

ISO9001 ISO/TS16949 ISO14001 OHSAS18001 IECQ QC080000 CERTIFIED



HONGFA RELAY

● LATCHING RELAY

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RoHS compliant

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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 Hermetically Sealed Relays, Hongfa Power Electronics, Hongzhou, 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 has a wealth of experience in relays development and manufacturing after many years of hard work. HONGFA is now the leading relays manufacturer in China and is ranked No. 1 in the industry for overall economic efficiency. HONGFA has also become one of the leading relays sellers and manufacturers in the world. From 1995, HONGFA has continuously ranked among 'China Top-100 Electronic Components Enterprises' with a current position of the 10th 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 Export-Oriented Enterprise of 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, OHSAS18001, GJB9001A, IECQ QC 080000. 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. HONGFA has introduced the most advanced relays manufacturing technology and equipment available worldwide into the factories to upgrade our technology level and the product quality. HONGFA engineers use 3-D CAD in new product development and mould tooling design. 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. HONGFA Testing Centre is approved by CNAS and it is approved by America UL as a CTRP lab. It is 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. At the same time, HONGFA Testing Centre is also the unique partnership for VDE in electronic components in the world. The testing capability on RoHS compliance in the chemistry analysis laboratory is also approved by CNAS, which means that 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 and Hermetically sealed relays. The company has the annual production capacity of 1.5 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.

NEVER REST ON OUR LAURELS, 
MAKE MORE PROGRESS

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.

HONGFA PRODUCTS:



Signal Relay



Power Relay



Automotive Relay & Module



Latching Relay



Green Energy Relay



Industrial Relay



Safety Relay



Hermetically-sealed Relay



Low-voltage Device



Switchgear



Automatic Equipment

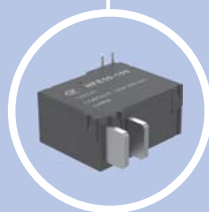
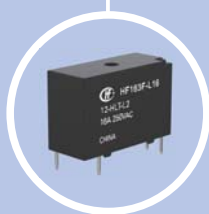


Precise Parts

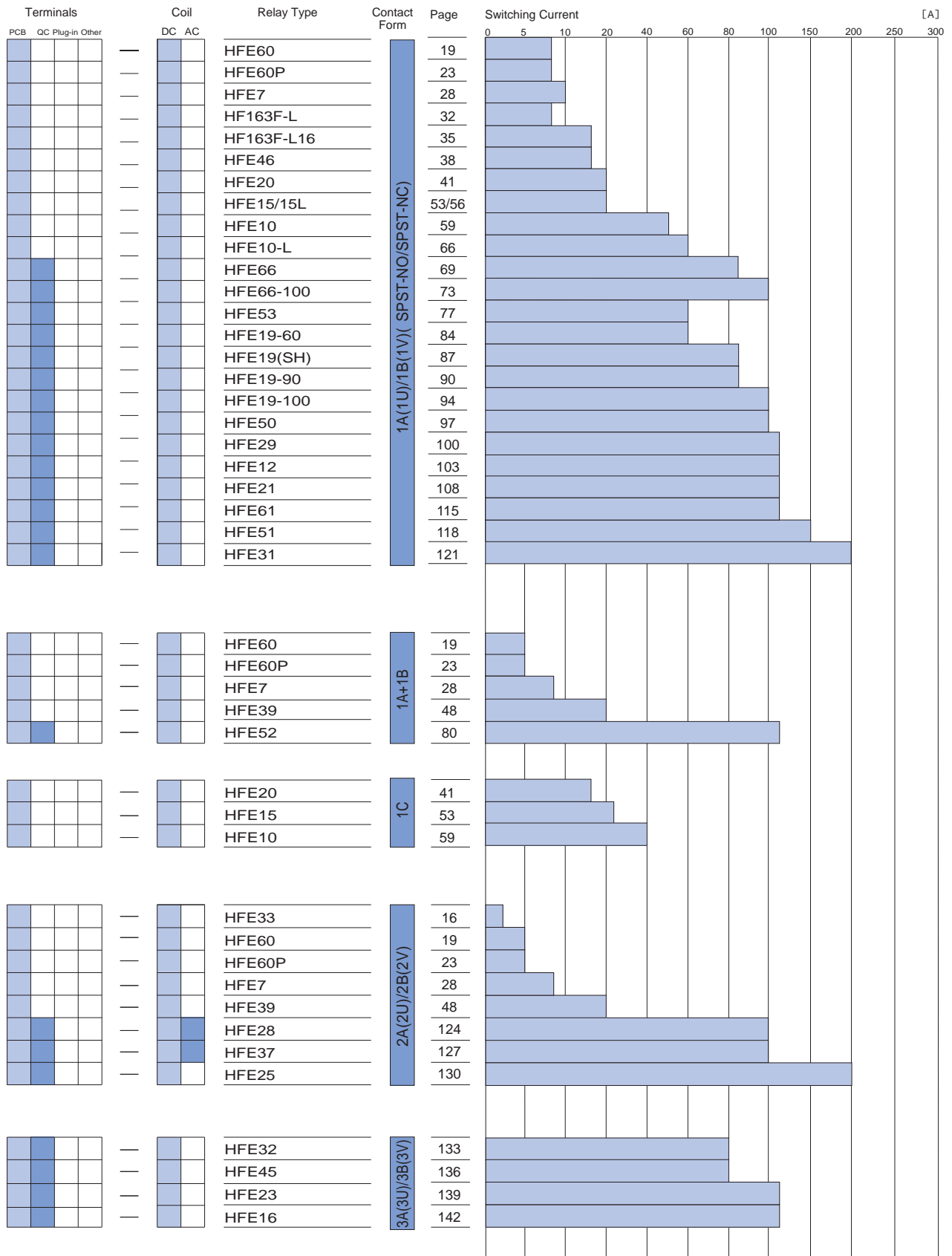


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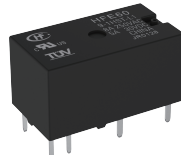
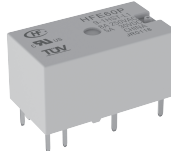
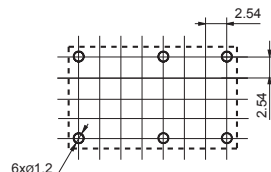
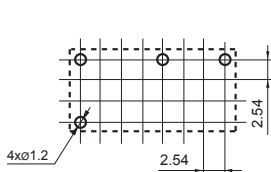
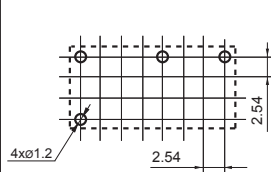
RELAY SELECTION GUIDE



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.).

SELECTION CHART

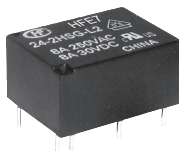

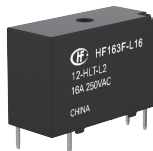
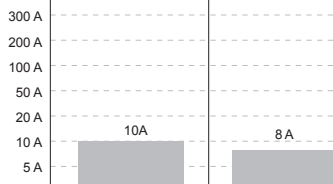
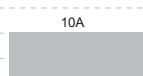
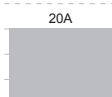
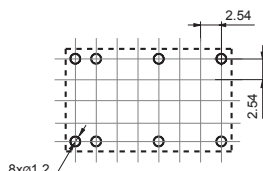
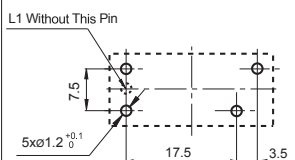
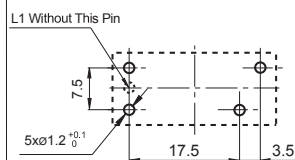
METERING LATCHING RELAY

Type	HFE33		HFE60		HFE60P	
Appearance						
Dimensions(L x W x H) mm	20.0 x 13.0 x 19.2		20.2 x 11.3 x 10.5		20.2 x 11.3 x 10.5	
Features	<ul style="list-style-type: none">• 2A Latching relay• Specific for meter application• 2.5kV dielectric strength (between open contacts)• 4kV dielectric strength (between coil & contacts)• Relays with 1.2mm contact gap are available		<ul style="list-style-type: none">• Low height 10.5mm• Low coil power• High switching capacity 1A: 8A 250VAC 2A, 1A+1B: 5A 250VAC• 3kV dielectric strength (between coil and contacts)		<ul style="list-style-type: none">• Low height 10.5mm• Low coil power• High switching capacity 1A: 8A 250VAC 2A, 1A+1B: 5A 250VAC• 3kV dielectric strength (between coil and contacts)	
Contact Ratings						
Contact Form	2A, 2B		1A	2A, 1A+1B	1A	2A, 1A+1B
Contact Material	AgNi		AgSnO ₂		AgSnO ₂	
Max. Switching Current	300 A					
	200 A					
	100 A					
	50 A					
	20 A					
	10 A					
	5 A					
Max. Switching Voltage	440VAC		380VAC/240VDC		380VAC/240VDC	
Max. Switching Power	500VA		2000VA/150W	1250VA/150W	2000VA/150W	1250VA/150W
Rated Load (Resistive load)	2A 250VAC		8A 250VAC 5A 30VDC	5A 250VAC 5A 30VDC	8A 250VAC 5A 30VDC	5A 250VAC 5A 30VDC
Coil Ratings						
Rated Voltage	(3 ~ 24)VDC		(3 ~ 24)VDC		(3 ~ 24)VDC	
Nominal Operating Power	360mW, 720mW		0.15W, 0.3W		0.15W, 0.3W	
Specifications						
Insulation Resistance	1000MΩ		1000MΩ		1000MΩ	
Dielectric Strength (Between coil and contacts)	4000VAC		3000VAC		3000VAC	
Ambient Temperature	-40°C~ 85°C		-40°C~ 85°C		-40°C~ 85°C	
Operate / Release Time max.	20ms / 20ms		10ms / 10ms		10ms / 10ms	
Mechanical Endurance min.	1 x 10 ⁶ ops		1 x 10 ⁷ ops		1 x 10 ⁷ ops	
Electrical Endurance min.	4 x 10 ⁴ ops		1 x 10 ⁵ ops		1 x 10 ⁴ ops	
Layout (Bottom view)						
Terminal Type (Coil/Load)	PCB		PCB		PCB	
Approved Standards			UL/CUL TüV		UL/CUL TüV	
File No.			E134517 B140653286012		E134517 B140653286012	
Cross Reference			PANASONIC:DSP OMRON: G6B		PANASONIC:DSP OMRON: G6B	
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Note: Specification and dimensions in this catalog are subject to change without notice.

SELECTION CHART




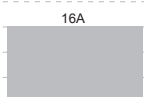

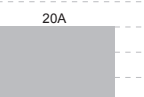
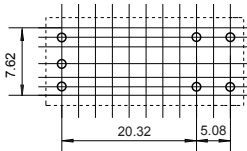
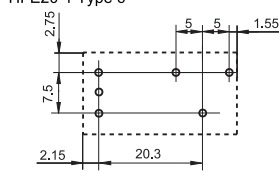
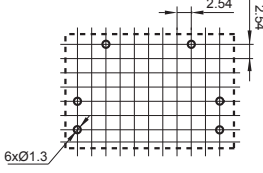
METERING LATCHING RELAY

Type	HFE7		HF163F-L	HF163F-L16
Appearance				
Dimensions(L x W x H) mm	20.0 x 15.0 x 10.2		24.0 x 10.0 x 18.8	24.0 x 10.0 x 15.7
Features	<ul style="list-style-type: none">• High switching capacity 1A, 1B: 10A 250VAC/30VDC; 2A, 2B, 1A + 1B: 8A 250VAC/30VDC• High sensitive• 4kV dielectric strength (between coil & contacts)		<ul style="list-style-type: none">• Latching relay• Breakdown voltage (between contact and coil):5000V• High switching capacity: 8A 250VAC• Surge breakdown voltage (between contact and coil):12000V• Reflow soldering available	<ul style="list-style-type: none">• Low height 15.7mm• Breakdown voltage (between contact and coil): 5000 V• Max. inrush current100A• 16A switching capability• Max. switching capacity 20A• For LED load
Contact Ratings				
Contact Form	1A, 1B	2A, 2B, 1AB	1A	1A
Contact Material	AgSnO ₂ .AgNi		AgSnO ₂	AgSnO ₂
Max. Switching Current				
Max. Switching Voltage	277VAC		250VAC / 30VDC	277VAC
Max. Switching Power	2500VA	2000VA	2500VA/150W	5000VA
Rated Load (Resistive load)	10A 250VAC 10A 30VDC	8A 250VAC 8A 30VDC	8A 250VAC 5A 30VDC	16A 250VAC 20A 250VAC
Coil Ratings				
Rated Voltage	(3 ~ 24)VDC		(3 ~ 24)VDC	(3 ~ 24)VDC
Nominal Operating Power	0.2W, 0.28W/0.3W,0.42W		0.2W, 0.4W	0.2W, 0.4W/0.4W,0.6W
Specifications				
Insulation Resistance	1000MΩ		1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC		5000VAC	5000VAC
Ambient Temperature	-40°C~ 70°C		-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	10ms / 10ms		15ms / 15ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁷ ops		1 x 10 ⁶ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁵ ops; 3 x 10 ⁴ ops(2A)		5 x 10 ⁴ ops	5 x 10 ⁴ ops
Layout (Bottom view)				
Terminal Type (Coil/Load)	PCB		PCB	PCB
Approved Standards	UL/CUL VDE		UL/CUL VDE	UL/CUL TüV CQC
File No.	E134517 40027342		E133481 40039460	E133481 B0532860028 CQC19002212710
Cross Reference	PANASONIC:DK OMRON: G6C		PANASONIC:DW	PANASONIC:DW
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SELECTION CHART






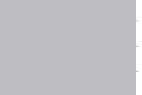
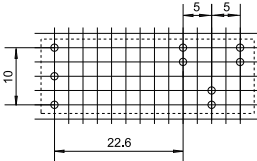
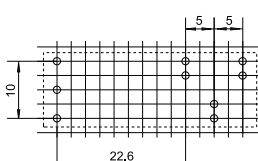
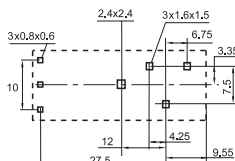
METERING LATCHING RELAY

Type	HFE46	HFE20	HFE39
Appearance			
Dimensions(L x W x H) mm	29.0 x 13.0 x 15.7	29.0 x 12.7 x 15.7	20.0 x 30.0 x 10.2
Features	<ul style="list-style-type: none"> • Latching relay • 16A switching capability • Max. inrush current 320A/2ms • Dielectric strength: more than 12kV (between coil and contacts) • Insulation distance up to 15mm • Manual switch function available 	<ul style="list-style-type: none"> • 20A switching capability • Low height 15.7mm • UL insulation class: F class • Have passed TV-8 (UL) certification • Inrush current Capacitor 500A/2ms and 320A/2ms 	<ul style="list-style-type: none"> • 20A switching capability • Latching relay • Max.inrush current 350A/2ms • Environmental friendly product (RoHS compliant)
Contact Ratings			
Contact Form	1A,1B	1A,1B,1C	2A,2B,1AB
Contact Material	AgSnO ₂	AgSnO ₂ .W+AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	277VAC	277VAC	277VAC
Max. Switching Power	4000VA	4000VA	4000VA
Rated Load (Resistive load)	16A 250VAC	16A 250VAC 20A 250VAC	16A 250VAC 20A 250VAC
Coil Ratings			
Rated Voltage	(3 ~ 24)VDC	(3 ~ 24)VDC	(3 ~ 48)VDC
Nominal Operating Power	0.4W, 0.8W	0.4W, 0.6W	1W, 2W/0.6W, 1.2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	5000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	10ms / 10ms	10ms / 10ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁵ ops(16A 250VAC)	1 x 10 ⁵ ops(16A 250VAC)	1 x 10 ⁵ ops(16A 250VAC)
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB	PCB	PCB
Approved Standards	UL/CUL CQC	UL/CUL VDE CQC	UL/CUL VDE
File No.	E133481 CQC16002138347	E134517 40031831 CQC14002113728	E134517 40049970
Cross Reference	PANASONIC:DJ TYCO:RT	PANASONIC:DJ TYCO:RT	
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SELECTION CHART






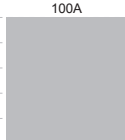
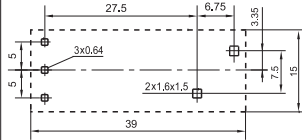
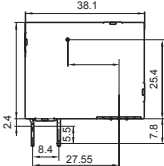
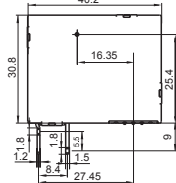
METERING LATCHING RELAY

Type	HFE15	HFE15L	HFE10
Appearance			
Dimensions(L x W x H) mm	37.3 x 13.1 x28.8	37.3 x 13.1 x28.8	39.0 x 15.0 x 30.2
Features	<ul style="list-style-type: none"> • Latching relay • 20A switching capacity • Inrush current Capacitor 430A/1.5ms 	<ul style="list-style-type: none"> • Latching relay • In accordance to IEC60669-2-1 • 20A switching capacity • Lamp load up to 10A • Inrush current Capacitor 430A/1.5ms 	<ul style="list-style-type: none"> • 50A switching capability • Lamp load up to 5000W • Motor load up to 3HP • Max. inrush current 500A/2ms • Manual switch function available • Relays with 1.5mm contact gap are available
Contact Ratings			
Contact Form	1A;1B;1C	1A;1B;1C	1A, 1B, 1C
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	400VAC	400VAC	440VAC
Max. Switching Power	5000VA	5000VA	1A:12500VA 1C:10000VA
Rated Load (Resistive load)	20A 250VAC	20A 250VAC	50A 277VAC 40A 277VDC
Coil Ratings			
Rated Voltage	(3 ~ 48)VDC	(3 ~ 48)VDC	(6 ~ 48)VDC
Nominal Operating Power	0.7W, 1.5W	0.7W, 1.5W	1.5W, 3.0W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-25°C~ 70°C	-25°C~ 70°C	-40°C~ 70°C
Operate / Release Time max.	15ms / 15ms	15ms / 15ms	15ms / 15ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁶ ops
Electrical Endurance min.	5 x 10 ⁴ ops (1C:20A 250VAC)	1 x 10 ⁵ ops (1H,1D:20A 250VAC)	1H,1D:1 x 10 ⁵ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB	PCB	PCB
Approved Standards	VDE UL/CUL CQC	VDE UL/CUL	UL/CUL VDE
File No.	40045248 E134517 CQC19002223146	40045248 E134517	E134517 40035869
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SELECTION CHART




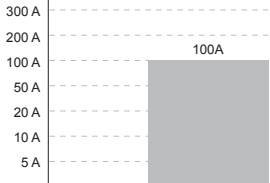
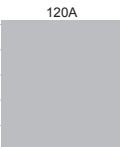
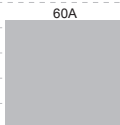
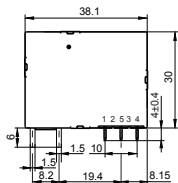
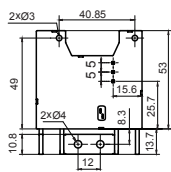
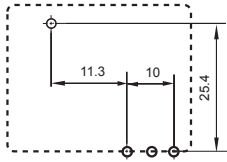
METERING LATCHING RELAY

Type	HFE10-L	HFE66	HFE66-100
Appearance			
Dimensions(L x W x H) mm	39.0 x 15.0 x 29.3	38.1 x 30.8 x 16.5	40.2 x 30.8 x 16.5
Features	<ul style="list-style-type: none"> • 20A switching capability • The relay can stand short circuit SCCR 5000A peak current for 10ms • Meet IEC60669-2-1 • Max. inrush current 500A/2ms 	<ul style="list-style-type: none"> • Latching relay • Apply to smart capacitor • 60A switching capability • Low bounce time: less than 200μs 	<ul style="list-style-type: none"> • Latching relay • Apply to smart capacitor • 100A switching capability • Low bounce time: less than 200μs
Contact Ratings			
Contact Form	1A, 1B	1A	1A
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	440VAC	277VAC	380VAC
Max. Switching Power	15000VA	15000VA	38000VA
Rated Load (Resistive load)	20A 277VAC 60A 250VDC	60A 250VAC	100A 250VAC
Coil Ratings			
Rated Voltage	(6 ~ 48)VDC	(5 ~ 48)VDC	(5 ~ 48)VDC
Nominal Operating Power	1.5W, 3.0W	1.5W, 3W	2.5W, 5W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	15ms / 15ms	6ms / 6ms	6ms / 6ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁵ ops(20A 277VAC)	6 x 10 ³ ops 60A 250VAC (COSφ=1)	6 x 10 ³ ops 60A 250VAC (COSφ=1)
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB	QC	QC
Approved Standards	UL/CUL VDE	UL/CUL CQC TÜV	
File No.	E134517 40035869	CQC 18002200845 E133481 B0532860034	
Cross Reference	GRUNER:704L		
Page	66	69	73

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

SELECTION CHART

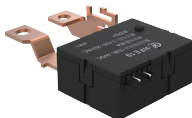
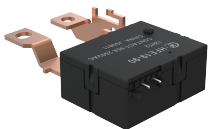
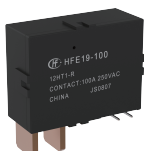
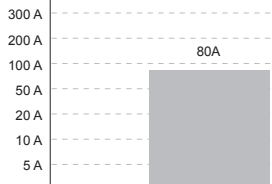
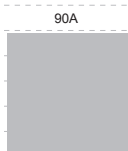
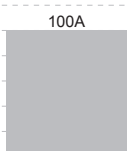
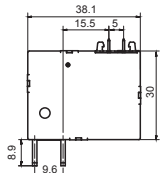
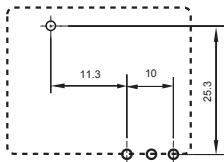
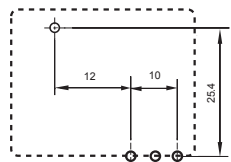
POWER&METERING LATCHING RELAY

Type	HFE53	HFE52	HFE19-60
Appearance			
Dimensions(L x W x H) mm	38.1 x 30.8 x 16.5	57.0 x 53.0 x 22.0	38.0 x 30.0 x 16.5
Features	<ul style="list-style-type: none"> • Latching relay • 100A switching capability • Contact gap ≥ 1.2 mm • Dielectric strength ≥ 3000VAC (between open contacts) 	<ul style="list-style-type: none"> • Phase-change switch latching relay • With micro switch detection function • 120A switching capability • In accordance to IEC 62055-31:UC3 Carrying: 6kA current/100ms (can break 2 times voltage) • Complete switch in 10ms 	<ul style="list-style-type: none"> • 60A latching relay • Electrical endurance 5000ops • According to IEC62055-31:UC1 • Contact resistance ≤ 1mΩ
Contact Ratings			
Contact Form	1A,1B	1AB	1A,1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	380VAC	380VAC	253VAC
Max. Switching Power	38000VA	26400VA	13200VA
Rated Load (Resistive load)	100A 250VAC	120A 220VAC	60A 220VAC
Coil Ratings			
Rated Voltage	(5 ~ 48)VDC	(5 ~ 48)VDC	(9 ~ 48)VDC
Nominal Operating Power	2.5W, 3W	5W, 10W	1W, 2W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Operate / Release Time max.	15ms / 15ms	5.5ms / 4.5ms (at 2.5 time nomi. volt.)	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	6 x 10 ³ ops 100A 250VAC (COSφ=1)	2 x 10 ⁴ ops(120A 220VAC)	5000ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	QC	QC	PCB、QC
Approved Standards			
File No.			
Cross Reference			
Page	77	80	84

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

SELECTION CHART




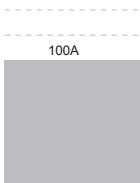
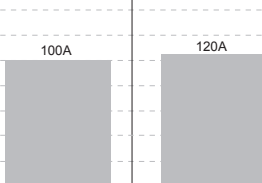
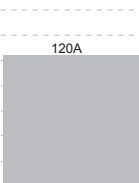
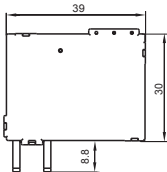
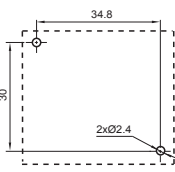
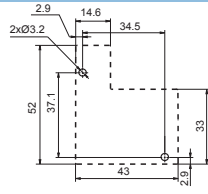
METERING LATCHING RELAY

Type	HFE19 (SH)	HFE19-90	HFE19-100
Appearance			
Dimensions(L x W x H) mm	38.1 x 30.0 x 16.5	38.0 x 30.0 x 16.5	41.0 x 31.0 x 16.8
Features	<ul style="list-style-type: none"> • 90A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2 • Contact resistance ≤0.45mΩ 	<ul style="list-style-type: none"> • 90A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2 • Contact resistance ≤0.45mΩ 	<ul style="list-style-type: none"> • 100A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2 • Contact resistance ≤0.35mΩ
Contact Ratings			
Contact Form	1U,1V	1A,1B	1A, 1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	253VAC	253VAC	253VAC
Rated switching power	19800VA	19800VA	22000VA
Rated Load (Resistive load)	90A 220VAC	90A 220VAC	100A 220VAC
Coil Ratings			
Rated Voltage	(5~48)VDC	(5~48)VDC	(9 ~ 48)VDC
Nominal Operating Power	1.5W, 3W	1.5W, 3W	2.4W, 4.8W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁶ ops	1 x 10 ⁶ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1 x 10 ⁴ ops(at 60A)	1 x 10 ⁴ ops(at 60A)	1 x 10 ⁴ ops(at 80A)
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB、QC	PCB、QC	PCB、QC
Approved Standards			
File No.			
Cross Reference		GRUNER:704	
Page	87	90	94

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

SELECTION CHART


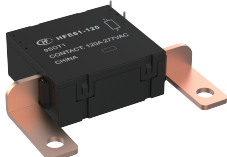

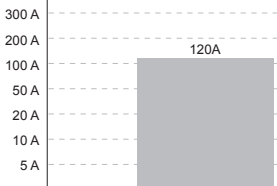
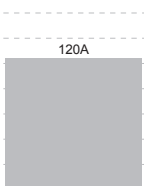
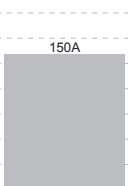
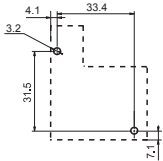
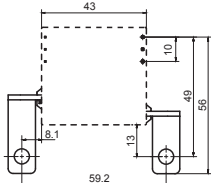
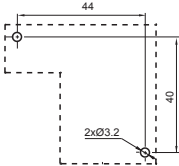
METERING LATCHING RELAY

Type	HFE50	HFE29	HFE12
Appearance			
Dimensions(L x W x H) mm	39.0 x 30.0 x 18.5	43.0 x 37.0 x 22.0	52.0 x 43.0 x 22.0
Features	<ul style="list-style-type: none"> • 100A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2 • Contact resistance $\leq 0.5\text{m}\Omega$ 	<ul style="list-style-type: none"> • 100, 120A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC3 • Contact resistance $\leq 0.35\text{m}\Omega$ 	<ul style="list-style-type: none"> • 120A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC3 • Contact resistance $\leq 0.35\text{m}\Omega$
Contact Ratings			
Contact Form	1A,1B	1U,1V	1A, 1B
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	253VAC	277VAC	253VAC
Rated switching power	22000VA	19200VA 24000VA	22000VA
Rated Load (Resistive load)	100A 220VAC	100A 240VAC 120A 240VAC	100A 220VAC
Coil Ratings			
Rated Voltage	(9~48)VDC	(6 ~ 48)VDC	(6~ 48)VDC
Nominal Operating Power	2.4W, 4.8W	2.4W, 3.0W, 4.8W, 6.0W	2.4W, 4.8W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 20ms	20ms / 20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	1 x 10 ⁴ ops(at 80A)	1 x 10 ⁴ ops(at 80A)	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB、QC	PCB、QC	PCB、QC
Approved Standards			
File No.			
Cross Reference			GRUNER:721/722
Page	97	100	103

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

SELECTION CHART




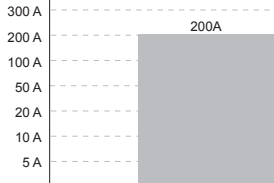
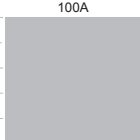
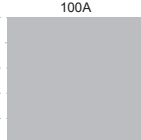
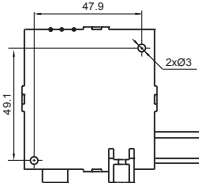
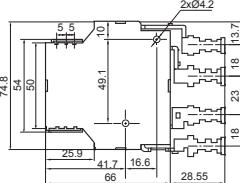
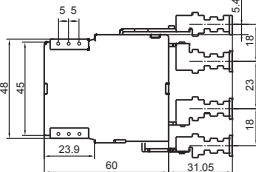
METERING LATCHING RELAY

Type	HFE21	HFE61	HFE51
Appearance			
Dimensions(L x W x H) mm	52.0 x 43.0 x 22.0	43.0 x 40.0 x 18.0	52.0 x 48.0 x 30.0
Features	<ul style="list-style-type: none"> • 120A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC3 • Contact resistance $\leq 0.35\text{m}\Omega$ 	<ul style="list-style-type: none"> • 120A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC3 • Contact resistance $\leq 0.35\text{m}\Omega$ 	<ul style="list-style-type: none"> • 150A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC3 • Contact resistance $\leq 0.5\text{m}\Omega$
Contact Ratings			
Contact Form	1A, 1B, 1U, 1V	1U, 1V	1U, 1V
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	253VAC	277VAC	253VAC
Rated switching power	26400VA	28800VA	33000VA
Rated Load (Resistive load)	120A 220VAC	120A 240VAC	150A 220VAC
Coil Ratings			
Rated Voltage	(6 ~ 48)VDC	(6 ~ 48)VDC	(6 ~ 48)VDC
Nominal Operating Power	3W, 6W	3W, 6W	3W, 6W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Operate / Release Time max.	20ms / 20ms	20ms / 20ms	20ms/20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁶ ops
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference	GRUNER:721/722		
Page	108	115	118

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

SELECTION CHART


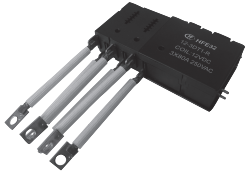

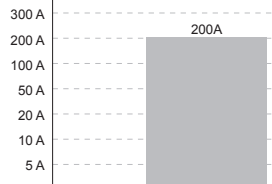
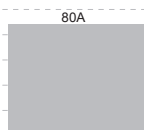
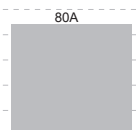
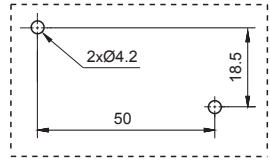
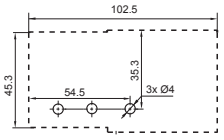
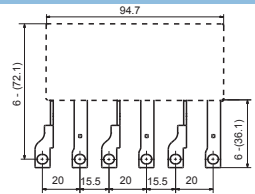
METERING LATCHING RELAY

Type	HFE31	HFE28	HFE37
Appearance			
Dimensions(L x W x H) mm	61.3 x 57.0 x 29.3	60.0 x 75.0 x 23.5	60.0 x 52.0 x 23.0
Features	<ul style="list-style-type: none"> • 200A Latching relay • Electrical endurance 5000ops • According to IEC62055-31:UC4 (Carrying: 7kA current / 500ms) • Contact resistance $\leq 0.25m\Omega$ 	<ul style="list-style-type: none"> • 100A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC1, UC2, UC3 • AC-voltage driving is feasible • Contact resistances $\leq 0.35m\Omega$ 	<ul style="list-style-type: none"> • 100A Latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC1, UC2, UC3 • AC-voltage driving is feasible • Contact resistances $\leq 0.35m\Omega$
Contact Ratings			
Contact Form	1U,1V	2A,2B,2U, 2V	2U, 2V
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	253VAC	265VAC	265VAC
Rated switching power	44kVA	23000VA/2800W	23000VA/2800W
Rated Load (Resistive load)	200A 220VAC	100A 230VAC/28VDC	100A 230VAC/28VDC
Coil Ratings			
Rated Voltage	(6~48)VDC	(6~48)VDC/230VAC	(6~48)VDC/230VAC
Nominal Operating Power	5W, 10W	5.0W, 10.0W	4.0W, 8.0W
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	1000M Ω
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	25ms / 25ms	20ms / 20ms	20ms/20ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	1 x 10 ⁵ ops
Electrical Endurance min.	5000ops	6000ops/1 x 10 ⁴ ops	6000ops/1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB、QC	PCB、QC	PCB、QC
Approved Standards			
File No.			
Cross Reference		GRUNER:741/744	GRUNER:741/744
Page	121	124	127

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

SELECTION CHART



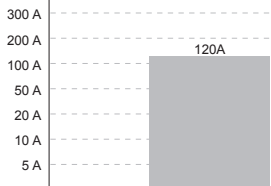
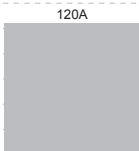
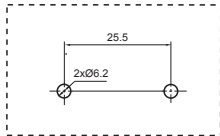
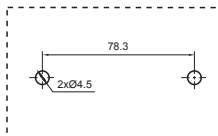
METERING LATCHING RELAY

Type	HFE25	HFE32	HFE45
Appearance			
Dimensions(L x W x H) mm	73.3 x 74.8 x 29.5	102.5 x 45.3 x 24.2	98.0 x 40.5 x 34.7 94.7 x 40.5 x 34.4
Features	<ul style="list-style-type: none"> • 200A Latching relay • Electrical endurance 6000ops • According to ANSI C 12.1 (Carrying: 12kA current / 66.7ms; 7kA peak current/100ms) • Contact resistance ≤0.25mΩ 	<ul style="list-style-type: none"> • 80A 3-phases latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2 • Contact resistance ≤0.45mΩ 	<ul style="list-style-type: none"> • 80A 3-phases latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2 • Contact resistance ≤0.45mΩ
Contact Ratings			
Contact Form	2A, 2B	3A, 3B	3A, 3B, 3U, 3V
Contact Material	AgSnO ₂	AgSnO ₂	AgSnO ₂
Max. Switching Current			
Max. Switching Voltage	265VAC	253VAC	253VAC
Rated switching power	48kVA/5600W	17600VA	17600VA
Rated Load (Resistive load)	200A 240VAC 200A 28VDC	80A 220VAC	80A 220VAC
Coil Ratings			
Rated Voltage	(6 ~ 48)VDC	(6 ~ 48)VDC	(6 ~ 48)VDC
Nominal Operating Power	12W, 24W	3.0W, 6.0W	3.0W, 6.0W
Specifications			
Insulation Resistance	1000MΩ	1000MΩ	1000MΩ
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	4000VAC
Ambient Temperature	-40°C~ 85°C	-40°C~ 85°C	-40°C~ 85°C
Operate / Release Time max.	20ms/20ms	30ms / 30ms	30ms / 30ms
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁶ ops	1 x 10 ⁵ ops
Electrical Endurance min.	6 x 10 ³ ops	1 x 10 ⁴ ops	1 x 10 ⁴ ops
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB, QC	PCB, QC	PCB, QC
Approved Standards			
File No.			
Cross Reference	GRUNER:740		
Page	130	133	136

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

SELECTION CHART

METERING LATCHING RELAY

Type	HFE23	HFE16	
Appearance			
Dimensions(L x W x H) mm	115.0 x 54.0 x 24.0	115.0 x 48.0 x 26.0	
Features	<ul style="list-style-type: none"> • 120A 3-phases latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2,UC3 • Contact resistance$\leq 0.35\text{m}\Omega$ 	<ul style="list-style-type: none"> • 120A 3-phases latching relay • Electrical endurance 10000ops • According to IEC62055-31:UC2,UC3 • Contact resistance$\leq 0.35\text{m}\Omega$ 	
Contact Ratings			
Contact Form	3U, 3V	3U,3V	
Contact Material	AgSnO ₂	AgSnO ₂	
Max. Switching Current			
Max. Switching Voltage	253VAC	265VAC	
Rated switching power	26400VA	27600VA	
Rated Load (Resistive load)	120A 220VAC	120A 230VAC	
Coil Ratings			
Rated Voltage	(6 ~ 48)VDC	(6~48)VDC	
Nominal Operating Power	5.0W, 10.0W	5.0W, 10.0W	
Specifications			
Insulation Resistance	1000M Ω	1000M Ω	
Dielectric Strength (Between coil and contacts)	4000VAC	4000VAC	
Ambient Temperature	-40°C ~ 85°C	-40°C ~ 85°C	
Operate / Release Time max.	30ms / 30ms	30ms/30ms	
Mechanical Endurance min.	1 x 10 ⁵ ops	1 x 10 ⁵ ops	
Electrical Endurance min.	1 x 10 ⁴ ops	1 x 10 ⁴ ops	
Layout (Bottom view)			
Terminal Type (Coil/Load)	PCB、QC	PCB、QC	
Approved Standards			
File No.			
Cross Reference	GRUNER:733	GRUNER:733	
Page	139	142	

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

LATCHING RELAY

POWER LATCHING RELAY		METERING LATCHING RELAY	
HFE33	16	TYPE 1H,1D:	
HFE60	19	HFE19-60	84
HFE60P	23	HFE19(SH)	87
HFE7	28	HFE19-90	90
HFE163F-L	32	HFE19-100	94
HFE163F-L16	35	HFE50	97
HFE46	38	HFE29	100
HFE20	41	HFE12	103
HFE39	48	HFE21	108
HFE15	53	HFE61	115
HFE15L	56	HFE51	118
HFE10	59	HFE31	121
HFE10-L	66	TYPE 2H,2D:	
HFE66	69	HFE28	124
HFE66-100	73	HFE37	127
HFE53	77	HFE25	130
HFE52	80	TYPE 3H,3D:	
		HFE32	133
		HFE45	136
		HFE23	139
		HFE16	142
		PRECISION SHUNT	145



HFE33

SUBMINIATURE INTERMEDIATE POWER RELAY



Features

- Latching relay
- 2A switching capacity
- Specific for meter application
- 2.5kV dielectric strength (between open contacts)
- 4kV dielectric strength (between coil & contacts)
- Relays with 1.2mm contact gap are available

CONTACT DATA

Contact arrangement	2A, 2B
Contact resistance 1)	50mΩ max.(at 1A 6VDC)
Contact material	AgNi
Contact rating (Res. load)	2A 250VAC
Max. switching Voltage	440VAC
Max. switching current	2A
Max. switching power	500VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	4 x 10 ⁴ OPS (2A 250VAC, Resistive load, Room temp., 1.5s on 1.5s off)

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric Strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC 1min
Electrical distance		3.2mm
Set time (at nomi. volt.)		≤20ms
Reset time (at nomi. volt.)		≤20ms
Shock Resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination	Coil termination	PCB
	Load termination	PCB
Unit weight		Approx.7g
Construction		Flux proofed

Notes: The data shown above are initial values.

COIL

Coil power	Single coils latching: Approx. 360mW Double coils latching: Approx. 720mW
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC 1)2) max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω	
3	2.4	50	Single coil latching	25
5	4.0	50		69.4
6	4.8	50		100
9	7.2	50		225
12	9.6	50		400
24	19.2	50		1600
3	2.4	50	Double coils latching	12.5+12.5
5	4.0	50		34.7+34.7
6	4.8	50		50+50
9	7.2	50		112.5+112.5
12	9.6	50		200+200
24	19.2	50		800+800

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

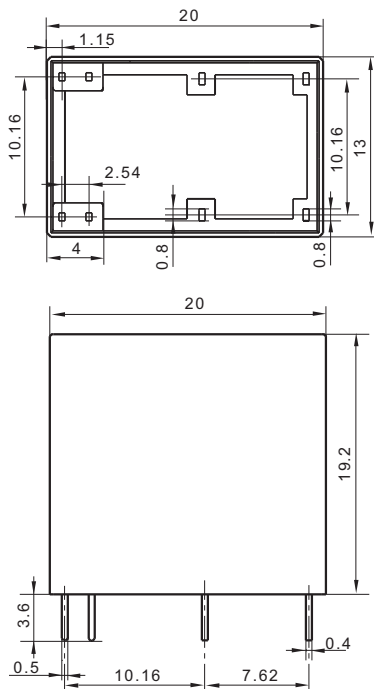
Type	HFE33	/ 12	-2H	S	-L2	-R	(XXX)
Coil voltage	3, 5, 6, 9, 12, 24VDC						
Contact form ¹⁾	2H: 2 Form A 2D: 2 Form B						
Construction ²⁾	S: Plastic sealed Nil: Flux proofed						
Sort	L1: Single coil latching L2: Double coils latching						
Polarity	R: Reverse polarity Nil: Positive polarity						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) 2H means that relay is on the "reset" status when delivery; 2D means that relay is on the "set" status when delivery.
 2) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts. If the ambience allows, flux proofed type is preferentially recommended.
 3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (317): Specific for meter application.

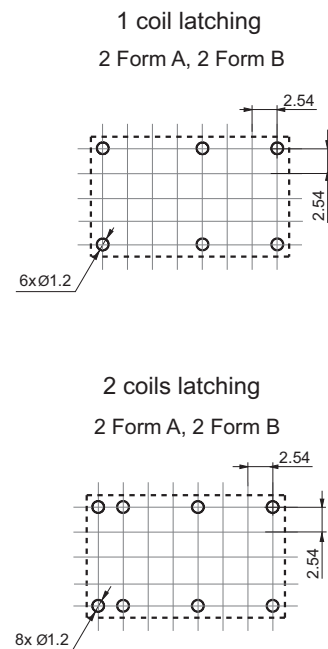
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions



PCB Layout (Bottom view)

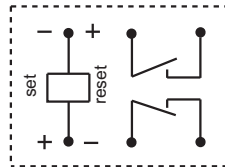


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
 2) The tolerance without indicating for PCB layout is always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

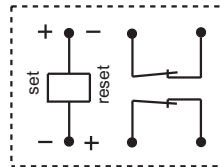
Wiring Diagram

1 coil latching (Positive polarity)

2 Form A

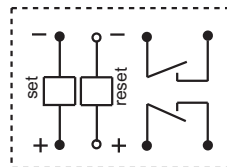


2 Form B

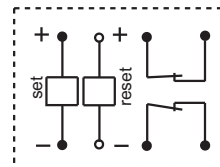


2 coils latching (Positive polarity)

2 Form A



2 Form B



Remark: The coil polarity of Reverse polarity and Standard polarity is opposite.

Notice:

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

Disclaimer

The specification is for reference only. 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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HFE60

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: B140653286012



Features

- Low height 10.5mm
- Low coil power
- High switching capacity
1A: 8A 250VAC
2A, 1A+1B: 5A 250VAC
- 3kV dielectric strength (between coil and contacts)

CONTACT DATA

Contact arrangement	1A	2A, 1A+1B
Contact ¹⁾ resistance	No gold plated: 50mΩ (at 1A 6VDC) Gold plated: 50mΩ (at 0.1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating	8A 250VAC (COSØ=1.0) 5A 30VDC (τ=0ms)	5A 250VAC (COSØ=1.0) 5A 30VDC (τ=0ms)
Max. switching voltage	380VAC / 240VDC	
Max. switching current	8A	5A
Max. switching power	2000VA/150W	1250VA/150W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1 x 10 ⁵ OPS	

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2000VAC 1min
Surge voltage (between coil and contacts)		5.5kV (1.2/50μs)
Operate time (single side stable)		≤10ms
Release time (single side stable)		≤5ms
Set time (latching)		≤10ms
Reset time (latching)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance	Functional	10Hz to 55Hz 2.0mm DA
	Destructive	10Hz to 55Hz 3.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination	coil termination	PCB
	load termination	PCB
Unit weight		Approx. 4.5g
Construction		Plastic sealed Flux proofed

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL

Coil power	Single side stable: Approx. 300mW 1 coil latching: Approx. 150mW 2 coils latching: Approx. 300mW
------------	--

COIL DATA

at 23°C

Single side stable (300mW)

Nominal Voltage VDC	Pick-up Voltage VDC ¹⁾ ₂₎	Drop-out Voltage VDC ¹⁾ ₂₎	Max. Allowable Voltage VDC	Coil Resistance
3	≤2.4	≥0.3	3.9	30 x (1±10%)
5	≤4.0	≥0.5	6.5	83 x (1±10%)
6	≤4.8	≥0.6	7.8	120 x (1±10%)
9	≤7.2	≥0.9	11.7	270 x (1±10%)
12	≤9.6	≥1.2	15.6	480 x (1±10%)
18	≤14.4	≥1.8	23.4	1080 x (1±10%)
24	≤19.2	≥2.4	31.2	1920 x (1±10%)

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

2) Above driving voltage only apply to check relay normal function without load. When normal use with load, use (1~1.5)U_e for latching relay set/reset voltage, use (1~1.3)U_e for set voltage and 0V for release voltage for monostable relay.

SAFETY APPROVAL RATINGS

UL/CUL	1A: 8A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC	2A/1A+1B: 5A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC (For 1HD) 1/10HP 125VAC/250VAC (For 2H)
	1A: 8A 250VAC 5A 250VAC (COSØ=0.4) 5A 30VDC	2A/1A+1B: 5A 250VAC 3A 250VAC (COSØ=0.4) 5A 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.

COIL DATA

at 23°C

1 coil latching (150mW)

Nominal Voltage VDC	Set Voltage VDC ^{1) 2)}	Reset Voltage VDC ^{1) 2)}	Max. Allowable Voltage VDC	Coil Resistance
3	≤2.4	≤2.4	3.9	60 x (1±10%)
5	≤4.0	≤4.0	6.5	167 x (1±10%)
6	≤4.8	≤4.8	7.8	240 x (1±10%)
9	≤7.2	≤7.2	11.7	540 x (1±10%)
12	≤9.6	≤9.6	15.6	960 x (1±10%)
18	≤14.4	≤14.4	23.4	2160 x (1±10%)
24	≤19.2	≤19.2	31.2	3840 x (1±10%)

2 coils latching (300mW)

Nominal Voltage VDC	Set Voltage VDC ^{1) 2)}	Reset Voltage VDC ^{1) 2)}	Max. Allowable Voltage VDC	Coil Resistance
3	≤2.4	≤2.4	3.9	30 x (1±10%)
5	≤4.0	≤4.0	6.5	83 x (1±10%)
6	≤4.8	≤4.8	7.8	120 x (1±10%)
9	≤7.2	≤7.2	11.7	270 x (1±10%)
12	≤9.6	≤9.6	15.6	480 x (1±10%)
18	≤14.4	≤14.4	23.4	1080 x (1±10%)
24	≤19.2	≤19.2	31.2	1920 x (1±10%)

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

2) Above driving voltage only apply to check relay normal function without load. When normal use with load, use (1~1.5)U_e for latching relay set/reset voltage, use (1~1.3)U_e for set voltage and 0V for release voltage for monostable relay.

ORDERING INFORMATION

Type	HFE60/ 12 -1HD S T G -L2 -R (XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC
Contact form	1H: 1 Form A 2H: 2 Form A 1HD: 1 Form A +1 Form B
Construction	S: Plastic sealed Nil: Flux proofed
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated Nil: No gold plated
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable
Polarity	R: Reverse polarity Nil: Standard polarity
Special code ¹⁾	XXX: Customer special requirement

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.

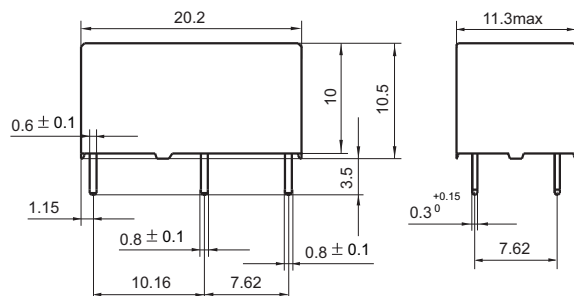
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

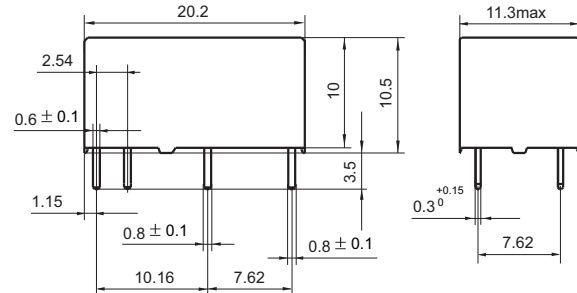
Unit: mm

Outline Dimensions

Single side stable / 1 coil latching

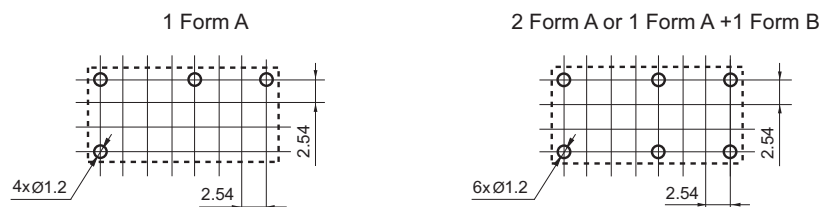


2 coils latching

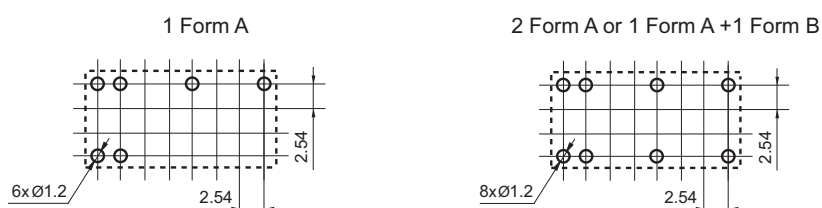


PCB Layout (Bottom view)

Single side stable/1 coil latching

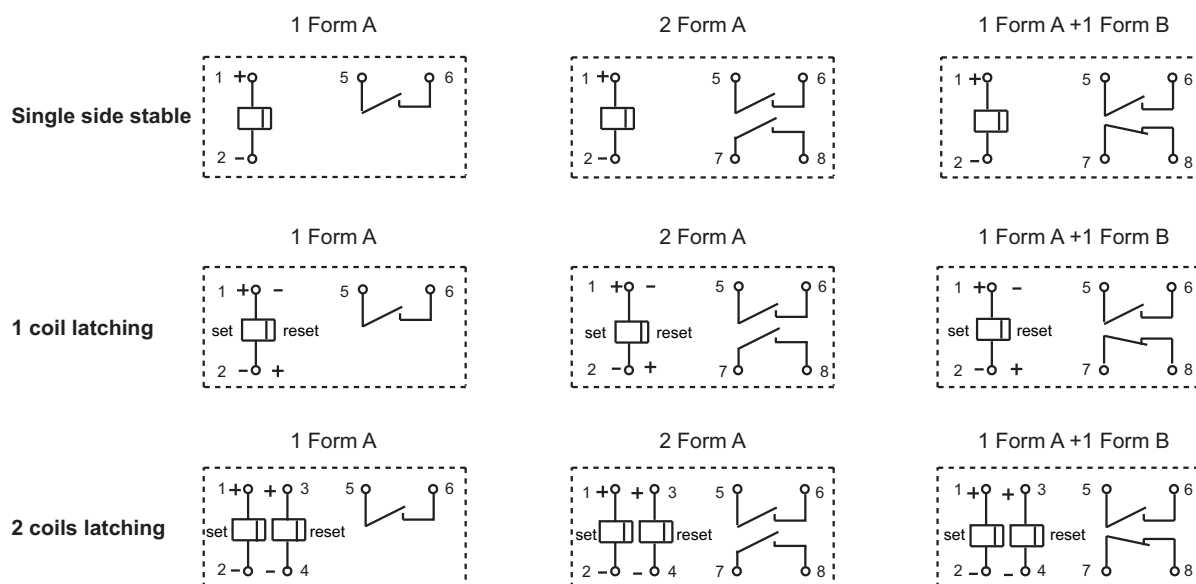
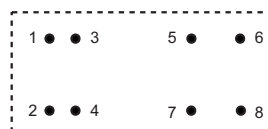


2 coils latching



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.

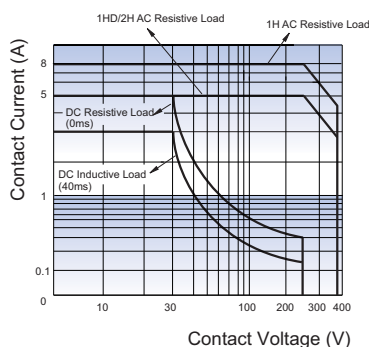
Wiring Diagram (Bottom view)



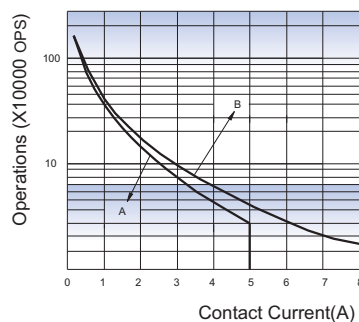
Remark: The above is wiring diagram for product with standard polarity, the coil polarity of reverse polarity and standard polarity is opposite.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



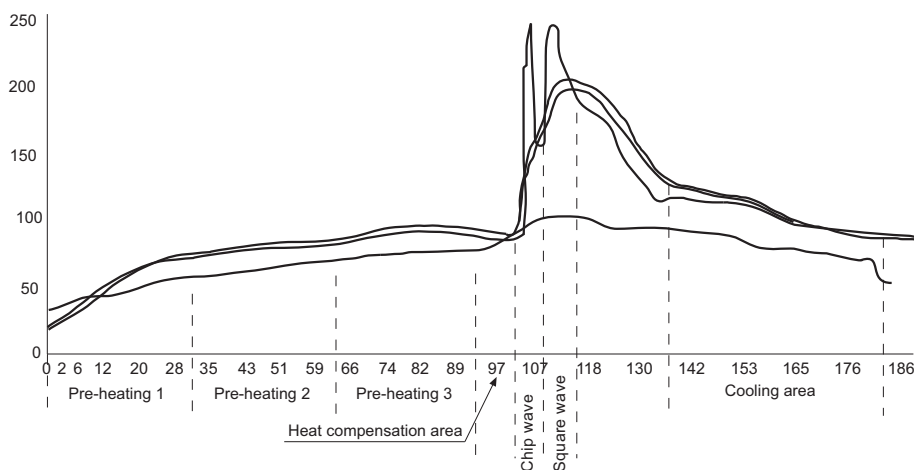
Test conditions:

- 1) Curve A: 1A+1B type (or 2A type)
Curve B: 1A type
- 2) Test conditions:
Resistive load, 120VAC~250VAC, 40°C.

Notice:

1. Latching relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.
4. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.
5. This is a polarized relay. Please pay attention to the coil polarity according to the datasheet when using it.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. 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.

HFE60P

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: B140653286012



Features

- Low height 10.5mm
- Low coil power
- High switching capacity
 - 1A: 8A 250VAC
 - 2A, 1A+1B: 5A 250VAC
- 3kV dielectric strength (between coil and contacts)

CONTACT DATA

Contact arrangement	1A	2A, 1A+1B
Contact resistance 1)	No gold plated: 30mΩ (at 1A 6VDC) Gold plated: 20mΩ (at 0.1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating	8A 250VAC(COSφ=1.0) 5A 250VAC(COSφ=0.4) 0.3A 240VDC(τ=0ms) 0.15A 240VDC(τ=40ms) 5A 30VDC(τ=0ms)	5A 250VAC(COSφ=1.0) 3A 250VAC(COSφ=0.4) 0.3A 240VDC(τ=0ms) 0.15A 240VDC(τ=40ms) 5A 30VDC(τ=0ms)
Max. switching voltage	380VAC / 240VDC	
Max. switching current	8A	5A
Max. switching power	2000VA / 150W	1250VA / 150W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1 x 10 ⁴ OPS(at 40°C, 1.5s on 1.5s off)	

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

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2000VAC 1min
Surge voltage (between coil and contacts)	5.5kV (1.2/50μs)	
Operate time (single side stable)	10ms max.	
Release time (single side stable)	5ms max.	
Set time (latching)	10ms max.	
Reset time (latching)	10ms max.	
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance	Functional	10Hz to 55Hz 2.0mm DA
	Destructive	10Hz to 55Hz 3.5mm DA
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	coil termination	PCB
	load termination	PCB
Unit weight	Approx. 4.5g	
Construction	Plastic sealed	

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL

Coil power	Single side stable: Approx. 300mW 1 coil latching: Approx. 150mW 2 coils latching: Approx. 300mW
------------	--

COIL DATA

at 23°C

Single side stable (300mW)

Nominal Voltage VDC	Pick-up VDC 1) max. 2)	Drop-out Voltage VDC 1) min. 2)	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	0.3	3.9	30 x (1±10%)
5	4.0	0.5	6.5	83 x (1±10%)
6	4.8	0.6	7.8	120 x (1±10%)
9	7.2	0.9	11.7	270 x (1±10%)
12	9.6	1.2	15.6	480 x (1±10%)
18	14.4	1.8	23.4	1080 x (1±10%)
24	19.2	2.4	31.2	1920 x (1±10%)

1 coil latching (150mW)

Nominal Voltage VDC	Set Voltage VDC 1) max. 2)	Reset Voltage VDC 1) max. 2)	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	60 x (1±10%)
5	4.0	4.0	6.5	167 x (1±10%)
6	4.8	4.8	7.8	240 x (1±10%)
9	7.2	7.2	11.7	540 x (1±10%)
12	9.6	9.6	15.6	960 x (1±10%)
18	14.4	14.4	23.4	2160 x (1±10%)
24	19.2	19.2	31.2	3840 x (1±10%)

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

2) Above driving voltage only apply to check relay normal function without load. When normal use with load, use (1~1.5)U_e for latching relay set/reset voltage, use (1~1.3)U_e for set voltage and 0V for release voltage for monostable relay.

COIL DATA

at 23°C

2 coils latching (300mW)

Nominal Voltage VDC	Set Voltage VDC max. 1) 2)	Reset Voltage VDC max. 1) 2)	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	30 x (1±10%)
5	4.0	4.0	6.5	83 x (1±10%)
6	4.8	4.8	7.8	120 x (1±10%)
9	7.2	7.2	11.7	270 x (1±10%)
12	9.6	9.6	15.6	480 x (1±10%)
18	14.4	14.4	23.4	1080 x (1±10%)
24	19.2	19.2	31.2	1920 x (1±10%)

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

2) Above driving voltage only apply to check relay normal function without load. When normal use with load, use (1~1.5)U_e for latching relay set/reset voltage, use (1~1.3)U_e for set voltage and 0V for release voltage for monostable relay.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A: 8A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC	2 Form A / 1 Form A+1 Form B: 5A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC(For 1HD) 1/10HP 125VAC/250VAC(For 2H)
TÜV	1 Form A: 8A 250VAC 5A 250VAC (COSØ=0.4) 5A 30VDC	2 Form A / 1 Form A+1 Form B: 5A 250VAC 3A 250VAC (COSØ=0.4) 5A 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	HFE60P/ 12 -1HD S T G -L2 -R (XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC
Contact form	1H: 1 Form A 2H: 2 Form A 1HD: 1 Form A +1 Form B
Construction	S: Plastic sealed
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated Nil: No gold plated
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable
Polarity	R: Reverse polarity Nil: Standard polarity
Special code ¹⁾	XXX: Customer special requirement

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.).

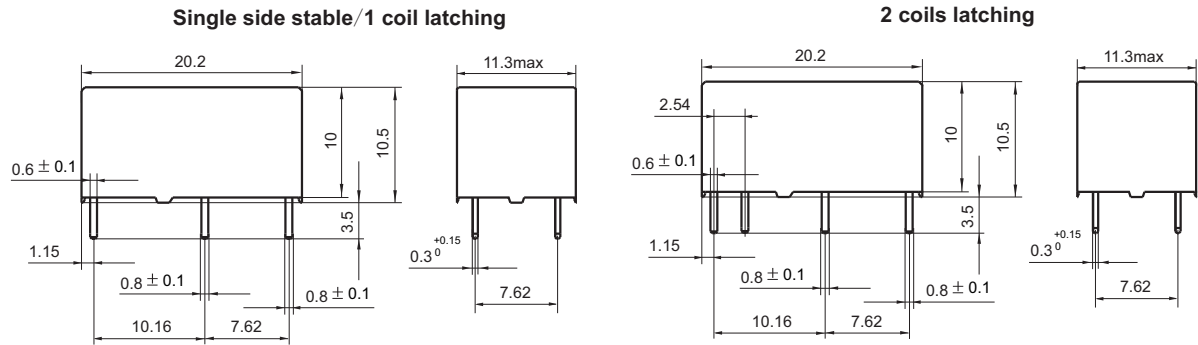
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

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

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

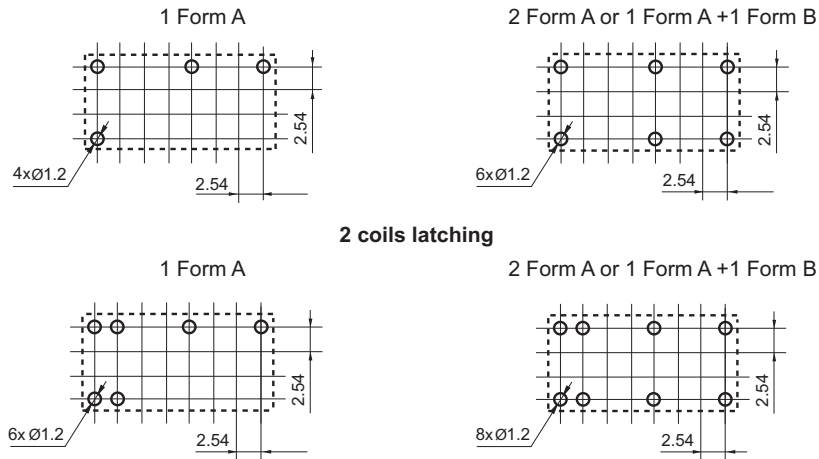
Unit: mm

Outline Dimensions



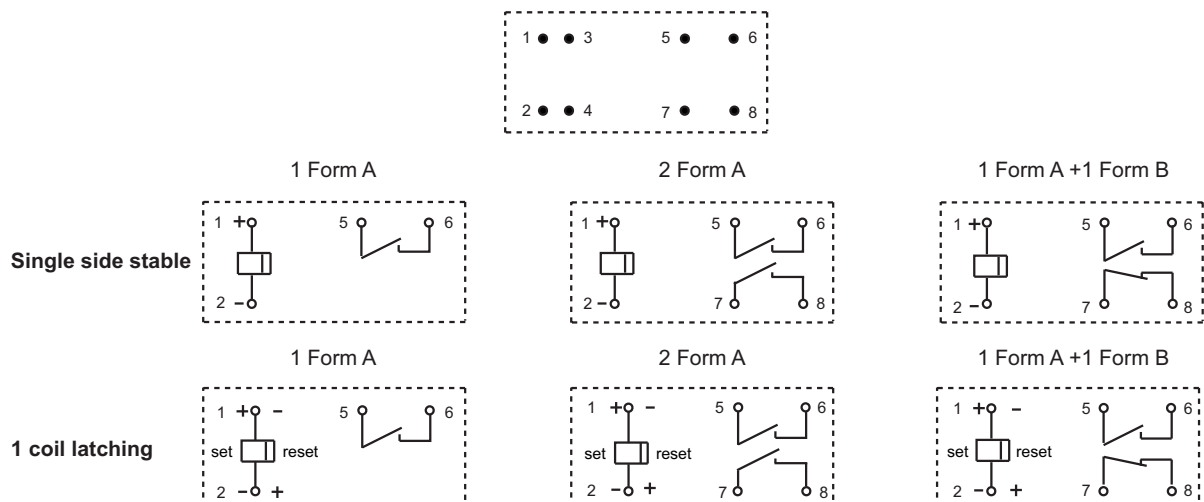
PCB Layout (Bottom view)

Single side stable/1 coil latching



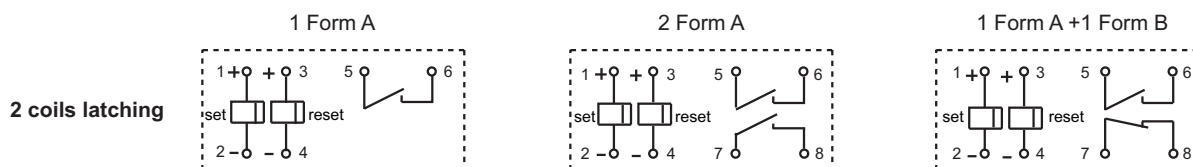
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

Wiring Diagram (Bottom view)



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

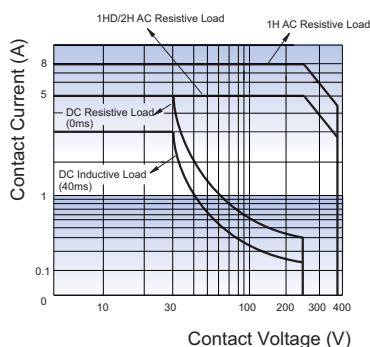
Unit: mm



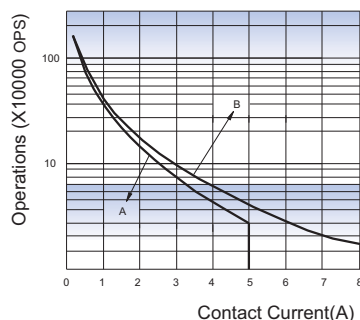
Remark: The above is wiring diagram for product with standard polarity, the coil polarity of reverse polarity and standard polarity is opposite.

CHARACTERISTIC CURVES

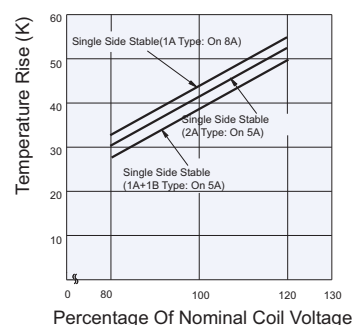
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE

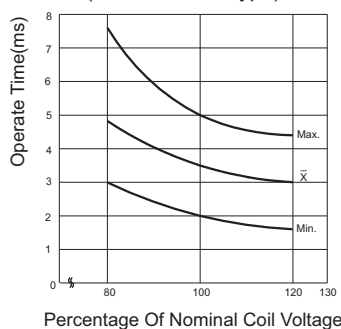


Test conditions:

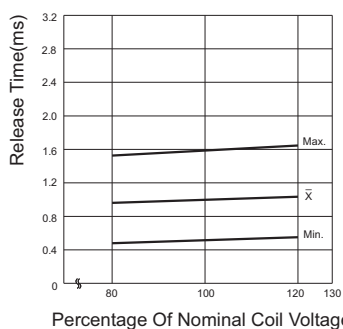
- Curve A: 1A+1B type (or 2A type)
Curve B: 1A type
- Test conditions:
Resistive load, 120VAC~250VAC, 40℃.

Operate & Release Time

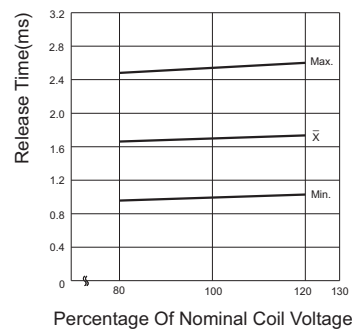
Single Side Stable
(1A/2A/1A+1B Type)



Single Side Stable(1A/2A Type)

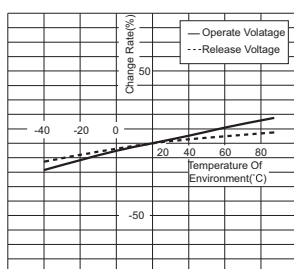


Single Side Stable(1A+1B Type)

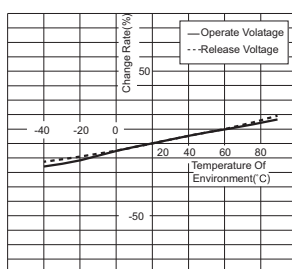


Operate & Release Voltage

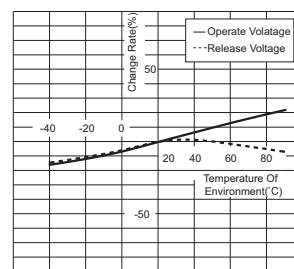
Single Side Stable(1A Type)



Single Side Stable(2A Type)



Single Side Stable(1A+1B Type)

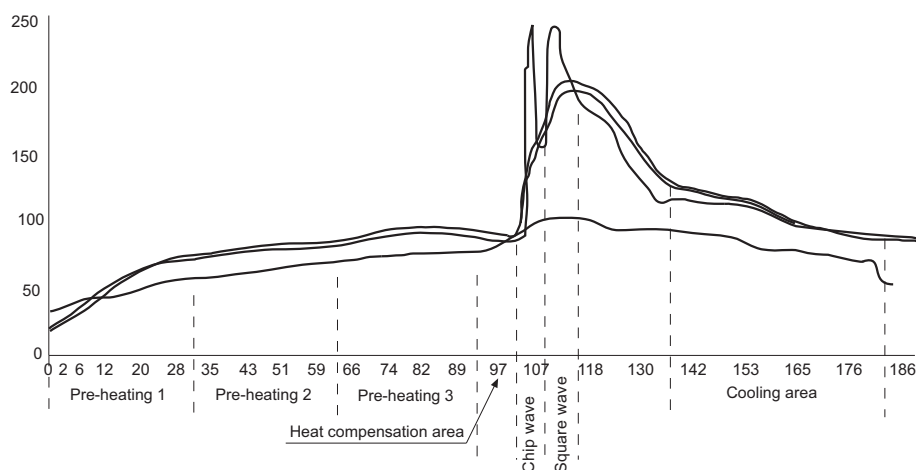


CHARACTERISTIC CURVES

Notice:

1. Latching relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.
4. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.
5. This is a polarized relay. Please pay attention to the coil polarity according to the datasheet when using it.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. 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.

HFE7

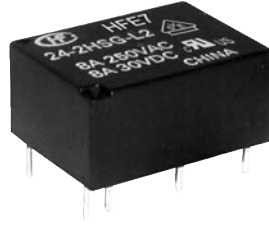
SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40027342



Features

- High switching capacity
1A, 1B: 10A 250VAC/30VDC;
2A, 2B, 1A + 1B: 8A 250VAC/30VDC
- High sensitive
- 4kV dielectric strength (between coil & contacts)
- Single side stable and latching types available
- 1 Form A, 1 Form B, 2 Form A, 2 Form B and 1A + 1B contact arrangement

CONTACT DATA

Contact arrangement	1A, 1B	2A, 2B, 1A + 1B
Contact resistance ¹⁾	AgNi +Au plated: 30mΩ max.(at 1A 6VDC) AgNi: 50mΩ max.(at 1A 6VDC) AgSnO ₂ +Au plated: 60mΩ max.(at 1A 6VDC) AgSnO ₂ : 80mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂ , AgNi	
Contact rating (Res. load)	10A 250VAC / 30VDC	8A 250VAC / 30VDC
Max. switching Voltage	277VAC	277VAC
Max. switching current	10A	8A
Max. switching power	2500VA	2000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1A, 1B type: 1 x 10 ⁵ OPS (10A 250VAC, Resistive load., at 70°C, 1.5s on 1.5s off) 1A + 1B, 2A, 2B type: 3 x 10 ⁴ OPS (8A 250VAC, Resistive load., at 70°C, 1.5s on 1.5s off)	

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

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric Strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (single side stable)	10ms max.	
Release time (single side stable)	10ms max.	
Set time (latching)	10ms max.	
Reset time (latching)	10ms max.	
Max. operate frequency (under rated load)	20 cycles /min	
Temperature rise (at nomi. volt.)	50K max.	
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Shock resistance	98m/s ²	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	coil termination	PCB
	load termination	PCB
Unit weight	Approx. 6g	
Construction	Plastic sealed, Flux proofed	

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL

Type		Coil power	
		Sensitive	High sensitive
Single side stable	1A,1A+1B	Approx. 420mW	Approx. 200mW
	2A		Approx. 280mW
Single coils latching		Approx. 300mW	Approx. 200mW
Double coils latching		Approx. 420mW	Approx. 280mW

COIL DATA

at 23°C

Single side stable

Nominal Voltage VDC	Pick-up Voltage VDC 1) max. 2)	Drop-out Voltage VDC 1) min. 2)	Coil Resistance x (1±10%)Ω		
			200mW	280mW	420mW
3	2.1	0.3	45	32.1	21.4
5	3.5	0.5	125	89.3	59.5
6	4.2	0.6	180	129	85.7
9	6.3	0.9	405	289	192.9
12	8.4	1.2	720	514	342.9
24	16.8	2.4	2880	2056	1371.4

Single coil latching

Nominal Voltage VDC	Set /Reset Voltage VDC 1) 2) max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω	
			300mW	200mW
3	2.1	50	30	45
5	3.5	50	83.3	125
6	4.2	50	120	180
9	6.3	50	270	405
12	8.4	50	480	720
24	16.8	50	1920	2880

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

2) Above driving voltage only apply to check relay normal function without load. When normal use with load, use (1~1.5)U_e for latching relay set/reset voltage, use (1~1.3)U_e for set voltage and 0V for release voltage for monostable relay.

COIL DATA at 23°C

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
			420mW	280mW
3	2.1	50	21.4+21.4	32.1+32.1
5	3.5	50	59.5+59.5	89.3+89.3
6	4.2	50	85.7+85.7	129+129
9	6.3	50	192.9+192.9	289+289
12	8.4	50	342.9+342.9	514+514
24	16.8	50	1371.4+1371.4	2056+2056

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

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	AgNi	10A 250VAC 8A 30VDC 1/4HP 125VAC 1/3HP 250VAC
		AgSnO ₂	10A 30VDC B300, R300 10A 250VAC 1/4 HP 125VAC 1/3 HP 250VAC
	2 Form A	AgSnO ₂ , AgNi	8A 250VAC/30VDC 1/4HP 125VAC 1/3HP 250VAC
		AgSnO ₂	600W 125VAC B300, R300
	1 Form A+1 Form B	AgSnO ₂ , AgNi	8A 250VAC/30VDC 1/4HP 125VAC 1/3HP 250VAC
		AgSnO ₂	B300, R300
VDE (No UL approval on Single side stable version)	1 Form A	AgNi	10A 250VAC (cosφ=1) 5A 250VAC (cosφ=0.4)
	2 Form A	AgNi	8A 250VAC (cosφ=1) 3.5A 250VAC (cosφ=0.4)
	1 Form A+1 Form B	AgNi	8A 250VAC (cosφ=1) 3.5A 250VAC (cosφ=0.4)

Notes: 1) All values unspecified are at room temperature; 2) Only typical loads are listed above.

ORDERING INFORMATION

Type	HFE7 /	12	-1H	S	T	G	-L2	-R	(XXX)(XXX)
Coil voltage	3, 5, 6, 9, 12, 24VDC								
Contact form ¹⁾	1H: 1 Form A 1D: 1 Form B 2H: 2 Form A 2D: 2 Form B 1HD: 1A+1B								
Construction ²⁾	S: Plastic sealed Nil: Flux proofed								
Contact material ³⁾	T: AgSnO ₂ Nil: AgNi								
Contact plating	G: Gold plated Nil: No gold plated								
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable								
Polarity	R: Negative polarity Nil: Positive polarity								
Customer special code (Coil power) ⁴⁾	(412): Sensitive Nil: High sensitive								
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) 1H, 2H means that relay is on the "reset" status when delivery; 1D, 2D means that relay is on the "set" status when delivery. There are no UL approval on 1D, 2D version.

2) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended. Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

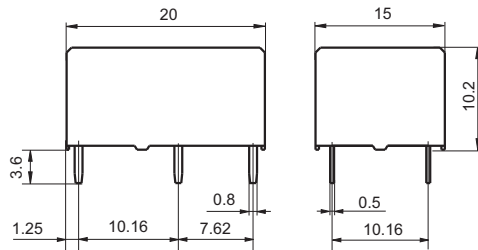
3) For the application with inrush current conditions, such as lamp load, motor load, capacitance load, coil load, etc., we suggest use the flux proof and no golden plated AgSnO₂ contact version.

4) We recommend to choose the sensitive version (same part number, but with special suffix (412)) if the higher coil activation is allowable; Please choose the sensitive version (same part number, but with special suffix (412)) if the relay to be used in the extreme environment or welded by wave soldering; Please check with HF's engineer before designing the relay to your application if there are some requirements' outside the specification we provided.

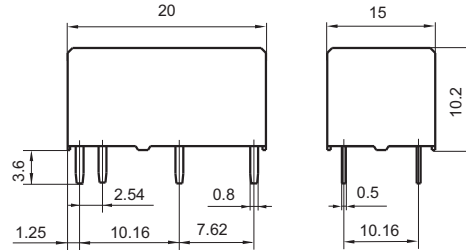
5) The customer special requirement express as special code after evaluating by Hongfa. e.g. (359) stands for Lamp load.

Outline Dimensions

Single side stable & 1 coil latching

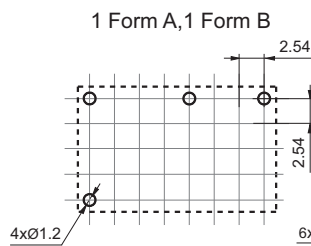


2 coils latching

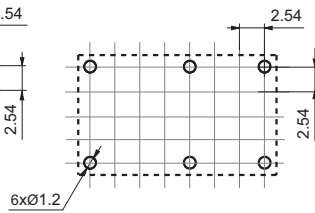


PCB Layout (Bottom view)

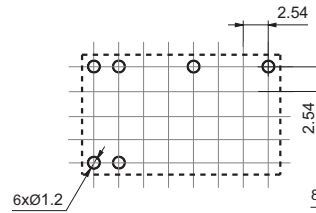
Single side stable & 1 coil latching



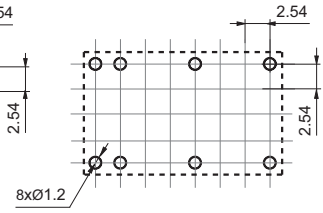
2 Form A, 2 Form B, 1A + 1B



1 Form A, 1 Form B



2 Form A, 2 Form B, 1A + 1B

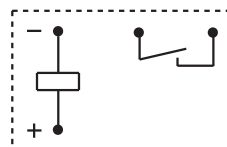


- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

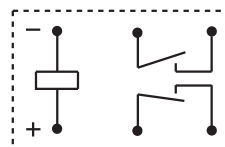
Wiring Diagram (Bottom view)

Single side stable (Standard polarity)

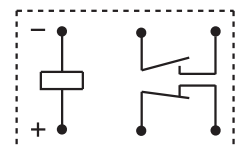
1 Form A



2 Form A

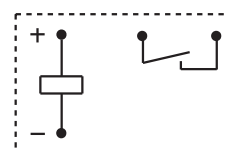


1A + 1B

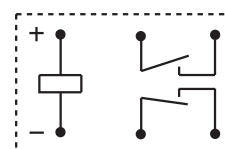


Single side stable (Reverse polarity)

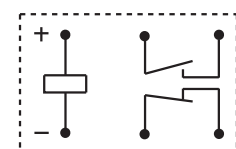
1 Form A



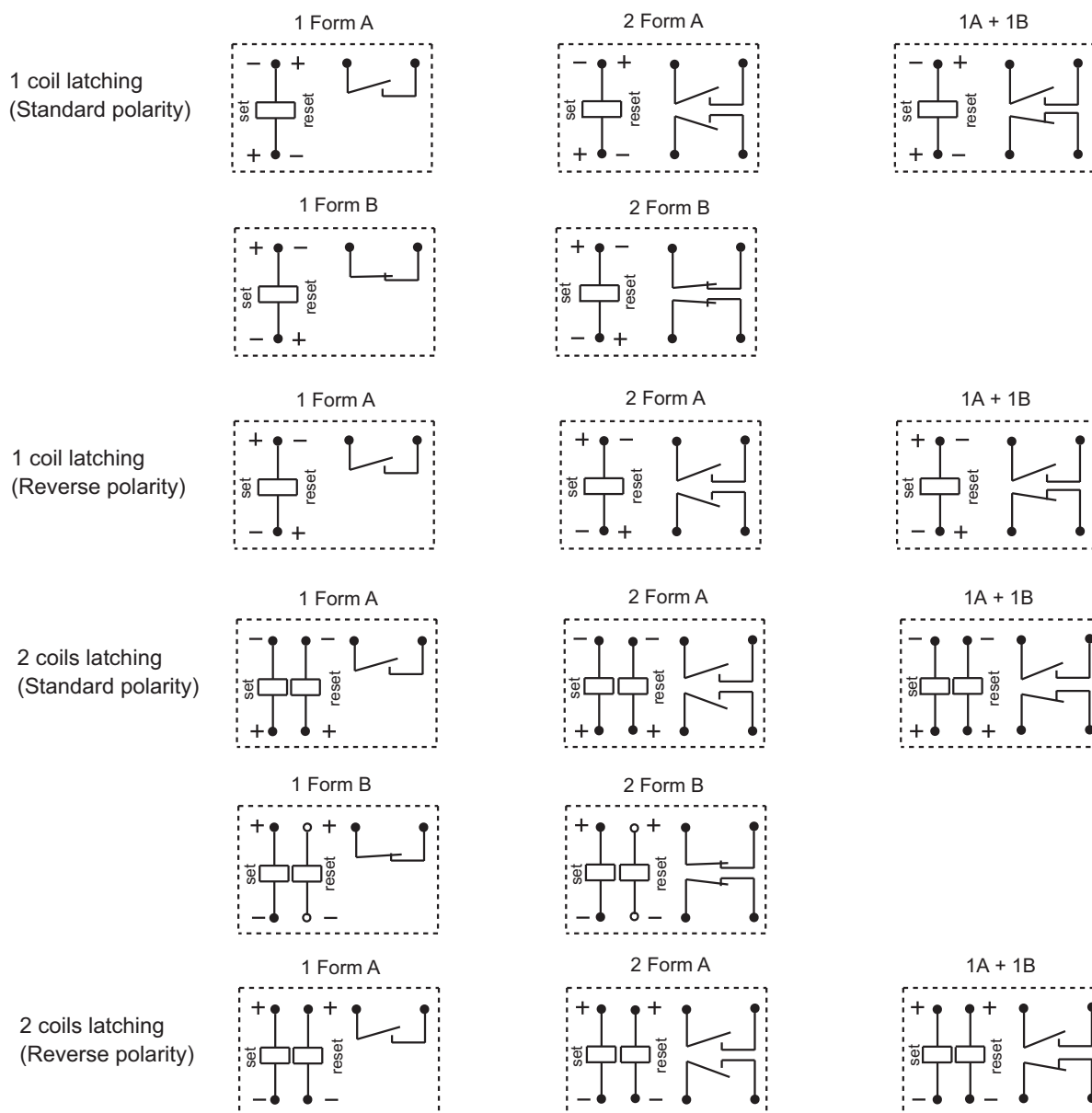
2 Form A



1A + 1B



Wiring Diagram (Bottom view)



Notice:

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- As the relay component part's will shrink and deformed due to the high temperature impact, our products are forbidden to be used at the temperature outside our suggested working temperature range (-40℃ to 70℃) for long time ; If the wave soldering will be used, the operating parameters we will suggest are: Up limit of the pre-heating time: 120s; Up limit of the pre-heating temperature:120℃; Soldering temperature: 260℃±5℃; Soldering time (10±3) s; Besides our suggested parameters, please try to shorten the pre-heating time and the soldering time and try to lower the temperature for pre-heating and the soldering as you can; the manual soldering for such relay is more recommended.

Disclaimer

The specification is for reference only. 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.

HF163F-L SUBMINIATURE INTERMEDIATE POWER LATCHING RELAY



File No.: E133481



File No.: 40039460



Features

- Latching relay
- Breakdown voltage (between contact and coil): 5,000 V
- High switching capacity: 8A 250VAC
- Surge breakdown voltage (between contact and coil): 12,000 V
- Reflow soldering available
- 1 Form A configuration

CONTACT DATA

Contact arrangement	1A
Contact resistance ¹⁾	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	8A 250VAC 5A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA/150W
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	5 x 10 ⁴ OPS(8A 250VAC, Resistive load, at 85°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
Set time		15ms max.
Reset time		15ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 2.0mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 8g
Construction		Flux proofed

Notes: The data shown above are initial values.

COIL

Coil power	1 coil latching	Approx. 200mW
	2 coils latching	Approx. 400mW

COIL DATA

at 23°C

1 coil latching (200mW)

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾²⁾ max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
3	2.4	50	45
5	4.0	50	125
6	4.8	50	180
9	7.2	50	405
12	9.6	50	720
24	19.2	50	2880

2 coils latching (400mW)

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾²⁾ max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
3	2.4	50	22.5
5	4.0	50	62.5
6	4.8	50	90
9	7.2	50	202.5
12	9.6	50	360
24	19.2	50	1440

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

SAFETY APPROVAL RATINGS

UL/CUL	8A 250VAC at 85°C 5A 30VDC at 85°C 10A 250VAC at 40°C TV-3 125VAC at 40°C 800W 277VAC Tungsten at 40°C 4A 277VAC Standard Ballast at 40°C
VDE	8A 250VAC at 85°C 5A 30VDC 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.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

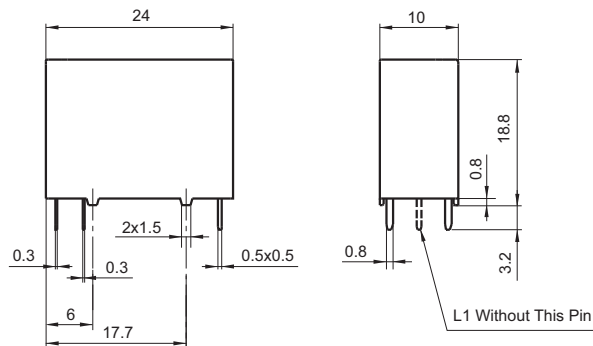
Type	HF163F-L/	12	-H	L2	T	(XXX)
Coil voltage	3, 5, 6, 9, 12, 24VDC					
Contact form	H: 1 Form A					
Sort	L1: 1 coil latching L2: 2 coils latching					
Contact material	T: AgSnO ₂					
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
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.(470) stands for product which is suitable for reflow soldering.

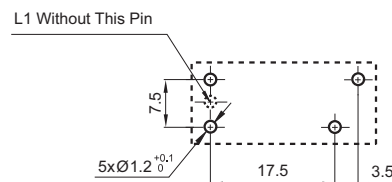
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



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 2.54mm.

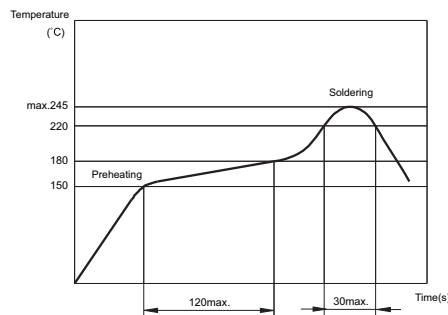
Wiring Diagram (Bottom view)

Reset Status



RECOMMENDED SOLDERING CONDITIONS

Temperature/Time profile of Reflow Soldering see below:



- Notes:** 1) Temperature profile shows Printed Circuit Board surface temperature on the relay terminal portion.
2) Please check the actual soldering condition to use other method except above mentioned temperature profiles.

Notice:

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

Disclaimer

The specification is for reference only. 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.

HF163F-L16 SUBMINIATURE INTERMEDIATE POWER LATCHING RELAY



File No.:E133481



File No.: B0532860028



File No.: CQC19002212710



Features

- Low height 15.7mm
- Breakdown voltage (between contact and coil): 5,000 V
- Have passed TV-8 certification
- 16A switching capability
- Max. switching capacity 20A
- Inrush current Capacitor 192A/1.2ms
- For LED load

CONTACT DATA

Contact arrangement	1A
Contact resistance ¹⁾	30mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating	16A 277VAC, 1 x 10 ⁵ (Resistive, at 85°C) 20A 250VAC, 5 x 10 ⁴ (Resistive, at 85°C) 600W 120VAC, 2.5 x 10 ⁴ (Incandescent lamp, at 50°C) 8A 277VAC, 6 x 10 ³ (Standard rectifier, at 50°C) 5A 120VAC, 6 x 10 ³ (Electronic rectifier, at 40°C) 8A 240VAC, 2.5 x 10 ⁴ (TV-8, 40°C)
Max. switching voltage	277VAC
Max. switching current	20A
Max. switching power	5000VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

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
Set time		15ms max.
Reset time		15ms 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 85°C
Termination	coil termination	PCB
	load termination	PCB
Unit weight		Approx. 7g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL

Coil power	Standard type	1 coil latching: Approx. 0.4W 2 coils latching: Approx. 0.6W
	Sensitive type	1 coil latching: Approx. 0.2W 2 coils latching: Approx. 0.4W

COIL DATA

at 23°C

1 coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾²⁾ max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
			Sensitive type	Standard type
3	2.4	50	45	22.5
5	4.0	50	125	62.5
6	4.8	50	180	90
9	7.2	50	405	202.5
12	9.6	50	720	360
24	19.2	50	2880	1440

2 coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾²⁾ max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
			Sensitive type	Standard type
3	2.4	50	22.5+22.5	15+15
5	4.0	50	62.5+62.5	42+42
6	4.8	50	90+90	60+60
9	7.2	50	202.5+202.5	135+135
12	9.6	50	360+360	240+240
24	19.2	50	1440+1440	960+960

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

SAFETY APPROVAL RATINGS

UL/CUL	Resistive: 16A 277VAC 85°C Resistive: 20A 250VAC 85°C Resistive: 5A 30VDC 85°C Incandescent lamp: 600W 120VAC 50°C Standard rectifier: 8A 277VAC 50°C Electronic rectifier: 5A 120VAC 40°C TV-8: 8A 240VAC 40°C
	Resistive: 16A 277VAC 85°C Resistive: 20A 250VAC 85°C Resistive: 5A 30VDC 85°C
TüV	Resistive: 16A 277VAC 85°C Resistive: 20A 250VAC 85°C Resistive: 5A 30VDC 85°C

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

ORDERING INFORMATION

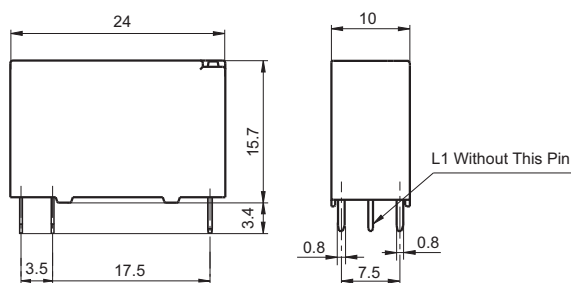
Type	HF163F-L16 /12 -H 1A- L T -L2 (XXX)						
Coil voltage	3, 5, 6, 9, 12, 24VDC						
Contact form	H: 1 Form A						
Termination	Nil: Standard 1A: Wide pin type						
Coil power ⁽⁴⁾	Nil: Standard L: Sensitive type						
Contact material	T: AgSnO ₂						
Sort	L1: 1 coil latching L2: 2 coils latching						
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.).
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

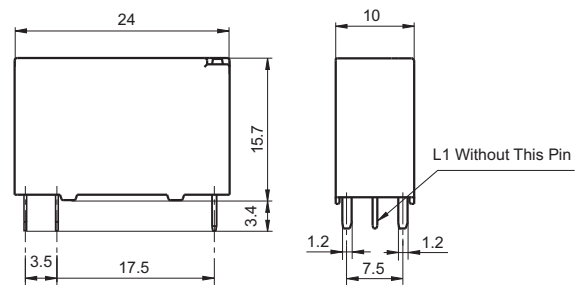
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

HF163F-L16/XX-HXT-X

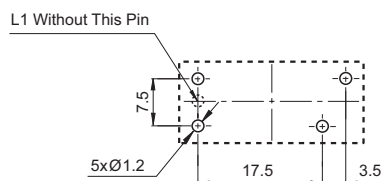


HF163F-L16/XX-H1A-XT-X

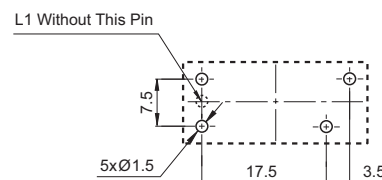


PCB Layout
(Bottom view)

HF163F-L16/XX-HXT-X



HF163F-L16/XX-H1A-XT-X



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.

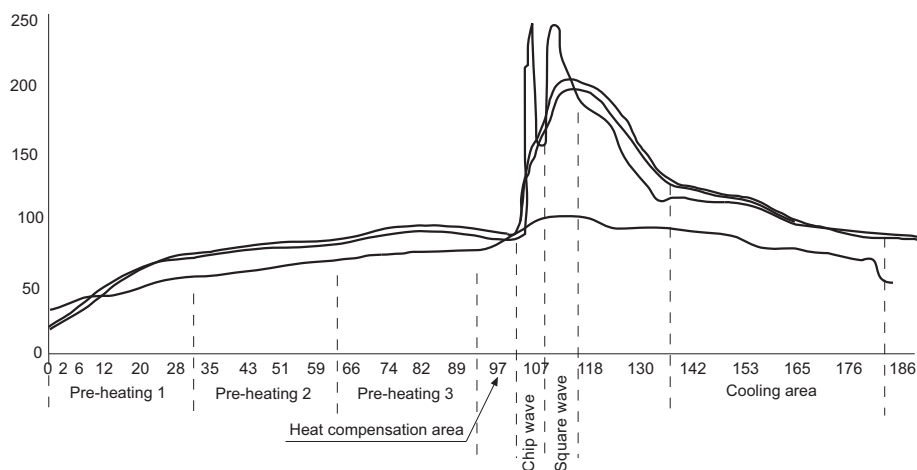
Wiring Diagram (Bottom view)

Reset Status



RECOMMENDED SOLDERING CONDITIONS

Wave soldering temperature distribution chart



Notice:

1. the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the above chart is the wave soldering temperature distribution chart we recommended for your reference.
2. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
3. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
4. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

Disclaimer

The specification is for reference only. 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.

HFE46

MINIATURE HIGH POWER LATCHING RELAY



File No.:E133481



File No.:CQC16002138347



Features

- Latching relay
- 16A switching capability
- Max. inrush current 320A/2ms
- Dielectric strength: more than 12kV (between coil and contacts)
- Insulation distance up to 15mm
- Manual switch function available

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance 1)	20mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating	Resistive: 16A/250VAC(cos=1) ,1 x10 ⁵ ops Inductive: 6A/277VAC(cos=0.4) ,2 x10 ⁴ ops Motor:1.5HP 250VAC, 6 x 10 ³ ops Standard ballast: 6A/277VAC 6 x 10 ³ ops Electronic ballast: 5A/277VAC 6 x 10 ³ ops TV8 240VAC 2.5 x 10 ⁴ ops
Max. switching voltage	277VAC
Max. switching current	16A
Max. switching power	4000VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC (1 min)
	Between open contacts	1000VAC (50/60Hz 1 min)
Creepage distance		15mm
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		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 85°C
Termination	coil termination	PCB
	load termination	PCB
Unit weight		Approx. 11g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 400mW Double coil latching: Approx. 800mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC 1) max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω	
3	2.4	50	Single coil latching	22.5
5	4.0	50		62.5
6	4.8	50		90
9	7.2	50		202.5
12	9.6	50		360
24	19.2	50		1440
3	2.4	50	Double coils latching	11.25+11.25
5	4.0	50		31.25+31.25
6	4.8	50		45+45
9	7.2	50		101.25+101.25
12	9.6	50		180+180
24	19.2	50		720+720

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

SAFETY APPROVAL RATINGS

UL/CUL	1A,1B	250VAC 16A 85°C
		250VAC 1.5HP 40°C
		240VAC TV8 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.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

Type	HFE46	-1	/12	-1H	S	T	-L1	-R	(XXX)
Manual switch	1: With manual switch Nil: None								
Coil voltage	3,5,6,9,12,24 VDC								
Contact form	1H: 1 Form A 1D: 1 Form B								
Polarity	Nil: Flux proofed S: Plastic sealed(Only for without manual switch type)								
Contact material	T: AgSnO ₂								
Sort	L1: Single coil latching L2: Double coils latching								
Polarity	R: Negative polarity Nil: Positive polarity								
Special code	XXX: Customer special requirement Nil: Standard								

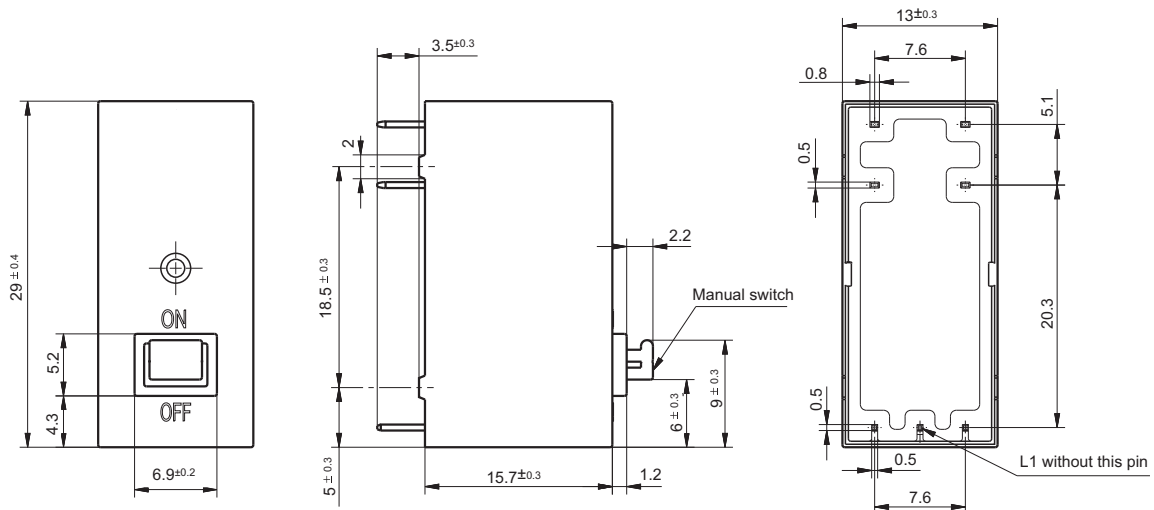
Notes: 1) 1H means that relay is on the "reset" status when delivery; 1D means that relay is on the "set" status when delivery.
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

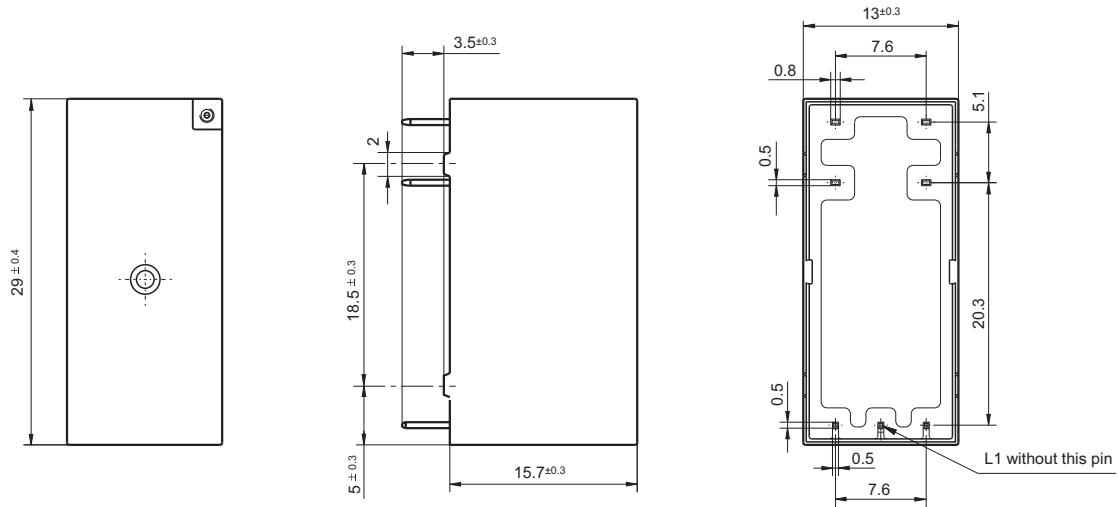
Outline Dimensions

HFE46-1

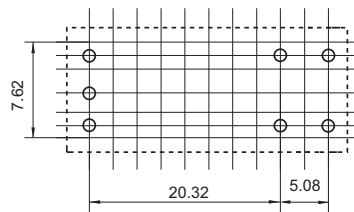


Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

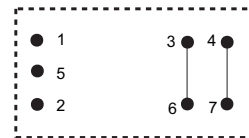
HFE46



PCB Layout

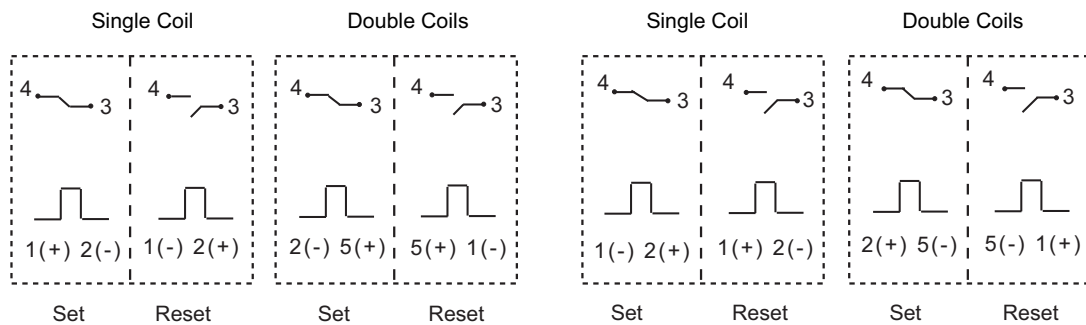


Wiring Diagram



Positive Polarity

Negative Polarity



NOTICE

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

Disclaimer

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.

HFE20

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



File No.: 40031831



File No.: CQC14002113728



Features

- 20A switching capability
- Low height 15.7mm
- UL insulation class: F class
- Have passed TV-8 (UL) certification
- Inrush current Capacitor
500A/2ms and 320A/2ms
(Contact material: W+AgSnO₂ and AgSnO₂)
- Product in accordance to IEC 60335-1 available

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance 1)	20mΩ max. (at 1A 24VDC)
Contact material	AgSnO ₂ , W+AgSnO ₂
Contact rating	1A,1B: 16A 250VAC, 1 x 10 ⁵ OPS (Resistive, at 85°C, 1s on 9s off) 1A,1B: 20A 250VAC, 2 x 10 ⁴ OPS (Resistive, at 70°C, 1s on 9s off) 1A,1B: 1.5HP 250VAC 6 x 10 ³ OPS (Motor, at 40°C, 0.5s on 0.5s off) 1A,1B: 8A 220VAC COSØ=0.4, 1x10 ⁵ OPS (Inductive, at 85°C, 1s on 9s off) HFE20-1/X-1HD: 3300W 277VAC, 2 x 10 ⁴ OPS (Electronic rectifier, at 40°C, 1s on 9s off) 1C: 16A 250VAC, 5 x 10 ⁴ OPS (Resistive, at 85°C, 1s on 9s off)
Max. switching voltage	277VAC
Max. switching current	20A
Max. switching power	4000VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See "Contact rating"

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

SAFETY APPROVAL RATINGS

UL/CUL	1A	Resistive:20A 250VAC 70°C Resistive:16A 250VAC 85°C Motor:1.5HP 250VAC 40°C Fluorescent lamp (without compensation): 1800W 120VAC 40°C Fluorescent lamp (with compensation): 1800W 120VAC 40°C Incandescent lamp:1800W 120VAC 40°C
	1C	NO:20A 250VAC 70°C 16A 250VAC 85°C NC:16A 250VAC 85°C
VDE	1A	20A 250VAC(COSØ=1) 70°C 16A 250VAC(COSØ=1) 85°C 8A 250VAC(COSØ=0.4) 85°C
	1C	16A 250VAC(COSØ=1) 85°C

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

COIL

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

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Creepage distance		8mm
Surge voltage(Between coil & contacts)		10000V
Set time (at nomi. volt.)		10ms max.
Reset time (at nomi. volt.)		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 85°C
Termination	coil termination	PCB
	Load termination	PCB
Unit weight		Approx. 13g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC 1)2) max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
3	2.4	50	22.5
5	4.0	50	62.5
6	4.8	50	90
9	7.2	50	202.5
12	9.6	50	360
24	19.2	50	1440

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC 1)2) max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
3	2.4	50	15+15
5	4.0	50	42+42
6	4.8	50	60+60
9	7.2	50	135+135
12	9.6	50	240+240
24	19.2	50	886+886

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

ORDERING INFORMATION

Type	HFE20	- 3	/12	-1D	S	T	-L2	-R	(XXX)
Version	1: 5mm pin 2: 3.5mm pin 3: 2.5mm pin								
Coil voltage	3, 5, 6, 9, 12, 24 VDC								
Contact form ¹⁾	1D: 1 Form B 1H: 1 Form A 1Z: 1 Form C (Only for HFE20-1, HFE20-2)								
Construction ²⁾	S: Plastic sealed Nil: Flux proofed								
Contact material	T: AgSnO2 D: W+AgSnO2(Only for HFE20-1/□□ -1H, UL certification only)								
Sort	L1: Single coil latching				L2: Double coils latching				
Polarity	R: Reverse polarity				Nil: Positive polarity				
Special code ³⁾	XXX: Customer special requirement				Nil: Standard				

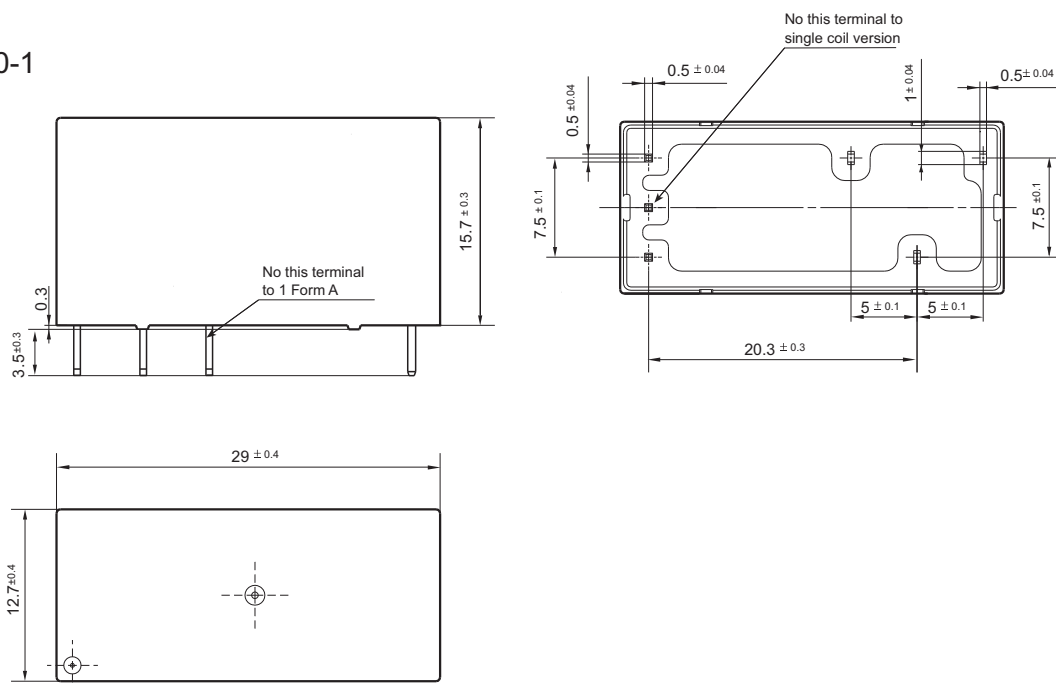
Notes: 1) 1H means that relay is on the "reset" status when delivery; 1D means that relay is on the "set" status when delivery. we will recommend use one form B if customer can use normally (except the pre-make version HFE20-1/□□-1H□D).

2) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

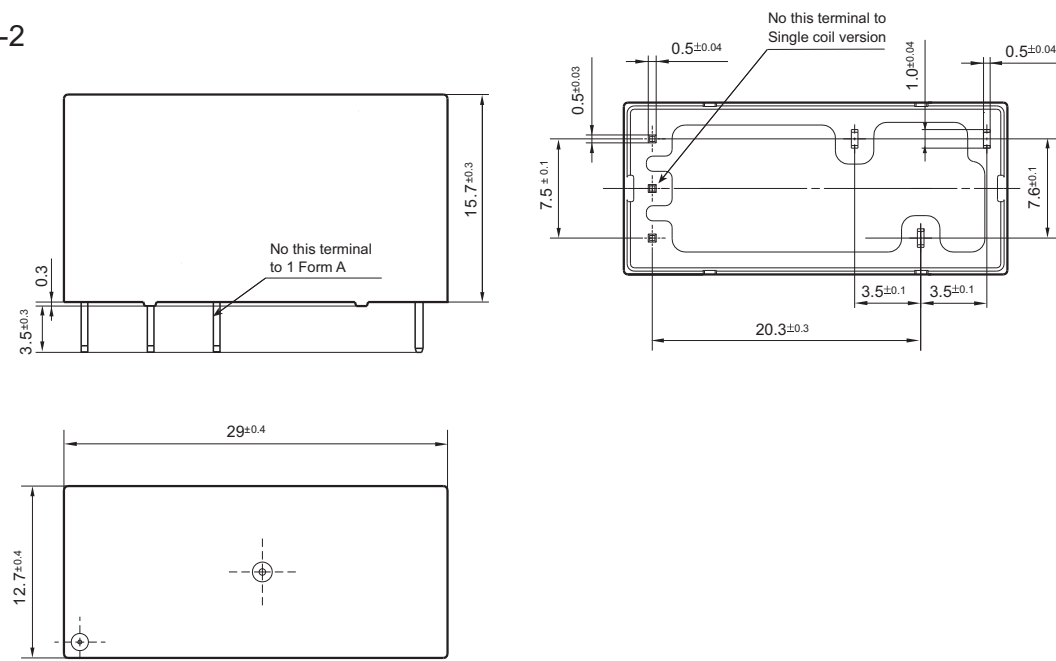
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (359) stands for lamp load; e.g. (399) stands for special polarity(See Wiring Diagram).

Outline Dimensions

HFE20-1

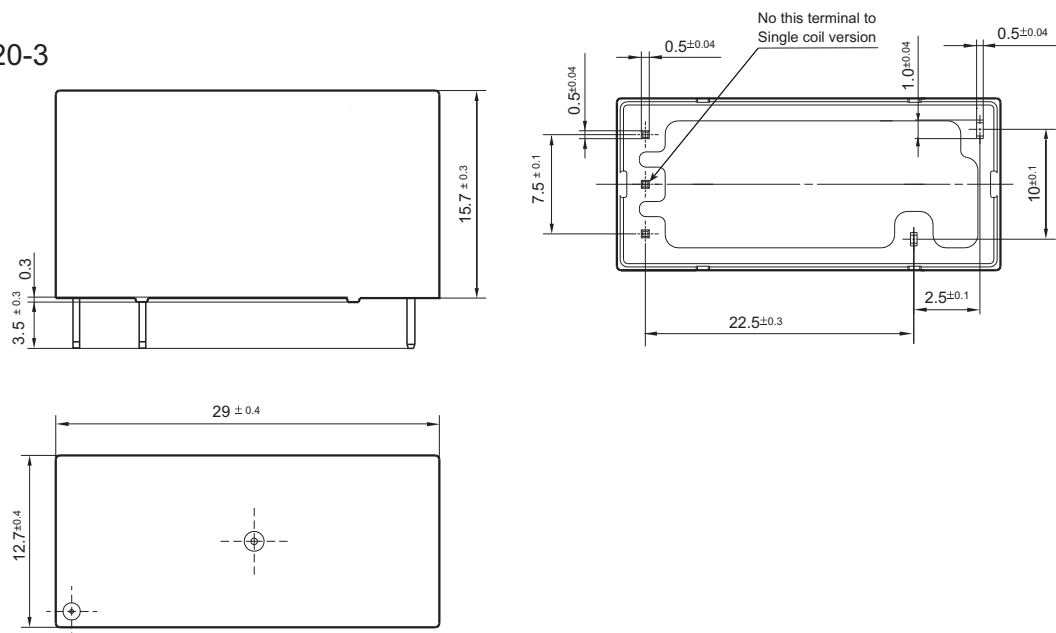


HFE20-2



Outline Dimensions

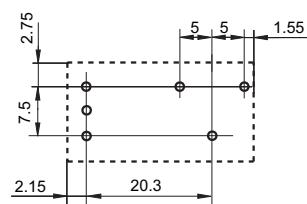
HFE20-3



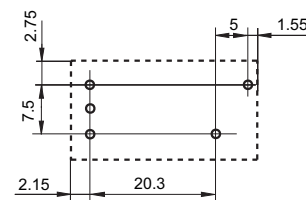
PCB Layout (Bottom view)

HFE20-1

1 Form C

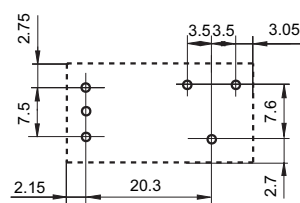


1 Form A, 1 Form B

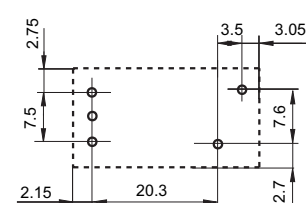


HFE20-2

1 Form C

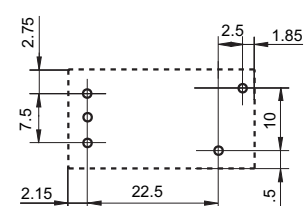


1 Form A, 1 Form B



HFE20-3

1 Form A, 1 Form B



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 $\pm 0.4\text{mm}$.

Wiring Diagram (Bottom view)

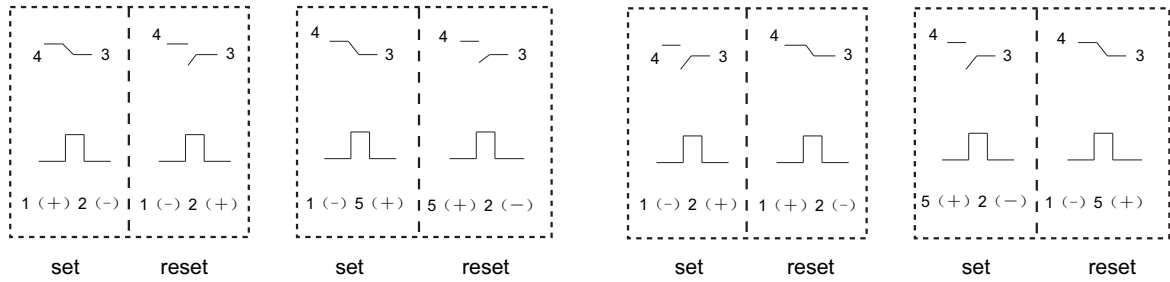
HFE20-3



Positive polarity

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

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

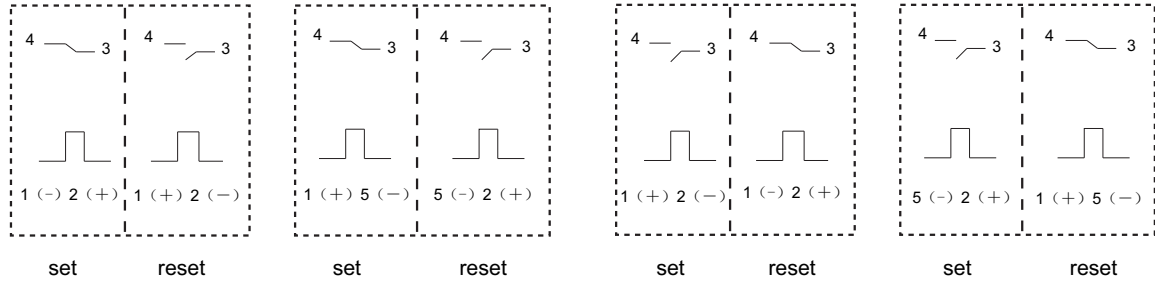


Wiring Diagram (Bottom view)

Reverse polarity

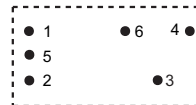
Single coil latching, 1 Form A Double coils latching, 1 Form A

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



Wiring Diagram (Bottom view)

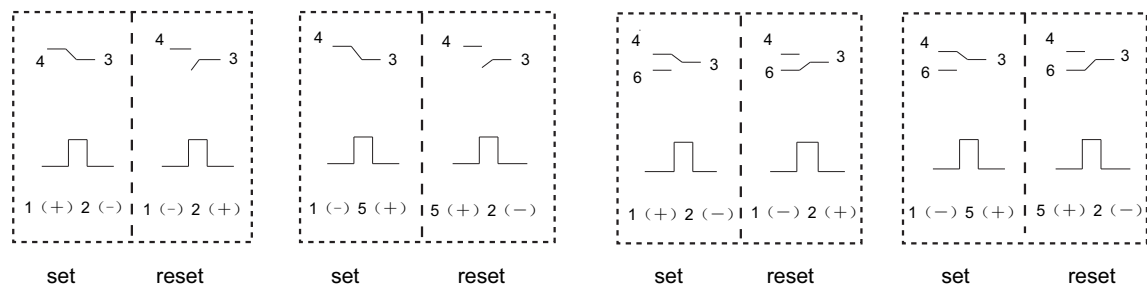
HFE20-1
HFE20-2



Positive polarity

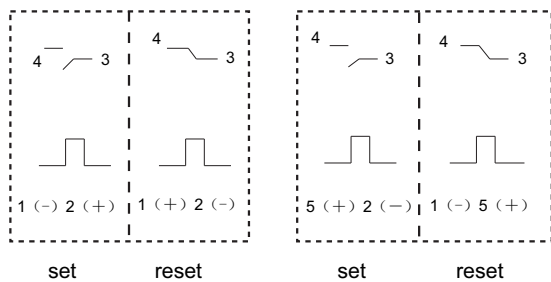
Single coil latching, 1 Form A Double coils latching, 1 Form A

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



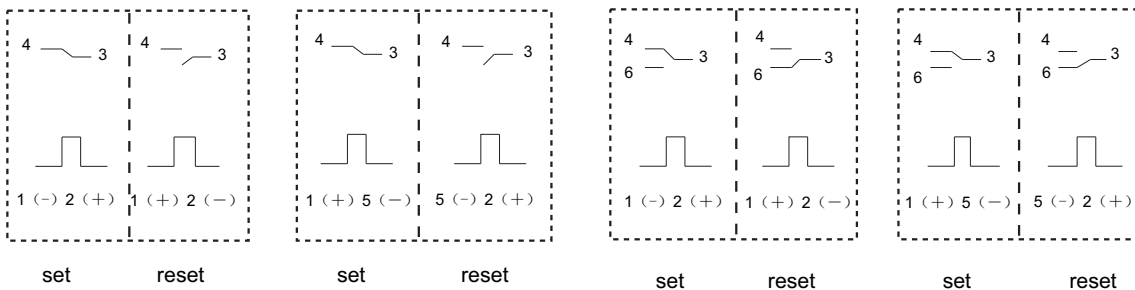
Wiring Diagram (Bottom view)

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

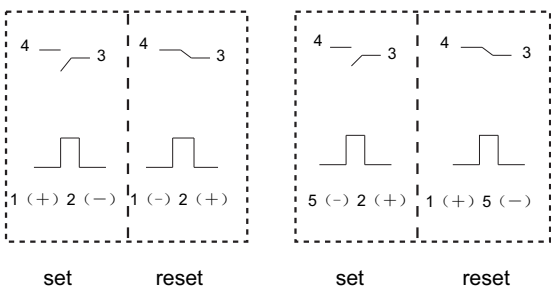


Reverse polarity

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

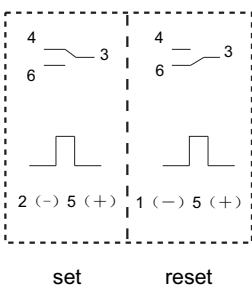


Single coil latching, 1 Form B Double coils latching, 1 Form B



(399):Special polarity

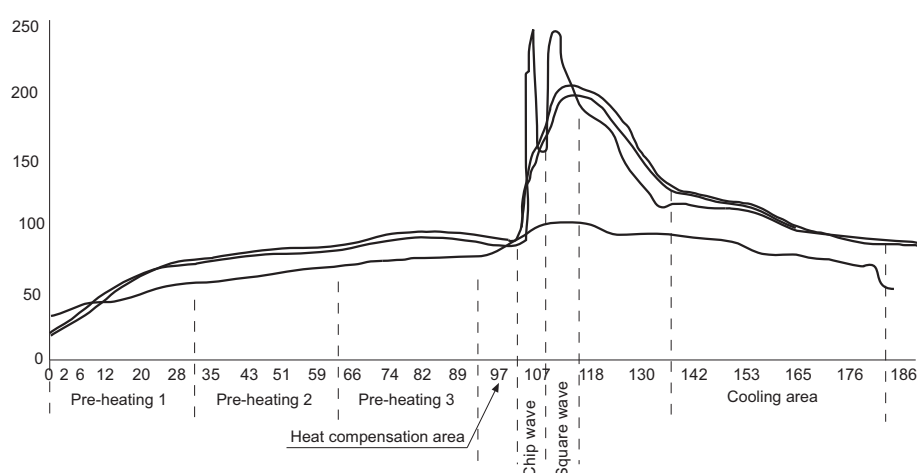
Double coils latching



Notice:

1. Latching relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. 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.

HFE39

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



File No.:40049970



Features

- 20A switching capability
- Latching relay
- Max.inrush current 350A/2ms

CONTACT DATA

Contact arrangement	2A, 2B, 1A+1B	
Contact resistance 1)	20mΩ max. (at 1A 24VDC)	
Contact material	AgSnO ₂	
Contact rating	2A	16A 250VAC, 1 x 10 ⁵ ops (Resistance) 20A 250VAC, 1 x 10 ⁵ ops (Resistance) ²⁾ 1.5HP 250VAC 5 x 10 ⁴ ops (Motor)
	2B	10A 277VAC 2 x 10 ⁴ ops (Electronic ballast) 10A 277VAC, 3 x 10 ⁴ ops (Standard ballast) 10A 240VAC, 2.5 x 10 ⁴ ops (TV-10)
	1A+1B	16A 250VAC, 5 x 10 ⁴ ops (Resistance)
Max. switching voltage	277VAC	
Max. switching current	20A	
Max. switching power	4000VA	
Mechanical endurance	1 x 10 ⁶ ops	
Electrical endurance	See "Contact rating"	

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

2) A special suffix (530) will be required to follow at the end of relay partnumber,when the electrical life requirement up to 1 x 10⁵ cycles at 20A 250VAC resistive load.

COIL

Coil power	Standard: Single coil latching: Approx 1W Double coils latching: Approx 2W	
	Sensitive: Single coil latching: Approx 0.6W Double coils latching: Approx 1.2W	

SAFETY APPROVAL RATINGS

UL/CUL	2A, 2B (Only for standard type)	20A 250VAC Resistance at 85°C 1.5HP 250VAC Motor at 40°C 277VAC 10A Standard ballast at 40°C 277VAC 10A Electronic ballast at 40°C 240VAC 10A TV-10 at 40°C
	VDE	2A, 1A+1B 16A 250VAC Resistance at 85°C 20A 250VAC Resistance

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 1min
	Between open contacts	1000VAC 1min
Creepage distance		8mm min.
Set time (at nomi. volt.)		15ms max.
Reset time (at nomi. volt.)		15ms 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 85°C
Termination		PCB
Unit weight		Approx.12g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.

COIL DATA

at 23°C

Standard type:

Nominal Voltage VDC	Set / Reset Voltage VDC 1)2) max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
3	2.1	50	Single coil latching	9
5	3.5	50		25
6	4.2	50		36
9	6.3	50		81
12	8.4	50		144
24	16.8	50		576
48	33.6	50		2304
3	2.1	50	Double coils latching	4.5+4.5
5	3.5	50		12.5+12.5
6	4.2	50		18+18
9	6.3	50		40.5+40.5
12	8.4	50		72+72
24	16.8	50		288+288
48	33.6	50		1152+1152



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

COIL DATA

at 23°C

Sensitive type:

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾²⁾ max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
3	2.1	50	Single coil latching	15
5	3.5	50		42
6	4.2	50		60
9	6.3	50		135
12	8.4	50		240
24	16.8	50		960
3	2.1	50	Double coils latching	7.5+7.5
5	3.5	50		21+21
6	4.2	50		30+30
9	6.3	50		67.5+67.5
12	8.4	50		120+120
24	16.8	50		480+480

Notes: 1) The data shown above are initial values; The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

ORDERING INFORMATION

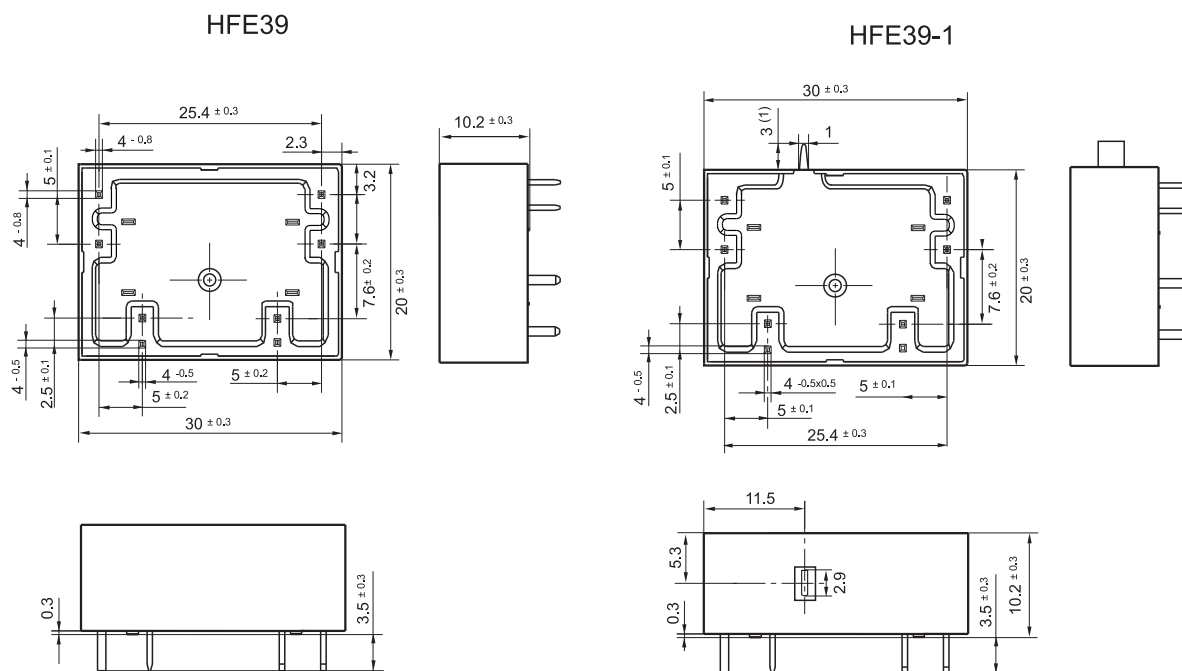
Type	HFE39	-1	/12	-2D	S	L	T	-L1	-R (XXX)
Version	1: with manual switch Nil: No manual switch								
Coil voltage	3, 5, 6, 9, 12, 24VDC 48 VDC(Only for standard type)								
Contact form ¹⁾	1HD: 1 Form A + 1 Form B 2D: 2 Form B 2H: 2 Form A								
Construction ²⁾	S: Plastic sealed(No for HFE39-1) Nil: Flux proofed								
Coil power	L: Sensitive Nil: Standard								
Contact material	T: AgSnO ₂								
Sort	L1: Single coil latching				L2: Double coils latching				
Polarity	R: Reverse polarity				Nil: Positive polarity				
Special code ³⁾	XXX: Customer special requirement				Nil: Standard				

Notes: 1) 2H means that relay is on the "reset" status when delivery; 2D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

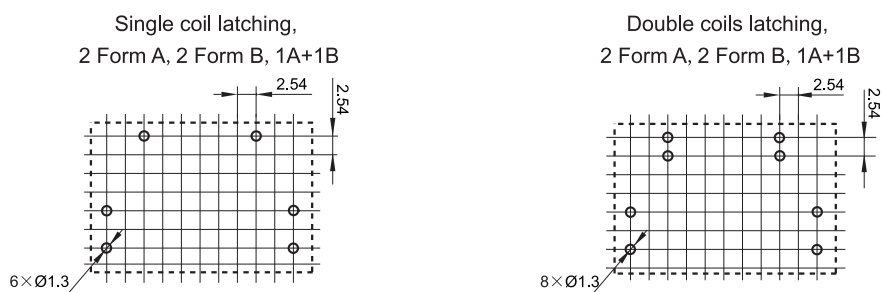
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relay on PCB.

3) Customer's special technical requirements to be evaluated by Hongfa, and differentiated by the special code suffix. For example, suffix (170) is for flash light load; (530) is for electrical life requirement up to 1×10^5 cycles at 20A 250VAC resistive load.

Outline Dimensions



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) This size for reference only. Contact is recommended for suitable specifications if you have any special requirements.

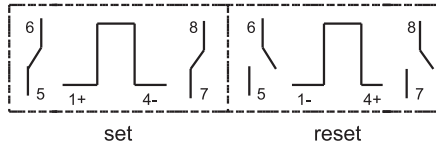
Wiring Diagram (Bottom view)



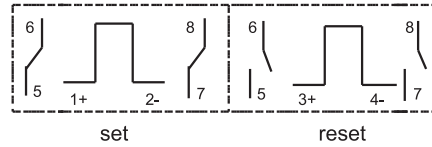
2 Form A

Positive polarity

Single coil latching

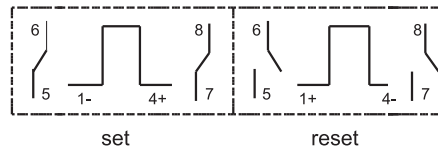


Double coils latching

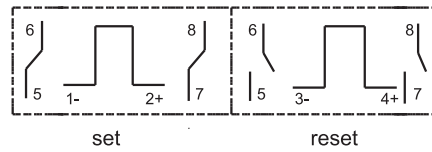


Reverse polarity

Single coil latching



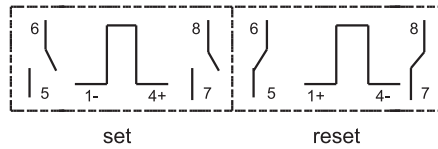
Double coils latching



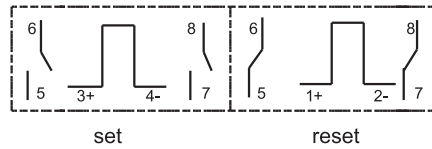
2 Form B

Positive polarity

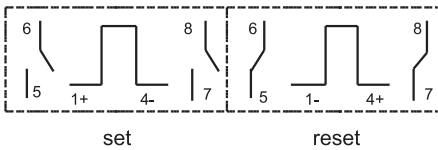
Single coil latching



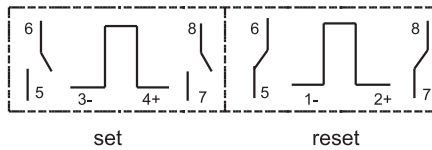
Double coils latching



Single coil latching



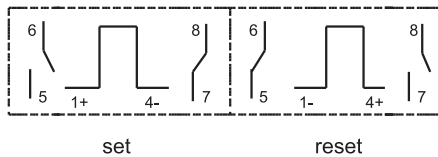
Double coils latching



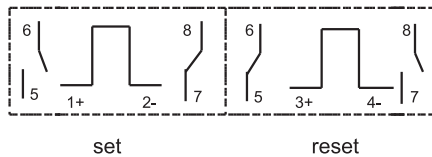
1 Form A + 1 Form B

Positive polarity

Single coil latching

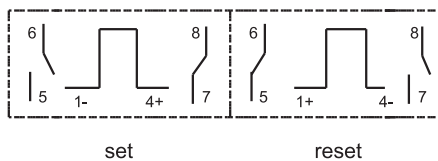


Double coils latching

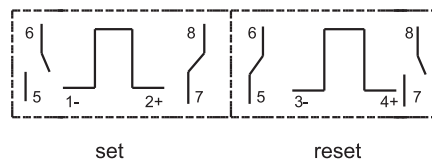


Reverse polarity

Single coil latching



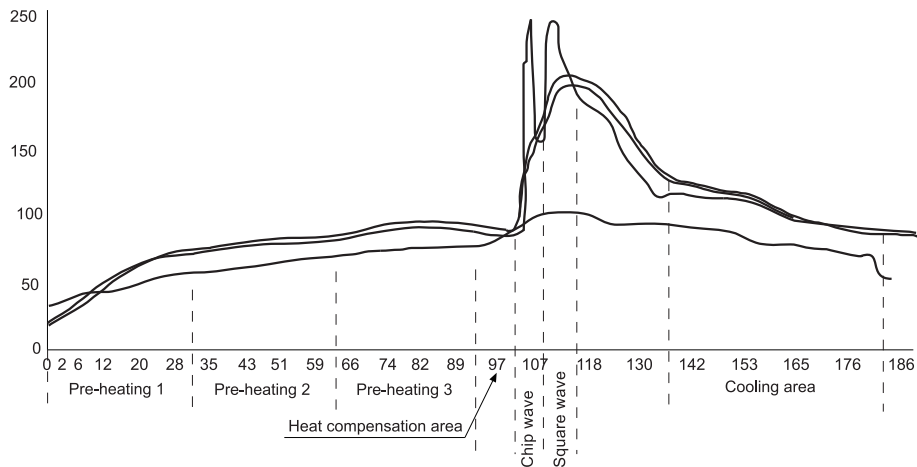
Double coils latching



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. 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.

HFE15

MINIATURE HIGH POWER LATCHING RELAY



File No.: E134517



File No.: 40045248



File No.: CQC19002223146



Features

- Latching relay
- 20A switching capacity
- Inrush current Capacitor 430A/1.5ms

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance ¹⁾	20mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating	1A, 1B: 20A 250VAC, 1x10 ⁵ OPS(Resistive) 25A 250VAC, 5x10 ⁴ OPS(Resistive) 10A 250VAC C=140uF, 3x10 ⁴ OPS(Capacitive) 10A 250VAC cosΦ=0.4, 3x10 ⁴ OPS(Inductive) 20A 30VDC, 3x10 ⁴ OPS(Resistive) 15A 45VDC, 6,000OPS(Resistive) 16A 250VAC, 1x10 ⁵ OPS(AC-1) 12.5A 400VAC, 1x10 ⁵ OPS(AC-1) 10A 277VAC, 6,000OPS (Electronic ballast) 1Z: 20A 250VAC, 5x10 ⁴ OPS(Resistive)
Max. switching voltage	400VAC
Max. switching current	25A
Max. switching power	5000VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1000VAC 1 min
Creepage distance		8mm
Impulse voltage		12KV min.
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		15ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 85% RH
Ambient temperature		-25°C ~ 70°C
Termination		PCB
Unit weight		Approx.23g

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 0.7W Double coils latching: Approx. 1.5W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ^{1) 2)} max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω
3	≤2.4	≥50	12.5
5	≤4.0	≥50	34.5
6	≤4.8	≥50	50
9	≤7.2	≥50	112.5
12	≤9.6	≥50	200
24	≤19.2	≥50	800
32	≤25.6	≥50	1460
48	≤38.4	≥50	3200

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ^{1) 2)} max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω
3	≤2.4	≥50	2 x 6
5	≤4.0	≥50	2 x 17.5
6	≤4.8	≥50	2 x 25
9	≤7.2	≥50	2 x 54
12	≤9.6	≥50	2 x 100
24	≤19.2	≥50	2 x 400
32	≤25.6	≥50	2 x 680
48	≤38.4	≥50	2 x 1600

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

SAFETY APPROVAL RATINGS

VDE	1A, 1B	Resistive: 20A 250VAC Incandescent lamp: 2500W 250VAC
	1C	Resistive: 20A 250VAC
UL	1A, 1B	Resistive: 20A 250VAC Resistive: 15A 45VDC Electronic ballast: 10A 277VAC

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



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

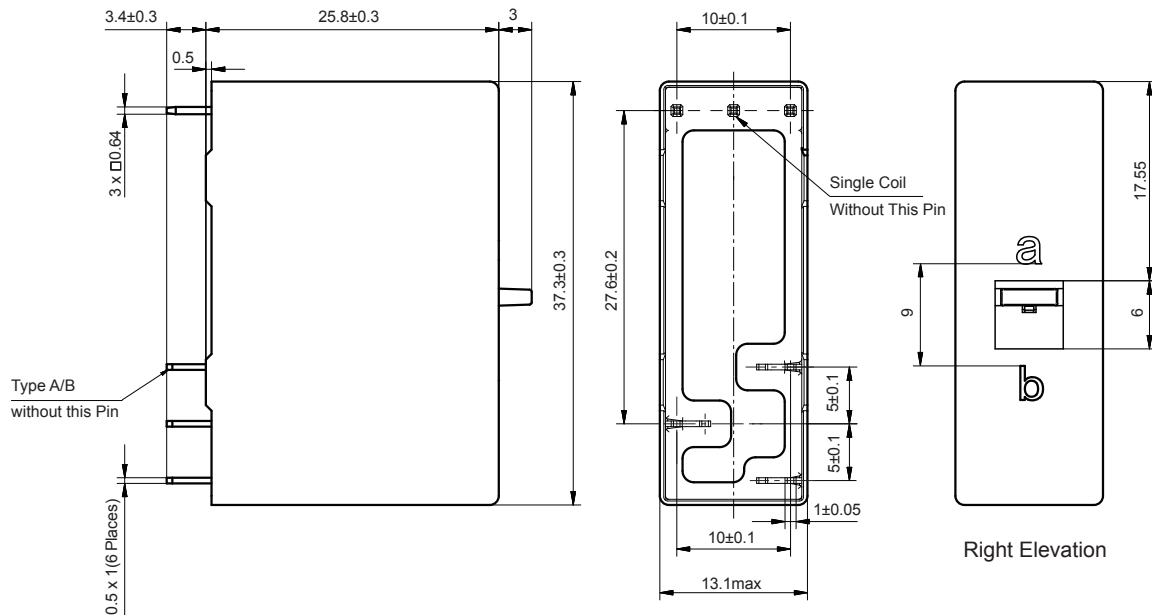
	HFE15	-1	/12	-1H	T	-L2	R	(XXX)
Type	Standard							
Manual wwitch	Nil: None -1: With manual switch							
Coil voltage	3,5,6,9,12,24,32,48 VDC							
Contact form ¹⁾	1H: 1 Form A 1D: 1 Form B 1Z:1 Form C							
Contact material	T: AgSnO ₂							
Sort	L1: Single coil latching L2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement							

Notes: 1) 1H means that relay is on the "reset" status when delivery; 1D means that relay is on the "set" status when delivery.
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

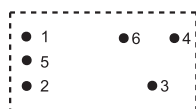
Outline Dimensions



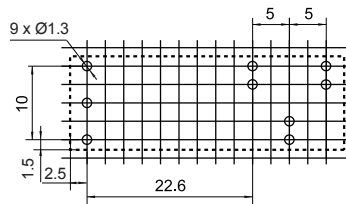
Remark:

- 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 length of pins does not include the length of the tin tip, and the length of the tin tip should not exceed 0.5mm after tin pick-up.
- 3) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
- 4) The width of the gridding is 2.54mm.

Wiring Diagram



PCB Layout (Bottom view)



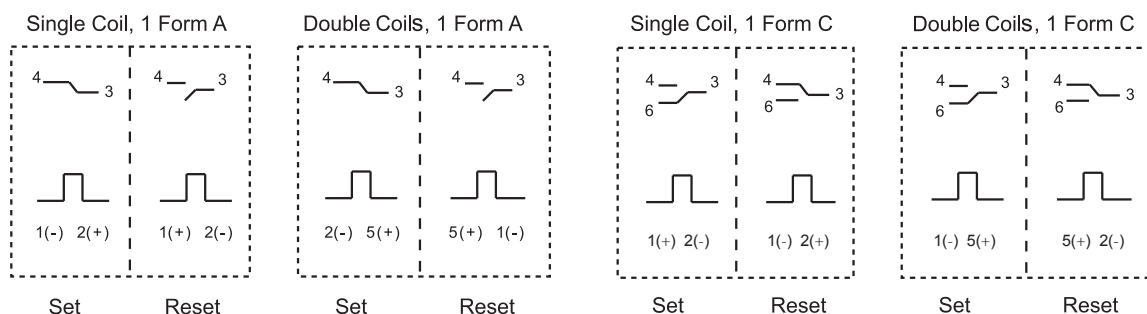
1 Form C

Contact position		
Manual switch position	(a)	(b)

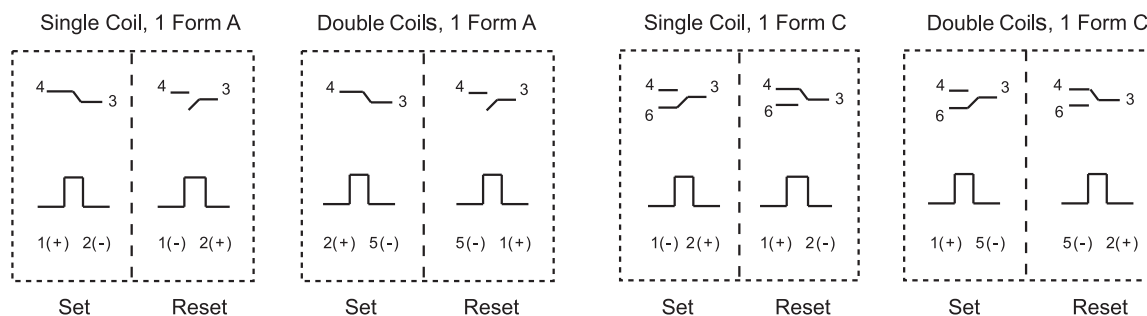
1 Form A

Contact position		
Manual switch position	(a)	(b)

Positive Polarity



Negative Polarity



NOTICE

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "ret" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C~260°C, 2s~5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s.

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.

HFE15L

MINIATURE HIGH POWER LATCHING RELAY



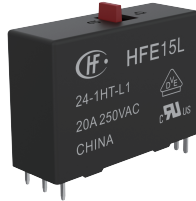
File No.: E134517



File No.: 40045248



File No.: CQC19002223146



Features

- Latching relay
- In accordance to IEC60669-2-1
- 20A switching capacity
- Lamp load up to 10A
- Inrush current Capacitor 430A/1.5ms

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance ¹⁾	20mΩ max.(at 1A 24VDC)
Contact material	AgSnO ²
Contact rating	1H,1D: 20A 250VAC, 1x10 ⁵ OPS(Resistive) 25A 250VAC, 5x10 ⁴ OPS(Resistive) 10A 250VAC C=140uF, 3x10 ⁴ OPS(Capacitive) 10A 250VAC cosΦ=0.4, 3x10 ⁴ OPS(Inductive) 20A 30VDC, 3x10 ⁴ OPS(Resistive) 16A 250VAC, 1x10 ⁵ OPS(AC-1) 12.5A 400VAC, 1x10 ⁵ OPS(AC-1) 10A 277VAC, 6x10 ³ OPS (Electronic ballast)
Max. switching voltage	440VAC
Max. switching current	25A
Max. switching power	5000VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1000VAC 1 min
Creepage distance		8mm
Impulse voltage		12KV min.
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		15ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 85% RH
Ambient temperature		-25°C ~ 70°C
Termination		PCB
Unit weight		Approx.23g

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 0.7W Double coils latching: Approx. 1.5W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC 1) 2) max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω
3	≤2.4	≥50	12.5
5	≤4.0	≥50	34.5
6	≤4.8	≥50	50
9	≤7.2	≥50	112.5
12	≤9.6	≥50	200
24	≤19.2	≥50	800
32	≤25.6	≥50	1460
48	≤38.4	≥50	3200

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC 1) 2) max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω
3	≤2.4	≥50	2 x 6
5	≤4.0	≥50	2 x 17.5
6	≤4.8	≥50	2 x 25
9	≤7.2	≥50	2 x 54
12	≤9.6	≥50	2 x 100
24	≤19.2	≥50	2 x 400
32	≤25.6	≥50	2 x 680
48	≤38.4	≥50	2 x 1600

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

SAFETY APPROVAL RATINGS

VDE	1H,1D	Resistive: 20A 250VAC Fluorescent Lamp (Without compensation): 10A 250VAC Fluorescent Lamp (With parallel compensation): 10A 250VAC Incandescent Lamp: 2500W 250VAC
UL	1H,1D	Resistive: 20A 250VAC Electronic ballast: 10A 277VAC

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

ORDERING INFORMATION

	HFE15L	-1	/12	-1H	T	-L2	R	(XXX)
Type	HFE15: Standard HFE15L: Lamp control							
Manual switch	Nil: None -1: With manual switch							
Coil voltage	3,5,6,9,12,24,32,48 VDC							
Contact form ¹⁾	1H: 1 Form A 1D: 1 Form B							
Contact material	T: AgSnO ₂							
Sort	L1: Single coil latching L2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

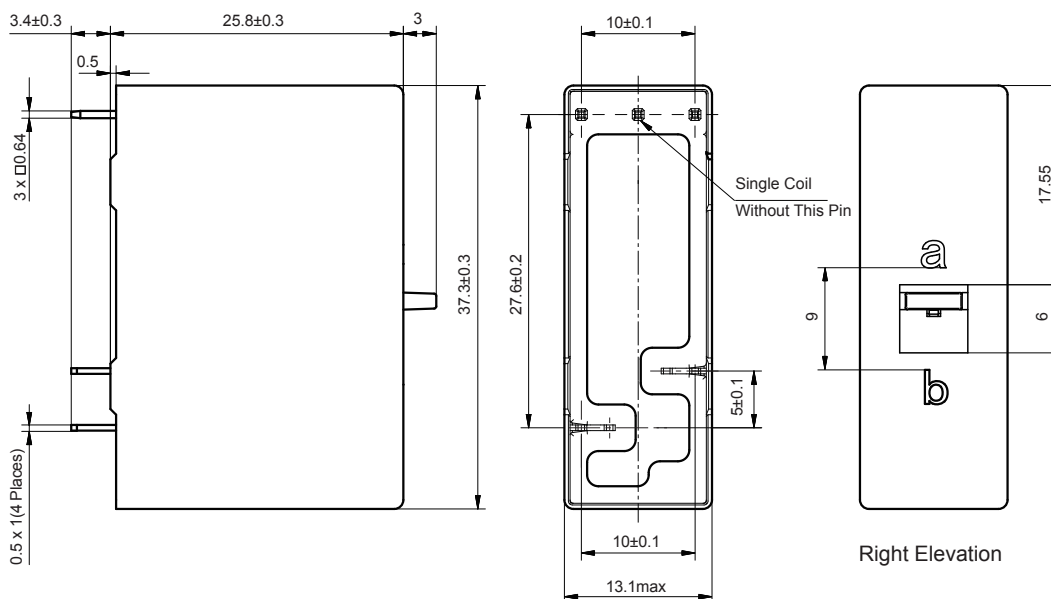
Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery.

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

OUTLINE DIMENSIONS

Unit: mm

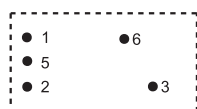
Outline Dimensions



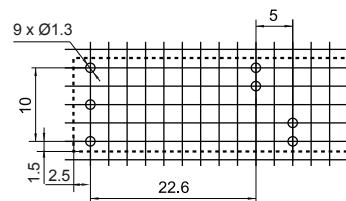
Remark:

- 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 length of pins does not include the length of the tin tip, and the length of the tin tip should not exceed 0.5mm after tin pick-up.
- 3) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
- 4) The width of the gridding is 2.54mm.

Wiring Diagram



PCB Layout (Bottom view)

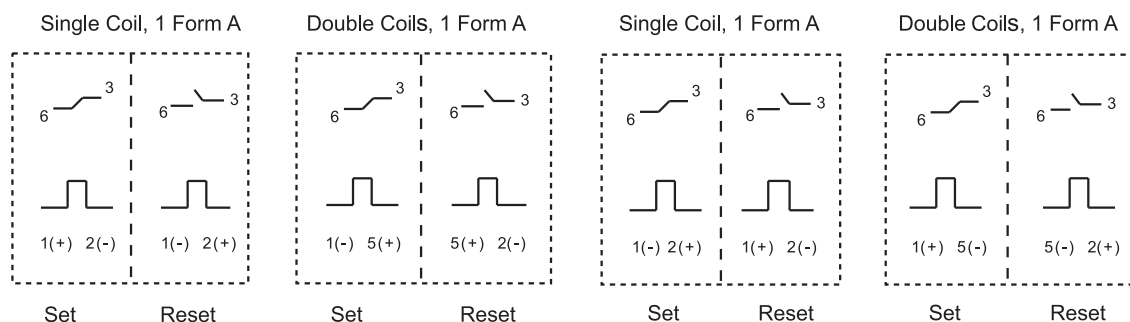


1 Form A

Contact position		
Manual switch position	(a)	(b)

Positive Polarity

Negative Polarity



NOTICE

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "ret" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C~260°C, 2s~5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s.

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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HFE10

MINIATURE HIGH POWER LATCHING RELAY



File No.:40035869



File No.:E134517



Features

- 50A switching capability
- Lamp load up to 5000W
- Motor load up to 3HP
- Max. inrush current 500A/2ms
- Dielectric strength: more than 4kV (between coil and contacts)
- Manual switch function available
- Relays with 1.5mm contact gap are available

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance ¹⁾	20mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating	1A, 1B: 50A 277VAC, 1 x 10 ⁵ OPS (Resistive) 5000W 240VAC, 3 x 10 ⁴ OPS (Incandescent lamp) 16A 277VAC, 6000 OPS (Electronic ballast) 3HP 277VAC, 3 x 10 ⁴ OPS (Motor) 1C: 40A 277VAC, 3 x 10 ⁴ OPS (Resistive)
Max. switching voltage	440VAC
Max. switching current	50A
Max. switching power	1A: 12500VA / 1C: 10000VA
Max. continuous current	50A
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

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

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
6	≤4.8	≥50	24
9	≤7.2	≥50	54
12	≤9.6	≥50	96
24	≤19.2	≥50	384
48	≤38.4	≥50	1536
6	≤4.8	≥50	12+12
9	≤7.2	≥50	27+27
12	≤9.6	≥50	48+48
24	≤19.2	≥50	192+192
48	≤38.4	≥50	768+768

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

COIL

Coil power	Single coil latching: Approx. 1.5W Double coils latching: Approx. 3.0W Type W-Single coil latching: Approx. 2.4W Type W-Double coils latching: Approx. 4.8W
------------	--

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance (input to output)		1A, 1B: 8mm 1C: 6mm
Set time (at nomi. volt.)		15ms max.
Reset time (at nomi. volt.)		15ms max.
Max. operate frequency		1A, 1B: 20cycles/min 1C: 10cycles/min
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	Coil termination	PCB
	Load termination	PCB&QC
Unit weight		Approx. 32g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.

SAFETY APPROVAL RATINGS

UL/CUL (AgSnO ₂)	1 Form A	Resistive: 50A 277VAC Incandescent lamp: 5000W 240VAC
	1 Form C	40A 277VAC
VDE	1 Form A 1 Form B	Resistive: 50A 277VAC

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

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



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL DATA

23°C

Type W-Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC max. ¹⁾	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
6	≤4.8	≥50	15
9	≤7.2	≥50	33.8
12	≤9.6	≥50	60
24	≤19.2	≥50	240
48	≤38.4	≥50	960

Type W-Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC max. ¹⁾	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
6	≤4.8	≥50	7.5+7.5
9	≤7.2	≥50	16.9+16.9
12	≤9.6	≥50	30+30
24	≤19.2	≥50	120+120
48	≤38.4	≥50	480+480

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

3) W-type for special code (W).

ORDERING INFORMATION

Type	HFE10	-1/	12	-D	1	S	T	-L2	-R	(W)	(XXX)
Version	1: No auxiliary convexity, no manual switch 2: No auxiliary convexity, with manual switch 3: With auxiliary convexity, no manual switch 4: With auxiliary convexity, with manual switch 5: No auxiliary convexity, with manual switch, the reverse action										
Coil voltage	6, 9, 12, 24, 48VDC										
Contact form	¹⁾ H: 1 Form A D: 1 Form B (No UL approval) Z: 1 Form C (No for HFE10-5) (No VDE approval)										
Termination	²⁾ 1: Extra long terminal 5: Wide terminal 6: Bending extra long terminal 7: Double PCB terminal Nil: PCB terminal										
Construction	³⁾ S: Plastic sealed (Only for HFE10-1 & HFE10-3) Nil: Flux proofed										
Contact material	T: AgSnO ₂										
Sort	L1: Single coil latching L2: Double coils latching										
Polarity	R: Negative polarity Nil: Positive polarity										
Special code	(W): Relays with Approx. 1.5mm contact gap (Only for H model. No approval.) Nil: Standard type										
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard										

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery.

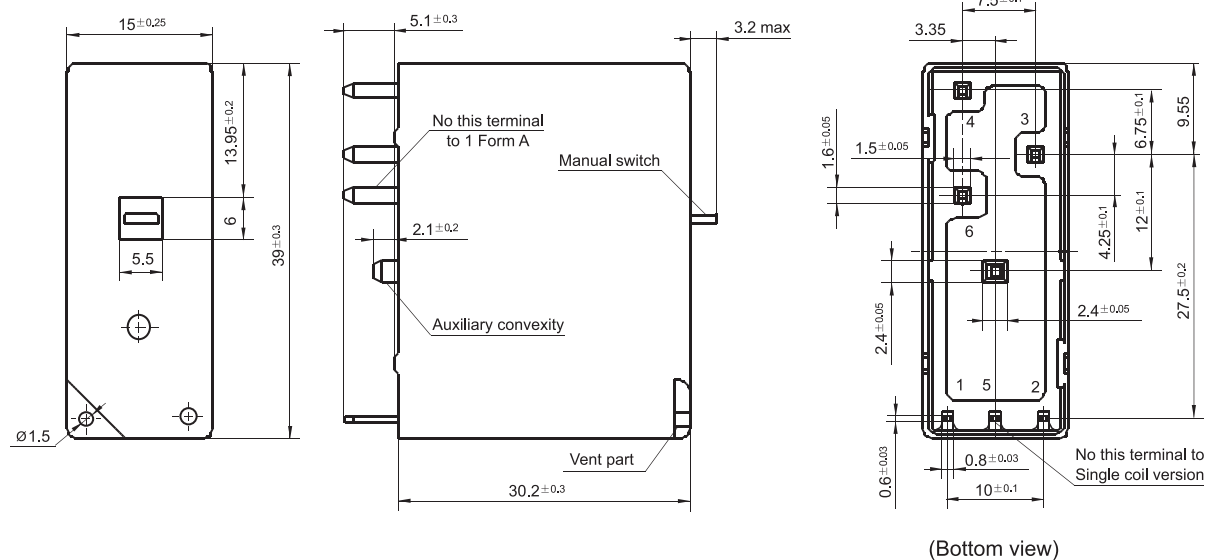
2) The 1 type, 5 type, 6 type and 7 type is only for HFE10-1/□□□ H, HFE10-2/ □□□ H.

3) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

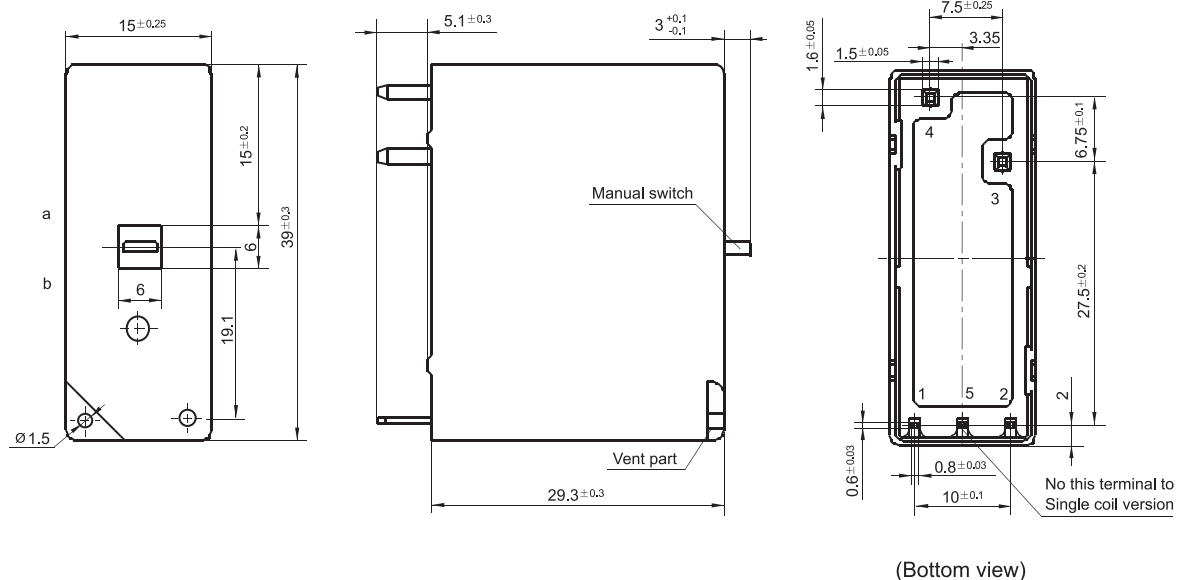
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (399) stands for Special polarity (See Wiring Diagram).

Outline Dimensions

HFE10-1, HFE10-2, HFE10-3, HFE10-4



HFE10-5/ □□□ H



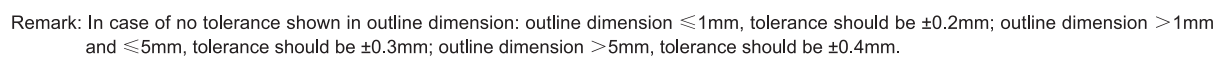
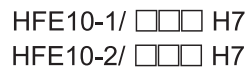
Remark: When the manual switch is pitched on point a, the contact is open; when the manual switch is pitched on point b, the contact is closed.

HFE10-1/ H1
HFE10-2/ H1

[illegible]

Unit: mm

HFE10-1/ H6
HFE10-2/ H6

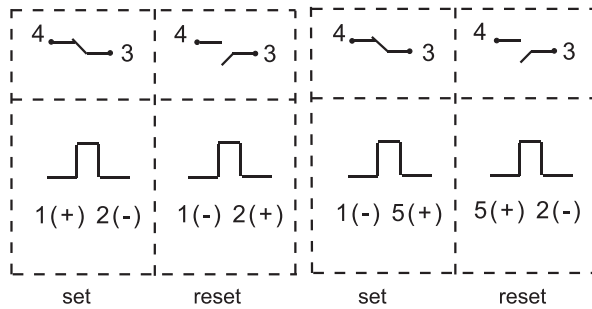


Wiring Diagram

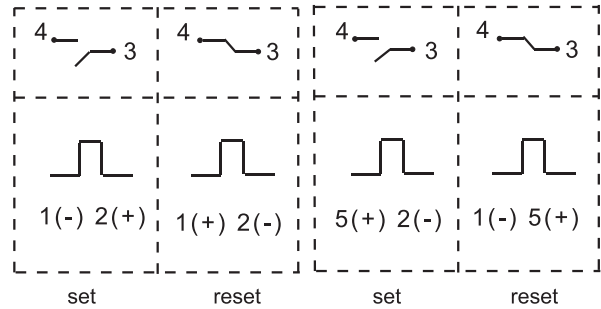
HFE10-1, HFE10-2, HFE10-3, HFE10-4

Positive polarity

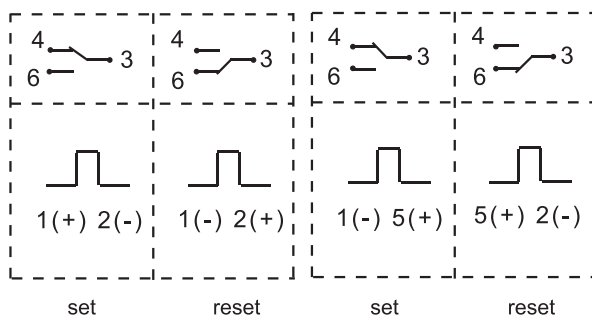
Single coil latching, 1 Form A Double coils latching, 1 Form A



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

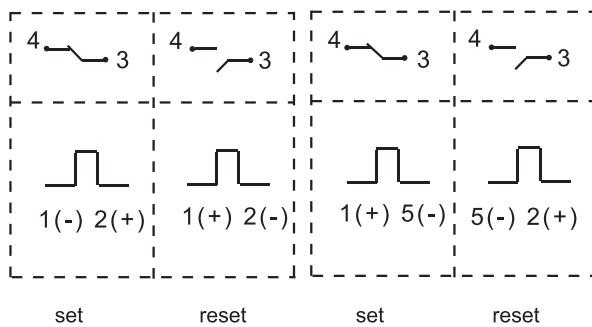


Single coil latching, 1 Form C Double coils latching, 1 Form C

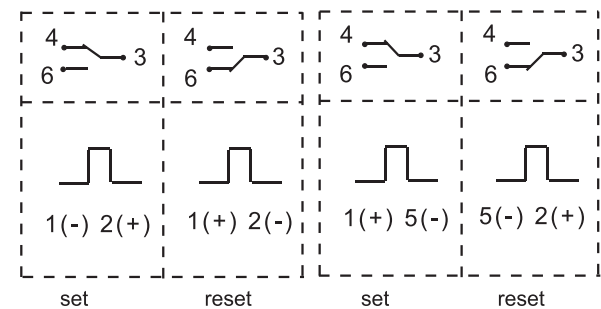


Negative polarity

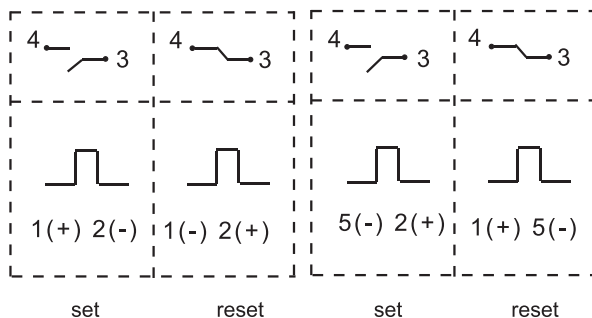
Single coil latching, 1 Form A Double coils latching, 1 Form A



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



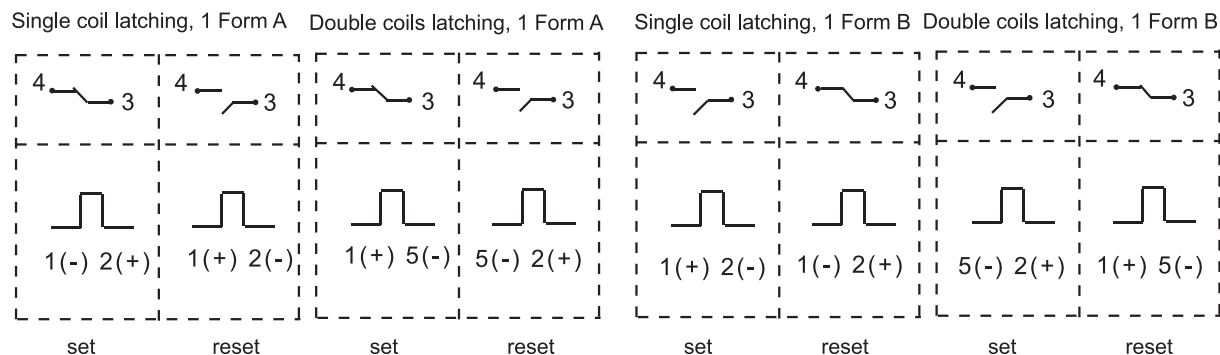
Single coil latching, 1 Form B Double coils latching, 1 FormB



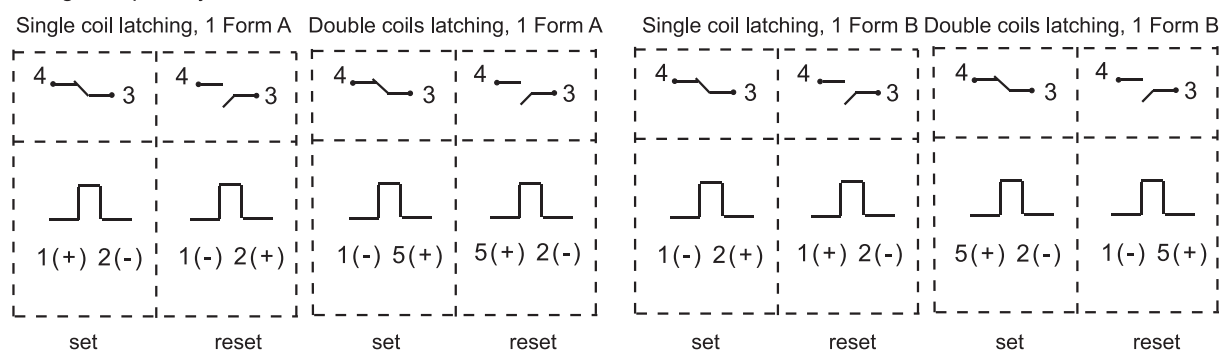
Wiring Diagram

HFE10-5

Positive polarity

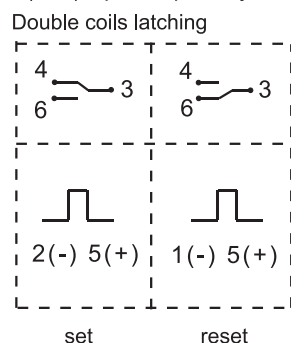


Negative polarity



HFE10-1, HFE10-2, HFE10-3, HFE10-4, HFE10-5

(399):Special polarity



Notice:

- When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s.
- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.

Disclaimer

The specification is for reference only. 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.

HFE10-L

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



File No.:40035869



Features

- 20A switching capability
- The relay can stand short circuit SCCR 5000A peak current for 10ms
- Meet IEC60669-2-1
- Max. inrush current 500A/2ms

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance 1)	1.5mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating 2)	277VAC 20A, 1 x 10 ⁵ OPS (Resistive) 30VDC 20A, 1 x 10 ⁵ OPS (Resistive) 250VAC 60A, 3 x 10 ⁴ OPS (General purpose) 250VAC 5000W, 3 x 10 ⁴ OPS (Incandescent lamp) 277VAC 20A, 3 x 10 ⁴ OPS (Standard ballast) 277VAC 16A, 3 x 10 ⁴ OPS (Electronic ballast)
Max. switching voltage	440VAC
Max. switching current	60A
Max. switching power	15000VA
Max. continuous current	40A
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

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

2) Conform to EN60947-4-1(VDE0660-102),EN60669-1(VDE0632-1), EN60669-2-1, (VDE0632-1) lamp load request.

SAFETY APPROVAL RATINGS

UL/CUL	1A,1B	General purpose: 250VAC,60A Standard ballast: 277VAC,20A Electronic ballast: 277VAC,16A Incandescent lamp: 250VAC,5000W
VDE	1A,1B	Resistive load: 277VAC 20A Fluorescent lamp (uncompensated): 250VAC 20A Fluorescent lamp (parallel compensated): 250VAC 20A Incandescent lamp:250VAC,5000W AC-1 AC-3

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

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

COIL

Coil power	Single coil latching: Approx. 1.5W Double coils latching: Approx. 3.0W
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CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance (input to output)		12mm
Set time (at nomi. volt.)		15ms max.
Reset time (at nomi. volt.)		15ms max.
Max. operate frequency		20cycles/min
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 85°C
Termination		PCB
Unit weight		Approx. 32g
Construction		Plastic sealed

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max. 1)2)	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	50	Single coil latching	22
9	7.2	50		54
12	9.6	50		100
15	12	50		150
24	19.2	50		360
48	38.4	50		1600
6	4.8	50	Double coils latching	11+11
9	7.2	50		27+27
12	12	50		50 + 50
15	9.6	50		75 + 75
24	19.2	50		180 + 180
48	38.4	50		800 + 800

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

ORDERING INFORMATION

Type	HFE10	-L/	12	-D	T	-L2	-R	(XXX)
Version	L: Products series code							
Coil voltage	6, 9, 12, 15, 24, 48VDC							
Contact form ¹⁾	D: 1 Form B H: 1 Form A							
Contact material	T: AgSnO ₂							
Sort	L1: Single coil latching L2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

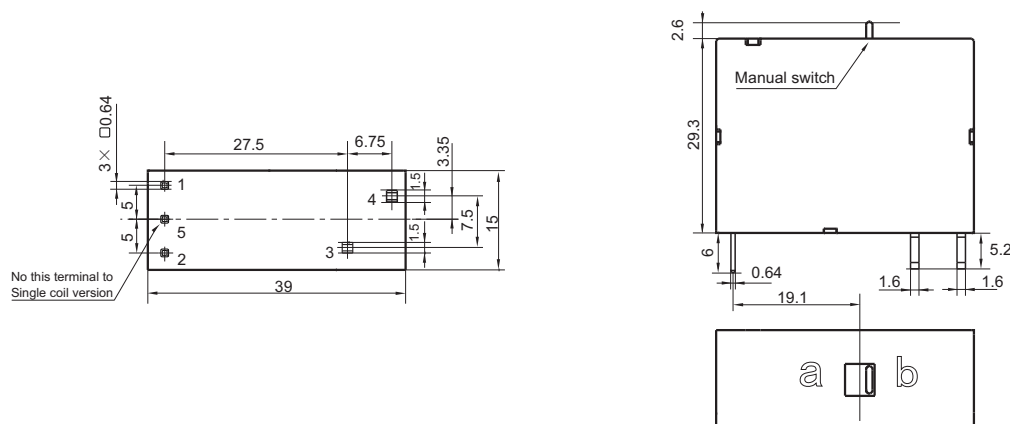
Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

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

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions





OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

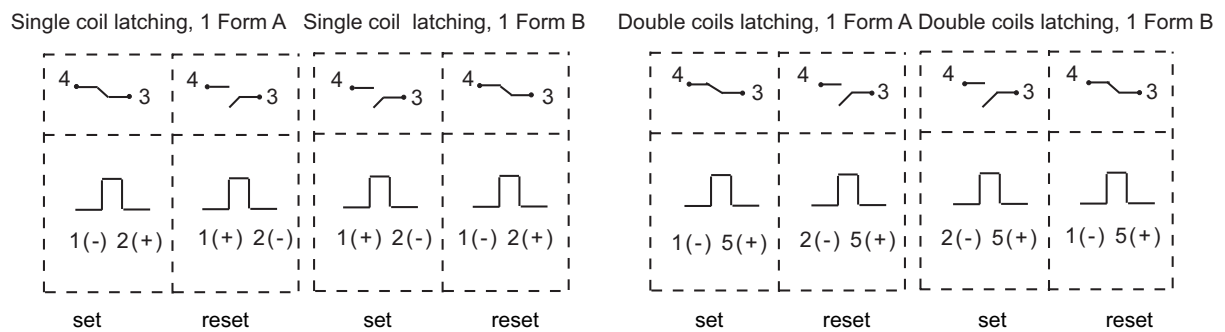
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Wiring Diagram

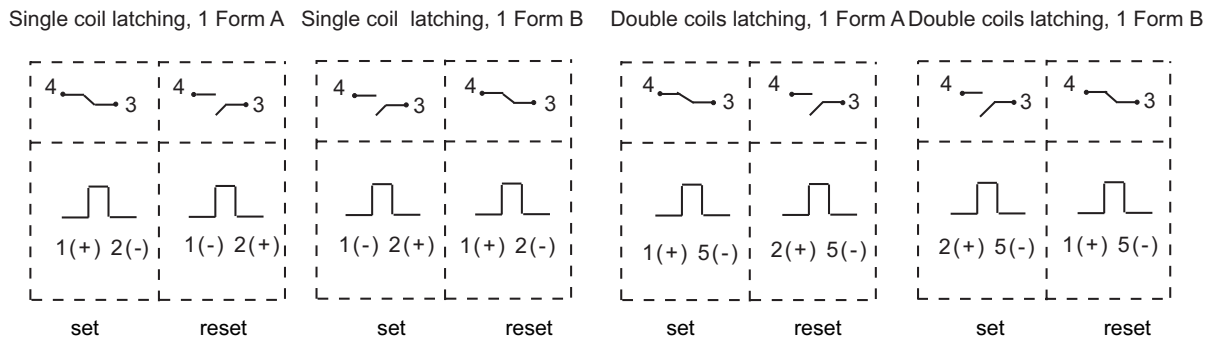
1 Form A

Contact position		
Manual switch position	(a)	(b)

Positive polarity



Negative polarity



Notice:

- When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s.
- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Relays are made with dust proof structure, So no longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

The specification is for reference only. 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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HFE66

SMART CAPACITOR LATCHING RELAY



File No.:E133481



File No.: B0532860034



File No.: CQC 18002200845



Features

- Latching relay
- Apply to smart capacitor
- 60A switching capability
- Low bounce time: less than 200μs

CONTACT DATA

Contact arrangement	1A
Contact resistance 1)	≤2mΩ(1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	60A 250VAC (COSφ=1) 6 x 10 ³ ops
Max. switching voltage	277VAC
Max. switching current	90A
Max. switching power	15000VA
Mechanical endurance	1 x 10 ⁶ ops
Electrical endurance	See "Contact rating"

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

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC(50/60Hz,1min) 1min
Creepage distance		8.4mm
Operate time (at 2.5 time nomi. volt.)		≤6ms
Release time (at 2.5 time nomi. volt.)		≤6ms
Bounce time		≤0.2ms
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 70% RH
Ambient temperature		-40% ~ 85%
Termination	Coil terminal	PCB、QC
	Load terminal	QC
Unit weight		Approx.35g
Construction		Plastic sealed

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx.1.5W Double coils latching: Approx.2x3W
------------	---

COIL DATA

23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage 1)2) VDC	Pulse Duration ms	Coil Resistance x (1±10%) Ω
5	≤4.0	≥50	16.7
6	≤4.8	≥50	24
9	≤7.2	≥50	54
12	≤9.6	≥50	96
24	≤19.2	≥50	384
48	≤38.4	≥50	1536

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage 1)2) VDC	Pulse Duration ms	Coil Resistance x (1±10%) Ω
5	≤4.0	≥50	8.3+8.3
6	≤4.8	≥50	12+12
9	≤7.2	≥50	27+27
12	≤9.6	≥50	48+48
24	≤19.2	≥50	192+192
48	≤38.4	≥50	768+768

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.

SAFETY APPROVAL RATINGS

CQC	1A	60A/250VAC (cosφ=1) 85°C
UL (Type:HFE66-3)	1A	60A/277VAC (cosφ=1) 85°C
TüV (Type:HFE66-3)	1A	60A/277VAC (cosφ=1) 85°C

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



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

	HFE66	-1	/12	-H	T	-L1	-R	(XXX)
Type								
Version	1: Type 1 coil pins 2: Type 2 coil pins 3: Type 3 coil pins 4: Type 4 coil pins							
Coil voltage	5,6,9,12,24,48 VDC							
Contact form	H: 1 Form A							
Contact material	T: AgSnO ₂							
Sort	L1: Single coil latching L2: Double coils latching							
Polarity	R: Reverse polarity Nil: Positive polarity							
Special code ¹⁾	XXX: Customer special requirement							

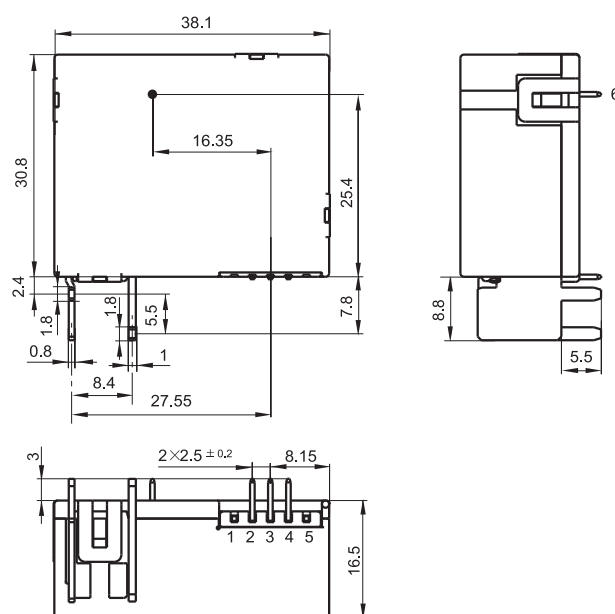
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

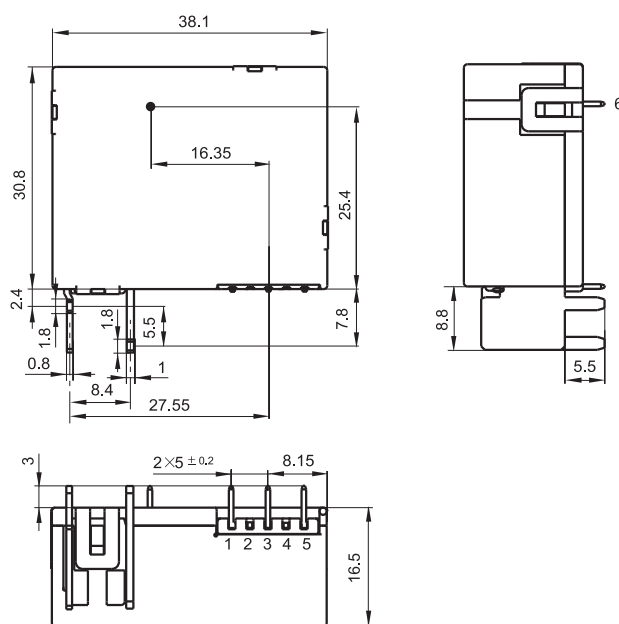
HFE66-1



HFE66-1 single coil type has pin 2 and 4, HFE66-1 double coils type has pin 2, 3, and 4. Pin 6 is alternative.

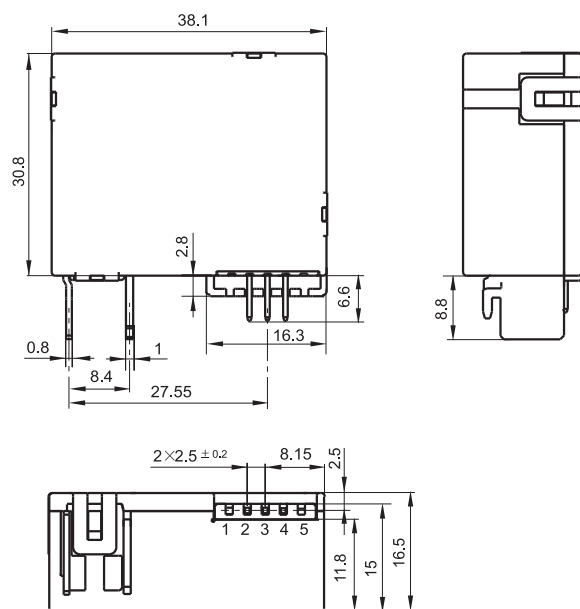
Outline Dimensions

HFE66-2



HFE66-2 single coil type has pin 1 and 5, HFE66-2 double coils type has pin 1, 3, and 5. Pin 6 is alternative.

HFE66-3



HFE66-3 single coil type has pin 2 and 4, HFE66-3 double coils type has pin 2, 3, and 4.

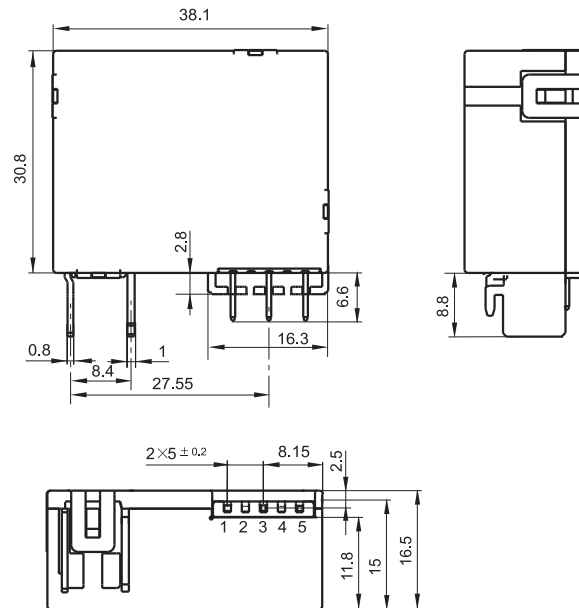
Remark:(1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

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

(3) Contact is recommended for suitable assembly method and customized terminal solutions.

Outline Dimensions

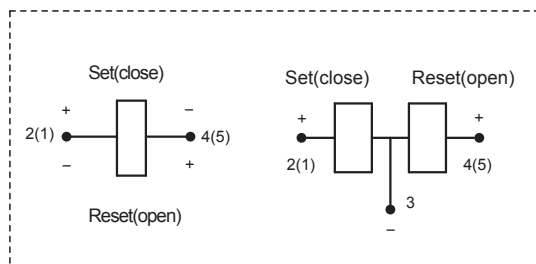
HFE66-4



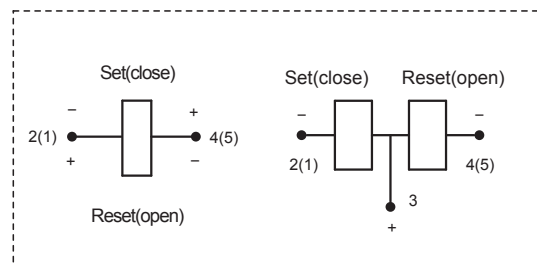
HFE66-4 single coil type has pin 1 and 5, HFE66-4 double coils type has pin 1, 3, and 5.

Wiring Diagram

Positive polarity



Reverse polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE66-100 SMART CAPACITOR LATCHING RELAY



Features

- Latching relay
- Apply to smart capacitor
- 100A switching capability
- Low bounce time: less than 200μs

CONTACT DATA

Contact arrangement	1A
Contact resistance ¹⁾	≤2mΩ(1A 24VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 250VAC(COSØ=1)6 x 10 ³ ops
Max. switching voltage	380VAC
Max. switching current	100A
Max. switching power	38000VA
Mechanical endurance	1 x 10 ⁶ ops
Electrical endurance	See "Contact rating"

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

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	3000VAC(50/60Hz,1min) 1min
Creepage distance		8.4mm
Operate time (at 2.5 time nomi. volt.)		≤6ms
Release time (at 2.5 time nomi. volt.)		≤6ms
Bounce time		≤0.2ms
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 70% RH
Ambient temperature		-40% ~ 85%
Termination	Coil terminal	PCB、QC
	Load terminal	QC
Unit weight		Approx.42g
Construction		Plastic sealed

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx.2.5W Double coils latching: Approx.5.0W
------------	---

COIL DATA

23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾²⁾ VDC	Pulse Duration ms	Coil Resistance x (1±10%) Ω
5	≤4.0	≥50	10
6	≤4.8	≥50	14.5
9	≤7.2	≥50	32.5
12	≤9.6	≥50	58
24	≤19.2	≥50	230
48	≤38.4	≥50	920

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾²⁾ VDC	Pulse Duration ms	Coil Resistance x (1±10%) Ω
5	≤4.0	≥50	5+5
6	≤4.8	≥50	7.2+7.2
9	≤7.2	≥50	16.2+16.2
12	≤9.6	≥50	29+29
24	≤19.2	≥50	115+115
48	≤38.4	≥50	460+460

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

Type	HFE66	-100	/12	-H	T	-1	1	-R	(XXX)
Contact rating	100:100A								
Coil voltage	5,6,9,12,24,48 VDC								
Contact form ¹⁾	H: 1 Form A								
Contact material	T: AgSnO2								
Version	1: Type 1 coil pins 2: Type 2 coil pins 3: Type 3 coil pins 4: Type 4 coil pins								
Sort	1: Single coil latching 2: Double coils latching								
Polarity	R: Reverse polarity Nil: Positive polarity								
Special code ²⁾	XXX: Customer special requirement								

Notes: 1) H means that relay is on the "reset" status when delivery;

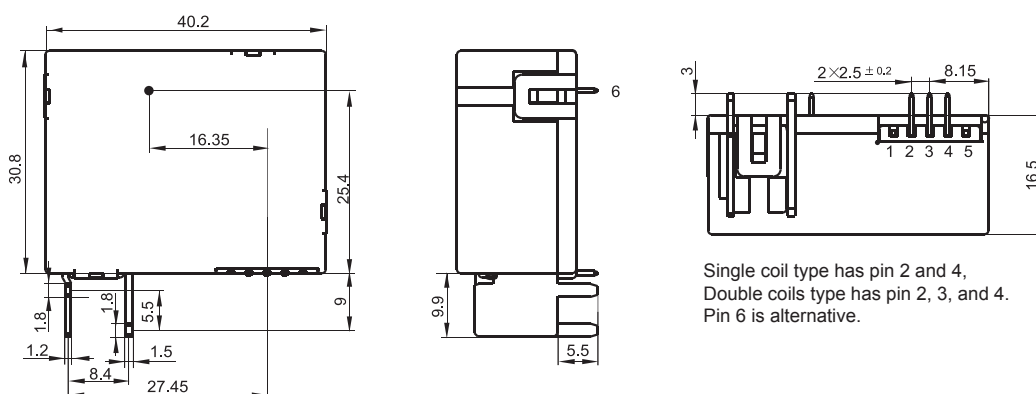
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

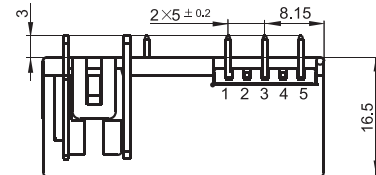
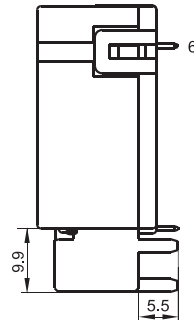
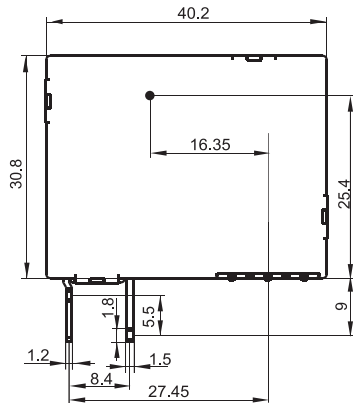
Outline Dimensions

HFE66-100 Type 1 coil pins



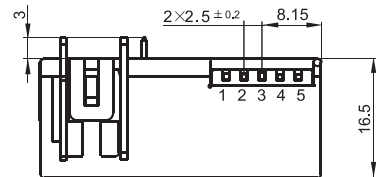
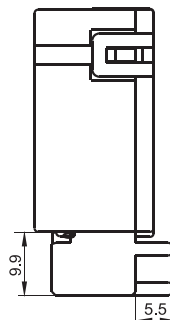
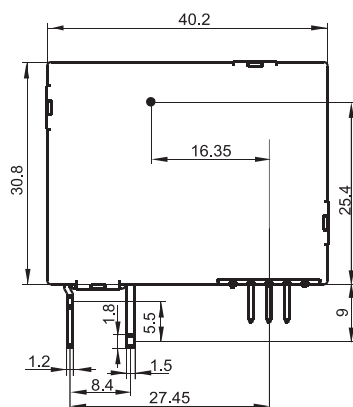
Outline Dimensions

HFE66-100 Type 2 coil pins



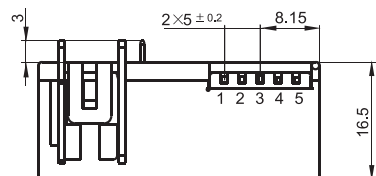
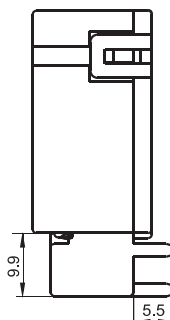
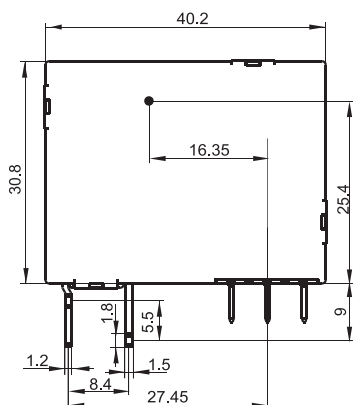
Single coil type has pin 1 and 5,
Double coils type has pin 1, 3, and 5.
Pin 6 is alternative.

HFE66-100 Type 3 coil pins



Single coil type has pin 2 and 4,
Double coils type has pin 2, 3, and 4.

HFE66-100 Type 4 coil pins



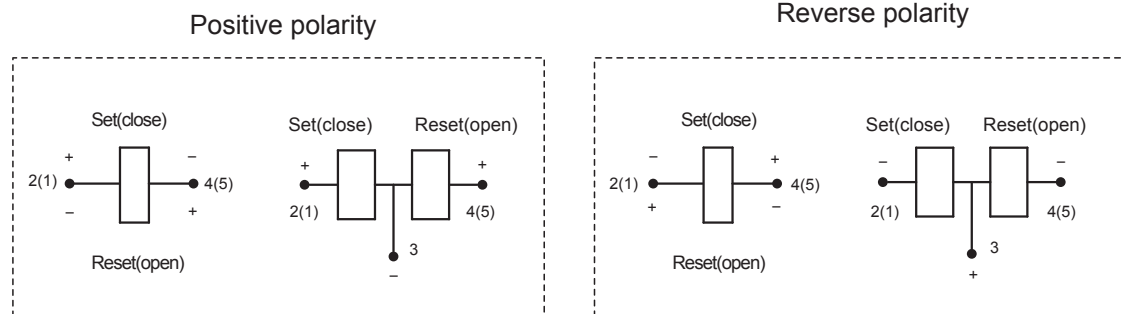
Single coil type has pin 1 and 5,
Double coils type has pin 1, 3, and 5.

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) Contact is recommended for suitable assembly method and customized terminal solutions.

Wiring Diagram



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE53 LATCHING RELAY FOR OVER AND UNDER VOLTAGE PROTECTOR



Features

- Latching relay
- 100A switching capability
- Contact gap ≥ 1.2 mm
- Dielectric strength $\geq 3000\text{VAC}(50/60\text{Hz}, 1\text{min})$
(between open contacts)

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance ¹⁾	$\leq 2\text{m}\Omega$ (1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 250VAC(COS ϕ =1)6 x 10 ³ ops
Max. switching voltage	380VAC
Max. switching current	100A
Max. switching power	38000VA
Mechanical endurance	1 x 10 ⁵ ops
Electrical endurance	See "Contact rating"

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

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	3000VAC(50/60Hz,1min) 1min
Creepage distance		8.4mm
Operate time		≤15ms
Release time		≤15ms
Bounce time		≤2ms
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 70% RH
Ambient temperature		-40% ~ 85%
Termination	Coil terminal	PCB、QC
	Load terminal	QC
Unit weight		Approx.35g
Construction		Plastic sealed

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 2.5W Double coils latching: Approx. 5.0W
------------	---

COIL DATA

23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾²⁾ VDC	Pulse Duration ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 4.0	≥ 50	10
6	≤ 4.8	≥ 50	14.5
9	≤ 7.2	≥ 50	32.5
12	≤ 9.6	≥ 50	58
24	≤ 19.2	≥ 50	230
48	≤ 38.4	≥ 50	920

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾²⁾ VDC	Pulse Duration ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 4.0	≥ 50	5+5
6	≤ 4.8	≥ 50	7.2+7.2
9	≤ 7.2	≥ 50	16.2+16.2
12	≤ 9.6	≥ 50	29+29
24	≤ 19.2	≥ 50	115+115
48	≤ 38.4	≥ 50	460+460

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

Type	HFE53	/9	-H	7	T	2	-1	-R	(XXX)
Coil voltage	5,6,9,12,24,48 VDC								
Contact form ¹⁾	D: 1 Form B H: 1 Form A								
Load input terminal	7: With external connector								
Contact material	T: AgSnO ₂								
Coil angle form	2: Distance 5mm; No bowlge 4: Distance 5mm; L- bowlge								
Sort	1: Single coil latching 2: Double coils latching								
Polarity	R: Reverse polarity Nil: Positive polarity								
Special code ²⁾	XXX: Customer special requirement								

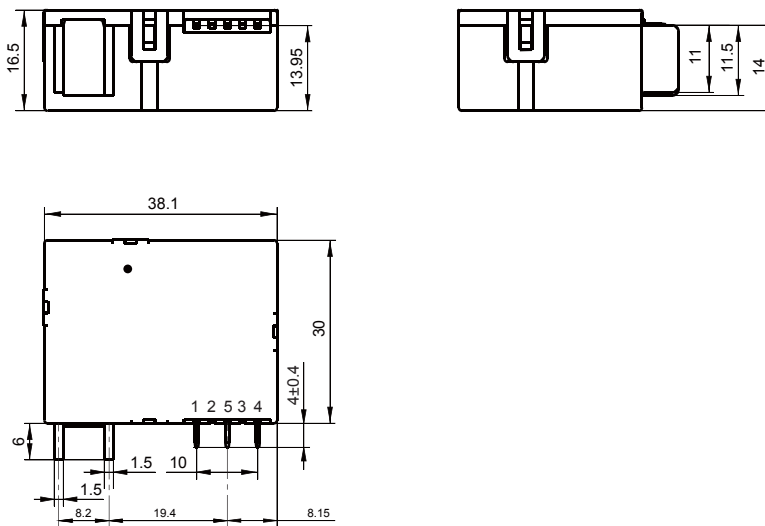
Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

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

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

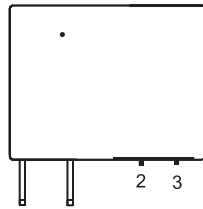
Outline Dimensions



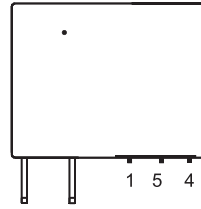
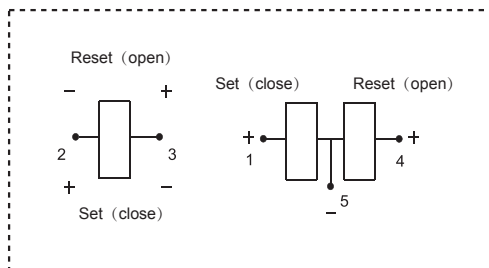
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

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

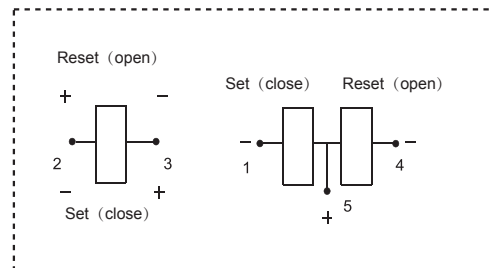
Wiring Diagram (Bottom view)



Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE52 FORM-C TYPE HIGH POWER LATCHING RELAY



Features

- Phase-change switch latching relay
- With micro switch detection function
- 120A switching capability
- In accordance to IEC 62055-31:UC3
Carrying: 6kA current/100ms (can break 2 times voltage)
- Complete switch in 10ms

CONTACT DATA

Contact arrangement	1AB
Contact resistance ¹⁾	Typical value ²⁾ : $\leq 0.35\text{m}\Omega$ (100A)
Contact material	AgSnO ₂
Contact rating (Res. load)	120A 220VAC
Max. switching voltage	380VAC
Max. switching current	120A
Max. switching power	26400W
Mechanical endurance	1 x 10 ⁵ ops
Electrical endurance	2 x 10 ⁴ ops(120A 220VAC)

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ(500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC 1min
Creepage distance		>10mm
Operate time (at 2.5 time nomi. volt.)		Approx.5.5ms
Release time (at 2.5 time nomi. volt.)		Approx.4.5ms
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Termination	Coil terminal	PCB、QC
	Load terminal	QC
Unit weight		Approx.70g
Construction		Plastic sealed

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx.5W Double coils latching: Approx.10W
------------	--

COIL DATA

23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾²⁾ VDC	Pulse Duration ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 4.0	≥ 100	5
6	≤ 4.8	≥ 100	7.2
9	≤ 7.2	≥ 100	16.2
12	≤ 9.6	≥ 100	28.8
24	≤ 19.2	≥ 100	115.2
48	≤ 38.4	≥ 100	460.8

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾²⁾ VDC	Pulse Duration ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 4.0	≥ 100	2.5+2.5
6	≤ 4.8	≥ 100	3.6+3.6
9	≤ 7.2	≥ 100	8.1+8.1
12	≤ 9.6	≥ 100	14.4+14.4
24	≤ 19.2	≥ 100	57.6+57.6
48	≤ 38.4	≥ 100	230.4+230.4

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

2) The above set voltage, reset voltage are the test value for relay without load. Please use 1~1.5 times of rated voltage to drive the relay for your application.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

	HFE52	/12	-1HD	T	-L1	-R	(XXX)
Type							
Coil voltage	5,6,9,12,24,48 VDC						
Contact form	1HD:1 Form A + 1 Form B						
Contact material	T: AgSnO ₂						
Sort	L1: Single coil latching		L2: Double coils latching				
Polarity	R: Reverse polarity		Nil: Positive polarity				
Special code ^{1) 2)}	XXX: Customer special requirement						

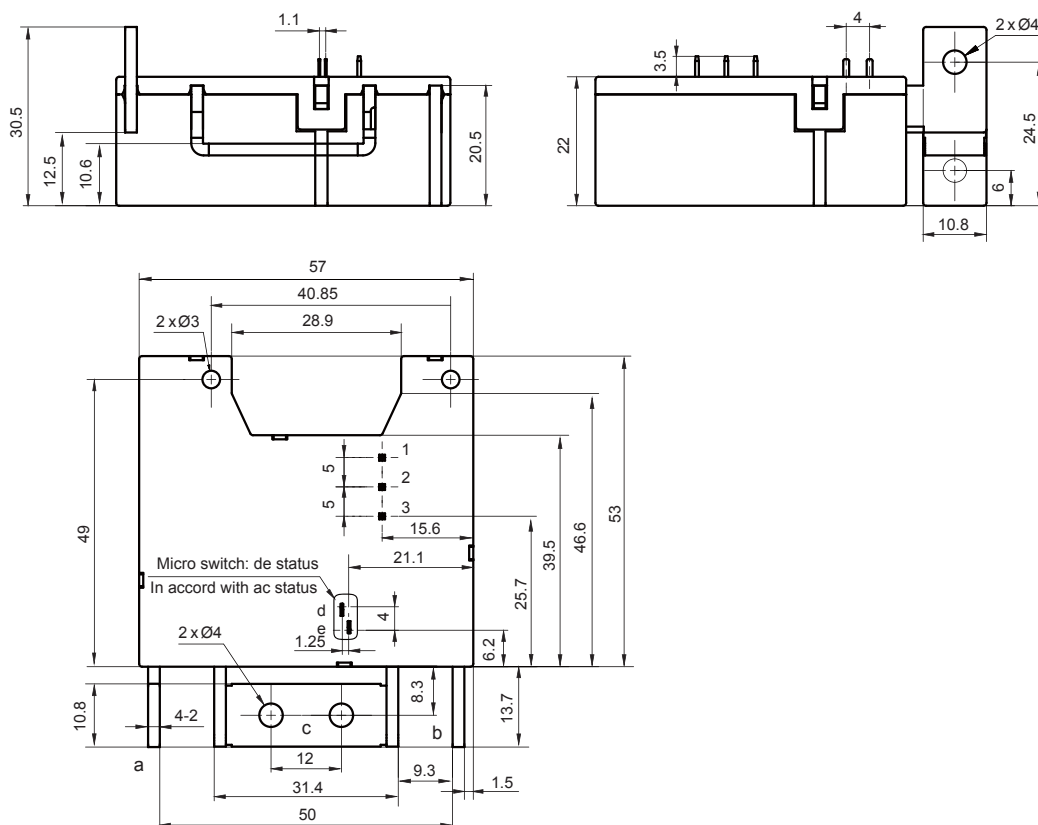
Note: 1) Please contact us if mirco switch is needed.

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

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

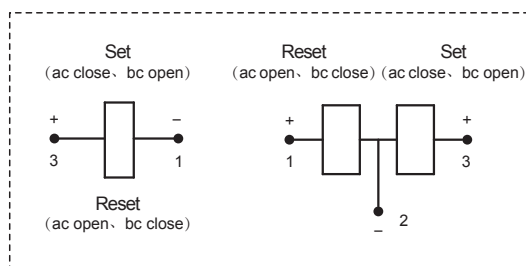


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

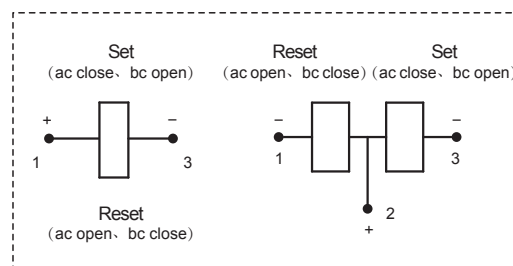
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Wiring Diagram

Positive polarity

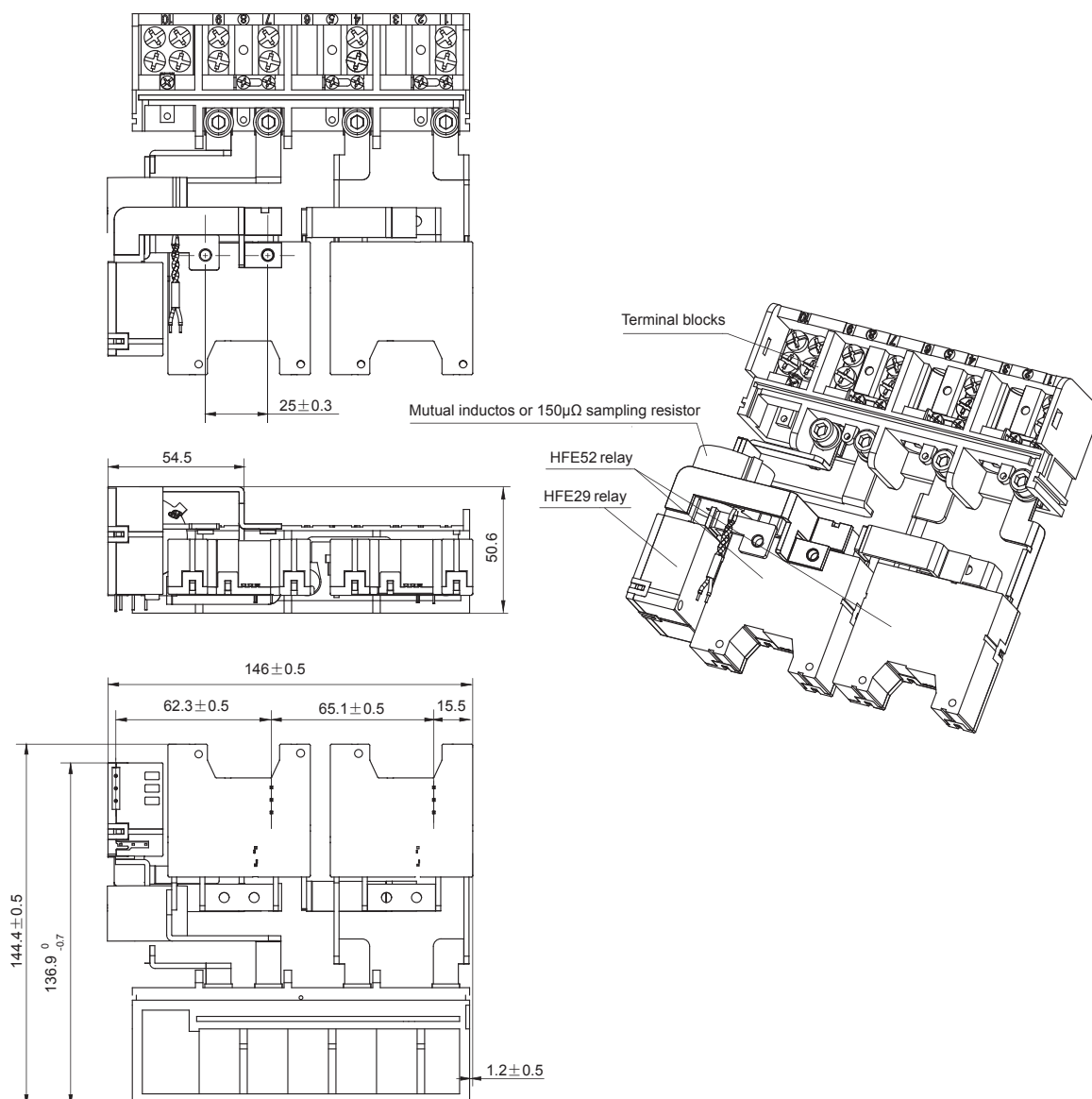


Reverse polarity



Typical Design

Typical Design for phase-changes switch (HFE29+HFE52+HFE52)

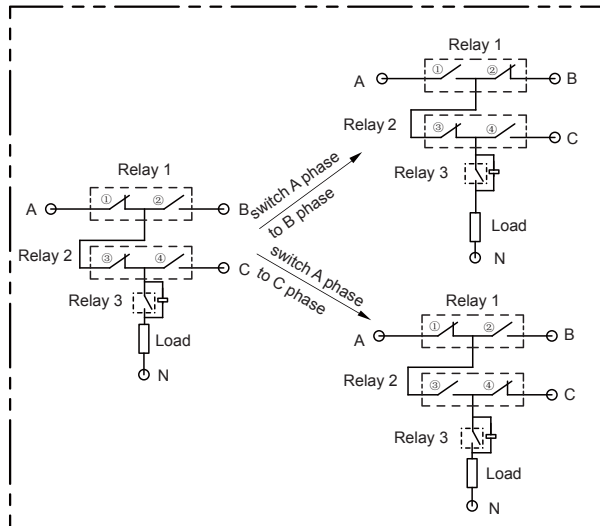


TYPICAL DESIGN

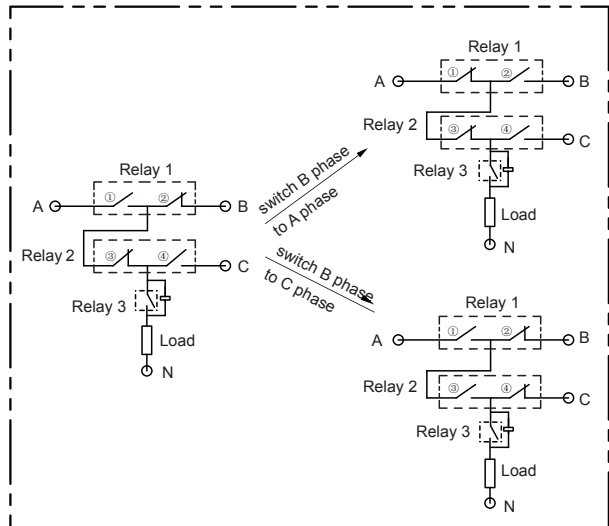
Typical Design

Wiring diagram of phase-changes switch typical design
(HFE29+HFE52+HFE52)

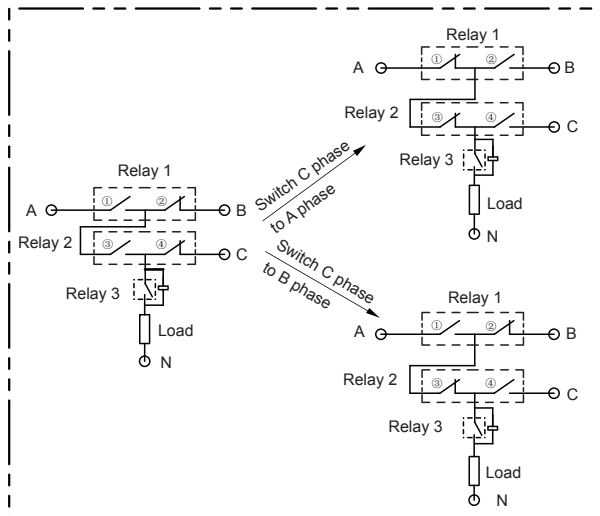
Switch A phase to B phase or C phase



Switch B phase to A phase or C phase



Switch C phase to A phase or B phase



Disclaimer

The specification is for reference only. 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.

HFE19-60

MINIATURE HIGH POWER LATCHING RELAY



Features

- 60A Latching relay
- Electrical endurance 5000ops
- According to IEC62055-31:UC1
- Contact resistance $\leq 1\text{m}\Omega$

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance ¹⁾	1m Ω max.(at 1A 24VDC) ²⁾
Contact material	AgSnO ₂
Contact rating	60A 220VAC
Max. switching voltage	253VAC
Max. switching current	60A
Rated switching power	13200VA
Mechanical endurance	Meter: 1 x 10 ⁶ OPS
Electrical endurance	Meter: 5000 OPS (60A 250VAC, Resistive load, Room temp., 0.6s on 5.4s off)

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 50g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 1.0 W Double coils latching: Approx. 2.0 W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
9	≤ 6.3	50~100	80
12	≤ 8.4	50~100	145
24	≤ 16.8	50~100	575
48	≤ 33.6	50~100	2270

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
9	≤ 6.3	50~100	40+40
12	≤ 8.4	50~100	72+72
24	≤ 16.8	50~100	285+285
48	≤ 33.6	50~100	1135+1135

Notes: 1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

HFE19 -60/ 12 D T 2 1 -R (445)(XXX)	
Type	
Contact rating	60: 60A
Coil voltage	9, 12, 24, 48VDC
Contact form ¹⁾	D: 1 Form B H: 1 Form A
Contact material	T: AgSnO ₂
Coil angle form	2: Distance 5mm; No bowleg 4: Distance 5mm; L-bowleg
Sort	1: Single coil latching 2: Double coils latching
Polarity	R: Negative polarity Nil: Positive polarity
Special code	(445): Normal type
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

2) we can make special design according to customer's requirement.

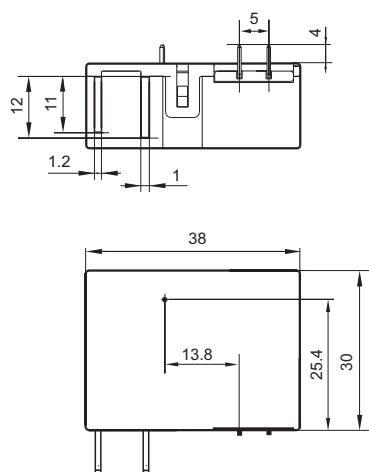
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

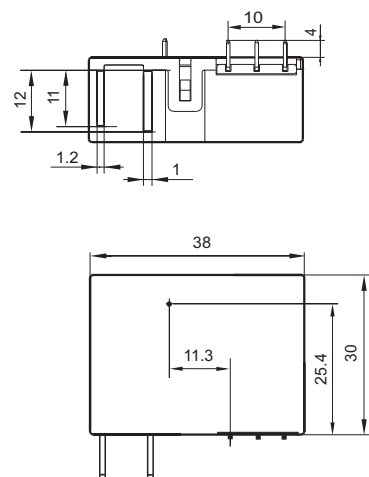
Unit: mm

Outline Dimensions

1 coil latching



2 coils latching

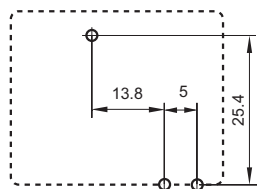


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

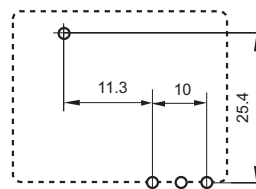
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

PCB Layout (Bottom view)

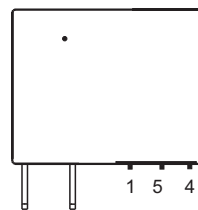
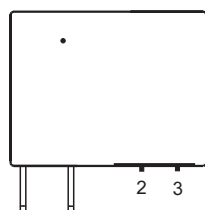
Single coil latching



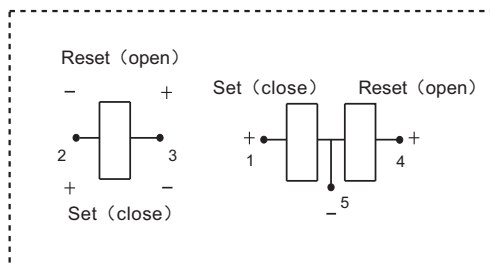
Double coils latching



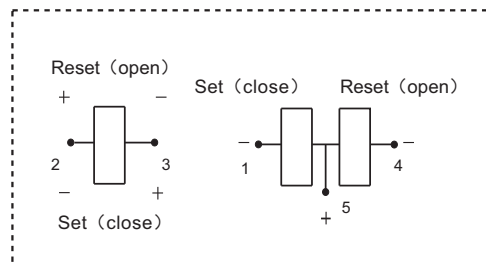
Wiring Diagram (Bottom view)



Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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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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HFE19(SH) MINIATURE HIGH POWER LATCHING RELAY



Features

- 90A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2
- Contact resistance $\leq 0.45\text{m}\Omega$

CONTACT DATA

Contact arrangement	1U, 1V
Contact resistance ¹⁾	Typ.: 0.45m Ω max.(80A) ²⁾
Contact material	AgSnO ₂
Contact rating	90A 220VAC
Max. switching Voltage	253VAC
Max. switching current	90A
Rated switching power	19800VA
Mechanical endurance	1 x 10 ⁵ ops

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		≤20ms
Reset time (at nomi. volt.)		≤20ms
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Termination	Coil termination	QC
	Load termination	QC
Unit weight		Approx.100g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 1.5W Double coils latching: Approx. 3W
------------	---

COIL DATA

23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾ VDC	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 3.5	50~100	16
6	≤ 4.2	50~100	24
9	≤ 6.3	50~100	54
12	≤ 8.4	50~100	96
24	≤ 16.8	50~100	384
48	≤ 33.6	50~100	1536

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾ VDC	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 3.5	50~100	8+8
6	≤ 4.2	50~100	12+12
9	≤ 6.3	50~100	27+27
12	≤ 8.4	50~100	48+48
24	≤ 16.8	50~100	192+192
48	≤ 33.6	50~100	768+768

Notes:1) The data shown above are initial values; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
253VAC	60A	COS ϕ =1	10:20	5000	Total:10000
		COS ϕ =0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

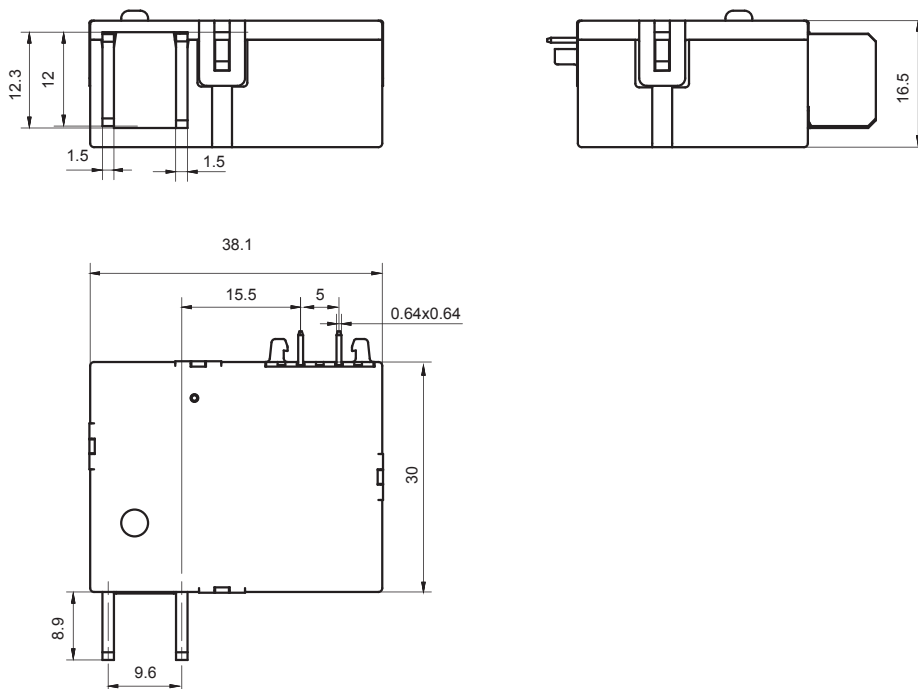
HFE19		-90/	12	SD	T	2	1	-R	(XXX)
Type									
Version	90: 90A								
Coil voltage	5, 6, 9, 12, 24, 48VDC								
Contact form	¹⁾ SD: 1 Form B (Double-contact of 1 Form B) SH: 1 Form A (Double-contact of 1 Form A)								
Contact material	T: AgSnO ₂								
Coil angle form	2: Distance 5mm; No bowleg 4: Distance 5mm; L-bowleg								
Sort	1: Single coil latching 2: Double coils latching								
Polarity	R: Negative polarity Nil: Positive polarity								
Special code	²⁾ XXX: Customer special requirement Nil: Standard(See electrical endurance)								

Notes: 1) SH means that relay is on the "reset" status when delivery; SD means that relay is on the "set" status when delivery.
If no speical required by customer, we will keep the relay on the "set" status when delivery.
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

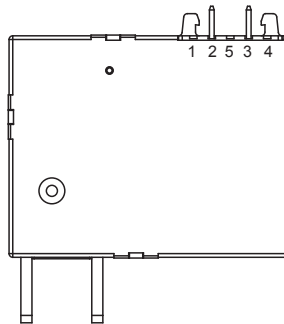
Outline Dimensions



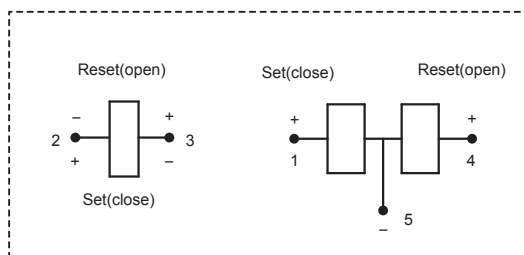
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

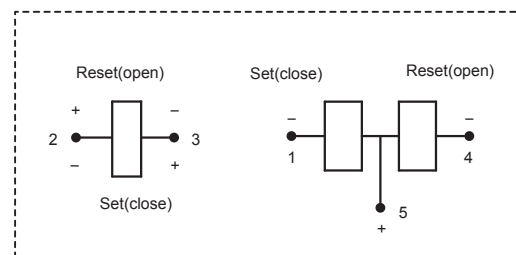
Wiring Diagram



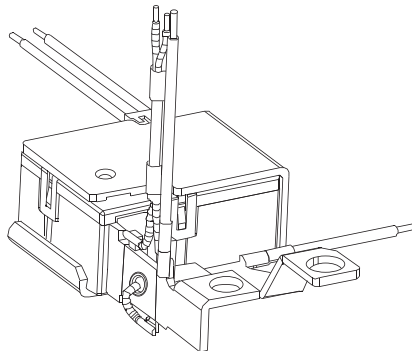
Positive polarity



Negative polarity



Typical Design



Remark: The drawing shown above are typical design, we can make special design according to customer's requirement. Please provide us with the drawing.

Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

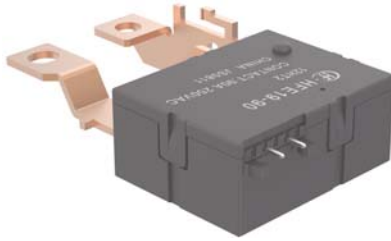
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HFE19-90

MINIATURE HIGH POWER LATCHING RELAY



Features

- 90A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2
- Contact resistance $\leq 0.45m\Omega$

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance ¹⁾	Typ.: $0.45m\Omega$ max.(at 90A) ²⁾
Contact material	AgSnO ₂
Contact rating	90A 220VAC
Max. switching voltage	253VAC
Max. switching current	90A
Rated switching power	19800VA
Mechanical endurance	1×10^5 OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 100g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 1.5W Double coils latching: Approx. 3.0W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 3.5	50~100	16
6	≤ 4.2	50~100	24
9	≤ 6.3	50~100	54
12	≤ 8.4	50~100	96
24	≤ 16.8	50~100	384
48	≤ 33.6	50~100	1536

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
5	≤ 3.5	50~100	8+8
6	≤ 4.2	50~100	12+12
9	≤ 6.3	50~100	27+27
12	≤ 8.4	50~100	48+48
24	≤ 16.8	50~100	192+192
48	≤ 33.6	50~100	768+768

Notes: 1) The data shown above are initial values and recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
445 (UC1)	220VAC	60A	COSφ=1	10:20	3000	Total:6000
		10A	COSφ=0.4		3000	
Nil	265VAC	60A	COSφ=1		5000	Total:10000
			COSφ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

	HFE19 -90/ 12 D T 2 1 -R (445)(XXX)									
Type										
Contact rating	90: 90A									
Coil voltage	5,6,9, 12, 24,48 48VDC									
Contact form ¹⁾	D: 1 Form B H: 1 Form A									
Contact material	T: AgSnO ₂									
Coil angle form	2: Distance 5mm; No bowleg 4: Distance 5mm; L-bowleg									
Sort	1: Single coil latching 2: Double coils latching									
Polarity	R: Negative polarity Nil: Positive polarity									
Special code	(445): Normal type									
Special code ^{2) 4)}	XXX: Customer special requirement									

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

2) UC1: Meet the UC1 requirements on IEC62055-31;Relays are able to pass the 30Imax short circuit.

3) We can make special design according to customer's requirement,Please see the typical design.

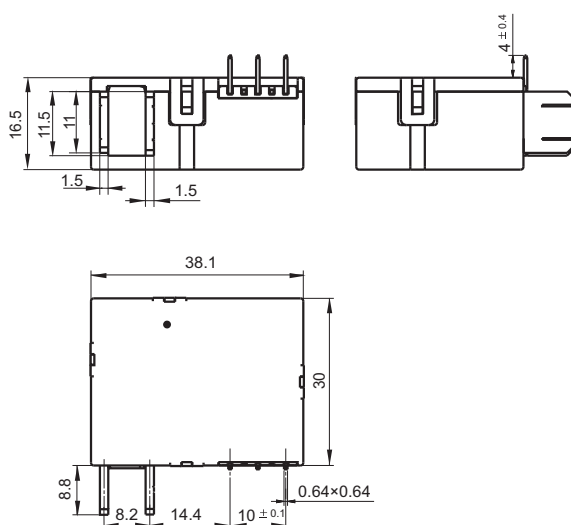
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (459): Coil pins with reverse eduction way.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

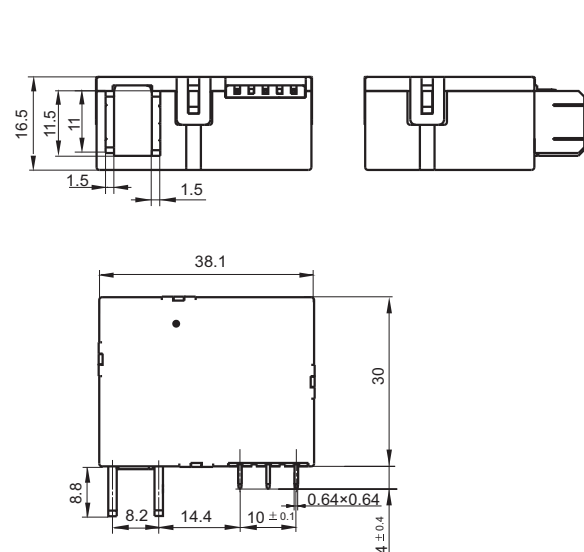
Unit: mm

Outline Dimensions

L-bowleg

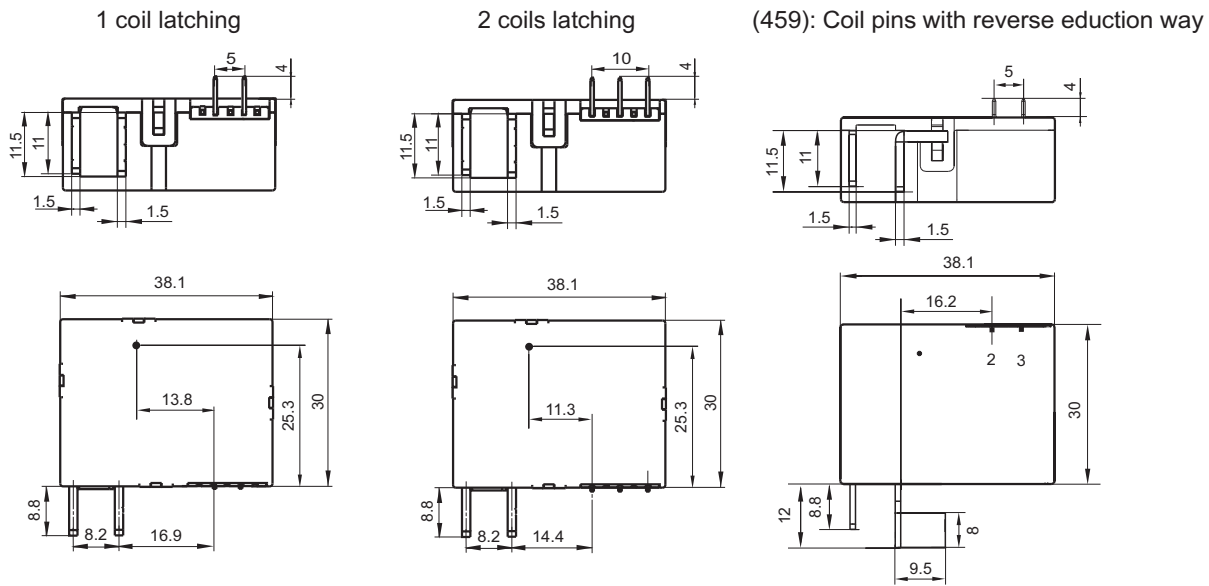


No bowleg



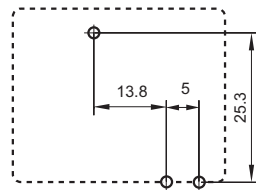
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

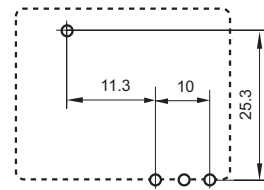


PCB Layout (Bottom view)

Single coil latching

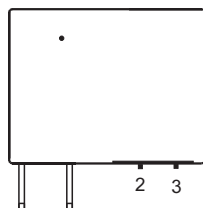


Double coils latching

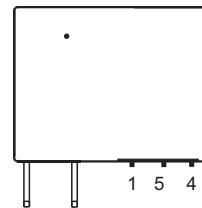


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

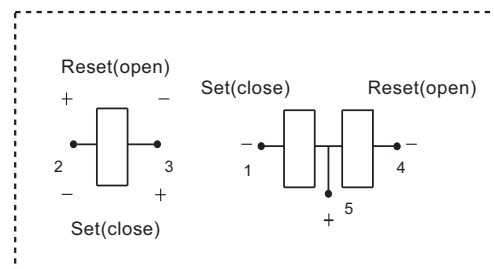
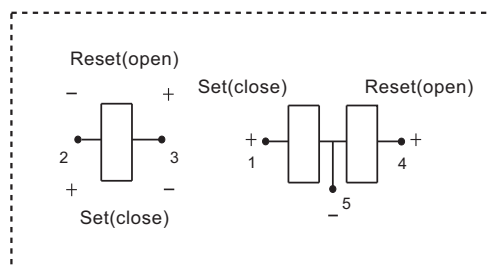
Wiring Diagram (Bottom view)



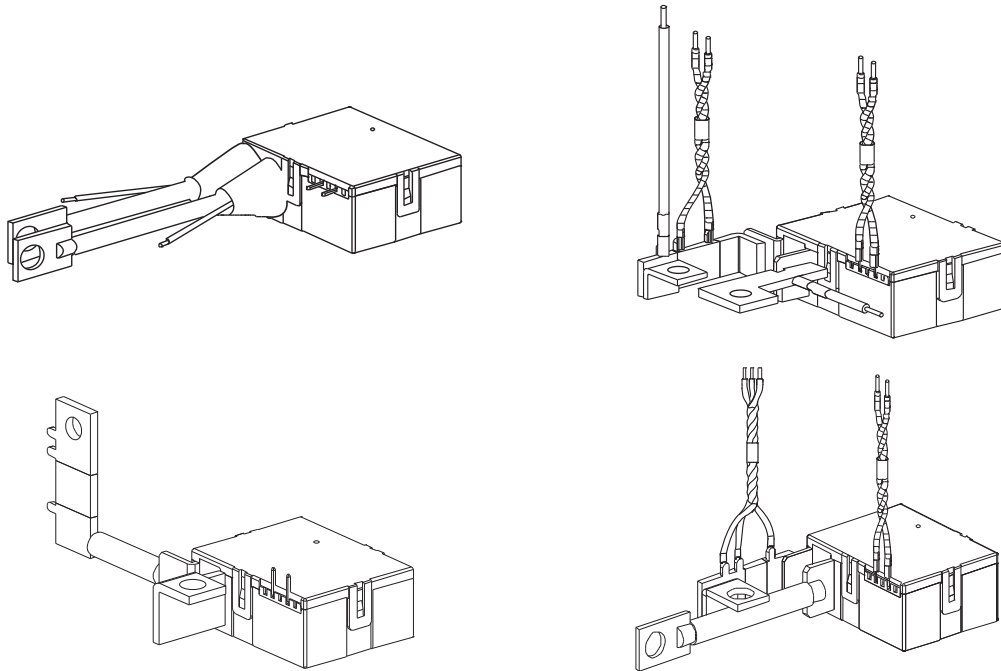
Positive polarity



Negative polarity



Typical Design



Remark: The drawing shown above are typical design, we can make special design according to customer's requirement. Please provide us with the drawing.

Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE19-100

MINIATURE HIGH POWER LATCHING RELAY



Features

- 100A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2
- Contact resistance $\leq 0.35m\Omega$

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance ¹⁾	Typ.:0.35m Ω max.(at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	100A 220VAC
Max. switching voltage	253VAC
Max. switching current	100A
Rated. switching power	22000VA
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 100g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 2.4W Double coils latching: Approx. 4.8W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
9	≤ 7.2	50~100	34
12	≤ 9.6	50~100	60
24	≤ 19.2	50~100	240
48	≤ 38.4	50~100	960

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
9	≤ 7.2	50~100	17+17
12	≤ 9.6	50~100	30+30
24	≤ 19.2	50~100	120+120
48	≤ 38.4	50~100	480+480

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power factor	Close Open time (s)	Electrical endurance (OPS)		Short circuit current (10ms)
415 (UC1)	220VAC	80A	COSØ=1	10:20	3000	Total:6000	3000A Peak value
		10A	COSØ=0.4		3000		
416 (UC2)		80A	COSØ=1		5000	Total:10000	Making: 2500A Carrying: 2500A
		80A	COSØ=0.5		5000		

Notes: Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test. Only some typical ratings of UC are listed above, if more special ratings required, please contact us.

ORDERING INFORMATION

Type		HFE19 -100/ 12 D T 2 1 -R (XXX)					
Contact rating		100: 100A					
Coil voltage		9, 12, 24, 48VDC					
Contact form ¹⁾		D: 1 Form B H: 1 Form A					
Contact material		T: AgSnO ₂					
Coil angle form		2: Distance 5mm; No bowleg 4: Distance 5mm; L-bowleg					
Sort		1: Single coil latching 2: Double coils latching					
Polarity		R: Negative polarity Nil: Positive polarity					
Special code ^{2) 4)}		XXX: Customer special requirement Nil: Standard(See electrical endurance)					

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) UC1: Meet the UC1 requirements on IEC62055-31; Relays are able to pass the 30I_{max} short circuit.

UC2: Meet the UC2 requirements on IEC62055-31.

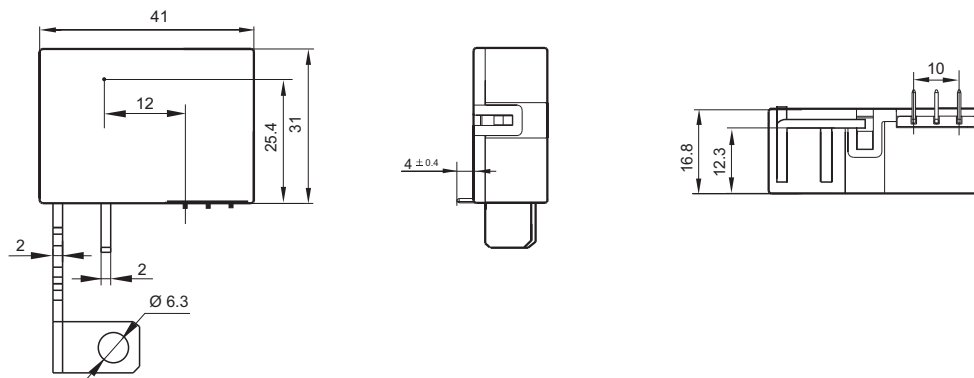
3) We can make special design according to customer's requirement, Please see the typical design.

4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2.

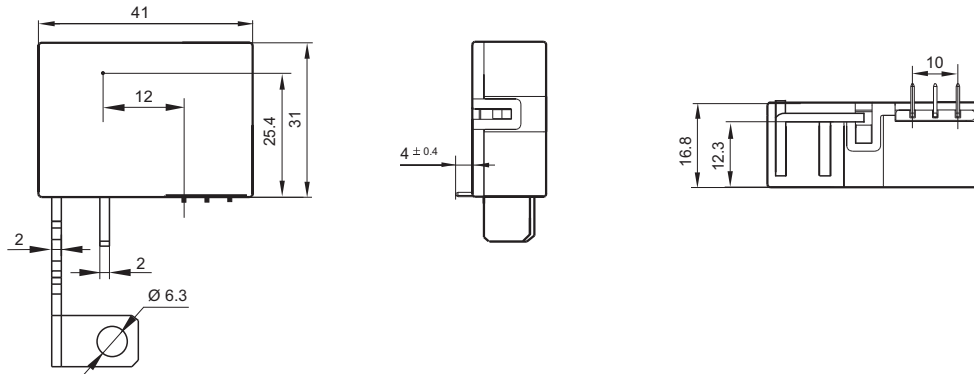
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

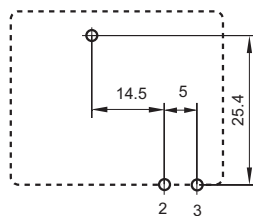


Outline Dimensions

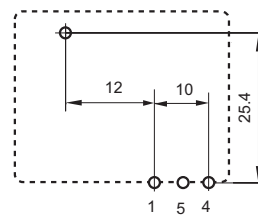


PCB Layout (Bottom view)

Single coil latching

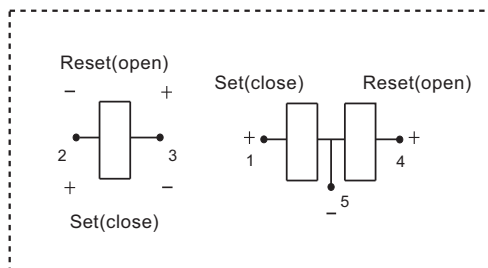


Double coils latching

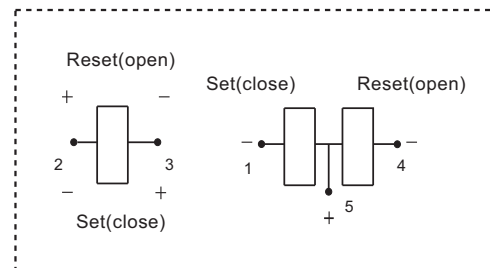


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

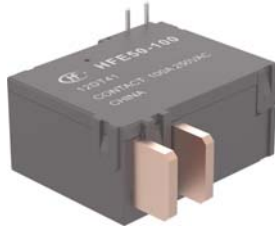
The specification is for reference only. Specifications subject to change without notice.

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HFE50

MINIATURE HIGH POWER LATCHING RELAY



Features

- 100A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2
- Contact resistance $\leq 0.5\text{m}\Omega$

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance ¹⁾	Typ.:0.5m Ω max.(at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	100A 220VAC
Max. switching voltage	253VAC
Max. switching current	100A
Rated switching power	22000VA
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 65g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 2.4W Double coils latching: Approx. 4.8W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.2	50~100	15
9	≤ 6.3	50~100	34
12	≤ 8.4	50~100	60
24	≤ 16.8	50~100	240
48	≤ 33.6	50~100	960

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.2	50~100	7.5+7.5
9	≤ 6.3	50~100	17+17
12	≤ 8.4	50~100	30+30
24	≤ 16.8	50~100	120+120
48	≤ 33.6	50~100	480+480

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power factor	Close Open time (s)	Electrical endurance (OPS)		Short circuit current (10ms)
416 (UC2)	230VAC	80A	COSØ=1	10:20	5000	Total:10000	Making: 2500A Carrying: 2500A Carrying: 4500A
		80A	COSØ=0.5		5000		

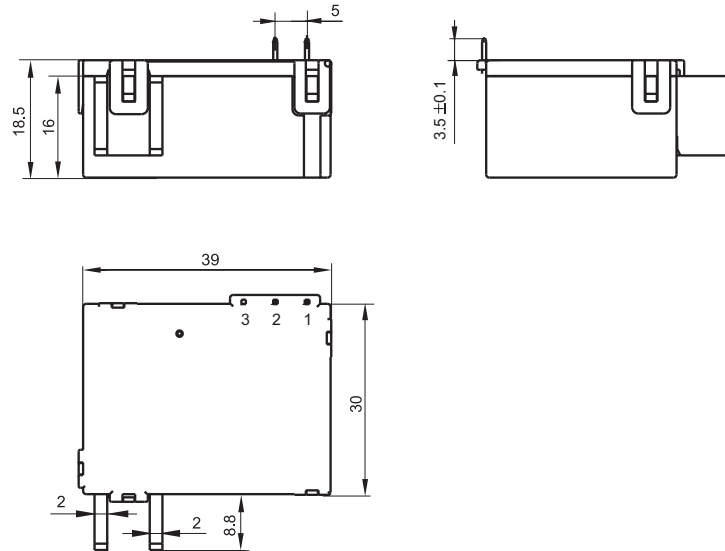
Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.
2) The coil is driven at rated voltage.

ORDERING INFORMATION

Type		HFE50 -100/ 12 D T 4 1 -R (XXX)						
Contact rating		100: 100A						
Coil voltage		6, 9, 12, 24, 48VDC						
Contact form ¹⁾		D: 1 Form B H: 1 Form A						
Contact material		T: AgSnO ₂						
Coil angle form		2: Distance 5mm; No bowleg 4: Distance 5mm; L-bowleg						
Sort		1: Single coil latching 2: Double coils latching						
Polarity		R: Negative polarity Nil: Positive polarity						
Special code ^{2) 4)}		XXX: Customer special requirement						

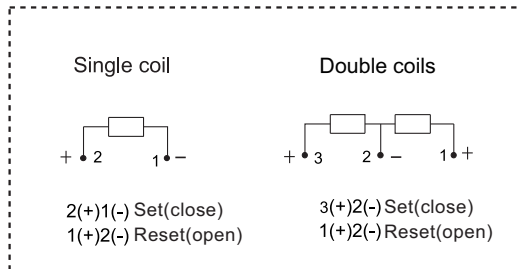
Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.
2) UC2: Meet the UC2 requirements on IEC62055-31.
3) We can make special design according to customer's requirement, Please see the typical design.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (416) stands for UC2.

Outline Dimensions

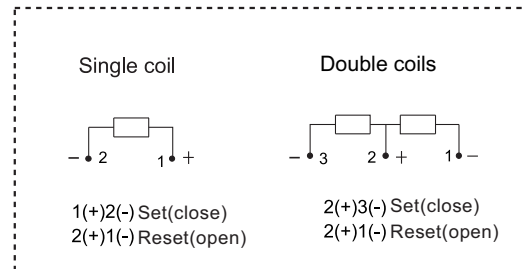


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

Positive polarity



Negative polarity



Notice:

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
- Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE29

HIGH POWER LATCHING RELAY



Features

- 100A, 120A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC3
- Contact resistance $\leq 0.35\text{m}\Omega$

CONTACT DATA

Contact arrangement	1U, 1V
Contact resistance ¹⁾	Typ.:0.35m Ω max. (at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	100A 240VAC (HFE29-100) 120A 240VAC (HFE29-120)
Max. switching voltage	277VAC
Max. switching current	100A (HFE29-100) 120A (HFE29-120)
Rated switching power	24000VA (HFE29-100) 28800VA (HFE29-120)
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 75g
Construction		Dust protected

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL

Coil power	HFE29-100	Single coil latching: Approx. 2.4W Double coils latching: Approx. 4.8W
	HFE29-120	Single coil latching: Approx. 3W Double coils latching: Approx. 6W

COIL DATA

at 23°C

HFE29-100 Single coil

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	15
9	≤ 7.2	50~100	34
12	≤ 9.6	50~100	60
24	≤ 19.2	50~100	250
48	≤ 38.4	50~100	1000

HFE29-100 Double coils

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	7.5+7.5
9	≤ 7.2	50~100	17+17
12	≤ 9.6	50~100	30+30
24	≤ 19.2	50~100	125+125
48	≤ 38.4	50~100	500+500

Notes: 1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
416 (UC2)	240VAC	80A	COS ϕ =1	10:20	5000	Total:10000
			COS ϕ =0.5		5000	
417 (UC3)	240VAC	100A	COS ϕ =1		5000	Total:10000
			COS ϕ =0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.

COIL DATA

at 23°C

HFE29-120 Single coil

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1±10%) Ω
6	≤4.8	50~100	12
9	≤7.2	50~100	27
12	≤9.6	50~100	48
24	≤19.2	50~100	192
48	≤38.4	50~100	768

HFE29-120 Double coils

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1±10%) Ω
6	≤4.8	50~100	6+6
9	≤7.2	50~100	13.5+13.5
12	≤9.6	50~100	24+24
24	≤19.2	50~100	96+96
48	≤38.4	50~100	384+384

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ORDERING INFORMATION

Type	HFE29 - 120 /12 -SD T -2 -R (XXX)						
Contact rating	100: 100A 120: 120A						
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	SD: 1 Form B (Double-contact of 1 Form B) SH: 1 Form A (Double-contact of 1 Form A)						
Contact material	T: AgSnO ₂						
Sort	1: Single coil latching 2: Double coils latching						
Polarity	R: Negative polarity Nil: Positive polarity						
Special code ^{2) 3)}	XXX: Customer special requirement						

Notes: 1) SH means that relay is on the "reset" status when delivery; SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 2 UC ratings:

UC2: meet the UC2 requirements on IEC62055-31: Making test: 2.5KA/10ms, carrying test 4.5KA/10ms;

UC3: meet the UC3 requirements on IEC62055-31: Making test: 3KA/10ms, carrying test 6KA/10ms.

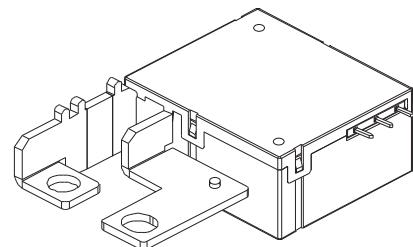
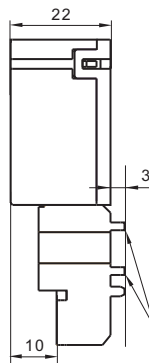
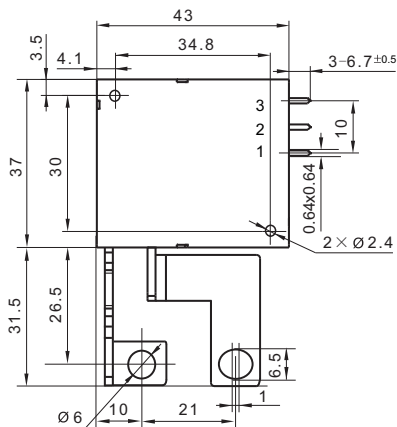
Nil: Only some typical ratings of UC are listed above, if need more special requirement, please contact us.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (416) stands for UC2(HFE29-100); e.g. (417) stands for UC3(HFE29-120).

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

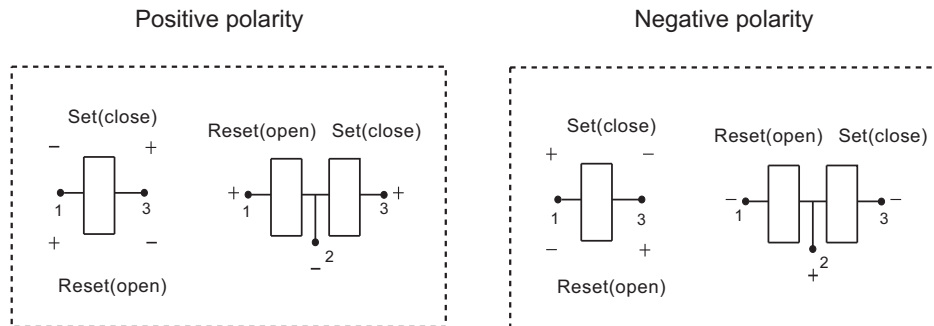


This is sampling resistance Sampling resistance=100μΩ

Remark: 1) The dimension of the load terminals as well as the sampling resistance can be made per customer request.

2) 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.

Wiring Diagram



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE12

MINIATURE HIGH POWER LATCHING RELAY



Features

- 120A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC3
- Contact resistance $\leq 0.35\text{m}\Omega$

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance ¹⁾	Typ.:0.35m Ω max.(at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	100A 220VAC
Max. switching voltage	253VAC
Max. switching current	120A
Rated switching power	22000VA
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 85g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 2.4W Double coils latching: Approx. 4.8W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50 ~ 100	16
9	≤ 7.2	50 ~ 100	34
12	≤ 9.6	50 ~ 100	60
24	≤ 19.2	50 ~ 100	250
48	≤ 38.4	50 ~ 100	1000

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50 ~ 100	8+8
9	≤ 7.2	50 ~ 100	17+17
12	≤ 9.6	50 ~ 100	30+30
24	≤ 19.2	50 ~ 100	125+125
48	≤ 38.4	50 ~ 100	500+500

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
417 (UC3)	220VAC	100A	COS ϕ =1	10:20	5000	Total:10000
			COS ϕ =0.5		5000	
NIL: (UC3)		100A	COS ϕ =1		5000	Total:10000
			COS ϕ =0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) The coil is driven at rated voltage.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

Type	HFE12	-C	/12	-D	T	2	-R	(XXX)
Version	A: Type A contact terminal B: Type B contact terminal C: Type C contact terminal D: Type D contact terminal F: Type F contact terminal G: Type G contact terminal							
Coil voltage	6, 9, 12, 24, 48VDC							
Contact form ¹⁾	D: 1 Form B H: 1 Form A							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ^{2) 3)}	XXX: Customer special requirement Nil: Standard(See electrical endurance)							

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following UC rating:

UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10ms, carrying test 6kA/10ms.

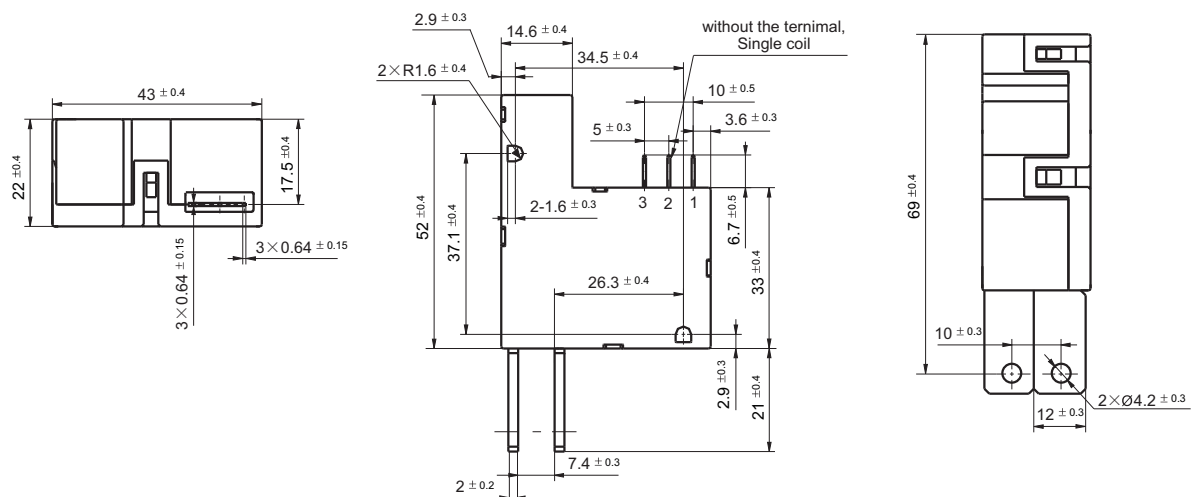
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (417) stands for UC3.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

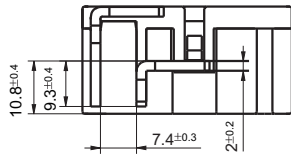
Outline Dimensions

Type C contact terminal

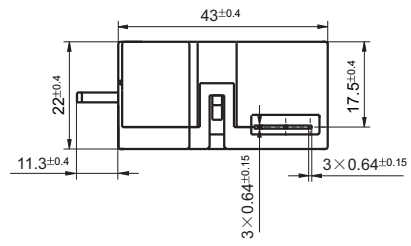
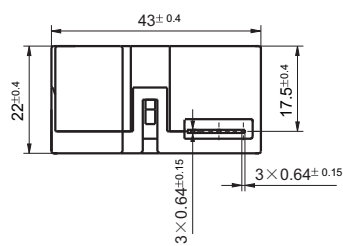
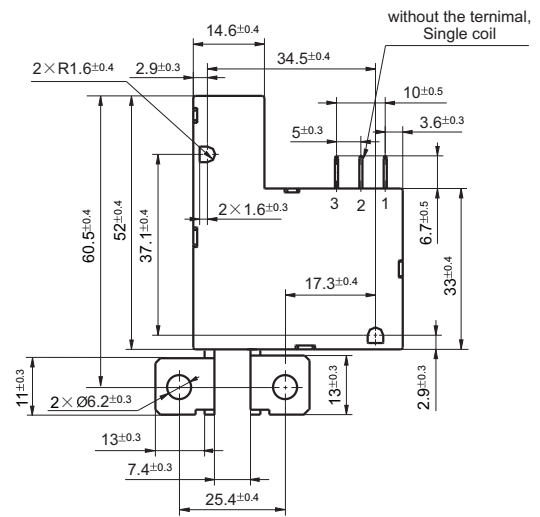
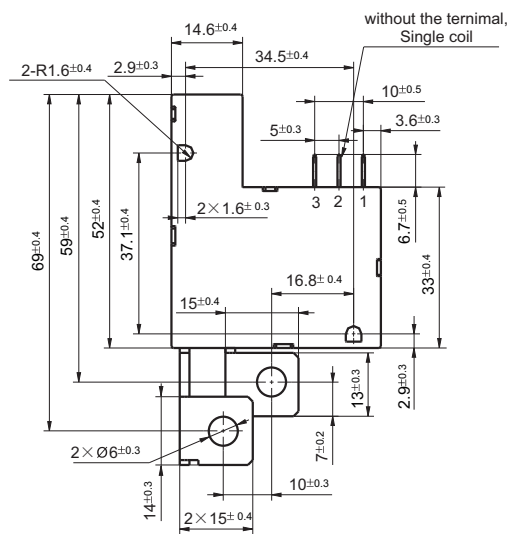
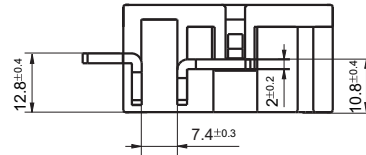


Outline Dimensions

Type A contact terminal

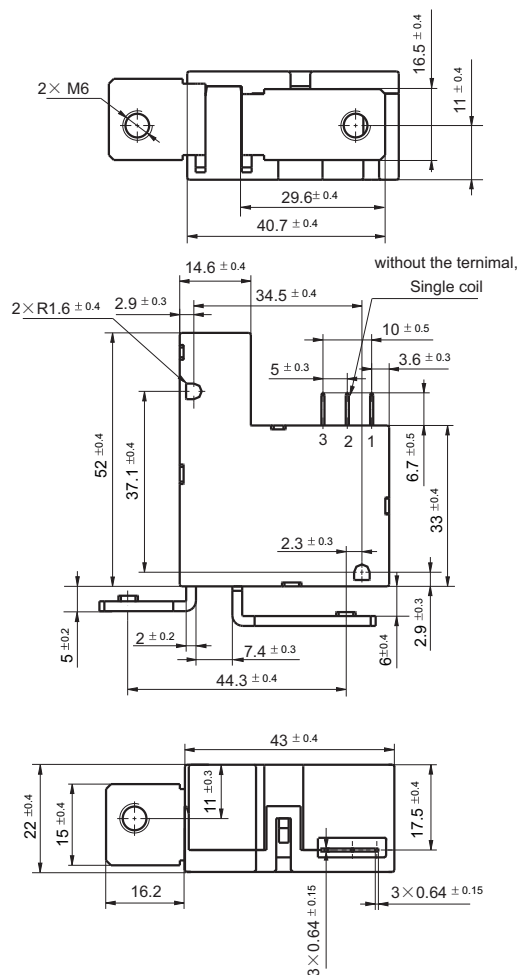


Type B contact terminal

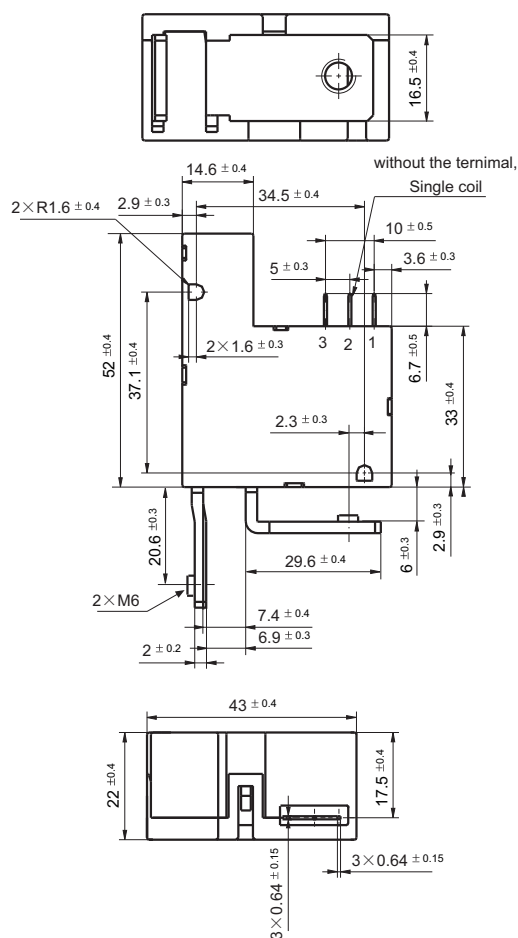


Outline Dimensions

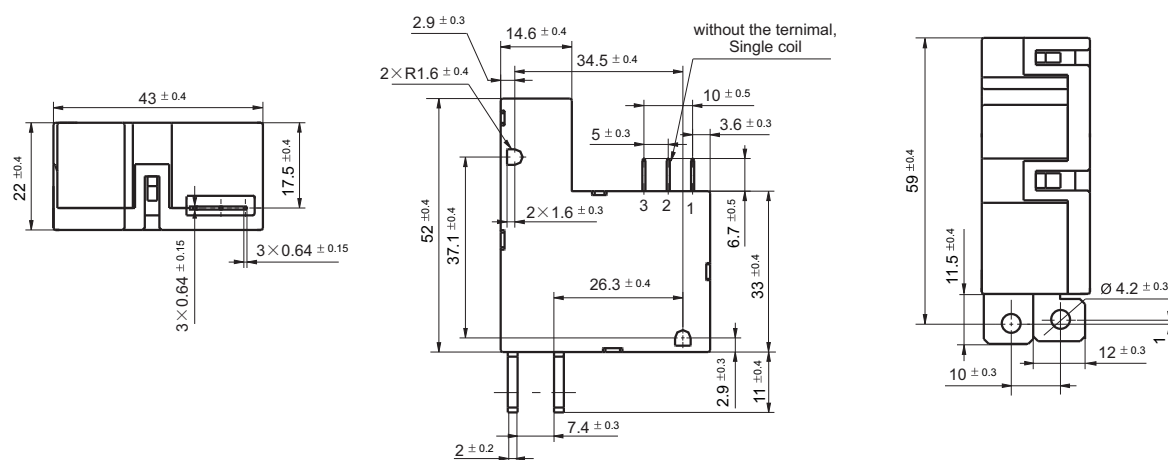
Type D contact terminal



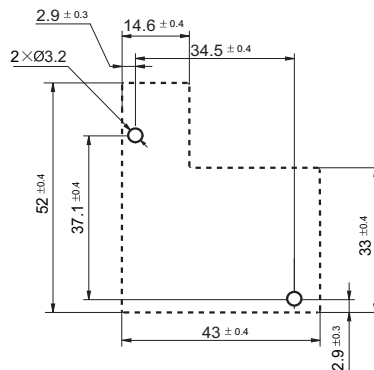
Type F contact terminal



Type G contact terminal



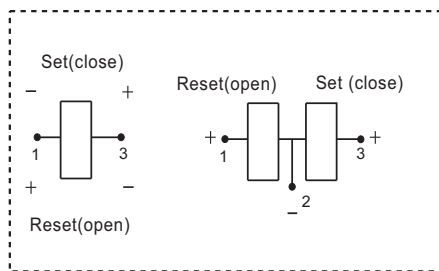
PCB Layout



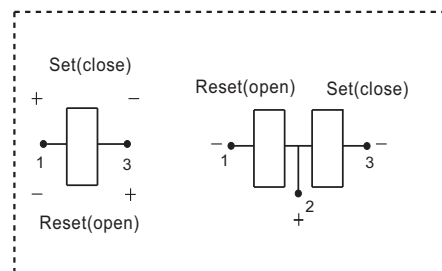
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.1\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE21

MINIATURE HIGH POWER LATCHING RELAY



Features

- 120A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC3
- Contact resistance $\leq 0.35m\Omega$

CONTACT DATA

Contact arrangement	1A, 1B, 1U, 1V
Contact resistance ¹⁾	Typ.:0.35m Ω max. (at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	120A 220VAC
Max. switching voltage	253VAC
Max. switching current	120A
Rated switching power	26400VA
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 85g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 3.0W Double coils latching: Approx. 6.0W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	13
9	≤ 7.2	50~100	27
12	≤ 9.6	50~100	50
24	≤ 19.2	50~100	210
48	≤ 38.4	50~100	860

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	6.5+6.5
9	≤ 7.2	50~100	13.5+13.5
12	≤ 9.6	50~100	25+25
24	≤ 19.2	50~100	105+105
48	≤ 38.4	50~100	430+430

Notes:1) The data shown above are initial values and recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
417 (UC3)	220VAC	100A	COS ϕ =1	10:20	5000	Total:10000
			COS ϕ =0.5		5000	
NIL: (UC3)		100A	COS ϕ =1		5000	Total:10000
			COS ϕ =0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.

2) The coil is driven at rated voltage.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

Type	HFE21	-C	/12	-D	T	2	-R	(XXX)
Version ¹⁾	A: Type A contact terminal B: Type B contact terminal C: Type C contact terminal D: Type D contact terminal G: Type G contact terminal I: Type I contact terminal J: Type J contact terminal							
Coil voltage	6, 9, 12, 24, 48VDC							
Contact form ²⁾	D: 1 Form B (Single-contact) H: 1 Form A (Single-contact) SD: 1 Form B (Double-contact of 1 Form B) SH: 1 Form A (Double-contact of 1 Form A)							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ^{3) 4)}	XXX: Customer special requirement Nil: Standard(See electrical endurance)							

Notes: 1) The version code A,B,C,D,G,I,J is for D,H type contact form only.Regarding the terminal size of SH,SD contact type, we can design according to customer's requirement.

2) H, SH means that relay is on the "reset" status when delivery; D, SD means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

3) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10MS; carrying test 6kA/10ms.

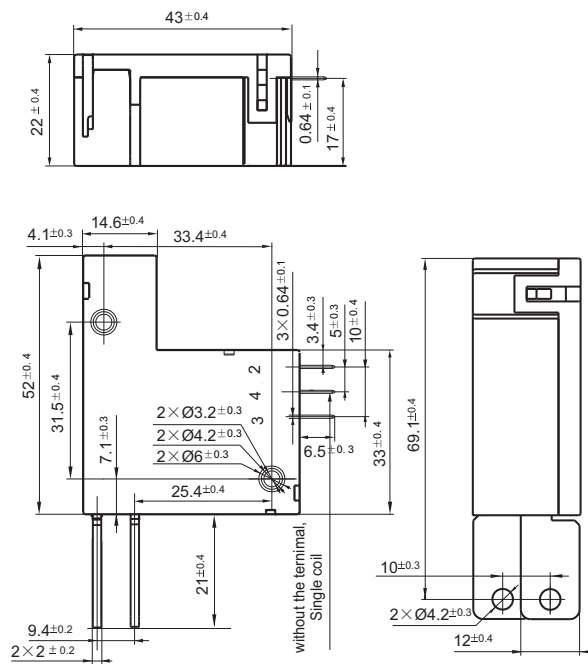
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (417) stands for UC3.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

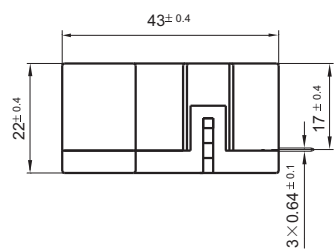
Unit: mm

Outline Dimensions

Type C contact terminal

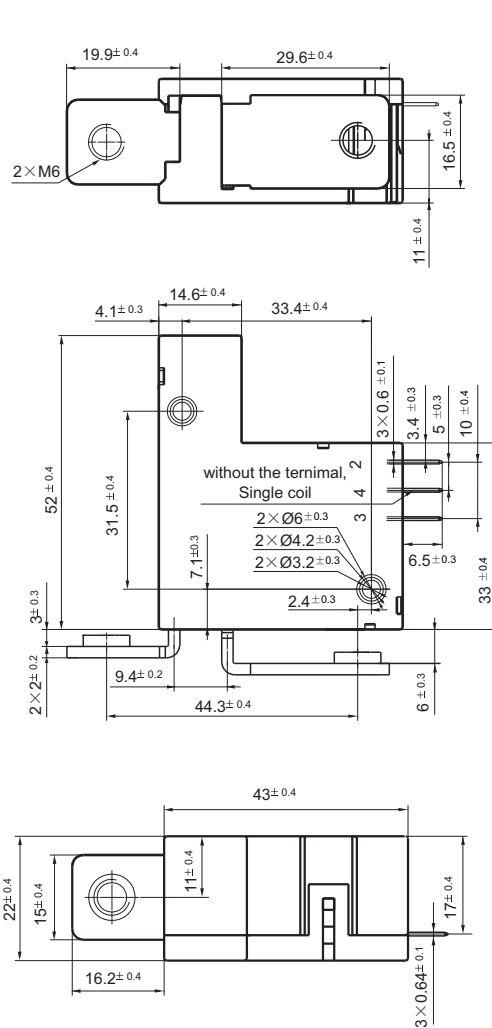


Type A contact terminal

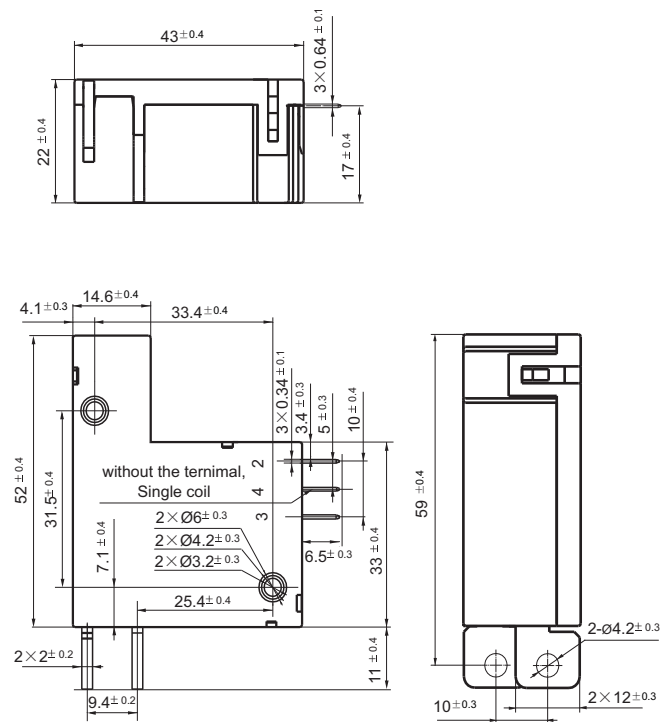
[illegible]

Outline Dimensions

Type D contact terminal

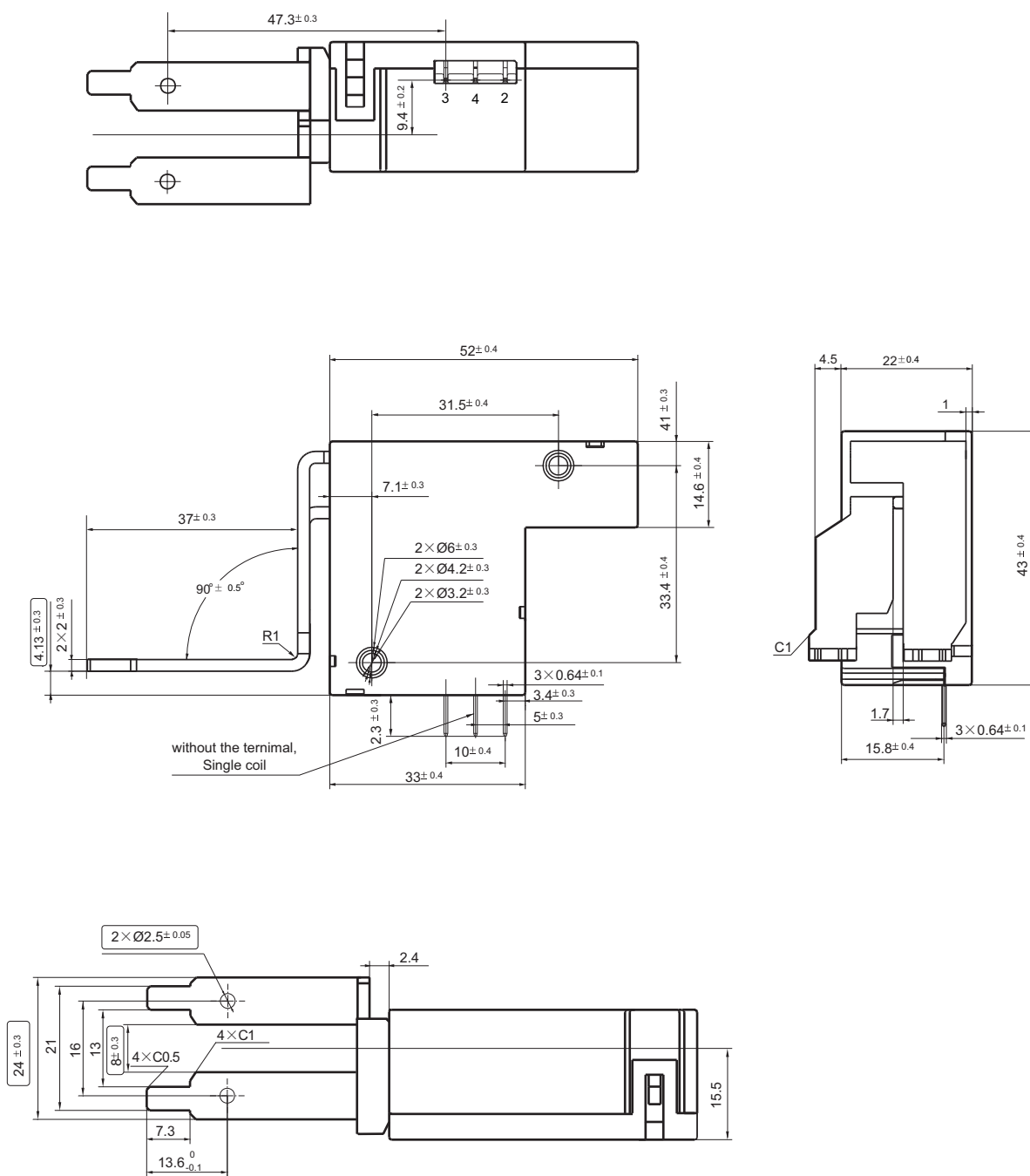


Type G contact terminal



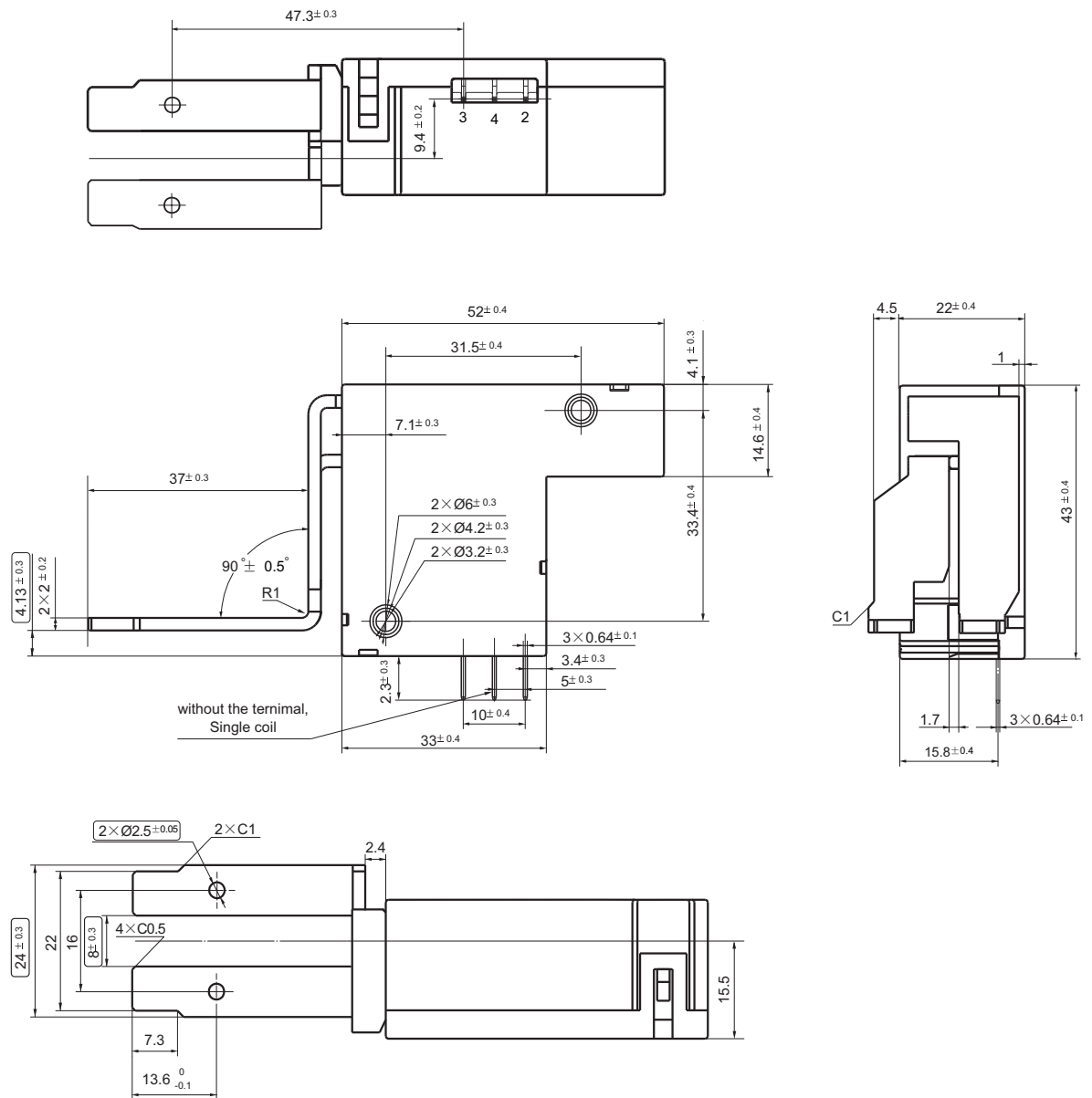
Outline Dimensions

Type I contact terminal



Outline Dimensions

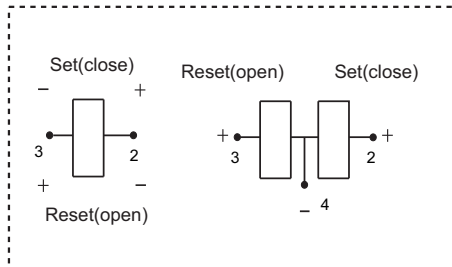
Type J contact terminal



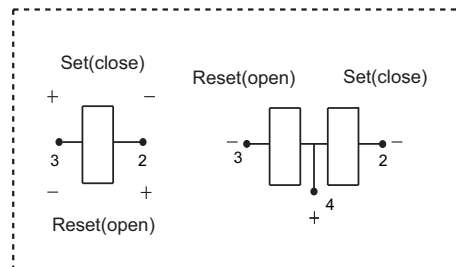
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.1\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE61 SUBMINIATURE INTERMEDIATE POWER RELAY



Features

- 120A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC3
- Contact resistance $\leq 0.35\text{m}\Omega$

CONTACT DATA

Contact arrangement	1U,1V
Contact resistance ¹⁾	Typ.: 0.35m Ω max. ²⁾
Contact material	AgSnO ₂
Contact rating	120A 240VAC
Max. switching Voltage	277VAC
Max. switching current	120A
Rated switching power	28800VA
Mechanical endurance	1 x 10 ⁵ ops

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000 mΩ(500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		≤20ms
Reset time (at nomi. volt.)		≤20ms
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx.70g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 3.0W Double coils latching: Approx. 6.0W
------------	---

COIL DATA

23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾ VDC	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	12
9	≤ 7.2	50~100	27
12	≤ 9.6	50~100	48
24	≤ 19.2	50~100	192
48	≤ 38.4	50~100	768

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾ VDC	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	6+6
9	≤ 7.2	50~100	13.5+13.5
12	≤ 9.6	50~100	24+24
24	≤ 19.2	50~100	96+96
48	≤ 38.4	50~100	384+384

Notes:1) The data shown above are initial values; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance
417 (UC3)	250VAC	100A	COS ϕ =1	10:20	5000ops
			COS ϕ =0.5		5000ops
					Total: 10000ops

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

Type	HFE61	-120	/12	-SD	T	-2	-R	(XXX)
Contact rating	120:120A							
Coil voltage	6, 9, 12, 24, 48VDC							
Contact form ¹⁾	SH: 1 Form A (Double-contact) SD: 1 Form B (Double-contact)							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ⁽²⁾⁽³⁾	XXX: Customer special requirement Nil: Standard(See electrical endurance)							

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

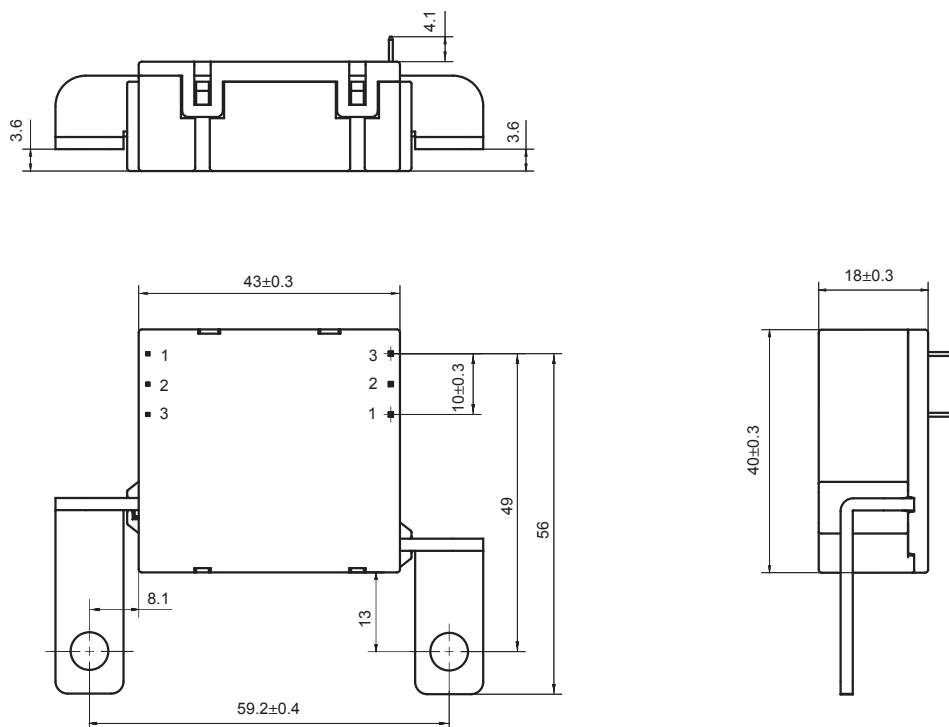
UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10ms; carrying test 6kA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (417) stands for UC3.

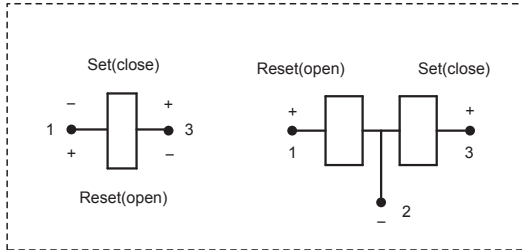
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

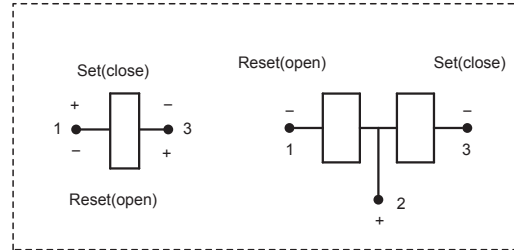
Outline Dimensions



Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE51

SUBMINIATURE INTERMEDIATE POWER RELAY



Features

- 150A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC3
- Contact resistance $\leq 0.5m\Omega$

CONTACT DATA

Contact arrangement	1U, 1V
Contact resistance ¹⁾	Typ.:0.5m Ω max. (at 150A) ²⁾
Contact material	AgSnO ₂
Contact rating	150A 220VAC
Max.switching Voltage	253VAC
Max. switching current	150A
Rated switching power	33000VA
Mechanical endurance	1 x 10 ⁶ ops

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric Strength	Between coil & contacts	4000VAC (1min)
	Between open contacts	2000VAC (50/60Hz 1min)
Electrical distance		8.4mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock Resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 110g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coils: Approx. 3W Double coils: Approx. 6W
------------	--

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	12
9	≤ 7.2	50~100	27
12	≤ 9.6	50~100	48
24	≤ 19.2	50~100	192
48	≤ 38.4	50~100	768

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	6+6
9	≤ 7.2	50~100	13.5+13.5
12	≤ 9.6	50~100	24+24
24	≤ 19.2	50~100	96+96
48	≤ 38.4	50~100	384+384

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)
250VAC	120A	COS ϕ =1	7.5:7.5	5500 ops
220VAC	120A	COS ϕ =1	10:20	5000 ops
		COS ϕ =0.5		5000 ops

Notes:1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) The coil is driven at rated voltage.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

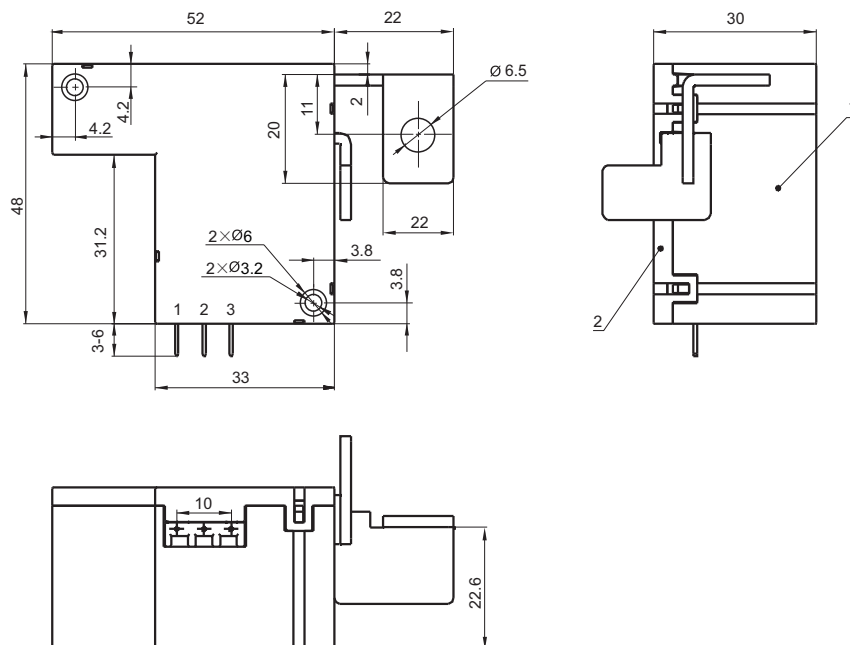
	HFE51	12	-SH	T	L1	R	(XXX)
Type							
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	SH: 1 Form A (Double-contact) SD: 1 Form B (Double-contact)						
Contact material	T: AgSnO ₂						
Sort	L1: Single coil latching L2: Double coils latching						
Polarity	R: Reverse polarity Nil: Positive polarity						
Special code	XXX: Customer special requirement Nil: Standard(See electrical endurance)						

Notes: 1) SH means that relay is on the "reset" status when delivery; SD means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

OUTLINE DIMENSIONS AND WIRING DIAGRAM Unit: mm

Unit: mm

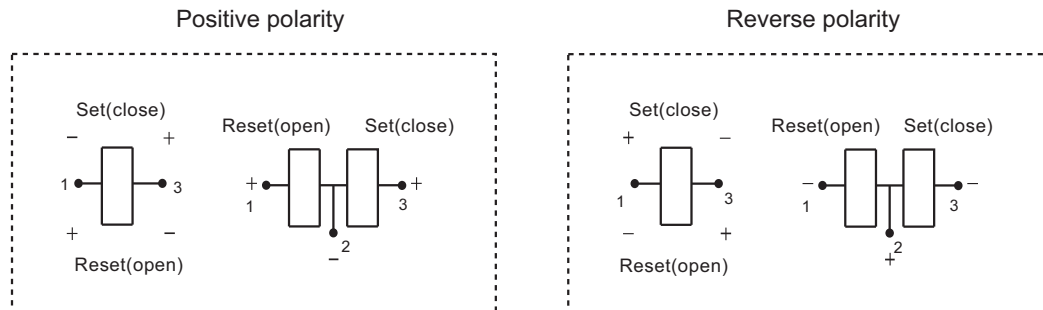
Outline Dimensions



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 $\pm 0.1\text{mm}$.

Wiring Diagram



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE31

HIGH POWER LATCHING RELAY



Features

- 200A Latching relay
- Electrical endurance 5000ops
- According to IEC62055-31:UC4 (Carrying: 7kA current / 500ms)
- Contact resistance $\leq 0.25m\Omega$

CONTACT DATA

Contact arrangement	1U, 1V
Contact resistance ¹⁾	Typ.:0.25m Ω max. (at 200A) ²⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	200A 220VAC
Max. switching voltage	253VAC
Max. switching current	200A
Rated switching power	44000kVA
Mechanical endurance	1 x 10 ⁵ ops
Electrical endurance	5000ops (200A 250VAC, Resistive load, Room temp., 0.6s on 5.4s off)

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		25ms max.
Reset time (at nomi. volt.)		25ms max.
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 151g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching:Approx. 5W Double coils latching: Approx.10W
------------	--

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC max. ¹⁾	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	7.2
9	≤ 7.2	50~100	16.2
12	≤ 9.6	50~100	28.8
24	≤ 19.2	50~100	115.2
48	≤ 38.4	50~100	460.8

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC max. ¹⁾	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	3.6+3.6
9	≤ 7.2	50~100	8.1+8.1
12	≤ 9.6	50~100	14.4+14.4
24	≤ 19.2	50~100	57.6+57.6
48	≤ 38.4	50~100	230.4+230.4

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

	HFE31 / 6 -SD 1 T -2 -R (XXX)						
Type							
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	SD: 1 Form B (Double-contact of 1 Form B) SH: 1 Form A (Double-contact of 1 Form A)						
Termination	1: With mounting aperture 2: No mounting aperture						
Contact material	T: AgSnO ₂						
Coil Sort	1: Single coil latching 2: Double coils latching						
Polarity	R: Negative polarity Nil: Positive polarity						
Special code ²⁾	XXX: Customer special requirement Nil: Standard						

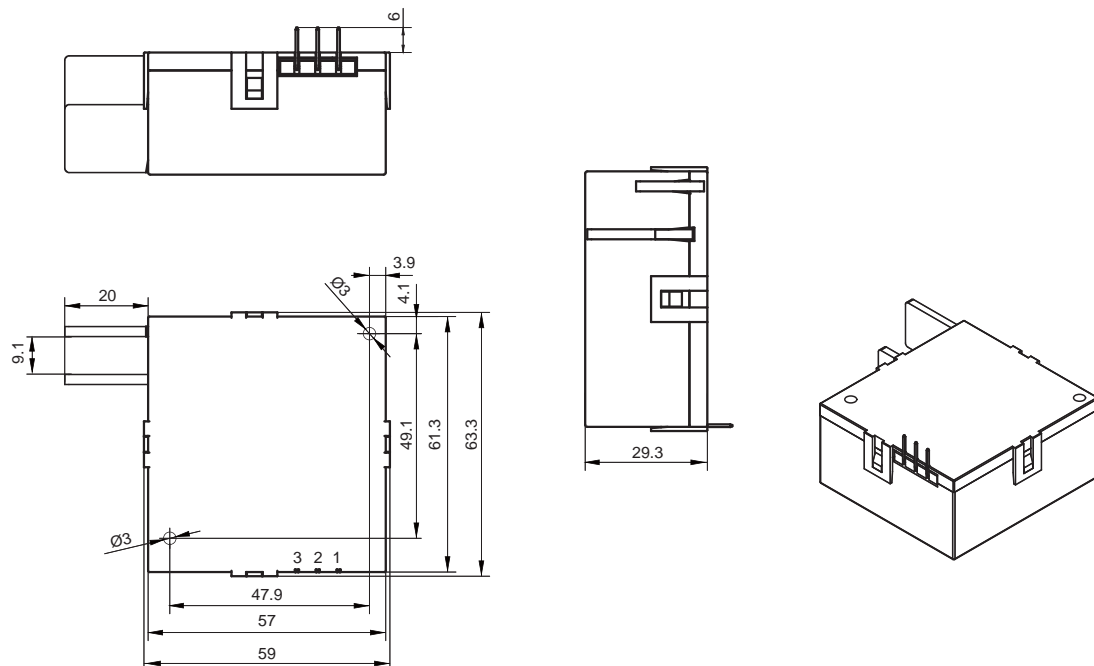
Notes: 1) SH means that relay is on the "reset" status when delivery; SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

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

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

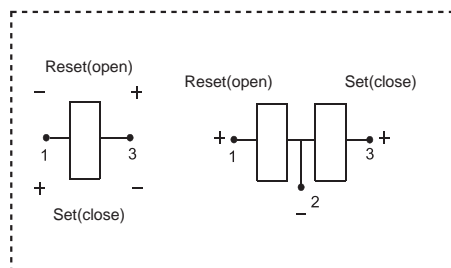
Outline Dimensions



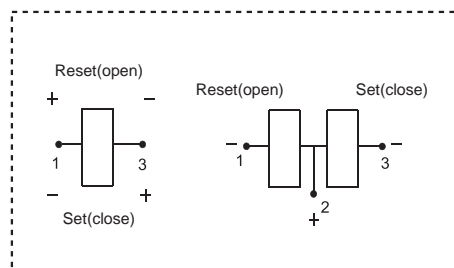
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE28

HIGH POWER LATCHING RELAY



Features

- 100A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC1, UC2, UC3
- AC-voltage driving is feasible
- Contact resistance $\leq 0.35m\Omega$

CONTACT DATA

Contact arrangement	2A, 2B, 2U, 2V
Contact resistance ¹⁾	Typ.:0.35m Ω max.(at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	100A 230VAC/28VDC
Max. switching voltage	265VAC
Max. switching current	100A
Rated switching power	23000VA/2800W
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx. 220g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 5W Double coils latching: Approx. 10W
------------	--

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	7.2
9	≤ 7.2	50~100	16.2
12	≤ 9.6	50~100	28.8
24	≤ 19.2	50~100	114
48	≤ 38.4	50~100	460

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	3.6+3.6
9	≤ 7.2	50~100	8.1+8.1
12	≤ 9.6	50~100	14.4+14.4
24	≤ 19.2	50~100	57+57
48	≤ 38.4	50~100	230+230

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

Nominal Voltage VAC	Set / Reset Voltage VAC max.	Pulse Duration ms min.	Coil Resistance x (1 \pm 10%) Ω	
230	161	50: full-wave rectification	Single coil latching	2420
230	161	100: half-wave rectification	Double coils latching	1210+1210



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
415 (UC1)	230VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.
2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.

ORDERING INFORMATION

	HFE28	-140	/12	-2D	T	2	-R	(XXX)
Type								
Sampling resistance	140: 140μΩ 280: 280μΩ Nil: Without sampling resistance							
Coil voltage	6, 9, 12, 24, 48VDC; 230VAC							
Contact form ¹⁾	2D: 2 Form B (Single-contact) 2H: 2 Form A (Single-contact) 2SD: 2 Form B (Double-contact of 2 Form B) 2SH: 2 Form A (Double-contact of 2 Form A)							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ^{2) 3)}	XXX: Customer special requirement							

Notes: 1) 2H, 2SH means that relay is on the "reset" status when delivery; 2D, 2SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 2400A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5kA/10ms, carrying test 4.5kA/10ms;

UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10ms, carrying test 6kA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

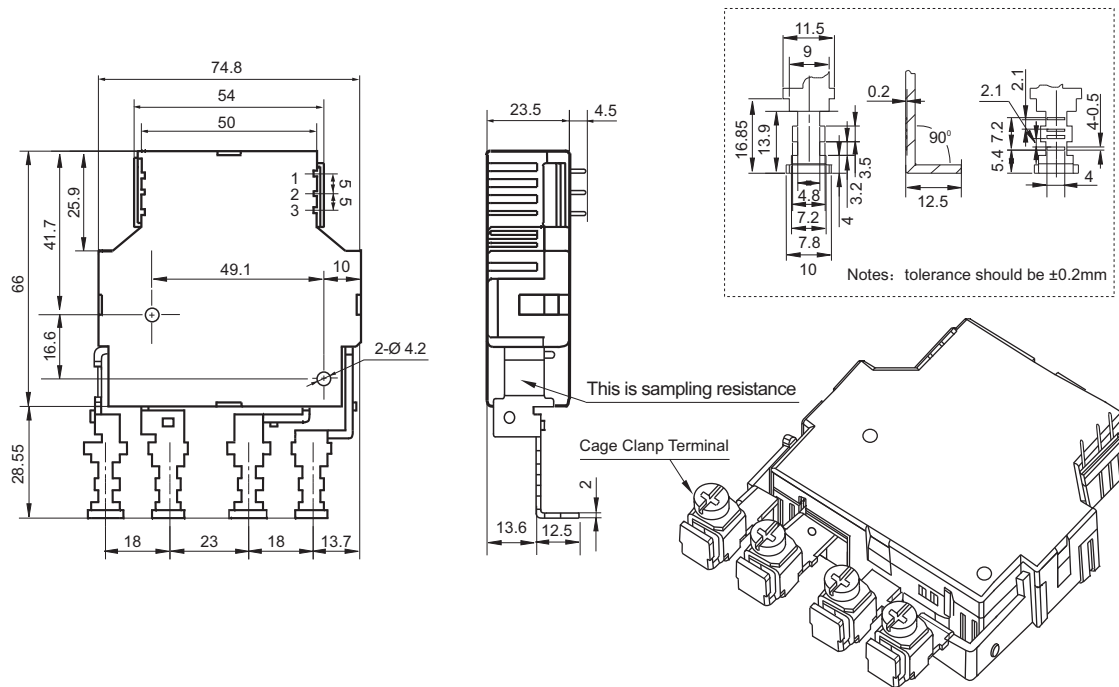
Notice:

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
- Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

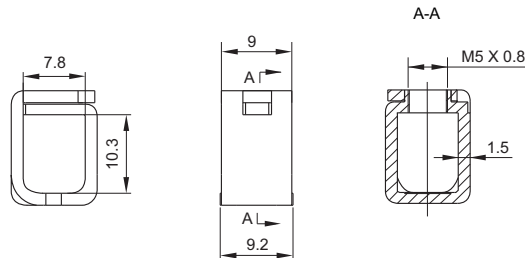
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions



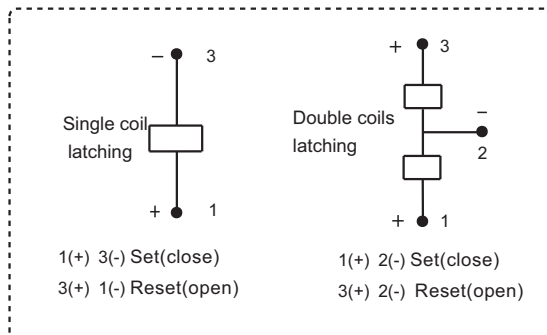
Cage Clamp Terminal



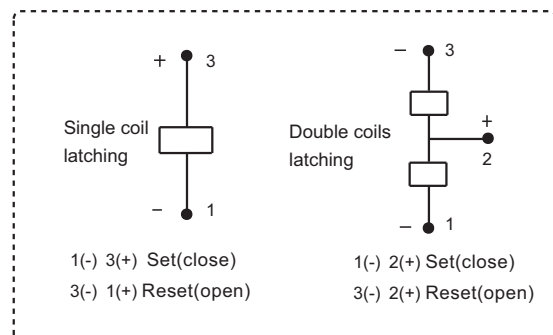
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Disclaimer

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HFE37

HIGH POWER LATCHING RELAY



Features

- 100A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC1, UC2, UC3
- AC-voltage driving is feasible
- Contact resistance $\leq 0.35m\Omega$

CONTACT DATA

Contact arrangement	2U, 2V
Contact resistance ¹⁾	Typ.:0.35m Ω max.(at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	100A 230VAC/28VDC
Max. switching voltage	265VAC
Max. switching current	100A
Rated switching power	23000VA/2800W
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000M Ω (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	294m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination	Coil ermination	PCB&QC
	Load termination	QC
Unit weight		Approx. 160g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 4W Double coils latching: Approx. 8W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	9
9	≤ 7.2	50~100	20.25
12	≤ 9.6	50~100	36
24	≤ 19.2	50~100	144
48	≤ 38.4	50~100	576

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	4.5+4.5
9	≤ 7.2	50~100	10.1+10.1
12	≤ 9.6	50~100	18+18
24	≤ 19.2	50~100	72+72
48	≤ 38.4	50~100	288+288

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

Nominal Voltage VAC	Set / Reset Voltage VAC max.	Pulse Duration ms min.	Coil Resistance x (1 \pm 10%) Ω	
230	161	50: full-wave rectification	Single coil latching	3024
230	161	100: half-wave rectification	Double coils latching	1512+1512



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
415 (UC1)	230VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.

ORDERING INFORMATION

Type		HFE37	- 280	/12	-2SD	T	2	-R	(XXX)
Sampling resistance		280: 280µΩ Nil: Without sampling resistance							
Coil voltage		6, 9, 12, 24, 48VDC; 230VAC							
Contact form ¹⁾		2SD: 2 Form B (Double-contact of 2 Form B) 2SH: 2 Form A (Double-contact of 2 Form A)							
Contact material		T: AgSnO ₂							
Sort		1: Single coil latching 2: Double coils latching							
Polarity		R: Negative polarity Nil: Positive polarity							
Special code ^{2) 3)}		XXX: Customer special requirement							

Notes: 1) 2SH means that relay is on the "reset" status when delivery; 2SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

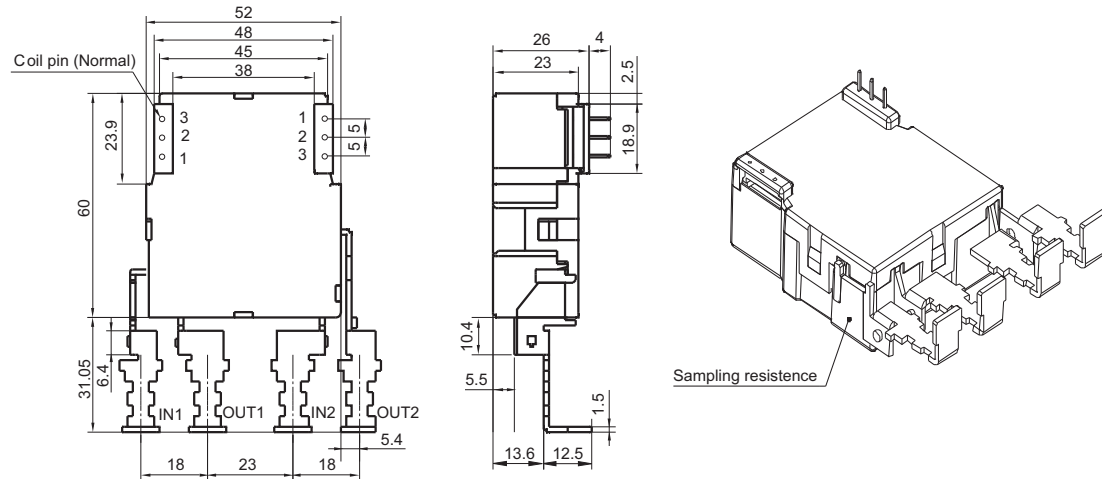
UC1: meet the UC1 requirements on IEC62055-31: Carrying test 2400A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5kA/10ms, carrying test 4.5kA /10ms;

UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10ms, carrying test 6kA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

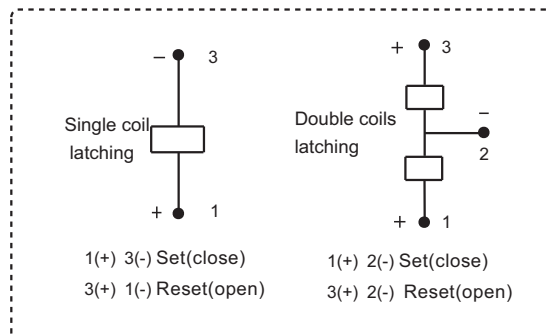
Outline Dimensions



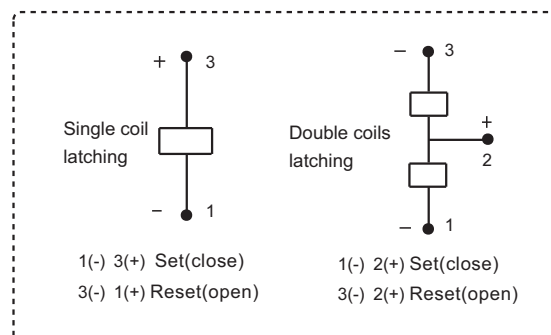
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock arisen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
- Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE25

HIGH POWER LATCHING RELAY



Features

- 200A Latching relay
- Electrical endurance 6000ops
- According to ANSI C 12.1
(Carrying: 12kA current / 66.7ms;
7kA peak current/100ms)
- Contact resistance $\leq 0.25m\Omega$

CONTACT DATA

Contact arrangement	2A,2B
Contact resistance ¹⁾	Typ.: 0.25m Ω max.(200A) ²⁾
Contact material	AgSnO ₂
Contact rating	200A 240VAC/28VDC
Max. switching Voltage	265VAC
Max. switching current	200A
Rated switching power	48000VA/5600W
Mechanical endurance	1 x 10 ⁵ ops
Electrical endurance	6 x 10 ³ ops

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000m Ω (500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		$\leq 20ms$
Reset time (at nomi. volt.)		$\leq 20ms$
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm DA
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx.400g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 12W
	Double coils latching: Approx. 24W

COIL DATA

23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾ VDC	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	3
9	≤ 7.2	50~100	6.75
12	≤ 9.6	50~100	12
24	≤ 19.2	50~100	48
48	≤ 38.4	50~100	190

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage ¹⁾ VDC	Pulse Duration (Recommended) ms	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	50~100	1.5+1.5
9	≤ 7.2	50~100	3.3+3.3
12	≤ 9.6	50~100	6+6
24	≤ 19.2	50~100	24+24
48	≤ 38.4	50~100	95+95

Notes:1) The data shown above are initial values; recommended driving voltage is 1~1.5times of rated voltage.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

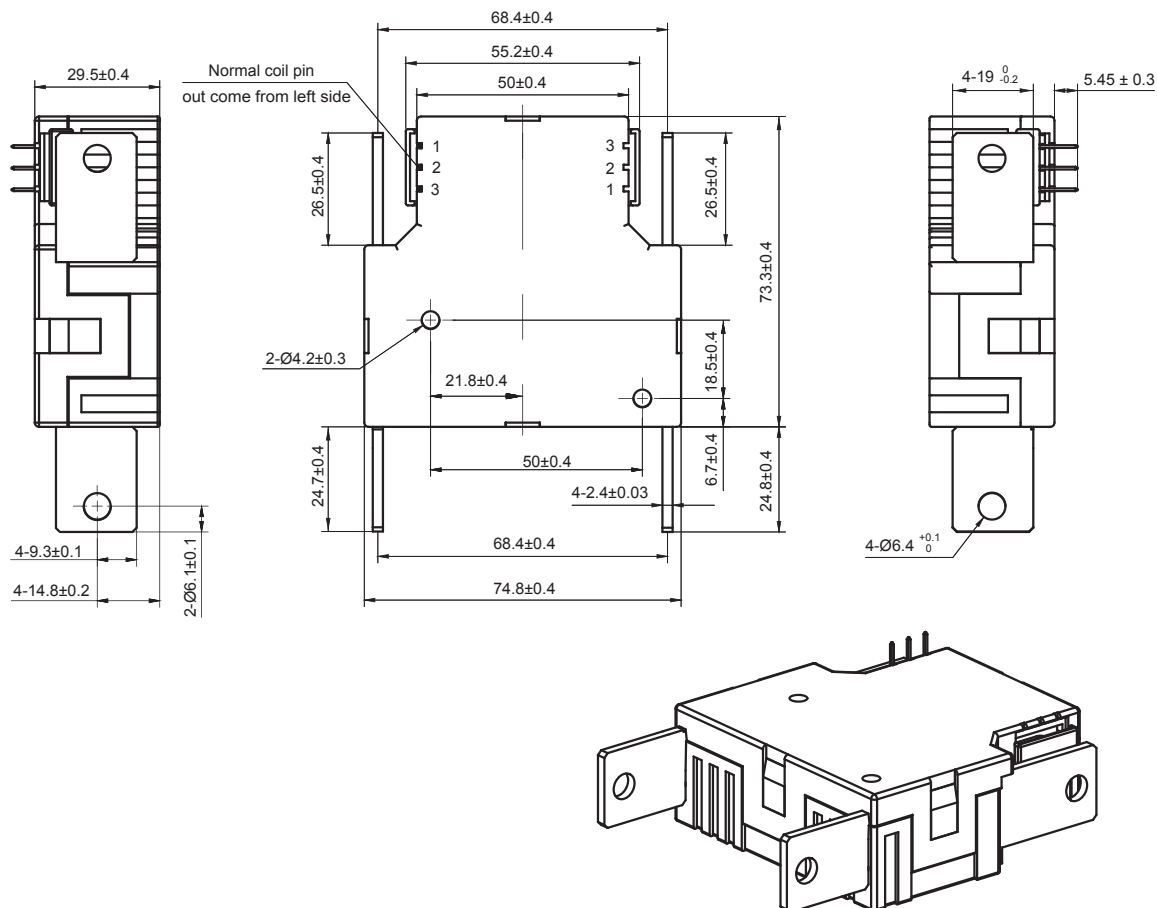
Type	HFE25	-B	/12	-2D	T	2	-R (XXX)
Version	B: Type B contact terminal						
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	2D: 2Form B 2H: 2 Form A						
Contact material	T: AgSnO ₂						
Sort	1: Single coil latching 2: Double coils latching						
Polarity	R: Negative polarity Nil: Positive polarity						
Special code ²⁾	XXX: Customer special requirement Nil: Standard(See electrical endurance)						

Notes: 1) 2H means that relay is on the "reset" status when delivery; 2D means that relay is on the "set" status when delivery.
If no special required by customer, we will keep the relay on the "set" status when delivery.
2) The customer special requirement express as special code after evaluating by Hongfa.

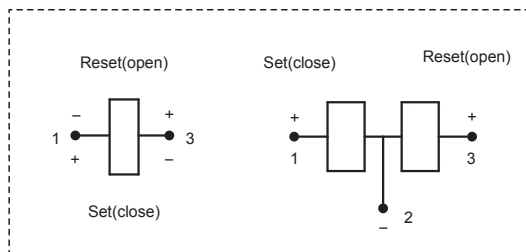
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

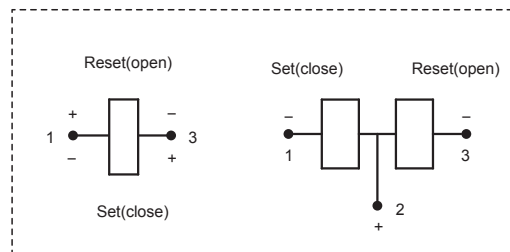
Outline Dimensions



Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

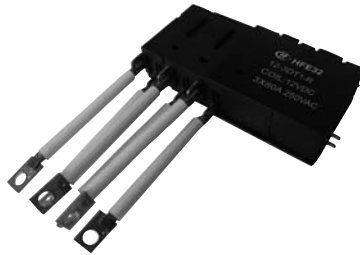
Disclaimer

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HFE32

MINIATURE 3-PHASES RELAY



Features

- 80A 3-phases latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2
- Contact resistance $\leq 0.45\text{m}\Omega$

CONTACT DATA

Contact arrangement	3A, 3B
Contact resistance ¹⁾	Typ.:0.45mΩ max.(at 80A) ²⁾
Contact material	AgSnO ₂
Contact rating	80A 220VAC
Max. switching voltage	253VAC
Max. switching current	80A
Max. switching power	17600VA
Mechanical endurance	1 x 10 ⁵ ops

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	2000VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		30ms max.
Reset time (at nomi. volt.)		30ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx.155g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 3W Double coil latching: Approx. 6W
------------	--

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC max. ¹⁾	Pulse Duration (Recommended) ms	Coil Resistance x (1±10%) Ω
6	≤ 4.8	100~200	12
9	≤ 7.2	100~200	27
12	≤ 9.6	100~200	48
24	≤ 19.2	100~200	192
48	≤ 38.4	100~200	768

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC max. ¹⁾	Pulse Duration (Recommended) ms	Coil Resistance x (1±10%) Ω
6	≤ 4.8	100~200	6+6
9	≤ 7.2	100~200	13.5+13.5
12	≤ 9.6	100~200	24+24
24	≤ 19.2	100~200	96+96
48	≤ 38.4	100~200	384+384

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
416 (UC2)	253VAC	60A	COSØ=1 COSØ=0.5	10:20	5000 5000	Total:10000

Notes: Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

Type	HFE32	-A /	12	-3D	T	2	-R	(XXX)
Version	A: Type A contact terminal							
Coil voltage	6, 9, 12, 24, 48 VDC							
Contact form ¹⁾	3D: 3 Form B 3H: 3 Form A							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾³⁾	XXX: Customer special requirement							

Notes: 1) 3H means that relay is on the "reset" status when delivery; 3D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following UC ratings:

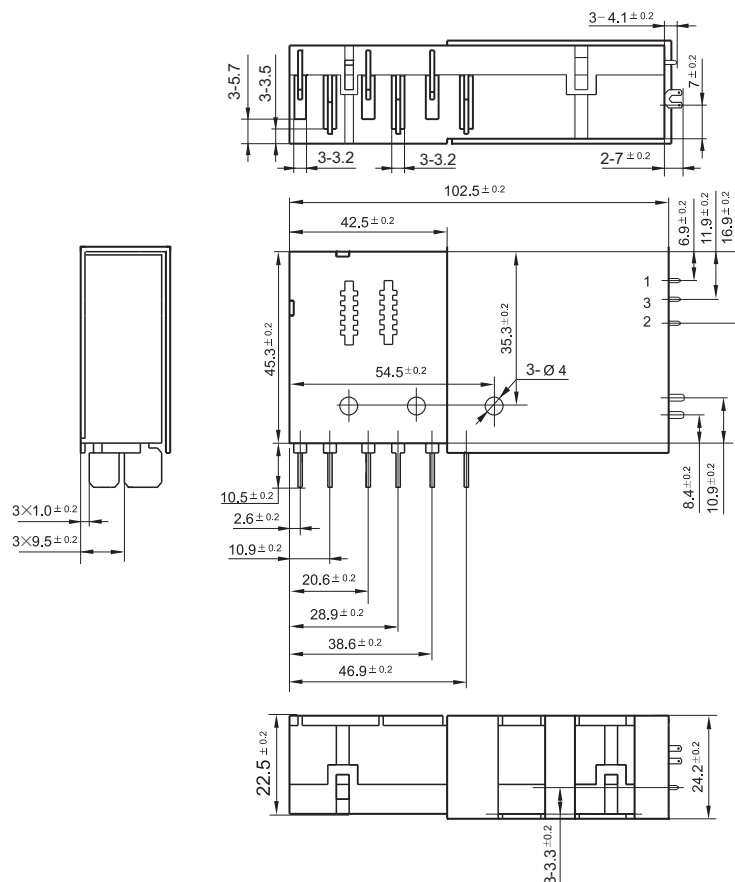
UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5KA/10ms carrying test 4.5KA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (416) stands for UC2.

OUTLINE DIMENSIONS, WIRING DIAGRAM

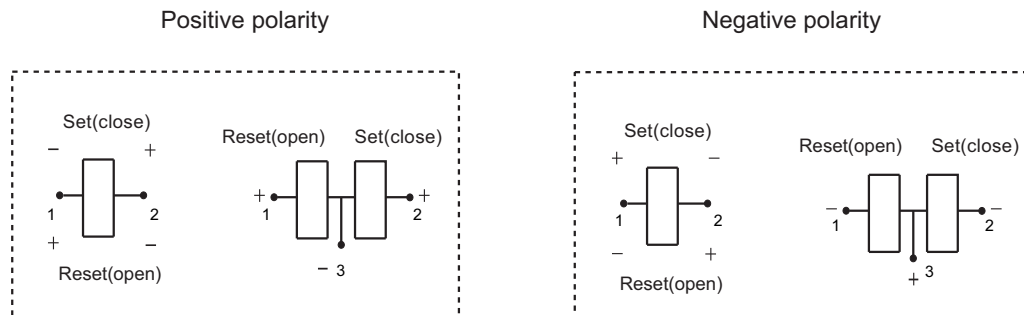
Unit: mm

Outline Dimensions



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 $\pm 0.4\text{mm}$.

Coil Wiring Diagram



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE45

MINIATURE 3-PHASES RELAY



Features

- 80A 3-phases latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2
- Contact resistance $\leq 0.45\text{m}\Omega$

CONTACT DATA

Contact arrangement	3A, 3B, 3U, 3V
Contact resistance ¹⁾	Typ.:0.45m Ω max.(at 80A) ²⁾
Contact material	AgSnO ₂
Contact rating	80A 220VAC
Max. switching voltage	253VAC
Max. switching current	80A
Rated switching power	17600VA
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	2000VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		30ms max.
Reset time (at nomi. volt.)		30ms 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 85°C
Termination	Coil termination	PCB&QC
	Load termination	QC
Unit weight		Approx.210g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 3W Double coil latching: Approx. 6W
------------	--

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC max. ¹⁾	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	100~200	12
9	≤ 7.2	100~200	27
12	≤ 9.6	100~200	48
24	≤ 19.2	100~200	192
48	≤ 38.4	100~200	768

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	100~200	6+6
9	≤ 7.2	100~200	13.5+13.5
12	≤ 9.6	100~200	24+24
24	≤ 19.2	100~200	96+96
48	≤ 38.4	100~200	384+384

Notes:1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)
416 (UC2)	253VAC	60A	COS ϕ =1 COS ϕ =0.5	10:20	5000 5000 Total:10000

Notes: Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

	HFE45	-A /	12	-3D	T	-L1	-R	(XXX)
Type								
Version	A: Type A contact terminal							
Coil voltage	6, 9, 12, 24, 48 VDC							
Contact form ¹⁾	3D: 3 Form B (Single-contact) 3H: 3 Form A (Single-contact) 3SD: 3 Form B (Double-contact) 3SH: 3 Form A (Double-contact)							
Contact material	T: AgSnO ₂							
Sort	L1: Single coil latching L2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ^{2) 3)}	XXX: Customer special requirement							

Notes: 1) 3H, 3SH means that relay is on the "reset" status when delivery; 3D, 3SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following UC ratings:

UC2: meet the UC2 requirements on IEC62055-31: Making test: 2.5KA/10ms carrying test 4.5KA/10ms.

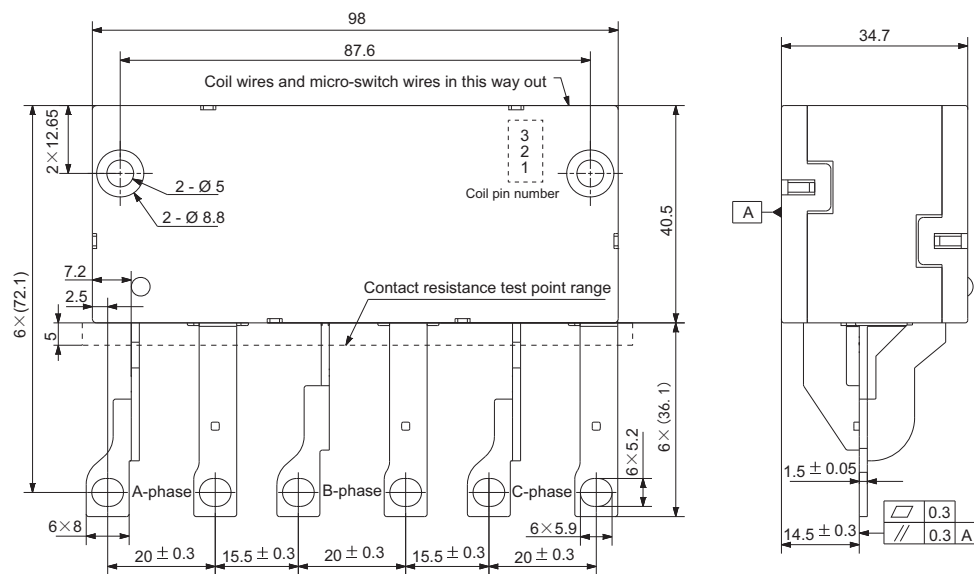
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (416) stands for UC2.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

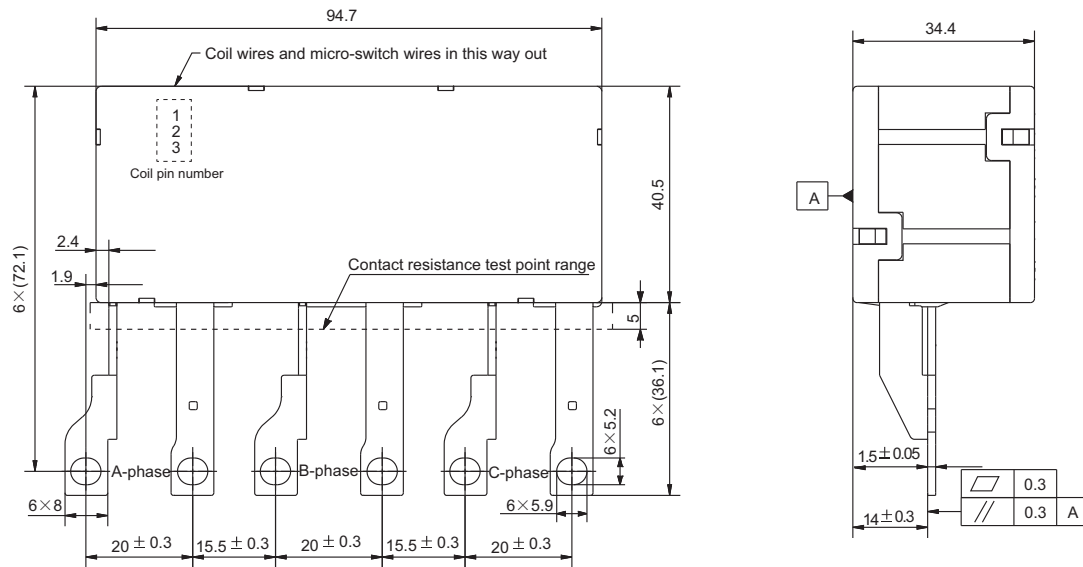
Outline Dimensions

HFE45-3H/3D (Single-contact)



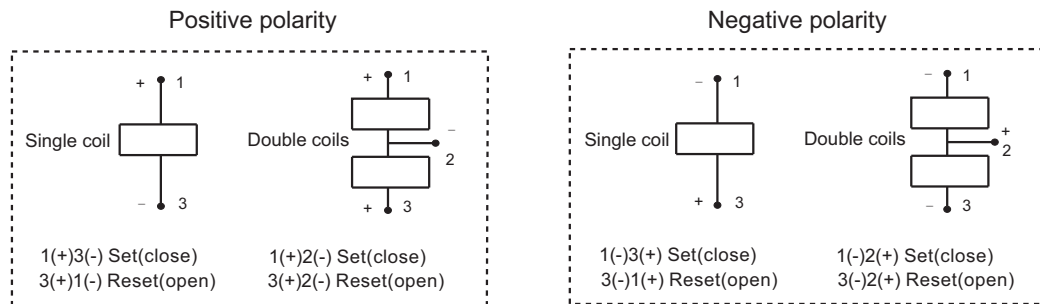
HFE45-3SH/3SD (Double-contact)

Outline Dimensions



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 $\pm 0.4\text{mm}$.

Coil Wiring Diagram



Notice:

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
- Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE23

MINIATURE 3-PHASES RELAY



Features

- 120A 3-phases latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2,UC3
- Contact resistance $\leq 0.35m\Omega$

CONTACT DATA

Contact arrangement	3U, 3V
Contact resistance ¹⁾	Typ.:0.35mΩ max. (at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating	120A 220VAC
Max. switching voltage	253VAC
Max. switching current	120A
Rated switching power	26400VA
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	2000VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		30ms max.
Reset time (at nomi. volt.)		30ms 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 85°C
Termination		QC
Unit weight		Approx.300g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 5W Double coils latching: Approx. 10W
------------	--

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1±10%) Ω
6	≤ 4.8	100 ~200	7
9	≤ 7.2	100 ~200	16
12	≤ 9.6	100 ~200	29
24	≤ 19.2	100 ~200	115
48	≤ 38.4	100 ~200	460

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms	Coil Resistance x (1±10%) Ω
6	≤ 4.8	100 ~200	3.5+3.5
9	≤ 7.2	100 ~200	8+8
12	≤ 9.6	100 ~200	14.5+14.5
24	≤ 19.2	100 ~200	57.5+57.5
48	≤ 38.4	100 ~200	230+230

Notes: 1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
416 (UC2)	220VAC	80A	COSØ=1	10:20	5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

ORDERING INFORMATION

	HFE23	-A /	12	-3SD	T	2	-R	(XXX)
Type								
Version	A: Type A contact terminal							
Coil voltage	6, 9, 12, 24, 48VDC							
Contact form ¹⁾	3SD: 3 Form B (Double-contact) 3SH: 3 Form A (Double-contact)							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ^{2) 3)}	XXX: Customer special requirement							

Notes: 1) 3H, 3SH means that relay is on the "reset" status when delivery; 3D, 3SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 2 UC ratings:

UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5KA/10ms, carrying test 4.5KA/10ms;

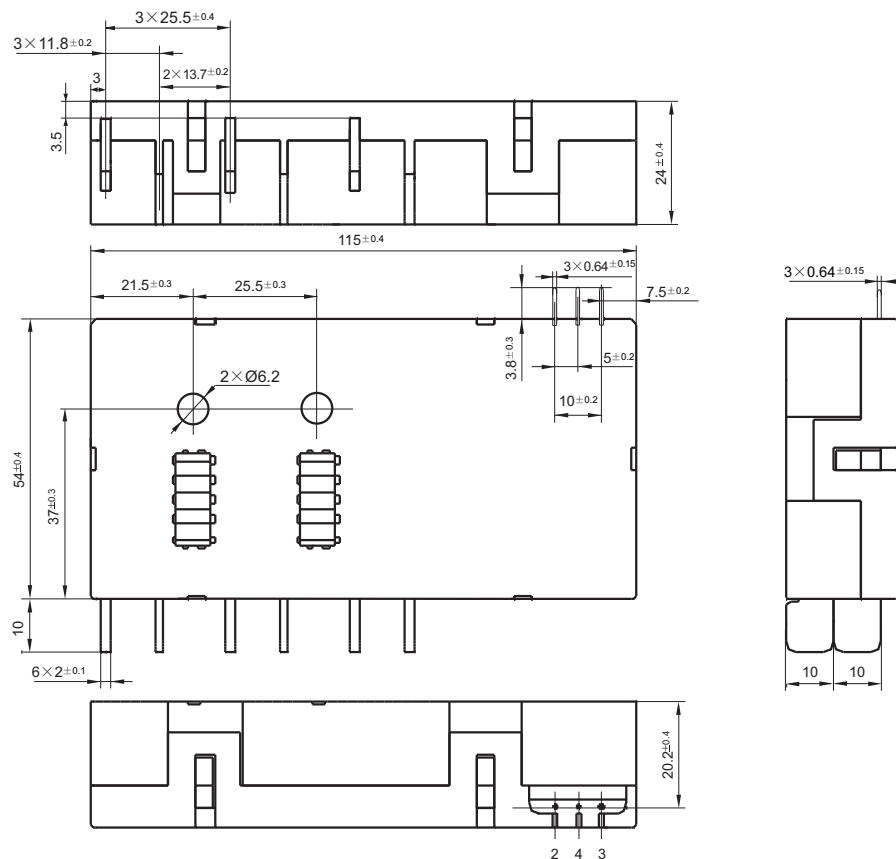
UC3: meet the UC3 requirements on IEC62055-31: Making test:3KA/10ms, carrying test 6KA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

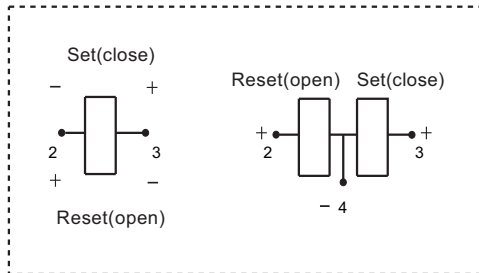
Outline Dimensions



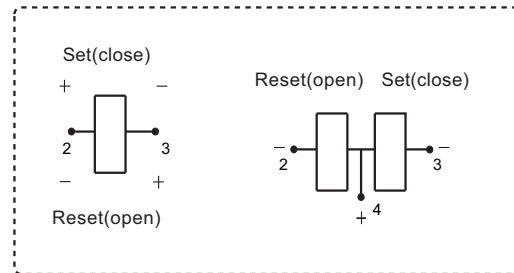
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.1\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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Features

- 120A 3-phases latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC2,UC3
- Contact resistance $\leq 0.35\text{m}\Omega$

CONTACT DATA

Contact arrangement	3U, 3V
Contact resistance ¹⁾	Typ.:0.35m Ω max. (at 100A) ²⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	120A 230VAC
Max. switching voltage	265VAC
Max. switching current	120A
Max. switching power	27600VA
Mechanical endurance	1 x 10 ⁵ OPS

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000M Ω (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	2000VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		30ms max.
Reset time (at nomi. volt.)		30ms 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 85°C
Termination	Coil termination	PCB & QC
	Load termination	QC
Unit weight		Approx.300g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 5W Double coils latching: Approx. 10W
------------	--

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	100 ~200	7
9	≤ 7.2	100 ~200	16
12	≤ 9.6	100 ~200	29
24	≤ 19.2	100 ~200	115
48	≤ 38.4	100 ~200	460

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC ¹⁾ max.	Pulse Duration (Recommended) ms.	Coil Resistance x (1 \pm 10%) Ω
6	≤ 4.8	100 ~200	3.5+3.5
9	≤ 7.2	100 ~200	8+8
12	≤ 9.6	100 ~200	14.5+14.5
24	≤ 19.2	100 ~200	57.5+57.5
48	≤ 38.4	100 ~200	230+230

Notes: 1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
416 (UC2)	240VAC	80A	COS ϕ =1	10:20	5000	Total:10000
			COS ϕ =0.5		5000	
417 (UC3)	240VAC	100A	COS ϕ =1		5000	Total:10000
			COS ϕ =0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.

ORDERING INFORMATION

Type	HFE16	12	-3SD	T	2	-R	(XXX)
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	3SD: 3 Form B (Double-contact) 3SH: 3 Form A (Double-contact)						
Contact material	T: AgSnO ₂						
Sort	1: Single coil latching 2: Double coils latching						
Polarity	R: Negative polarity Nil: Positive polarity						
Special code ^{2) 3)}	XXX: Customer special requirement						

Notes: 1) 3SH means that relay is on the "reset" status when delivery; 3SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 2 UC ratings:

UC2: meet the UC2 requirements on IEC62055-31: Making test: 2.5KA/10ms, carrying test 4.5KA/10ms;

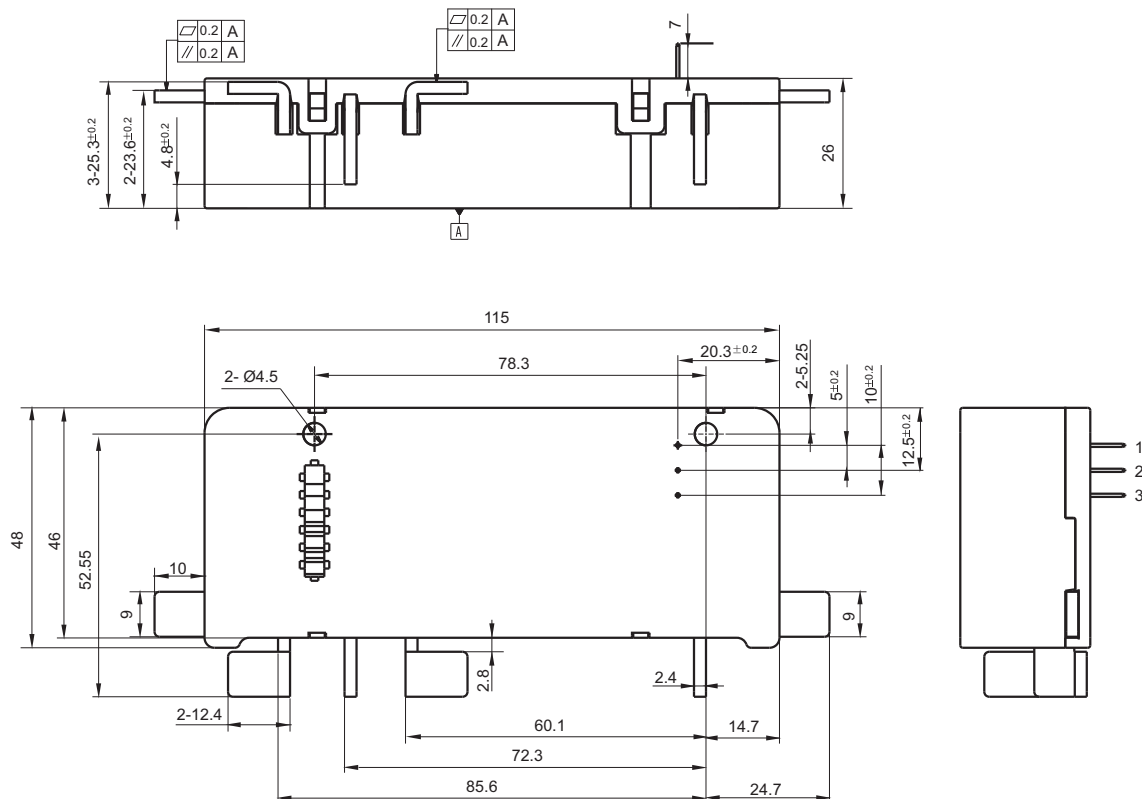
UC3: meet the UC3 requirements on IEC62055-31: Making test: 3KA/10ms, carrying test 6KA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

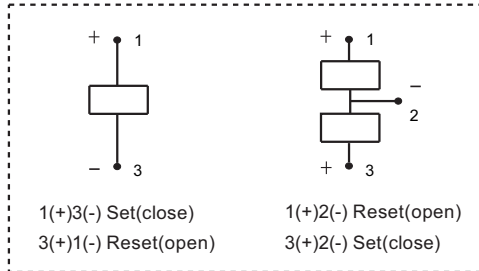
Outline Dimensions



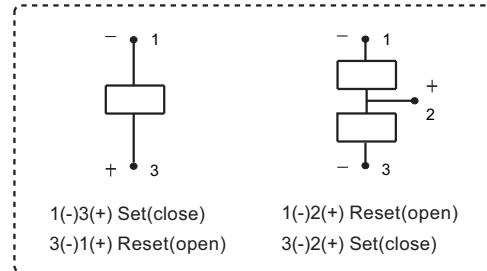
Remark: In case of no tolerance shown in outline dimension: outline dimension ≤ 1mm, tolerance should be ±0.1mm; outline dimension > 1mm and ≤ 5mm, tolerance should be ±0.2mm; outline dimension > 5mm, tolerance should be ±0.4mm.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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PRECISION SHUNT

HFR	A type	200 250 300 350 400 500 600 800 1000 1200 $\mu\Omega$	HFR	C type	200 250 300 350 400 500 600 800 1000 1200 $\mu\Omega$
HFR	B type	200 250 300 350 400 500 600 800 1000 1200 $\mu\Omega$			
	Typical structure			Typical structure	

Notes: The above is the typical structure of the precision shunt. For special request, please contact Hongfa. We can manufacture the special shunt according to customer's request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

CROSS REFERENCE GUIDE

HONGFA	TE	GRUNER	PANASONIC	OMRON
HFE60/60P			DSP	G6B
HFE7			DK	G6C
HFE163F-L/16			DW	
HFE46	RT		DJ	
HFE20	RT		DJ	
HFE27		708		
HFE15/15L		707/707L		
HFE10/10-L		704/704M		
HFE10-L		704L		
HFE19-90		704		
HFE12		721/722		
HFE21		721/722		
HFE28		741/744		
HFE37		741/744		
HFE25		740		
HFE23/16		733		

Notes: This table is just for reference.if you have any questions,please contact our local agent or send e-mail to marketing@hongfa.com.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

PACKING LIST

Type	Packing Method	Tube Size L x W x H cm	QTY/CTN PCS	Approx. N.W. kg	Approx. G.W. kg	Stacking Layers Limit n
HFE33	box	350 x 250 x 225	1100	7.7	9.1	5
HFE60	box	315 x 257 x 240	1000	4.0	5.7	5
HFE60P	box	315 x 257 x 240	1000	4.0	6.0	5
HFE7	box	370 x 260 x 250	1000	6.0	7.1	5
HFE163F-L	tube	485 x 170 x 190	1000	7.0	9.3	6
HFE163F-L16	tube	485 x 170 x 190	1000	7.0	9.3	6
HFE46	box	350 x 250 x 225	800	10.4	12	5
HFE20	box	350 x 250 x 225	800	10.4	12	5
HFE39	box	370 x 260 x 250	500	5.8	7.2	5
HFE15	plastic tray	375 x 285 x 290	630	14.5	16.5	5
HFE15L	plastic tray	375 x 285 x 290	630	14.5	16.5	5
HFE10	box	370 x 260 x 250	400	11.2	13.2	5
HFE10-L	plastic tray	365 x 330 x 290	420	12	14.1	5
HFE66/E66-100	plastic tray	365 x 330 x 360	200	6.6	8.6	4
HFE53	plastic tray	365 x 330 x 360	200	7.0	9.0	4
HFE52	plastic tray	365 x 330 x 290	56			5
HFE19-60	plastic tray	365 x 330 x 360	200	6.6	8.6	4
HFE19 (SH)	plastic tray	365 x 330 x 360	200	6.6	8.6	4
HFE19-90	plastic tray	365 x 330 x 360	200	6.6	8.6	4
HFE19-100	plastic tray	365 x 330 x 360	200	7.0	9.0	4
HFE50	plastic tray	365 x 330 x 360	200	7.0	9.0	4
HFE29	plastic tray	360 x 330 x 290	140	11.4	12.9	5
HFE12	plastic tray	355 x 295 x 230	60	5.0	6.3	5
HFE21	plastic tray	365 x 330 x 290	160	12.0	13.8	5
HFE31	plastic tray	365 x 330 x 290	60	11.1	13.1	5
HFE51	plastic tray	365 x 330 x 310	48			5
HFE37	plastic tray	375 x 285 x 290	36	6.95	8.5	5
HFE28	molded pulp tray	548 x 365 x 293	48	11.8	15	5

Notes:1)This above list is the typical packing specification. Specifications and dimensions in this catalog are subject to change without notice.



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PACKING LIST

Type	Packing Method	Tube Size L x W x H cm	QTY/CTN PCS	Approx. N.W. kg	Approx. G.W. kg	Stacking Layers Limit n
HFE25	molded pulp tray	545 x 365 x 435	36	14.1	19	3
HFE32	plastic tray	425 x 325 x 325	60			
HFE45	plastic tray	365 x 330 x 360	42	13.0	15.0	4
HFE23	plastic tray	365 x 330 x 310	28	8.3	10	5
HFE16	plastic tray	365 x 330 x 360	32			4

Notes:1)This above list is the typical packing specification. Specifications and dimensions in this catalog are subject to change without notice.

CAUTIONS FOR USING LATCHING RELAY

To better use the latching relay, besides knowing its features, there are some cautions for you to know to make sure the latching relay can work reliably.

1. The cautions when using the latching relays

1.1 Input

1.1.1 Please use the coil polarity speculated in the datasheet to energize the relay, otherwise the relay's set voltage will be enlarged and even failed to operate; If need to change the driving polarity, please choose our "-R" version for the reverse polarity; If there are special polarity requirement (different from our datasheet), please check with our technicals firstly.

1.1.2 Only energizing the relays with our recommended pulse width can we guarantee the relay's reliable performance.

1.1.3 Only energizing the relays with the rated voltage can we guarantee the relay's reliable performance.

1.1.4 When energize the coil with 1.5 times of rated voltage and recommended pulse width, the relay's reliable performance will not be affected much.

1.1.5 When use the capacitor to drive the coil, the recommended peak voltage is 1.5~2 times of the rated voltage, and the recommended pulse width shall not less than the relay's set time when the peak. Seen in Figure 1.

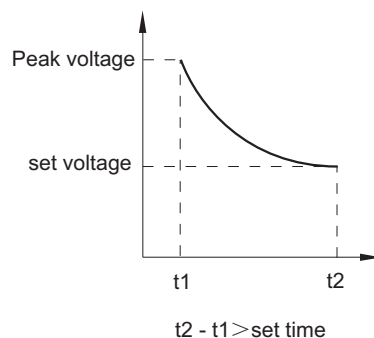


Figure 1

1.1.6 The continuous switch-on is forbidden for latching relay, please drive the relay by impulse width voltage.

1.1.7 Relay's contact status will be changed under the impact of external stress force during the transportation installation, therefore, please make a "reset" pulse before power on in your driving circuit to make sure the relay's contact status (set or reset) can resume to what you required, and avoid any disaster consequences voltage decreased to rate voltage.

1.2 Output

1.2.1 When choose the relay with QC termination, please do not use the tin-welding connecting method on the relay's load terminals, and please make sure the relay won't be affected by the heat created by your welding; We can also make the welding at customer's request.



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1.2.2 When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference. Seen in Figure 2.

Wave soldering temperature distribution chart

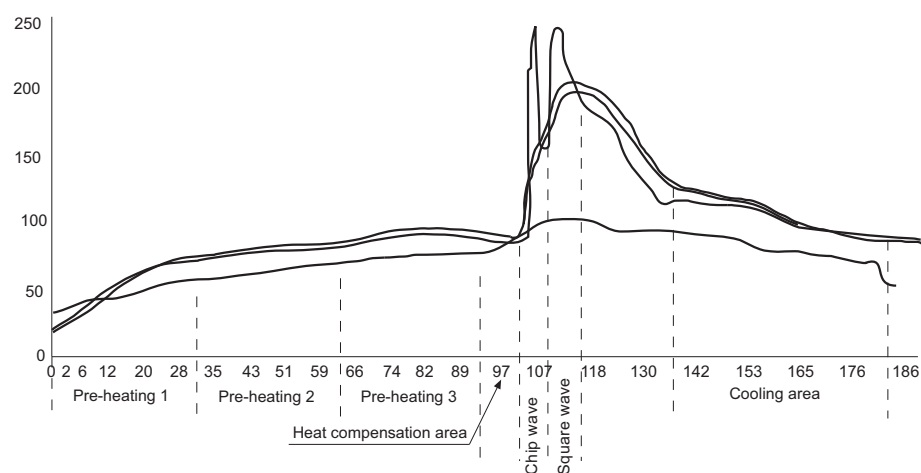


Figure 2

1.2.3 When choose the relay with hard connections, please avoid the external stress force on the load terminals during or after the installation.

1.2.4 When the relay will be connected with screw or bolts to the relay's load terminals, please make sure you the connection is fastened and prevent the relay from damages or other safety problems due the over big temperature rise.

1.2.5 The strength of sampling signal wires (from the coil, shunt or others) is limited, please do not pull or torque the wires during the installation.

2. Cautions for latching relays to be used in metering

2.1 Different Electric company or meter manufacturer's requirements to relays different a lot, to make sure the relay can work reliably at the real field environment, please provide us with the following necessary technical inputs which are must to be sure before defining the relays suitable for you. Seen in table 1.

Table 1

Item	Parameters	Must to be sure	Influence factors
Contact	Contact load		Rated current and voltage? DC or AC?Type (resistive or inductive)?
	Contact form		Normally open? Normally close? change over?
	Electrical endurance		Frequency? duty cycle? expected life cycles?
	Contact resistance		Value? test condition?
Coil	Rated voltage		Value? polarity? DC or AC?
	Coil resistance		Value? input coil power?
	Set/reset voltage		

Item	Parameters	Must to be sure	Influence factors
Performance	Dielectric strength		Value? position?
	Anti-vibration performance		Value? stability or strength?
	Anti-shock performance		Value? stability or strength?
Using enviroment	Ambient temperature		
	Humidity		
Outline and installation	Outline		Size? height?
	Installing method		Installing drawings? pins position Requirements?
	Shunt resistance		If shunts are needed, please let us konw.
Others	Short circutor or fault current		Current requirement? duration?
	Terminal temperature rise		Test position? requirements?

2.2 Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

3. Explanation to terminology

3.1 load terminal: The two ends of the relay carrying the loads, that is contacts' two terminals.

3.2 Hard connection: The mechanical connection of two rigid parts by welding or riveting.

3.3 Sampling signal wire: The wires used to transmit the inductive and controlling signals in the electric controlling circuit, usually they are 24AWG copper wire.

3.4 Others: The following picture shows our typical external connecting solutions. Seen in figure 3.

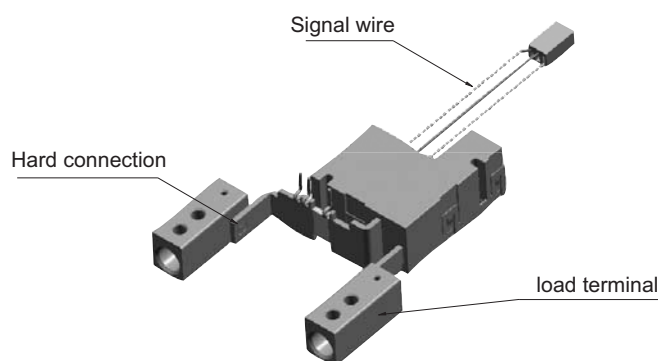


Figure 3



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