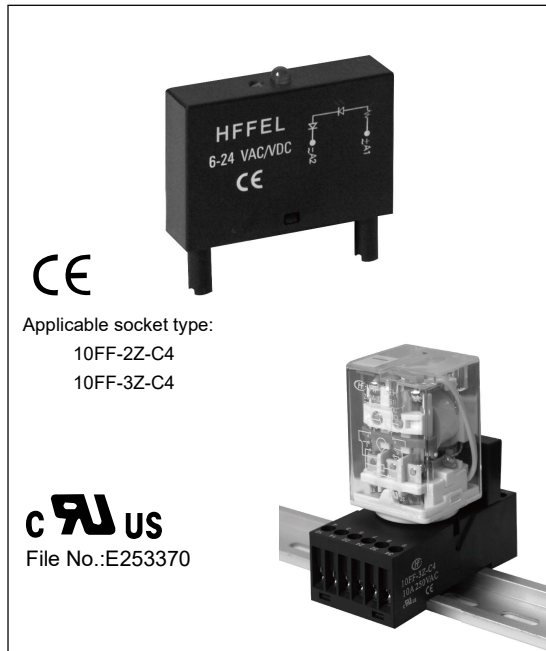
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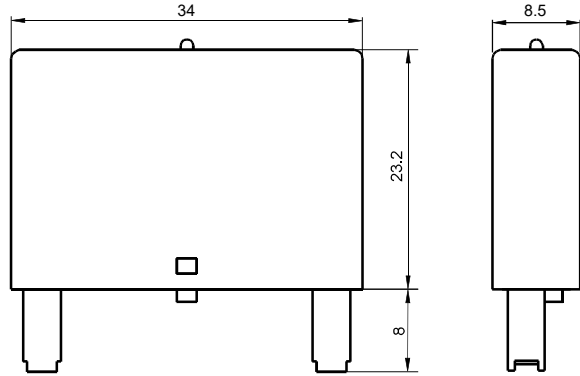
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HFFAA to HFFHU

PLUG-IN MODULES



OUTLINE DIMENSIONS



SPECIFICATIONS FOR MODULES

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFAA		(6 to 220)VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFFAB		(6 to 220)VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFFBC (R) HFFBC (G)		(6 to 24)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFBD (R) HFFBD (G)		(24 to 60)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFBE (R) HFFBE (G)		110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage

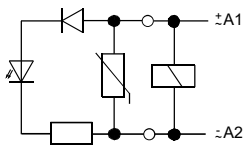
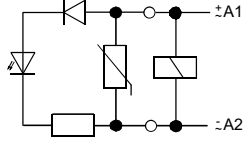
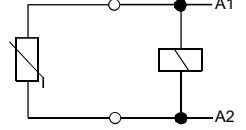
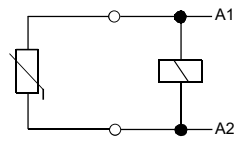
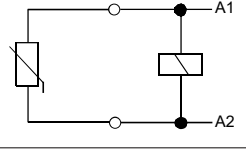
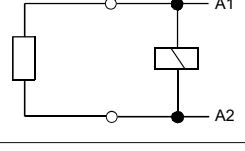


HONGFA RELAY

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

2024 Rev. 1.00

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFCF (R) HFFCF (G)		(6 to 24)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFCG (R) HFFCG (G)		(24 to 60)VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFCH (R) HFFCH (G)		110 VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFDI		(6 to 24)V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● Starting with RC to protect the coil and to absorb instant starting surge current
HFFDJ		(24 to 60)V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● Starting with RC to protect the coil and to absorb instant starting surge current
HFFDK		(110 to 230)V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● Starting with RC to protect the coil and to absorb instant starting surge current
HFFEL (R) HFFEL (G)		(6 to 24)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With LED to show the coil in voltage
HFFEM (R) HFFEM (G)		(24 to 60)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With LED to show the coil in voltage
HFFEN (R) HFFEN (G)		(110 to 230)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With LED to show the coil in voltage
HFFFO (R) HFFFO (G)		(6 to 24)V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● Use voltage dependent resistor to protect coil ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFFP (R) HFFFP (G)		(24 to 60)V AC/DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● Use voltage dependent resistor to protect coil ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFFFQ (R) HFFFQ (G)		(110 to 230)V AC/DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● Use voltage dependent resistor to protect coil ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFFGR		24VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFFGS		115VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFFGT		230VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFFHU		(110 to 230)VAC	Resistor	<ul style="list-style-type: none"> ● With resistor to protect the coil and to spread around current and to spread around current

Notes: 1) When there is LED in the module, please indicate (R) or (G) to show the color of the light, for example HFFBC(R) or HFFBC (G). (R) means red light while (G) means green light.

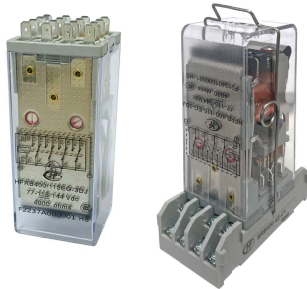
Disclaimer

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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HFRB400

Plug-in Rail Transit RELAY



File No.: 2022000303000013

Features

- Instantaneous, Safety critical relay
- 4CO double make double break contacts, Gold plated and AgSnO₂ type available
- Socket available, Plug-in design with secure locking feature
- Minimum switching current 10mA
- Maximum continuous current 12A
- Mechanical endurance: 5 million cycles
- Integrated LED coil indicator, back EMF suppression diode
- Visible cover

RoHS compliant

CONTACT DATA

Contact arrangement	4Z
Contact resistance ¹⁾	100mΩ max. (0.1A 6VDC)
Contact material	Ag, Ag-Au
Contact rating	12A 220VAC
	3A 72VDC
	1A 72VDC L/R≤30ms
Max. Switching voltage	250VDC, 220VAC
Max. Switching current	12A
Mechanical endurance	5×10 ⁶ OPS
Electrical endurance	≥2.5×10 ⁶ OPS(80°C, 5s on 5s off, 3A 72VDC, Resistive load)

Notes: The data shown above are initial values.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between open contacts	2000VAC 1min
	Between contact sets	2600VAC 1min
	Between coil & contacts	2600VAC 1min
Surge voltage (Between coil & contacts)		6kV(1.2/50μs)
Operate time (at rated. volt.)		55ms max.
Release time (at rated. volt.)		80ms max.
Shock resistance	Functional	Meet IEC 61373
	Destructive	Meet IEC 61373
Vibration resistance		Meet IEC 61373
Humidity		5% to 95%RH
Ambient temperature		-50°C to 80°C
Termination		Plug-in
Unit weight		Approx. 450g
Construction		Dust protected ¹⁾

Notes: 1) The data shown above are initial values;
2) Dust protected relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

COIL

Coil power	Approx. 3.5W
------------	--------------

COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
12ME	8	1.25	16	40×(1±10%)
24AG	16	2.5	33	170×(1±10%)
36FL	25	3.5	45	390×(1±10%)
48DG	33	4.5	60	625×(1±10%)
72BG	48	6.5	90	1600×(1±10%)
96US	65	9	120	2400×(1±10%)
110SV	73.7	11	137.5	3457×(1±10%)
115EG	77	11.5	144	4000×(1±10%)
550FG	440	50	660	75500×(1±8%)

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.



HONGFA RELAY

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

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ORDERING INFORMATION

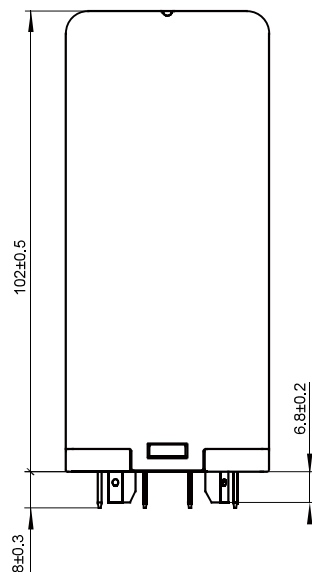
Type	HFRB400/	110SV	-3	G	D	J	A	(XXX)
Coil voltage	12ME, 24AG, 36FL, 48DG, 72BG, 96US, 110SV, 115EG, 550FG VDC							
Contact material	3: AgNi T: AgSnO							
Contact plating	G: Gold plated Nil: No Gold plated							
Coil protect	D: With Diode Nil: No Diode							
Coil indicator	J: With LED Nil: No LED							
Installation method	Nil: Standard							
Special code ¹⁾	XXX: Customer special requirement Nil: Standard type							

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

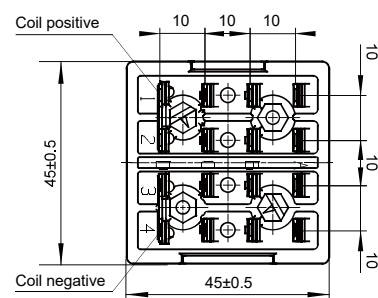
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

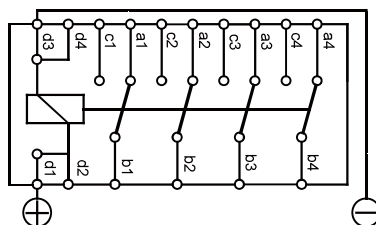
Outline Dimensions



PCB Layout
(Bottom view)



Wiring Diagram
(Bottom view)



- Notes: 1) Other requirement, like meet BZDT1111-FA-G000-002 standard, please contact with our engineer;
 2) 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 $\pm 0.4\text{mm}$;
 3) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

Disclaimer

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HFRD400

Plug-in Railway RELAY



Features

- Instantaneous compact relay, 4CO contacts
- Integrated back EMF suppression diode
- Magnetic arc blow-out for high breaking capacity
- Minimum switching current 10mA
- Maximum continuous current 10A
- Mechanical life: 5 million operations
- Integrated snaplock, no external retaining clip needed
- Visible cover & LED coil indicator
- Socket available

RoHS compliant

CONTACT DATA

Contact arrangement	4CO
Contact resistance ¹⁾	100mΩ max.(at 0.1A 6VDC)
Contact material	Ag, Ag+Au plated
Contact rating	10A 110VDC 5A 72VDC L/R≤40ms 0.5A 110VDC L/R≤0ms
Max. Switching voltage	250VDC, 440VAC
Max. Switching current	10A
Mechanical endurance	5×10 ⁶ OPS
Electrical endurance	≥5×10 ⁴ OPS(85°C, 5s on 5s off, 10A 110VDC, Resistive load)

Notes: The data shown above are initial values.

CHARACTERISTICS

Insulation resistance		1000 MΩ (500VDC)
Dielectric strength	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
	Between coil & contacts	2500VAC 1min
Surge voltage (Between coil & contacts)		5kV(1.2/50μs)
Operate time(at nomi. volt.)		30ms max.
Release time(at nomi. volt.)		30ms max.
Shock resistance		IEC 61373,Category I, Class B,Body mounted
Vibration resistance		IEC 61373,Category I, Class B,Body mounted
Humidity		5% ~ 95%RH
Ambient temperature		-50℃ to 85℃
Termination		Plug-in
Unit weight		Approx. 140g
Construction		Dust protected ¹⁾

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

2) Dust protected relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

COIL

Coil power	Approx. 2.3W
------------	--------------

COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
12	8.4	1.2	15	72×(1±10%)
24	16.8	2.4	30	270×(1±10%)
36	25.2	3.6	45	562×(1±10%)
48	33.6	4.8	60	1044×(1±10%)
55	38.5	5.5	69	1300×(1±10%)
72	50.4	7.2	90	2406×(1±10%)
96	67.2	9.6	120	4400×(1±10%)
100	70	10	125	4400×(1±10%)
110	77	11	137.5	5330×(1±10%)
120	84	12	150	6160×(1±10%)
125	87.5	12.5	156.25	7634×(1±10%)
220	154	22	275	21776×(1±10%)
250	175	25	312.5	23850×(1±10%)

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.



HONGFA RELAY

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ORDERING INFORMATION

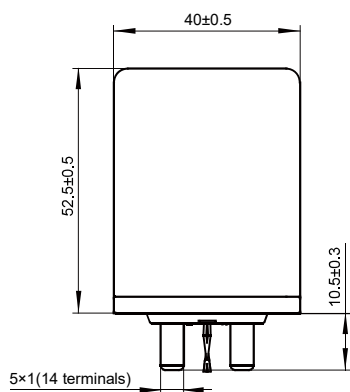
Type	HFRD400/	110	-3G	D	J	M	(XXX)
Coil voltage	12, 24, 36, 48, 55, 72, 100, 110, 120, 125, 220, 250 VDC						
Contact material	3: Ag	3G: Ag+Au plated					
Coil protect	D: With Diode	Nil: No Diode					
Coil indicator	J: With LED	Nil: No LED					
Arc blow-out	M: Magnetic arc blow-out	Nil: no Magnetic arc blow-out					
Special code ¹⁾	XXX: Customer special requirement	Nil: Standard type					

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

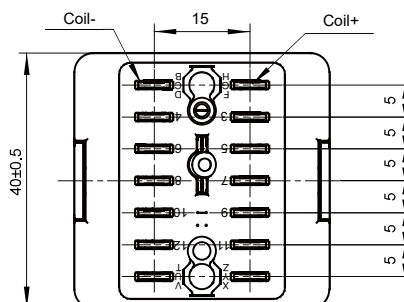
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

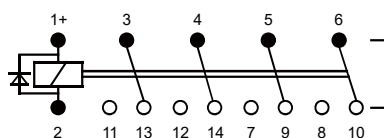
Outline Dimensions



PCB Layout
(Bottom view)



Wiring Diagram
(Bottom view)



Notes: 1) Other requirement, like meet BZDT1111-FA-G000-002 standard, please contact with our engineer.

2) 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 $\pm 0.4\text{mm}$;

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PACKING LIST(SOCKET KITS)

Type (Relay + Socket)	Packing method	Carton Size L x W x H cm	QTY/CTN PCS	Approx.G.W. kg
HFA2+14FF-2Z-C2	10 pcs/box	35×29×20	120	8.4
HFA4+A4-4Z-C2	6 pcs/box	35×32×33	144	11.9
HFA6+A6-6Z-C2	5 pcs/box	35×32×33	120	12.0
HF41F+41F-1Z-A1	50 pcs/box	35×29×25	1200	10.4
HF41F+41F-1Z-A2	36 pcs/box	35×29×25	864	9.4
HF41F+41F-1Z-C2	10 pcs/box	38×21×23	200	7.1
HF41F+41F-1Z-C4	10 pcs/box	38×21×23	200	7.3
HF41F+41F-1Z-C10	10 pcs/box	36×32×30	450	14.3
HF18FF+18FF-2Z-C2	10 pcs/box	35×27×29	120	9.8
HF18FF+18FF-2Z-C5	5 pcs/box	31×26×24	60	7.5
HF18FF+18FF-2Z-C10	5 pcs/box	35×34×31	90	9.2
HF18FF+18FF-3Z-C4	5 pcs/box	31×26×24	60	7.0
HF18FF+18FF-4Z-C5	5 pcs/box	31×26×24	60	8.3
HF18FF+18FF-4Z-C10	5 pcs/box	35×34×31	90	10.6
HF18FH+18FF-2Z-C4	5 pcs/box	31×26×24	60	6.5
HF18FH+18FF-3Z-C5	5 pcs/box	31×26×24	60	8.4
HF18FH+18FF-4Z-C4	5 pcs/box	31×26×24	60	7.3
HF18FH+18FF-4Z-C5	5 pcs/box	35×29×25	60	8.3
HF18FH+18FF-4Z-C8	10 pcs/box	34×32×31	120	11.4
HF18FZ+18FZ-2Z-C2	10 pcs/box	35×27×29	120	9.3
HF115F+14FF-1Z-A1	20 pcs/box	41×29×24	1000	18.7
HF115F+14FF-1Z-C2	10 pcs/box	35×29×25	180	12.4
HF115F+14FF-1Z-C3	10 pcs/box	35×29×25	180	12.2
HF115F+14FF-2Z-A1	20 pcs/box	41×29×24	1000	18.7
HF115F+14FF-2Z-C3	10 pcs/box	35×29×25	180	12.9
HF115F+14FF-2Z-C4	10 pcs/box	35×34×31	180	12.2
HF115F+14FF-2Z-C10	10 pcs/box	35×34×31	240	14.1
HF115FK+14FF-2Z-C10	10 pcs/box	35×34×31	240	13.8
HF115FP+14FF-2Z-C10	10 pcs/box	35×34×27	180	10.5
HF115FP+14FF-2Z-C3	10 pcs/box	35×29×20	120	7.0
HF157F+157F-1Z-C2	10 pcs/box	36×27×30	240	13.1
HF157F+157F-2Z-C2	10 pcs/box	34×34×24	240	13.6

Notes: This table is just for reference.if you have any questions,please contact us.



HONGFA RELAY

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

2024 Rev. 1.00

PACKING LIST(RELAY)

Type	Packing Method	Carton Size L x W x H cm	QTY/CTN PCS	Approx. N.W. kg	Approx. G.W. kg	Stacking Layers Limit n
HF157F	50 pcs/tray	35 x 29 x 19	400	9.4	11.2	6
HF13F (1,2 type)	30 pcs/tray	35 x 29 x 19	300	*11.1	*12.8	6
	20 pcs/box	35 x 29 x 24	320	11.8	13.3	6
HF13F (5 type)	30 pcs/tray	35 x 29 x 23	240	8.9	10.4	6
HF18FF (1,2 type)	30 pcs/tray	35 x 29 x 19	300	11.1	12.8	6
	20 pcs/box	35 x 29 x 24	320	11.8	13.3	6
HF18FF (5 type)	30 pcs/tray	35 x 29 x 23	240	8.9	10.4	6
HF18FZ	30 pcs/tray	35 x 29 x 19	300	11.1	12.8	6
HF10FF	20 pcs/box	35 x 29 x 24	100	9.5	10.5	6
HF10FH	20 pcs/box	35 x 29 x 24	100	9.5	10.5	6
HF14FF	50 pcs/tray	35 x 29 x 19	500	8.7	10.6	6
HF14FW	50 pcs/tray	35 x 29 x 19	500	8.7	10.6	6
HF41F	100 pcs/tube	60 x 19 x 15	2000	10.8	14.1	6
HF49FD	100 pcs/tube	60 x 18 x 19	3000	9	12	7
HF115F	50 pcs/tray	40 x 27 x 20	500	6.8	8.3	6
HF115F-A/HF115F Series	20 pcs/tube	65 x 18 x 14	1000	13.5	15.5	5
HF115F-A	50 pcs/box	39 x 23 x 22	500	6.8	8.3	6
HF115FP	50 pcs/tray	35 x 29 x 24	500	9	10.5	6
HF118F	20 pcs/tube	64 x 17 x 15	1000	8.2	10.2	8
HF140FF	50 pcs/tray	35 x 29 x 19	500	8.5	10.5	6
HF140FF(NEW)	50 pcs/tray	35 x 29 x 19	500	9.5	11.4	6
HF140FF-G	50 pcs/tray	35 x 29 x 19	500	9.5	11.4	6
HF140FF-V	30 pcs/tray	34.5×28.5×19.3	300	8.4	9.9	6
HFA2	40 pcs/tray	40 x 27 x 20	400	8	9.5	7
HFA4	30 pcs/tray	40 x 27 x 24	300	6	7.5	6
HFA6	20 pcs/tray	40 x 27 x 24	200	5	6.5	6
HFA2B	35 pcs/tray	40×27×17.5	420	5.1	6.6	7
HFA3B	30 pcs/tray	40×27×17.5	360	4.9	6.4	7
HFA4A	40 pcs/tray	40×27×20	400	6	7.5	7
HFA4B	20 pcs/tray	40×27×17.5	240	3.8	5.3	7
HFA4G	50 pcs/tray	40×27×24	500	12.5	14	7
HFA6A	20 pcs/tray	40×27×20	200	5	6.5	7

Notes: Specification and dimensions in this catalog are subject to change without notice.



HONGFA RELAY

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2024 Rev. 1.00

PACKING LIST(RELAY SOCKETS)

Type	Packing method	Carton Size L x W x H cm	QTY/CTN PCS	Approx.G.W. kg
10FF-2Z-C3	10 pcs/box	36×30×25	240	13.3
10FF-2Z-C4	10 pcs/box	36×30×22	160	11.0
10FF-3Z-C3	10 pcs/box	36×30×25	240	15.0
10FF-3Z-C4	10 pcs/box	36×30×22	160	11.7
118F-1Z-A1	40 pcs/tube	35×29×25	2000	9.6
118F-2Z-A1	40 pcs/tube	35×29×25	2000	9.8
13F-2Z-A2	20 pcs/box	35×29×25	600	7.2
13F-2Z-C1	5 pcs/box	35×29×22	150	9.0
13F-2Z-C2	5 pcs/box	35×29×22	150	10.1
14FF-1Z-A1	150 pcs/box	35×32×33	3600	14.0
14FF-1Z-C2	50 pcs/box	35×29×25	200	8.6
14FF-1Z-C3	50 pcs/box	35×29×25	150	7.3
14FF-2Z-A1	150 pcs/box	35×32×33	3600	16.3
14FF-2Z-C10	20 pcs/box	35×34×31	360	14.4
14FF-2Z-C2	50 pcs/box	35×29×25	200	8.7
14FF-2Z-C3	50 pcs/box	35×29×25	150	8.2
14FF-2Z-C4	10 pcs/box	35×33×18	180	9.0
157F-1Z-C2	10 pcs/box	37×28×27	300	8.8
157F-2Z-C1	10 pcs/box	37×28×27	300	10.0
157F-2Z-C2	10 pcs/box	37×28×27	300	10.1
157F-2Z-C10	20 pcs/box	35×34×31	360	14.5
18FF-2Z-A2	20 pcs/box	35×29×25	600	6.3
18FF-2Z-C1	20 pcs/box	43×24×26	300	12.1
18FF-2Z-C2	20 pcs/box	43×24×26	300	12.3
18FF-2Z-C4	10 pcs/box	31×26×24	120	7.4
18FF-2Z-C5	10 pcs/box	31×26×24	120	8.3
18FF-2Z-C8	10 pcs/box	36×30×25	240	11.3

Notes: This table is just for reference.if you have any questions,please contact us.



HONGFA RELAY

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2024 Rev. 1.00

PACKING LIST(SOCKET)

Type	Packing method	Carton Size L x W x H cm	QTY/CTN PCS	Approx.G.W. kg
18FF-2Z-C10	10 pcs/box	35×34×31	180	11.7
18FF-3Z-C4	10 pcs/box	31×26×24	120	7.9
18FF-3Z-C5	10 pcs/box	31×26×24	120	9.4
18FF-4Z-A2	20 pcs/box	35×29×25	600	6.7
18FF-4Z-C1	5 pcs/box	35×29×22	150	10.2
18FF-4Z-C2	5 pcs/box	35×29×22	150	10.2
18FF-4Z-C4	10 pcs/box	31×26×24	120	8.5
18FF-4Z-C5	10 pcs/box	31×26×24	120	9.7
18FF-4Z-C8	10 pcs/box	36×30×25	240	13.2
18FF-4Z-C10	10 pcs/box	35×34×31	180	13.1
18FZ-2Z-C2	20 pcs/box	43×24×26	300	11.0
18FZ-4Z-C2	5 pcs/box	35×29×22	150	8.2
41F-1Z-A1	50 pcs/box	35×29×25	1200	4.3
41F-1Z-A2	36 pcs/box	35×29×25	864	5.2
41F-1Z-C2	10 pcs/box	35×29×25	300	9.1
41F-1Z-C4	10 pcs/box	35×29×25	300	9.1
41F-1Z-C10	10 pcs/box	36×32×30	450	13.3
49F-1Z-A1	100 pcs/tube	58×28×20	5000	8.6
A4-4Z-C2	6 pcs/box	35×32×33	144	8.8
A6-6Z-C2	5 pcs/box	35×32×33	120	9.3
HYDES1	5 pcs/box	35×29×25	60	6.2
HYDES1D	5 pcs/box	35×29×25	60	6.3
S470M	10 pcs/box	46×28×27	120	5.6
S670M	10 pcs/box	46×28×27	120	6.5
SRB400-4Z-C1	10 pcs/box	36×31×30	60	8.0
SRD400-4Z-C1	5 pcs/box	37×28×27	100	14.3

Notes: This table is just for reference.if you have any questions,please contact us.



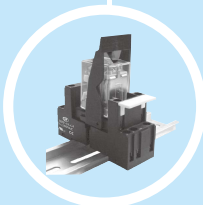
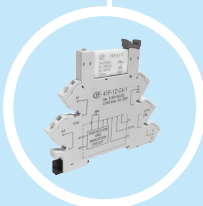
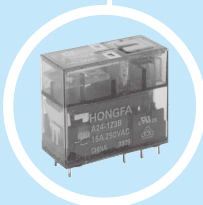
HONGFA RELAY

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

2024 Rev. 1.00

Terminology Interpretation and Application Guidelines

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PREFACE

1. Principles

HF and its affiliates have made every effort to guarantee the accuracy of instructions and specifications. Still, errors may occur. Therefore, HF and its affiliates reserve the right to make any modifications to the instructions and specifications.

HF and its affiliates claim only the responsibility of the clearly confirmed experiment clauses and condition of sale as well as the application condition and test results stated in particular specifications. We disclaim any assumptions or implications of any of our specifications and instructions.

Given the impossibility of defining all the requirements of all the relays in every application, users shall select relays accordingly and re-check through careful evaluation, or turn to HF and its affiliates for Technical support if necessary. Users shall take full responsibility for relay selection.

2. Definition and Classification

Relay is a kind of component by which when the input reached to a certain value, one or more outputs will produce the scheduled changes.

For electromagnetic relay, SSR and combined relay, it can be simply understood as the following way: it is a switch by which in the input the speculated electrical signals are applied, the output makes or breaks the controlled circuit.

There are many kinds of classifications about relay, we take the following classifications shown as table 1.

Table 1

Classifications		Application Fields	Advantages
Electromagnetic Relay	Signal relay	Generally for telecom and signal control	<ul style="list-style-type: none"> • Without leakage current in the open output end • In the large load, it is unnecessary to add the radiators
	Power relay	Generally for home application	
	Industrial relay	Generally for industrial application	
	Latching relay	Generally for power control	
	Automotive relay	For automotive fields	
	Hermetically sealed relay	For the fields where the environment is bad and the high reliability is required	
SSR & Power Module		For the fields where the environment is bad, low noise and high reliability are required.	<ul style="list-style-type: none"> • With long electrical endurance • Without noise • Good shock and vibration capability
Combined Relay		For the fields where the certain control functions are required.	<ul style="list-style-type: none"> • With certain control logic



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According to the classifications of relay, our catalogues can be divided into general relay fascicule, automotive relay & module fascicule, industrial relay fascicule, latching relay fascicule and hermetically sealed relay fascicule. In general relay fascicule, power relay and signal relay are included; and in automotive relay & module fascicule, plug-in relay, PCB relay and automotive module are included. We also provide the sockets which match to the relays.

This article states the basic information about the electromagnetic relay, lists the selecting principles and cautions of applications.

The parameters in the catalogue are the initial values measured under the standard Conditions, which are as following, unless otherwise stated.

- 1) Ambient temperature: 15°C to 35°C
- 2) Relative humidity: 25% to 75%
- 3) Air pressure: 86kPa to 106kPa

Generally the drawing stated in the catalogue is the first quadrant projection way as shown in figure 1, unless otherwise stated.

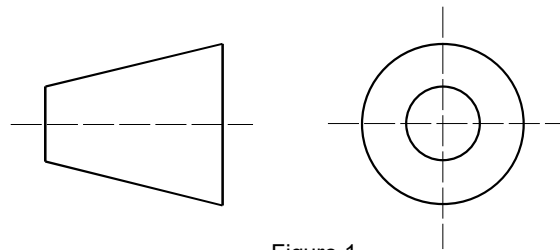


Figure 1

CHAPTER 1 THE BASIC TERMINOLOGY OF RELAY

1. Contact Parameters

1.1 Contact forms are the arrangements of relay contacts. The basic contact arrangements are shown in Table 2, the multi-contact arrangements can be in the same manner.

Table 2

Name	Symbol	Alphabet Letter	
		China	Others
Normally Open Contacts		H	A(or NO)
Normally Closed Contacts		D	B(or NC)
Change-Over Contacts		Z	C(or CO)



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- 1.2 Contact resistance** is the total resistance between the contacts, the terminals and spring jointed with contacts, generally shown in $m\Omega$.
Unless otherwise stated in the catalogue, generally for the relay with contact load below 2A, its contact resistance is measured in 6VDC, 0.1A; for the relay with contact load above 2A, its contact resistance is measured in 6VDC, 1A. contact resistance should be tested with the max applicable voltage and current according to the corresponding load type in IEC61810-7.
- 1.3 Contact voltage drop** generally is, in the load circuit, the total voltage drop between contacts, springs jointed with contact and the terminals. It is generally described as the voltage drop value under the regulated current, for example 50mV (measured in 10A).
- 1.4 Contact material** is the material used in contacts and generally shown in chemistry formula, for example, AgNi represents silver-nickel alloy contacts. The material used in the relay, its characteristics and its application environment can be seen in 1.2 'Contact material' in chapter 2 'the principles for selecting relays'.
- 1.5 Contact rated load** generally refers to the load the contacts can switch reliably under the certain conditions. Generally it is shown as the combination of the voltage and the current. The loads listed in catalogue are resistive loads, unless otherwise stated.
- 1.6 Max. switching voltage** is the maximum load voltage of which the contacts can switch. This voltage value shall not be surpassed in general application, or the relay endurance will be reduced.
- 1.7 Max. switching current** is the maximum load current of which relay contacts can switch. This voltage value shall not be surpassed in general application, or the relay endurance will be reduced.
- 1.8 Max. switching power** is the maximum power of relay contacts can switch reliably. It is shown in VA for AC load and W for DC load in general.
- 1.9 Mechanical endurance** refers to the operations that the relays without load or with load do not lead to failure under the rated voltage, normally switch in the specified, generally it is shown in operations.
- 1.10 Electrical endurance generally** refers to the operations that the relay can normally switch when the specified load is applied on the contacts and the rated voltage is applied to the coil under the conditions that the relay is placed in the certain speculated environment. Generally it is shown in operations.
- 1.11 Surge current generally** refers to the maximum transient current of which relay can endure in the specified load.
- 1.12 Min. applicable load** refers to a reference value of the min. load for the relay contact to switch under normal temperature and normal humidity environment. The value would be affected by on-off frequency, environmental conditions, installation direction, desired contact resistance and reliability, etc. Thus, please perform confirmation tests with actual load before use. And it is suggested to avoid using the relay below 0°C.

2. Characteristics Parameters

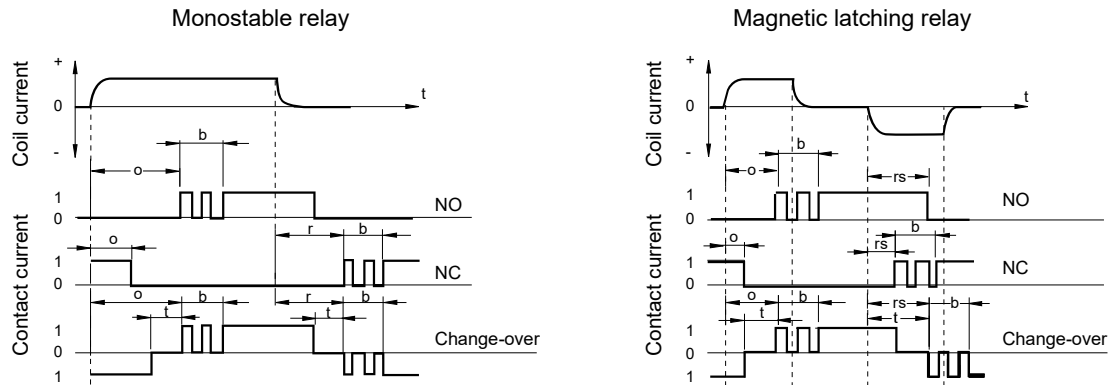
- 2.1 Insulation resistance** is the impedance when the conductors insulated with insulating material are applied to voltage and it is generally shown in "M Ω ". The speculated voltage described above are general 500VDC(or 250 VDC).
- 2.2 Dielectric strength** is the voltage value when, within the speculated time, the conductors insulated with insulated material are applied to the voltage and the leakage current is less than the speculated current. The certain voltage above generally is the effective value of AC voltage and unless otherwise stated, the leakage current is generally less 1mA.
- 2.3 Operation time** refers to, with the relay in the released state, the elapsed time from the initial application of power to the coil, till the closure of the normal open contacts. It does not include any bounce time, and expressed in "ms".
For the latching relays, operation time refers to, with the relay in the reset state, the elapsed time from the initial application of power to the coil, till the closure of the normal open contacts. Seen in figure 2.



2.4 Release time refers to, with the relay in the operation state, the elapsed time from the initial removal of coil power till the re-close of the normal closed contacts. It does not include bounce time and expressed in "ms". Seen in figure 2.

2.5 Reset time (only for the latching relays) refers to, with the relay in the operation state, the time from the first application of power to the reset coil till the re-close of the normally closed contacts. Seen in figure 2.

2.6 Bounce time generally refers to the time from the initial close of the contacts till the complete close and generally expressed in "ms". Seen in figure 2.



o: operation time r: release time t: switching time b: bounce time
rs: reset time 0: the contacts open 1: the contacts closed

Remarks: The operation time, release time, reset time and bounce time are the test values of a single relay at room temperature, without connecting to any external components.

Figure 2

2.7 Switching frequency refers to the cycling times of the operation and release in united time.

2.8 Ambient temperature refers to the temperature in which the relay can normally be applied and it is generally expressed in the range of temperature.

2.9 Coil temperature rise refers to the temperature that the coil rises by after the temperature becomes stable and under the conditions that in the suitable maximum ambient environment the rated voltage is impressed on the coil and the rated load is impressed on the contacts. Generally it refers to the maximum value, expressed in K.

2.10 Shock is divided into shock functional and survival.

Shock functional refers to the acceleration the relay can suffer the shock value under the condition of the NC contact open time and open contact closing time at specified time. Usually it is expressed in the combination of the acceleration value "g" and the duration "ms".

Shock survival refers to the shock value that can not damage the relay construction, Usually it is expressed in the combination of the acceleration value "g" ($1g=9.8m/s^2$) and the duration "ms".

2.11 Vibration resistance is divided into Vibration function and survival.

Vibration function refers to the vibration the relay can suffer without causing the closed contacts to open for more than the specified time and the open contacts to close for more than the specified time. Generally, it is expressed by vibration amplitude "mm", or expressed by gravitational acceleration "g" and vibration frequency "Hz". Vibration survival refers to the vibration the relay can suffer without damaging their construction. Generally, it is expressed by vibration amplitude "mm", or expressed by gravitational acceleration "g" and vibration frequency "Hz".



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2.12 Humidity refers to the required humidity in which the relay can reliably work and generally expressed in relative humidity "%RH".

2.13 Model of Terminals

The terminals model of the relays also shows the applicable fields. Generally speaking, the models of terminals are PCB, THT, SMT, plug-in, QC and others.

2.14 Weight : the weight of the relay.

2.15 Enclosure type refers to the protection mode for the relay body. It is divided into enclosed, dust protected, flux proofed, plastic sealed and hermetically sealed. Seen in 3.1 'mode of encapsulation' in chapter 2 'the principles of selecting the relays'

3. Coil Parameters

3.1 The rated coil power refers to the power consumed by the coil when the coil are applied to the rated voltage. Generally for the DC relay, it is expressed in W while for the AC relay in VA.

3.2 Rated voltage is the voltage applied to the coil that can make relay work normally. It is expressed in "V". For the polarized relay, the direction in which the voltage is impressed should be notified.

3.3 Operate voltage is the voltage which closes the NO contacts when the relay is in the releasing state (for the latching relay in the reset state) and the coil voltage is increased gradually. Usually it is expressed in "V". It is usually the maximum value listed in the instructions, which is about 80% of rated voltage.

3.4 Release voltage is the voltage which closes the NC contacts when the relay is in the operation state and the coil voltage is gradually reduced from the rated voltage. It is usually expressed in "V". The minimum value is listed in the instructions, which is about 10% of the rated voltage.

3.5 Reset voltage is the voltage which closes the NC contacts when the latching relay is in the operation state and the reset coil voltage is increased. It is expressed in "V". The maximum value is listed in the catalogue, which is about 80% of the rated voltage.

3.6 Coil resistance generally refers to the DC resistance and is expressed in "Ω". In the catalogue the combination of the nominal value and tolerance is given.

3.7 Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time. It is expressed in V.

4. Safety Approval

4.1 UL Approval

UL, the abbreviation of Underwriter Laboratories Inc, is a non-profitable organization founded in 1984. The electrical products authorized by this organization can be freely sold in American market, while the electrical products not authorized by this organization will be limited when they are sold in most of the states of America. Due to the authority of UL, the products approved by UL are accepted by many countries.

4.2 CSA Approval

CSA, the abbreviation of Canadian Standards Association, is the authorized approval institution. The electrical products approved by this institution can be freely sold in Canadian market. The products approved by the CSA can be only sold in Canadian market and if these products want to enter into the American market, they should get the American approval of UL.

4.3 UL&CUR

UL&CUR is the approval which simultaneously meets the American standard and the Canadian standard and can be used in North America.



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4.4 VDE Approval

VDE, the abbreviation of Verband Deutscher Elektrotechniker, is one of Germany authorized organizations in electrical component and other equipment. The electric products approved by this institution will be admitted in Germany law.

4.5 TÜV Approval

TÜV, the abbreviation of Technischer Überwachungsverein, has the same authority as VDE. TÜV is one of the authorized institution in electric equipments. The electric products approved by this institution will be admitted in Germany law.

4.6 CQC Approval

CQC, the abbreviation of China Quality Certification, is the most authorized approval institution in China. The products not listed in the catalogue of 3C approval can make CQC approval in China Quality Certification Center.

5. Ordering Code

Ordering code is a code which is used to ensure the type and the specifications of the relay, which includes the basic information of relay, such as the type of the products, coil voltage, contacts arrangement, enclosure type etc.. The ordering code of HONGFA brand relay can be seen in Chapter 5 "the ordering code".

6. Outline Dimensions, Wiring Diagram and the Size Drawing of the Mounting Holes

Ordering mark is a mark which is used to ensure the type and the specifications of the relay, which includes the basic information of the relays, such as the type of the products, the coil voltage, contacts arrangement, the mode of encapsulation etc.. The ordering marks of HONGFA brand relay can be seen in Chapter 5 "the ordering marks".

6.1 Outline dimensions describes the drawing of the relay outline size and the mounting space needed by relay.










6.2 Wiring diagram describes the wiring way of the input and output terminals respondent to the terminals of the relays.

6.3 The size drawing of the mounting holes describes the position of the relay terminals and the size of their mounting holes.

6.4 Examples

The examples of the common components can be seen in table 3.

Table 3

Coil	Polarized Coil	Contact	Resistance	Capacitance	Diode	Zener Diode	LED	Varistor
								

7. Characteristic Curves

7.1 Max. switching power curves represent the loads the relay can support.

7.2 Electrical Endurance Curve: The electrical endurance curve indicates the typical endurance under rated load. The data of all the electrical endurance do not guarantee a minimum value.

- 1) The data of all the electrical endurance are only valid for stated contact materials, special contact materials excluded. No deductions should be made from the data.
- 2) No deductions should be made from the data, especially to the situation when the current is below 0.5A as contact wear is not the dominant failure mode.



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7.3 Coil temperature rise curve shows the measured temperature rise value of the coil when the relay is energized with different voltage and loads under the speculated ambient temperature.

8. Monostable, Latching and Polarized Relay

8.1 Monostable Relay:

For this relay, the contacts operate when the coil is energized while the contacts will reset when the coil is deenergized.

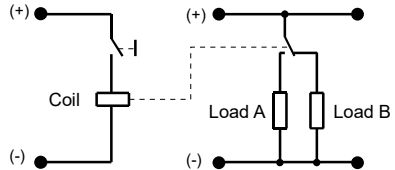
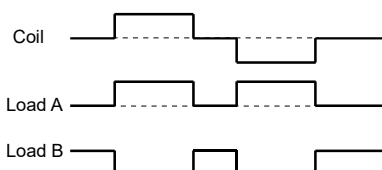
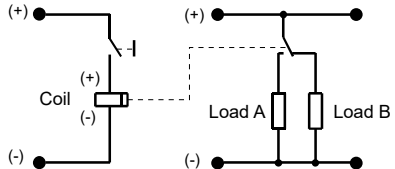
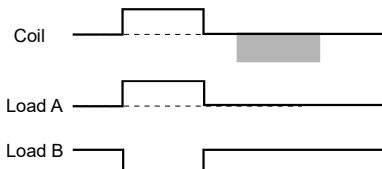
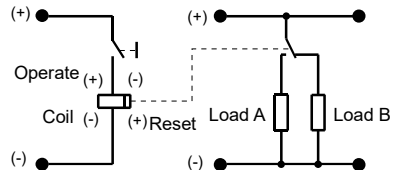
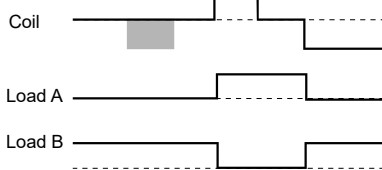
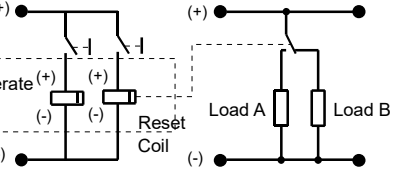

8.2 Latching Relay:

For this relay, the contacts operate when the coil is energized while the contacts will keep the state when the coil is deenergized. To reset the contacts, the counter-energization will be applied to the single-coil coil or the energization is applied to the double-coil reset coil.

8.3 Polarized Relay:

The switch of the contact state is dependent on the polarity of the energized voltage in the terminals of the coil. Part of the monostable relays and all the magnetic latching relays belong to polarized relays. The basic circuit and operating wave of the several common relays can be seen in table 4.

Table 4

Type	The Basic Circuit and Operating Waveform		
Non-Polarized Monostable			
Polarized Monostable			
Single-coil Latching			
Two-coil Latching			

Notes: the voltage with the correct polarity is required to impress on the coil of polarized relays or the relays will not work, as shown in the shaded area in the figures above.



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CHAPTER 2 THE PRINCIPLES OF SELECTING RELAY

In order to correctly select relays, customers need know the characteristics of the relays to ensure whether these characteristics meet with the practical requirements. It will be more reliable if these characteristics can be tested in the practical environment. The principles of selecting relays can be seen in table 5. In table 5, in the column "must be confirmed" the item with mark * is confirmed and a type of relay can be selected. If there is further requirement, the correspondent items with the mark * are required to be further confirmed.

Table 5

Item		The considered points	Confirmed	Reference	Influence factors
Contact	Contact load	AC, DC, size and types (inductive or resistive)	√		<ul style="list-style-type: none"> the ambient temperature as for AC load, is the operation and the load synchronous or not Does the contact material match the load?
	Contact arrangement	NO or NC or switching? how many pairs of the contacts?	√		
	Electrical endurance	The frequency and the expected operation times?	√		
	Contact material	Which material?		√	
	Contact resistance	How much and the testing conditions?		√	
Coil	Rated voltage	How much, direction, AC, DC?	√		<ul style="list-style-type: none"> the ambient temperature the power fluctuation the voltage drop driven by semi-conductor
	Coil resistance	How much? The input power consumption?	√		
	Operate voltage	How much? The influence of the power wave?		√	
	Release voltage	How much? The influence of the power fluctuation?		√	
	Max. allowable voltage	How much? How long?		√	
	Coil temperature rise	How much? Insulation level?		√	
Performance	Enclosure type	Unenclosed type, dust protected, flux proofed, or plastic sealed?	√		<ul style="list-style-type: none"> the ambient atmosphere the safety requirements
	Dielectric strength	How much? where?	√		
	Insulation resistance	How much where?		√	
	Vibration resistance	How much? Functional or destructive?		√	
	Shock resistance	How much? Functional or strength?		√	
Practical Environment	Ambient temperature	High or low? How long?	√		<ul style="list-style-type: none"> insulation level method of encapsulation the life
	Atmosphere	Humidity? Harmful gases ?		√	
Outline and Mounting	Outline	Size and dimension	√		<ul style="list-style-type: none"> the required mounting size mounting method
	Type of Terminals	PCB, QC, plug-in or screw fixed model?	√		
	Welding mode	Manual solder, wave solder, reflow solder ? Is cleaning needed or not?		√	
	Mounting gap	Cling or with gap?		√	
Others	Safety approval	UL、VDE、TUV、CQC etc ?		√	<ul style="list-style-type: none"> zone the customers' requirements
	Special requirements and conditions	The requirements of the customers		√	

The following will give the further explanation about the items in the table above.



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1. Contact Parameters

1.1 Contact Load

Before ensuring whether the load the relay can carry in order to meet with the application, we should confirm the type of the real load except for confirming the load value for different loads have different steady state value and inrush value. Seen in table 6 The load given in the instructions are generally the resistive load, unless otherwise stated.

Table 6

The Type of Load	Inrush Current
Resistive Load	once steady state current
Motor Load	5-10 times steady state current
Capacitive Load	20-40 times steady state current
Transformer Load	5--15 times steady state current
Solenoid Load	10--20 times steady state current
Incandescent Lamp Load	10-15 times steady state current
Mercury Lamp Load	3 times steady state current
Sodium Vapor Lamp Load	1-3 times steady state current

Figure 3 shows the relations between the representative load and the inrush current. In addition, according to the characteristics that the polarity of different moving and stationary contacts will influence the electrical endurance. Please check in the practical application or consult the technician of HONGFA company.

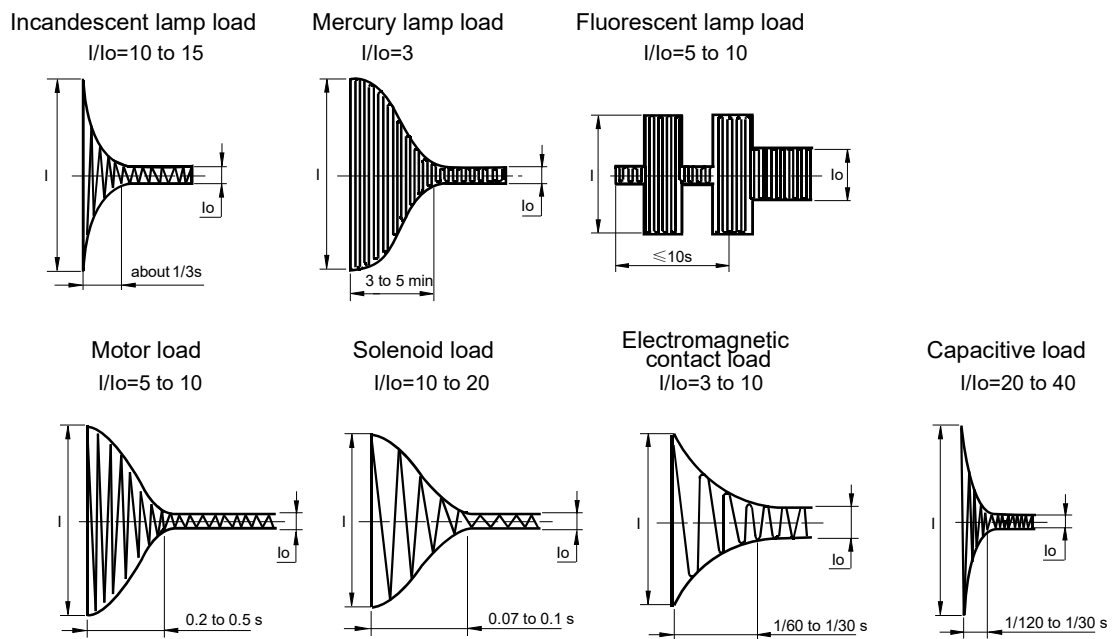


Figure 3

1.2 Contact Material

For the same type of relay, different contact materials are applicable to different load types or ranges. Seen in table 7.



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Table 7

Material	Feature	Typical application and notes
AgNi+ Au (gold plating)	<ul style="list-style-type: none"> gold plating with good resistance to erode in the air with better contact resistance stability under low load compared with other materials. high electrical conductivity and thermal conductivity 	<ul style="list-style-type: none"> Small load: gold plating almost not eroded, from 10mW(5V, 2mA) to 1.5W (24V,62.5mA) (resistive load) Middle load: gold plating is eroded after seve operations and AgNi functionsmainly,from 2.4W (24V, 100mA) to 60W (30V, 2A) (resistive load) <p>Notes: It is suggested to perform confirmation tests before use.</p>
AgPd	<ul style="list-style-type: none"> good resistance to erode and sulfur in room temperature low contact resistance and good consistency expensive 	<ul style="list-style-type: none"> the same as the above
AgNi	<ul style="list-style-type: none"> the standard material of most contact material high electrical conductivity and thermal conductivity high resistance to burn easily produce the sulfured film in the atmosphere with sulfid. 	<ul style="list-style-type: none"> resistive load High current carrying <p>Notes: when surge current is contained, it is easy to lead to sticking. So confirmation tests are suggested before use.</p>
AgCdO	<ul style="list-style-type: none"> high AC load high electrical conductivity and thermal conductivity good resistance to burn great resistance to welding easily produce the sulfured film in the atmosphere with sulfid 	<ul style="list-style-type: none"> resistive load motor load inductive load
AgSnO ₂	<ul style="list-style-type: none"> great resistance to welding the materials transferred less than those above3 in DC load easily produce the sulfured film in the atmosphere with sulfid. 	<ul style="list-style-type: none"> resistive load motor load inductive load High current carrying
AgSnO ₂ (with other oxide matter)	<ul style="list-style-type: none"> the same as the above 	<ul style="list-style-type: none"> resistive load motor load inductive load with different oxide matter, the different applicable load High current carrying

Notes:

- 1) Consider the maximum current value specified in different relays.
- 2) It would be better to be checked and tested in application when the conditions are catalogue allowable.
Gold plating of the contacts shows good performance for the low loads. However, for the high load, it can only keep the initial contact performance of the contacts before the relays are used.



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1.3 Electrical Endurance

Unless otherwise specified, the electrical endurance in the instruction refers to the standard value under rated load in the circumstance that:

- a) standard condition
- b) NO contact
- c) 50Hz for AC load
- d) Make-break rate 1:9
- e) Resistive load
- f) Flux-proof
- g) Downwards PCB terminals
- h) Separated installation
- i) Failure and malfunction criteria and final dielectric test comply with the relevant regulation of IEC61810-1:2015
- j) See IEC61810-1:2015 for unstated information

Considering the flux-proof and the dust-proof types have longer electrical endurance than the sealed type of the same relay, it is preferred to select the flux-proof and the dust-proof types if possible.

1.4 Mechanical Endurance

Unless otherwise specified, the mechanical endurance in the instruction refers to the standard value under rated load in the circumstance that:

- a) no contact load
- b) Rated frequency of operation, duty factor 50%
- c) Downwards PCB terminals
- d) 50Hz for AC load
- e) See IEC 61810-7 for failure modes

2. Coil

2.1 Voltage

To make the relay work reliably, be sure that work circuit can supply the rated voltage to the coil.

In the case of transistor drive circuit, that the voltage on the coil is less than the normal voltage of the transistor drive circuit because of the voltage drop on the transistor, it is recommended to use 4.5V type relay which in 5V transistor circuit and 2.4V type relay in 3V transistor circuit.

Sometimes to shorten the operating time, the coil can be applied to maximum allowable voltage to the coil in the short time. However it should be ensured that the relay will not overheat or even be damaged.

For polarized relays, please check the polarity of the coil voltage.

2.2 Coil Resistance

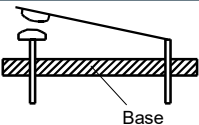
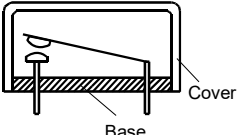
To make the relay work reliably, be sure that work circuit supplies the nominal coil power consumption to the relay. Therefore please select the suitable coil resistance.

3. Performances

3.1 Enclosure Type

To ensure the reliability of the relay, different ways of encapsulation will require different post-processing(table 8).

Table 8

Type	Construction	Features	Auto- matic Solder	Auto- matic Clean- ing	Dust Resis- tance	Liquid Proof	Harmful Gas Resis- tance
Un- enclosed		Without the protective case.	X	X	X	X	X
Dust Protected		With the dust protective case; the case and the base are fitted together and their joint is close to PCB.	X	X	√	△	X



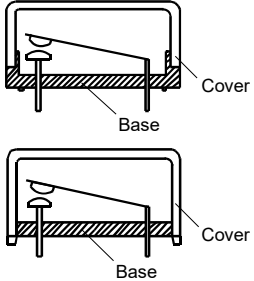
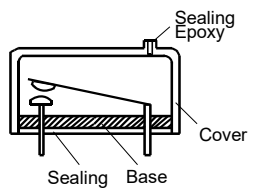
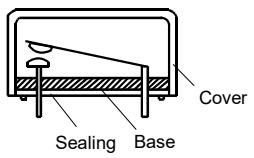
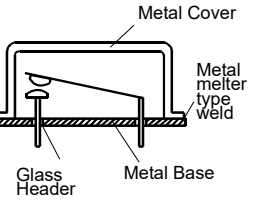
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To be continued

Type	Construction	Features	Auto- matic Solder	Auto- matic Clean- ing	Dust Resis- tance	Liquid Proof	Harmful Gas Resis- tance
Flux Proofed		With the dust protective case; the case and the base are fitted together and their joint is close to PCB. The terminals are plastically sealed on the base or the base and the terminals are fitted with sealing epoxy; the fitted joint is far from PCB. Without exceeding the scheduled position, the flux will not penetrate the relay.	√	X	√	△	X
		Base, terminals and case are fitted with sealing epoxy; there is ventilating hole far from PCB. Without exceeding the scheduled position, the flux will not penetrate the relay.	√	X	△	△	X
Plastic Sealed *		Base, terminals and case are fitted with sealing epoxy; The internal of the relay is sealed in the case and base. Washable in limited condition.	√	√	√	√	√
Sealed or Hermetically		Metal case and metal base are sealed; terminals and base are sealed with glass. The leakage rate of the air in the internal of the relay meet with the requirements.	√	√	√	√	√

Notes:

- 1) "√" means good; "X" means bad; "△" means to notice.
- 2) Because the plastic has the certain leakage, please use hermetic relays in the conditions that there are harmful gases or the explosive proof is required.
- 3)* Hongfa recommends to implement washing-free soldering process to avoid washing on relay, ultrasonic cleaning is prohibited. If water cleaning is required after the relay is assembled on PCB, it is a must that you should get contact with hongfa and specify detailed washing method, we'll help you to choose suitable product.

3.2 Dielectric Strength and Insulation Resistance

Please confirm that these two parameters can meet the application requirement and will not lead to such conditions as the breakdown of the circuit, short circuit.

3.3 Vibration Resistance and Shock Resistance

Please confirm that these two parameters can meet the application requirement and will not lead to the failure of the relay in the course of the application.

4. Temperature

4.1 Ambient Temperature

Generally speaking, when the temperature does not exceed temperature range speculated in the catalogue, the relay can normally work. When the temperature in application is higher than the temperature speculated in the instructions, please contact Hongfa to ensure whether the relay can be normally used according to the loads.



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4.2 Atmosphere

In the atmosphere with high humidity, moisture, even freezing dew and much dust, recommend to use sealed relays. Under high humidity, it would easily accelerate the rust of the relay parts and the dust easily result in the failure of the relay contacts.

Please avoid using the relay in an environment containing organic silicon. Otherwise, after the organic silicon enters into the relay, it may accelerate contact failure. If there are water vapor, H₂S, SO₂, NO₂, Cl, P, dust, or other currently unknown harmful substances and elements in the operating environment gas, it may lead to increased contact resistance and poor contact during the use of the relay. In the above circumstances, please control the materials or use plastic sealed type, and arrange relevant tests to confirm.

In application, if the ambient atmosphere is better, recommend to use the dust protected and flux proofed relays for they can get the longer electric endurance than plastic sealed relays.

5. Outline and Mounting

5.1 Outline and Mounting Gap

The outline sizes of the relays usually have a certain tolerance. Therefore when the circuit and the mounting gap are designed, the design is suggested to be done according to the maximum size in the instructions.

5.2 Welding Methods

Since July 1st, 2006, the terminals of the relays produced have been lead-free. The suggested welding temperature and time are respectively 240°C to 260°C, 2s to 5s.

If reflow solder is required, it should be confirmed the relay can be reflow soldered according to the instructions.

If you have questions, please contact Hongfa.

5.3 The Model of Terminals

Select the suitable shapes of the terminals and mounting methods according to the real conditions.

Table 9






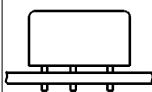

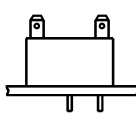
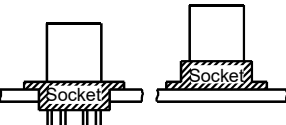
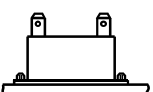
Classification	PCB (THT)	(SMT)	(Plug-in)	(QC)	(Screw)
Terminals type					
Representative products	HFD27 HF115F HFKC	HFD3	HF13F HF18FF	HF105F HFV7 HF3501	HF116F-3

Table 10

Classification	PCB Mounting			Plug-in Mounting	Screwing Mounting
	THT	SMT	THT and QC		
Mounting type					
Representative products	HFD27 HF115F HFKC	HFD3	HF102F HF105F-4 HF2160	HF13F HFV7 HF18FF HF3501	HF105F-4 HF92F HF116F

6. Others

6.1 Safety Approval

Generally UL/CUR approvals are applicable in North America and VDE&TÜV approvals are applicable in Europe. However, due to the international authority of these approvals, most of countries also accept them. If you have questions, please contact Hongfa.

6.2 Special Requirements

Except for normal products, we accept the customer's order for the products with special specifications. Please contact Hongfa when required.



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CHAPTER 3 PRECAUTIONS FOR RELAY APPLICATION

To properly use the relay, when the relay is selected and its characteristics are learnt, the precautions for using are required to be known and ensure the reliable operation of the relay.

The following precautions will be considered in application:

- 1) The relays are used within the range of the parameters listed in the catalogue, to the extent that it is possible.
- 2) The rated load and the life are the referent values, which will be different due to the different environments, load features and types. Therefore they should be tested in the practical or stimulated application.
- 3) DC relays are controlled by rectangle wave to the extent that it is possible while the AC relays are controlled by sine wave.
- 4) To maintain the performances of relays, please do not make the relay drop or be shocked strongly. Suggest that the relays dropped not be used.
- 5) Relays is used in the ambient temperature and normal humidity and in the atmosphere with less dust and harmful gas. The harmful gases include gases with sulfur, silicon and nitrogen oxide etc.
- 6) For the latching relays, please set them in the operate or reset state before they are used. *Please pay attention to polarity and pulse width when energizing on the coil
- 7) For polarized relay, please notify the polarity (+, -) of the coil voltage.
- 8) Except for the above there are other precautions. In the following they will be described one by one in the order listed in table 2.

1. Precautions for Contacts

Contacts are the most important elements of relay construction. Contact life is influenced by contact material, voltage and current value applied to the contacts (especially the voltage and current waveforms at the time of application and release), the type of load, switching frequency, ambient atmosphere, form of contact and the contact bouncing etc. The material transfer, welding, abnormal usage and the increase in contact resistance bring about the failure of the contacts. Please pay attention to them in application.

In order to better apply the relay, please refer to the following precautions of the contacts.

1.1 Load

The resistive load value is usually listed in the catalogue, however, which is not enough. It should be checked and tested in the practical contact circuit.

The minimum load described in the instructions is not the standard lower limit value the relay can switch reliably. The reliability of this load value is different due to differences of the ON-OFF frequency, the environment, the change of the required CR and absolute values.

1.1.1 Voltage

When the inductive circuit is switched off, there are the reverse voltage which is higher than the electrical circuit. The higher this voltage is the more the energy is. Correspondently the contact wear and material transfer also increase. Therefore notify the load type and load value the contacts of the relay control.

In the same current, DC voltage value the relay can switch reliably is much less than AC voltage value for AC current exists zero point (the point when the current is zero) and the electrical arc produced easily extinguishes. However for DC current, the electrical arc extinguishes when the contact gap is up to the certain value. Therefore the duration of the arc is longer than that in AC current and the contact wear and material transfer increases.

1.1.2 Current

When the contacts are on or off, the inrush currents will greatly influence the contacts. For example, when the load is motor load or lamp load, the higher the inrush current when the contact is on, the more the contact wear and the material transfer increase, and the more easily lead to the contact weld and not to separate.

Please check in practical application.

1.2 Precautions for Application

1.2.1 Avoiding Switching both the Large Load and the Micro Load in the Same Relay

When switching the high load, the scattered contact material is produced, which will attach to the contacts with the low load and lead to the failure of the contacts. Therefore, please avoid the same relay switching both the high load and the low load. If it is the only choice to do against this, when mounting please place the contacts switching the little load over the contacts switching the large load. However the reliability will be influenced.



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1.2.2 Precautions for the Two Pairs of Contacts Connected in Parallel

When the two poles of contacts are connected in parallel, the reliability will be improved but the load capacity could not, for the two poles of contacts could not be opened or closed at the same time.

1.2.3 The Problems about Phase Synchronism of Contact Operation and AC Load

If the operation of the relay contacts is synchronized with the phase of the AC power and the contacts always make or break in the high load voltage, seen in figure 4, the contact weld or material transfer will increase to lead the relay to prematurely fail. Please check whether the random phase are used in actual application. When the relay is driven by timer, micro computer etc., it will appear the power phase synchronism.

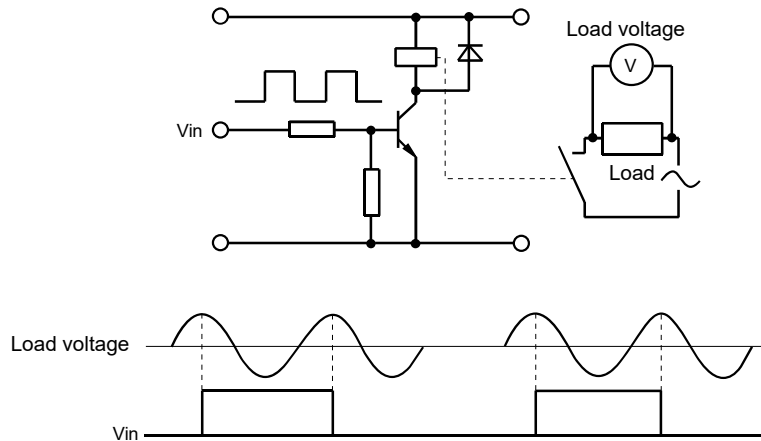


Figure 4

1.2.4 Electrical Endurance in the High Temperature

Electrical endurance of the relay will be lower in the high temperature than that in the low temperature. Please check while it is operating in the actual application.

1.2.5 Connection of Multiple Pairs of Contacts and Load

Multi-contacts are arranged in the same polarity of the supply power to the extent that it is possible and the passive polarity in the other polarity of the supply power, as shown in figure 5 (a). Thus, the short circuits between the contacts, due to voltage differences between the contacts, can be possibly avoided. The wiring as shown in figure 5 (b) can be avoided.

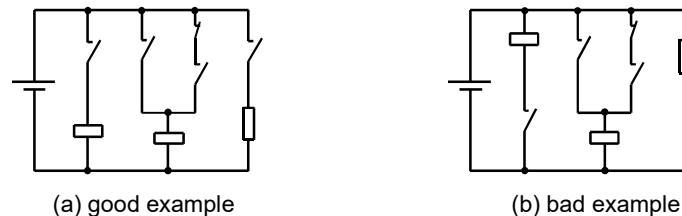


Figure 5

1.2.6 Avoid Short Circuit Caused by Contacts Weld and Electrical Arc

In the electrical circuit, the following points should be considered (seen in the figure 6)

1) Generally the gap between the contacts are small. The reason can probably be that the electrical arc between the contacts results in the short circuit. Please do not adopt the circuit shown in figure 6(b). The circuit shown in figure 6(a) is suggested to use and the certain interval can be set in the operation between Con1 and Con2.

2) It should be considered that the overcurrent should not be generated to make the circuit overload or burn when short circuit is caused by contact welding and error operation.

3) Care should be taken that the two pairs of switching contacts are not used to build the forward circuit and the reverse circuit, as shown in figure 6(d). Suggest that the circuit shown in Figure in 6(c) is applied and the certain interval is set in the operation between Con1 and Con2.



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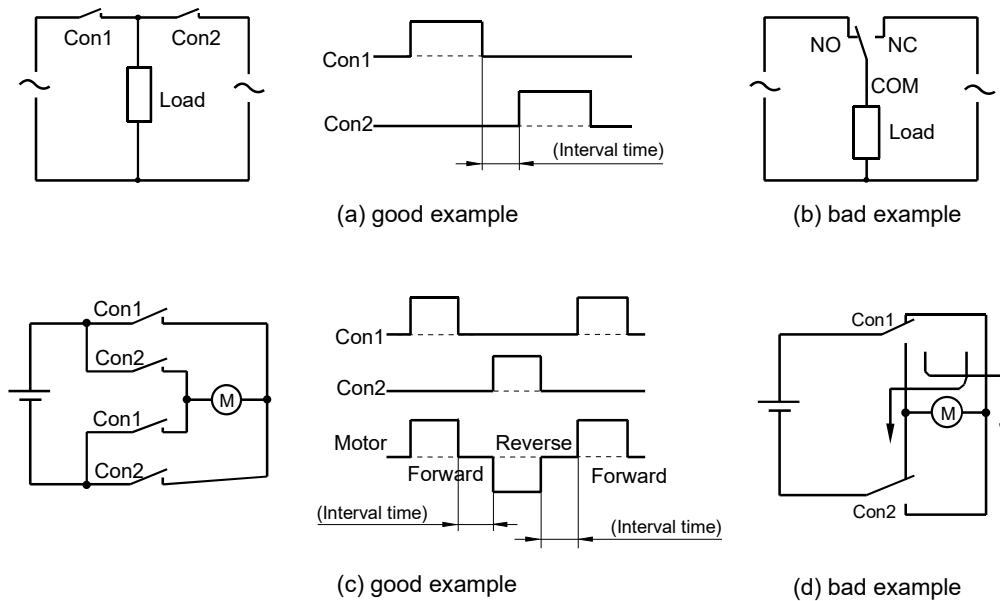


Figure 6

1.2.7 Avoid Short Circuit between Contacts

The miniaturization of the electrical control equipments makes the control components tend to miniaturization, so the relay with multiple poles of contacts are used, care is taken of the differences of the voltage between the poles of contacts and load types. Suggest that large differences of the voltage among the contacts do not exist in order to avoid short circuit between poles of contacts.

1.2.8 Precautions for Using Long Lead Wire

In the contact circuit of the relay, when the lead wire with more than 10m length is used, the inrush current will be generated due to the capacitance in the lead wire. Please connect in series the resistance (about 10Ω to 50Ω) in the contact circuit, as shown in Figure 7.

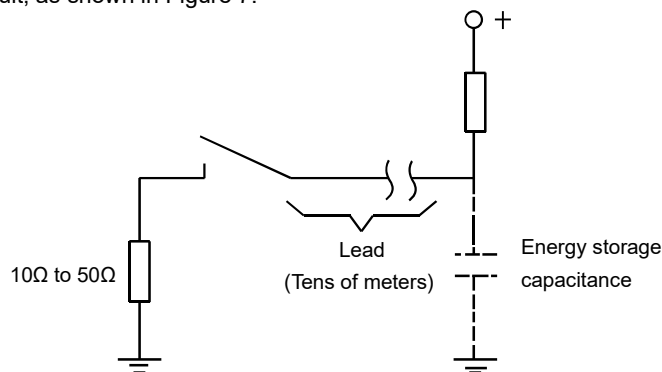


Figure 7

1.2.9 Precautions for the Contacts of the Magnetic Latching Relay

Generally the latching relays are shipped from the factory in the reset states. However during shipping or mounting relays the shock of the relay may change the operate state. Therefore suggest that in application it be set in the required state.

1.3 Contact Protection

1.3.1 Inrush Current and Reverse Voltage

When the motor, capacitance, solenoid and lamp load make, the inrush current is generated, which is several multiple steady state currents.



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When the inductive load such as solenoid, the motor, contactor, the reverse voltage which are from hundreds of to thousands of volts. Generally in the normal temperature and atmospheric pressure the critical insulation destruction voltage of the air is 200 to 300V. Therefore if the reverse voltage exceeds this value, the discharge phenomena between contacts will happen.

Both inrush current and the reverse voltage will greatly damage the contacts and obviously shorten the relay life. Therefore the proper use of the contact protection circuit may increase the life of the relay.

1.3.2 Material Transfer of Contacts

Material transfer of contacts refers to the transfer of the contact material from one contact to the other. When material transfer becomes serious, the accidented contact surface can be seen by eyes. As shown in figure 8, the accidented surface easily causes contact welding.

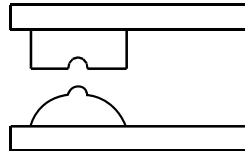


Figure 8

Generally, material transfer of contacts is caused by the one-way flowing of the large current or the inrush current of the capacitive load and often happens in DC circuit. Generally it shows the protruding shape in the passive polarity and the concave shape in the positive polarity. Therefore the proper use of the contact protection circuit or the use of AgSnO contact which has better resistance against material transfer may reduce the material transfer of contacts. AC load with large capacity should be checked in actual application in the test.

1.3.3 The Protective Circuit of Contacts

Generally speaking, in contrast to resistive load, inductive load more easily damages the contacts. The use of properly protective circuit may make the influence of inductive load on the contacts equal to the influence of resistive load on the contacts. Care is taken that the incorrect use will generate the counter effect. Table 11 shows the typical examples of the contact protective circuit.

Table 11

Circuits Example		Application		Features	Device Selection
		AC	DC		
CR Circuit		△	√	<ul style="list-style-type: none"> The supply voltage is usu. 24 to 48V. The load is a timer or a contactor, the release time lengthens If the load is a time, leakage current flows through the CR circuit causing faulty operation. If used with AC voltage, be sure the impedance of the load is sufficiently smaller than that of the CR circuit. 	<p>A: As a guide in selecting C and R</p> <p>C: 0.5 to 1μF per 1A contact current</p> <p>R: 0.5 to 1Ω per 1V contact voltage</p> <p>Values vary depending on the properties of the load and variations in relay characteristics; Please check by test.</p> <p>Capacitor C acts to suppress the discharge the moment the contacts open.</p>
		√	√	<ul style="list-style-type: none"> Applicable to the supply voltage of 100 to 200V If the load is a relay or a contactor, the release time lengthens. 	<p>The dielectric strength of the capacitor C is usu. 200 to 300V or more than two times the load voltage.</p> <p>Please use AC capacitor (non polaried) in AC circuit.</p>



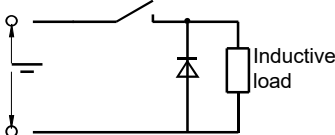
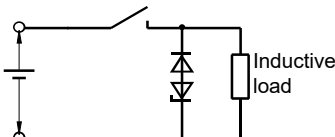
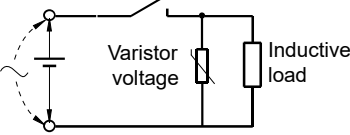
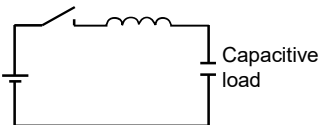
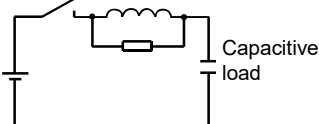
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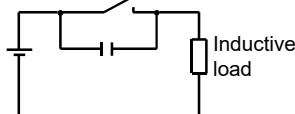
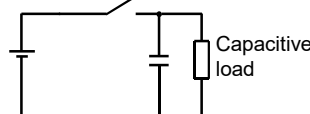
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To be continued

Circuits Example		Application		Features	Device Selection
		AC	DC		
Diode Circuit		X	√	<ul style="list-style-type: none"> At the terminals of the inductive load the diode is connected in parallel, which can reduce the reverse voltage. The release time is longer than that in CR circuit. 	Select a diode with the reverse breakdown voltage at least 10 times the circuit voltage and a forward current at least as large as the load current. In electric circuits where the circuit voltages are not high, a diode can be used with a reverse breakdown voltage of about 2 to 3 times the supply voltage.
Diode and Zener Diode Circuit		X	√	<ul style="list-style-type: none"> If the zener diode is added in the diode circuit the release time is reduced. 	Use a zener diode with a zener voltage about the same as the supply voltage.
Piezo Resistance Circuit		√	√	<ul style="list-style-type: none"> Reduce the excessive high voltage between the contacts If the load is a timer and a contactor, the release time lengthens 	Use the piezo resistance with control voltage V_c 1.5 times the supply voltage peak value. If the control voltage is excessively high, the effect of the reverse control is not good. Please check in application.
Inductance Circuit		√	√	<ul style="list-style-type: none"> Effective when piezo resistance is connected to both contacts if the supply voltage is 24V or 48V. Effective when piezo resistance is connected to the load if the supply voltage is 100V or 200V. 	
Inductance and Resistance Circuit		√	√	<ul style="list-style-type: none"> Reduce the excessively high voltage between the contacts 	

Notes: "√" means good; "X" means bad; "△" means to notice. Please avoid using the following circuit as table 12.

Table 12

	
When the contacts are OFF, the effect on controlling the electric arc is good. However in this case the capacitor C stores the energy, so the energy in the capacitor C will release to the contacts, when the contacts are ON, will result in the easy welding of the contacts.	When the contacts are OFF, the effect on controlling the electric arc is good. However the contacts are easily welding due to the large charge current of the capacitor C when the contacts are ON.



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1.3.4 Precaution for Mounting Protective Elements

When the protective elements such as diode, C-R, piezo resistance are mounted, they must be mounted beside the load or the contacts. If the distance is far, the protective effect will not be good. Suggest to be mounted within 50cm.

2. Precautions for Coil

The application of rated voltage to the coil is the basis for a relay to work normally. Only applied the voltage beyond the operate voltage, the relay can work, but the rated voltage must be applied to the coil for the changes caused by the temperature and the variation of the power voltage will influence the normal operation of the relay.

2.1 Types

2.1.1 AC Operation Type (AC type)

Generally the work voltage of the relay is always a commercial frequency (50Hz or 60Hz). Suggest that the products with standard voltage specifications listed in the instructions be selected to the extent that it is possible. If the products with other specifications are required, Please contact the technicians in HONGFA company. For AC relays, due to the factors such as eddy current loss, hysteresis loss and lower coil efficiency, the temperature rise is greater than that for DC type. When voltage exceeds 70% of rated voltage, the buzz is easily produced. Please notify the variation of the power voltage. For AC relays, when the coil breaks, there should not remain any DC voltage in the circuit; otherwise the relays can not release normally.

2.1.2 DC Operation Type (DC type)

Generally the DC relays mostly are voltage drive type. Suggest that to the extent that it is impossible, the products with the standard voltages listed in the instructions should be selected. If the products with other specifications are required, Please contact the technicians. Please check the voltage polarities of the relay coils in the instructions. If the diode for the control or the elements for displaying are added, once the opposite connection of the voltage will lead to the abnormal operation of the relays or the abnormal operation of the added elements or even short circuit. When the coil is paralleled with diode or LED, the release time will be prolonged which may reduce the electrical endurance. Please note that. In addition, for polarized relay, the polarity of the voltage applied to the coil is opposite to that in the instruction, the relay will not work.

2.2 Input Power of Coil

2.2.1 Input Power for AC Coil

To make the relay work reliably, please apply rated voltage to the coil. If the voltage, which does not make the relay completely operate, is continuously applied to the coil, the coil will abnormally heat to make the coil abnormal wear.

The supply voltage of AC relay would better be sine curve. The AC coil can better control the buzz. If the waveform distorts or deforms, the control function can not be displayed better. Figure 9 shows several examples of common waveforms.

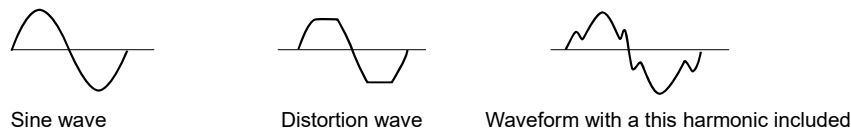


Figure 9

If the parts such as the motor, solenoid and transformer are connected in the drive circuit of the relay, when the parts work the coil voltage of the relay will reduce and then the relay contacts will shake to cause the contact welding, abnormal wear or non-conduction. The alike phenomena of the reduction of the coil voltage will happen when the miniature transformer are used, no transformer with rich capacity can be used as the power source and the wiring is long, the wiring used in the house or the shop etc. is thin. If the similar failure happens, Please use the synchro oscilloscope to check and properly adjust.

If using the loads with large variation such as the motor, Please separate the drive circuit of the coil from the power circuit according to the usage.

If the AC relay could not work reliably, switch AC to DC and then select the proper DC relay.

2.2.2 Input Power for DC Coil

In order to work steadily, the voltage applied to the two terminals of the coil of the DC relay is suggested to use



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the coil rated voltage under 70% or the relay could not work steadily, to cause the contact welding or abnormal wear, especially when such parts as the motor, solenoid or transformer etc. are connected in the drive circuit of the relay, the case will be more obvious

As the power source of DC relay, there are the accumulator, the full (as shown in 10-1) or half wave rectifier circuit of smoothing capacitor, which will influence the operating characteristics of the relays. Please check in the practical application.

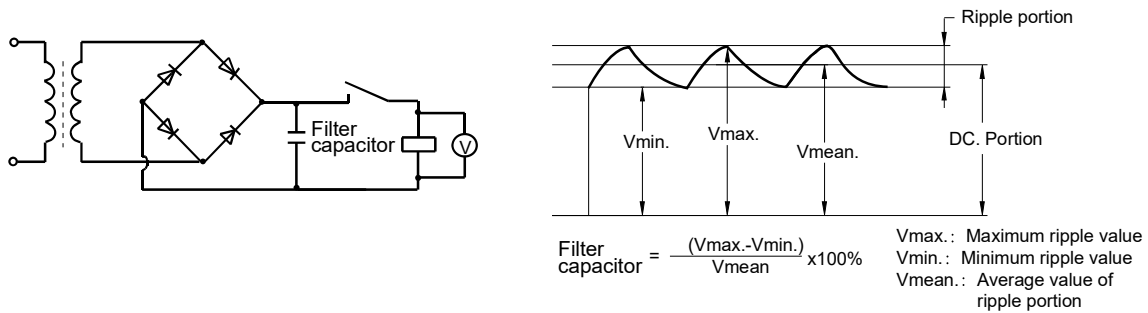


Figure 10-1

By reducing the holding voltage of the coil, the power consumption can be reduced. The common method to reduce the power consumption of the coil is that inputting the rated voltage pulse of the coil and then reducing the coil voltage or using PWM pulse width modulation. Please take the following Figure 10-2 for reference.

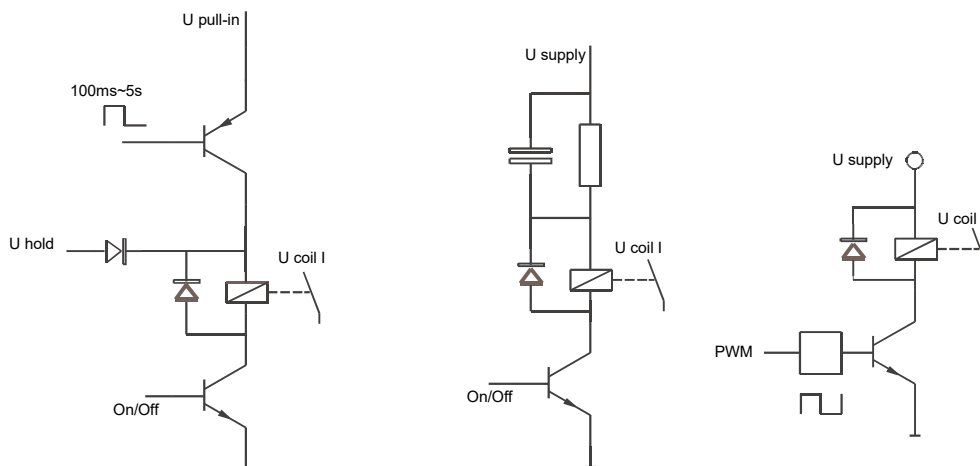


Figure 10-2

Please note the following items when PWM is used:

- 1) the coil must be energized by 1-1.5 times of rated voltage for more than 100ms; 2) frequency 10-25kHz is recommended;
- 3) the duty cycle is recommended by 50%-70%. If the duty cycle is less than 50%, Hongfa should be informed for special control;
- 4) both ends of the coil must be connected in parallel with the continuous current diode.



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2.3 Maximum Voltage of Coil

Except for the limits from the coil temperature rise and the heat-resistant temperature of insulation material of the coil electro-magnetic wire (once beyond the heat-resistant temperature, short circuit will locally happen in the coil and even the coil burns), the maximum voltage of the coil will be influenced by heat distortion and the aging of the insulation materials. Especially it can not destroy other machines, hurt the human body or cause the fire, so it must be limited with the certain range. Therefore please do not make it beyond the regulated value in the instructions.

Maximum voltage is the maximum value of the voltage which can be applied to the coil of the relay in short time rather than the value of the voltage allowed to be continuously applied with.

2.4 Coil Temperature Rise

2.4.1 Temperature Rise

In the course of the relay operation, the coil temperature will be increased. When a pulse voltage with ON time of less than 2 minutes is used, the coil temperature rise value is related to the ON time and the ratio of ON time to OFF time. The various relays are essentially the same in this aspect.(table 13)

Table 13

(Current Passage Time) For Continuous Passage	(%) Temperature Rise Value is 100%
ON:OFF=3:1	about 80%
ON:OFF=1:1	about 50%
ON:OFF=1:3	about 35%

2.4.2 Pick-up Voltage Change Due To Coil Temperature Rise

The temperature rise causes the increase of the coil resistance and correspondently the pick-up voltage will increase. the resistance temperature coefficient of the copper wire is about 0.4% per 1℃. with this ratio, the coil resistance increases. Pick-up, release and reset voltages in the instructions are all the values in 23℃ . When the coil temperature is beyond 23℃ ,pick-up voltage surpasses sometimes the speculated value in the catalogue. Please check in the practical application.

2.5 Leakage Current

When designing the circuit, please avoid the leakage current flowing through the relay when the relay does not work.

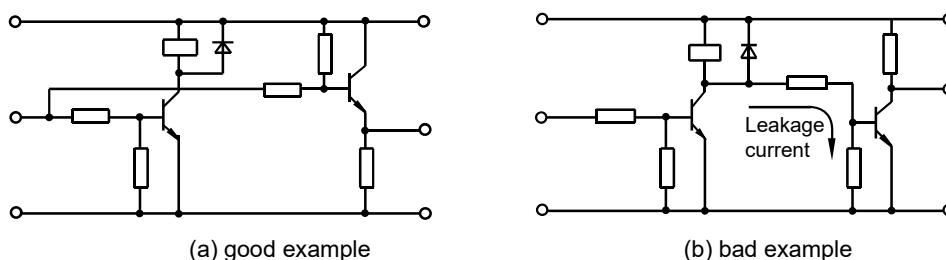


Figure 11



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2.6 Energized Voltage of Coil and Operation Time

In the case of AC operation, there is extensive variation in operate time according to the difference of the phase when the coil is applied with the voltage.

In the case of the DC operation, although the voltage applied to the coil increases and operate time of the relay will properly become rapid, the contact bounce time when the contacts closes is extended to cause the reduction of the life or the contacts welding when they work in the rated load or in the large inrush current.

2.7 The Application of Relay Connected in Parallel and in Series.

Several relays connected in parallel, please take care of the wrong operation for the bypass current and leakage current shown as figure 12.

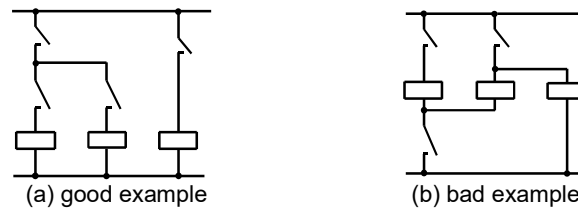


Figure 12

2.8 Avoid Gradual Increase of Coil Impressed Voltage

In the course of the operation, the relay experiences such phases as contact pressure changing, contact bounce and the unstable condition of the contacts. When gradual increase of coil impressed voltage happens, the time of the unstable phase becomes longer to affect the life of the relay.

In order to reduce the influence on the relay, please impress bypass voltage to the coil, to the extent that it is possible.

2.9 Precaution for Long Power Wire

If the power wire is longer, please select the relay according to the principles of impressing the rated voltage after testing the coil voltage of the relay.

If paralleled with the power line and long distance, when the supply power of the coil is switched, the voltage at the terminals of the coil will be generated due to the capacitance stored in the wire and then result in the release worse. In this case, Please connect the bypass resistor at the two ends of the coil.

2.10 Long Term Current Carrying

If the coil is continuously applied the power to for a long term, the self heating of the coil promotes the aging of the insulation materials of the coil and the worse characteristics, so in this case please use the latching relay.

If the monostable relay must be used, please use the hermetic relay which is not easily influenced by the external environments and also use the suitably protective circuit to prevent the loss due to the contact failure or the break of the coil wire.

2.11 Low ON-OFF Frequency

When the ON-OFF frequency is below once per month, please periodically check the states of the contacts. If the contacts keep the non ON-OFF state for a long time, the organic film will be formed on the surface of the contacts and result in the contact failure.

2.12 Electrolytic Corrosion of Coils

When the relays are placed in high temperature and high humidity atmospheres or with continuous passage of current, that the coil is grounded will make the coil electrolytic erosion to cause the break of the electro-magnetic wires. Therefore please do not make the coil grounded to the extent that it is possible. In the case where unavoidably the coil is grounded, please set the control switch of the relay coil in the positive side of the coil.



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2.13 Precaution for Coil of Magnetic Latching Relay

2.13.1 Coil Voltage

Please check whether the direction of coil impressed voltage is correct or not, or the relay may not work. Due to the characteristics of the magnetic latching relays, to prevent the relay against overheating and then burning, the long-term impressed voltage on the coil are not allowable.

2.13.2 Self-locking of Relay

Please avoid using the NC contacts of the relay itself to switch off its own coil. Otherwise the failure will happen due to the instability of the relay operation. (Figure 13)

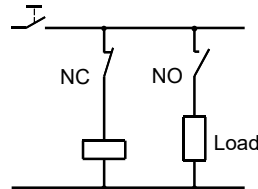


Figure 13

2.13.3 Precautions for Using Relay Connected In Parallel

When the coil of the latching relay is connected in parallel with the coil and the solenoid of other relays, please add diode to prevent the reverse voltage from influencing the normal work of the relay.

2.13.4 Width of Minimum Impulse In Operating and Resetting

In order to make the latching relay operate or reset, please impress the rectangle rated voltage for more than 5 times at the operate time or the reset time on the coil and then operate it. If the impulse width can not meet the requirements above, please check in the actual application.

Please avoid using in the conditions that the power source has many surges.

2.13.5 Precautions for Double-Coil Relay

Do not impress the voltage on the set coil and reset coil at the same time, or the relay will abnormally heat, abnormally operate and even abnormally wear.

As shown in figure 14, when the terminals of either of operate coil and reset coil in the circuit are required to connect and the other terminals are connected to the same polarity of the power source, Please directly connect the terminals to connect (short circuit) and then connect to the power source. Thus the insulation between the coils can be maintained well.

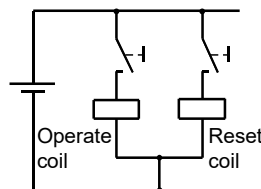


Figure 14

2.13.6 Drive Circuit of Latching Single-Coil Relay

As shown in figure 15, it is one of the drive circuits of the latching single-coil relay. When the signals are input, the current charges the capacitance C and in turn charges the coil and then make the relay operate; when the signals are removed, the electric power stored in the capacitance C will discharge through trinode Tr and the coil and make the relay reset.

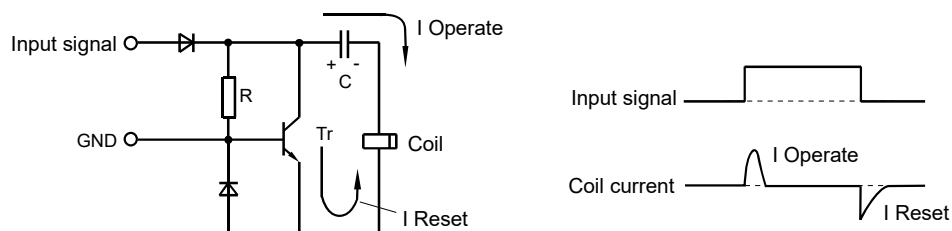


Figure 15



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3. Performance

3.1 Precautions for Plastic Sealed Relay

Hermetic relays can resist under bad surrounding. However, please pay attention to the following precautions in application to avoid the failure.

3.1.1. Regarding Practical Environment

Plastic sealed relays are not suitable for using in the environment which has the special requirement for the air seal. Please avoid using them in the pressure exceeding 86kPa to 106kPa.

3.1.2. Regarding washing

When washing PC board after the terminals soldered on PC board, suggest that the washing can be done by washing solvent of alcohol series.

Please avoid supersonic washing for supersonic washing may cause the break of the coil wire and the light contact welding.

3.2 Vibration and Shock

The transient break of the contacts when the relays are shocked strongly, will lead to the false operation. Therefore, when the relays are mounted on the same board with other parts (such as electromagnetic switch, air switch et.) which can produce the shock, the measures of reducing the influence of the shock on the relay should be taken. For example, make the direction of the shock* and direction of relay contacts make/break at the right angles to the moving direction of armature, or to mount these components on different boards, or using a buffer tablet, or to take some measures in the application circuit to reduce the impact of false operation of relay contacts (as illustrated by figure 16):

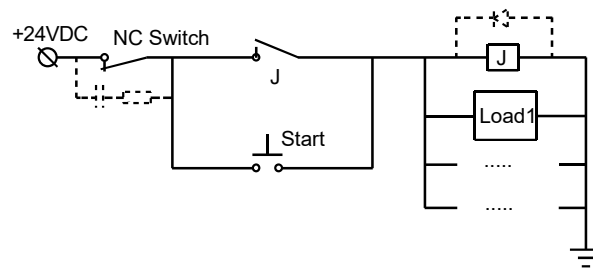


Figure 16

Remarks: in the above figure, a RC is parallel connected to NC switch, and a FWD is parallel connected to relay coil. This measure can avoid the abnormal cut-off of the circuit caused by the abrupt break of NC switch under strong shock and vibration.

In addition, for the relay in the vibration atmosphere in the long term (such as electrical car), please avoid combining with the socked in application. Suggest that the relay be directly soldered on the PC board.

3.3 The Influence of External Magnetic Fields

If there is the strong magnetic fields around the relay, if the relay is mounted beside the large relay, transformer or the speaker, the characteristics will produce the false operation with the variation of the external magnetic fields, especially for polarized relays. Because the operation of the relay is dependent on the internal permanent magnet, it is easily influenced by the external magnetic fields. Please pay attention to the mounting position in practical application and check.

3.4 Vibration, Shock and Weight During Shipping

During shipping the relay or the equipment with the relay installed, the large vibration, shock and weight will cause the failure of the relay functions. Please use the cushion package to control the vibration and shock within the allowable range.



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4. Environments

4.1 Regarding Ambient Temperature and Atmosphere

Care is taken that the ambient temperature at the installation does not exceed the value listed in the instructions. In addition, the contact surface will form sulfured film, oxide film or attached dust in an atmosphere with dust, moisture and sulfur gases (SO₂, H₂S etc.) or organic gases to cause the unstable contact and the failure of the contacts. Therefore please select sealed relays. If the plastic sealed relay is selected, it is required to check in application.

4.2 Harmful Gases To Relay

Please do not use the relay in the atmosphere with the following gases. In these atmospheres, plastic sealed relays can not avoid the influence of gases on the contacts. Please use the hermetic relays.

4.2.1 Silicon Atmosphere

Silicon-based substances (silicon rubber, silicon oil, silicon-based coating material and silicon caulking compound etc.) around the relay will emit volatile silicon gas, which may cause the silicon to adhere to the contacts and may result in contact failure.

4.2.2 Sulfureted Gas

Sulfured gases easily sulfur the contacts and result in the contact failure or non-conduction.

4.2.3 NO_x Gas

When a relay is used in an atmosphere high in humidity to switch a load which easily produces an arc, the NO_x created by the arc and the water absorbed from outside the relay combine to produce nitric acid. This corrodes the internal metal parts and adversely affects operation. Please do not use the relay in the atmosphere where the humidity is beyond 85%RH (at 20*).

4.3 The Circumstance with Water, Leechdom, Solvent and Oil

Do not use and store the relays in the atmosphere where the relays may be attached to by water, leechdom, solvent and oil etc. for water and leechdom may make the parts rusted, the plastics aging and also result in leakage current which damages the relays or the circuit and solvent and oil may make the marks disappearing or the parts aging. For covers made from PC materials, please prevent from contamination by some organic solvents; otherwise it is likely to lead to bulging or crack.

4.4 Atmosphere of Usage, Storage and Transport

During usage, storage and transportation, avoid locations subject to direct sunlight and maintain normal temperature, humidity and pressure conditions. The allowable range of the temperature and humidity suitable for usage, storage and transportation are shown in the unshaded part in figure 17. The allowable temperature may differ with the types of the relays. In case that the condition in real application is different from that of IEC 61810-1, UL508, UL60947-4-1, GB/T21711.1, etc. the electrical endurance of the relay must be confirmed by tests.

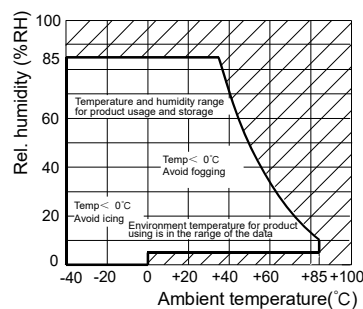


Figure 17

The suggested ranges of the temperature and humidity during usage, transportation and storage are as follows.

- 1) temperature: 0°C to 40°C
- 2) humidity: 5%RH to 85%RH
- 3) air pressure: 86kPa to 106kPa.



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4.4.1 Atmosphere High in Humidity

In the atmosphere high in humidity, when the temperature around sharply changes, the dew will be formed in the internal of the relay and result in the cracking of the insulation material, the break of the coil wire and the rust. The typical examples will happen on the ship transporting on the sea.

Dewing is a phenomena that the vapor freezes water drops in the atmosphere high in temperature when the temperature sharply reduces from the high temperature to the low temperature or the relay is moved in the high temperature from the low temperature.

4.4.2 Low Temperature (under 0°C) Environment

Please note the icing phenomena in the environment with low temperature (under 0°). Icing may result in the welding of the movable parts, the delay of the operation or preventing the operation etc.

Icing refer to the phenomena that water attached to the relay will freeze ice when the temperature reducing below freezing point.

4.4.3 Low Temperature, Low Humidity Environment

Note that the plastics may embrittle in low temperature, low humidity environment.

4.4.4 High Temperature, High Humidity Environment

Note that if the relay is in high temperature, high humidity environment for a long time the contact surface easily forms the oxidized film and then results in the unstable contact and the failure of the contacts. Other metal parts also are easily oxidized or rusted to result in the failure of the functions

4.4.5 SMT Environment

Relay of SMT type is sensitive to the humidity so they are packed with humidity proof package. The following points should be considered during storage.

- 1) Please use the humidity proof packing bags as soon as possible after they are unsealed.
- 2) If the humidity proof packing bags need long term storage after they are unsealed, it is suggested that the desiccator with humidity control be used to store them.

5. Outline and Mounting

5.1 Top View and Bottom View

Generally the bottom view is the projection whose projection plane is terminal side. Otherwise, the top view is the projection whose projection plane is cover side. Please take care of it when using the instructions or mounting the relays.

5.2 Mounting Direction

Unless otherwise stated, mounting direction of the relays is arbitrary. In order that the relay can work more stable and reliable, mounting direction need considering.

5.2.1 Vibration Resistance and Shock Resistance

It is ideal to mount the relay so that the movement of the contacts and movable parts is perpendicular to the direction of vibration or shock. Especially when the coil is not excited, the vibration or shock resistance of NC contacts is weak. If mounting direction is proper, their functions can be ensured.(figure 18)

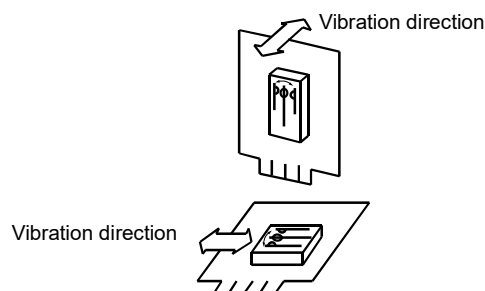


Figure 18



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5.2.2 Contact Reliability

Mounting the relay so the surfaces of its contacts are vertical prevents dirt and dust as well as scattered contact material and powdered metal from adhering to them when the arc is generated.

5.3 Adjacent Mounting

When many relays are mounted close together, abnormally high temperatures may result from the combined heat generated. To prevent the heat buildup, please mount relays with sufficient spacing between them. When many boards mounted with relays are installed in a card rack, please be sure that the ambient temperature of the relay does not exceed the value listed in the instructions.

5.4 Shroud Mounting

Use the gaskets when mounting to prevent from the damages and deforms. Keep the screwing moment in the range of 0.49 to 0.686N·m(5 to 7kgf·cm. To prevent from loosening, please use the spring gasket.

5.5 Mounting the Plug-In Terminals

When mounting the relay with plug-in terminals, the plug-in strength is based on 40N to 70N(4kgf to 7kgf).

5.6 Supersonic Cleaning

Do not clean the relay by the way supersonic cleaning, for the supersonic will result in the contact welding and the break of the coil wire.

5.7 Mounting and Soldering of THT Relay

The mounting and soldering of the THT relay can be divided into the following steps.(figure 19)

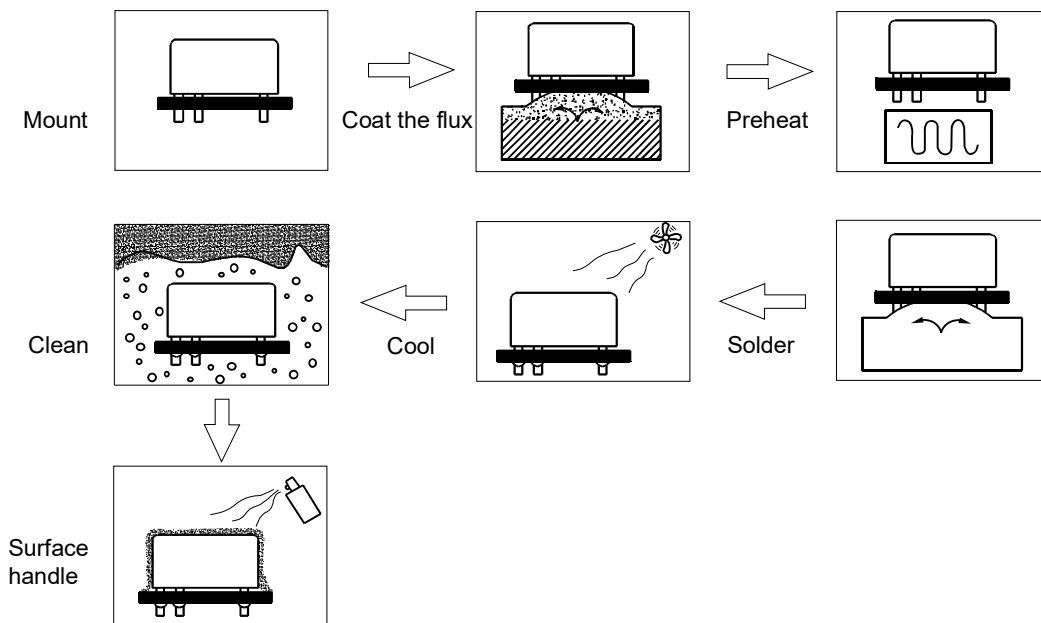


Figure 19

In the following the considered points are described when THT relay is soldered on the PC board. Please refer to them in application.

Note that if the solder entered the relay due to the carelessness, the functions of relay will be destroyed.

There will be such problems as the relay not be suitable for the automatic soldering or cleaning due to the different protective constructions. Please see the details in the constructions and characteristics in 3.1 pattern of encapsulation in Chapter 2.



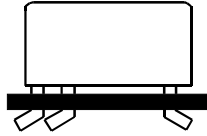
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5.7.1 Mounting

Do not bend the terminals of the relay (figure 20) for it may destroy the initial performances of the relay.
Please correctly process the PC board according to the mounting hole drawing in the instructions.
Please maintain the balance of the relay.
Please note that the set force of the hook for mounting is too much large to result in the internal failure of the relay.



Bad example

Figure 20

5.7.2 Coating Flux

Please use the rosin flux which is not corrosive and the alcohol solvent which is less chemistry.
Please use the thin and even coating flux to prevent from penetrating the relay. As for the dipping coating, please keep the surface of the flux stable.
Please adjust the places to ensure that the flux will not overflow through the surface of PCB.
Please do not make the flux attached to the parts of the relay except for the terminals. Otherwise the insulation of the relays will be reduced.
For the dust protected relays and flux proofed relays, do not use the coating method of pushing deeply PCB from the above into the sponge absorbing the flux, as shown in figure 21. This will make the flux penetrating the relay, especially for the dust protective type.

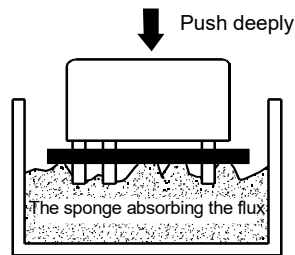


Figure 21

5.7.3 Preheating

In order to improve the soldering performance, please preheat without failure.
Please preheat under 100° (the soldered surface of the PC board) within 1 minute.
Do not use the relays which are placed in the high temperature for a long time due to the set failure for their initial performance may have changed.

5.7.4 Soldering

Precautions for soldering seen in table 14.

Table 14

Automatic Soldering	Manual Soldering
<ul style="list-style-type: none"> To maintain the soldering stable, the suggested soldering method is wave solder. Adjust the height of flux liquid level to make them not overflow the PCB. Please do it according to following suggested conditions. <p>Soldering temperature: about 260°C ± 5°C (Applicable to Power relays)</p> <p>Soldering temperature: about 250°C ± 5°C (Applicable to Signal relays)</p> <p>Soldering time: within about 5s.</p>	<ul style="list-style-type: none"> Please sufficiently clean the head of searing-iron with fluxing to make the surface of it smooth. Please do it according to the following suggested conditions. <p>Searing-iron: 30W or 60W</p> <p>The temperature of the head of searing-iron: about 280°C or 300°C</p> <p>Soldering time: within about 3s</p> <p>Use the solder with rosin fluxing.</p>



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- Remarks:** 1. The preheating and soldering temperature and time for automatic soldering should be reduced as low as possible to avoid any change in relay performance due to excessively high temperature or too long time preheating or soldering.
2. It is normal if some relay covers become slightly bulging under right soldering conditions.
3. In the process of manual soldering it is prohibited to press or pull the relay terminals because such doing will lead to changes in product performance or even relay failures.

5.7.5 Cooling

After automatic soldering, please ventilate and cool them to avoid the aging of the relay or its parts caused by the heat generated when the relay soldered.

Although the sealed relay can be cleaned, it is not cleaned for the sudden connection with the cool solvent may damage the hermetic characteristics of the relay.

5.7.6 Cleaning

Please select the cleaning method in table 15 when cleaning.

Table 15

Dust Protected Type	Flux Proofed Type	Plastic Sealed Type
<ul style="list-style-type: none"> Hot cleaning or soap cleaning not allowable Scrub the welding surface of PCB 		<ul style="list-style-type: none"> Washable in limited condition. Use the alcohol solvent or water. The temperature for cleaning is under 40°C. Do not do supersonic cleaning or truncate the terminals of the relays, or the break of the coil wire and the contact welding will happen.

Due to different soldering condition, sealed relays can be impaired when mounting on PCB. If cleaning is necessary after soldering, it is recommended to solder under the condition provided by HF and to select special sealed relays (customer code: 310).

Avoid cleaning with Freon, Trichloroethane, diluent or gasoline.

5.7.7 Surface Handling

In order to prevent the insulation of PCB from worsening, Please note the following precautions when surface handling.

The dust protected type and the flux proofed type result in the failure due to the surface handling agents penetrating the relay. Therefore please do not do the surface handling or mount the relay after surface handling.

Due to the bad influence of the surface handling agents on the relay eg. melting the cover, please select carefully and check and test in application.

Spraying and brushing processes are recommended for surface treatment, and dip-coating is prohibited. Surface treatment agent should best be room-temperature liquid agent, which should be sprayed when the relay is cooled down to room-temperature. The agent can be dried naturally or under constant temperature which should not exceed 60°C. Meanwhile, the drying temperature is not allowed to be decreased when the agent is not completely dried, otherwise the agent could be absorbed into the relay and thus lead to relay failure.

Please contact us when special surface treatments processes are used so that we can provide you a suitable product.

There are the following suggestions on the coat, as shown in table 16.

Table 16

Type of the Coat	Plastic Sealed Relay
Epoxy resin	Allowable
Polyurethane	Allowable
Silicon	Not allowable
Fluorin	Allowable



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5.8 Mounting and Soldering of SMT Relay

The mounting and soldering of SMT relays have the following steps, as shown in figure 22. In the following the considered points are listed when the SMT relays are soldered on PCB.

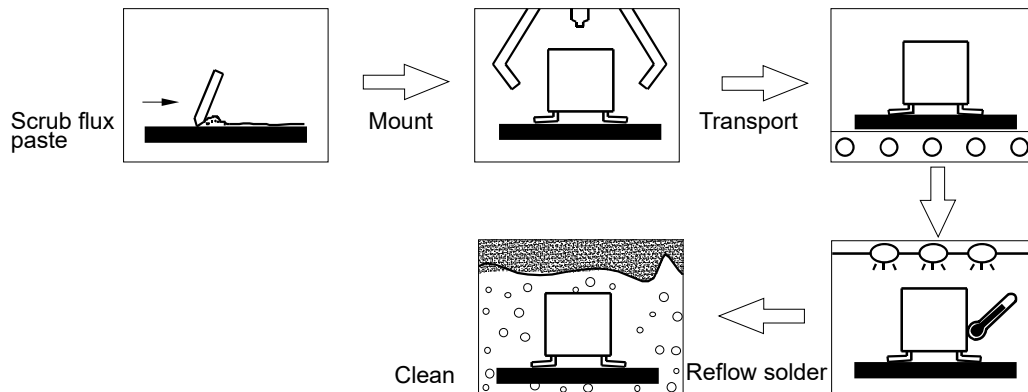


Figure 22

Please refer to these in application. Note that the relays are not damaged in processing.

5.8.1 Scrub Flux Paste

Please use the rosin and chlorine-free flux paste for chlorine may erode the terminals and circuit panel. Flux paste should be coated evenly and the thickness is 0.15mm or 0.2mm.

5.8.2 Mounting

When mounting the relays, do not set the conservative force of the finger within the range specified in table 17, unless otherwise stated in the catalogue.

		Table 17
Direction	Maintaining Force	
Direction A	Below 1.96N	
Direction B	Below 4.9N	
Direction C	Below 1.96N	

5.8.3 Transportation

During the transport, the relays will not fall off due to the factors such as the shock and vibration to avoid the bad soldering produced thereby.

5.8.4 Reflow Solder

Figure 23 shows the temperature curve of the PCB surface when the infrared ray are used to reflow solder. Please consult the specification of the relays due to the different characteristics of the different relays. If there is no statement in the instructions, Please use the temperature curve as shown in the following figure.

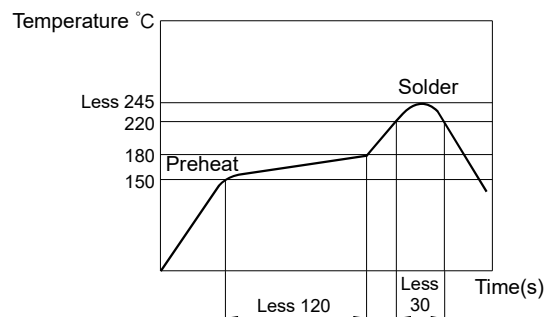


Figure 23



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When just finishing soldering, please do not clean the relay immediately, for the connection with the cool solvent may damage the hermetic characteristics of the internal parts.
Do not dip the relay in the flux groove for it will deform the plastics and then result in the failure of the relays.
Please see the soldered state in figure 24.

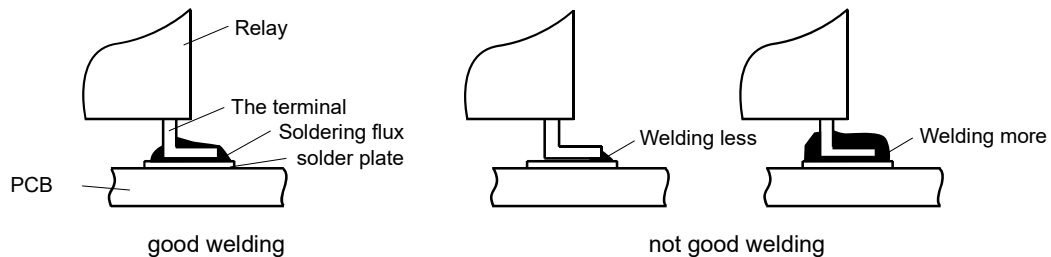


Figure 24

5.8.5 Cleaning

Hot cleaning or soap cleaning can be used and the cleaning temperature should be controlled under 40*.
Please use the alcohol solvent or water to clean and do not use Freon, thinner or gasoline to clean.
Do not use supersonic to clean, or the break of the coil wire and the contact welding will be resulted in.
Improper welding will decrease the relay sealing, so please do not clean the relay or do the surface treating (soaking protector).

6. Other Precautions

6.1 Precautions for the Safety

When the relay works, do not touch the relay with hands for there is the danger of getting the electric shock.
Please switch off the power when mounting, maintaining and handling the relays (including the connecting parts such as terminals and sockets).
When connecting the terminals, firstly refer to the wiring diagram in the instructions, and then make correct connection. The false connection may result in the unexpected false operation, abnormal heating or fire.
If the contact welding, the failure of the contact or the break of the coil wire happens, other properties or lives will be threatened. Please use the double mounting sets.

6.2 Tube Packaging

When packing the relay by the tube, do not shake the tube to shock the relays, for which will result in the failure of the relays. If the package uses the stop plug, be sure to slide the stopper plug to hold the remaining relays firmly together so they would not move in the tube.

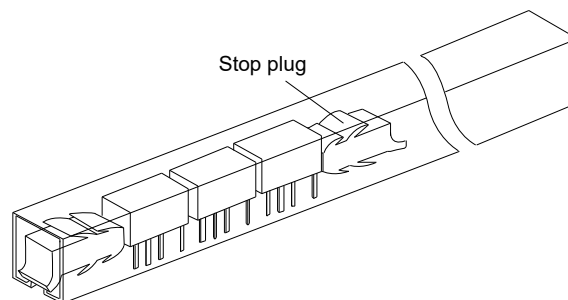


Figure 25



HONGFA RELAY

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

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CHAPTER 4 QUICK REFERENCE TABLE ON CAUSES OF RELAY FAILURE

Some common failure phenomena, failure modes, and the reasons. See table 18:

Table 18

Failure Phenomena	Failure Mode	Failure Reason
Non-operation	No current at the terminals of the coil	<ul style="list-style-type: none"> • Breaking circuit • Worse connected or short circuit • Terminal welded worse
	Insufficient voltage in the circuit	<ul style="list-style-type: none"> • Insufficient voltage supply • Power circuit too long • the voltage of the chosen relay too high
	Circuit unconnected	<ul style="list-style-type: none"> • Welded worse • Coil breaking
	Relay failure	<ul style="list-style-type: none"> • Drop, bumped badly • Contact failure
	Voltage polarity of the polarized relay is wrong	<ul style="list-style-type: none"> • Bumped during the transportation • circuit connected badly
No Release	Surplus voltage too high	<ul style="list-style-type: none"> • Energy storage component's influence • Leakage current or bypass current • Surplus voltage of the semiconductor too high
	Relay failure	<ul style="list-style-type: none"> • Drop, bumped badly • contact failure
Unsteady Operation	Unsteady power	<ul style="list-style-type: none"> • PARD(periodic and random deviation) • Insufficient voltage • Resistor beyond the tolerance
	Unsteady parameter	<ul style="list-style-type: none"> • Drop or bumped badly • Short form among the coils
	False operation of the relay	<ul style="list-style-type: none"> • Something wrong with the control procedure • The vibration excessively strong in application
NC/NO Contact Welding	Current excessively high	<ul style="list-style-type: none"> • Load excessively high • Surge current too high
	Contact Moving abnormally	<ul style="list-style-type: none"> • External vibration excessively strong • AC relay's unstable operation; with buzz • Unstable operation
	Operation frequency excessively high	
	Ambient temperature excessively high	
	Use beyond the life	
NC/NO Contact Not Closed	Contact resistance too high	<ul style="list-style-type: none"> • Weld worse • Contamination in the contact • Bad using environment, contact oxidizing or sulphidizing
	No current in the contacts surface	<ul style="list-style-type: none"> • Load circuit break • Circuit connected worse or short circuit • Terminal welded worse
	Use beyond the life	

Notes: when failure happens, if there's any question, please contact us.



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CHAPTER 5 ORDERING EXAMPLE

Ordering code contains the basic information of the relays. Table 19 is an ordering example of a typical Hongfa product. Please refer to the datasheet of each product for part no. selection.

Table 19

HF115FK-AS /24 -2Z S 4 T (610) -C10 -CF(G) -H4 (FD)	
Relay module	HF115FK: Relay type AS: module
Coil voltage	24VDC
Contact arrangement	2Z: 2 Form C
Construction	S: Plastic sealed
Version	4: 5.0mm 2 pole 8A
Contact material	T: AgSnO2
Special code ¹⁾	XXX: Customer special requiremen; Nil: Standard
Terminal & mounting	C10: Screwless terminal(Pushin terminal),DIN rail
Plug-in Module No	CF(G): HFCF (G)
Matching retaining clip	H4: 14FF-H4
Special code ²⁾	XXX: Customer special requiremen; Nil: Standard

Notes: 1) Relay characteristic number; 2) Socket characteristic number.



HONGFA RELAY

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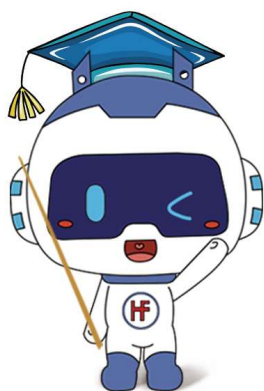
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For more information, please access our web site:

www.hongfa.com





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