



HONGFA RELAY



HVDC Relay I



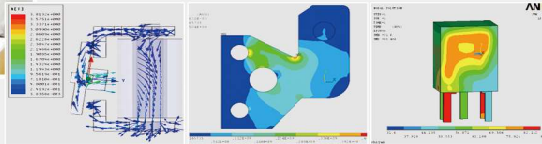
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RoHS&ELV compliant

ISO9001 IATF16949 ISO14001 OHSAS18001 IECQ QC080000 CERTIFIED

PROFESSIONAL AUTOMOTIVE RELAY & MODULE MANUFACTURER





COMPANY INTRODUCTION

HONGFA

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

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

HONGFA has a full set of quality assurance systems including ISO9001, ISO/TS16949, ISO14001, 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. The technology and the equipment of all the mould tooling, parts manufacturing and products assembly and the production environment are in the leading position in Chinese relays industry. HONGFA Testing Centre is the biggest relays testing and analyzing laboratory with the most advanced technology in China, which is approved by CNAS, approved by America UL as a CTDP lab, and approved by Germany VDE as a TDAP lab -For VDE's TDAP lab, there is only one in China and only six in the world. Hongfa is able to supply to the customers accurate, credible and authorized inspection data and test reports.

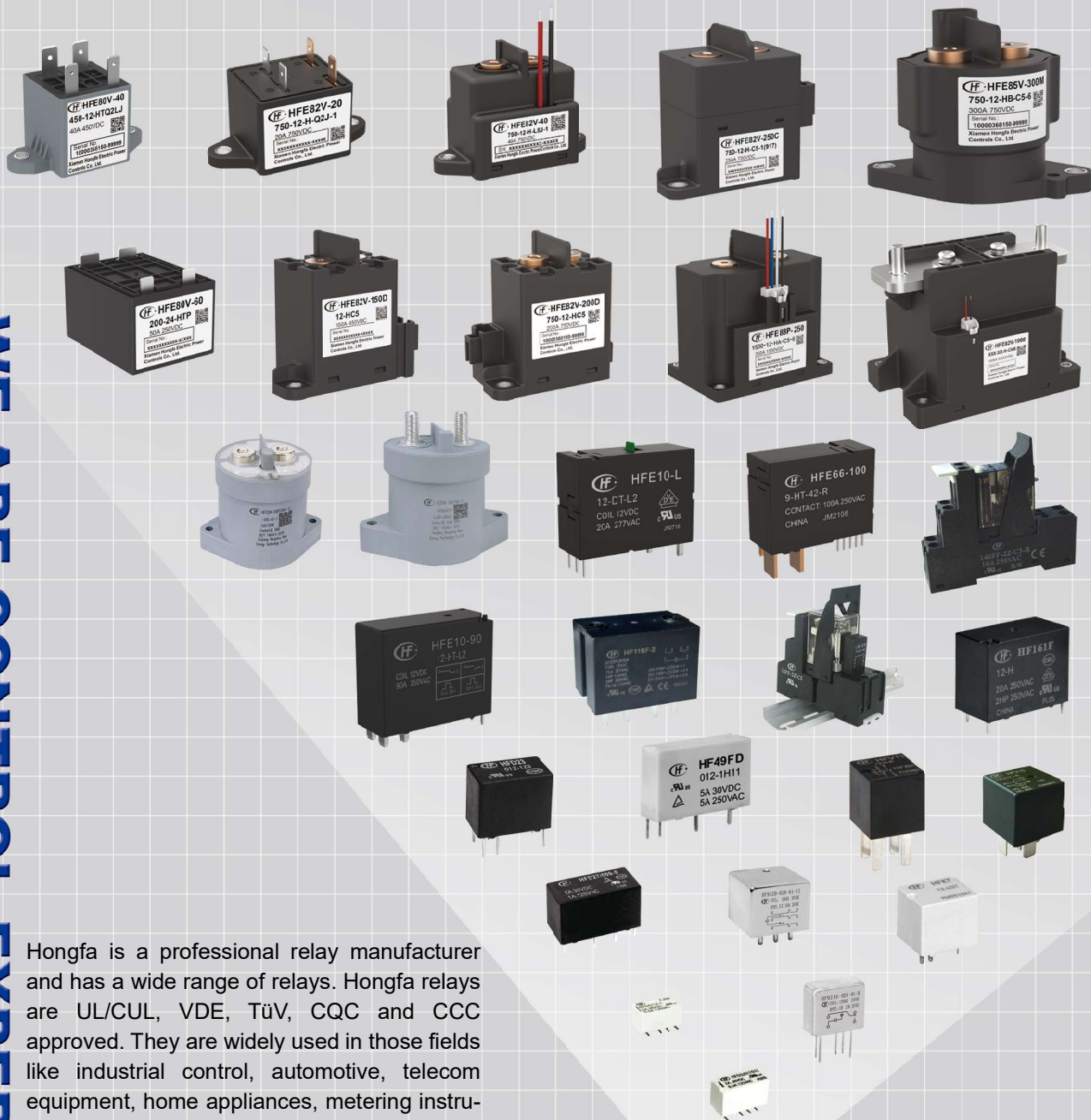
HONGFA has a wide range of relays, including Signal relays, Power relays, Automotive relays & modules, Latching relays, HVDC relays, Industrial relays, Safety relays. The company has the annual production capacity of 2.8 billion pieces of relays.

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.

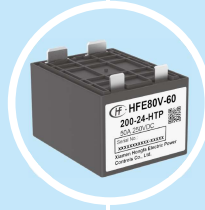


HONGFA PRODUCTS:



CONTENTS

Company introduction	Color page
Contents	1
Relay selection guide	2
Relay data sheets	4
Cross reference guide	178
Packing list	179
Precautions of DC relay	181



RELAY SELECTION GUIDE(Based on product model)

Direct current relay series

Load Terminal Structure	Optional Rated Voltage[V]	Relay Model	Contact Form	Page	Contact Rating	[A]
QC Female Male Other	≤200 450 750 1000 1500				0 100 200 300 400 500 600 700 800 900 1000	
Vehicle:						
		HFE82V-20	1A	68		
		HFE82V-40		68		
		HFE82V-60		69		
		HFE82V-60B		69		
		HFE82V-100D		69		
		HFE82V-150D		70		
		HFE82V-150F		70		
		HFE82V-200B		70		
		HFE82V-200D		71		
		HFE82V-200W		71		
		HFE82V-250		71		
		HFE82V-250C		72		
		HFE82V-300C		72		
		HFE82V-400M		72		
		HFE82V-600				
		HFE82V-1000				
		HFE85V-300M	1A			
PV and energy storage:						
		HFE80V-20B	1A			
		HFE80V-20C				
		HFE80V-20D				
		HFE80V-40				
		HFE80V-60				
		HFE80V-200				
		HFE82P-20	1A	75		
		HFE82P-60B		75		
		HFE82P-200B		76		
		HFE82P-250		76		
		HFE82P-250C		76		
		HFE85P-150		77		
		HFE85P-250		77		
		HFE85P-300				
		HFE88P-150				
		HFE88P-250				
		HFE88P-350				

Remarks:

- 1) In the "Load Terminal Structure", "Female" means the female screw, "Male" means male screw, "other" means please refer to the product specification of the model in the following page.
- 2) "Optional Rated Voltage" refers to the optional voltage of each model of product under standard configuration. If other rated voltage is required, special order is allowable. Please contact Hongfa for specific solutions.

If you have any questions about the selection, please contact Hongfa to get the most suitable configuration recommendations.

RELAY SELECTION GUIDE(Based on product model)

New Energy Vehicle Application					
	Main relay	Precharge relay	Fast charge relay	Normal change relay	Auxilliary relay
Passenger vehicle EV/PHEV	HFE82V-100D P32 HFE82V-150D P37 HFE82V-150F P42 HFE82V-200B P46 HFE82V-200W P57 HFE82V-250 P63 HFE82V-250C P68 HFE82V-300C P74 HFE82V-400M P84 HFE85V-300M P80	HFE82V-20 P17 HFE80V-20B P98 HFE80V-20C P102 HFE80V-20D P107	HFE82V-150D P37 HFE82V-200W P57 HFE82V-250 P63 HFE82V-250C P68 HFE82V-300C P74 HFE85V-300M P80 HFE82V-400M P84	HFE82V-40 P21 HFE80V-40 P111	HFE82V-40 P21 HFE80V-20B P98 HFE80V-20C P102 HFE80V-40 P111
Passenger vehicle HEV	HFE82V-60 P25 HFE82V-100D P32 HFE82V-150D P37	HFE80V-20B P98 HFE80V-20C P102 HFE80V-20D P107	—	—	HFE80V-20B P98 HFE80V-20C P102 HFE80V-40 P111
Bus	HFE82V-250 P63 HFE82V-250C P68 HFE82V-300C P74 HFE82V-600 P90	HFE82V-20 P17 HFE82V-40 P21	HFE82V-300C P74 HFE82V-400M P84 HFE82V-600 P90	HFE82V-150D P37	HFE82V-20 P17 HFE82V-40 P21 HFE82V-100D P32
Mild electric vehicle (Low speed EV)	HFE82V-60 P25 HFE82V-60B P28 HFE82V-150D P37 HFE82V-200B P46 HFE80V-200 P120	HFE80V-20B P98 HFE80V-20C P102 HFE80V-20D P107	HFE80V-200 P120	HFE80V-20B P98 HFE80V-20C P102 HFE80V-40 P111 HFE80V-60 P116	HFE80V-20B P98 HFE80V-20C P102 HFE80V-40 P111 HFE80V-60 P116
Logistics vehicle	HFE82V-150D P37 HFE82V-200B P46 HFE82V-250C P68	HFE80V-20B P98 HFE80V-20C P102 HFE80V-20D P107		HFE80V-20B P98 HFE80V-20C P102 HFE80V-40 P111	HFE80V-20B P98 HFE80V-20C P102 HFE80V-20D P107



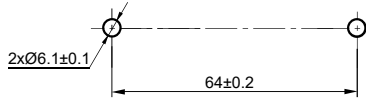
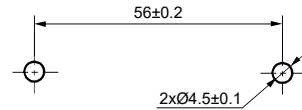
PV and Energy Storage Application					
Relay type	HFE82P-20 Page 126 HFE82P-60B Page 130 HFE82P-200B Page 134 HFE82P-250 Page 140 HFE82P-250C Page 145	:	HFE85P-150 Page 151 HFE85P-250 Page 155 HFE85P-300 Page 159	:	HFE88P-150 Page 163 HFE88P-250 Page 168 HFE88P-350 Page 173

Remarks: The above recommendations of partial model for typical applications are only for reference. In actual applications, the voltage, current, mounting and other factors shall be taken into consideration. Please contact with Hongfa for the most appropriate selection recommendation.

If you have any questions about the selection, please contact Hongfa to get the most suitable configuration recommendations.

SELECTION CHART




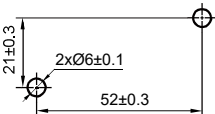
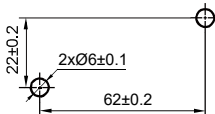
Direct current relay

Type		HFE82V-20			HFE82V-40	
Appearance						
Outline dimensions(mm)		78.0 x 39.8 x 46.1			67.0x32.6x47.0	
Contact arrangement		1 Form A			1 Form A	
Contact resistance		≤4.5mΩ(at 20A)			≤3mΩ(at 40A)	
Pick-up voltage(VDC)		≤75% Un			≤75% Un	
Contact rating		20A			40A	
Load voltage		450V	750V	1000V	450V	750V
Max. breaking current		200A (1000VDC) 1op	200A (1000VDC)1op	200A (1000VDC)1op	400A (300VDC) 1op	400A (300VDC)1op
Max. switching voltage		1000VDC	1000VDC	1000VDC	1000VDC	1000VDC
Max. switching power		18kW	30kW	30kW	36kW	60kW
Electrical endurance		Switching: 7.5 x 10 ⁴ ops (450VDC,20A)	Switching: 5 x 10 ⁴ ops (750VDC,20A)	Switching: 3 x 10 ⁴ ops (1000VDC,20A)	Switching:2×10 ⁴ ops (450VDC,40A) Making:7.5×10 ⁴ ops (450VDC,40A)	Switching:1×10 ³ ops (750VDC,40A) Making:7.5×10 ⁴ ops (750VDC,40A)
Dielectric strength	Between coil & contacts	4000VAC 1min			4000VAC 1min	
	Between open contacts	3000VAC 1min			3000VAC 1min	
Mechanical endurance		2 x 10 ⁵ ops			2 x 10 ⁵ ops	
Coil	Rated Voltage(VDC)	12, 24, 48			12, 24	
	Coil power	2.6W			3W	
Coil terminal structure		QC			Lead wire	
Load terminal structure		QC			Screw terminal female	
Unit weight		Approx.140g			Approx.160g	
Vibration resistance		10Hz ~ 500Hz 49m/s ²			10Hz ~ 500Hz 49m/s ²	
Humidity		5% ~ 85% RH			5% ~ 85% RH	
Ambient temperature		-40°C ~ 85°C			-40°C ~ 85°C	
Layout (Bottom View)						
Approved Standards						
Cross Reference		PANASONIC:AEV520** OMRON:G9EB/G9EJ			PANASONIC:AEVG160** LS:GER040	
Page		17			21	

Note:1) Seal chamber≥IP67;Relay body≥P40;

2) Working altitude≥4000m;




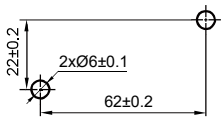
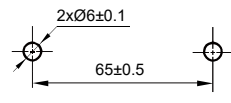
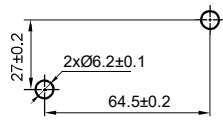
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART			Direct current relay	
Type	HFE82V-60	HFE82V-60B	HFE82V-100D	
Appearance				
Outline dimensions(mm)	55.0x39.8x37.0	64.0x33.0x52.8	76.0x36.0x72.0	
Contact arrangement	1 Form A	1 Form A	1 Form A	
Contact resistance	$\leq 1\text{m}\Omega$ (at 60A)	$\leq 1\text{m}\Omega$ (at 60A)	$\leq 0.5\text{m}\Omega$ (at 100A)	
Pick-up voltage(VDC)	$\leq 75\%$ Un	$\leq 75\%$ Un	$\leq 75\%$ Un	
Contact rating	60A	60A	100A	
Load voltage	450V/750V	450V/750V	450V	750V
Max. breaking current	600A(450VDC)1op	600A(450VDC)1op	1000A(300VDC)1op	1000A(300VDC)1op
Max. switching voltage	1000VDC	1000VDC	750VDC	
Max. switching power	54kW	54kW	90kW	150kW
Electrical endurance	Switching: 7.5×10^4 ops (20VDC, 60A) Breaking: 100ops (450VDC, 200A)	Making: 7.5×10^4 ops (450VDC, 60A) Making: 5×10^4 ops (750VDC, 60A)	Switching: 1×10^3 ops (450VDC, 100A) Making: 2.5×10^4 ops (22.5VDC, $\tau = 1\text{ms}$, Inrush 400A, Steady 100A)	Switching: 100ops (800VDC, 100A) Making: 1×10^4 ops (37.5VDC, $\tau = 1\text{ms}$, Inrush 400A, Steady 100A)
Dielectric strength	Between coil & contacts	4000VAC 1min	3600VAC 1min	4000VAC 1min
	Between open contacts	3000VAC 1min	3000VAC 1min	3000VAC 1min
Mechanical endurance	2×10^5 ops	2×10^5 ops	2×10^5 ops	
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	4.5W	5.2W	5.5W
Coil terminal structure	QC	Lead wire	Connector	
Load terminal structure	QC	Screw terminal female	Screw terminal female	
Unit weight	Approx. 175g	Approx. 170g	Approx. 260g	
Vibration resistance	10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²	
Humidity	5% ~ 85% RH	5% ~ 85% RH	5% ~ 85% RH	
Ambient temperature	-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C	
Layout (Bottom View)	See "Outline dimensions"			
Approved Standards	UL:E133481 TüV:B0532860044	UL:E133481	PANASONIC:AEVS160**M15 LS:GER100	
Cross Reference		PANASONIC:AEVG160**		
Page	25	28	32	

Note: 1) Seal chamber \geq IP67; Relay body \geq P40;

2) Working altitude \geq 4000m;




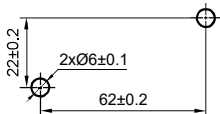
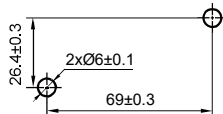
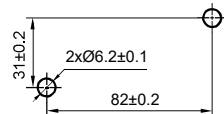
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SELECTION CHART			Direct current relay	
Type	HFE82V-150D		HFE82V-150F	HFE82V-200B
Appearance				
Outline dimensions(mm)	76.0x36.0x72.0		77.0x37.7x71.3	81.0x39.0x70.0(HC5) 81.7x39.5x69.6(HC5Y)
Contact arrangement	1 Form A		1 Form A	1 Form A
Contact resistance	$\leq 0.5\text{m}\Omega$ (at 150A)		$\leq 0.5\text{m}\Omega$ (at 150A)	$\leq 0.5\text{m}\Omega$ (at 200A)
Pick-up voltage(VDC)	$\leq 75\% U_n$		$\leq 75\% U_n$	$\leq 75\% U_n$
Contact rating	150A		150A	200A
Load voltage	450V	750V	-	-
Max. breaking current	1200A(300VDC)1op	1200A(300VDC)1op	1300A(400VDC)1op	2000A(450VDC)1op
Max. switching voltage	750VDC		750VDC	750VDC
Max. switching power	135kW	225kW	150kW	180kW
Electrical endurance	Switching: 1×10^3 ops (450VDC, 150A) Making: 2.5×10^4 ops (22.5VDC, $\tau = 1\text{ms}$, Inrush400A, Steady150A)	Switching: 100ops (750VDC, 150A) Making: 1×10^4 ops (37.5VDC, $\tau = 1\text{ms}$, Inrush400A, Steady150A)	Breaking: 5×10^4 ops (475VDC, 20A) Making: 7×10^4 ops (20VDC, 100A)	Switching: 1×10^3 ops (450VDC, 200A) Switching: 500ops (750VDC, 200A) Making: 2×10^4 ops (37.5VDC, $\tau = 1\text{ms}$, Inrush400A, Steady200A)
Dielectric strength	Between coil & contacts	4000VAC 1min	4000VAC 1min	4000VAC 1min
	Between open contacts	3000VAC 1min	3000VAC 1min	3000VAC 1min
Mechanical endurance	2×10^5 ops		2×10^5 ops	2×10^5 ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	5.5W	6W	6W
Coil terminal structure	Connector		QC	Connector
Load terminal structure	Screw terminal female		Screw terminal female	Screw terminal female
Unit weight	Approx.260g		Approx.285g	Approx.330g
Vibration resistance	10Hz ~ 500Hz 49m/s ²		10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²
Humidity	5% ~ 85% RH		5% ~ 85% RH	5% ~ 85% RH
Ambient temperature	-40°C ~ 85°C		-40°C ~ 85°C	-40°C ~ 85°C
Layout (Bottom View)				
Approved Standards				UL:E133481
Cross Reference	PANASONIC:AEVS160**M16 TYCO:EV500		PANASONIC:AEVH900122 M03	PANASONIC:AEVF140** LS:GER200
Page	37		42	46

Note:1) Seal chamber \geq IP67;Relay body \geq P40;

2) Working altitude \geq 4000m;




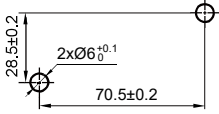
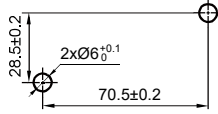
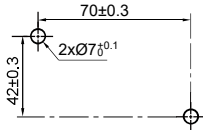
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SELECTION CHART			Direct current relay	
Type	HFE82V-200D		HFE82V-200W	HFE82V-250
Appearance				
Outline dimensions(mm)	78.7x36.0x72.0		55.0x43.0x65.8	95.0x45.0x85.0(HL5) 97.0x45.5x84.7(HL5Y)
Contact arrangement	1 Form A		1 Form A	1 Form A
Contact resistance	$\leq 0.5\text{m}\Omega$ (at 200A)		Main contact $\leq 0.5\text{m}\Omega$ (at 200A) auxiliary contact $\leq 100\text{m}\Omega$ (at 0.5A)	$\leq 0.2\text{m}\Omega$ (at 250A)
Pick-up voltage(VDC)	$\leq 75\% U_n$		$\leq 75\% U_n$	$\leq 75\% U_n$
Contact rating	200A		200A	250A
Load voltage	450V	750V	-	-
Max. breaking current	1200A(300VDC)1op	1200A(300VDC)1op	1500A(450VDC)1op	2000A(450VDC)1op
Max. switching voltage	750VDC		750VDC	750VDC
Max. switching power	180kW	300kW	180kW	225kW
Electrical endurance	Switching:800ops (450VDC,200A) Making:1.5x10 ⁴ ops (22.5VDC, $\tau = 1\text{ms}$, Inrush 400A, Steady 200A)	Switching:100ops (750VDC,200A)	Making:1x10 ⁵ ops(20 VDC C=1500 μF ,Inrush150A) Breaking:5x10 ⁴ ops (450 VDC,15A) Breaking:500ops (450 VDC,200A)	Making:2.5x10 ⁴ ops (22.5 VDC,C=1100 μF , Inrush 400A,Steady 250A) Making:1op(300 VDC, C=1100 μF ,Inrush1350A)
Dielectric strength	Between coil & contacts	4000VAC 1min	4000VAC 1min	4000VAC 1min
	Between open contacts	3000VAC 1min	3000VAC 1min	3000VAC 1min
Mechanical endurance	2 x 10 ⁵ ops		2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	5.5W	6W	6W
Coil terminal structure	Connector		Connector	Lead wire
Load terminal structure	Screw terminal female		Screw terminal female	Screw terminal female
Unit weight	Approx.260g		Approx.400g	Approx.580g
Vibration resistance	10Hz ~ 500Hz 49m/s ²		10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²
Humidity	5% ~ 85% RH		5% ~ 85% RH	5% ~ 85% RH
Ambient temperature	-40°C ~ 85°C		-40°C ~ 85°C	-40°C ~ 85°C
Layout (Bottom View)				
Approved Standards				UL:E133481
Cross Reference				PANASONIC:AEV170 M04
Page	52		57	63

Note:1) Seal chamber \geq IP67;Relay body \geq P40;

2) Working altitude \geq 4000m;




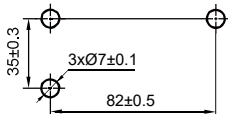
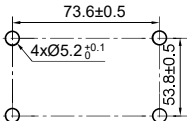
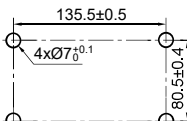
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART					Direct current relay	
Type	HFE82V-250C		HFE82V-300C		HFE85V-300M	
Appearance						
Outline dimensions(mm)	88.3x42.5x74.5 85.1x42.5x74.0		88.3x42.5x74.5 85.1x42.5x74.5		84.5 x 62.5x73.0	
Contact arrangement	1 Form A		1 Form A		1 Form A	
Contact resistance	$\leq 0.5\text{m}\Omega$ (at 250A)		$\leq 0.5\text{m}\Omega$ (at 300A)		$\leq 0.25\text{m}\Omega$ (at 200A)	
Pick-up voltage(VDC)	$\leq 75\%$ Un		$\leq 75\%$ Un		$\leq 75\%$ Un	
Contact rating	250A		300A		300A	
Load voltage	450V	750V	450V	750V	-	
Max. breaking current	2000A (450VDC)1op	2000A (450VDC)1op	2000A (750VDC)1op	2000A (750VDC)1op	2000A(450VDC)1op	
Max. switching voltage	1000VDC	1000VDC	1000VDC		1000VDC	
Max. switching power	250kW	250kW	300kW	300kW	450kW	
Electrical endurance	Making:7.5x10 ⁴ ops (20VDC,Steady140A) Breaking:1000ops (450VDC,250A)	Making:7.5x10 ⁴ ops (20VDC,Steady140A) Breaking:200ops (750VDC,250A)	Making:7.5x10 ⁴ ops (Steady140A,20VDC) Breaking:1000ops (450VDC,300A)	Making:7.5x10 ⁴ ops (Steady140A,20VDC) Breaking:500ops (750VDC,300A)	Breaking:100ops (1000VDC,300A) Breaking:500ops (800VDC,300A) Breaking:1000ops (450VDC,300A)	
Dielectric strength	Between coil & contacts	2600VAC 1min	2600VAC 1min		3000VAC 1min	
	Between open contacts	2600VAC 1min	2600VAC 1min		3000VAC 1min	
Mechanical endurance	2 x 10 ⁵ ops		2 x 10 ⁵ ops		2 x 10 ⁵ ops	
Coil	Rated Voltage(VDC)	12, 24	12, 24		12, 24	
	Coil power	6W	6W		Driving Power:60W Holding Power:4.3W	
Coil terminal structure	Connector,QC		Connector, QC		Connector	
Load terminal structure	Screw terminal female		Screw terminal female		Screw terminal female	
Unit weight	Approx.360g		Approx.370g		Approx.430g	
Vibration resistance	10Hz ~ 500Hz 49m/s ²		10Hz ~ 500Hz 49m/s ²		10Hz ~ 500Hz 49m/s ²	
Humidity	5% ~ 85% RH		5% ~ 85% RH		5% ~ 85% RH	
Ambient temperature	-40°C ~ 85°C		-40°C ~ 85°C		-40°C ~ 85°C	
Layout (Bottom View)						
Approved Standards	UL:E133481					
Cross Reference	PANASONIC:AEVA1251 M02 LS:GER250		PANASONIC:AEVA1251 M03			
Page	68		74		80	

Note:1) Seal chamber \geq IP67;Relay body \geq P40;

2) Working altitude \geq 4000m;




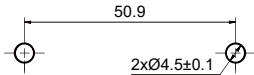
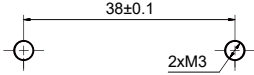
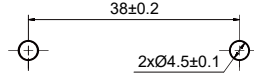
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART		Direct current relay		
Type		HFE82V-400M	HFE82V-600	HFE82V-1000
Appearance				
Outline dimensions(mm)		95.8 x 49.0 x 93	146.0x66.6x132.8	165.9x104.6x132.8
Contact arrangement		1 Form A	1 Form A	1 Form A
Contact resistance		$\leq 0.25 \text{ m}\Omega$ Typ.:0.15 mΩ(at 400 A)	$\leq 0.15 \text{ m}\Omega$ (at 600A)	$\leq 0.2 \text{ m}\Omega$ (at 1000A)
Pick-up voltage(VDC)		$\leq 75\% U_n$	$\leq 75\% U_n$	$\leq 75\% U_n$
Contact rating		400A	600A	1000A
Load voltage		450V/750V	450V/750V	1000V/1200V
Max. breaking current		2000A(450VDC)1op	2500A(800VDC)1op	2000A(1000VDC)1op
Max. switching voltage		800VDC	1000VDC	1500VDC
Max. switching power		360kW	600kW	1500kW
Electrical endurance		Making:7.5×10 ⁴ ops (22.5VDC 140A C=110μF) Breaking:7.5×10 ⁴ ops(450VDC,5A) Breaking:2.5×10 ⁴ ops(450VDC,10A) Breaking:100ops(800VDC,400A)	Making:5×10 ⁴ ops (750VDC 120A,0.6s on:5.4s off) Switching:1×10 ⁵ ops(800VDC,10A) Switching:1×10 ⁴ ops(800VDC,100A) Switching:100ops(1000VDC,600A)	Making:2×10 ⁴ ops(1000VDC,60A) Breaking:1ops(1000VDC,2000A) Breaking:50ops(1000VDC,1000A)
Dielectric strength	Between coil & contacts	3000VAC 1min	4000VAC 1min	5000VAC 1min
	Between open contacts	3000VAC 1min	3000VAC 1min	5000VAC 1min
Mechanical endurance		2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	6W	Switch on:50W(time:0.2s)Holding:10W	Switch on:50W(time:0.2s)Holding:10W
Coil terminal structure		Connector	Lead wire	Connector
Load terminal structure		Screw terminal female	Screw terminal female and copper bus bar terminal	Screw terminal female and copper bus bar terminal
Unit weight		Approx.740g	Approx.1800g	Approx.3500g
Vibration resistance		10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²	10Hz ~ 55Hz 49m/s ²
Humidity		5% ~ 85% RH	5% ~ 85% RH	5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Layout (Bottom View)				
Approved Standards				
Cross Reference			TYCO:TE600	
Page		84	90	94

Note:1) Seal chamber \geq IP67;Relay body \geq P40;

2) Working altitude \geq 4000m;




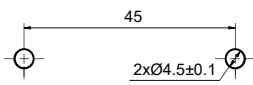
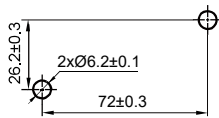
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART		Direct current relay		
Type		HFE80V-20B	HFE80V-20C	HFE80V-20D
Appearance				
Outline dimensions(mm)		40.0x30.0x31.6	30.1x30.0x29.2	29.0x25.0x28.9
Contact arrangement		1 Form A	1 Form A	1 Form A
Contact resistance		≤5mΩ(at 20A)	≤5mΩ(at 20A)	≤5mΩ(at 20A)
Pick-up voltage(VDC)		≤75% Un	≤75% Un	≤75% Un
Contact rating		20A	20A	20A
Load voltage		750V	-	-
Max. breaking current		30A(450VDC)5ops	30A (450VDC)5ops	20A (450VDC)5ops
Max. switching voltage		450VDC	750VDC	750VDC
Max. switching power		18kW	18kW	18kW
Electrical endurance		Making:7.5x10 ⁴ ops(450VDC,20A) Switching:3x10 ³ ops(450VDC,20A)	Swithing:3000ops(450VDC,20A)	Making:7.5x10 ⁴ ops(450VDC,20A) Switching:1000 ops(450VDC,15A)
Dielectric strength	Between coil & contacts	3000VAC 1min	3000VAC 1min	3000VAC 1min
	Between open contacts	2500VAC 1min	2000VAC 1min	2500VAC 1min
Mechanical endurance		2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24,48	12
	Coil power	3W	3W	1.8W
Coil terminal structure		QC	QC,PCB	QC
Load terminal structure		QC	QC,PCB	QC
Unit weight		Approx.59g	Approx.50g	Approx.45g
Vibration resistance		10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH	5% ~ 85% RH	5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Layout (Bottom View)				
Approved Standards			UL:E500911	
Cross Reference		PANASONIC:AEC510**	LS:GER010	PANASONIC:AECN110** TYCO:mini K
Page		98	102	107

Note:1) Seal chamber≥IP67;Relay body≥P40;

2) Working altitude≥4000m;




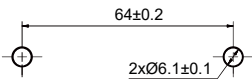
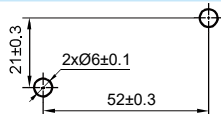
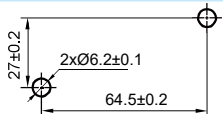
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART		Direct current relay		
Type		HFE80V-40	HFE80V-60	HFE80V-200
Appearance				
Outline dimensions(mm)		30.1x30.0x29.2	55.1 x 38.9 x 42.6	88.0 x 47.4 x 88.0 81.0 x 47.8 x 87.4
Contact arrangement		1 Form A	1 Form A	1 Form A
Contact resistance		≤5mΩ(at 20A)	≤1.5mΩ(at 20A)	≤1.0mΩ(at 20A)
Pick-up voltage(VDC)		≤75% Un	≤75% Un	≤75% Un
Contact rating		40A	60A	200A
Load voltage		-	-	-
Max. breaking current		50A (450VDC)1op	100A	400A
Max. switching voltage		750VDC	200VDC	250VDC
Max. switching power		27kW	32kW	80kW
Electrical endurance		Switching:3000ops (150VDC,40A) Switching:6000ops (450VDC,20A) Switching:1000ops (450VDC,40A)	Switching:1 x 10 ⁵ ops (12VDC,60A) Switching:7.5 x 10 ⁴ ops (150VDC,10A)	Switching:1 x 10 ⁴ ops(150VDC,40A) Switching:3,000ops(150VDC,200A)
Dielectric strength	Between coil & contacts	3000VAC 1min	3000VAC 1min	4000VAC 1min
	Between open contacts	2000VAC 1min	2000VAC 1min	3000VAC 1min
Mechanical endurance		2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24, 48	12, 24	12, 24
	Coil power	3W	3W	6W
Coil terminal structure		QC,PCB	QC,PCB	Connector
Load terminal structure		QC,PCB	PCB	Screw terminal female
Unit weight		Approx.51g	Approx.200g	Approx.370g
Vibration resistance		10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²	10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH	5% ~ 85% RH	5% ~ 85% RH
Ambient temperature		-40℃ ~ 85℃	-40℃ ~ 85℃	-40℃ ~ 85℃
Layout (Bottom View)			See "outline dimensions"	
Approved Standards		UL:E133481	TüV: B0532860033	UL:E133481
Cross Reference		TYCO:mini K LS:GER010		
Page		111	116	120

Note:1) Seal chamber≥IP67;Relay body≥P40;

2) Working altitude≥4000m;




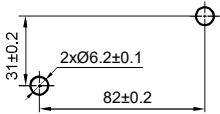
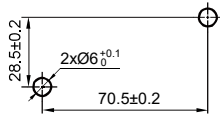
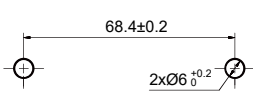
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART		Direct current relay		
Type		HFE82P-20	HFE82P-60B	HFE82P-200B
Appearance				
Outline dimensions(mm)		78.0x 39.8 x 46.1	64.0x33.0x52.8	81.0x39.0x70.0(HC5) 81.7x39.5x69.6(HC5Y)
Contact arrangement		1 From A	1 From A	1 From A
Contact resistance		≤4.5mΩ(at 20A)	≤1mΩ(at 60A)	≤0.5mΩ(at 200A)
Pick-up voltage(VDC)		≤80% Un	≤80% Un	≤80% Un
Contact rating		20A	60A	200A
Load voltage		1000V 1500V	-	-
Max. breaking current		200A (1000VDC)1op	600A(450VDC)1op	2000A(450VDC)1op
Max. switching voltage		1000VDC 1500VDC	1000VDC	750VDC
Max. switching power		20kW 30kW	54kW	180kW
Electrical endurance		Switching: 1 x 10 ⁴ ops (1500VDC, 15A) Switching: 1 x 10 ⁴ ops (1000VDC, 15A) making: 1.5 x 10 ⁴ ops (1500VDC, 40A)	Switching: 6000ops (600VDC, 30A)	Switching: 6000ops (500VDC, 60A) Breaking: 500ops (500VDC, 250A)
Dielectric strength	Between coil & contacts	4000VAC 1min	3600VAC 1min	4000VAC 1min
	Between open main contacts	4000VAC 1min	3000VAC 1min	3000VAC 1min
	Between contacts & auxiliary contacts			
Mechanical endurance		2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24, 48	12, 24	12, 24
	Coil power	2.6W	5.2W	6W
Coil terminal structure		QC	Lead wire	Connector
Load terminal structure		QC	Screw terminal female	Screw terminal female
Unit weight		Approx. 160g	Approx. 162g	Approx. 330g
Vibration resistance		10Hz ~ 55Hz 1.5mm 49m/s ²	10Hz~55Hz 1.5mm DA	10Hz~55Hz 1.5mm DA
Humidity		5% ~ 85% RH	5% ~ 85% RH	5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Layout (Bottom View)				
Approved Standards		UL: E133481	UL: E133481	UL: E133481
Cross Reference			PANASONIC:AEVG160**	PANASONIC:AEVF140** LS:GER200
Page		126	130	134

Note: 1) Seal chamber ≥ IP67; Relay body ≥ P40;

2) Working altitude ≥ 4000m;




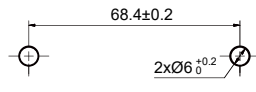
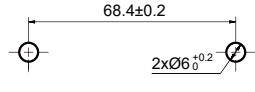
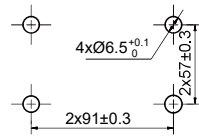
3) These specifications are for reference only and are subject to change without notice, If there are any questions, please contact Hongfa for technical service.

SELECTION CHART		Direct current relay		
Type		HFE82P-250	HFE82P-250C	HFE85P-150
Appearance				
Outline dimensions(mm)		95.0x45.0x85.0(HL5) 97.0x45.5x84.7(HL5Y)	88.3x42.5x74.5 85.1x42.5x74.0	80.4x62.3x72.8
Contact arrangement		1 Form A	1 Form A	1 Form A
Contact resistance		$\leq 0.2\text{m}\Omega$ (at 250A)	$\leq 0.5\text{m}\Omega$ (at 250A)	$\leq 0.3\text{m}\Omega$ (at 150A)
Pick-up voltage(VDC)		$\leq 80\% U_n$	$\leq 80\% U_n$	$\leq 80\% U_n$
Contact rating		250A	250A	150A
Load voltage		-	450V	-
Max. breaking current		2000A(450VDC)1op	1500A(750VDC)1op	1000A(320VDC)1op
Max. switching voltage		750VDC	1000VDC	1000VDC
Max. switching power		225kW	250kW	300kW
Electrical endurance		Swithing:6000ops (750VDC, 60A)	Swithing:6000ops (1000VDC,60A) Swithing:6000ops (400VDC,150A)	Breaking:6000ops (1500VDC,60A)
Dielectric strength	Between coil & contacts	4000VAC 1min	2600VAC 1min	3300VAC 1min
	Between open main contacts	3000VAC 1min	2600VAC 1min	3300VAC 1min
	Between contacts & auxiliary contacts			3300VAC 1min
Mechanical endurance		2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	6W	6W	Switch on:26W,Holding:3W
Coil terminal structure		Lead wire	Connector,QC	Lead wire
Load terminal structure		Screw terminal female	Screw terminal female	Screw terminal female
Unit weight		Approx.580g	Approx.360g	Approx.400g
Vibration resistance		10Hz~55Hz 1.5mm DA	10Hz~55Hz 1.5mm DA	10Hz~55Hz 1.5mm DA
Humidity		5% ~ 85% RH	5% ~ 85% RH	5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Layout (Bottom View)				
Approved Standards		UL: E133481	UL: E133481	UL: E133481
Cross Reference		PANASONIC:AEV170 M04	PANASONIC:AEVA1251 M02 LS:GER250	
Page		140	145	151

Note:1) Seal chamber \geq IP67;Relay body \geq P40;

2) Working altitude \geq 4000m;



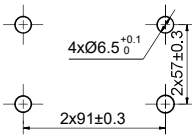
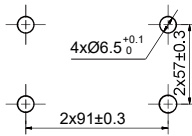
3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART		Direct current relay		
Type		HFE85P-250	HFE85P-300	HFE88P-150
Appearance				
Outline dimensions(mm)		80.4x62.3x72.8	80.4x62.3x72.8	104.0x70.0x107.9
Contact arrangement		1 Form A	1 Form A	1 Form A
Contact resistance		$\leq 0.3\text{m}\Omega$ (at 200A)	$\leq 0.3\text{m}\Omega$ (at 200A)	$\leq 0.3\text{m}\Omega$ (at 150A)
Pick-up voltage(VDC)		$\leq 80\% U_n$	$\leq 80\% U_n$	$\leq 80\% U_n$
Contact rating		250A	300A	150A
Load voltage		-	-	-
Max. breaking current		2000A(320VDC)1op	2000A(320VDC)1op	1000A(1500VDC)1op
Max. switching voltage		1000VDC	1000VDC	1500VDC
Max. switching power		400kW	450kW	450kW
Electrical endurance		Breaking:6000ops (1500VDC, 60A) Breaking:500ops (1000VDC, 250A)	Breaking:1000ops(450VDC,300A) Breaking:50ops(450VDC,-300A) Breaking:100ops(1000V,300A)	Breaking:2x10 ³ ops (1500VDC,100A) Breaking:1x10 ³ ops (1500VDC,150A)
Dielectric strength	Between coil & contacts	3300VAC 1min	3300VAC 1min	4000VAC 1min
	Between open main contacts	3300VAC 1min	3300VAC 1min	4000VAC 1min
	Between contacts & auxiliary contacts	3300VAC 1min	3300VAC 1min	4000VAC 1min
Mechanical endurance		2 x 10 ⁵ ops	2 x 10 ⁵ ops	2 x 10 ⁵ ops
Coil	Rated Voltage(VDC)	12, 24	12, 24	12, 24
	Coil power	Switch on:26W,Holding:3W	Switch on:26W,Holding:3W	Switch on:50W,Holding:5W
Coil terminal structure		Lead wire	Lead wire	Connector
Load terminal structure		Screw terminal female	Screw terminal female	Screw terminal female
Unit weight		Approx.400g	Approx.400g	Approx.1150g
Vibration resistance		10Hz ~ 500Hz 49m/s ²	10Hz~55Hz 1.5mm DA	10Hz ~ 55Hz
Humidity		5% ~ 85% RH	5% ~ 85% RH	5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Layout (Bottom View)				
Approved Standards		UL: E133481	CCC: 2021000304000020	
Cross Reference				
Page		155	159	163

Note:1) Seal chamber \geq IP67;Relay body \geq P40;

2) Working altitude \geq 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

SELECTION CHART		Direct current relay	
Type	HFE88P-250	HFE88P-350	
Appearance			
Outline dimensions(mm)	104.0x70.0x107.9mm	104.0x70.0x107.9mm	
Contact arrangement	1 Form A	1 Form A	
Contact resistance	$\leq 0.3m\Omega$ (at 250A)	$\leq 0.3m\Omega$ (at 350A)	
Pick-up voltage(VDC)	$\leq 80\% U_n$	$\leq 80\% U_n$	
Contact rating	250A	350A	
Load voltage	-	-	
Max. breaking current	1500A (1000VDC)1op	2000A (1000VDC)1op	
Max. switching voltage	1500VDC	1500VDC	
Max. switching power	500kW	700kW	
Electrical endurance	Swithing:6000ops(1500VDC,100A) Swithing:1000ops(1000VDC,350A) Swithing:6000ops (150VDC, 320A(L/R=0.3ms)	Swithing:6000ops(1500VDC,100A) Swithing:1000ops(1000VDC,350A) Swithing:6000ops (150VDC,320A(L/R=0.3ms)	
Dielectric strength	Between coil & contacts	4000VAC 1min	
	Between open main contacts	4000VAC 1min	
	Between contacts & auxiliary contacts	4000VAC 1min	
Mechanical endurance	2 x 10 ⁵ ops	2 x 10 ⁵ ops	
Coil	Rated Voltage(VDC)	12, 24	
	Coil power	Switch on:50W,Holding:5W	
Coil terminal structure	Connector	Connector	
Load terminal structure	Screw terminal female	Screw terminal female	
Unit weight	Approx.1150g	Approx.1150g	
Vibration resistance	10Hz ~ 55Hz	10Hz ~ 55Hz	
Humidity	5% ~ 85% RH	5% ~ 85% RH	
Ambient temperature	-40°C ~ 85°C	-40°C ~ 85°C	
Layout (Bottom View)			
Approved Standards	UL: E133481	UL: E133481	
Cross Reference	LS:GPR-H500-A		
Page	168	173	

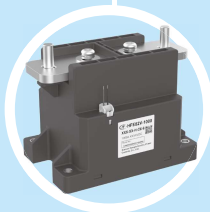
Note:1) Seal chamber \geq IP67;Relay body \geq P40;

2) Working altitude \geq 4000m;

3) These specifications are for reference only and are subject to change without notice,If there are any questions, please contact Hongfa for technical service.

CONTENTS

Application:Vehicle		Application:PV and energy storage	
HFE82V-20	17	HFE82P-20	126
HFE82V-40	21	HFE82P-60B	130
HFE82V-60	25	HFE82P-200B	134
HFE82V-60B	28	HFE82P-250	140
HFE82V-100D	32	HFE82P-250C	145
HFE82V-150D	37	HFE85P-150	151
HFE82V-150F	42	HFE85P-250	155
HFE82V-200B	46	HFE85P-300	159
HFE82V-200D	52	HFE88P-150	163
HFE82V-200W	57	HFE88P-250	168
HFE82V-250	63	HFE88P-350	173
HFE82V-250C	68		
HFE82V-300C	74		
HFE85V-300M	80		
HFE82V-400M	84		
HFE82V-600	90		
HFE82V-1000	94		
HFE80V-20B	98		
HFE80V-20C	102		
HFE80V-20D	107		
HFE80V-40	111		
HFE80V-60	116		
HFE80V-200	120		



HFE82V-20

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 20A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.
- No specific polarity requirements for the connection

CONTACT DATA

Contact arrangement	1 Form A	
Contact resistance ¹⁾	≤4.5mΩ(at 20A)	
Contact rating	20A	
Mechanical endurance	2 x 10 ⁶ ops	
	Type 450V	Type 750V
Max. switching voltage	450 VDC	750 VDC
Max. breaking current	200A (1000 VDC) 1op	200A (1000 VDC) 1op
Max. switching power	18kW	30kW
Electrical endurance ²⁾	Switching: 7.5 x 10 ⁴ ops (450 VDC,20A)	Switching: 5 x 10 ⁴ ops (750 VDC,20A)
	Type 1000V	
Max. switching voltage	1000 VDC	
Max. breaking current	200A (1000 VDC) 1op	
Max. switching power	30kW	
Electrical endurance ²⁾	Switching:3 x 10 ⁴ ops(1000 VDC,20A)	
Current carrying ³⁾ capacity	20A: Cont.	
	30A: 1h	
	40A:20min	
	80A:30s	
	120A:10s	
	200A: 0.6s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 4mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	2.6
24	≤18	≥2	2.6
48	≤36	≥4	2.6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz~500Hz 49m/s ²
Humidity		5%~85% RH
Ambient temperature		-40°C~85°C
Load terminal structure		QC terminal
Unit weight		Approx. 140g
Outline Dimensions		78.0 x 39.8 x 46.1mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-20/	1000-	12 -	H-	Q	2	J	-1	(XXX)
Application	V: Vehicle										
Contact rating	20: 20A										
Load voltage	Nil: 450 VDC 750: 750 VDC 1000: 1000 VDC										
Coil voltage	12: 12 VDC 24: 24 VDC 48: 48 VDC										
Contact arrangement	H: 1 Form A										
Coil terminal structure	Q: QC terminal										
Load terminal structure	2: QC terminal										
Base structure	J: Layout base without mounting boss										
Coil characteristic	1: Single coil										
Special code ¹⁾	XXX: Customer special requirement Nil: Standard										

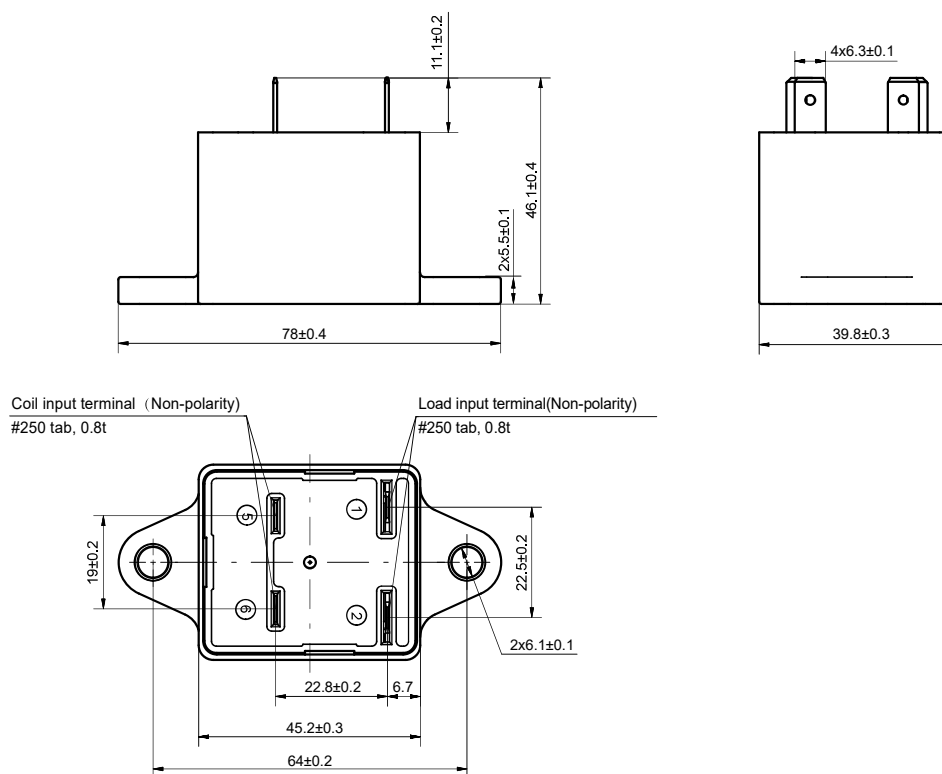
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

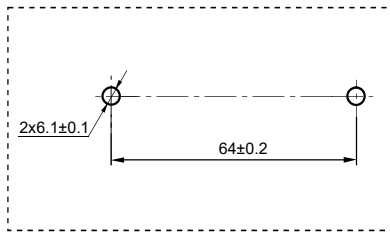
HFE82V-20/XXX-XX-H-Q2J-1



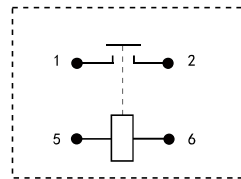
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



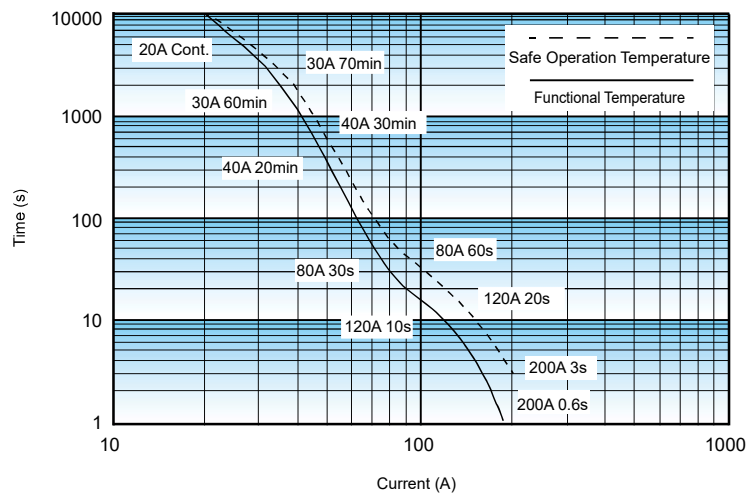
Terminal Arrangement



Note: No polarity on the load and coil sides.

CHARACTERISTIC CURVES

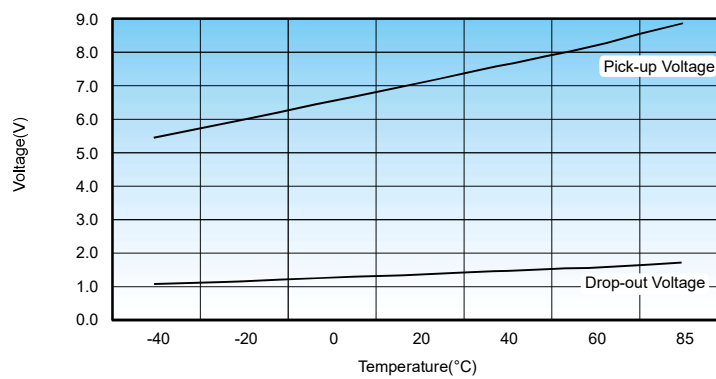
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 4\text{mm}^2$.
4. When the current is $\geq 200\text{A}$, the relay is likely to weld.

Pick-up Voltage / Drop-out Voltage Curve



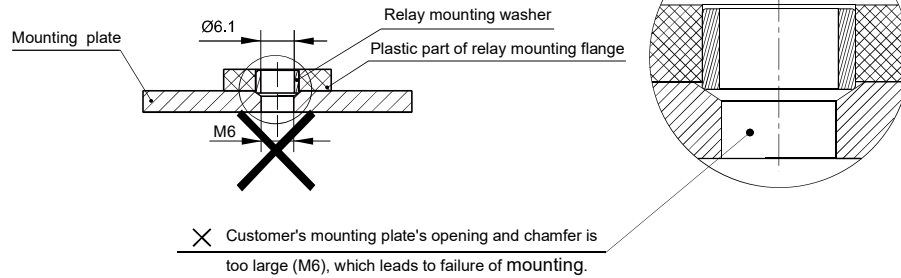
CAUTIONS

- 1、 In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, the push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 4mm², otherwise the terminal parts may have abnormal heating.
- 3、 Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

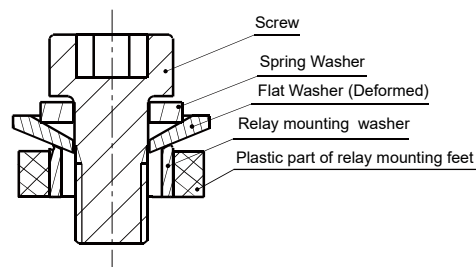
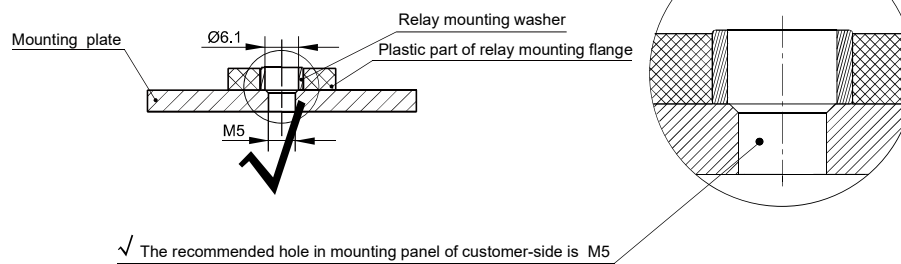
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-40

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 40A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.
- No specific polarity requirements for the connection

CONTACT DATA

Contact arrangement	1 Form A	
Contact resistance ¹⁾	≤3mΩ(at 40A)	
Contact rating	40A	
Mechanical endurance	2x10 ⁵ ops	
	Type 450V	Type 750V
Max. switching voltage	1000 VDC	1000 VDC
Max. breaking current	400A(300 VDC)1op	400A(300 VDC)1op
Max. switching power	36kW	60kW
Electrical endurance ²⁾	Switching: 2×10 ⁴ ops (450 VDC,40A)	Switching: 1×10 ³ ops (750 VDC,40A)
	Making: 7.5×10 ⁴ ops (450 VDC,40A)	Making: 7.5×10 ⁴ ops (750 VDC,40A)
Current carrying ³⁾ capacity	40A:Cont.	
	60A:1h	
	80A:20min	
	160A:30s	
	320A:2s	
	400A:0.6s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 10mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	3
24	≤18	≥2	3

CHARACTERISTICS

Insulation resistance		1000MΩ (1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M4 screw terminal female
Unit weight		Approx. 160g
Outline Dimensions		67.0x32.6x47.0mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-40/	750-	12-	H-	L	5	J	-1	(XXX)
Application	V: Vehicle										
Contact rating	40: 40A										
Load voltage	Nil: 450 VDC 750: 750 VDC										
Coil voltage	12: 12 VDC 24: 24 VDC										
Contact arrangement	H: 1 Form A										
Coil terminal structure	L: Lead wire										
Load terminal structure	5: Screw terminal female										
Base structure	J: Layout base without mounting boss										
Coil characteristic	1: Single coil										
Special code ¹⁾	XXX: Customer special requirement Nil: Standard										

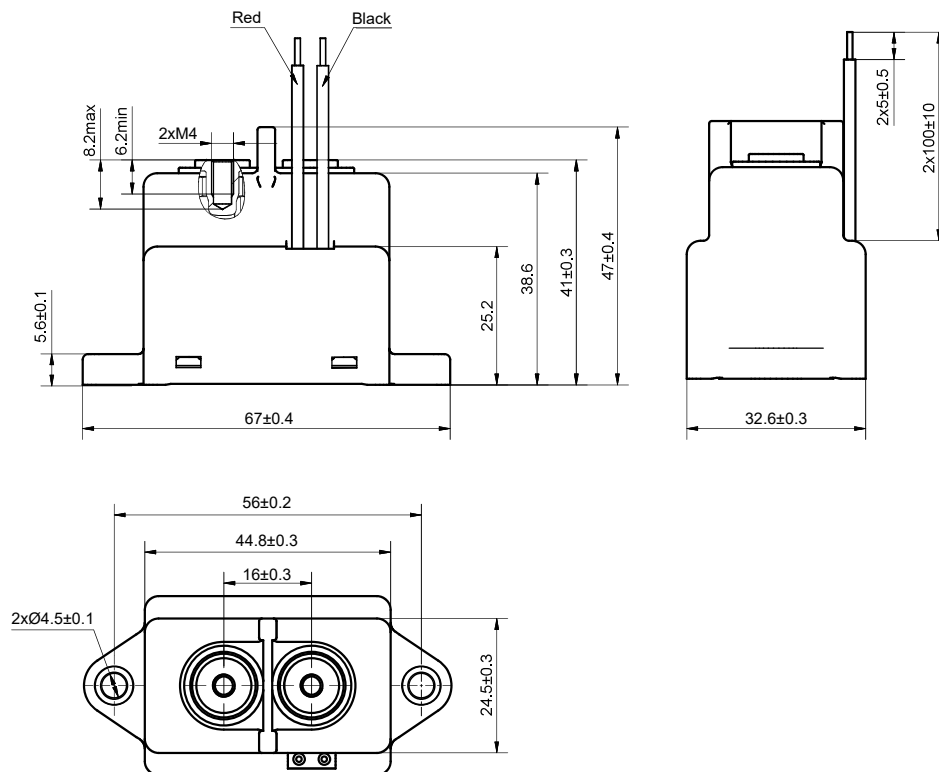
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

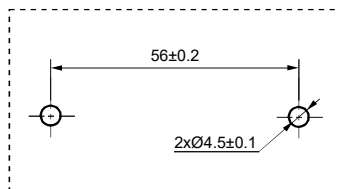
HFE82V-40/XXX-XX-H-L5J1



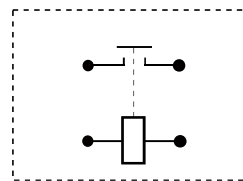
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



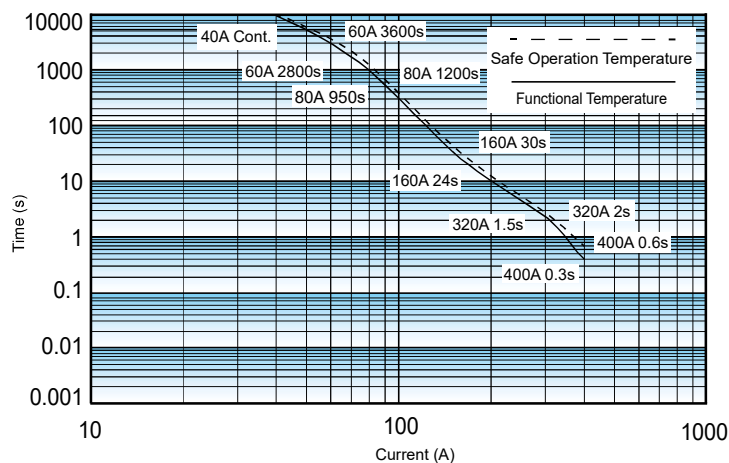
Terminal Arrangement



Note: No polarity on the load and coil sides.

CHARACTERISTIC CURVES

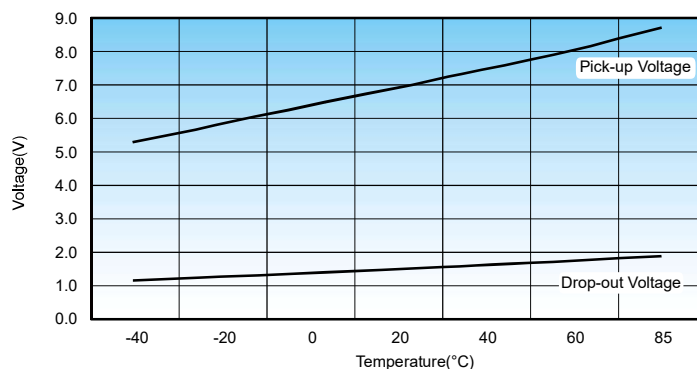
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 10\text{mm}^2$.
4. When the current is $\geq 400\text{A}$, the relay is likely to weld.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when install the relay with M4 screw, and the torque within 2N·m to 3N·m, The screw tightening torque at terminals shall be within 2N·m to 3N·m. The torque beyond the range may cause damage.

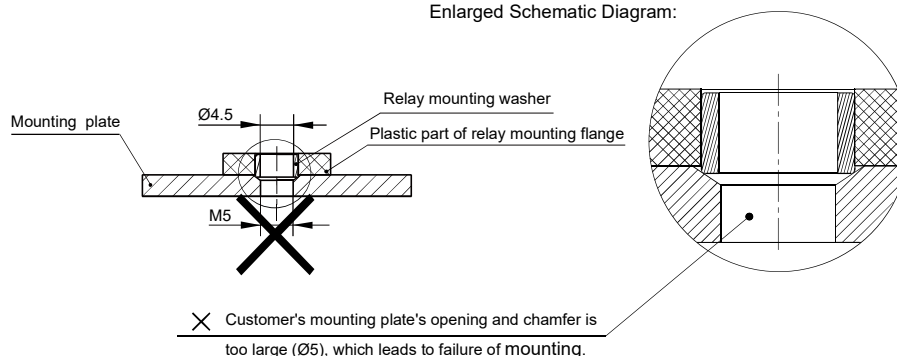
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M4 Screw	2N·m~3N·m	Ø4.0mm~Ø4.5mm	1mm~2mm	M4 Screw	2N·m ~ 3N·m

- Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
- When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
- When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
- Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 10mm² min, otherwise the terminal parts may have abnormal heating.
- The recommended thickness of copper bus-bar is 1mm to 2mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
- Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

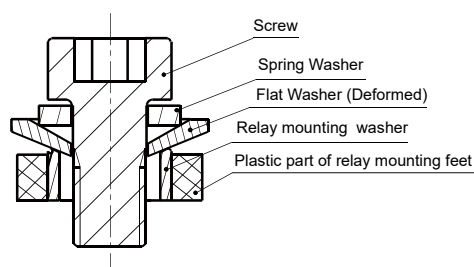
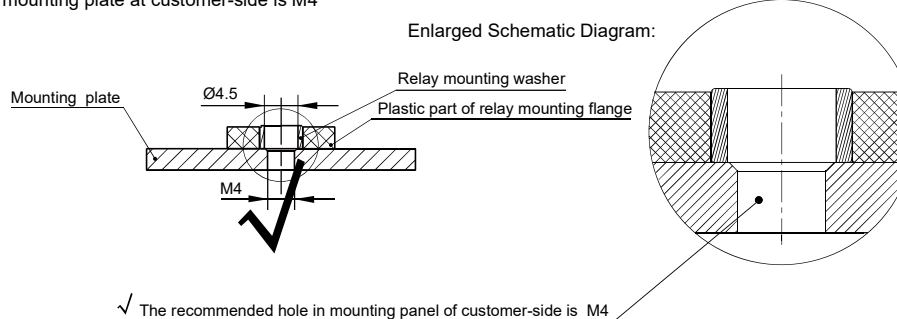
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M4

Enlarged Schematic Diagram:



When use M4 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE82V-60

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 60A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤1mΩ(at 60A)
Contact rating	60A
Mechanical endurance	2.5x10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	600A(450 VDC) 1op
Max. switching power	54kW
Electrical endurance ²⁾	Switching:7.5x10 ⁴ ops (20 VDC, 60A)
	Switching:800ops (450 VDC, 60A)
	Switching:50ops (450 VDC,120A)
	Breaking:100ops (450 VDC, 200A,on-off ratio:0.3s:29.7s)
	Breaking:1op (450 VDC, 600A,on-off ratio:0.3s:29.7s)
Current carrying ³⁾ capacity	60A: Cont.
	90A: 1h
	120A: 14min
	240A: 20s
	360A: 2s
	600A: 0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 15mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	4.5
24	≤18	≥2	4.5

CHARACTERISTICS

Insulation resistance		1000MΩ (1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤15ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		QC terminal
Unit weight		Approx. 175g
Outline Dimensions		55.0x39.8x37.0mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

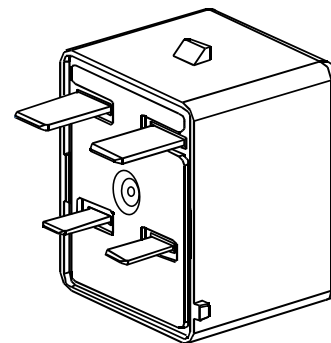
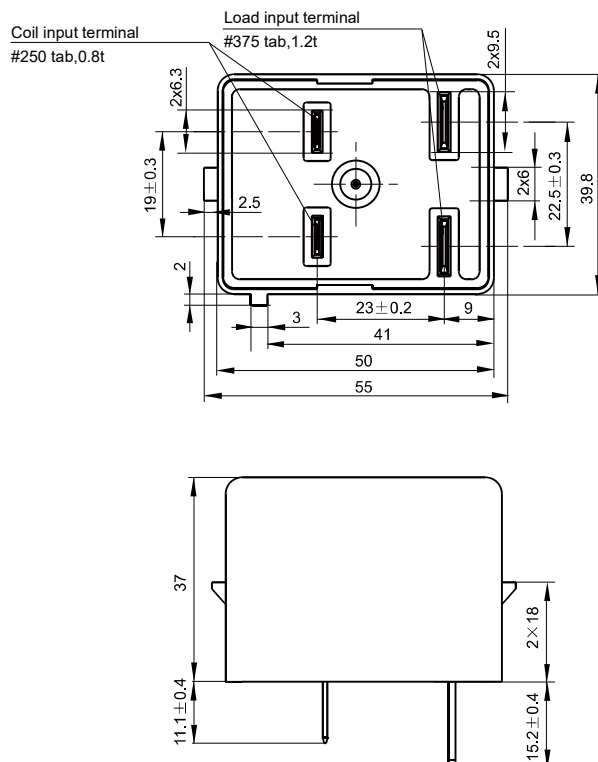
Type	HFE82	V	-60 /	12-	H	2	(XXX)
Application	V: Vehicle						
Contact rating	60: 60A						
Load voltage	Nil: 450 VDC						
Coil voltage	12: 12 VDC 24: 24 VDC						
Contact arrangement	H: 1 Form A						
Load terminal structure	2: QC terminal						
Special code ¹⁾	XXX: Customer special requirement Nil: Standard						

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

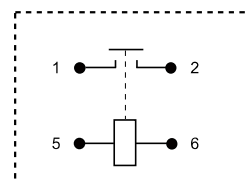
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions



Terminal Arrangement

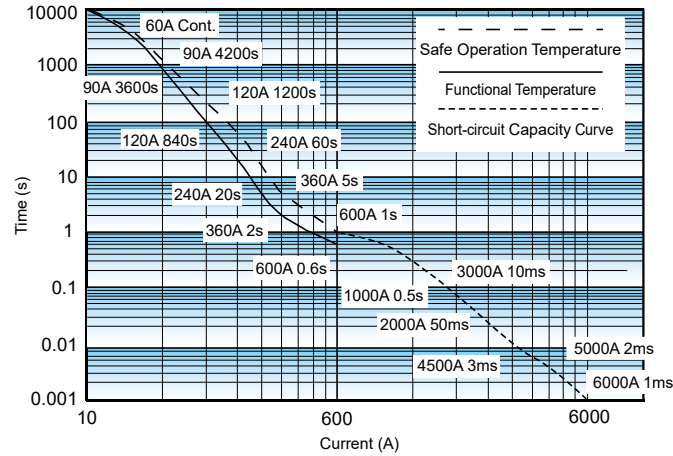


Note: No polarity on the load and coil sides.

Notes: In case of no tolerance shown in outline dimension: outline dimension ≤ 10mm, tolerance should be ± 0.3mm; outline dimension > 10mm and ≤ 50mm, tolerance should be ± 0.5mm; outline dimension > 50mm, tolerance should be ± 0.8mm.

CHARACTERISTIC CURVES

Endurance Capacity Curve



Notes:

1. This data is only for reference and please do not use it for fuse selection.
2. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
3. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C; If the safe operation temperature of 180°C is exceeded, the relay may also catch fire.
4. The data above is measured at the environment temperature 85°C, with cross section area of wire $\geq 15\text{mm}^2$.
5. When the relay is operated under current $\geq 3000\text{A}$ for 10ms, it may weld without fire or explosion.

CAUTIONS

1. The push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 15mm^2 , otherwise the terminal parts may have abnormal heating.

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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HFE82V-60B

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 60A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 3.6kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤1mΩ(at 60A)
Contact rating	60A
Mechanical endurance	2.0x10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	600A(450 VDC) 1op
Max. switching power	54kW
Electrical endurance ²⁾	Making:7.5x10 ⁴ ops (450 VDC, 60A)
	Making:5x10 ⁴ ops (750 VDC, 60A)
	Switching:1x10 ³ ops (450 VDC, 60A)
	Breaking:2x10 ⁴ ops (750 VDC, 30A)
Current carrying ³⁾ capacity	60A:Cont.
	90A:1h
	120A:20min
	240A:20s
	360A:2s
	600A:0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 15mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	5.2
24	≤18	≥2	5.2

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	3600 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M4 Screw terminal female
Unit weight		Approx. 170g
Outline Dimensions		64.0x33.0x52.8mm

Notes: The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-60	B/	750-	12-	H	L	5	(XXX)
Application	V: Vehicle									
Contact rating	60: 60A									
Series breakdown	B: B series									
Load voltage	Nil: 450VDC 750: 750VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Coil terminal structure	L: Lead wire									
Load terminal structure	5: Screw terminal female									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

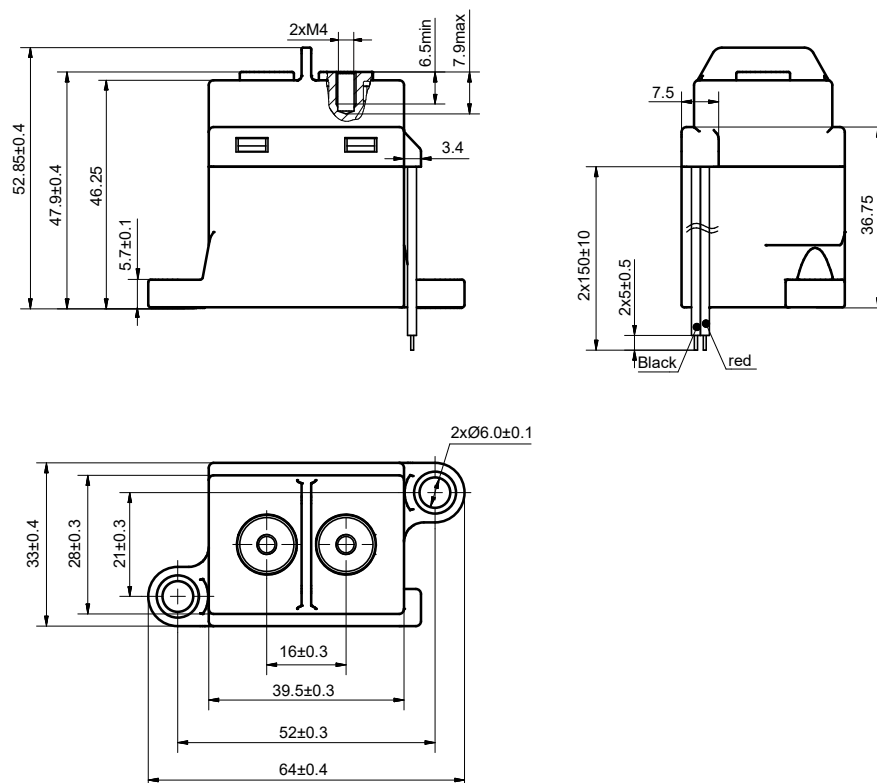
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

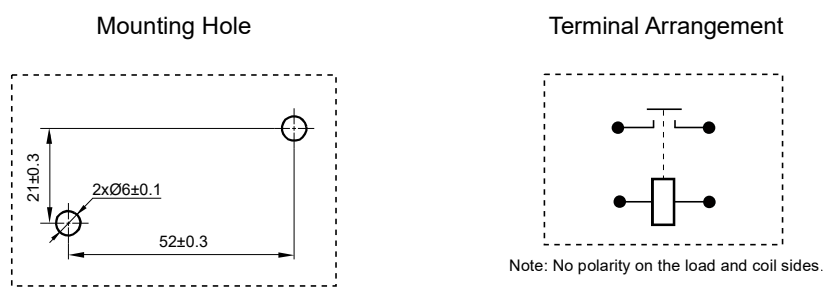
Outline Dimensions

HFE82V-60B/-XXX-XX-HL5

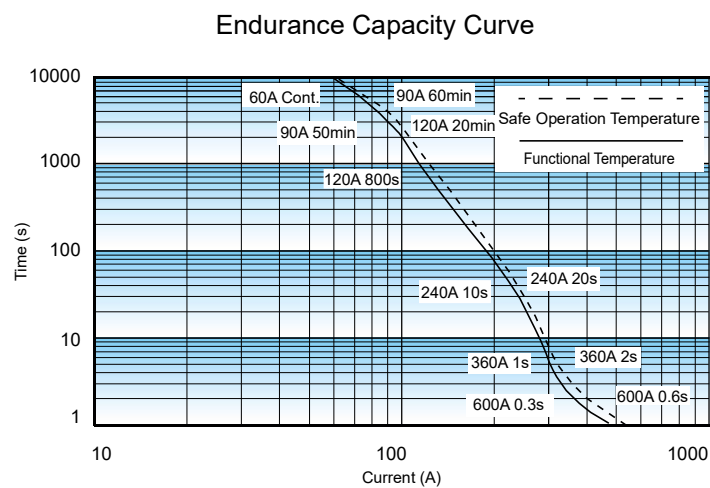


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

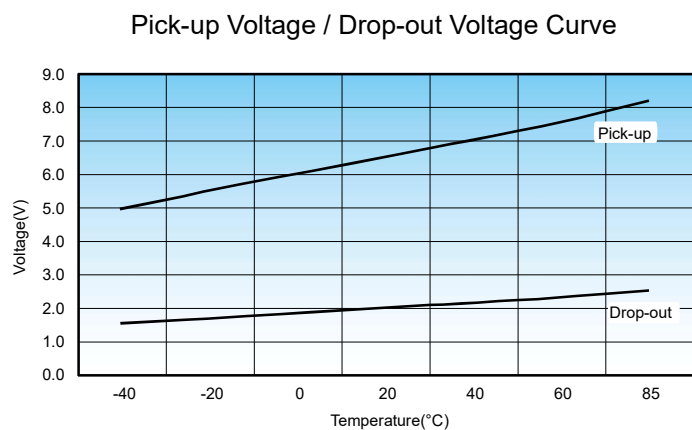
Unit: mm



CHARACTERISTIC CURVES



- Notes:**
1. This data is only for reference and please do not use it for fuse selection.
 2. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
 3. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
 4. The data above is measured at the environment temperature 85°C, with cross section area of wire $\geq 15\text{mm}^2$.



CAUTIONS

1. In case of loosening, please use washer when install the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 2N·m to 3N·m. The torque beyond the range may cause damage.

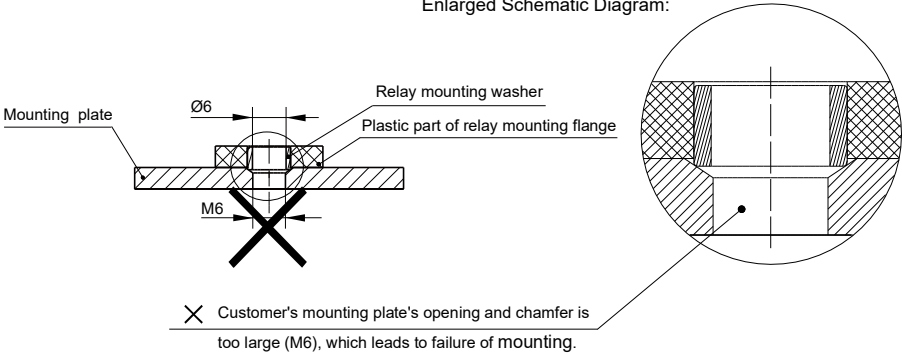
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M4 Screw	2N·m~3N·m	Ø4.0mm~Ø4.5mm	1mm~2mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 15mm² , otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

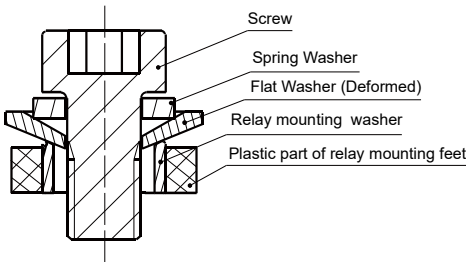
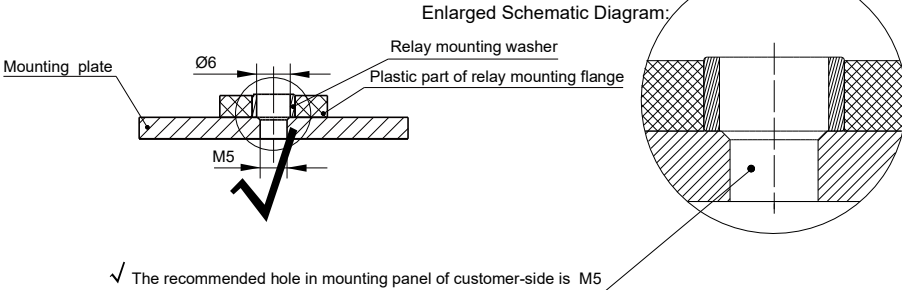
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-100D

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 100A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A	
Contact resistance ¹⁾	≤0.5mΩ(at 100A)	
Contact rating	100A	
Mechanical endurance	2x10 ⁵ ops	
	Type 450V	Type 750V
Max. switching voltage	450 VDC	750 VDC
Max. breaking current	1000A(300 VDC) 1op	1000A(300 VDC) 1op
Max. switching power	90kW	150kW
Electrical endurance ²⁾	Marking:2.5x10 ⁴ ops (22.5VDC, τ =1ms, Inrush 400A, Steady 100A)	Marking:1x10 ⁴ ops (37.5VDC, τ =1ms, Inrush 400A, Steady 100A)
	Switching:1x10 ³ ops (450 VDC, 100A)	Switching:100ops (750 VDC,100A)
	Switching:3x10 ³ ops (200 VDC, 120A)	
	Switching: 500ops (450 VDC, -100A)	
	Switching:1op (300 VDC, 1000A)	
Current carrying ³⁾ capacity	100A:Cont.	
	150A:2h	
	200A:10min	
	300A:2min	
	400A:30s	
	600A:10s	
	900A:4s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 35mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	5.5
24	≤18	≥2	5.5

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		Screw terminal female
Unit weight		Approx.260g
Outline Dimensions		76.0x36.0x72.0mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE82	V	-100	D/	750-	12-	H	-C	5	(A10)
Type										
Application	V: Vehicle									
Contact rating	100: 100A									
Series breakdown	D: D series									
Load voltage	Nil: 450 VDC 750: 750 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Special code¹⁾	XXX: Customer special requirement Nil: Standard									

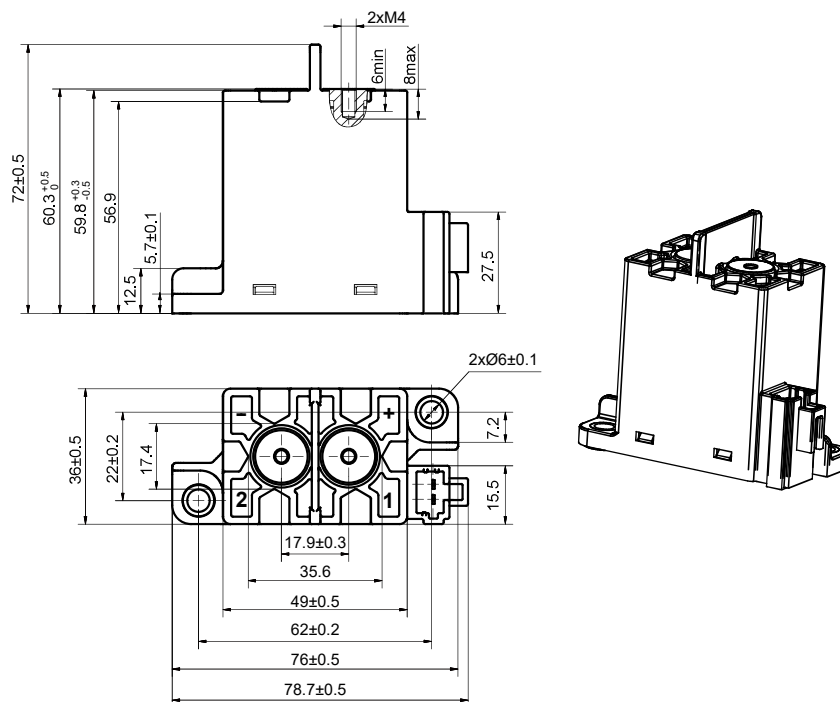
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

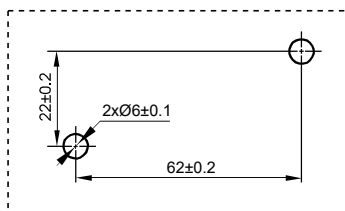
HFE82V-100D/XXX-XX-HC5(A10)



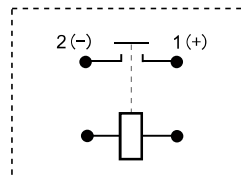
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



Terminal Arrangement



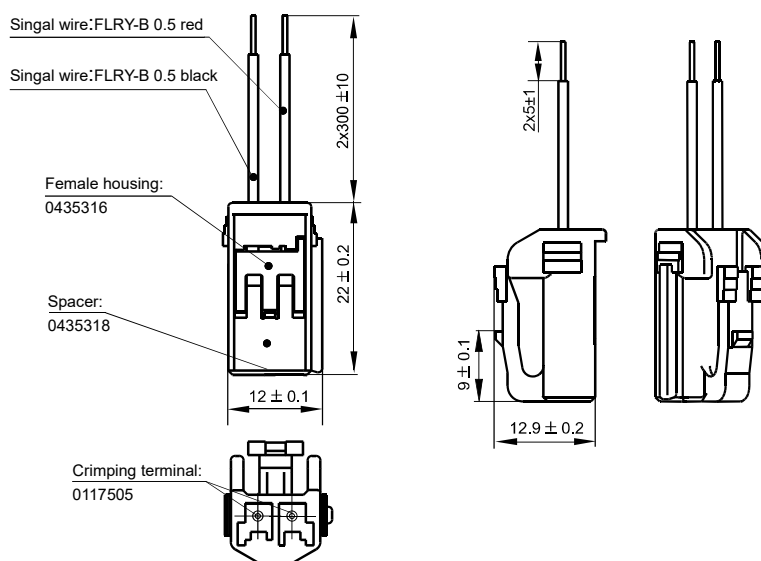
Note: The load side has polarity.
No polarity on the coil side.

WIRING DIAGRAM

Unit: mm

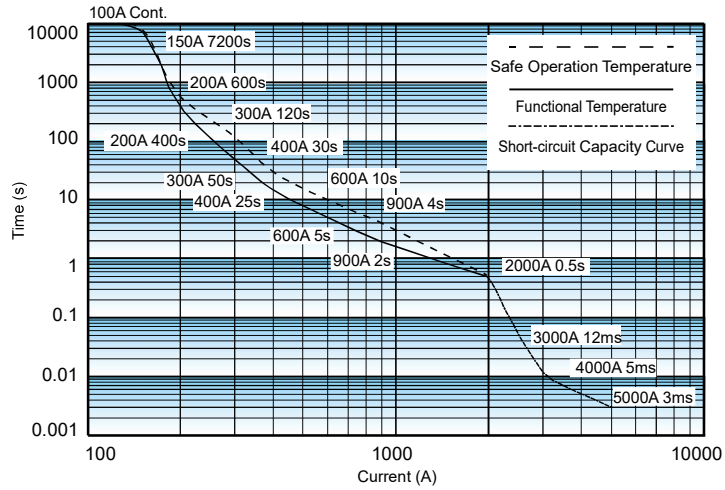
C:Connector

(Configured by customers: THB 0435 series, Yazaki 7283-1020)



CHARACTERISTIC CURVES

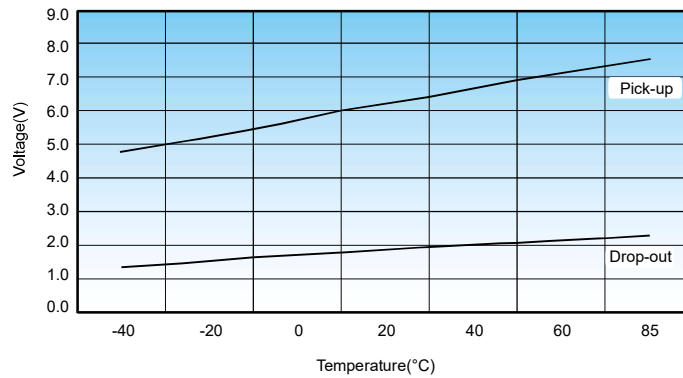
Endurance Capacity Curve



Notes:

- 1.The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
- 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C; If the safe operation temperature of 180°C is exceeded, the relay may also catch fire.
- 3.The data above is measured at the environment temperature 85°C, with cross section area of wire $\geq 35\text{mm}^2$.
- 4.When the relay is operated under current $\geq 2000\text{A}$ for a long-term, it may weld without fire or explosion.
- 5.The dash-dotted line refers to the short-circuit capacity curve of the relay without fire or explosion; when the short-circuit current is $\geq 3000\text{A}$, the contact may open.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when install the relay with M5 screw, and the torque within 3N·m to 4N·m, The torque beyond the range may cause damage.

HFE82V-100D/XXX-XX-HC5(A10)

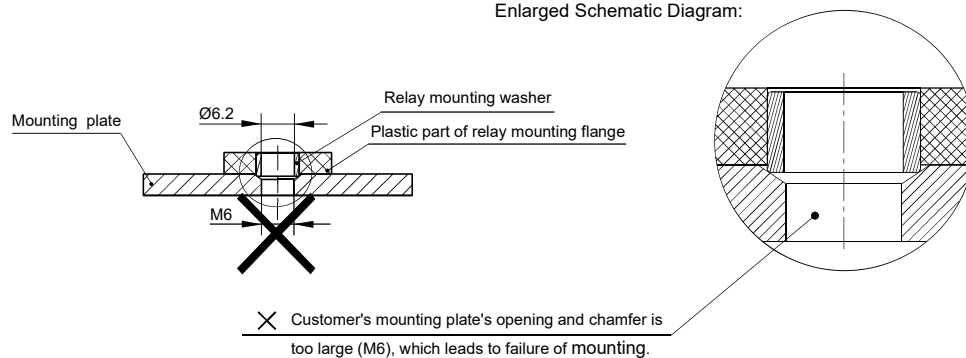
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M4 Screw	2N·m~3N·m	Ø4.0mm~Ø4.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 36mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

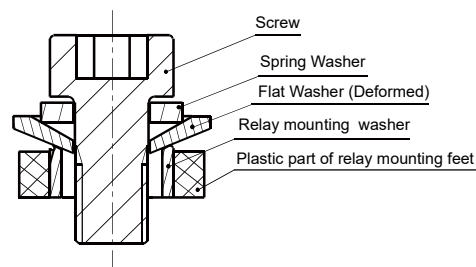
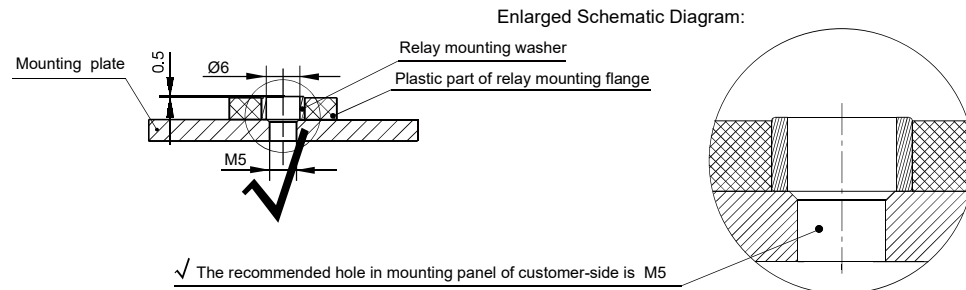
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-150D

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 150A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A	
Contact resistance ¹⁾	≤0.5mΩ(at 150A)	
Contact rating	150A	
Mechanical endurance	2x10 ⁵ ops	
	Type 450V	Type 750V
Max. switching voltage	450 VDC	750 VDC
Max. breaking current	1200A(300 VDC) 1op	1200A(300 VDC) 1op
Max. switching power	135kW	225kW
Electrical endurance ²⁾	Making:2.5x10 ⁴ ops (22.5 VDC, τ =1ms, Inrush400A, Steady150A)	Making:1x10 ⁴ ops (37.5 VDC, τ =1ms, Inrush400A, Steady150A)
	Switching:1x10 ³ ops (450 VDC, 150A)	Switching:100ops (750 VDC, 150A)
	Switching:3x10 ³ ops (200 VDC, 120A)	
	Switching:500ops (450 VDC, -150A)	
	Switching:1ops (300 VDC, 1200A)	
Current carrying ³⁾ capacity	150A:Cont.	
	180A:2h	
	225A:15min	
	320A:2min	
	400A:60s	
	600A:20s	
	900A:8s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 50mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	5.5
24	≤18	≥2	5.5

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		Screw terminal female
Unit weight		Approx.260g
Outline Dimensions		76.0x36.0x72.0mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-150	D/	750-	12-	H	-C	5	(A10)
Application	V: Vehicle									
Contact rating	150: 150A									
Series breakdown	D: D series									
Load voltage	Nil: 450 VDC 750: 750 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

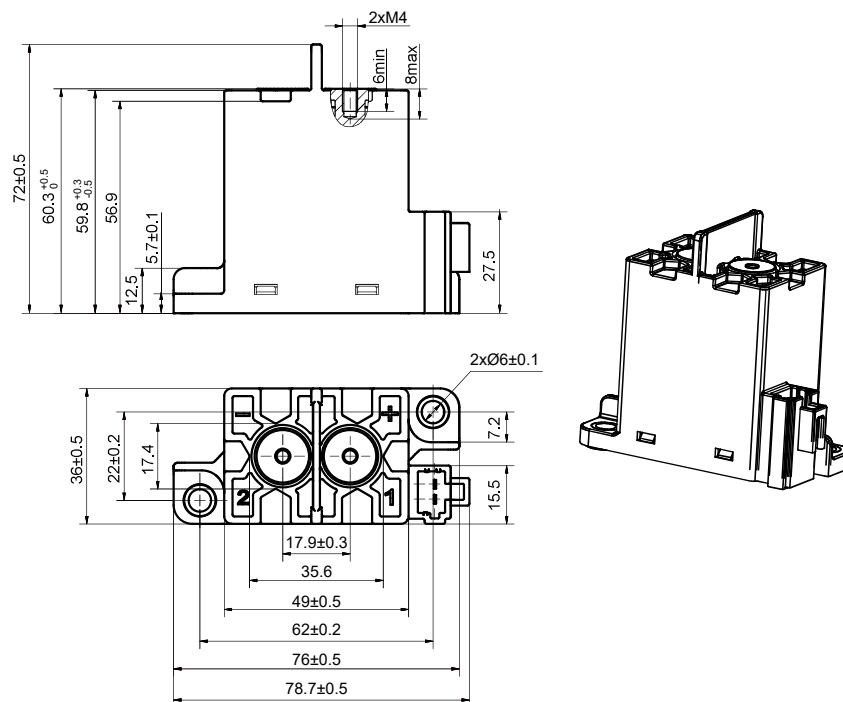
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

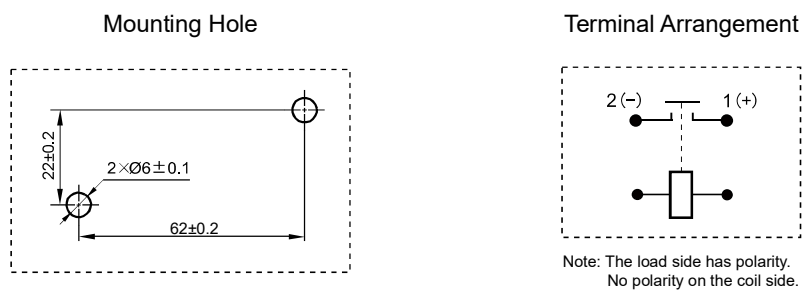
Outline Dimensions

HFE82V-150D/XXX-XX-HC5(A10)



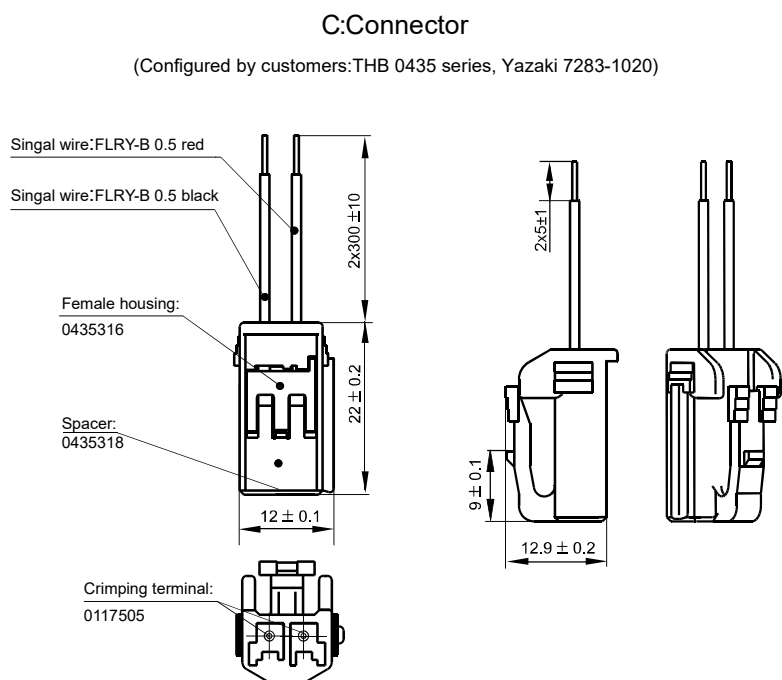
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm



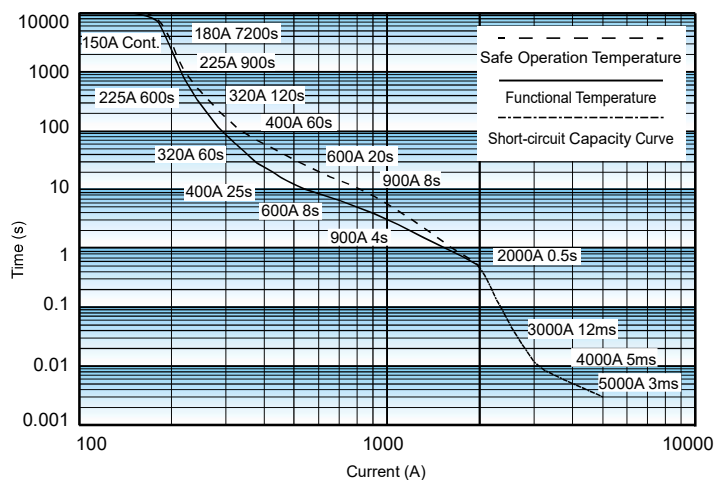
WIRING DIAGRAM

Unit: mm



CHARACTERISTIC CURVES

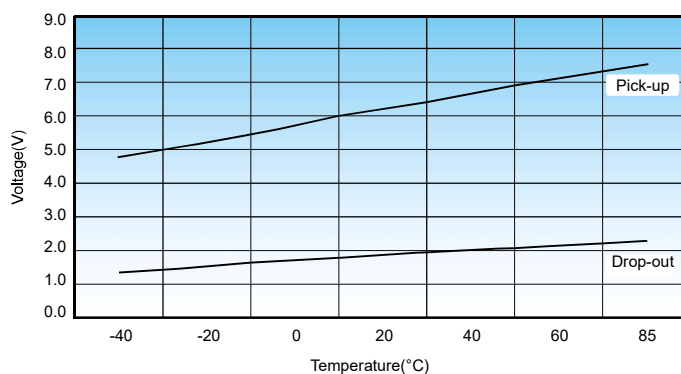
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C; If the safe operation temperature of 180°C is exceeded, the relay may also catch fire;
3. The data above is measured at the environment temperature 85°C, with cross section area of wire $\geq 50\text{mm}^2$.
4. When the relay is operated under current $\geq 2000\text{A}$ for a long-term, it may weld without fire or explosion.
5. The dash-dotted line refers to the short-circuit capacity curve of the relay without fire or explosion; when the short-circuit current is $\geq 3000\text{A}$, the contact may open.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when install the relay with M5 screw, and the torque within 3N·m to 4N·m, The torque beyond the range may cause damage.

HFE82V-150D/XXX-XX-HC5(A10)

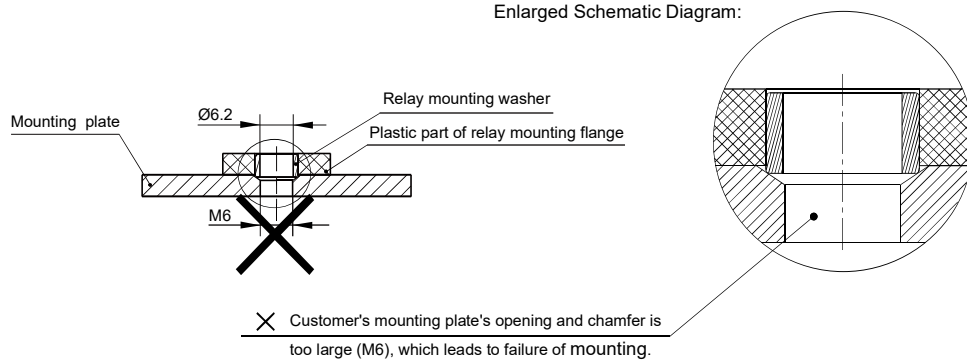
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M4 Screw	2N·m~3N·m	Ø4.0mm~Ø4.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 50mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

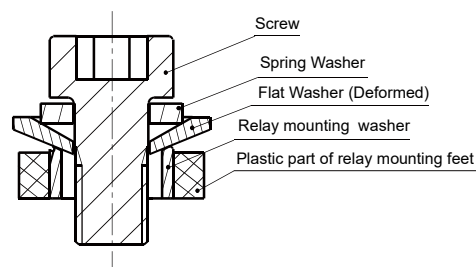
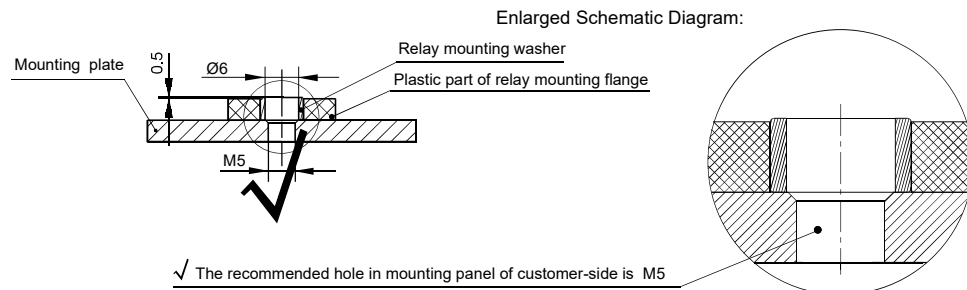
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-150F

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 150A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.5mΩ(at 150A)
Contact rating	150A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	1300A(400 VDC) 1op
Max. switching power	150kW
Electrical endurance ²⁾	Breaking:5x10 ⁴ ops (475 VDC, 20A)
	Making:7x10 ⁴ ops (20 VDC, 100A)
	Breaking:1x10 ³ ops(450 VDC, 150A)
Current carrying ³⁾ capacity	150A:Cont.
	180A:2h
	225A:15min
	320A:2min
	400A:1min
	600A:20s
	900A:8s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 50mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	6
24	≤18	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ (1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		Screw terminal female
Unit weight		Approx.285g
Outline Dimensions		77.0x37.7x71.3mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE82	V	-150	F/	500-12-	H-	Q	5	Y	-1	(XXX)
Type											
Application	V: Vehicle										
Contact rating	150: 150A										
Series breakdown	F: F series										
Load voltage	500: 500 VDC 750: 750 VDC										
Coil voltage	12: 12 VDC 24: 24 VDC										
Contact arrangement	H: 1 Form A										
Coil terminal structure	Q: QC terminal										
Load terminal structure	5: Screw terminal female										
Mounting	Y: Horizontal mounting										
Coil characteristic	1: Single coil										
Special code ¹⁾	XXX: Customer special requirement Nil: Standard										

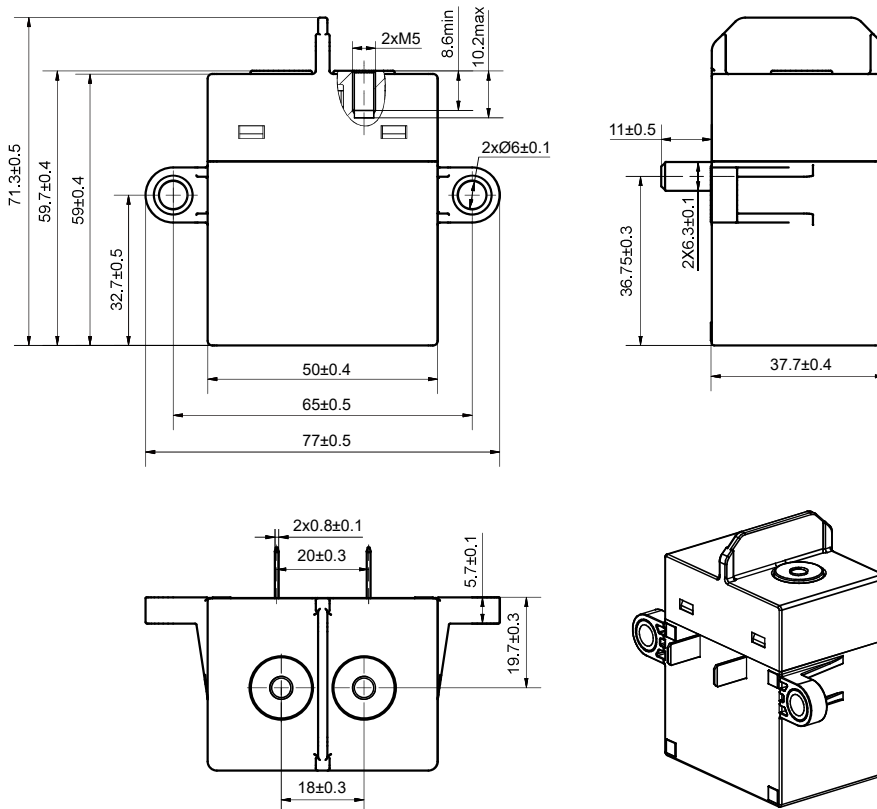
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

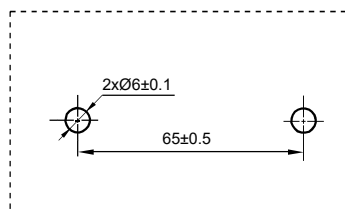
HFE82V-150F/XXX-XX-H-Q5Y-1



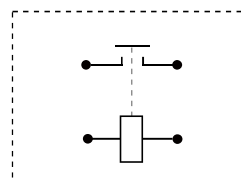
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



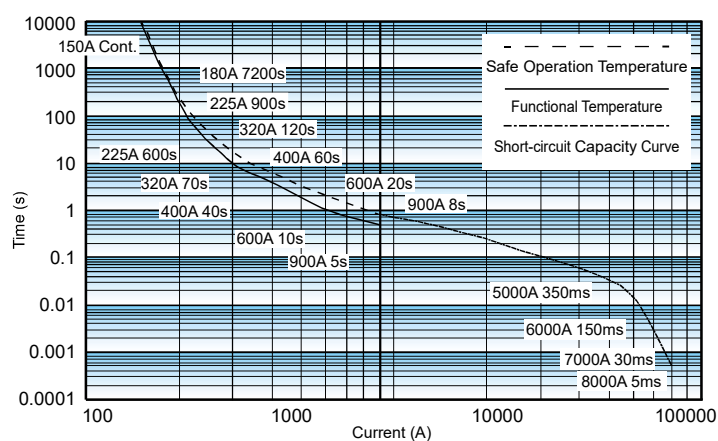
Terminal Arrangement



Note: No polarity on the load and coil sides.

CHARACTERISTIC CURVES

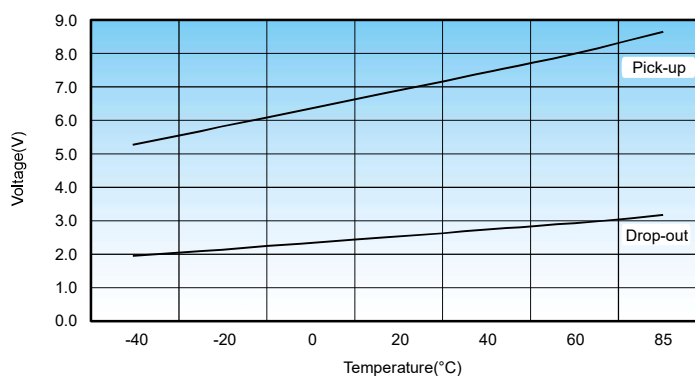
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross sectional area of the wire is $\geq 50\text{mm}^2$.
4. When the current is $\geq 1500\text{A}$, the relay is likely to weld without fire or explosion.
5. The dash-dotted line is the short-circuit capacity curve of the relay. when the current is $\geq 5000\text{A}$, the contact may bounce without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m. The torque beyond the range may cause damage.

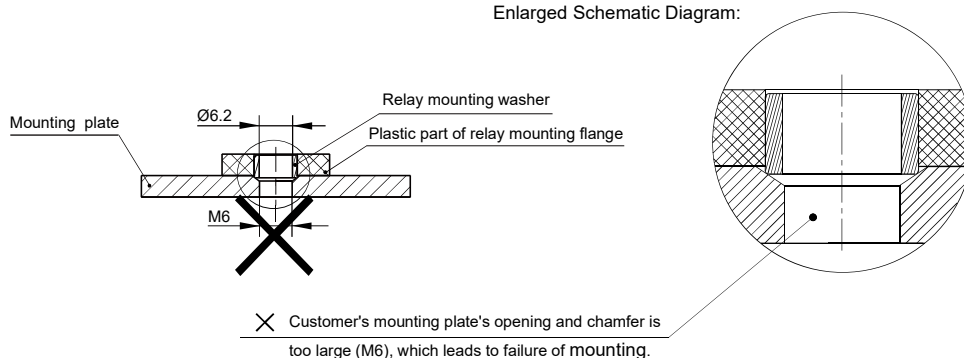
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M5 Screw	3N·m ~ 4N·m	Ø5.0mm~Ø5.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 50mm²,otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

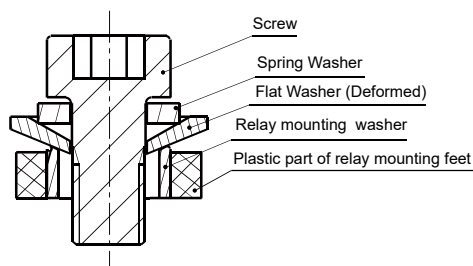
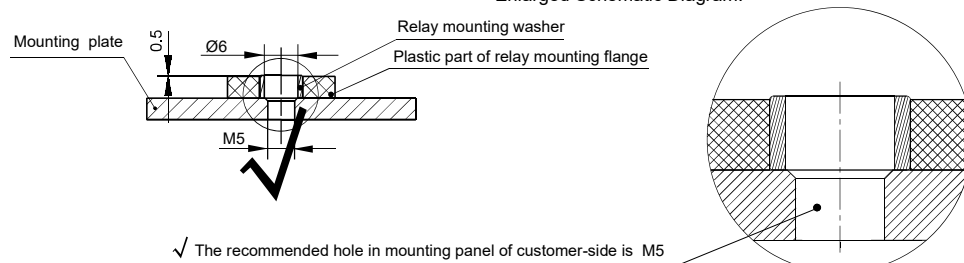
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE82V-200B

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 200A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.5mΩ(at 200A)
Contact rating	200A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	2000A(450 VDC) 1op
Max. switching power	180kW
Electrical endurance ²⁾	Making:2x10 ⁴ ops (37.5VDC,C=1100μf, Inrush400A, Steady 200A)
	Switching:1x10 ³ ops (450 VDC, 200A)
	Switching:500ops (750 VDC, 200A)
	Breaking:1op (450 VDC, 2000A)
Current carrying ³⁾ capacity	200A:Cont.
	250A:15min
	320A:5min
	600A:30s
	900A:10s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 60mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	6
24	≤18	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ (1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C~85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.330g
Outline Dimensions		81.0x39.0x70.0mm(HC5)
		81.7x39.5x69.6mm(HC5Y)

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-200	B/	12-	H	C	5	Y	(XXX)
Application	V: Vehicle									
Contact rating	200: 200A									
Series breakdown	B: B series									
Load voltage	Nil: 450VDC									
Coil voltage	12: 12VDC 24: 24VDC									
Contact arrangement	H: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Mounting	Nil: Vertical mounting Y: Horizontal mounting									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

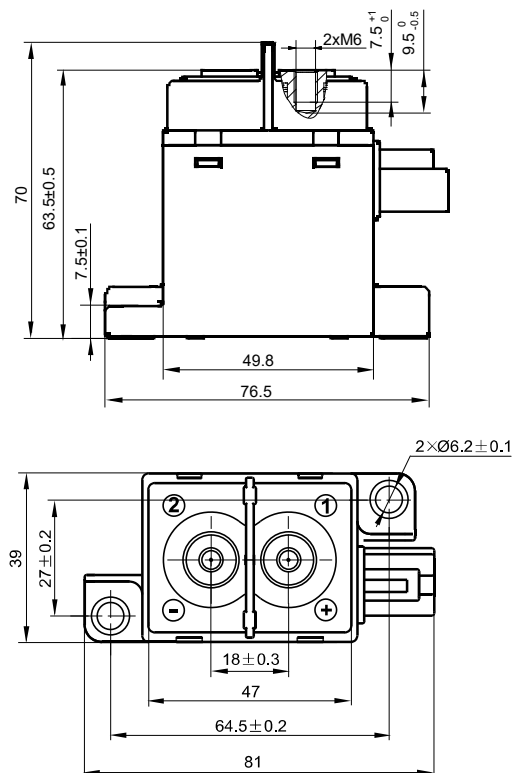
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82V-200B/XXX-XX-HC5

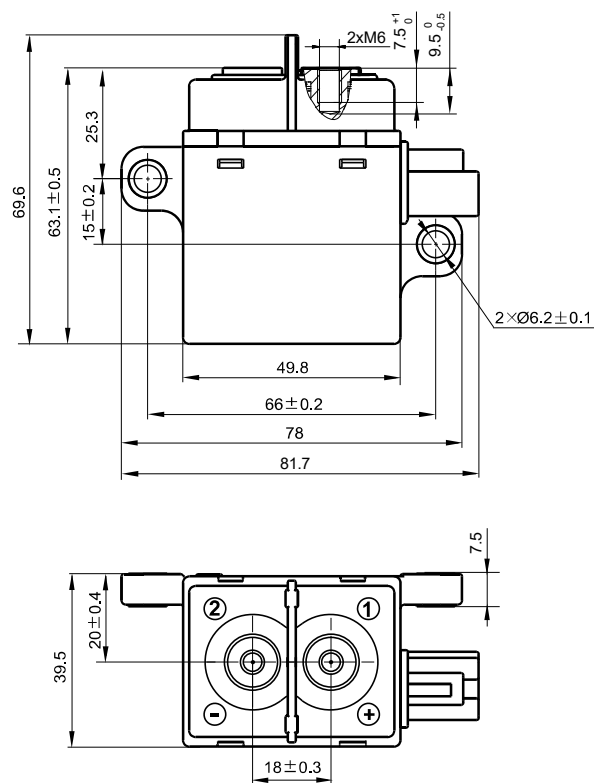


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

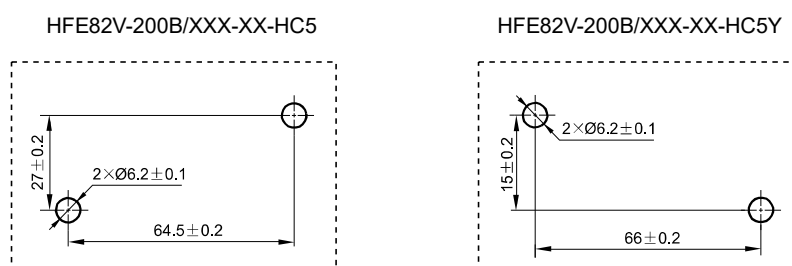
Unit: mm

Outline Dimensions

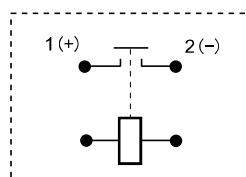
HFE82V-200B/XXX-XX-HC5Y



Mounting Hole



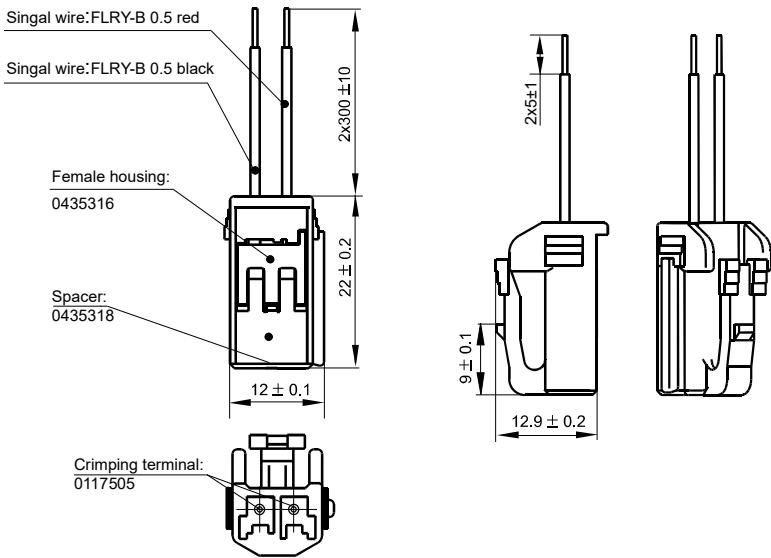
Terminal Arrangement



Note: The load side has polarity.
No polarity on the coil side.

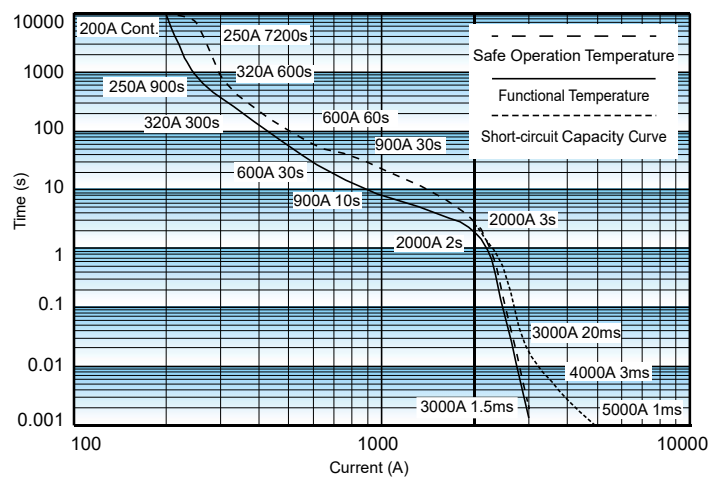
C:Connector

(Configured by customers:THB 0435 series, Yazaki 7283-1020)



CHARACTERISTIC CURVES

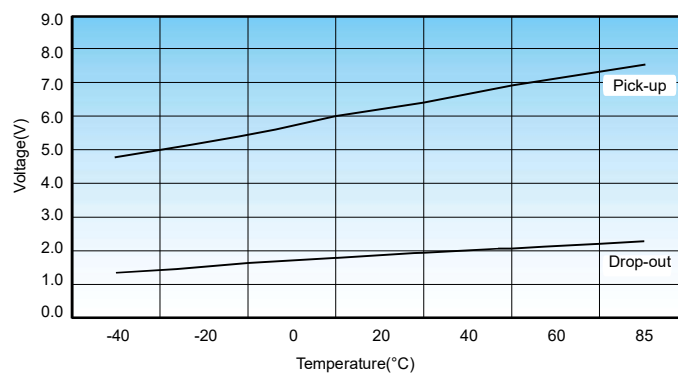
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross sectional area of the wire is $\geq 60\text{mm}^2$.
4. When the current is $\geq 2000\text{A}$, the relay is likely to weld without fire or explosion.
5. The dash-dotted line is the short-circuit capacity curve of the relay. when the current is $\geq 3000\text{A}$, the contact may bounce without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 5N·m to 6N·m. The torque beyond the range may cause damage.

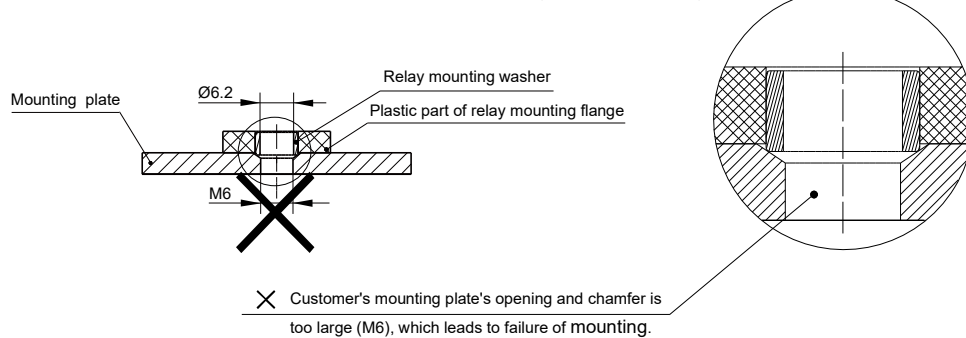
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	5N·m ~ 6N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 60mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

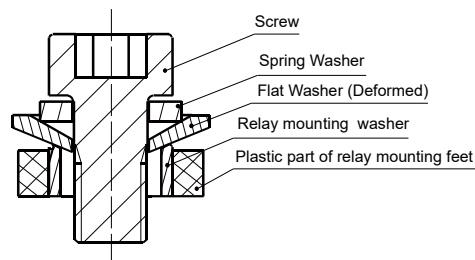
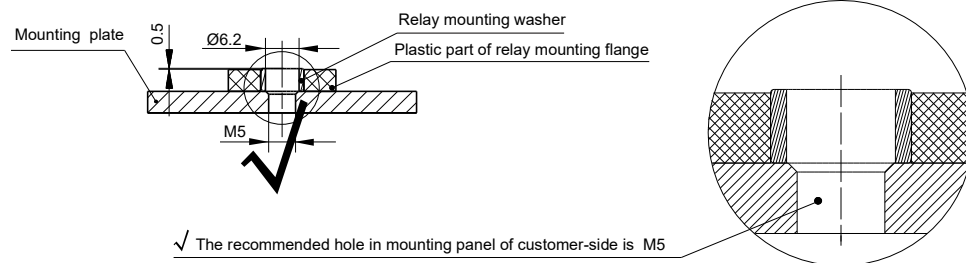
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-200D

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 200A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A	
Contact resistance ¹⁾	≤0.5mΩ(at 200A)	
Contact rating	200A	
Mechanical endurance	2x10 ⁵ ops	
	Type 450V	Type 750V
Max. switching voltage	450 VDC	750 VDC
Max. breaking current	1200A(300 VDC) 1op	1200A(300 VDC) 1op
Max. switching power	180kW	300kW
Electrical endurance ²⁾	Making:1.5x10 ⁴ ops (22.5 VDC, τ =1ms, Inrush400A, Steady200A)	Switching:100ops (750 VDC, 200A)
	Switching:800ops (450 VDC, 200A)	
	Switching:100ops (450 VDC, ~200A)	
	Breaking:1ops (300 VDC, 1200A)	
Current carrying ³⁾ capacity	200A:Cont.	
	250A:2h	
	300A:10min	
	600A:2min	
	900A:20s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 60mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	5.5
24	≤18	≥2	5.5

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.260g
Outline Dimensions		78.7x36.0x72.0mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-200	D/	750-	12-	H	C	5	(A10)
Application	V: Vehicle									
Contact rating	200: 200A									
Series breakdown	D: D series									
Load voltage	Nil: 450 VDC 750: 750 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

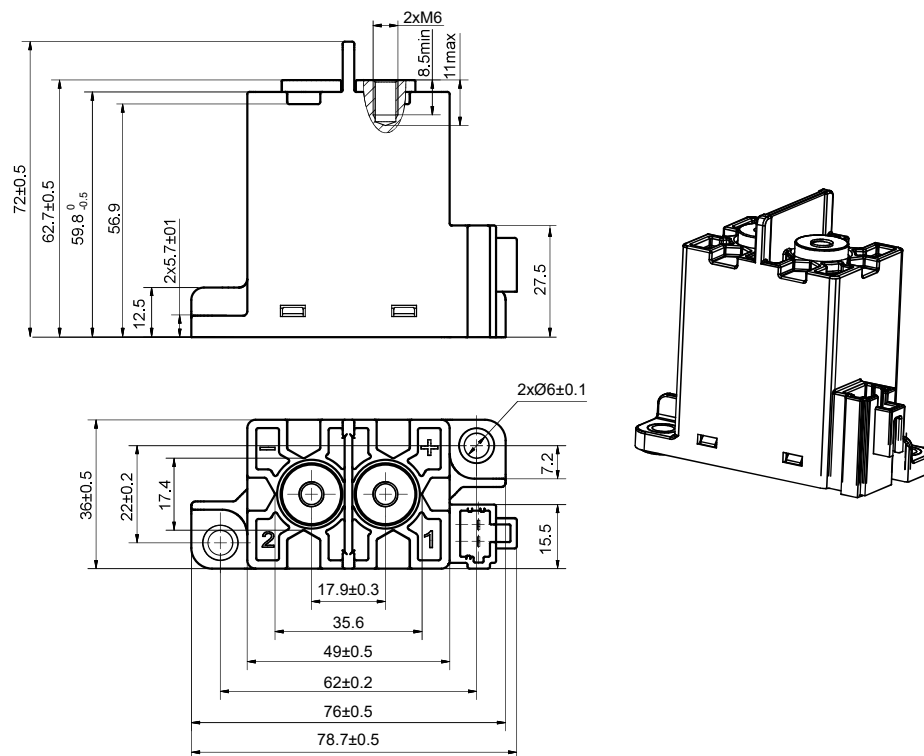
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

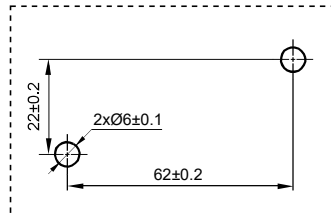
HFE82V-200D/XXX-XX-HC5(A10)



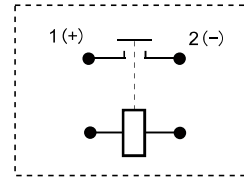
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



Terminal Arrangement



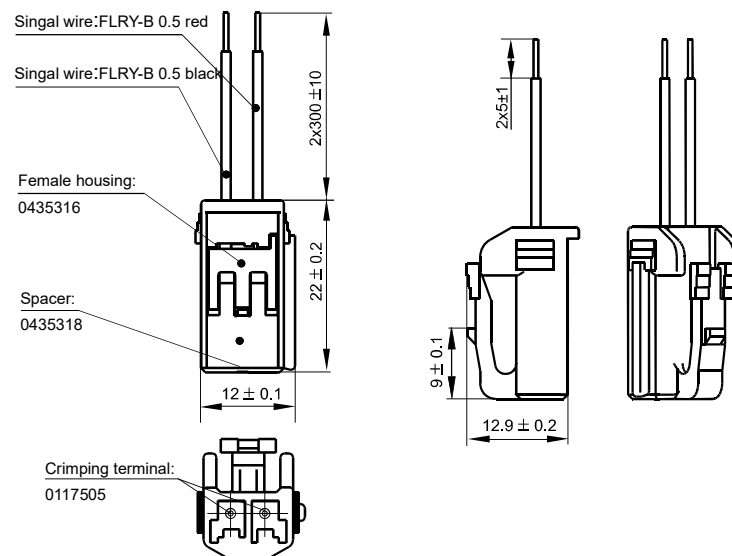
Note: The load side has polarity.
No polarity on the coil side.

WIRING DIAGRAM

Unit: mm

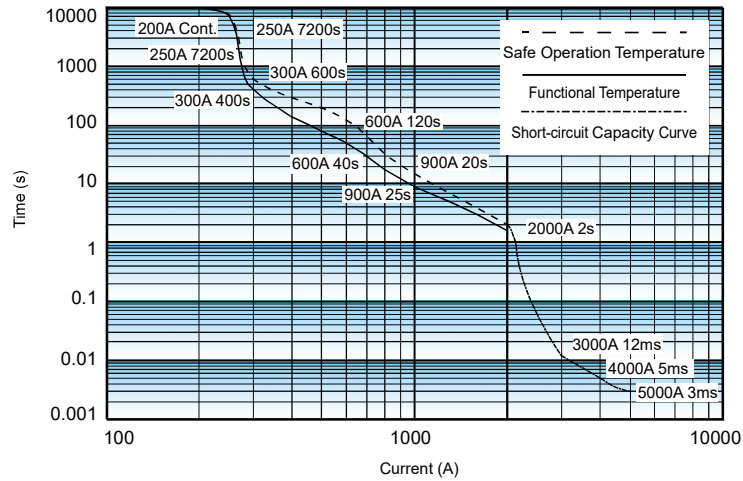
C:Connector

(Configured by customers: THB 0435 series, Yazaki 7283-1020)



CHARACTERISTIC CURVES

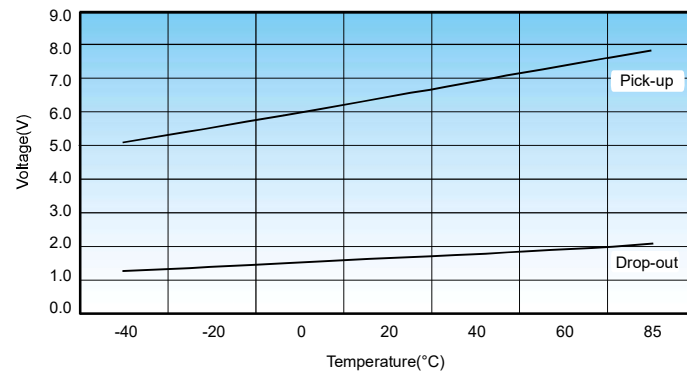
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C; If the safe operation temperature of 180°C is exceeded, the relay may also catch fire.
3. The ambient temperature is 85°C, and the cross sectional area of the wire is $\geq 60\text{mm}^2$.
4. When the current is $\geq 2000\text{A}$, the relay is likely to weld without fire or explosion.
5. The dash-dotted line is the short-circuit capacity curve of the relay, when the current is $\geq 3000\text{A}$, the contact may bounce without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

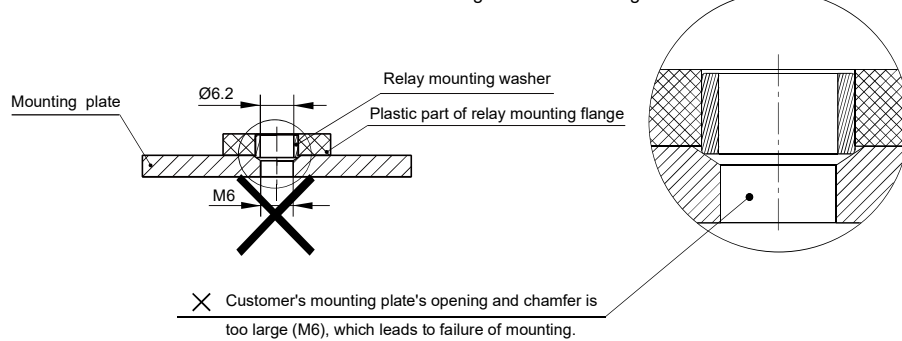
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 60mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

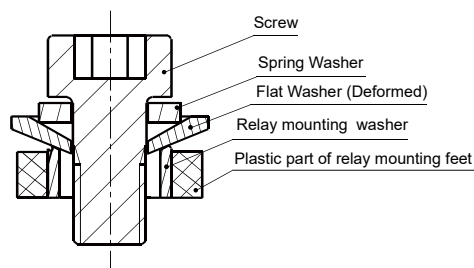
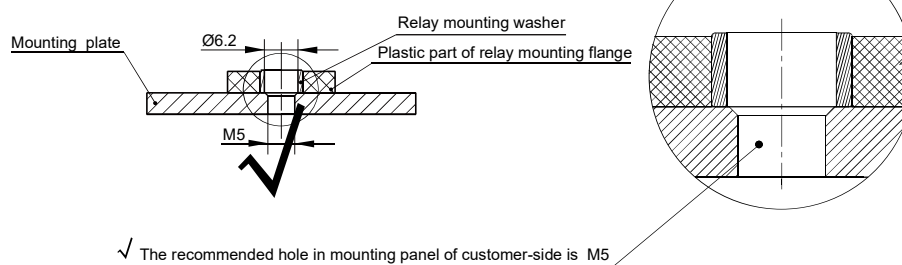
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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HFE82V-200W

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 200A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	Main contact≤0.5mΩ(at 200A) Auxiliary contact<100mΩ(at 0.5A)
Contact rating	200A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	1500A(450 VDC) 1op
Max. switching power	180kW
Electrical endurance ²⁾	Making:1x10 ⁵ ops(20 VDC C=1500μF, Inrush150A)
	Breaking:5x10 ⁴ ops(450 VDC,15A)
	Breaking:500ops(450 VDC,200A)
	Breaking:1op(450 VDC,1500A)
	Short-circuit capacity: 6kA/450 VDC. 5ms No fire, no explosion
Current carrying ³⁾ capacity	200A: Cont.
	250A: 15min
	320A: 5min
	600A: 30s
	900A: 10s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.
The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 80mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥0.5	6
24	≤18	≥1	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
	Between contacts & auxiliary contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.400g
Outline Dimensions		55.0x43.0x65.8mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE82	V	-200W/	12-	H	A-	C	5	-1	(XXX)
Type										
Application	V: Vehicle									
Contact rating	200: 200A									
Series breakdown	W: W series									
Load voltage	Nil: 450 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Auxiliary contact form	A: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Mounting	Nil: Vertical mounting									
Coil characteristic	1: Single coil									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

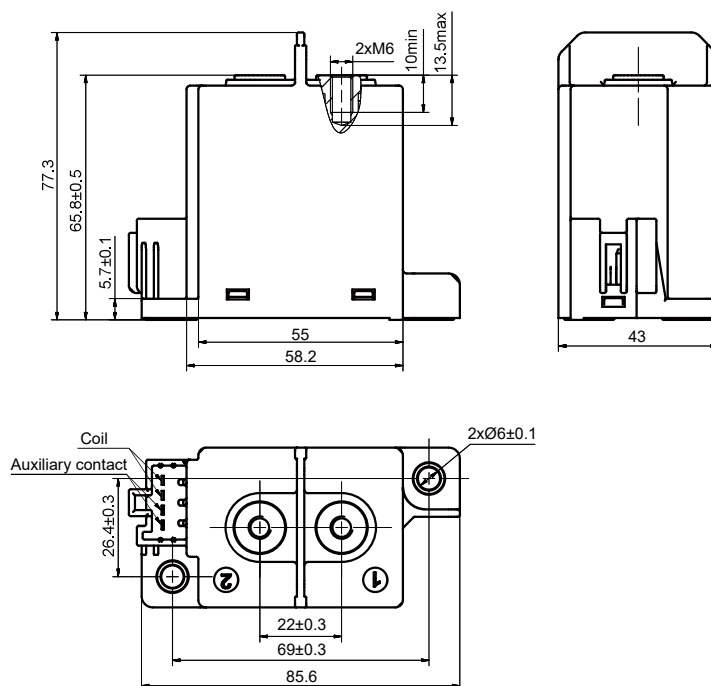
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

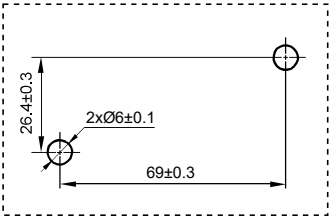
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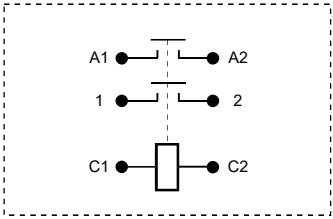
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



Terminal Arrangement



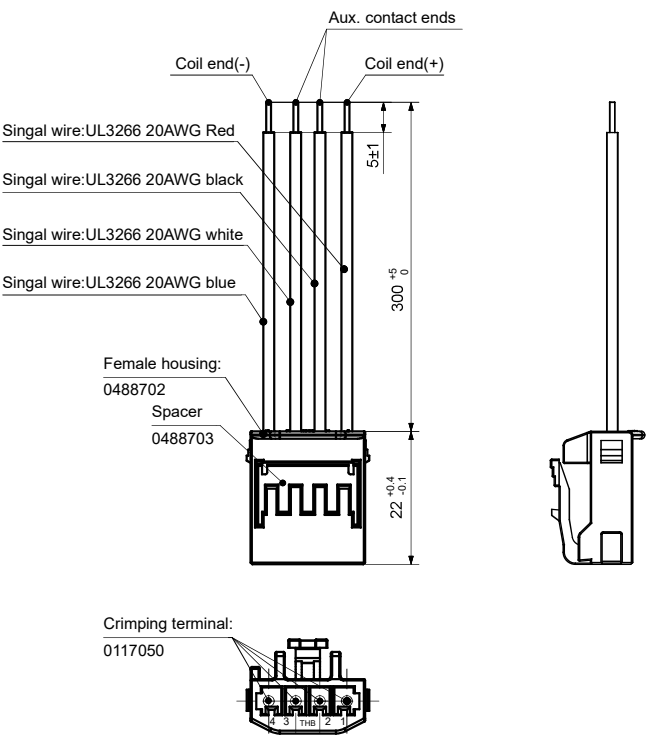
Note: No polarity on the load, auxiliary contacts and coil sides.

WIRING DIAGRAM

Unit: mm

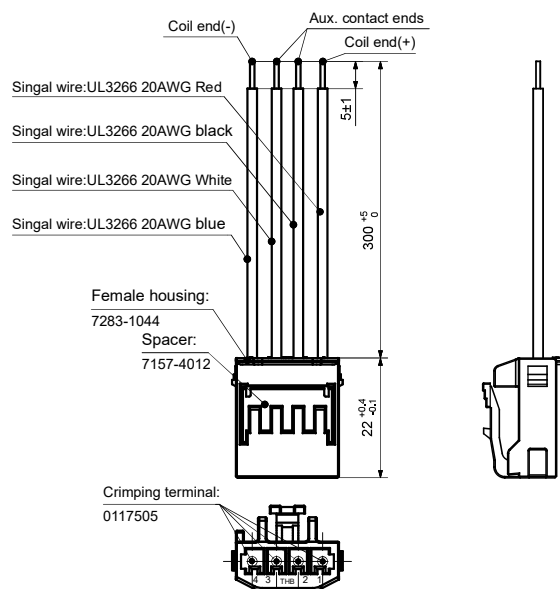
C:Connector

(Configured by customers: THB:0488701)



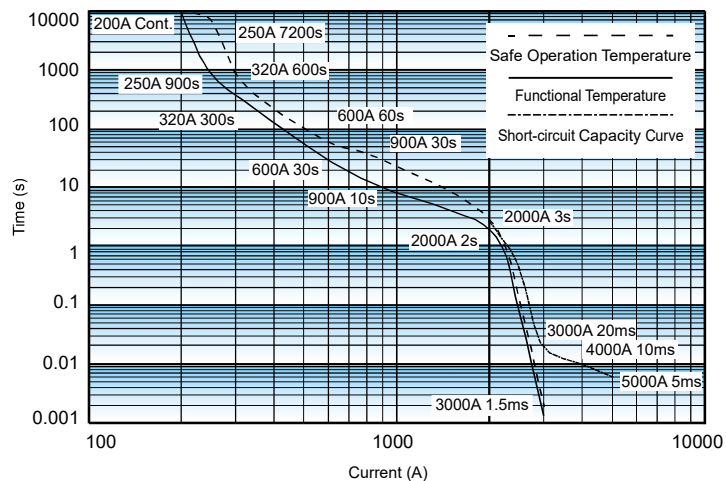
C:Connector

(Configured by customers: Yazaki-7283-1044)



CHARACTERISTIC CURVES

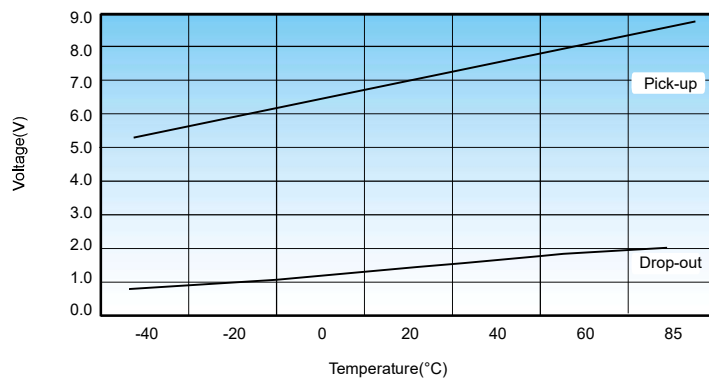
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C; If the safe operation temperature of 180°C is exceeded, the relay may also catch fire;
3. The ambient temperature is 85°C, and the cross sectional area of the wire is $\geq 80\text{mm}^2$.
4. When the current is $\geq 2000\text{A}$, the relay is likely to weld without fire or explosion.
5. The dash-dotted line is the short-circuit capacity curve of the relay. when the current is $\geq 5000\text{A}$, the contact may bounce without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

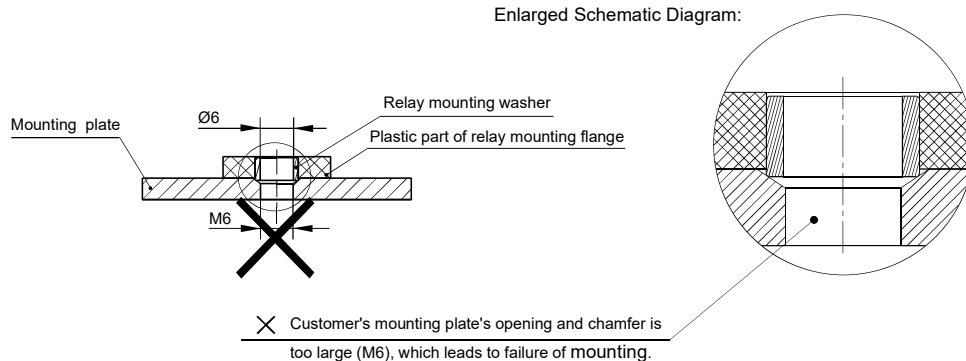
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 80mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

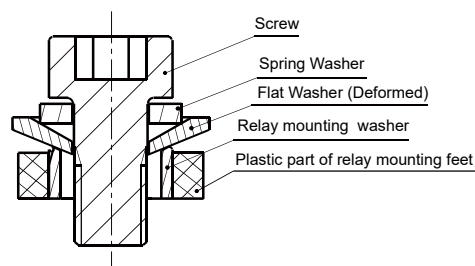
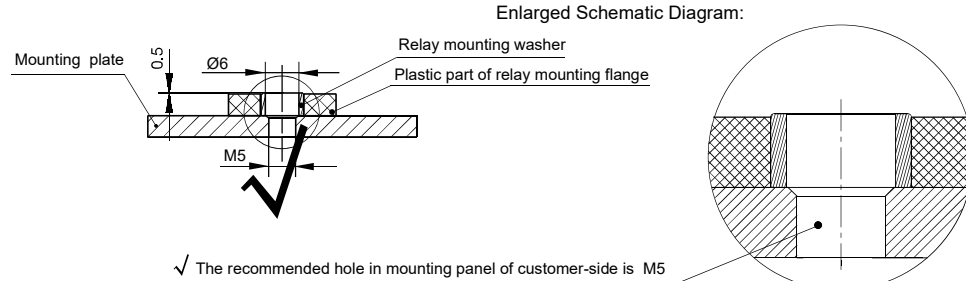
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-250

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 250A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.2mΩ(at 250A)
Contact rating	250A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	2000A(450 VDC) 1op
Max. switching power	225kW
Electrical endurance ²⁾	Making:2.5×10 ⁴ ops(22.5 VDC, C=1100μf,Inrush 400A, Steady 250A)
	Making:1ops(300 VDC, C=1100μF,Inrush1350A)
	Breaking:50ops(450 VDC,400A)
	Switching:1×10 ³ ops(450 VDC,250A)
	Switching:10ops(750 VDC,-250A)
	Switching:500ops(750 VDC,250A)
	Breaking:1op(450 VDC,2000A)
Current carrying ³⁾ capacity	250A:Cont.
	375A:10min
	500A:120s
	1000A:30s
	2500A:0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 100mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	6
24	≤18	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	Deenergized:98m/s ² Energized: 196m/s ² :196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.580g
Outline Dimensions		95.0x45.0x85.0mm(HL5) 97.0x45.5x84.7mm(HL5Y)

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE82	V	-250/ 750-	12-	H	L	5	Y	(XXX)
Type									
Application	V: Vehicle								
Contact rating	250: 250A								
Load voltage	Nil: 450 VDC 750: 750 VDC								
Coil voltage	12: 12 VDC 24: 24 VDC								
Contact arrangement	H: 1 Form A								
Coil terminal structure	L: Lead wire								
Load terminal structure	5: Screw terminal female								
Mounting	Nil: Vertical mounting Y: Horizontal mounting								
Special code¹⁾	XXX: Customer special requirement Nil: Standard								

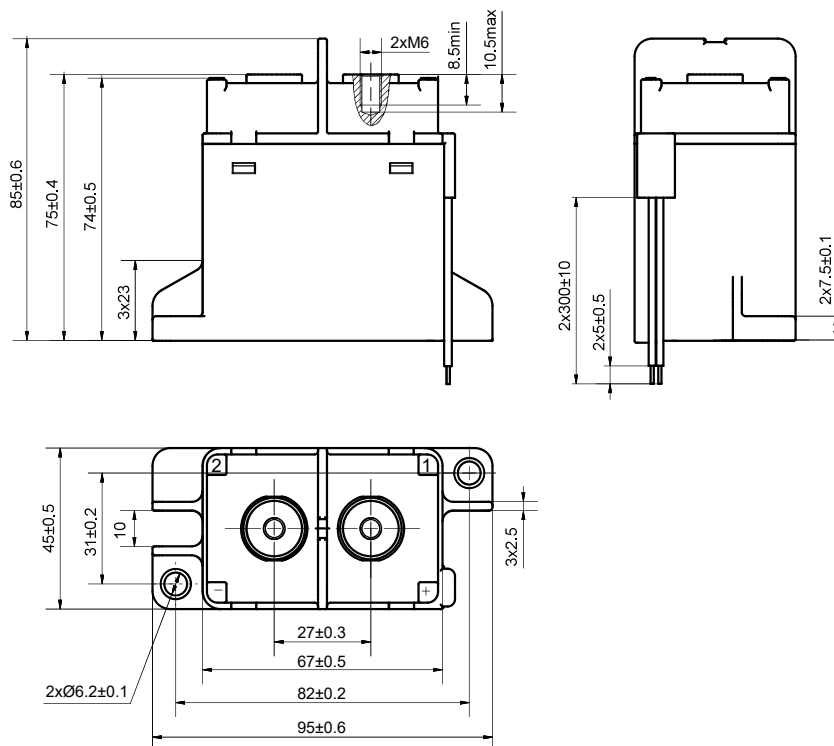
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82V-250/XXX-XX-12-HL5

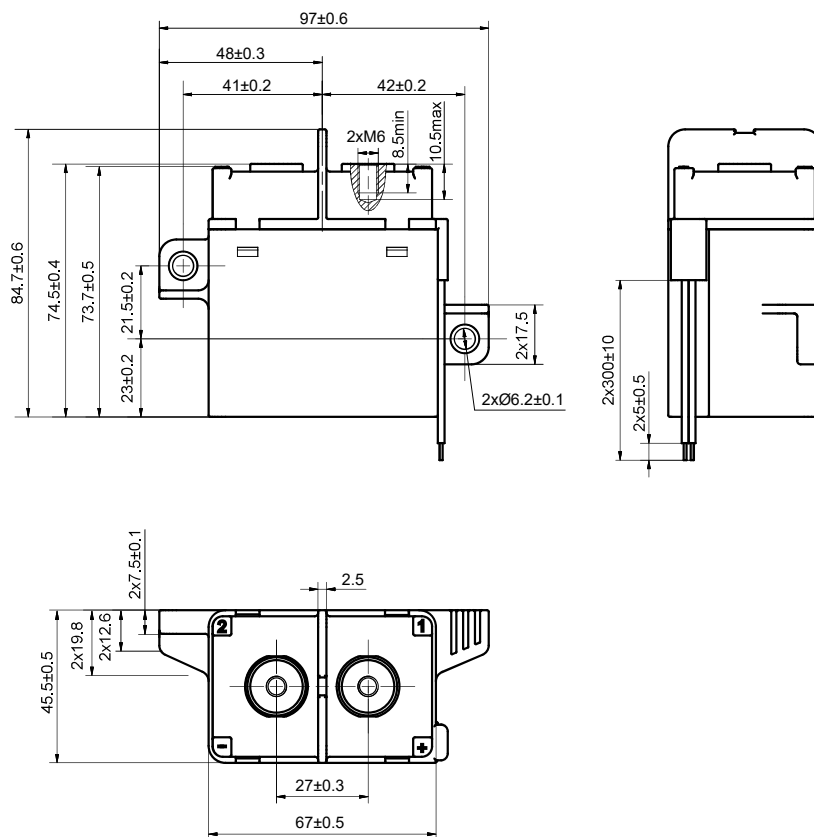


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

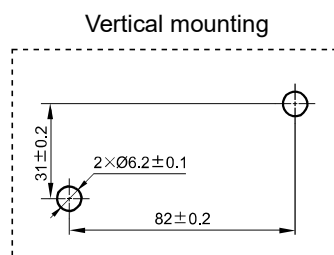
Unit: mm

Outline Dimensions

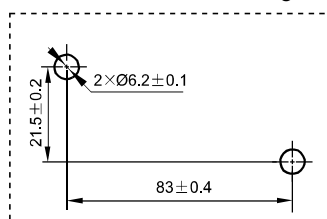
HFE82V-250/XXX-XX-12-HL5Y



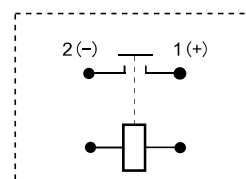
Mounting Hole



Horizontal mounting



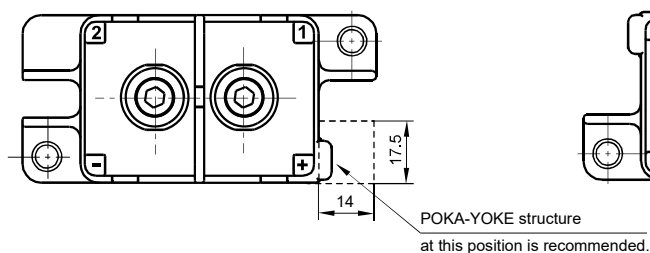
Terminal Arrangement



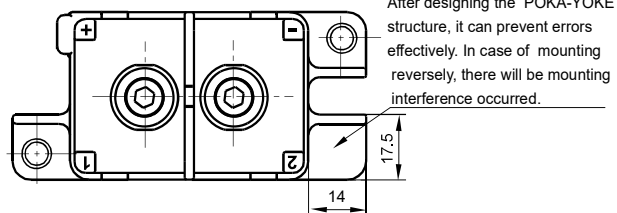
Note: The load side has polarity.
No polarity on the coil side.

Mounting Direction of Relay

Correct mounting direction



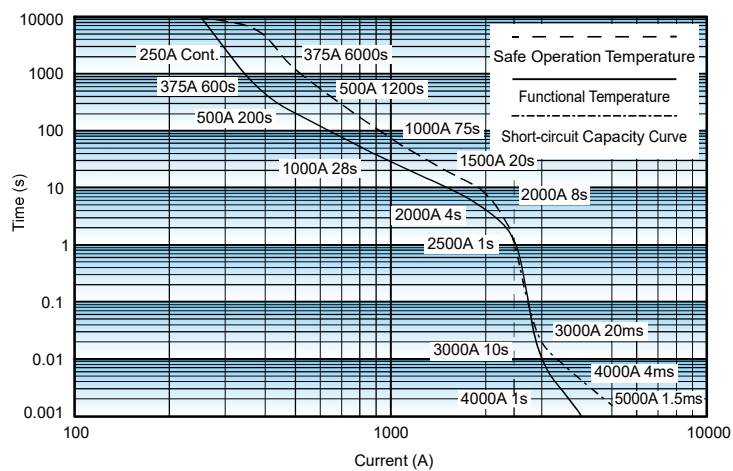
Wrong mounting direction



After designing the POKA-YOKE structure, it can prevent errors effectively. In case of mounting reversely, there will be mounting interference occurred.

CHARACTERISTIC CURVES

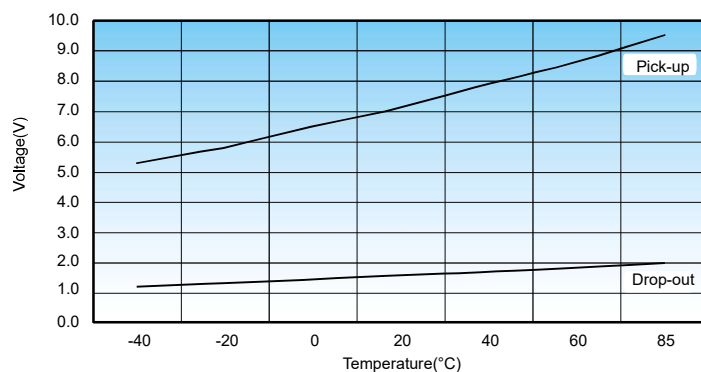
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross sectional area of the wire is $\geq 100\text{mm}^2$.
4. When the current is $\geq 2000\text{A}$, the relay is likely to weld without fire or explosion.
5. The dash-dotted line is the short-circuit capacity curve of the relay. when the current is $\geq 3500\text{A}$, the contact may bounce without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 9N·m to 11N·m. The torque beyond the range may cause damage.

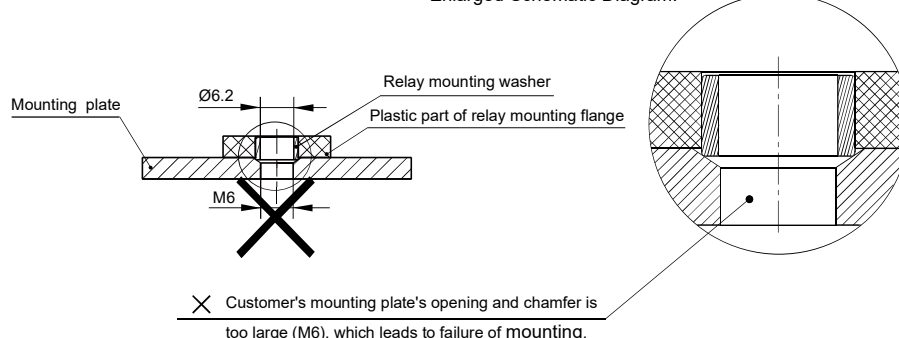
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	9N·m ~ 11N·m	Ø6.0mm~Ø6.5mm	2~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 100mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

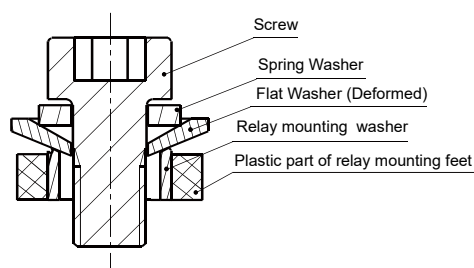
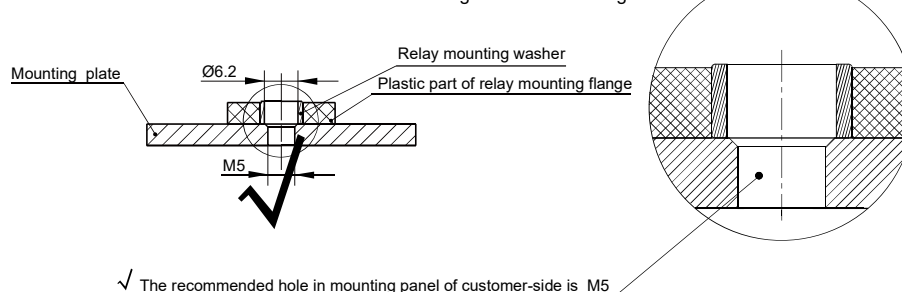
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-250C

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 250A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 2.6kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.5mΩ(at 250A)
Contact rating	250A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	2000A(450VDC) 1op
Max. switching power	250kW

	Type 450V	Type 750V
Electrical endurance ²⁾	Making:7.5×10 ⁴ ops (steady140A, Contact Voltage 20 VDC)	Making:7.5×10 ⁴ ops (steady140A, Contact Voltage 20 VDC)
	Breaking:1000ops (450 VDC,250A)	Breaking:200ops (750 VDC, 250A)
	Breaking:1000ops (450 VDC,-250A)	Breaking:200ops (750 VDC,-250A)
	Breaking:1op (450 VDC,2000A)	Breaking:1op (750 VDC,1500A)
	Breaking:1op (450 VDC,-2000A)	Breaking:1op (750 VDC,-1500A)
Current carrying ³⁾ capacity	250A:Cont.	
	350A:8min	
	500A:2min	
	900A:25s	
	1000A:20s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 60mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	6
24	≤18	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	2600 VAC 1min
	Between open contacts	2600 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	Close:588m/s ² Open:196m/s ²
	Destructive	588m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.360g
Outline Dimensions		88.3x42.5x74.5mm
		85.1x42.5x74.5mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE82	V	-250	C/	750-	12-	H-	C	5	Y	-1	(XXX)
Type												
Application	V: Vehicle											
Contact rating	250: 250A											
Series breakdown	C: C series											
Load voltage	Nil: 450 VDC 750:750 VDC											
Coil voltage	12: 12 VDC 24: 24 VDC											
Contact arrangement	H: 1 Form A											
Coil terminal structure	C: Connector Q: QC terminal											
Load terminal structure	5: Screw terminal female											
Mounting	Nil: Vertical mounting Y: Horizontal mounting											
Coil characteristic	1: Single coil											
Special code ¹⁾	XXX: Customer special requirement Nil: Standard											

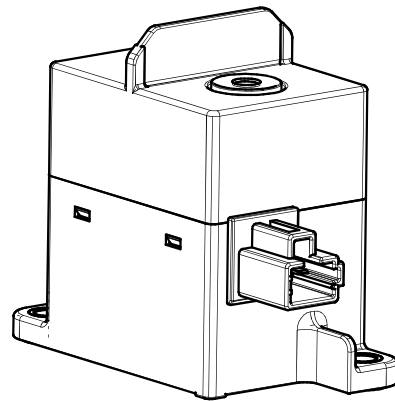
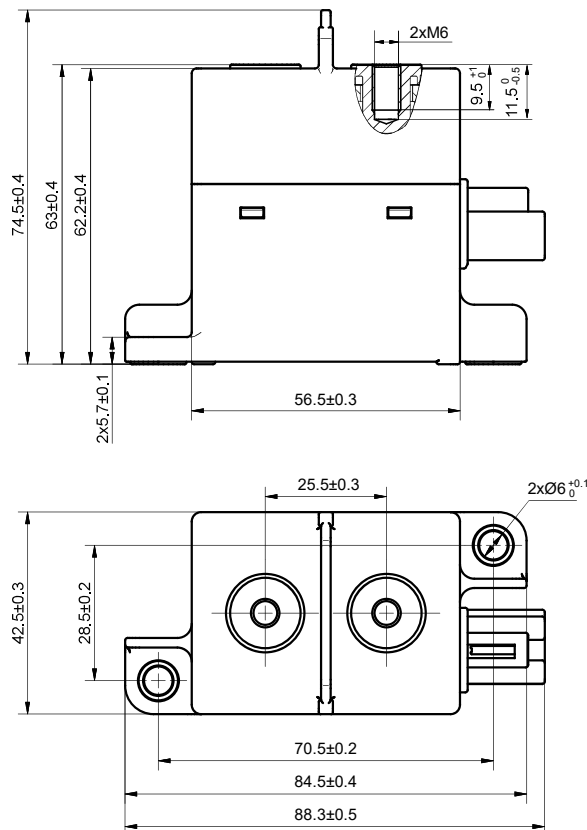
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82V-250C/XXX-XX-H-C5-1

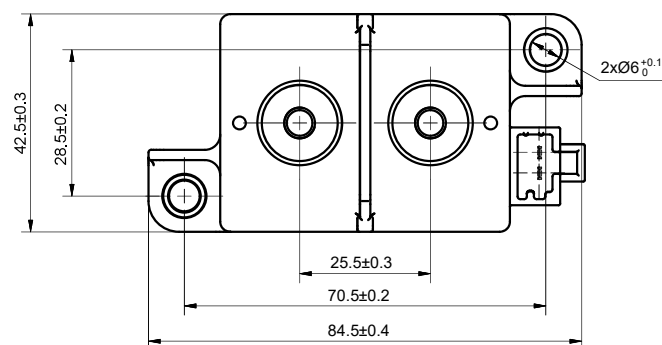
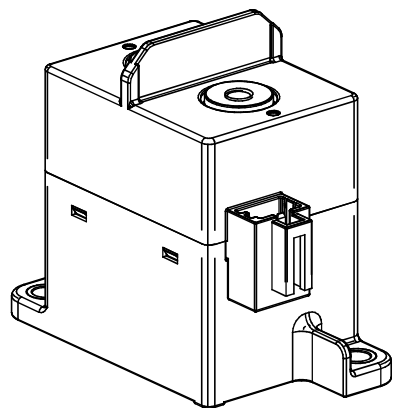
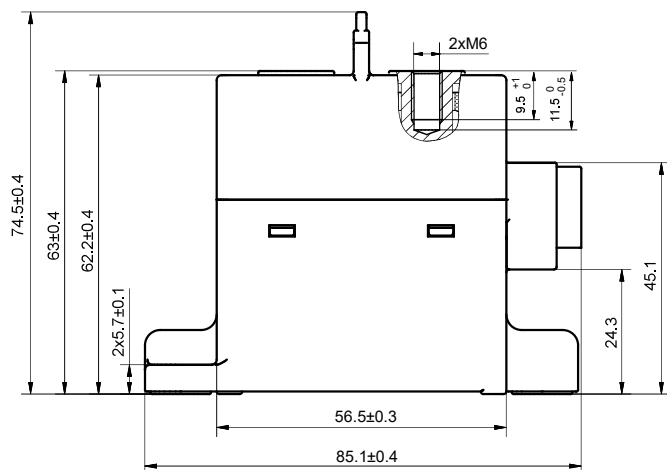


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

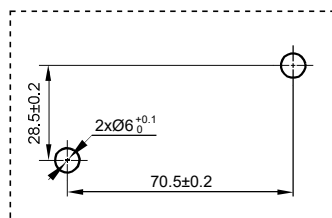
Unit: mm

Outline Dimensions

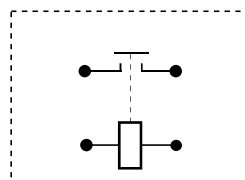
HFE82V-250C/XXX-XX-H-C5-1(917)



Mounting Hole



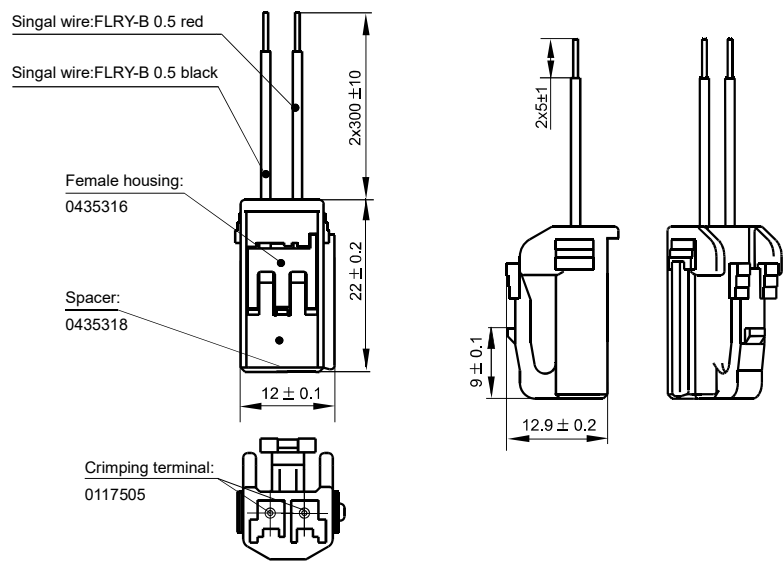
Terminal Arrangement



Note: No polarity on the load and coil sides.

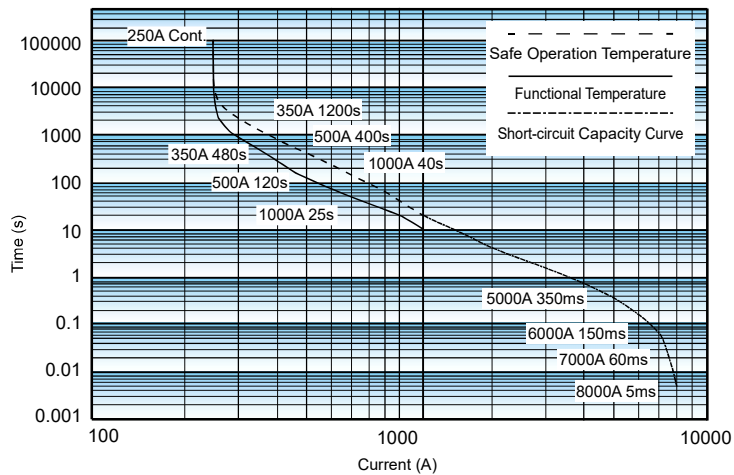
C:Connector

(Configured by customers:THB 0435 series, Yazaki 7283-1020)



CHARACTERISTIC CURVES

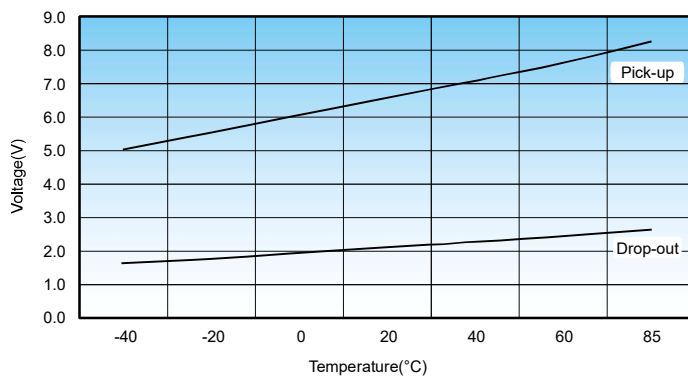
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross section area of the wire is $\geq 60\text{mm}^2$.
4. When the relay is operated under current $\geq 2000\text{A}$ for a long-term, it may weld without fire or explosion.
5. The dash-dotted line refers to the short-circuit capacity curve of the relay without fire or explosion; when the short-circuit current is $\geq 6000\text{A}$, the contact may open.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

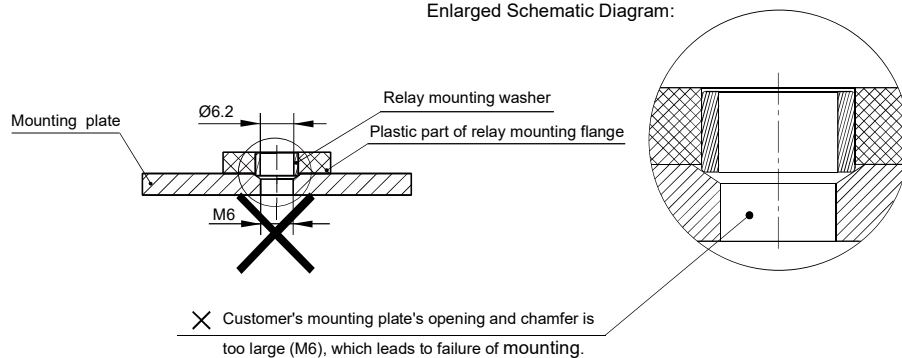
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 60mm², otherwise the terminal parts may have abnormal heating.
6. The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

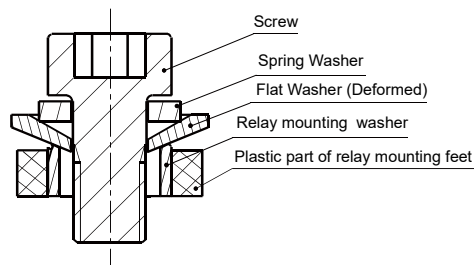
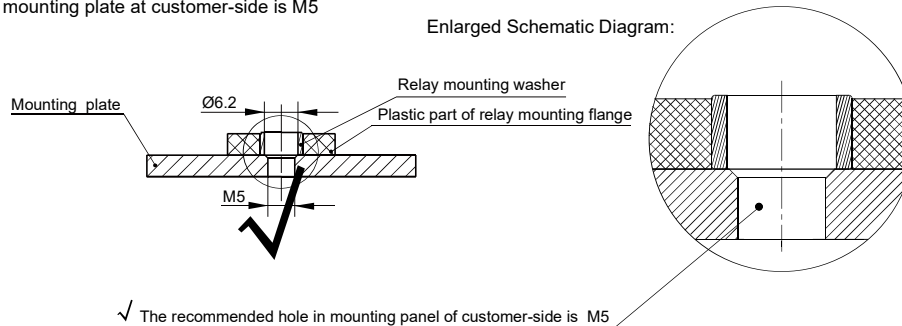
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE82V-300C

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 300A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 2.6kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.5mΩ(at 300A)
Contact rating	300A
Mechanical endurance	2 x 10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	2000A(750 VDC)1op
Max. switching power	300kW

	Type 450V	Type 750V
Electrical endurance ²⁾	Making:7.5×10 ⁴ ops (Steady140A, Contact Voltage 20 VDC)	Making:7.5×10 ⁴ ops (Steady140A, Contact Voltage 20 VDC)
	Breaking:1000ops (450 VDC,300A)	Breaking:500ops (750 VDC,300A)
	Breaking:1000ops (450 VDC,-300A)	Breaking:500ops (750 VDC,-300A)
	Breaking:10p (450 VDC,2000A)	Breaking:10p (750 VDC,2000A)
	Breaking:10p (450 VDC,-2000A)	Breaking:10p (750 VDC,-2000A)
Current carrying ³⁾ capacity	300A:Cont.	
	450A 5min	
	600A 2min	
	900A 30s	
	1000A 25s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 100mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	6
24	≤18	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	2600 VAC 1min
	Between open contacts	2600 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	Close:588 m/s ² Open:196 m/s ²
	Destructive	588m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.370g
Outline Dimensions		88.3x42.5x74.5mm(HC5) 85.1x42.5x74.5mm(HC5Y)

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-300	C/	750-	12-	H-	C	5	Y	-1	(XXX)
Application	V: Vehicle											
Contact rating	300: 300A											
Series breakdown	C: C series											
Load voltage	Nil: 450 VDC 750: 750 VDC											
Coil voltage	12: 12 VDC 24: 24 VDC											
Contact arrangement	H: 1 Form A											
Coil terminal structure	C: Connector Q: QC terminal											
Load terminal structure	5: Screw terminal female											
Mounting	Nil: Vertical mounting Y: Horizontal mounting											
Coil characteristic	1: Single coil											
Special code ¹⁾	XXX: Customer special requirement Nil: Standard											

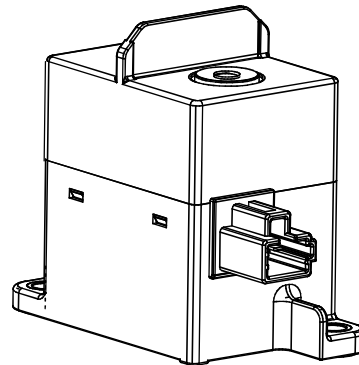
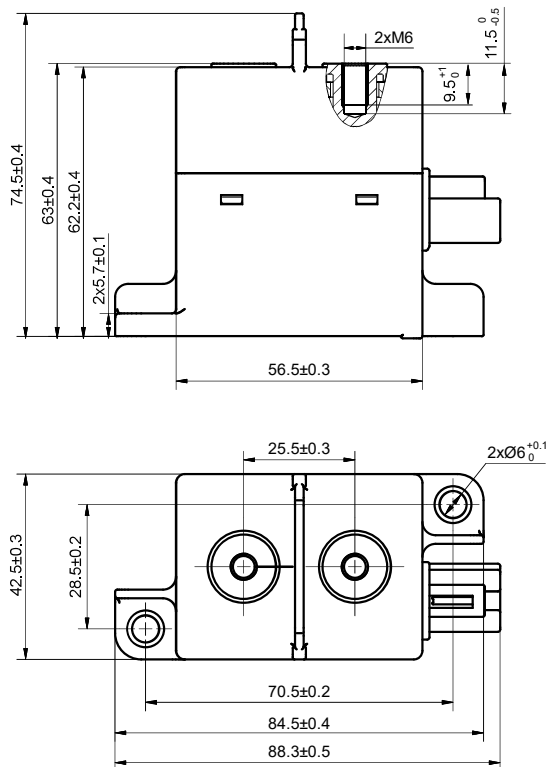
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82V-300C/XXX-XX-H-C5-1

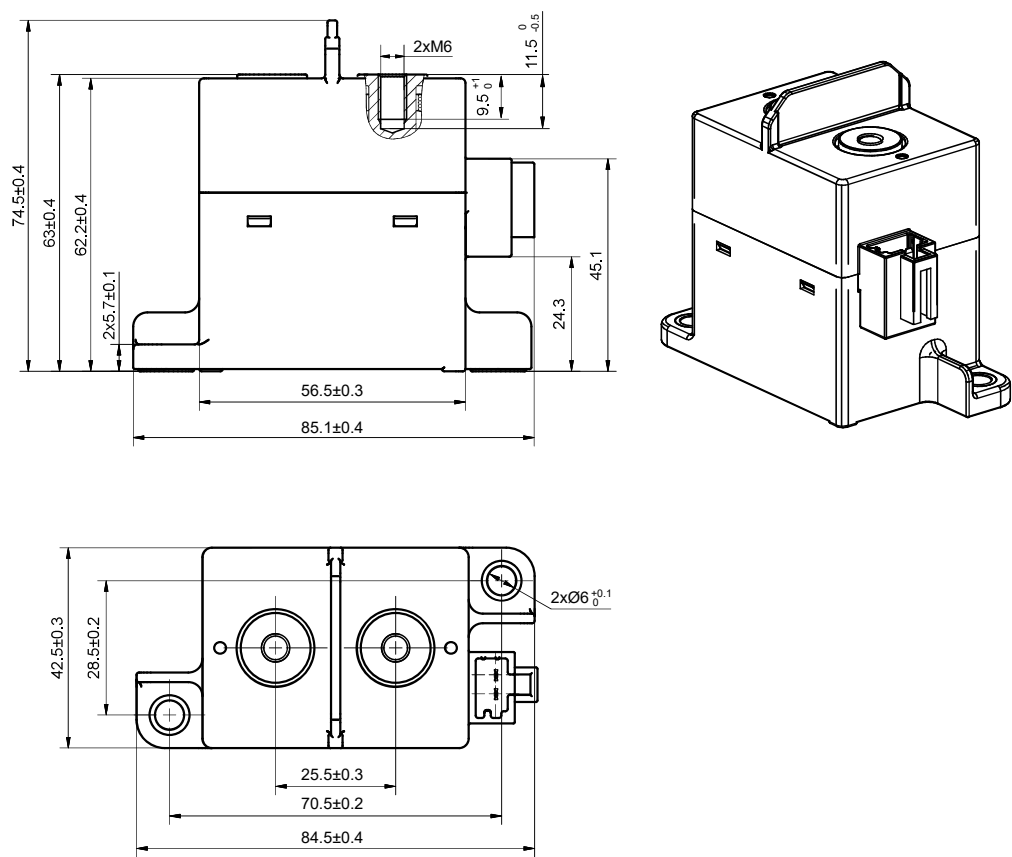


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

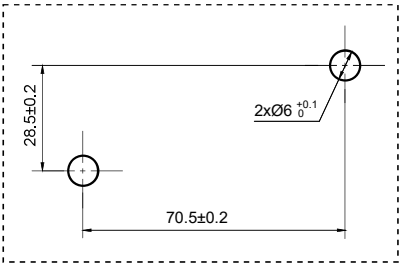
Unit: mm

Outline Dimensions

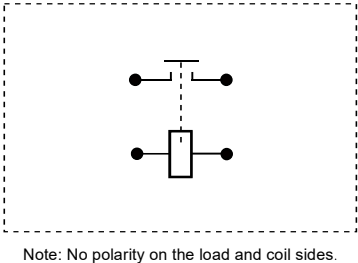
HFE82V-300C/XXX-XX-H-C5-1(917)



Mounting Hole

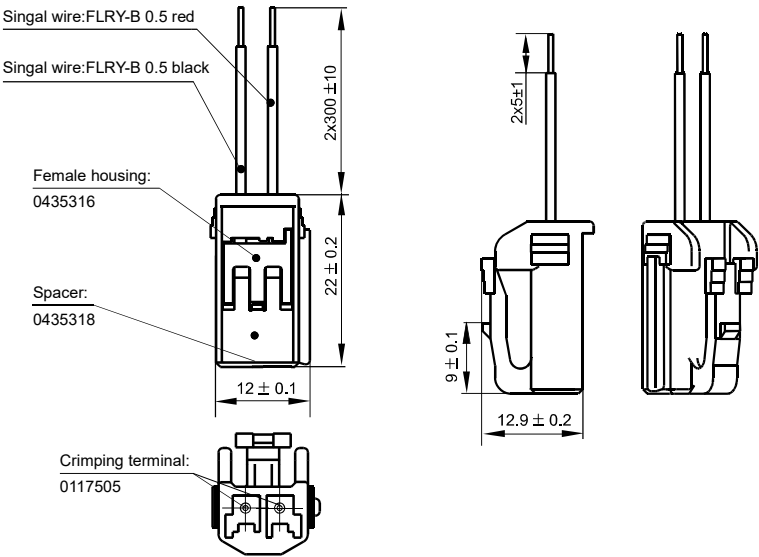


Terminal Arrangement



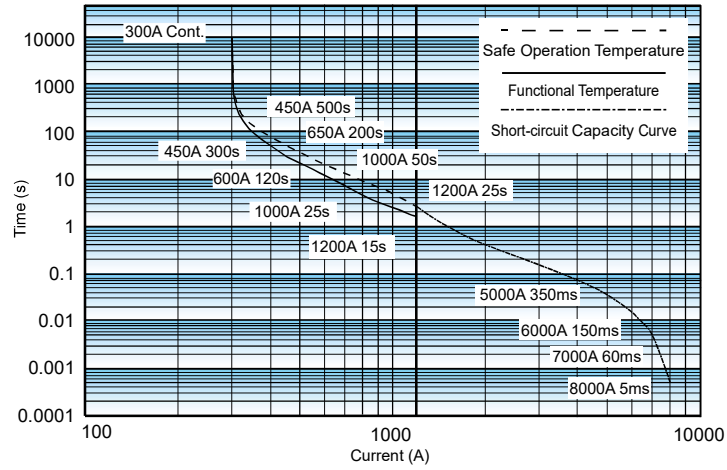
C:Connector

(Configured by customers:THB 0435 series, Yazaki 7283-1020)



CHARACTERISTIC CURVES

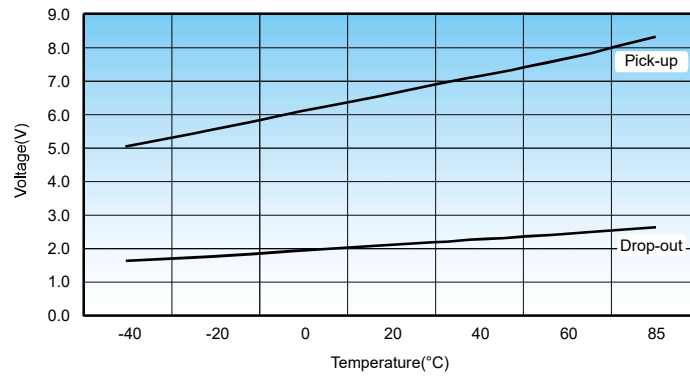
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross section area of the wire is $\geq 100\text{mm}^2$.
4. When the relay is operated under current $\geq 2000\text{A}$ for a long-term, it may weld without fire or explosion.
5. The dash-dotted line refers to the short-circuit capacity curve of the relay without fire or explosion; when the short-circuit current is $\geq 6000\text{A}$, the contact may open.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

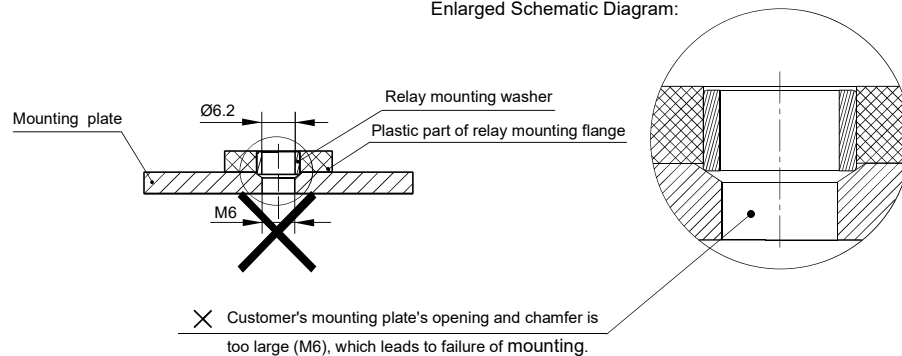
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 100mm², otherwise the terminal parts may have abnormal heating.
6. The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

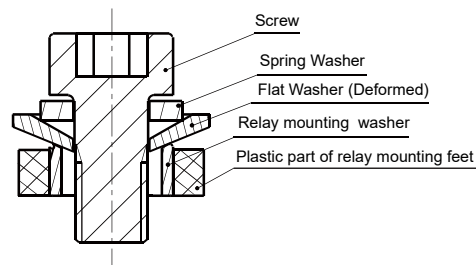
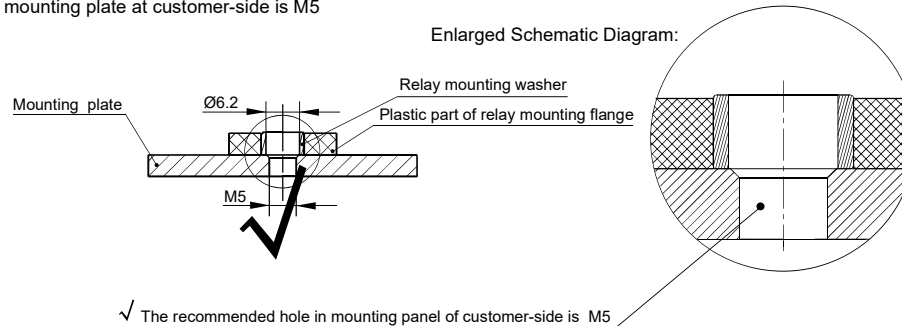
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE85V-300M

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 300A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 3kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement		1 Form A
Contact resistance ¹⁾		≤0.25mΩ(at 200A)
Contact rating		300A
Mechanical endurance		2x10 ⁵ ops
Max. switching voltage		1000VDC
Max. breaking current		2000A(450VDC)1op
Max. switching power		450kW
Electrical endurance ²⁾	Res.load	Breaking:100ops(1000VDC,300A)
		Breaking:500ops(800VDC,300A)
		Breaking:500ops(750VDC,300A)
		Breaking:1000ops(450VDC,300A)
		Breaking:1op(450VDC, 2000A)
Current carrying ³⁾ capacity	300A:Cont.	
	450A:150s	
	600A:23s	
	1000A:12s	
	2000A:10s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 100mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	Driving Power: 60 Holding Power: 4.3
24	≤18	≥2	

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	Main contacts:196m/s ² ; AUX contacts:147m/s ² @energized 98m/s ² @(non-energized)
	Destructive	490m/s ²
Vibration resistance		1.5mm DA 10Hz~500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.430g
Outline Dimensions		See "outline dimensions"

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

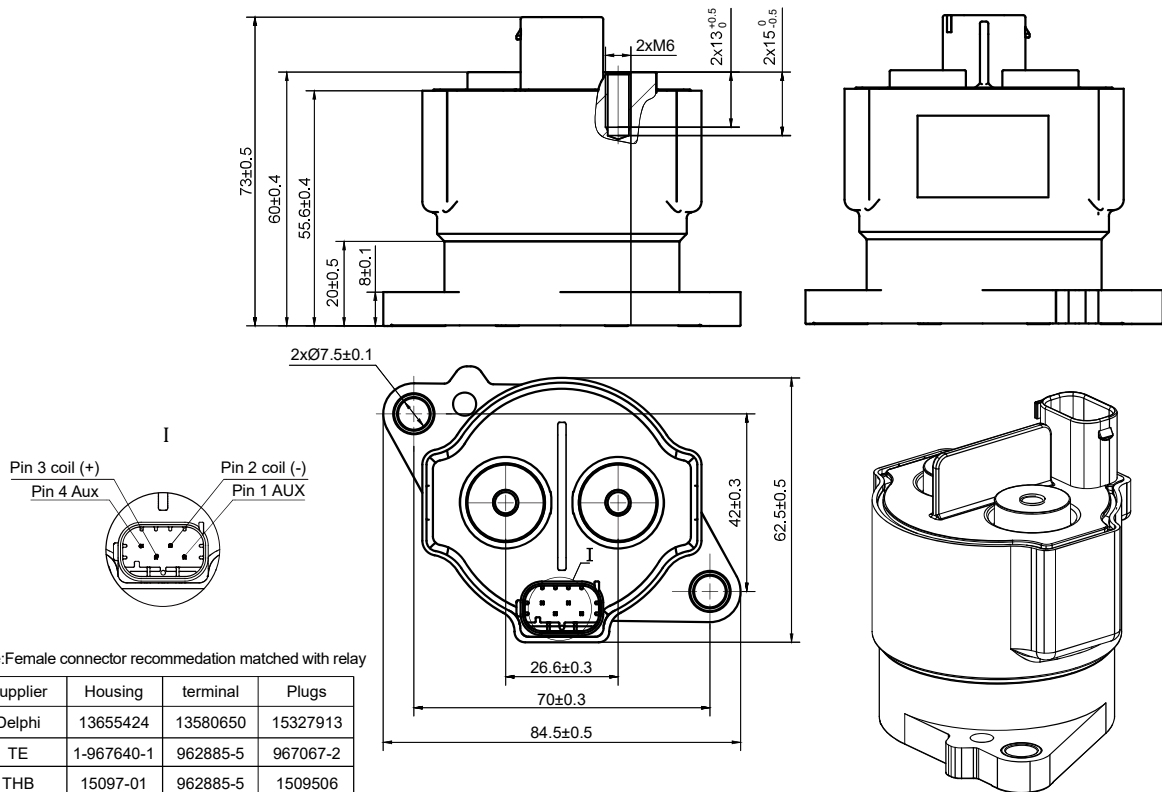
Type	HFE85	V	-300	M/	XXX	12-	H-	B	C	5	-6	(XXX)
Application	V: Vehicle											
Contact rating	300: 300A											
Series breakdown	M: M series											
Load voltage	Nil: 450VDC 750: 750VDC 800: 800VDC 1000: 1000VDC											
Coil voltage	12: 12VDC 24: 24VDC											
Contact arrangement	H: 1 Form A											
Aux Contact type	B: 1 Form B											
Coil terminal structure	C: Connector											
Load terminal structure	5: Screw terminal female											
Coil characteristic	6: Double coil with PCBA											
Special code ¹⁾	XXX: Customer special requirement Nil: Standard											

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

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

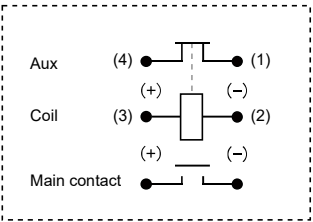
Outline Dimensions



OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

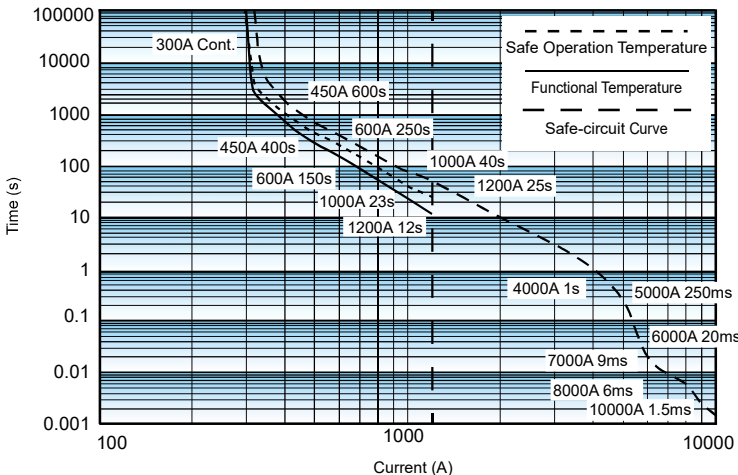
Terminal Arrangement



Note:With polarity on the coil and main Contact,Without polarity on the Aux.

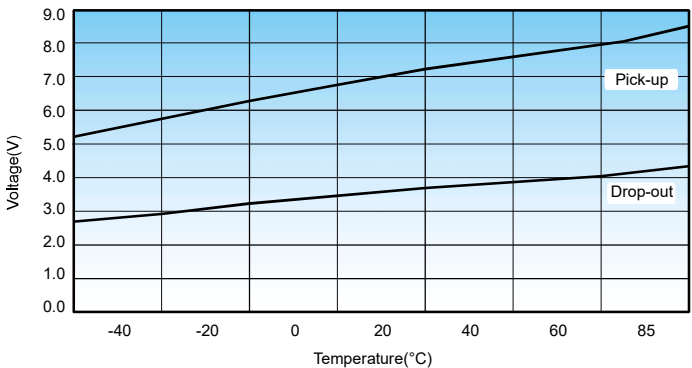
CHARACTERISTIC CURVES

Endurance Capacity Curve



- Notes:
- 1.The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
 - 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C;If the safe operation temperature of 180°C is exceeded, the relay may also catch fire;
 - 3.The data above is measured at the environment temperature 85°C,with cross section area of wire $\geq 100\text{mm}^2$.
 - 4.When the relay is operated under current $\geq 2000\text{A}$ for a long-term, it may weld without fire or explosion.
 - 5.When the over current is higher than 8000A 6ms, the levitation will possibly happen. Relay may explode if fuse can't trip in time and fire may caused if the arc continues after the explosion.
 - 6.When the over current is higher than 10000A 1.5ms, the levitation will happened seriously. Relay may explode if fuse can't trip in time and fire may caused if the arc continues after the explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

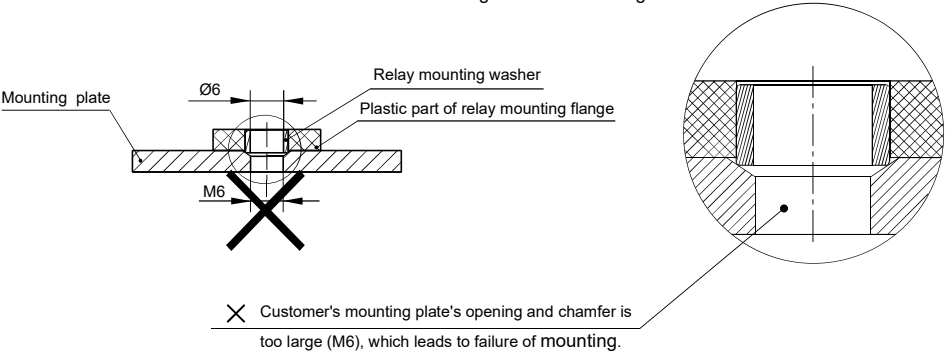
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.8mm~Ø7.5mm	3~4mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically,please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 100mm², otherwise the terminal parts may have abnormal heating.
6. The recommended thickness of copper bus-bar is 4mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

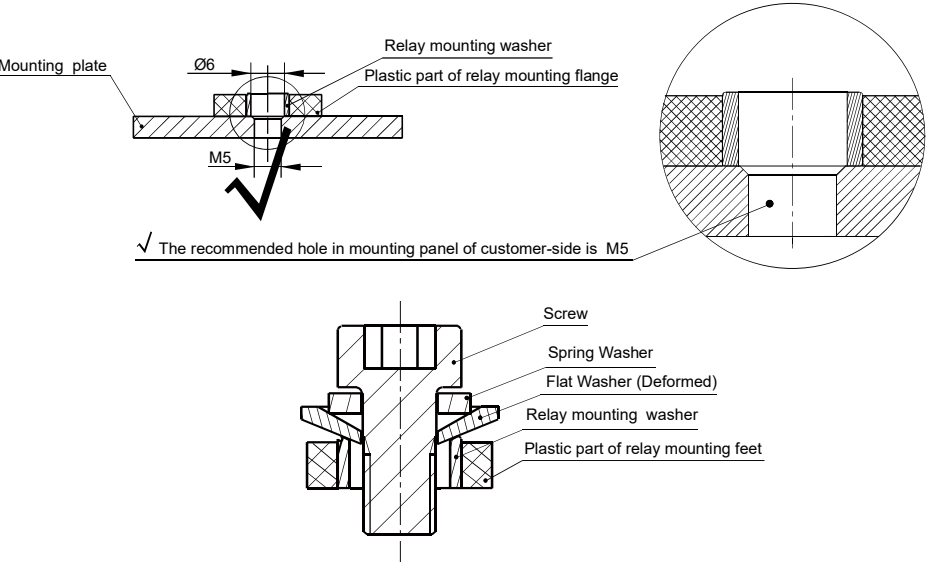
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82V-400M

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 400A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 3kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance 1)	$\leq 0.25\text{m}\Omega$, Typ.: $0.15\text{m}\Omega$ (at 400 A)
Contact rating	400A
Mechanical endurance	2×10^5 ops
Max. switching voltage	800 VDC
Max. breaking current	2000A(450VDC)1op
Max. switching power	360kW
Electrical endurance 2)	Making: 7.5×10^4 ops (22.5VDC 140A C=110μF)
	Breaking: 7.5×10^4 ops(450 VDC 5A)
	Breaking: 2.5×10^4 ops(450 VDC 10A)
	Breaking: 3×10^3 ops(450 VDC 200A)
	Breaking: 1×10^3 ops(450 VDC 400A)
	Breaking: 100ops(800 VDC 400A)
	Breaking: 100ops(1000 VDC 200A)
Current carrying 3) capacity	400A:Cont.
	500A:2000s
	1350A:15s
	2000A:10s
	3000A:5s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 200mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤ 9	≥ 1	6
24	≤ 18	≥ 2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		$\leq 50\text{ms}$
Release time (at rated volt.)		$\leq 10\text{ms}$
Shock resistance	Functional	Close: 98m/s^2 Open: 196m/s^2
	Destructive	490m/s^2
vibration resistance		10Hz ~ 500Hz 49m/s^2
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx. 740g
Outline Dimensions		95.8 x 49.0 x 93mm

Notes: The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-400	M/	750-	12-	H	-C	5	-1	(XXX)
Application	V: Vehicle										
Contact rating	400: 400A										
Series breakdown	M: M series										
Load voltage	Nil: 450 VDC 750: 750 VDC										
Coil voltage	12: 12 VDC 24: 24 VDC										
Contact arrangement	H: 1 Form A										
Coil terminal structure	C: Connector										
Load terminal structure	5: Screw terminal female										
Coil characteristic	1: Single coil										
Special code ¹⁾	XXX: Customer special requirement Nil: Standard										

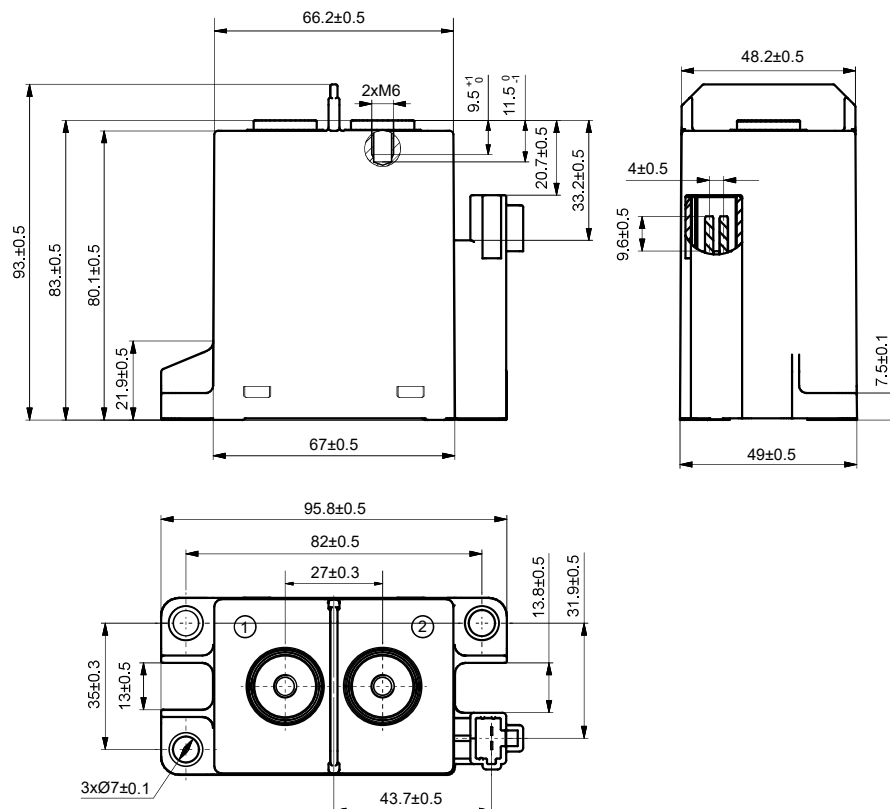
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82-400M/XXX-XX-H-C5-1(901)

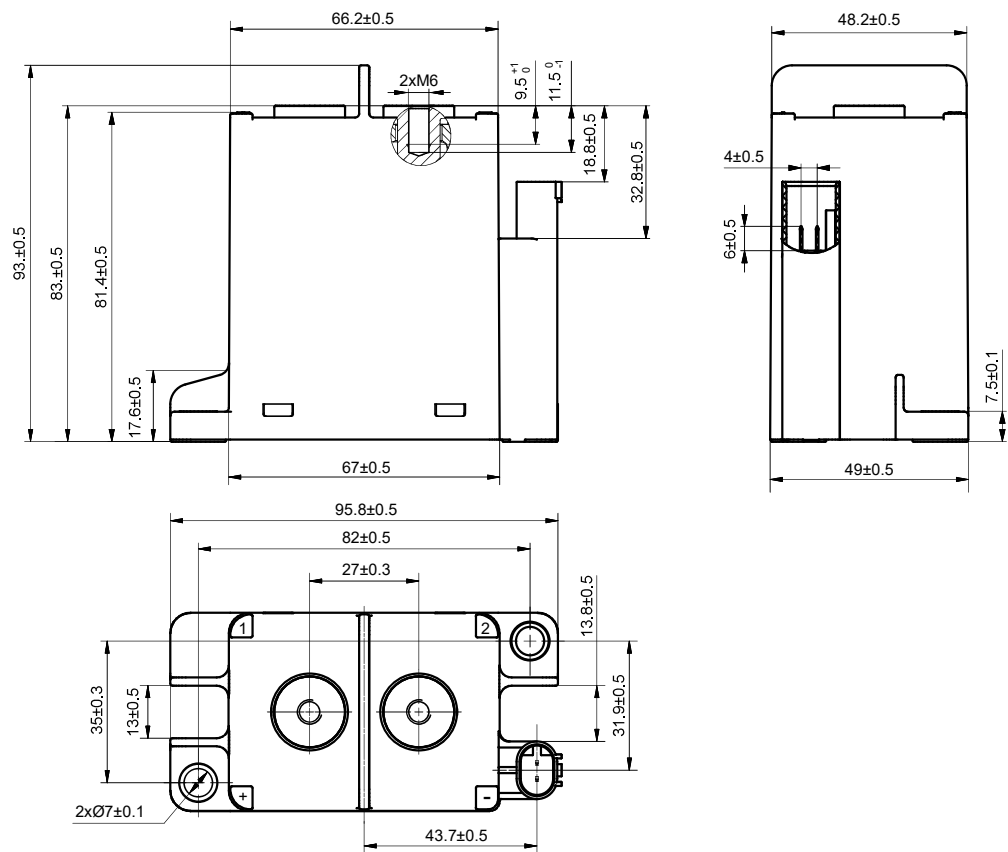


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

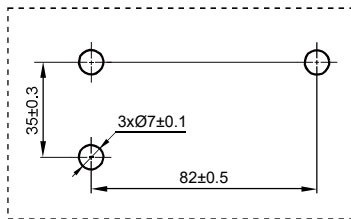
Outline Dimensions

HFE82-400M/XXX-XX-H-C5-1

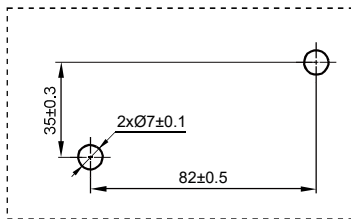


Mounting Hole

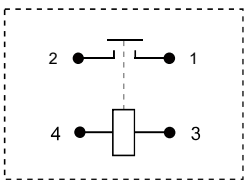
HFE82-400M/XXX-XX-H-C5-1(901)



HFE82-400M/XXX-XX-H-C5-1



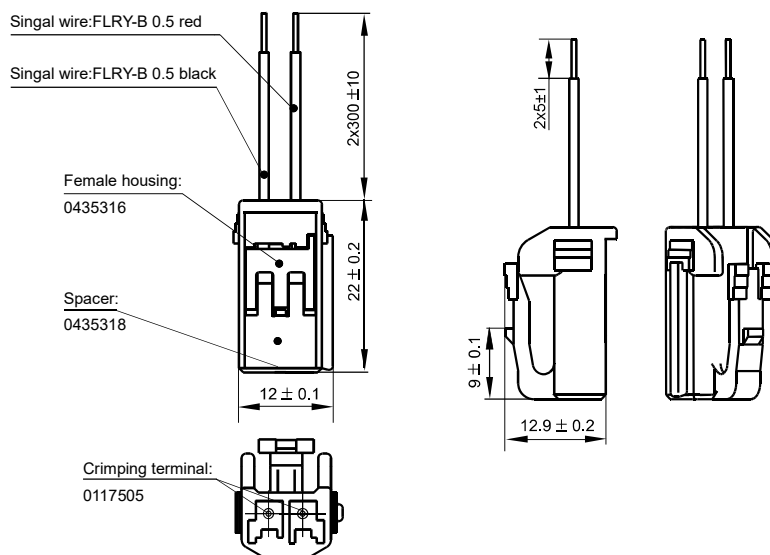
Terminal Arrangement



Note: No polarity on the load and coil sides.

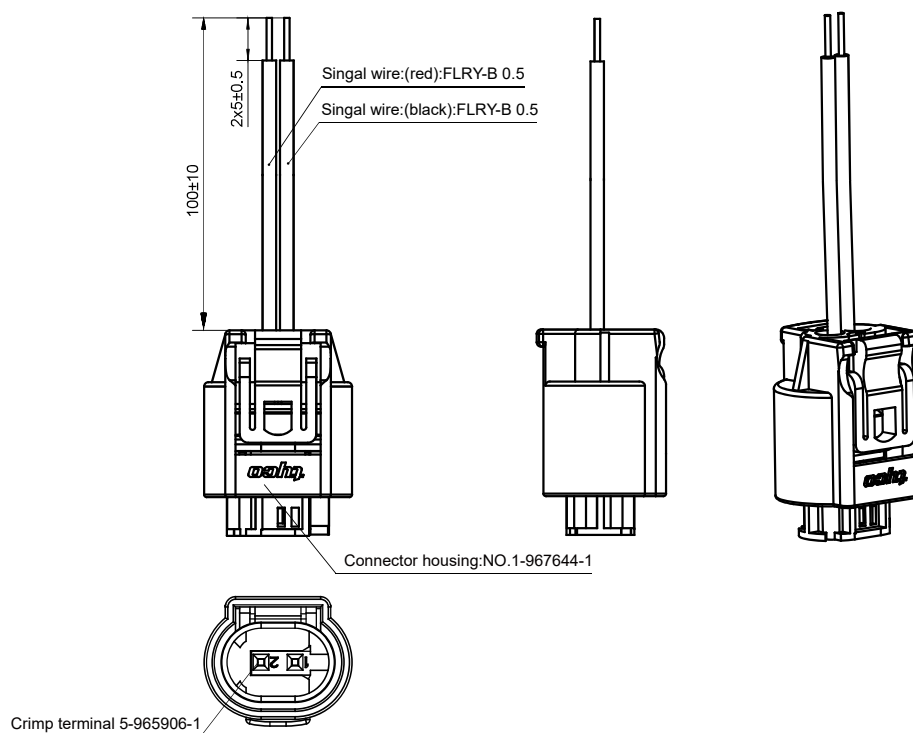
C:Connector

(Configured by customers:THB 0435 series, Yazaki 7283-1020)



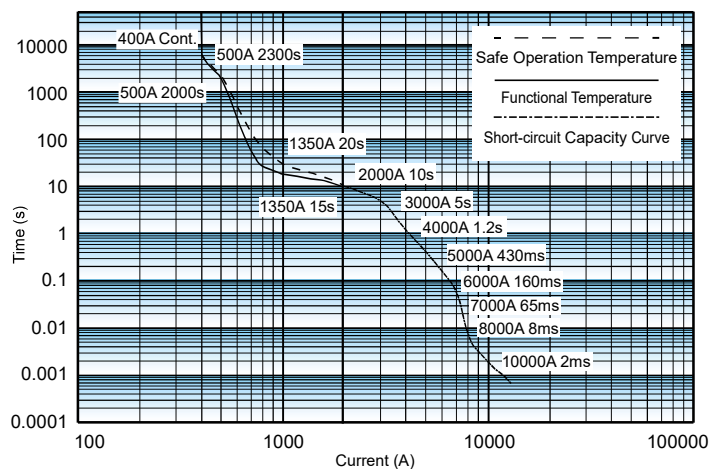
Mating connector for HFE82-400M/XXX-XX-H-C5-1

(Applicable to 2 position MQS connector of TE. Housing for female terminals is NO.1-967644-1)



CHARACTERISTIC CURVES

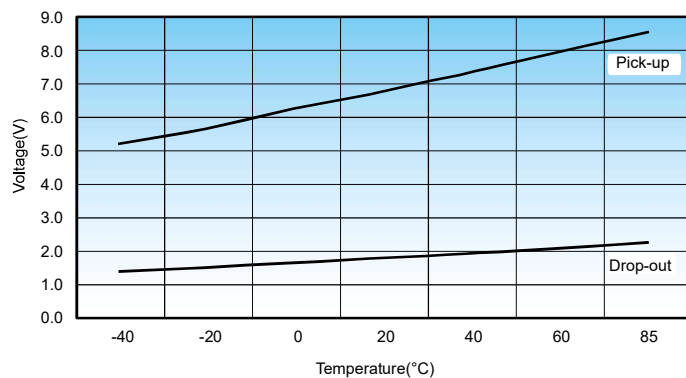
Endurance Capacity Curve



Notes:

- 1.The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
- 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C; If the safe operation temperature of 180°C is exceeded, the relay may also catch fire;
- 3.The ambient temperature is 85°C, and the cross section area of the wire is $\geq 200\text{mm}^2$.
- 4.When the relay is operated under current $\geq 2000\text{A}$ for a long-term, it may weld without fire or explosion.
- 5.When the current is $\geq 8000\text{A}$ for 8ms, the contact may open. If the fuse fails to open in time, the relay may explode, and the arc burning continuously after the explosion may cause the relay on fire.
- 6.When the current is $\geq 10000\text{A}$, the contact will open seriously, and the circuit current cannot get rise anymore. If the fuse fails to open in time, the relay will explode, and the arc may cause the relay on fire after explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

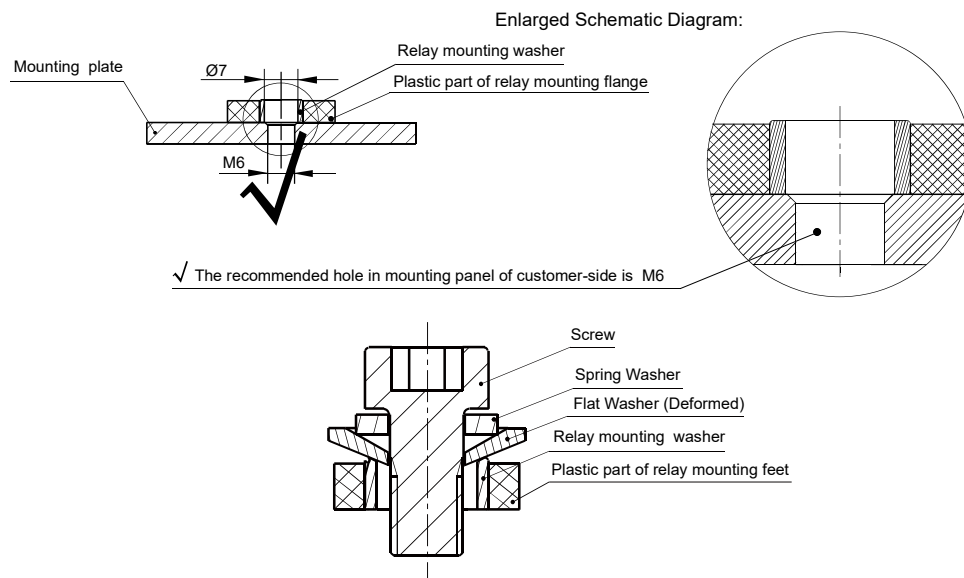
1. In case of loosening, please use washer when mount the relay with M6 screw, and the torque within 6N·m to 8N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M6 Screw	6N·m ~ 8N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 200mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Recommended method

The hole in mounting plate at customer-side is M6



When use M6 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE82V-600

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 600A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.
- Coil with energy-saving devices

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.2mΩ(at 600A)
Contact rating	600A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	2500A(800 VDC) 1op
Max. switching power	600kW
Electrical endurance ²⁾	Making:5×10 ⁴ ops(750VDC 120A,0.6s on:5.4s off)
	Switching:1×10 ⁵ ops(800 VDC,10A)
	Switching:1×10 ⁴ ops(800 VDC,100A)
	Switching:2×10 ³ ops(750 VDC,300A)
	Switching:500ops(750 VDC,600A)
	Reverse switching:5×10 ³ ops(750VDC,-100A)
	Reverse switching:1×10 ³ ops(750VDC,-300A)
	Reverse switching:300ops(750VDC,-600A)
	Breaking:1op(800 VDC,2500A)
Current carrying ³⁾ capacity	Switching:100ops(1000 VDC,600A)
	600A:Cont.
	800A:20min
	1000A:5min
	3000A:4s
	8000A:10ms

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 200mm² min. See Fig. Endurance Capacity Curve for more information.

4) 8000A 10ms is short circuit carrying test, relay contact may be welded, but will not burn or exploded.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	1~9	Switch on:50(time:0.2s) Holding:10
24	≤18	2~18	Switch on:50(time:0.2s) Holding:10

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M10 screw terminal female
Unit weight		Approx. 1800g
Outline Dimensions		146.0x66.6x132.8mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-600/ 750-	24-	H-	L	6	(XXX)
Application	V: Vehicle							
Contact rating	600: 600A							
Load voltage	Nil: 450VDC 750: 750VDC 1000: 1000VDC							
Coil voltage	12: 12 VDC 24: 24 VDC							
Contact arrangement	H: 1 Form A							
Coil terminal structure	L: Lead wire							
Load terminal structure	6: Screw terminal female and copper bus bar terminal							
Special code ¹⁾	XXX: Customer special requirement Nil: Standard							

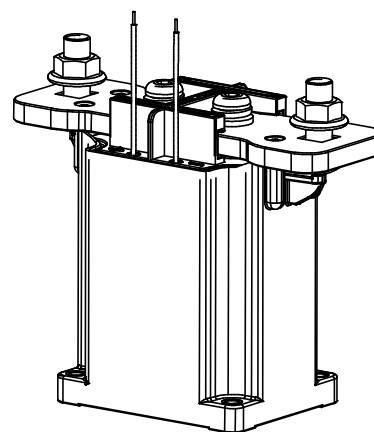
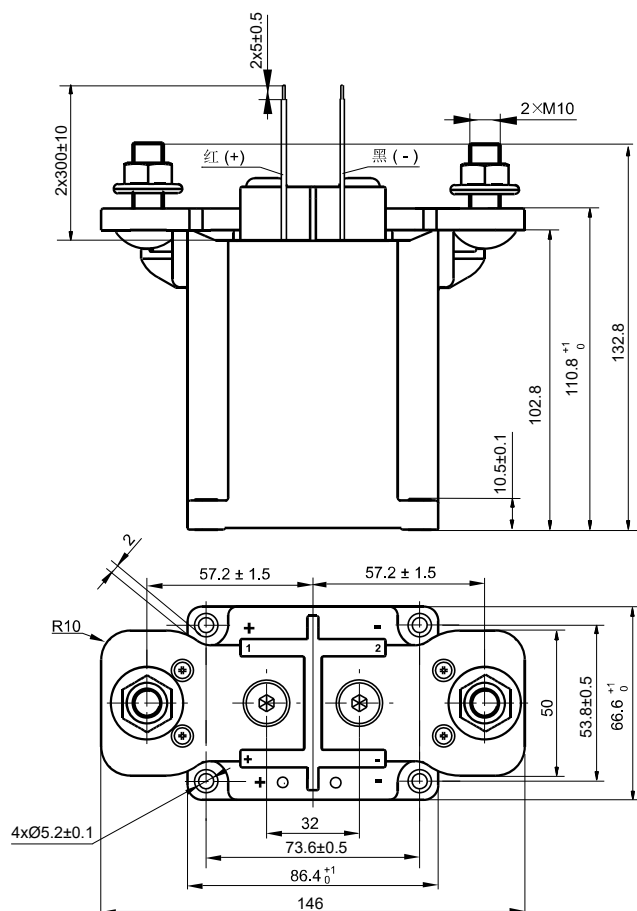
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

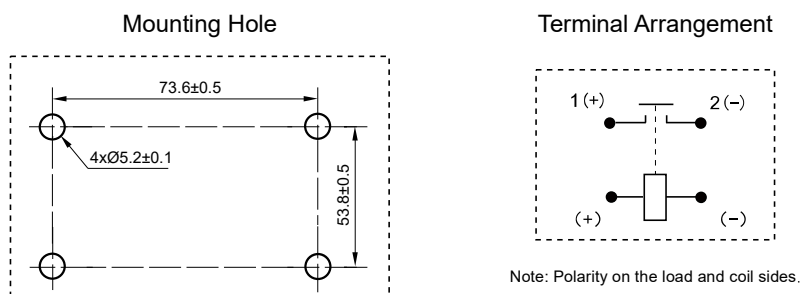
Outline Dimensions

HFE82V-600/XXX-XX-H-L6



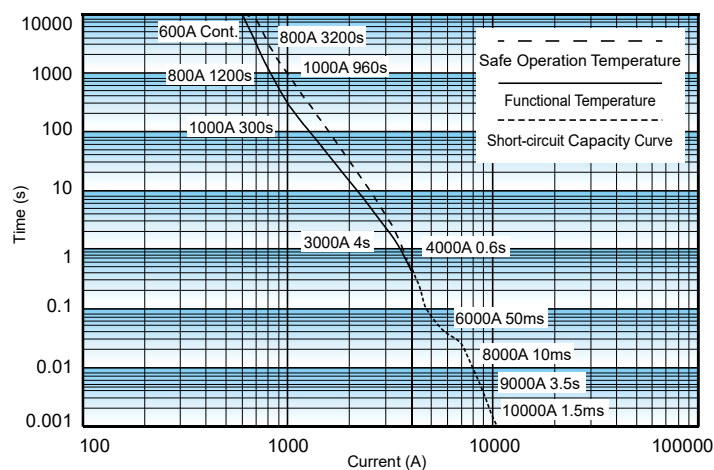
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm



CHARACTERISTIC CURVES

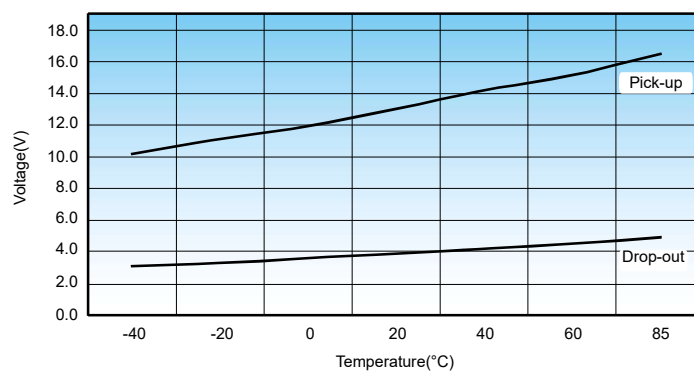
Endurance Capacity Curve



Notes:

- 1.The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
- 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
- 3.The ambient temperature is 85°C, and the cross section area of the wire is $\geq 200\text{mm}^2$.
- 4.When the relay is operated under current $\geq 4000\text{A}$ for a long-term, it may weld without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 20N·m to 25N·m. The torque beyond the range may cause damage.

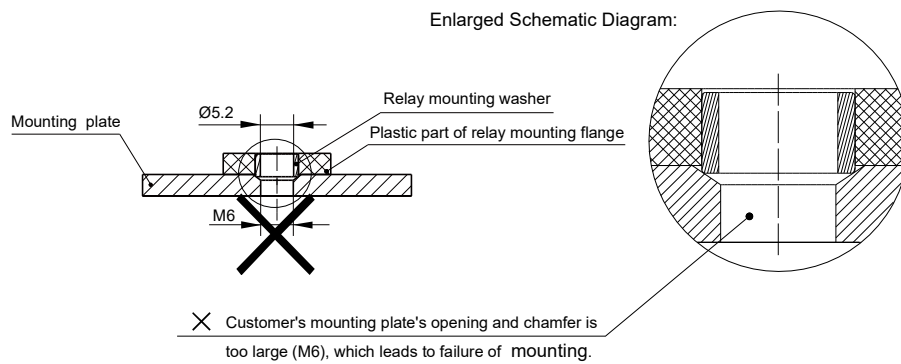
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M10 Bolt	20N·m ~ 25N·m	Ø10mm~Ø10.5mm	≥4mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing, repeat locking is not recommended.
3. When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 200mm², otherwise the terminal parts may have abnormal heating.
6. The product has energy-saving board inside and the coil will switch automatically after 0.2s drive, but repeated switching within 0.2s may cause failure of relay.
7. The product with PCB inside cannot be driven by ramp up voltage, please drive the coil by step type power, otherwise the relay may fail to work.
8. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

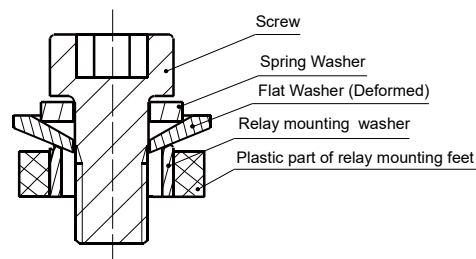
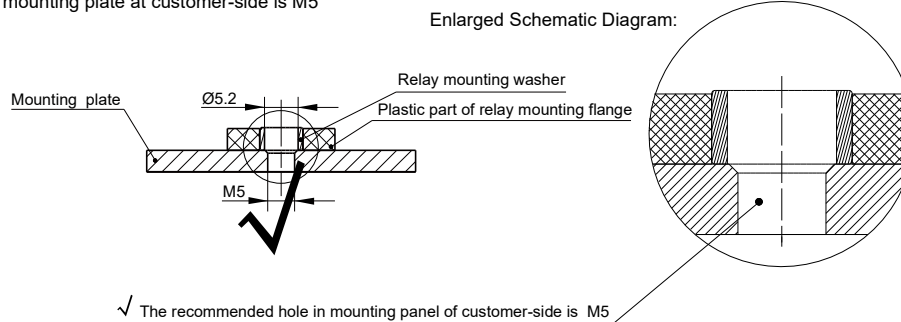
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

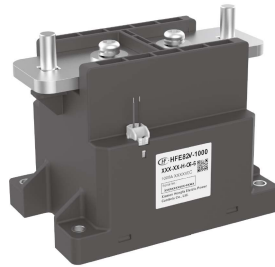
Disclaimer

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HFE82V-1000

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 1000A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 5kV, which meets the requirements of IEC 60664-1.
- Coil with energy-saving devices

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.2mΩ(at 1000A)
Contact rating	1000A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	2000A(1000 VDC) 1op
Max. switching power	1500kW
Electrical endurance ²⁾	Making:2×10 ⁴ ops(1000VDC 60A)
	Breaking:1 op(1000VDC 2000A)
	Breaking:50 ops(1000VDC 1000A)
	Breaking:50 ops(1500VDC 800A)
	Switching:100 ops(1000VDC 1000A)
Current carrying ³⁾ capacity	1000A:Cont.
	1500A:140s
	2000A:82s
	3000A:30s
	4000A:18s
	10000A:8ms
	12000A:4ms

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 400mm² min. See Fig. Endurance Capacity Curve for more information.

4) 10000A 2ms is short circuit carrying test, relay contact may be welded, but will not burn or explode.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	1~9	Switch on:50(time:0.2s) Holding:10
24	≤18	2~18	Switch on:50(time:0.2s) Holding:10

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	5000 VAC 1min
	Between open contacts	5000 VAC 1min
Operate time (at rated volt.)		≤100ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M10 screw terminal female
Unit weight		Approx.3500g
Outline Dimensions		165.9x104.6x132.8mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	V	-1000 /1000	-24	-H	-C	6	-6 (XXX)
Application	V: Vehicle							
Contact rating	1000:1000A							
Load voltage	1000: 1000 VDC 1200: 1200 VDC							
Coil voltage	12: 12 VDC 24: 24 VDC							
Contact arrangement	H: 1 Form A							
Coil terminal structure	C: Connector							
Load terminal structure	6: Screw terminal female and copper bus bar terminal							
Coil characteristic	6: Double coil with PCBA							
Special code ¹⁾	XXX: Customer special requirement Nil: Standard							

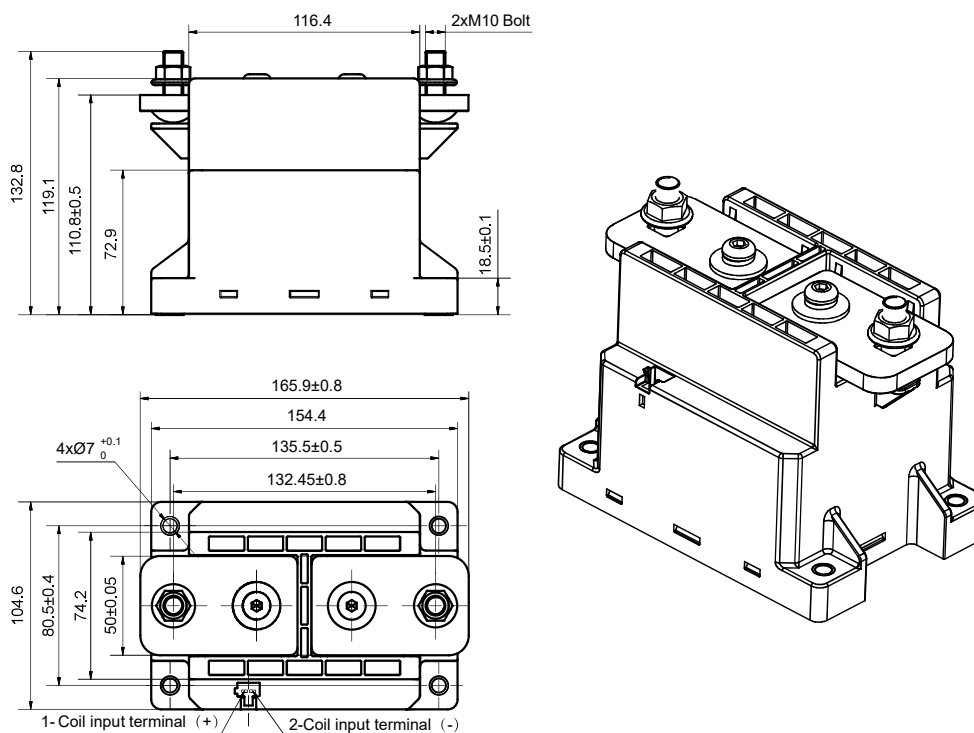
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

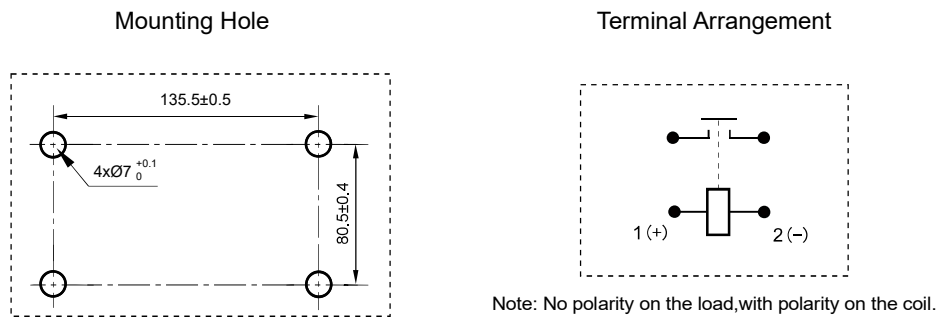
Unit: mm

Outline Dimensions

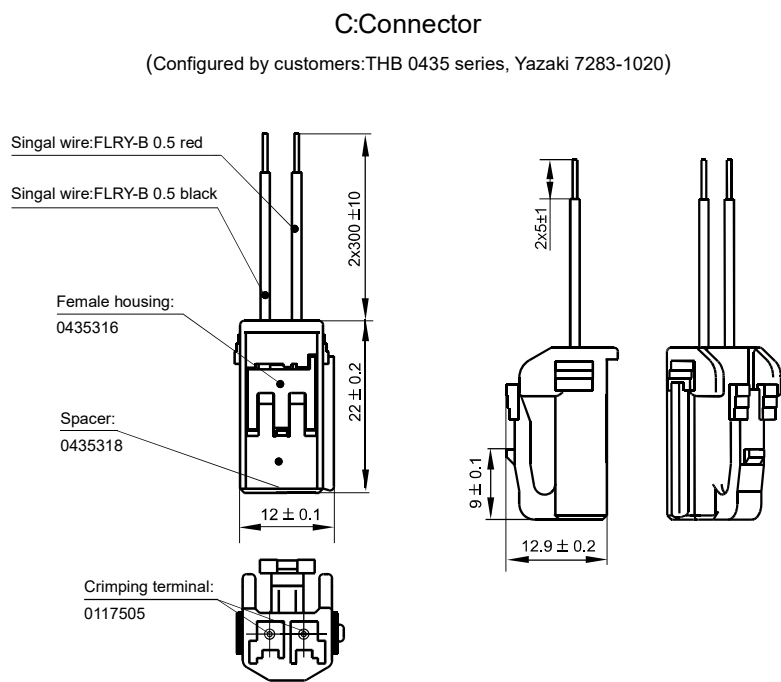
HFE82V-1000/XXX-24-H-C-6



OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT
Unit: mm



WIRING DIAGRAM
Unit: mm



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 6N·m to 8N·m, The screw tightening torque at terminals shall be within 20N·m to 25N·m. The torque beyond the range may cause damage.

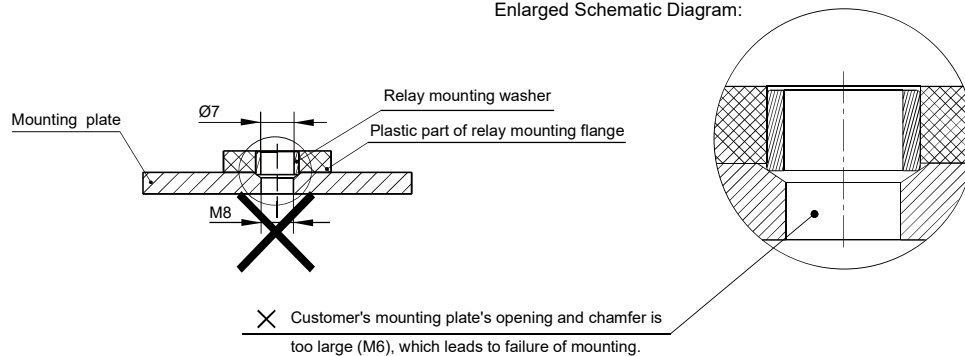
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M10 Bolt	20N·m ~ 25N·m	Ø10mm~Ø10.5mm	≥8mm	M6 Screw	6N·m ~ 8N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 400mm², otherwise the terminal parts may have abnormal heating.
6. The product has energy-saving board inside and the coil will switch automatically after 0.2s drive, but repeated switching within 0.2s may cause failure of relay.
7. The product with PCB inside cannot be driven by ramp up voltage, please drive the coil by step type power ,otherwise the relay may fail to work.
8. Cautions of mounting for relay body

Unrecommended method

The hole of mounting plate at customer-side is too large.

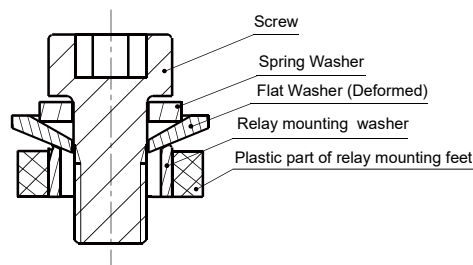
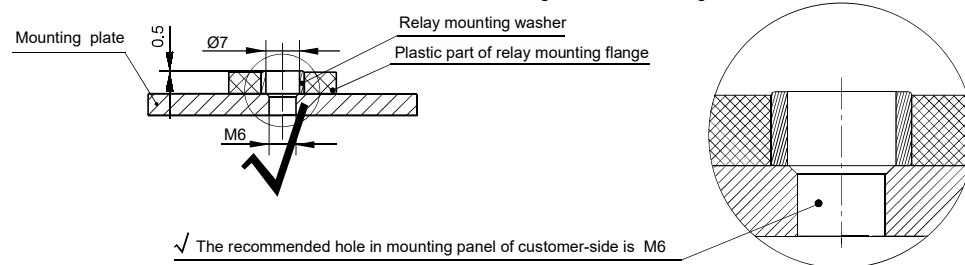
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M6

Enlarged Schematic Diagram:



When use M6 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE80V-20B

DIRECT CURRENT RELAY



RoHS compliant

Features

- Pre-charging relay for new energy automobile.
- Carrying current 20A continuously at 85°C.
- The electricity safety meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤5mΩ(at 20A)
Contact rating	20A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	30A(450 VDC) 5ops
Max. switching power	18kW
Electrical endurance ²⁾	Making:7.5 x 10 ⁴ ops(450 VDC, 20A)
	Switching:3 x 10 ³ ops(450 VDC, 20A)
Current carrying ³⁾ capacity	20A:Cont.
	30A:1h
	40A:20min
	80A:30s
	120A:10s
	200A: 0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 4mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	3
24	≤18	≥2	3

CHARACTERISTICS

Insulation resistance		1000MΩ (500 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	2500 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		QC terminal
Unit weight		Approx.59g
Outline Dimensions		40.0x30.0x42.7mm

Notes: Above is the initial value in the room temperature



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

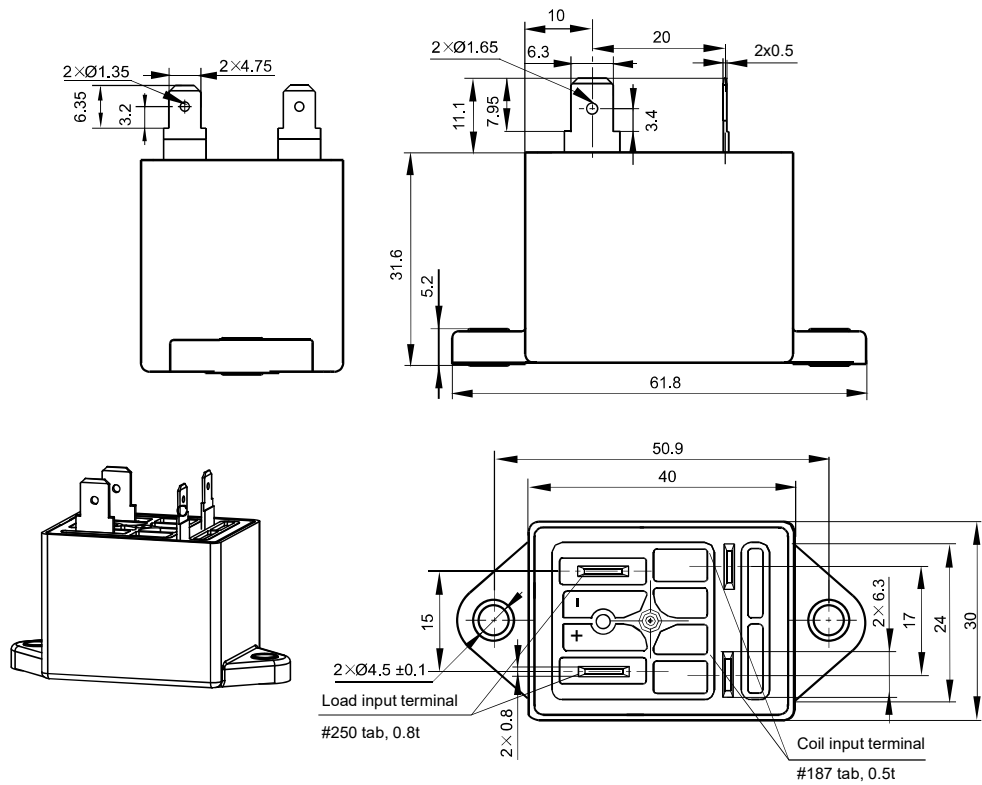
2022 Rev. 1.00

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

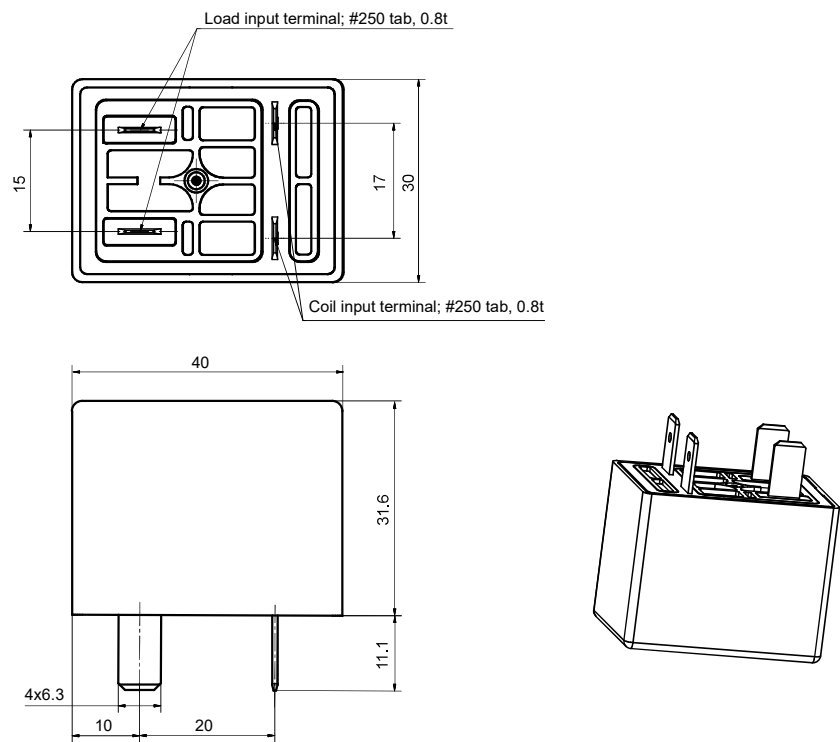
Unit: mm

Outline Dimensions

HFE80V-20B/450-XX-HTQ2BJ

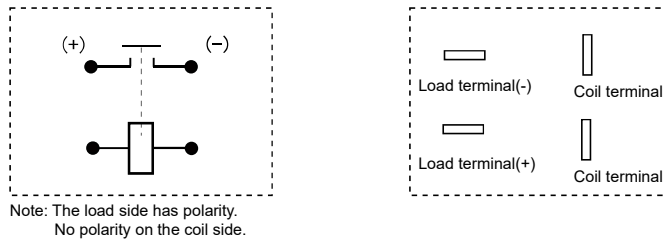


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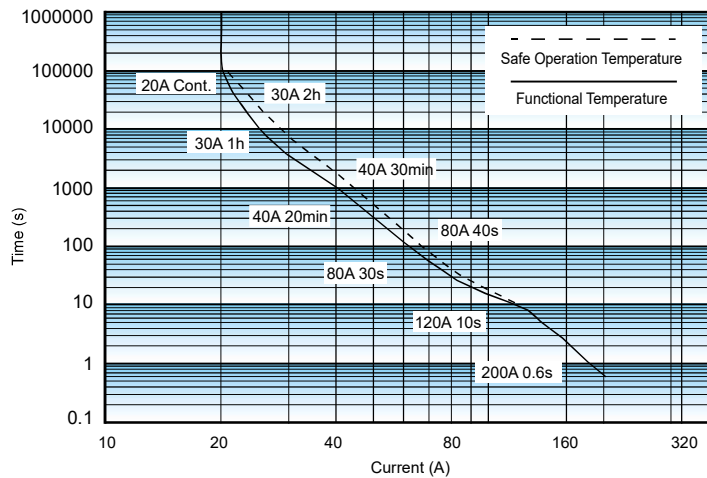


TERMINAL ARRANGEMENT, CHARACTERISTIC CURVES

Terminal Arrangement



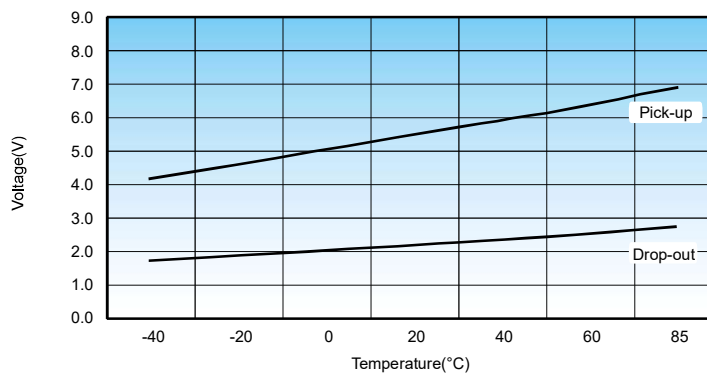
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross-sectional area of the wire is $\geq 4\text{mm}^2$.
4. The energized voltage of coil refers to the rated coil voltage.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use M4 screw for HTQ2BJ terminal mounting, and the screw tightening torque shall be within 2N.m to 3N.m. The push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 4mm^2 , otherwise the terminal parts may have abnormal heating.

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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HFE80V-20C

DIRECT CURRENT RELAY



RoHS compliant

Features

- Pre-charging relay for new energy automobile.
- Carrying current 20A continuously at 85°C.
- The electricity safety meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤5mΩ(at 20A)
Contact rating	20A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	30A(450 VDC) 5ops
Max. switching power	18kW
Electrical endurance ²⁾	Swithing:3000ops(450VDC,20A) ³⁾
Current carrying ⁴⁾ capacity	20A:Cont.
	30A:1h
	40A:20min
	80A:30s
	120A:10s
	200A: 0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 4mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	3
24	≤18	≥2	3
48	≤36	≥4	3

CHARACTERISTICS

Insulation resistance		1000MΩ(500 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	2000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		QC or PCB terminal
Unit weight		Approx.50g
Outline Dimensions		30.1x30.0x29.2mm

Notes: Above is the initial vale in the room temperature



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE80	V	-20	C/	450-	12-	H	T	Q	2	A	J	(XXX)
Application	V: Vehicle												
Contact rating	20: 20A												
Series breakdown	C: C series												
Load voltage	450: 450 VDC												
Coil voltage	12: 12 VDC 24: 24 VDC 48: 48 VDC												
Contact arrangement	H: 1 Form A												
Contact material	T: AgSnO ₂												
Coil terminal structure	Q: QC terminal P: PCB terminal												
Load terminal structure	2: QC terminal Nil: PCB terminal												
Shell structure	Nil: Standard mounting boss A: A type mounting flange B: B type mounting flange L: L type mounting flange												
Base structure	J: Layout base without mounting boss												
Special code ¹⁾	XXX: Customer special requirement Nil: Standard												

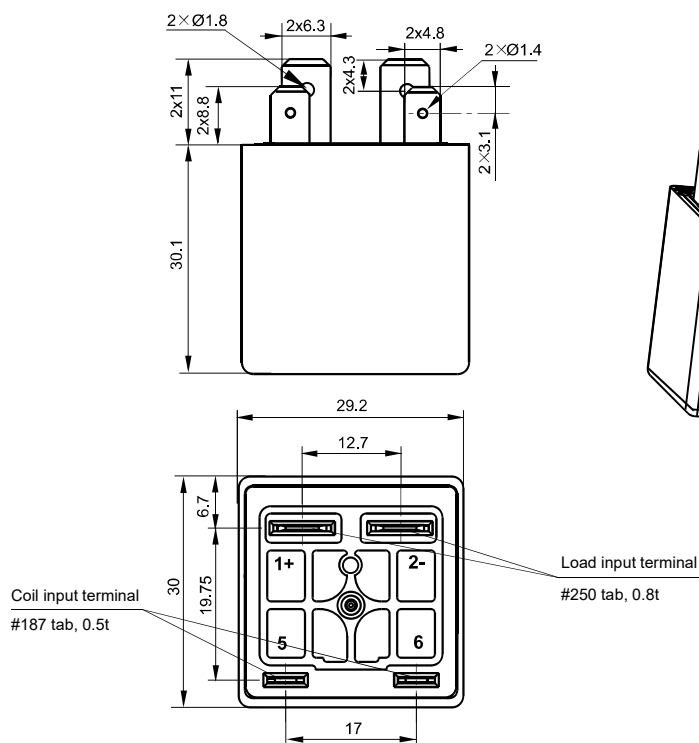
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE80V-20C/XXX-XX-HTQ2AJ

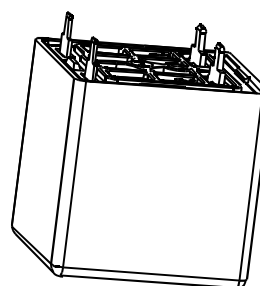
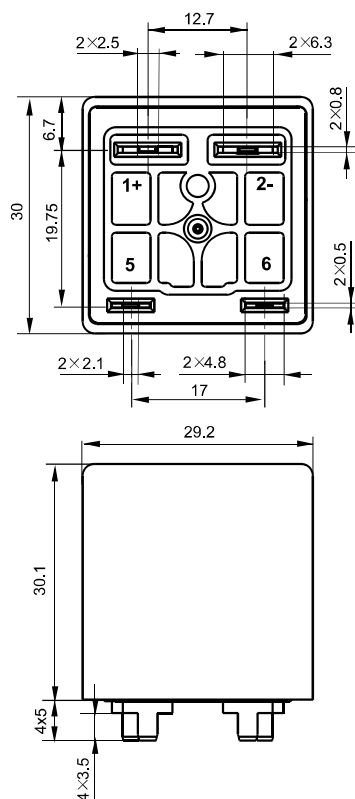


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

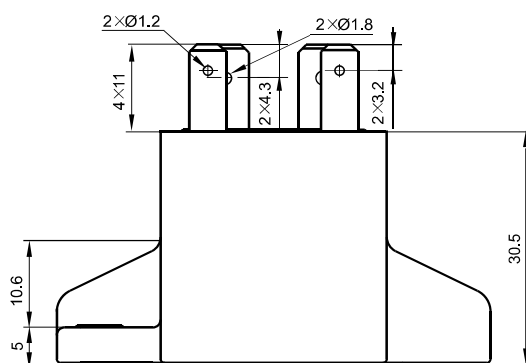
Unit: mm

Outline Dimensions

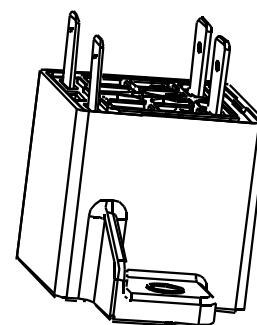
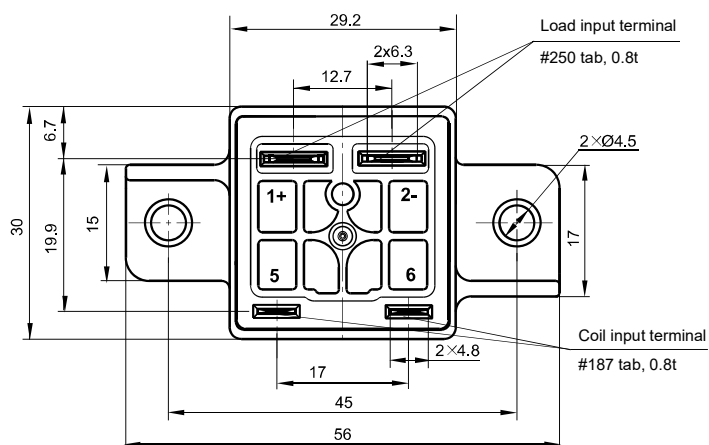
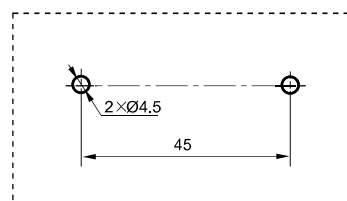
HFE80V-20C/XXX-XX-HTPAJ



HFE80V-20C/XXX-XX-HTQ2BJ



Mounting Hole

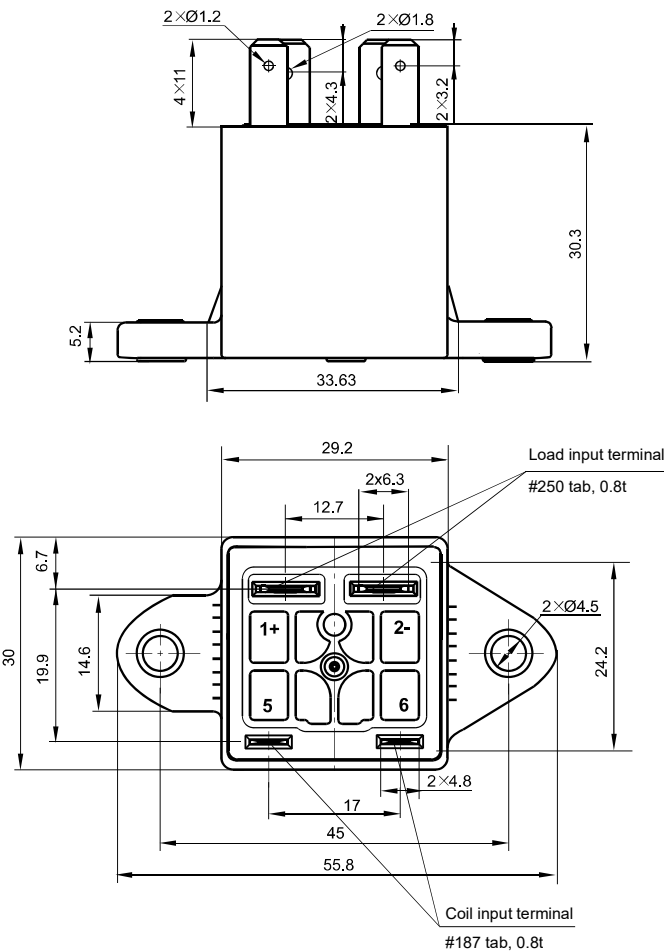


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

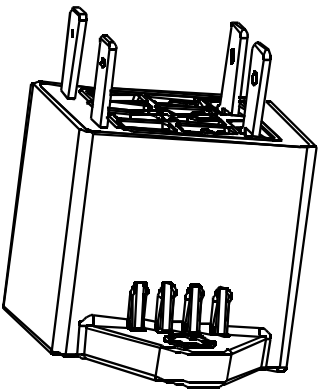
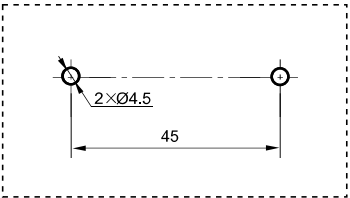
Unit: mm

Outline Dimensions

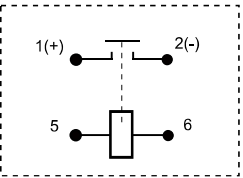
HFE80V-20C/XXX-XX-HTQ2LJ



Mounting Hole



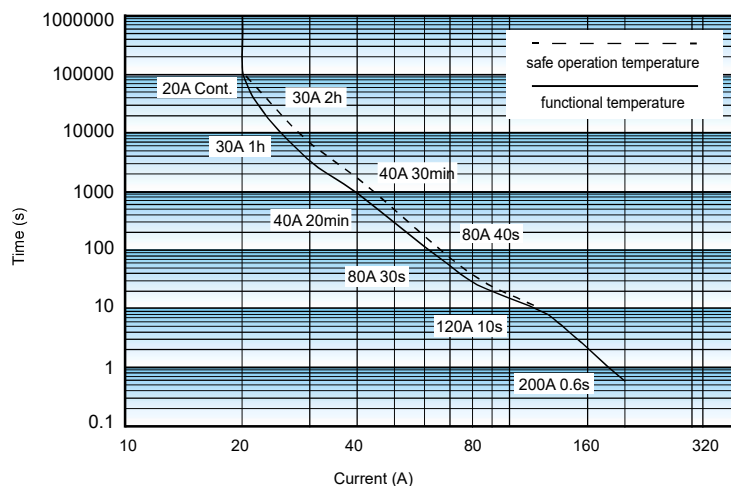
Terminal Arrangement



Note: The load side has polarity.
No polarity on the coil side.

CHARACTERISTIC CURVES

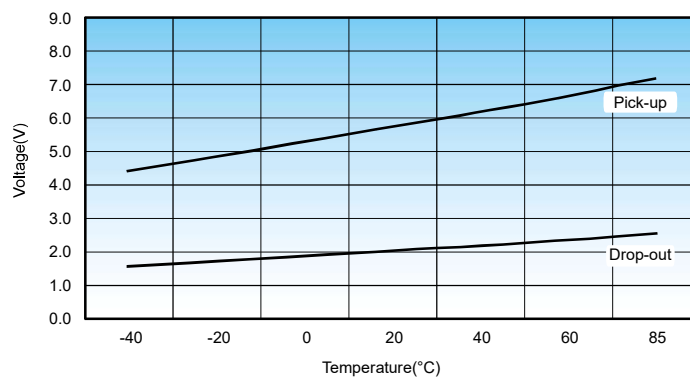
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross-sectional area of the wire is $\geq 4\text{mm}^2$.
4. The energized voltage of coil refers to the rated coil voltage.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use M4 screw for HTQ2BJ terminal mounting, and the screw tightening torque shall be within 2N.m to 3N.m. The push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 4mm^2 , otherwise the terminal parts may have abnormal heating.

Disclaimer

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HFE80V-20D

DIRECT CURRENT RELAY



RoHS compliant

Features

- Pre-charging relay for new energy automobile.
- Carrying current 20A continuously at 85°C.
- The electricity safety meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤ 10mΩ(at 20A)
Contact rating	20A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC(at 2A)
Max. breaking current	20A(450 VDC) 5ops
Max. switching power	18kW
Electrical ²⁾ endurance	Making:7.5×10 ⁴ ops(450 VDC 20A)
	Switching:1000ops(450 VDC 15A)
Current carrying ³⁾ capacity	15A:Cont.
	20A:1h
	30A:20min
	60A:30s
	90A:10s
	150A: 0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 4mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	1.8

CHARACTERISTICS

Insulation resistance		1000MΩ (500 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	2500 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		QC terminal
Unit weight		Approx.45g
Outline Dimensions		29.0x25.0x28.9mm

Notes: Above is the initial value in the room temperature



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE80	V	-20	D/	450-	12-	H	T-	Q	2	D	J-	(XXX)
Type													
Application	V: Vehicle												
Contact rating	20: 20A												
Series breakdown	D: D series												
Load voltage	450: 450 VDC												
Coil voltage	12: 12 VDC												
Contact arrangement	H: 1 Form A												
Contact material	T: AgSnO ₂												
Coil terminal structure	Q: QC terminal												
Load terminal structure	2: QC terminal												
Shell structure	A: Without mounting flange D: D type type mounting flange												
Base structure	J: Layout base without mounting boss												
Special code ¹⁾	XXX: Customer special requirement Nil: Standard												

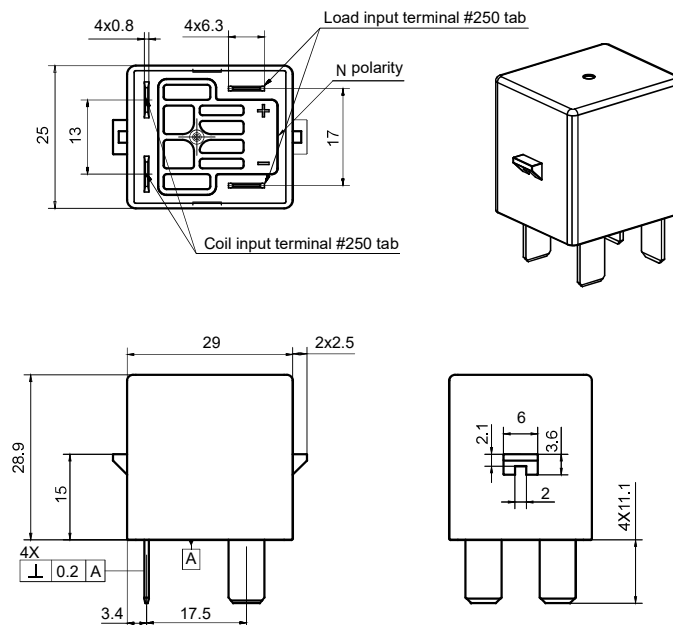
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

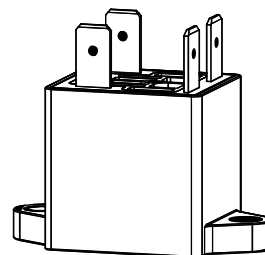
HFE80V-20D/XXX-XX-HT-Q2AJ



Notes: Outline dimension: outline dimension ≤10mm, tolerance should be ±0.3mm; outline dimension >10mm and ≤50mm, tolerance should be ±0.5mm; outline dimension >50mm, tolerance should be ±0.8mm.

Unit: mm

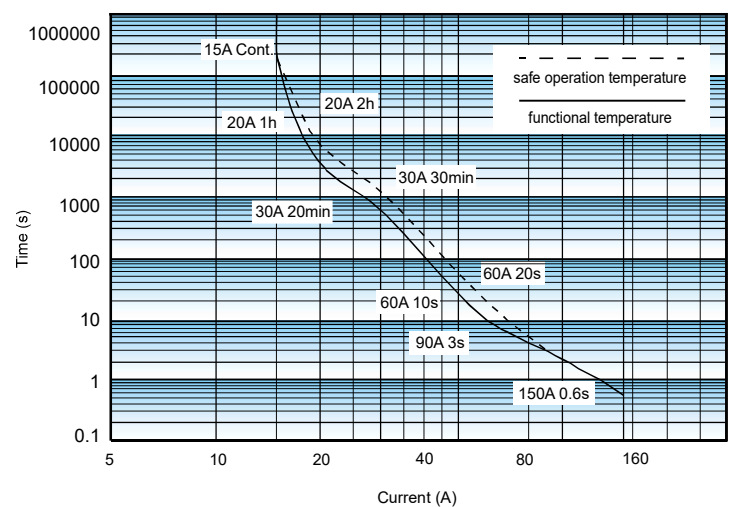
HFE80V-20D/XXX-XX-HT-Q2DJ



Note: The load side has polarity.
No polarity on the coil side.

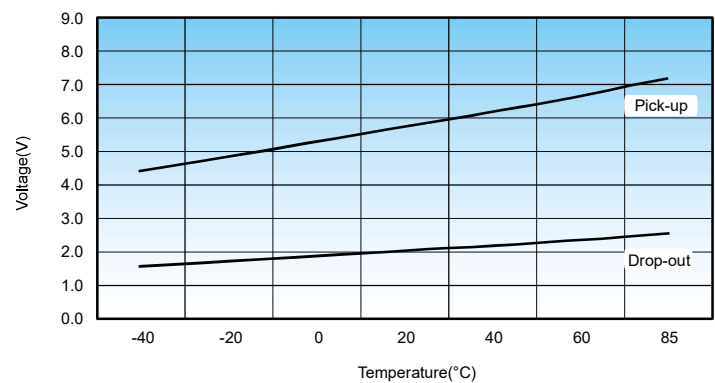
CHARACTERISTIC CURVES

Endurance Capacity Curve



- Notes:
- 1.The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
 - 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
 - 3.The ambient temperature is 85°C, and the cross-sectional area of the wire is $\geq 4\text{mm}^2$.
 - 4.The energized voltage of coil refers to the rated coil voltage.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

- 1.In case of loosening, please use M4 screw for HTQ2DJ terminal mounting, and the screw tightening torque shall be within 2N.m to 3N.m, The push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
- 2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 4mm^2 , otherwise the terminal parts may have abnormal heating.

Disclaimer

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HFE80V-40

DIRECT CURRENT RELAY



File No.:E133481

RoHS compliant



Features

- Pre-charging and heating relay for new energy automobile.
- Carrying current 40A continuously at 85°C.
- The electricity safety meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤5mΩ(at 20A)
Contact rating	40A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	50A(450 VDC) ≥1op
Max. switching power	27kW
Electrical endurance ²⁾	Swithing:3000ops (150VDC,40A) ³⁾
	Swithing:6000ops(450VDC,20A) ³⁾
	Swithing:1000ops(450VDC,40A) ³⁾
Current carrying ⁴⁾ capacity	40A:Cont.
	60A:1h
	80A:20min
	160A:30s
	240A:10s
	400A:0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 10mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	3
24	≤18	≥2	3
48	≤36	≥4	3

CHARACTERISTICS

Insulation resistance		1000MΩ(@500 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	2000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C~ 85°C
Load terminal structure		QC or PCB terminal
Unit weight		Approx.51g
Outline Dimensions		30.1x30.0x29.2mm

Notes: Above is the initial vale in the room temperature



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE80	V	-40/	450-	12-	H	T	Q	2	A	J	(XXX)
Type												
Application	V: Vehicle											
Contact rating	40: 40A											
Load voltage	450: 450VDC											
Coil voltage	12:12VDC 24:24VDC 48:48VDC											
Contact arrangement	H: 1 Form A											
Contact material	T: AgSnO ₂											
Coil terminal structure	Q: QC terminal											
Load terminal structure	2: QC terminal											
Shell structure	Nil: Standard mounting boss A: A type mounting flange B: B type mounting flange L: Ltype mounting flange											
Base structure	J: Layout base without mounting boss											
Special code ¹⁾	XXX: Customer special requirement Nil: Standard											

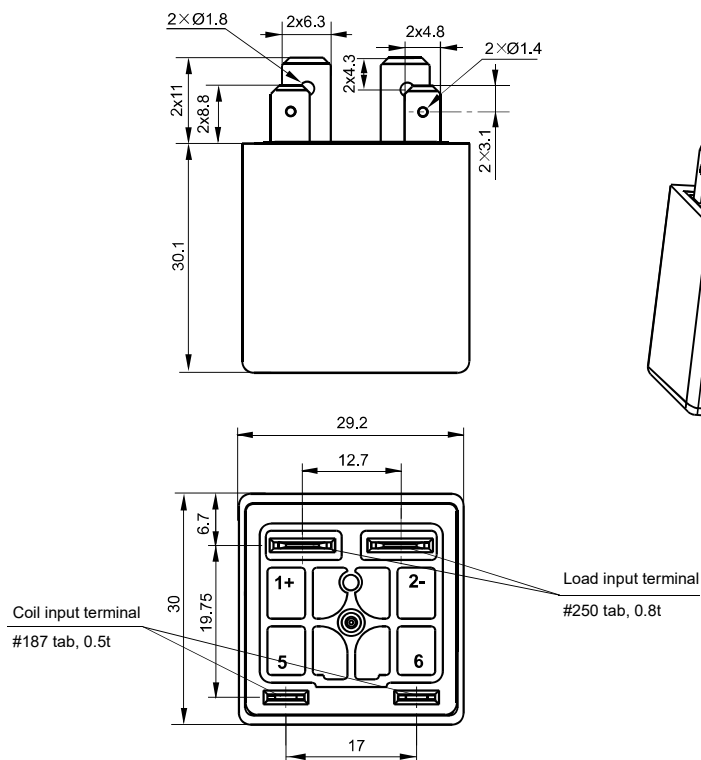
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE80V-40/XXX-XX-HTQ2AJ

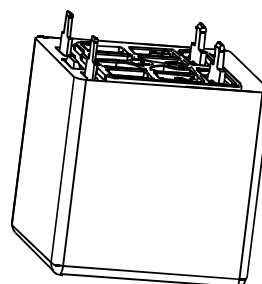
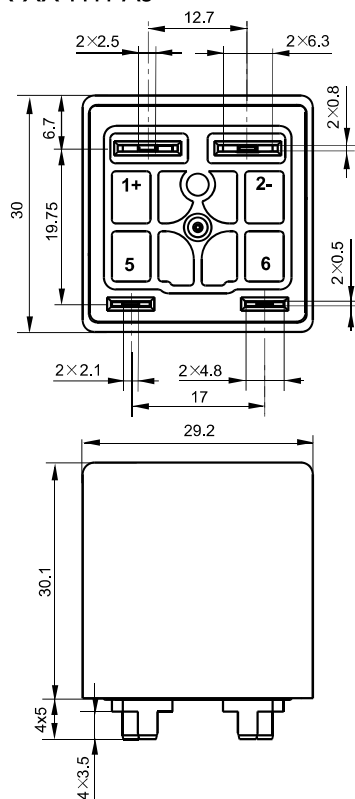


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

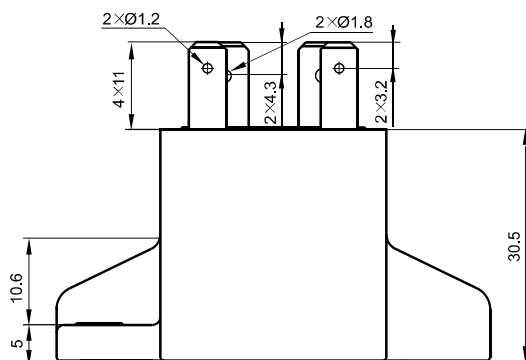
Unit: mm

Outline Dimensions

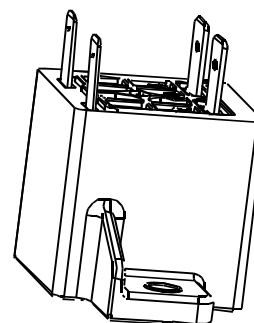
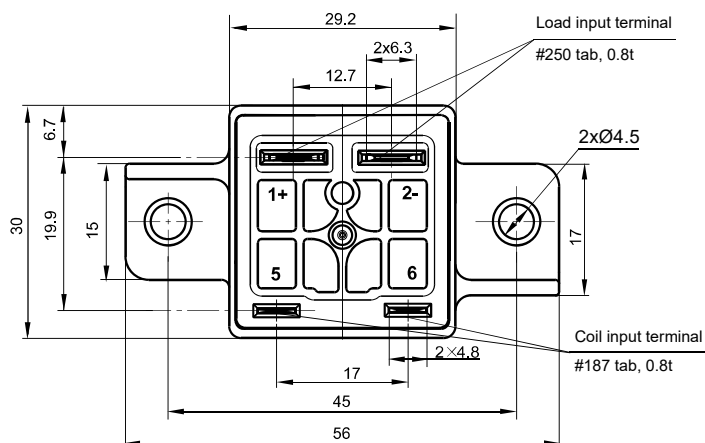
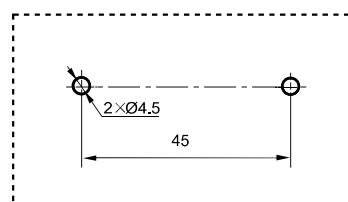
HFE80V-40/XXX-XX-HTPAJ



HFE80V-40/XXX-XX-HTQ2BJ



Mounting Hole

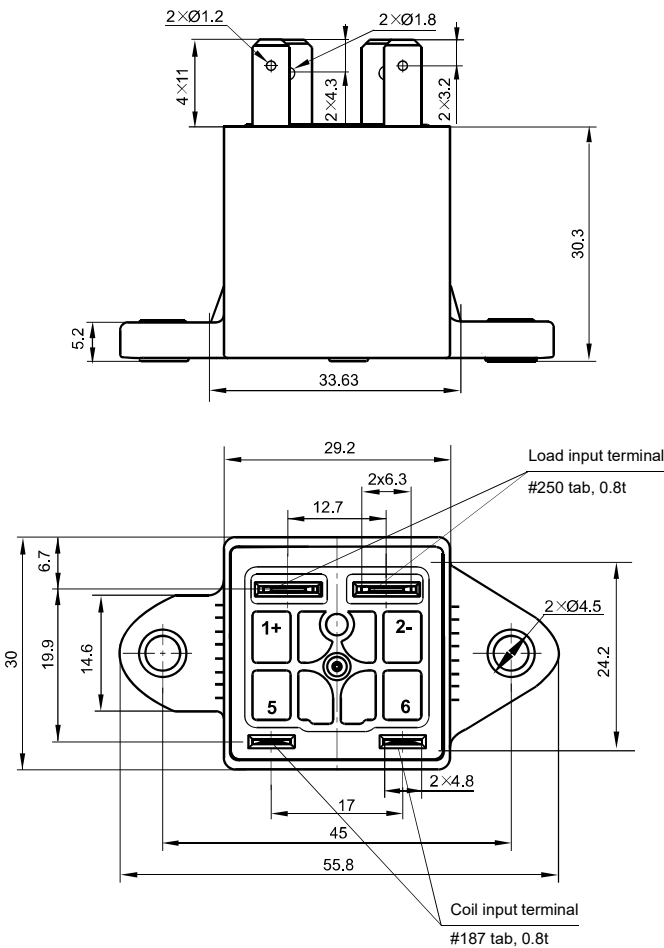


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

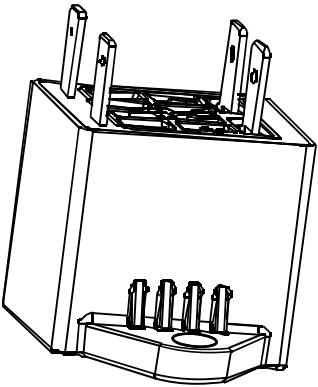
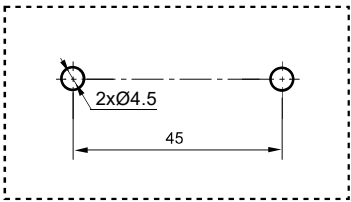
Unit: mm

Outline Dimensions

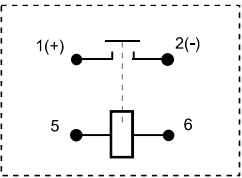
HFE80V-40/XXX-XX-HTQ2LJ



Mounting Hole



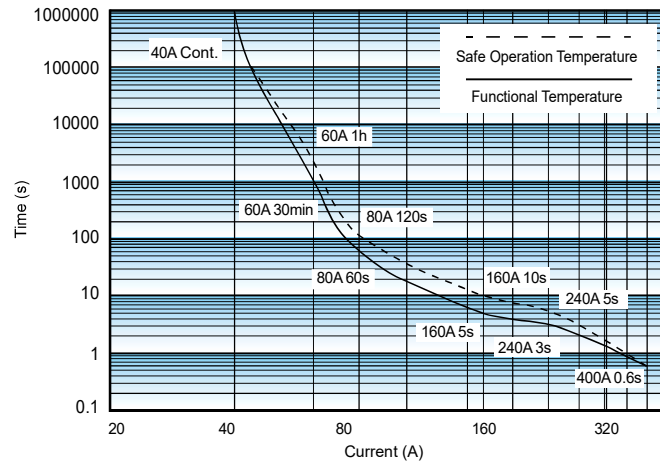
Terminal Arrangement



Note: The load side has polarity.
No polarity on the coil side.

CHARACTERISTIC CURVES

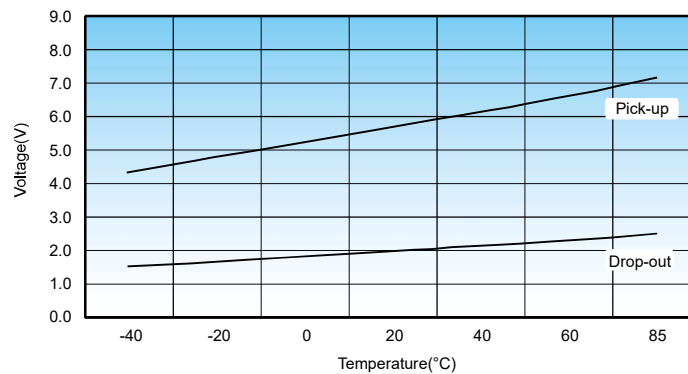
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross-sectional area of the wire is $\geq 10\text{mm}^2$.
4. The energized voltage of coil refers to the rated coil voltage.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer for relay mounting. The screw tightening torque shall be within 0.8N.m to 1.1N.m for M3 screw, and within 2N.m to 3N.m for M4 screw. The push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 10mm^2 , otherwise the terminal parts may have abnormal heating.

Disclaimer

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HFE80V-60

DIRECT CURRENT RELAY



File No: B0532860033

RoHS compliant



Features

- Preferred for micro electric vehicle(low speed vehicle) and 48V system.
- Carrying current 60A continuously at 85°C.
- No polarity on the load and coil sides.
- The electricity safety meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤ 1.5mΩ(at 20A)
Contact rating	60A
Mechanical endurance	2 x 10 ⁵ ops
Max. switching voltage	250 VDC
Max. breaking current	100A
Max. switching power	32kW
Electrical ²⁾ endurance	Switching: 1 x 10 ⁵ ops(12 VDC,60A)
	Switching:7.5 x 10 ⁴ ops(150 VDC,10A)
	Switching: 5 x 10 ⁴ ops(48 VDC,60A)
	Switching:3 x 10 ⁴ ops(72 VDC,60A)
	Switching:1 x 10 ⁴ ops(150 VDC,60A)
Current carrying ³⁾ capacity	Switching:5 x 10 ³ ops(200 VDC,60A)
	60A:Cont.
	90A:12min
	180A:15s
	600A:1s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 15mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	3
24	≤18	≥2	3

CHARACTERISTICS

Insulation resistance		1000MΩ (500 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	2000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		PCB terminal
Unit weight		Approx.200g
Outline Dimensions		76.6 x 55.1 x 49.6mm

Notes: Above is the initial value in the room temperature



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

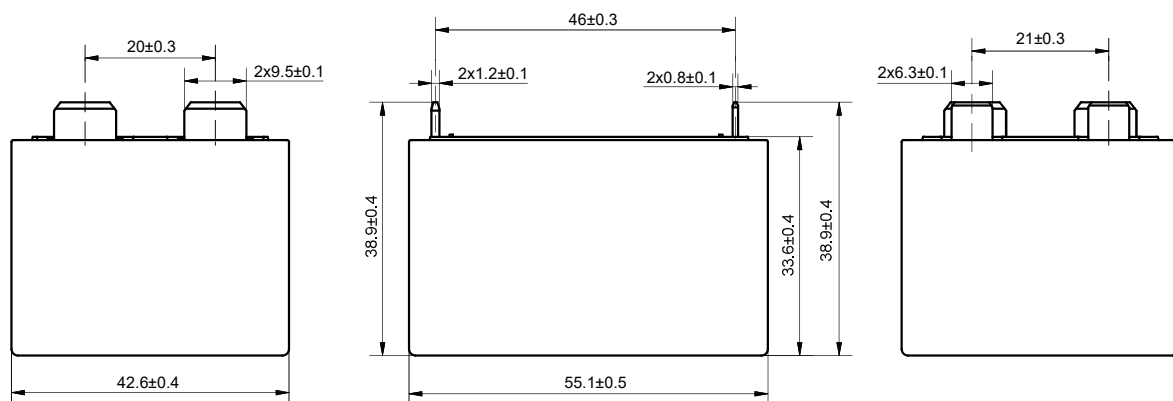
Type	HFE80	V	-60/	150-	12-	H	T	P	(XXX)
Application	V: Vehicle								
Contact rating	60: 60A								
Load voltage	150: 150 VDC 200: 200 VDC								
Coil voltage	12: 12 VDC 24: 24 VDC								
Contact arrangement	H: 1 Form A								
Contact material	T: AgSnO ₂								
Load terminal structure	P: PCB terminal								
Special code ¹⁾	XXX: Customer special requirement Nil: Standard								

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

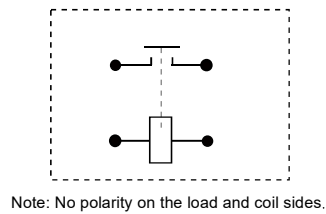
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

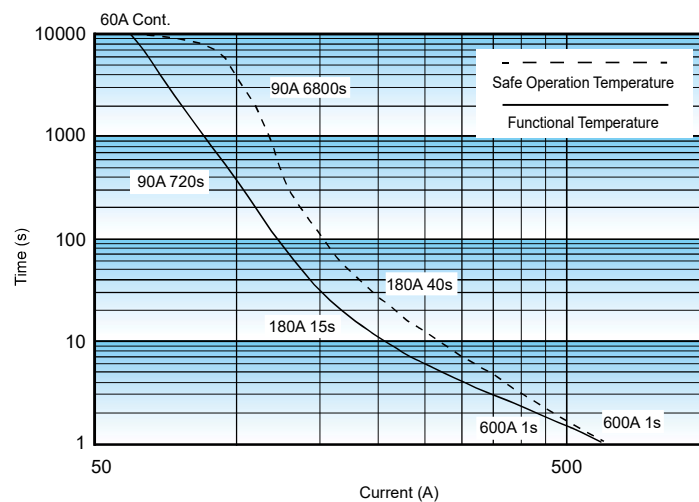


Terminal Arrangement



CHARACTERISTIC CURVES

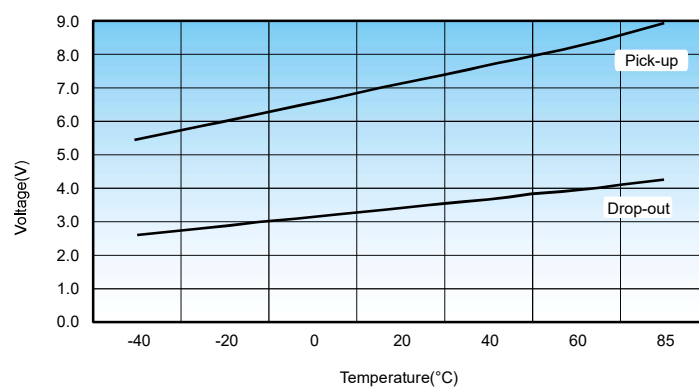
Endurance Capacity Curve



Notes:

- 1.The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
- 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
- 3.The ambient temperature is 85°C, and the cross-sectional area of the wire is ≥15mm².
- 4.When the current is ≥600A, the relay is likely to weld without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

- 1.The push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 15mm², otherwise the terminal parts may have abnormal heating.

Disclaimer

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HFE80V-200

DIRECT CURRENT RELAY



File No.:E133481

RoHS compliant



Features

- Preferred for micro electric vehicle(low speed vehicle)
- Carrying current 200A continuously at 85°C.
- No polarity on the coil and load sides.
- The electricity safety meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤1.0mΩ(at 20A)
Contact rating	200A
Mechanical endurance	2 x 10 ⁵ ops
Max. switching voltage	250 VDC
Max. breaking current	400A
Max. switching power	80kW
Electrical endurance ²⁾	Swithing:1 x 10 ⁴ ops(150VDC,40A) ³⁾
	Swithing:3,000ops(150VDC,200A) ³⁾
Current carrying ⁴⁾ capacity	200A:Cont.
	300A:5min
	400A:30s
	800A:10s
	1600A:1s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 60mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1	6
24	≤18	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(500 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 Screw terminal female
Unit weight		Approx.370g
Outline Dimensions		88.0 x 47.7 x 88.0mm
		81.0 x 47.8 x 87.4mm

Notes: Above is the initial vale in the room temperature



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE80	V	-200/ 150-	12-	H	T	C	5	Y	(XXX)
Application	V: Vehicle									
Contact rating	200: 200A									
Load voltage	150: 150 VDC 200: 200 VDC									
Coil voltage	12: 12VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Contact material	T: AgSnO ₂									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Mounting	Nil: Vertical mounting Y: Horizontal mounting									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

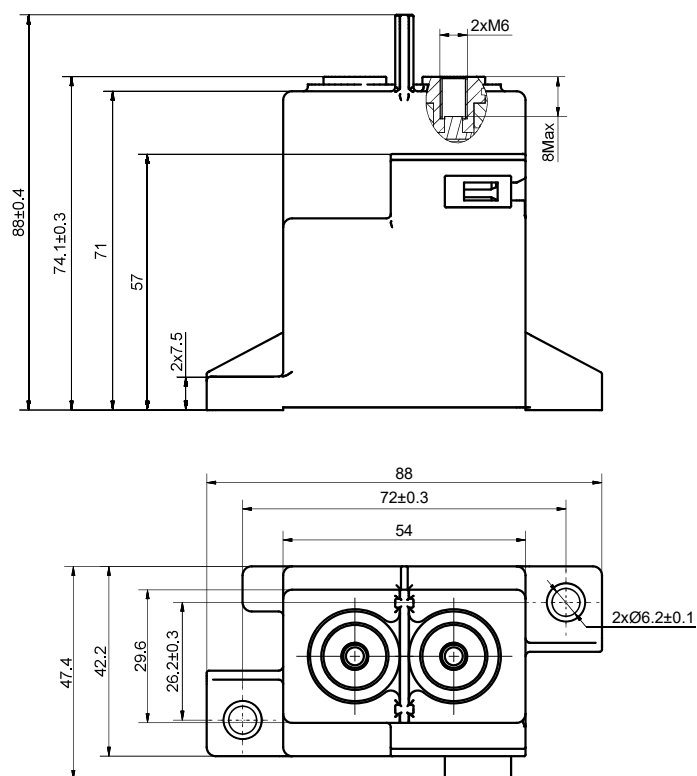
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE80V-200/XXX-XX-HTC5

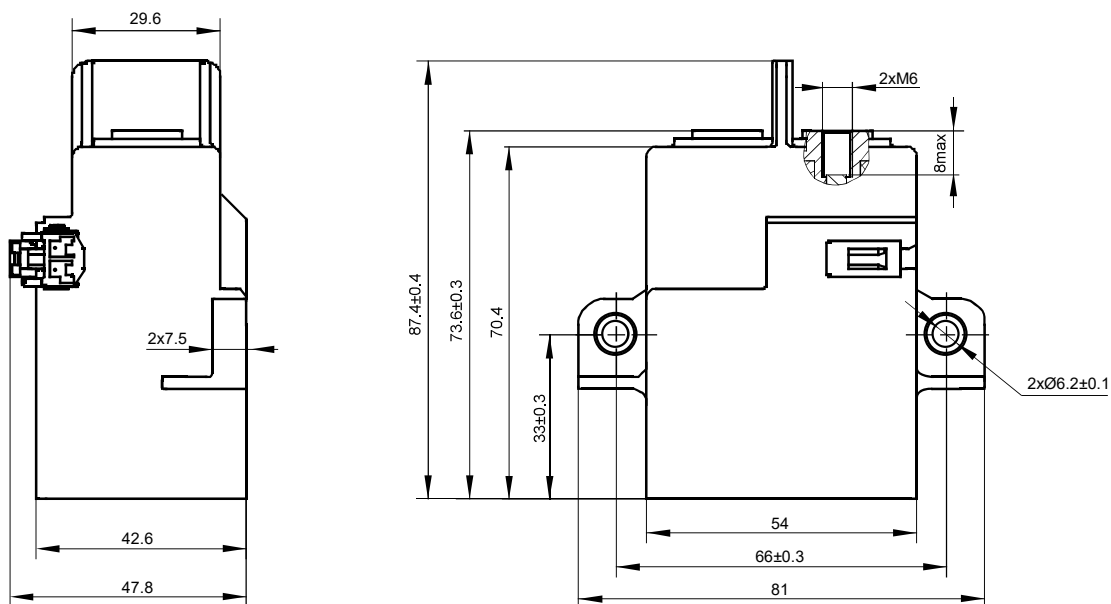


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

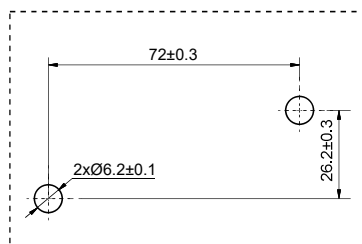
Outline Dimensions

HFE80V-200/XXX-XX-HTC5Y

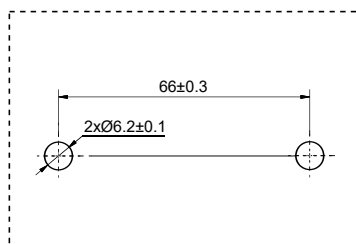


Mounting Hole

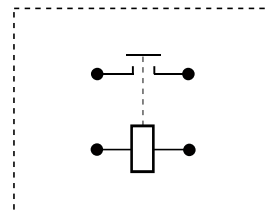
Vertical mounting



Horizontal mounting



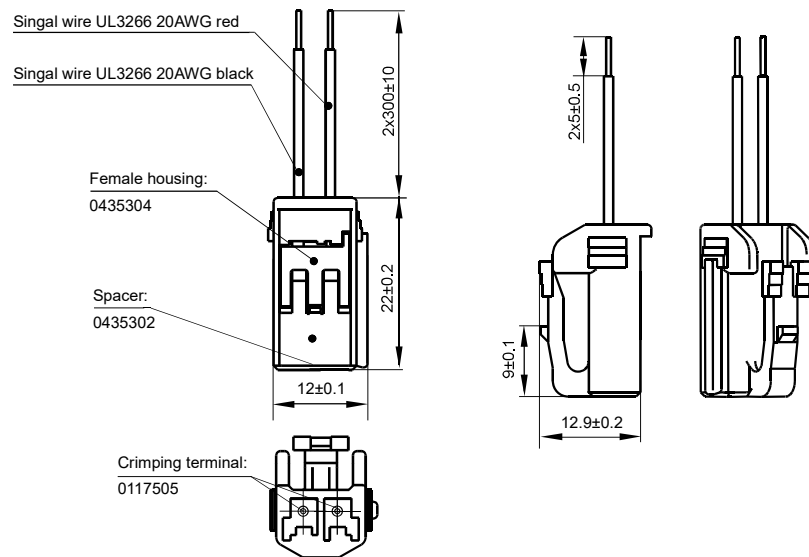
Terminal Arrangement



Note: No polarity on the load and coil sides.

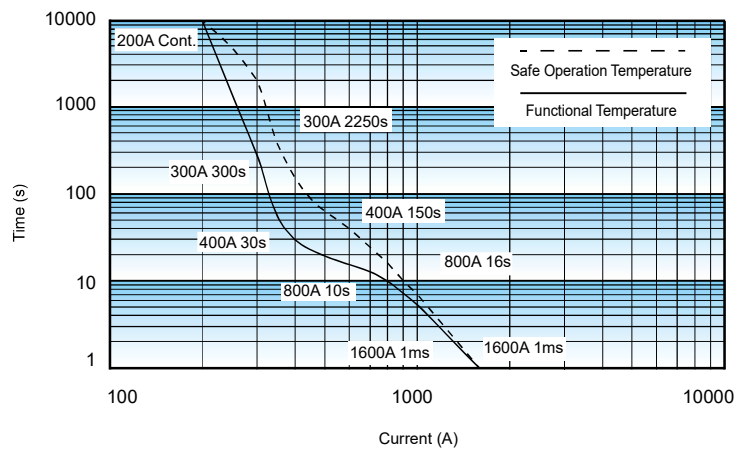
C:Connector

(Configured by customers:THB 0435 series, Yazaki 7283-1020)



CHARACTERISTIC CURVES

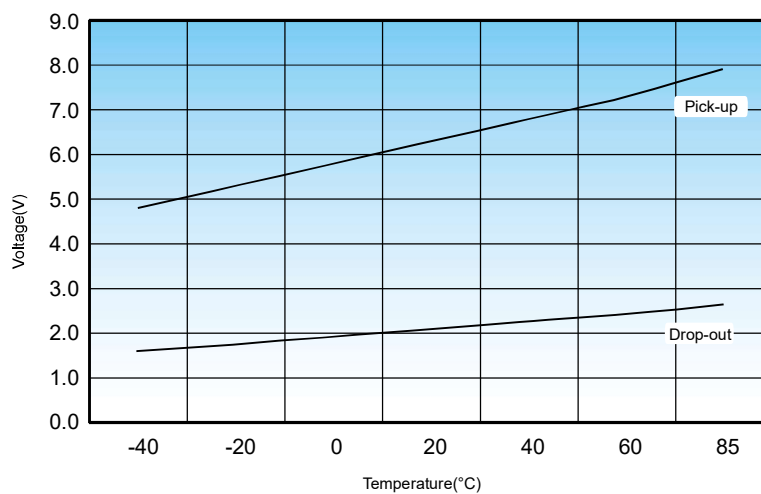
Endurance Capacity Curve



Notes:

- 1.The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
- 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
- 3.The ambient temperature is 85°C, and the cross-sectional area of the wire is $\geq 60\text{mm}^2$.
- 4.When the current is $\geq 1600\text{A}$, the relay is likely to weld without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mounting the relay with M5 screw, and the torque shall be within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

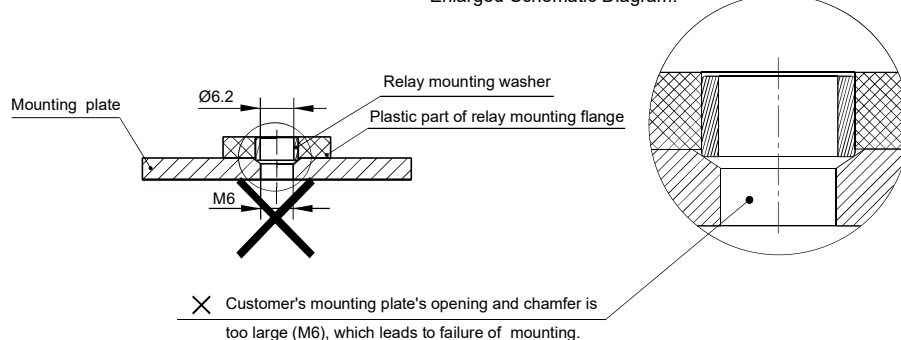
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing, repeat locking is not recommended.
3. When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 60mm² min, otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

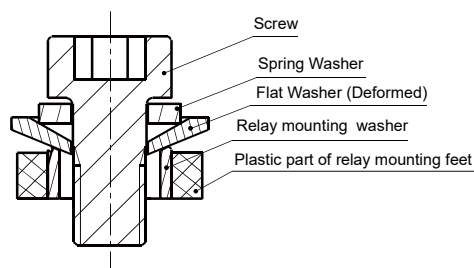
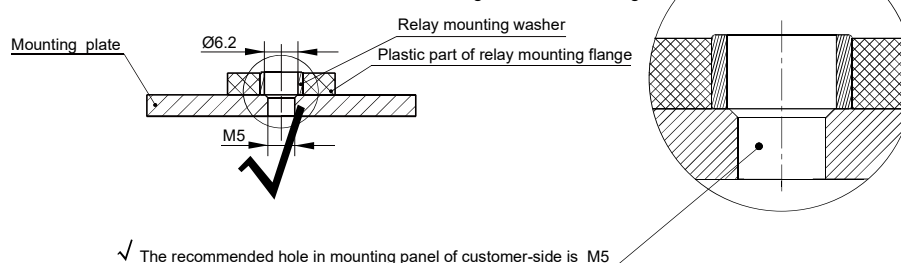
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82P-20

DIRECT CURRENT RELAY

cULus
File No.: E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 20A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.
- No specific polarity requirements for the connection
- For 1500 VDC energy storage application

CONTACT DATA

Contact arrangement	1 Form A	
Contact resistance ¹⁾	≤4.5mΩ(at 20A)	
Contact rating	20A	
Mechanical endurance	2 x 10 ⁵ ops	
	Type 1000V	Type 1500V
Max. switching voltage	1000 VDC	1500 VDC
Max. breaking current	200A (1000 VDC) 1op	200A (1000 VDC) 1op
Max. switching power	30kW	30kW
Electrical endurance ²⁾	Switching:1x10 ⁴ ops(1500VDC,15A) ³⁾	
	Switching:1x10 ⁴ ops(1000VDC,15A) ³⁾	
	Making:1.5x10 ⁴ ops(1500VDC,40A) ³⁾	
Current carrying ⁴⁾ capacity	20A:Cont.	
	30A:1h	
	40A:20min	
	80A: 30s	
	120A:10s	
	200A:0.6s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified,the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 4mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9.6	≥1	2.6
24	≤19.2	≥2	2.6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	4000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz 1.5mm 49m/s ²
Humidity		5%~85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		QC terminal
Unit weight		Approx. 160g
Outline Dimensions		78.0x 39.8 x 46.1mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	P	-20/	1000-	12-	H-	Q	2	J	-1	(XXX)
Application	P: PV and energy storage										
Contact rating	20: 20A										
Load voltage	1000: 1000 VDC 1500: 1500 VDC										
Coil voltage	12: 12 VDC 24: 24 VDC										
Contact arrangement	H: 1 Form A										
Coil terminal structure	Q: QC terminal										
Load terminal structure	2: QC terminal										
Base structure	J: Layout base without mounting boss										
Coil characteristic	1: Single coil										
Special code ¹⁾	XXX: Customer special requirement Nil: Standard										

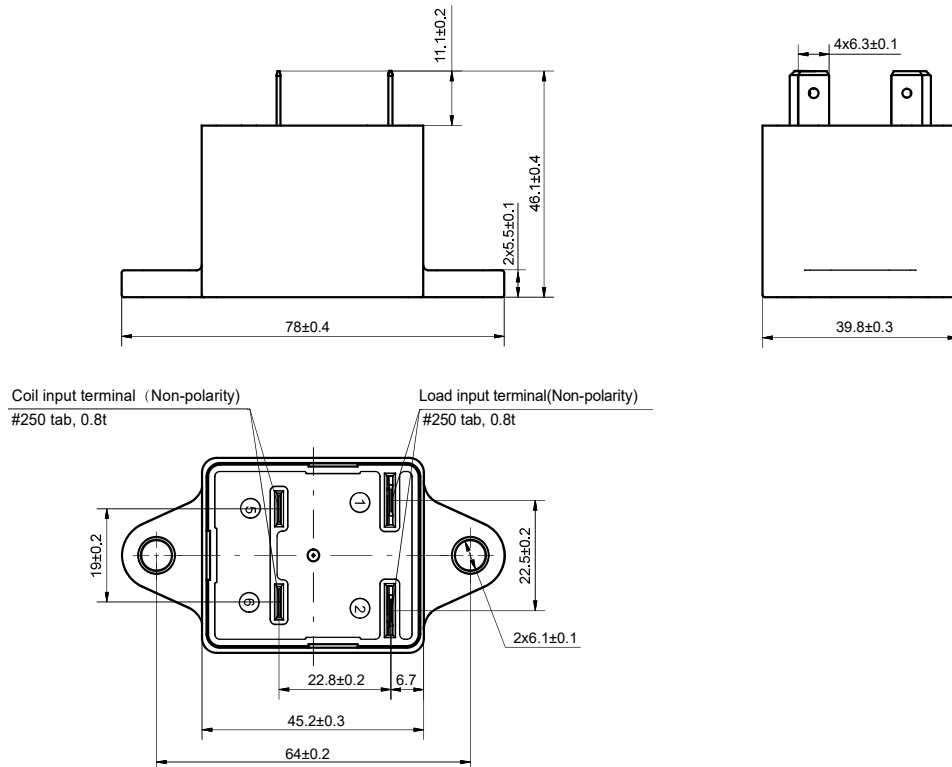
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

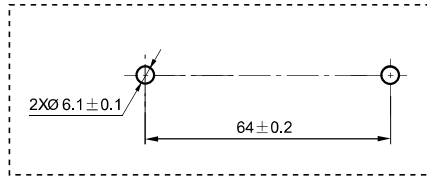
HFE82P-20/XXX-XX-H-Q2J-1



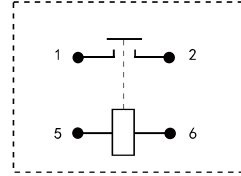
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



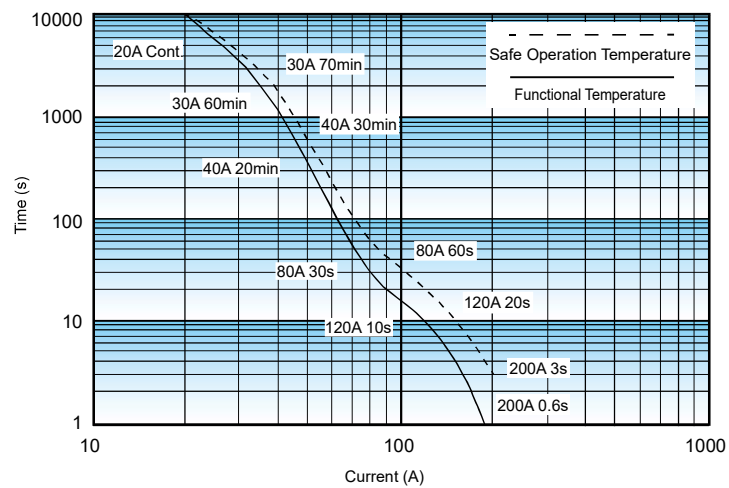
Terminal Arrangement



Note: No polarity on the load and coil sides.

CHARACTERISTIC CURVES

Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 4\text{mm}^2$.
4. When the current is $\geq 200\text{A}$, the relay is likely to weld.

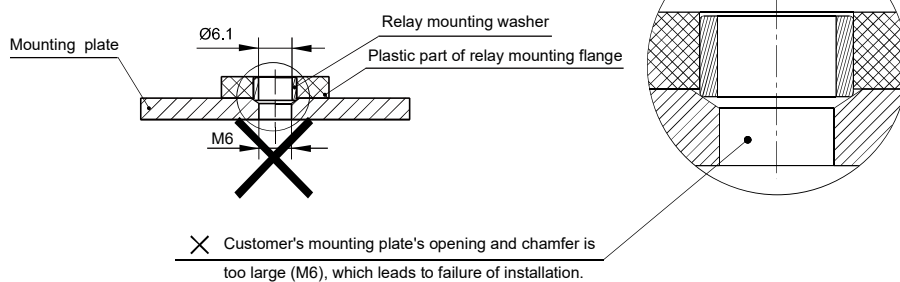
CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, the push and pull force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 4mm², otherwise the terminal parts may have abnormal heating.
3. Cautions of Relay mounting:

Unrecommended method

The hole of mounting plate at customer-side is too large.

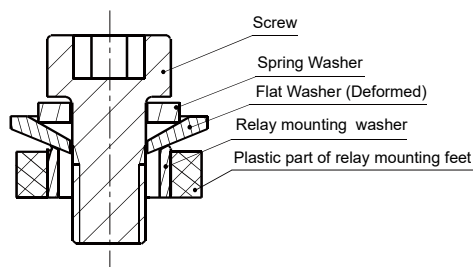
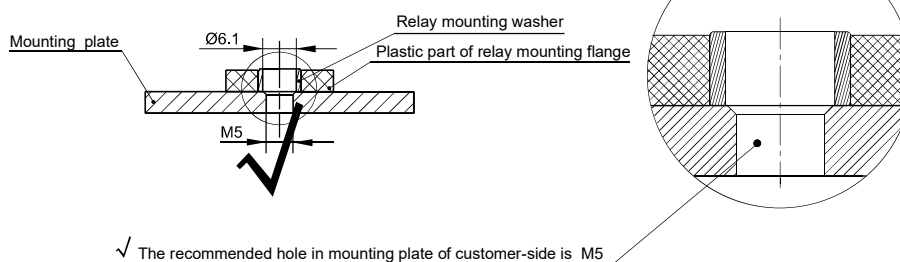
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82P-60B

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 60A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 3.6kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤1mΩ(at 60A)
Contact rating	60A
Mechanical endurance	2.0x10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	600A(450 VDC) 1op
Max. switching power	54kW
Electrical endurance ²⁾	Switching:6x10 ³ ops(600VDC,30A) ³⁾
Current carrying ⁴⁾ capacity	60A:Cont.
	90A:1h
	120A:20min
	240A:20s
	360A:2s
	600A:0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 15mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9.6	≥1	5.2
24	≤19.2	≥2	5.2

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	3600 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M4 Screw terminal female
Unit weight		Approx.162g
Outline Dimensions		64.0x33.0x52.8mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	P	-60	B/	750-	12-	H	L	5	(XXX)
Application	P: PV and energy storage									
Contact rating	60: 60A									
Series breakdown	B: B series									
Load voltage	Nil: 450VDC 750: 750VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Coil terminal structure	L: Lead wire									
Load terminal structure	5: Screw terminal female									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

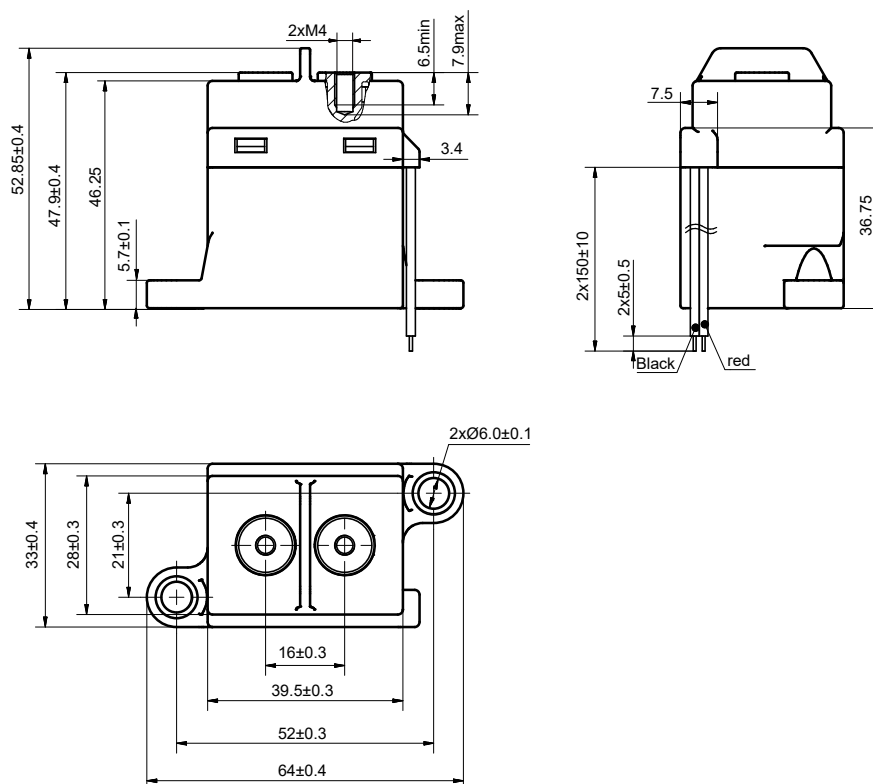
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

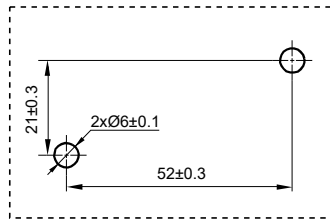
HFE82P-60B/-XXX-XX-HL5



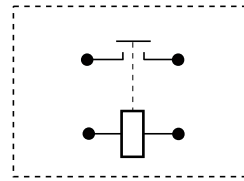
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Mounting Hole



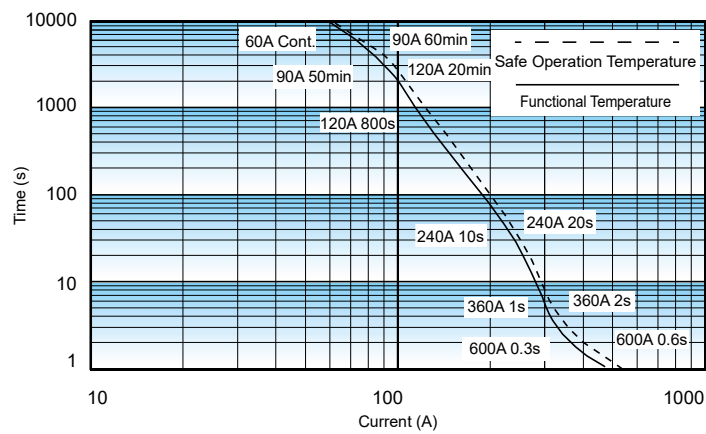
Terminal Arrangement



Note: No polarity on the load and coil sides.

CHARACTERISTIC CURVES

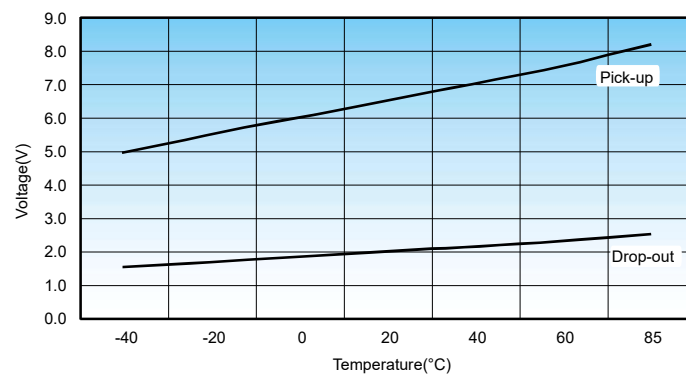
Endurance Capacity Curve



Notes:

1. This data is only for reference and please do not use it for fuse selection.
2. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
3. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
4. The data above is measured at the environment temperature 85°C, with cross section area of wire $\geq 15\text{mm}^2$.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when install the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 2N·m to 3N·m. The torque beyond the range may cause damage.

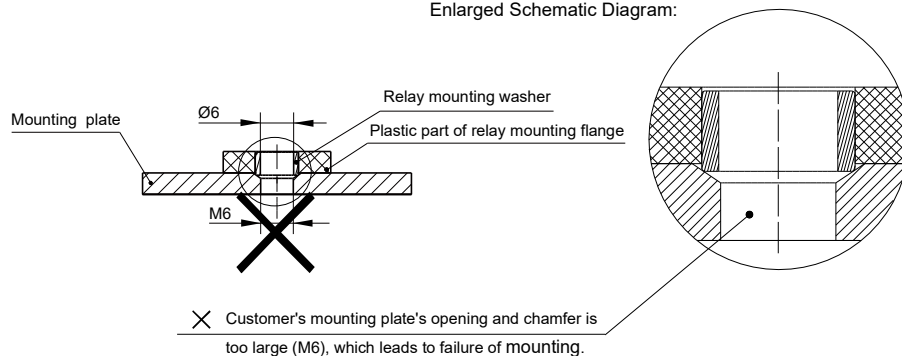
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M4 Screw	2N·m~3N·m	Ø4.0mm~Ø4.5mm	1mm~2mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 15mm² , otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

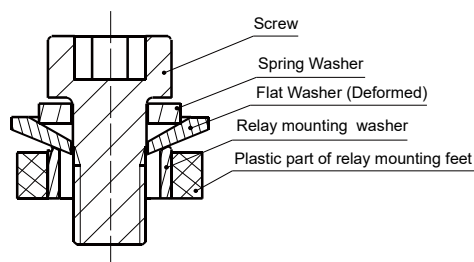
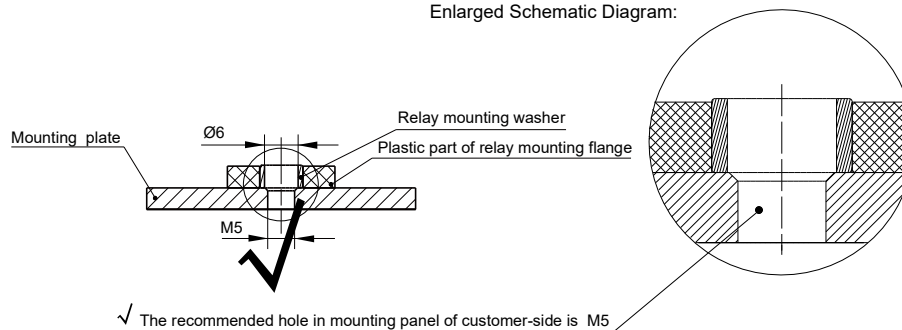
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE82P-200B

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 200A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.5mΩ(at 200A)
Contact rating	200A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	2000A(450 VDC) 1op
Max. switching power	180kW
Electrical endurance ²⁾	Swithing:6000ops(500VDC,60A) ³⁾
	Breaking:500ops(500VDC,250A) ³⁾
Current carrying ⁴⁾ capacity	200A:Cont.
	250A:15min
	320A:5min
	600A:30s
	900A:10s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 60mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9.6	≥1	6
24	≤19.2	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C~85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.330g
Outline Dimensions		81.0x39.0x70.0mm(HC5)
		81.7x39.5x69.6mm(HC5Y)

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

	HFE82	P	-200	B/		12-	H	C	5	Y	(XXX)
Type											
Application	P: PV and energy storage										
Contact rating	200: 200A										
Series breakdown	B: B series										
Load voltage	Nil: 450VDC										
Coil voltage	12: 12VDC 24: 24VDC										
Contact arrangement	H: 1 Form A										
Coil terminal structure	C: Connector										
Load terminal structure	5: Screw terminal female										
Mounting	Nil: Vertical mounting Y: Horizontal mounting										
Special code¹⁾	XXX: Customer special requirement Nil: Standard										

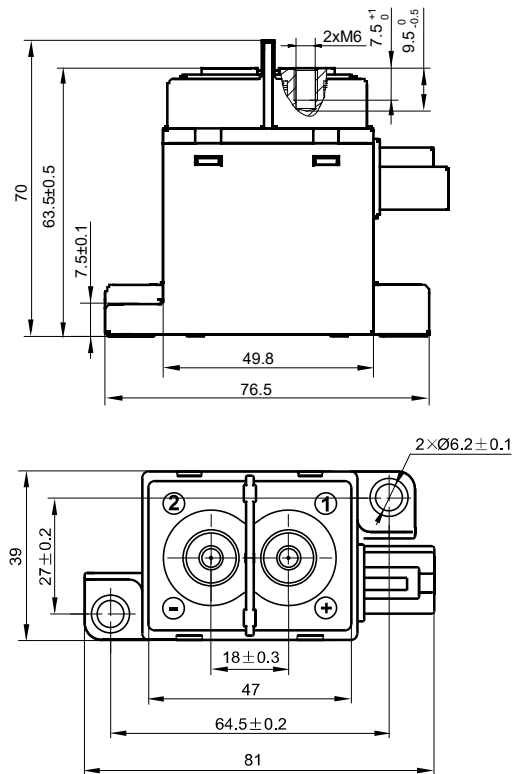
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82P-200B/XXX-XX-HC5

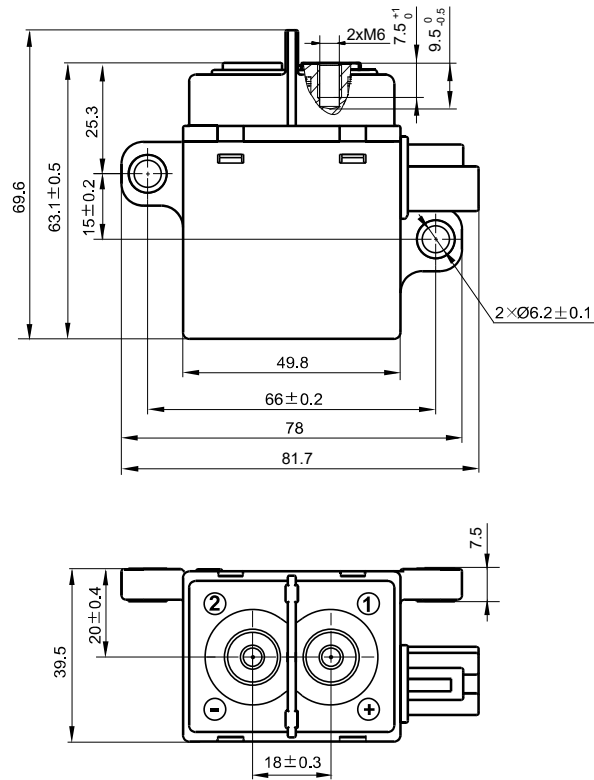


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

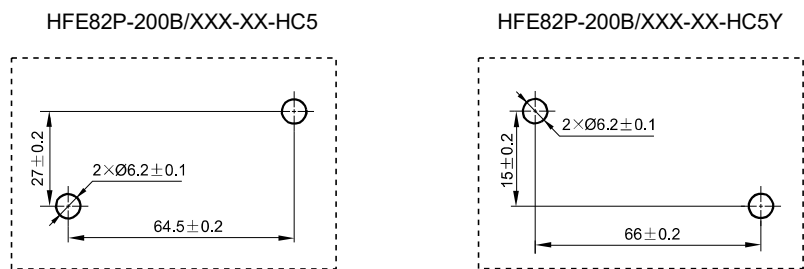
Unit: mm

Outline Dimensions

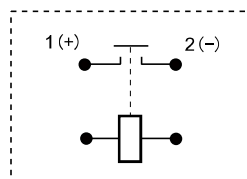
HFE82P-200B/XXX-XX-HC5Y



Mounting Hole



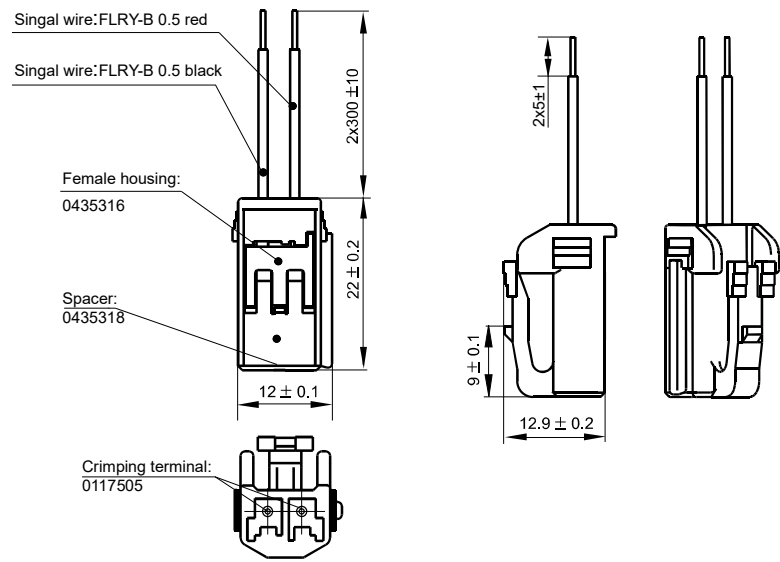
Terminal Arrangement



Note: The load side has polarity.
No polarity on the coil side.

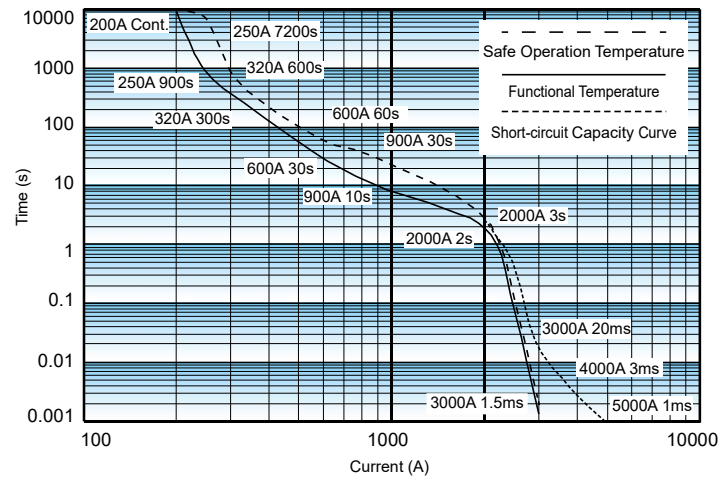
C:Connector

(Configured by customers:THB 0435 series, Yazaki 7283-1020)



CHARACTERISTIC CURVES

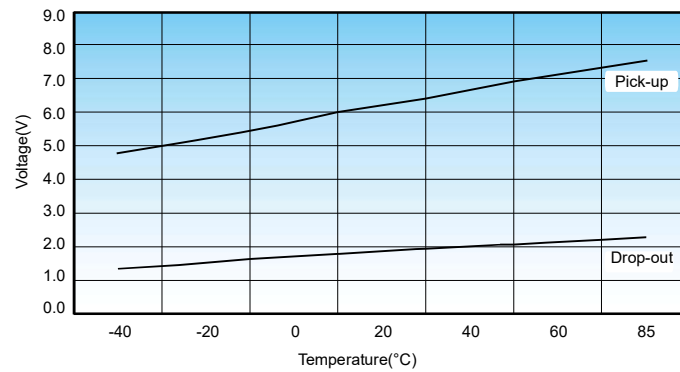
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
2. If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
3. The ambient temperature is 85°C, and the cross sectional area of the wire is $\geq 60\text{mm}^2$.
4. When the current is $\geq 2000\text{A}$, the relay is likely to weld without fire or explosion.
5. The dash-dotted line is the short-circuit capacity curve of the relay. when the current is $\geq 3000\text{A}$, the contact may bounce without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 5N·m to 6N·m. The torque beyond the range may cause damage.

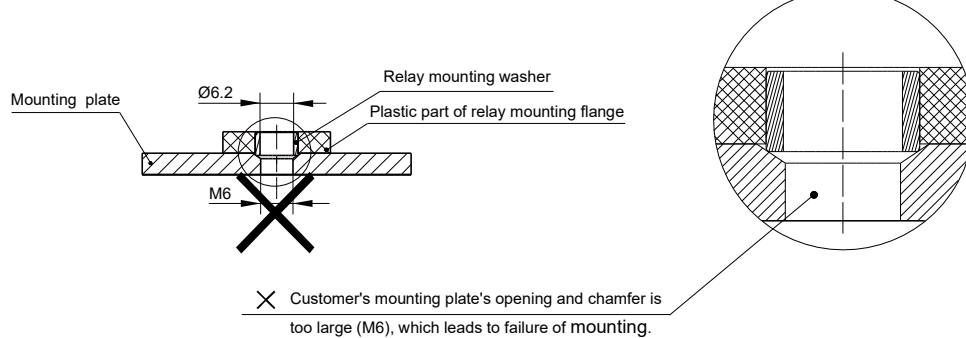
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	5N·m ~ 6N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 60mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

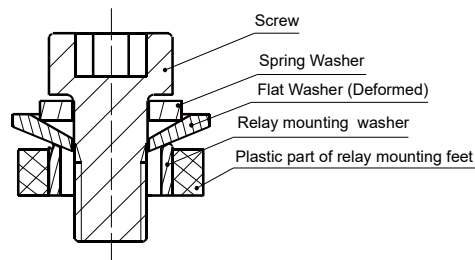
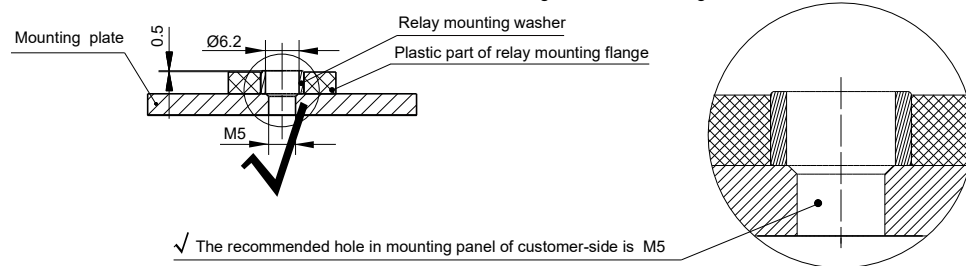
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE82P-250

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 250A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.2mΩ(at 250A)
Contact rating	250A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	2000A(450VDC)1op
Max. switching power	225kW
Electrical endurance ²⁾	Swithing:6000ops(750VDC, 60A) ³⁾
Current carrying ⁴⁾ capacity	250A:Cont.
	375A:10min
	500A:120s
	1000A:30s
	2500A:0.6s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 100mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9.6	≥1	6
24	≤19.2	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	Deenergized:98m/s ² Energized: 196m/s ² :196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.580g
Outline Dimensions		95.0x45.0x85.0mm(HL5)
		97.0x45.5x84.7mm(HL5Y)

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	P	-250/	750-	12-	H	L	5	Y	(XXX)
Application	P: PV and energy storage									
Contact rating	250: 250A									
Load voltage	Nil:450 VDC 750:750 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Coil terminal structure	L: Lead wire									
Load terminal structure	5: Screw terminal female									
Mounting	Nil:Vertical mounting Y: Horizontal mounting									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

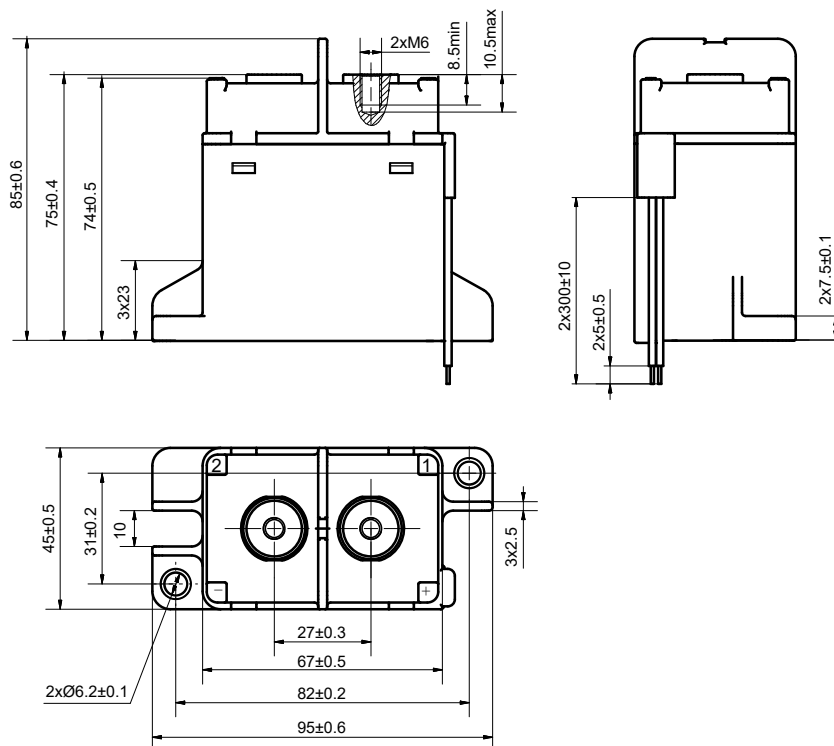
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82P-250/XXX-XX-12-HL5

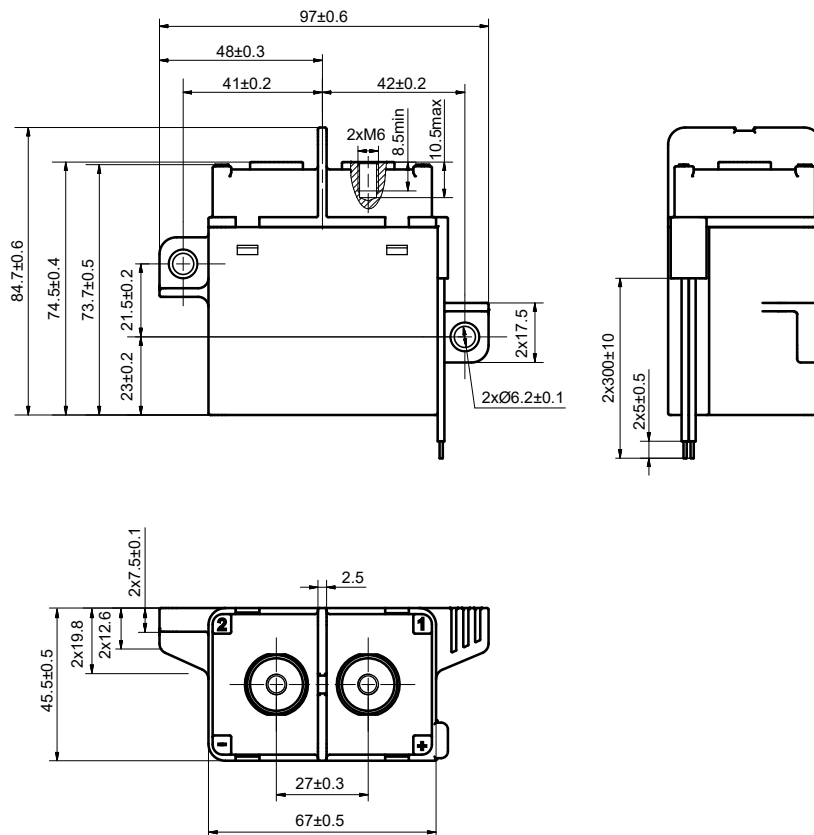


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

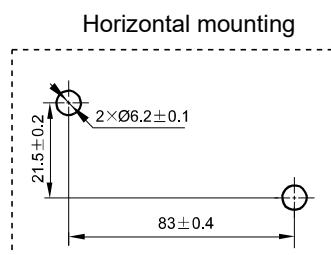
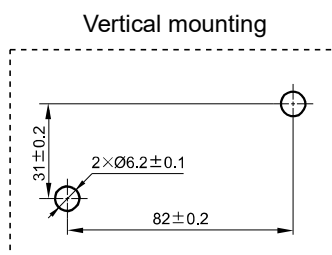
Unit: mm

Outline Dimensions

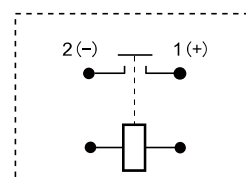
HFE82P-250/XXX-XX-12-HL5Y



Mounting Hole



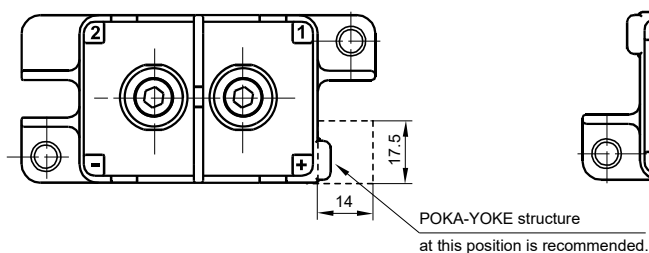
Terminal Arrangement



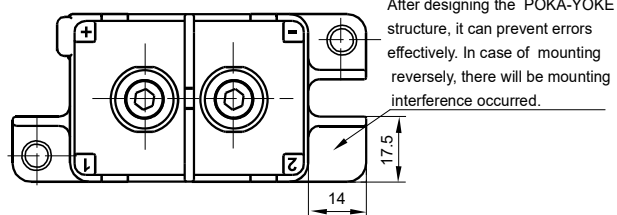
Note: The load side has polarity.
No polarity on the coil side.

Mounting Direction of Relay

Correct mounting direction

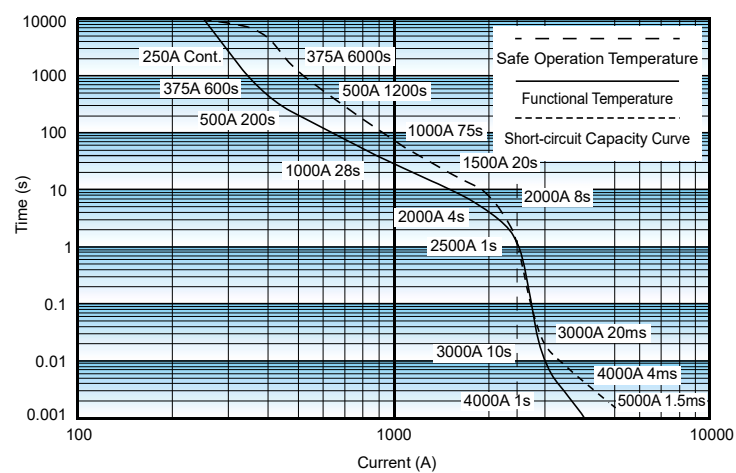


Wrong mounting direction



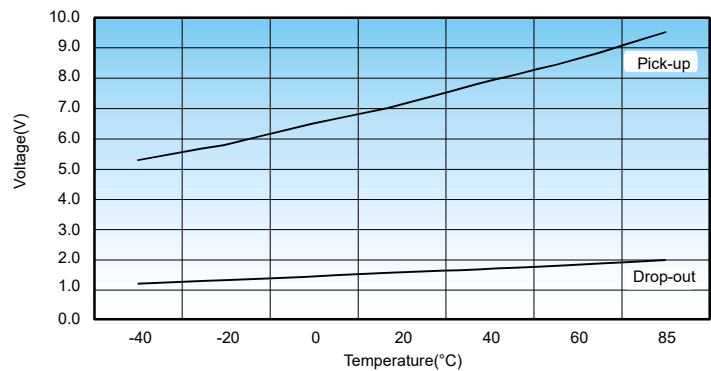
CHARACTERISTIC CURVES

Endurance Capacity Curve



- Notes:
- 1.The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
 - 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
 - 3.The ambient temperature is 85°C, and the cross sectional area of the wire is $\geq 100\text{mm}^2$.
 - 4.When the current is $\geq 2000\text{A}$, the relay is likely to weld without fire or explosion.
 - 5.The dash-dotted line is the short-circuit capacity curve of the relay. when the current is $\geq 3500\text{A}$, the contact may bounce without fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 9N·m to 11N·m. The torque beyond the range may cause damage.

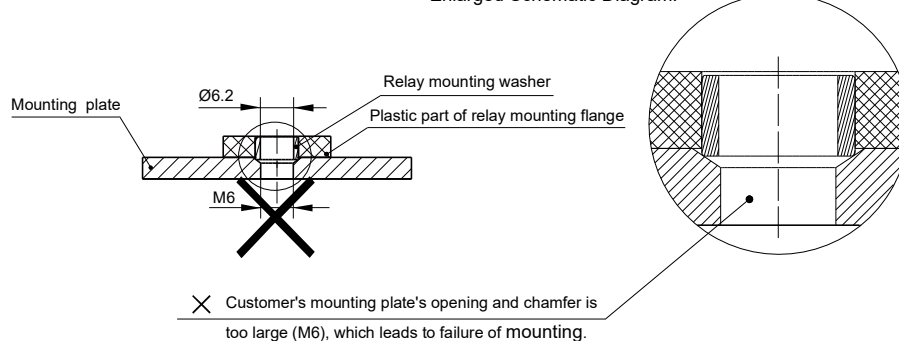
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	9N·m ~ 11N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 100mm², otherwise the terminal parts may have abnormal heating.
6. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

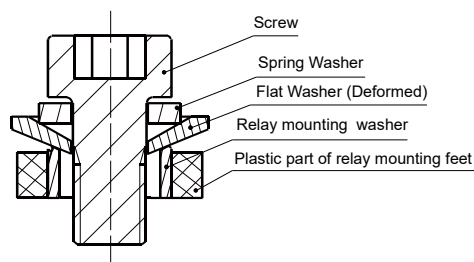
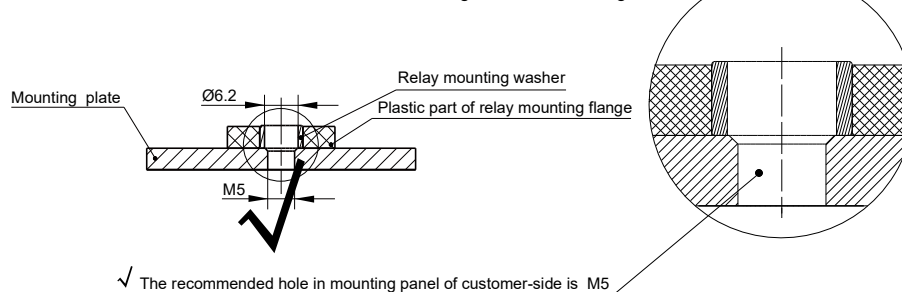
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE82P-250C

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt when exposed to electricity; the contact resistance is low and stable, and the parts exposed to electricity can meet IP67 protection level.
- Carrying current 250A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 2.6kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.5mΩ(at 250A)
Contact rating	250A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	1500A(750VDC) 1op
Max. switching power	250kW
Electrical endurance ²⁾	Switching:6000ops(1000VDC,60A) ³⁾
	Switching:6000ops(400VDC,150A) ³⁾
Current carrying ⁴⁾ capacity	250A:Cont.
	350A:8min
	500A:2min
	900A:25s
	1000A:20s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 60mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9.6	≥1	6
24	≤19.2	≥2	6

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	2600 VAC 1min
	Between open contacts	2600 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	Close:588m/s ² Open:98m/s ²
	Destructive	588m/s ²
Vibration resistance		10Hz ~ 55Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx.360g
Outline Dimensions		88.3x42.5x74.5mm(HC5)
		85.1x42.5x74.5mm(HC5Y)

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE82	P	-250	C/	750-	12-	H-	C	5	Y	-1	(XXX)
Application	P: PV and energy storage											
Contact rating	250: 250A											
Series breakdown	C: C series											
Load voltage	Nil: 450 VDC 750: 750 VDC											
Coil voltage	12: 12 VDC 24: 24 VDC											
Contact arrangement	H: 1 Form A											
Coil terminal structure	C: Connector Q: QC terminal											
Load terminal structure	5: Screw terminal female											
Mounting	Nil: Vertical mounting Y: Horizontal mounting											
Coil characteristic	1: Single coil											
Special code ¹⁾	XXX: Customer special requirement Nil: Standard											

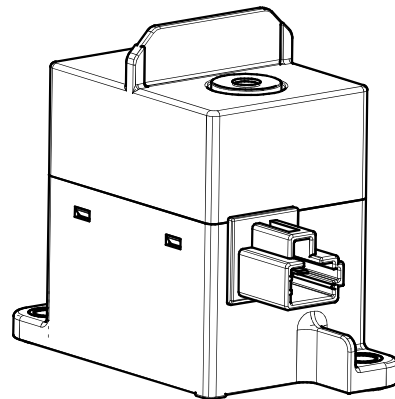
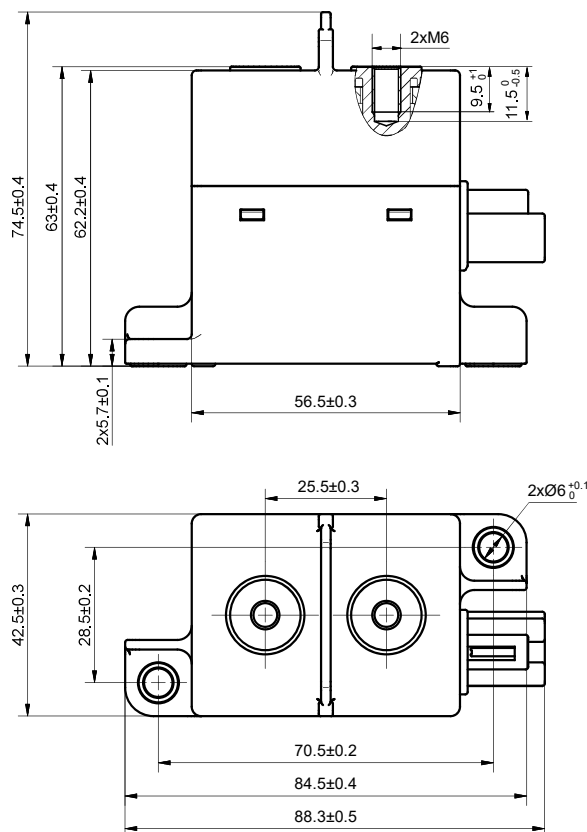
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE82P-250C/XXX-XX-H-C5-1

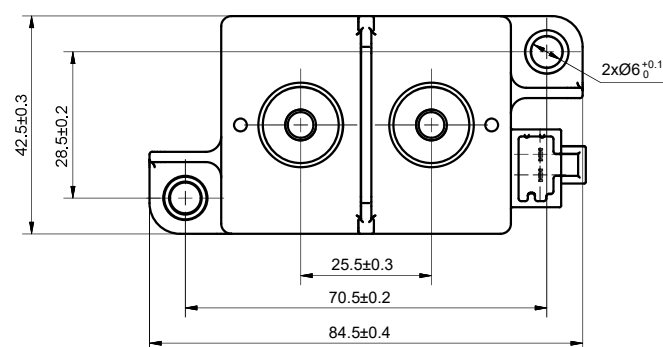
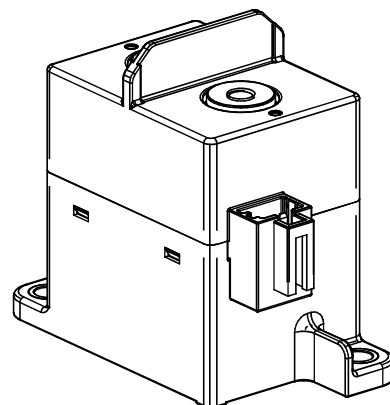
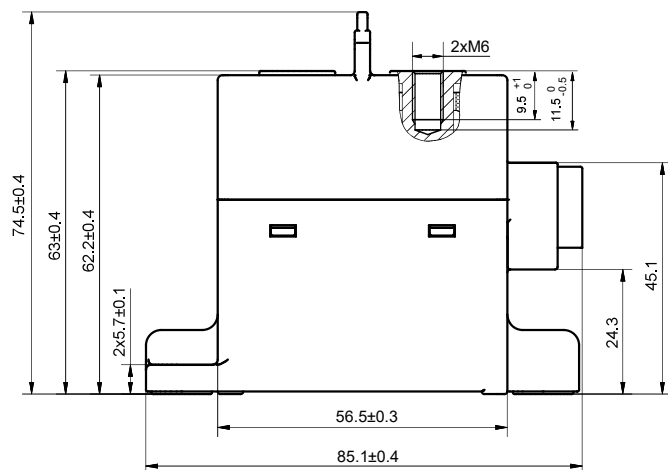


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

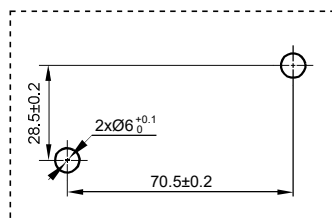
Unit: mm

Outline Dimensions

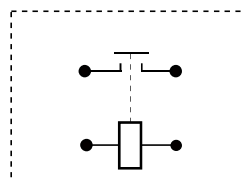
HFE82P-250C/XXX-XX-H-C5-1(917)



Mounting Hole



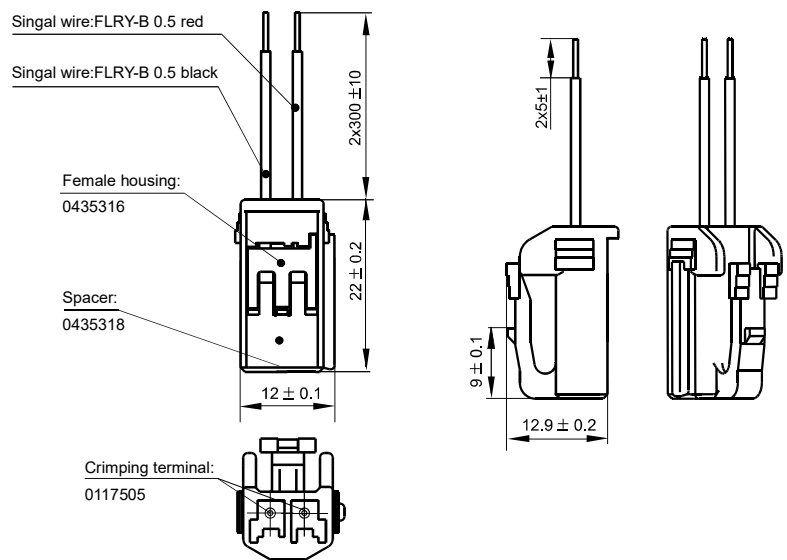
Terminal Arrangement



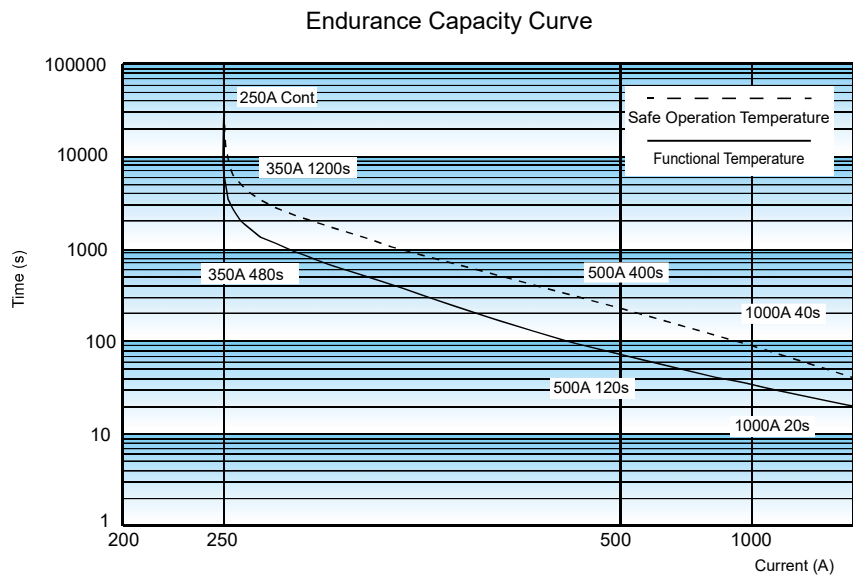
Note: No polarity on the load and coil sides.

C:Connector

(Configured by customers:THB 0435 series, Yazaki 7283-1020)

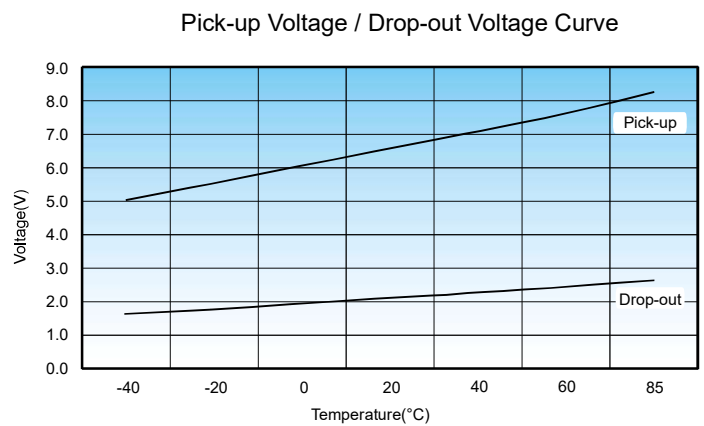


CHARACTERISTIC CURVES



Notes:

- 1.The upper limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
- 2.If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C;
If the safety temperature of 180°C is exceeded, it may cause fire.
- 3.The ambient temperature is 85°C, and the cross section area of the wire is $\geq 60\text{mm}^2$.



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m, The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

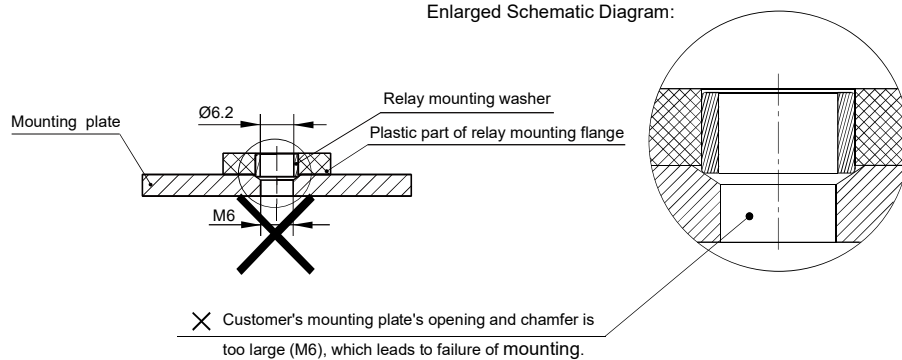
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing, repeat locking is not recommended.
3. When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 60mm², otherwise the terminal parts may have abnormal heating.
6. The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

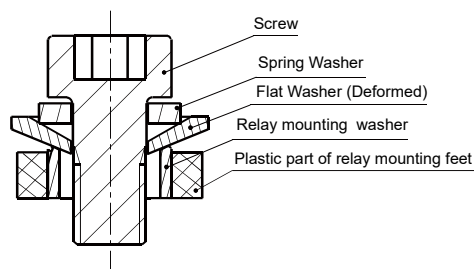
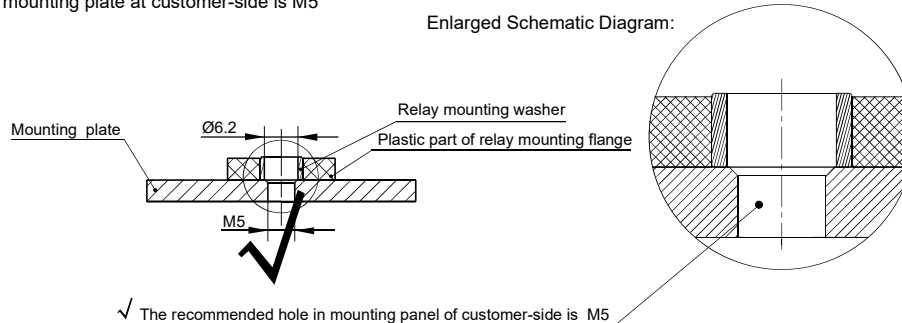
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE85P-150

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt; the contact resistance is low and stable, and contact part can meet IP67 protection level.
- Carrying current 150A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 3.3kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.3mΩ (at 150A)
Contact rating	150A
Mechanical endurance	2 x 10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	1000A(320 VDC)1op
Max. switching power	300kW
Electrical endurance ²⁾	Breaking:6000ops(1500VDC,60A) ³⁾
Current carrying ⁴⁾ capacity	150A:Cont.
	200A:10min
	300A:1min
	1200A:1s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified,the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 50mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥4.5	Switch on:26W Holding:3W
24	≤9	≥4.5	

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	3300 VAC 1min
	Between open contacts	3300 VAC 1min
	Between contacts & auxiliary contacts	3300 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz~55Hz 1.5mm DA
Humidity		5%~85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx. 400g
Outline Dimensions		80.4x62.3x72.8mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE85	P	-150/1000-12-	H	A	L	5	P	-5	(XXX)
Application	P: PV and energy storage									
Contact rating	150: 150A									
Load voltage	Nil: 450 VDC 750: 750 VDC 1000:1000 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Aux. contact arrangement	A: 1 Form A									
Coil terminal structure	L: Lead wire									
Load terminal structure	5: Screw terminal female									
Coil power	P: Energy-saving type									
Coil characteristic	5: Single coil with PWM									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

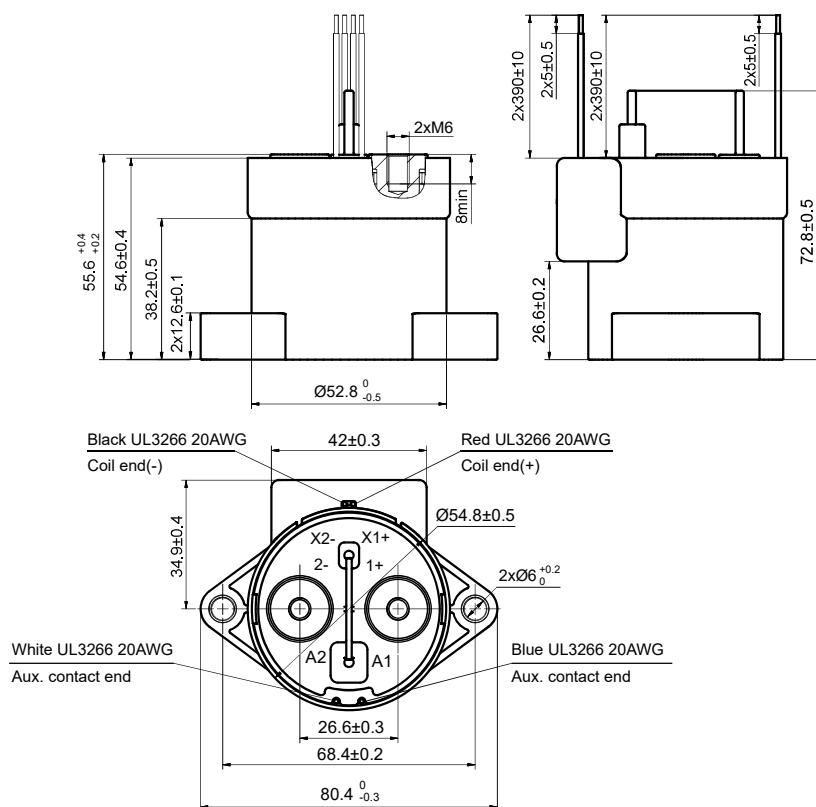
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

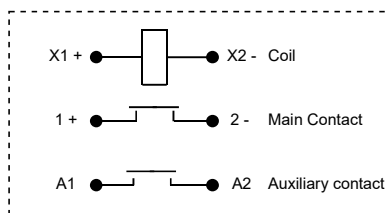
HFE85P-150/XXX-XX-HAL5P-5



OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

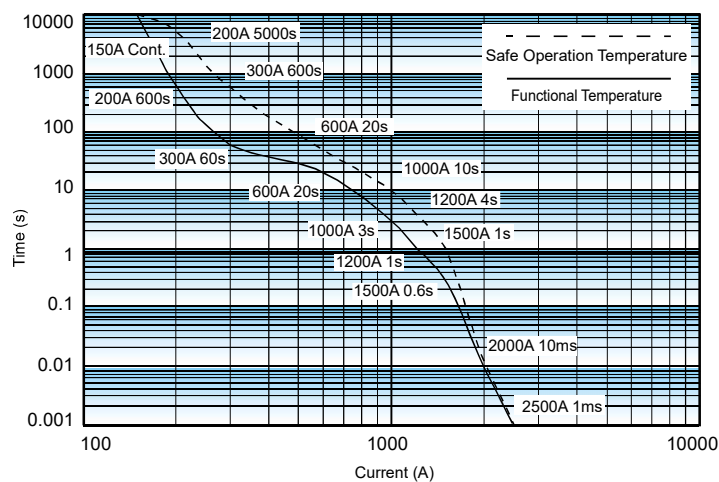
Terminal Arrangement



Note: Both the load and coil sides have polarity.
No polarity on the auxiliary contacts.

CHARACTERISTIC CURVES

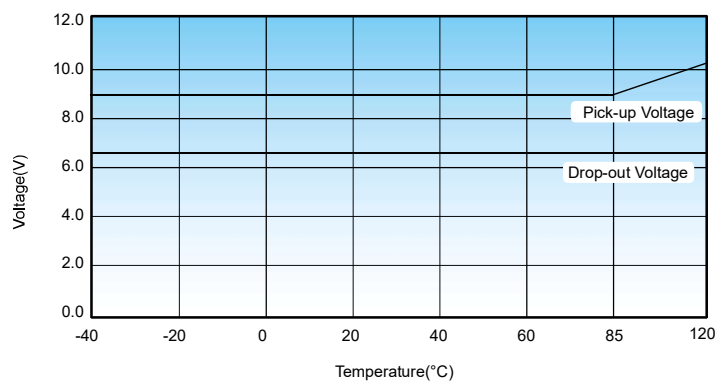
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 50\text{mm}^2$.
4. When the current is $\geq 2500\text{A}$, the relay is likely to be welded, but without any fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m; The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

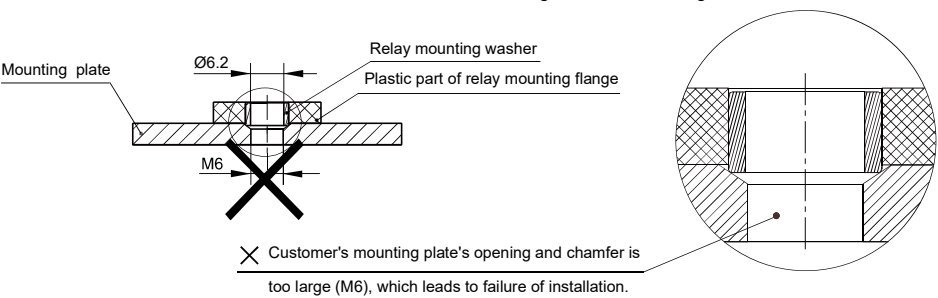
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m~8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m~4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing, repeat locking is not recommended.
3. When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 50mm², otherwise the terminal parts may have abnormal heating.
6. The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

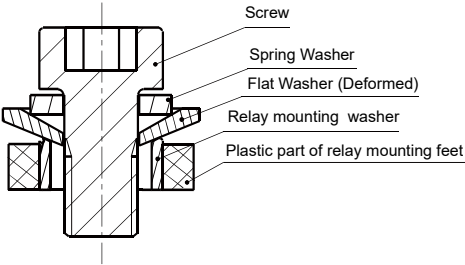
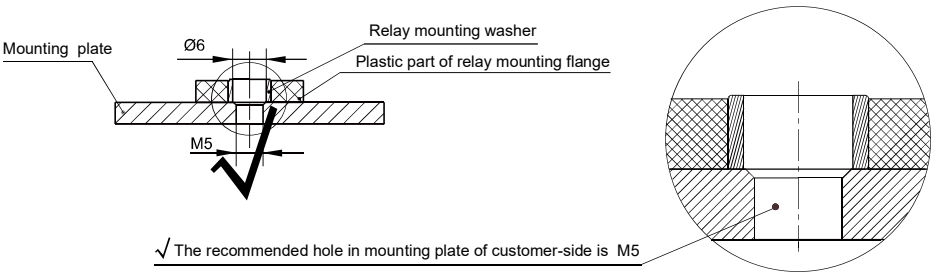
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE85P-250

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt; the contact resistance is low and stable, and contact part can meet IP67 protection level.
- Carrying current 250A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 3.3kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.3mΩ(at 200A)
Contact rating	250A
Mechanical endurance	2 x 10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	2000A(320 VDC)1op
Max. switching power	400kW
Electrical endurance ²⁾	Breaking:6000ops(1500VDC, 60A) ³⁾
	Breaking:500ops(1000VDC, 250A) ³⁾
Current carrying ⁴⁾ capacity	250A: Cont.
	320A: 10min
	500A: 1min
	2000A: 1s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified,the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 75mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥4.5	Switch on:26W Holding:3W
24	≤9	≥4.5	

CHARACTERISTICS

Insulation resistance		1000MΩ (1000 VDC)
Dielectric strength	Between coil & contacts	3300 VAC 1min
	Between open contacts	3300 VAC 1min
	Between contacts & auxiliary contacts	3300 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz~55Hz 1.5mm DA
Humidity		5%~85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx. 400g
Outline Dimensions		80.4x62.3x72.8mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE85	P	-250	/1000-12-	H	A	L	5	P	-5	(XXX)
Application	P: PV and energy storage										
Contact rating	250: 250A										
Load voltage	Nil: 450VDC 750: 750VDC 1000:1000VDC										
Coil voltage	12: 12VDC 24: 24VDC										
Contact arrangement	H: 1 Form A										
Aux. contact arrangement	A: 1 Form A										
Coil terminal structure	L: Lead wire										
Load terminal structure	5: Screw terminal female										
Coil power	P: Energy-saving type										
Coil characteristic	5: Single coil with PWM										
Special code ¹⁾	XXX: Customer special requirement Nil: Standard										

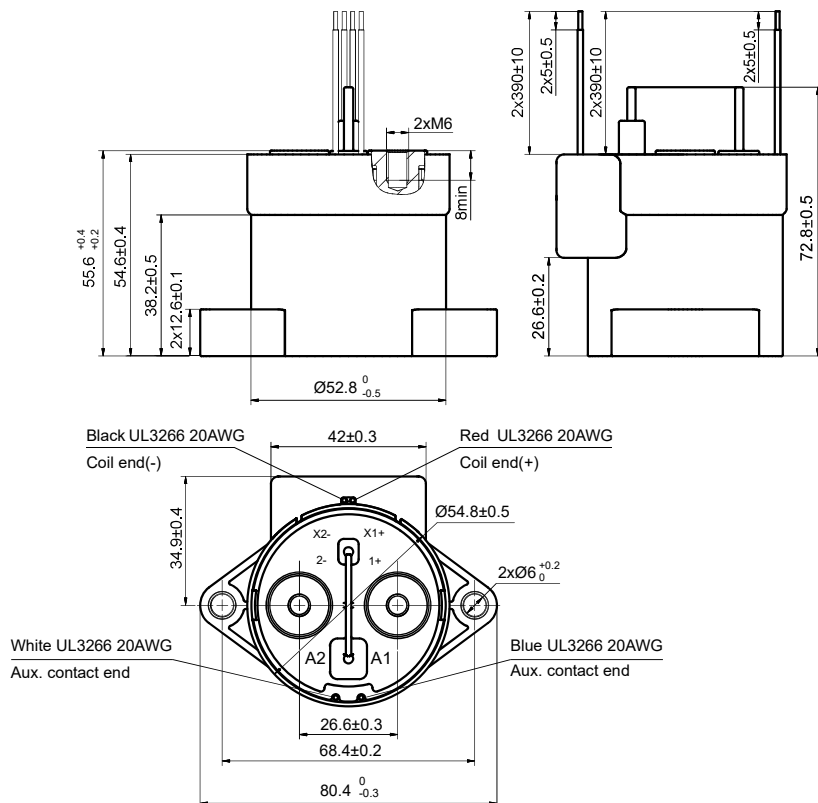
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

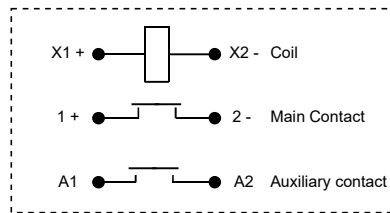
HFE85P-250/XXX-XX-HAL5P-5



OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

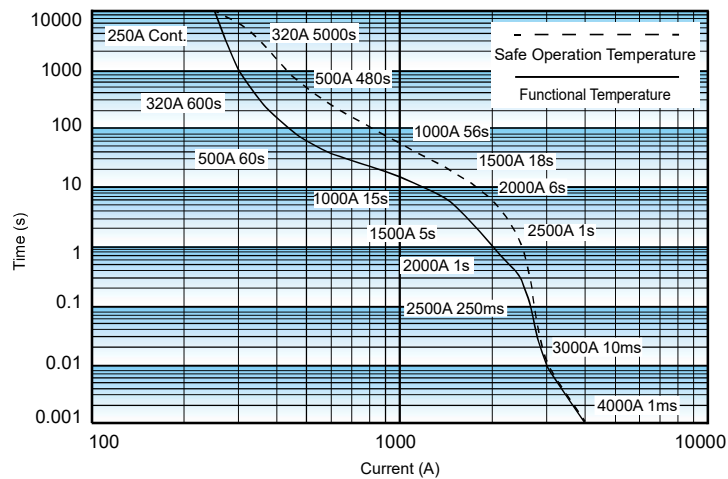
Terminal Arrangement



Note: Both the load and coil sides have polarity.
No polarity on the auxiliary contacts.

CHARACTERISTIC CURVES

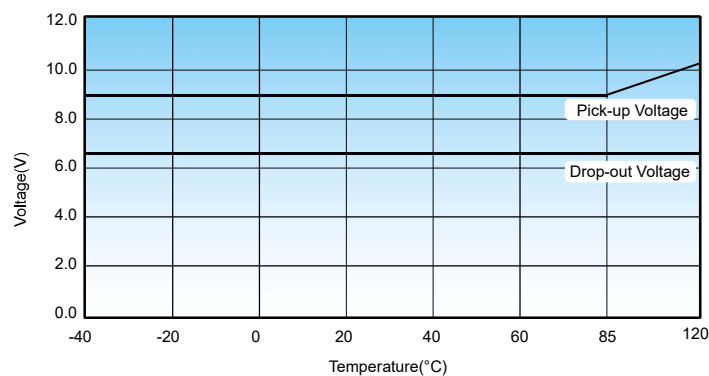
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively..
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 75\text{mm}^2$.
4. When the current is $\geq 2500\text{A}$, the relay is likely to be welded, but without any fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m; The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

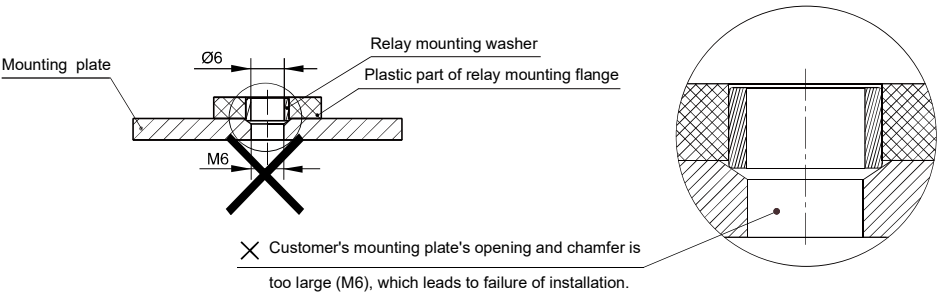
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m~8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m~4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 75mm², otherwise the terminal parts may have abnormal heating.
6. The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

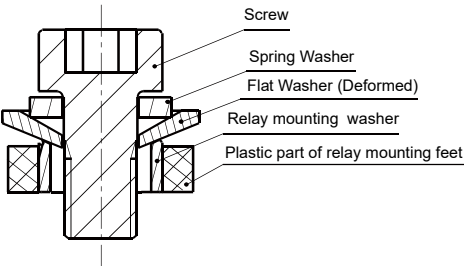
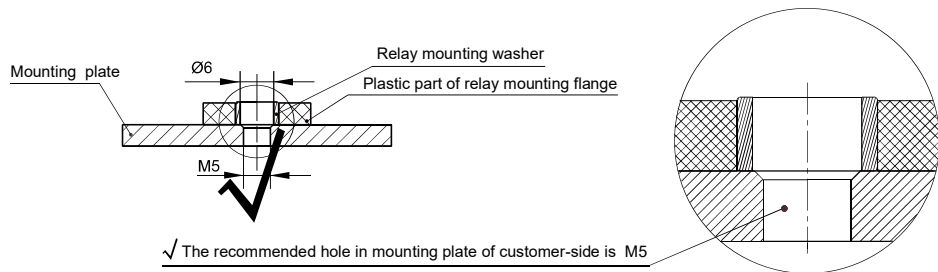
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE85P-300

DIRECT CURRENT RELAY



File No.:
2021000304000020
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt; the contact resistance is low and stable, and contact part can meet IP67 protection level.
- Carrying current 300A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 3.3kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.3mΩ(at 200A)
Contact rating	300A
Mechanical endurance	2 x 10 ⁵ ops
Max. switching voltage	1000 VDC
Max. breaking current	2000A (320 VDC) 1op
Max. switching power	450kW
Electrical endurance ²⁾	Breaking:1000ops(450 VDC, 300A)
	Breaking:50ops(450 VDC, -300A)
	Breaking:500ops(750 VDC, 300A)
	Breaking:20ops(750 VDC, -300A)
	Breaking:100ops(1000 VDC, 300A)
Current carrying ³⁾ capacity	300A: Cont.
	450A: 5min
	600A: 90s
	2000A: 1s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 100mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥4.5	Switch on:26W Holding:3W
24	≤9	≥4.5	

CHARACTERISTICS

Insulation resistance		1000MΩ (1000 VDC)
Dielectric strength	Between coil & contacts	3300 VAC 1min
	Between open contacts	3300 VAC 1min
	Between contacts & auxiliary contacts	3300 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz~55Hz 1.5mm DA
Humidity		5%~85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx. 400g
Outline Dimensions		80.4x62.3x72.8mm

Notes: The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE85	P	-300/1000-12-	H	A	L	5	P	-5 (XXX)
Application	P: PV and energy storage								
Contact rating	300: 300A								
Load voltage	Nil: 450 VDC 750: 750 VDC 1000: 1000 VDC								
Coil voltage	12: 12 VDC 24: 24 VDC								
Contact arrangement	H: 1 Form A								
Aux. contact arrangement	A: 1 Form A								
Coil terminal structure	L: Lead wire								
Load terminal structure	5: Screw terminal female								
Coil power	P: Energy-saving type								
Coil characteristic	5: Single coil with PWM								
Special code ¹⁾	XXX: Customer special requirement Nil: Standard								

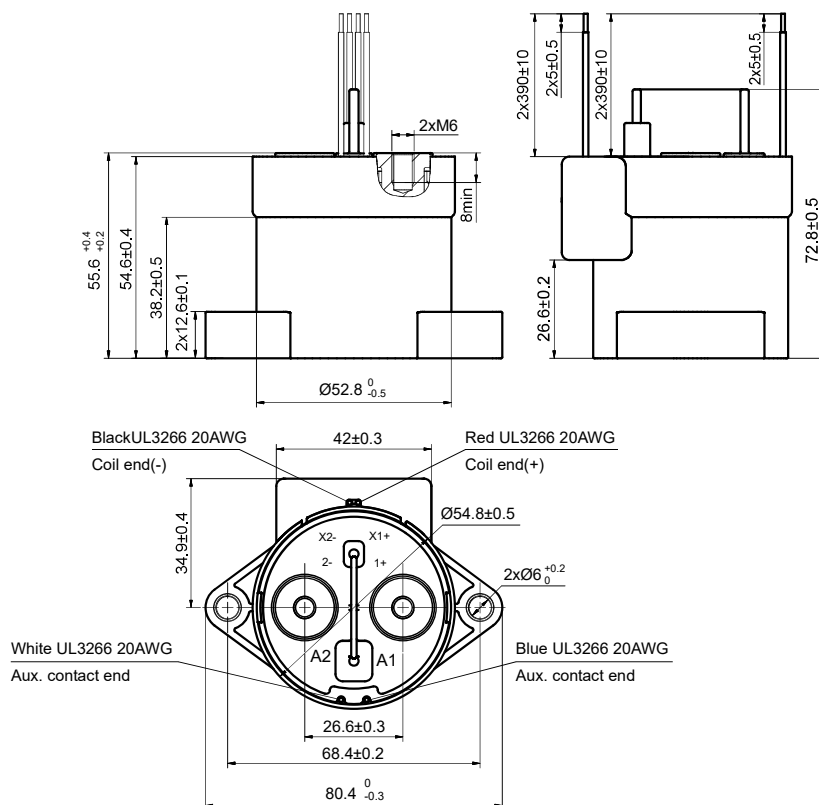
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

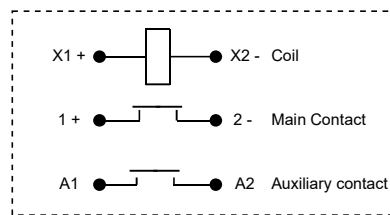
HFE85P-300/XXX-XX-HAL5P-5



OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

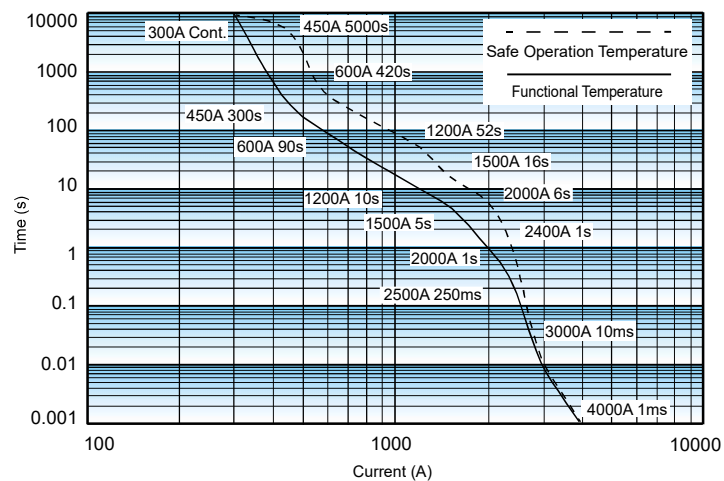
Terminal Arrangement



Note: Both the load and coil sides have polarity.
No polarity on the auxiliary contacts.

CHARACTERISTIC CURVES

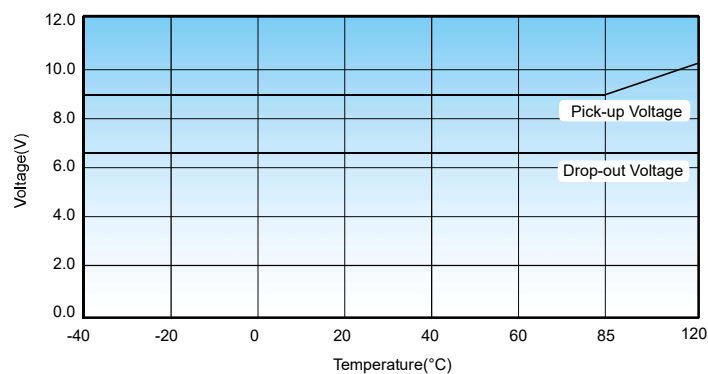
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 100\text{mm}^2$.
4. When the current is $\geq 2500\text{A}$, the relay is likely to be welded, but without any fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



CAUTIONS

1. In case of loosening, please use washer when mount the relay with M5 screw, and the torque within 3N·m to 4N·m; The screw tightening torque at terminals shall be within 6N·m to 8N·m. The torque beyond the range may cause damage.

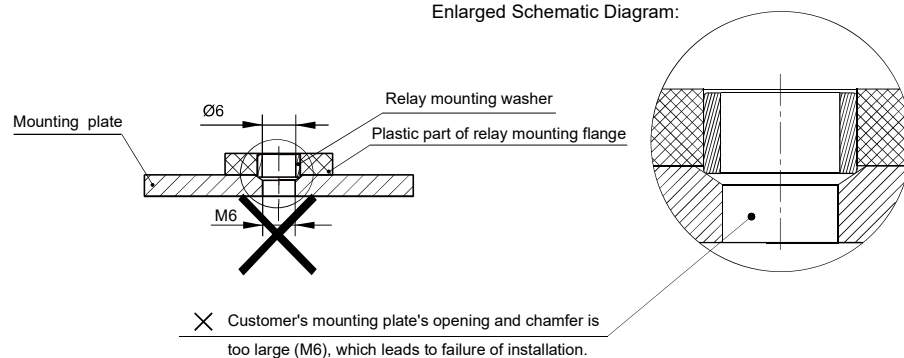
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 crew	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically, please pre-lock first and then lock when installing, repeat locking is not recommended.
3. When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 100mm², otherwise the terminal parts may have abnormal heating.
6. The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
7. Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

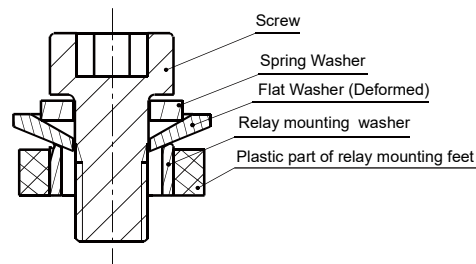
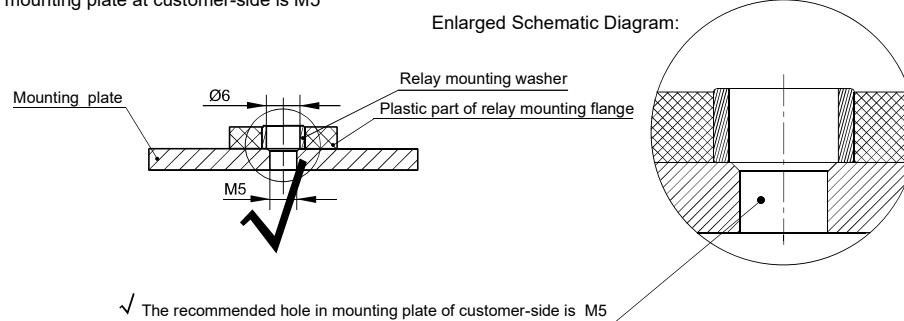
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE88P-150

DIRECT CURRENT RELAY



RoHS compliant

Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt; the contact resistance is low and stable, and contact part can meet IP67 protection level.
- Carrying current 150A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.3mΩ(at 150A)
Contact rating	150A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	1500 VDC
Max. breaking current	1000A(1500 VDC) 1op
Max. switching power	300kW
Electrical endurance ²⁾	Breaking:2x10 ³ ops(1500 VDC, 100A)
	Breaking:1x10 ³ ops(1500 VDC, 150A)
	Breaking:1op(1500 VDC, 1000A)
Current carrying ³⁾ capacity	150A: Cont.
	200A:8000s
	300A:5000s
	600A:75s
	1000A:20s
	1500A:10s
	2000A:5s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 50mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1.2	Switch on:50W Holding:5W
24	≤18	≥2.4	

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	4000 VAC 1min
	Between contacts & auxiliary contacts	4000 VAC 1min
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	98m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx. 1150g
Outline Dimensions		104.0x70.0x107.9mm

Notes: The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE88	P	-150/1500	-24	-H	A	-C	5	-6	(XXX)
Application	P: PV and energy storage									
Contact rating	150: 150A									
Load voltage	1000: 1000 VDC 1500: 1500 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Aux. contact arrangement	A: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Coil characteristic	6: Double coil with PCBA									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

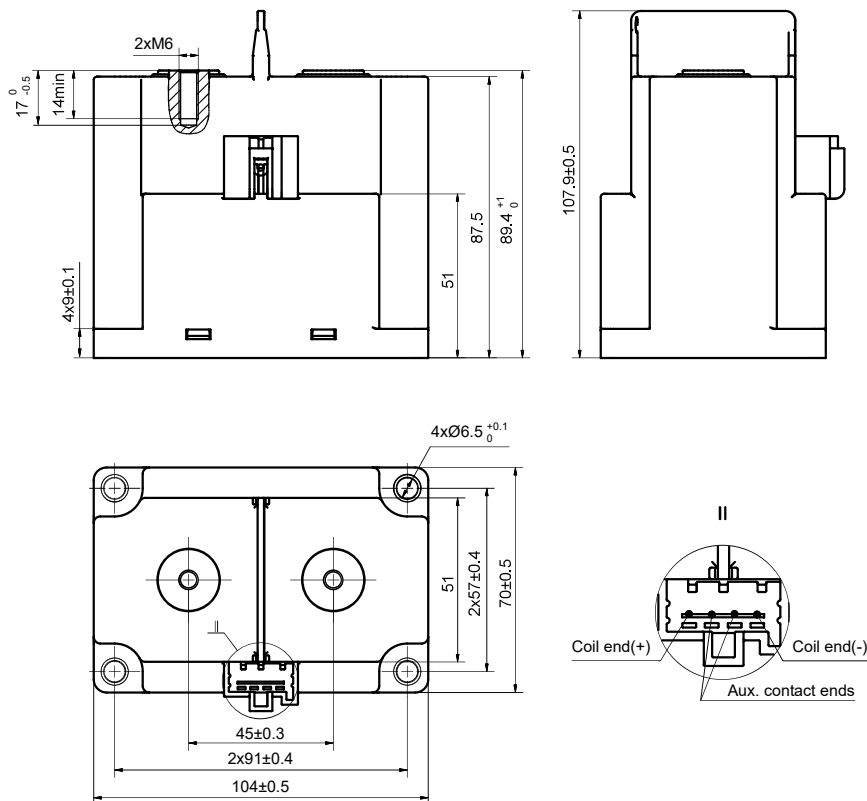
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

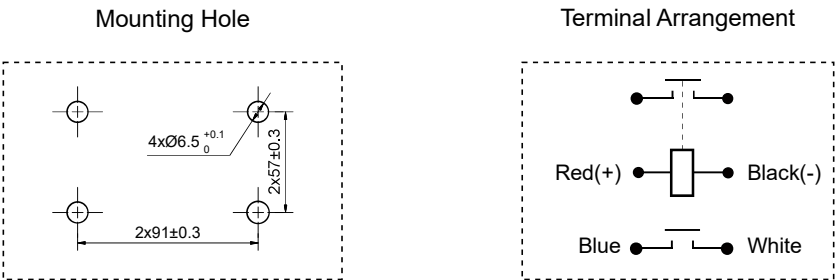
Outline Dimensions

HFE88P-150/XXX-XX-HA-C5-6



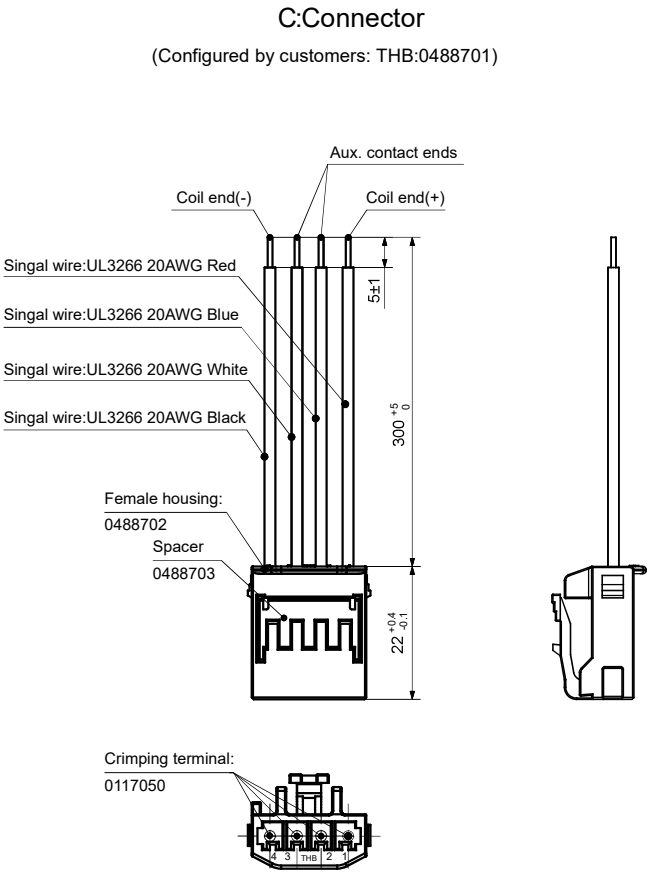
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm



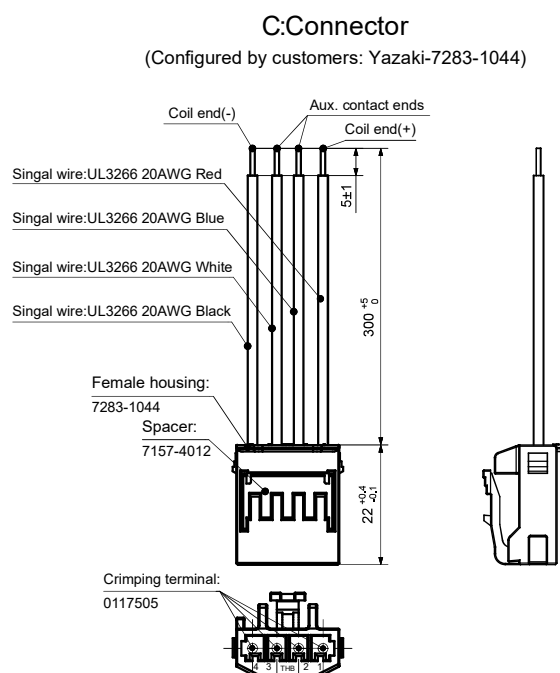
WIRING DIAGRAM

Unit: mm

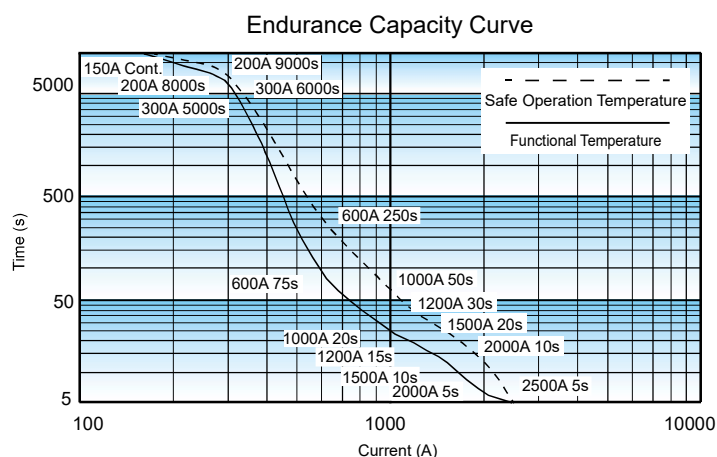


WIRING DIAGRAM

Unit: mm

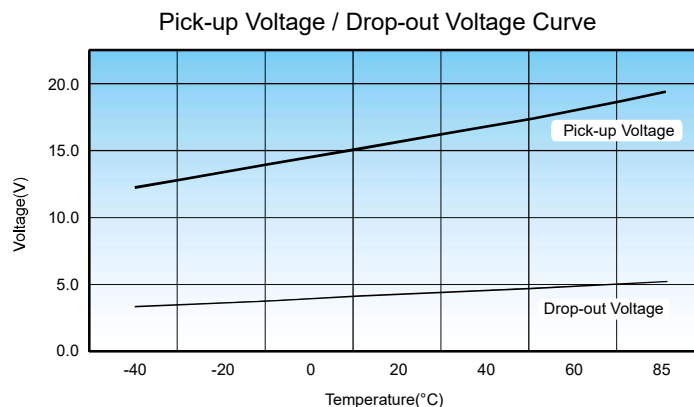


CHARACTERISTIC CURVES



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 50\text{mm}^2$.
4. When the current is $\geq 2500\text{A}$, the relay is likely to be welded, but without any fire or explosion.



CAUTIONS

1. Please use washers when mounting the relay in order to prevent loosening. Please mount the relay and the load terminal in the way specified in the following table, and control the torque within the required range. In case of exceeding the range, damage may be caused.

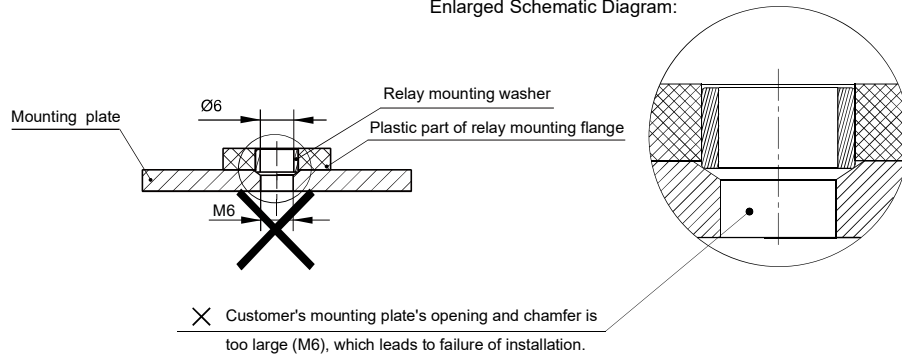
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

- Relay terminal lock vertically, please pre-lock first and then lock when installing, repeat locking is not recommended.
- When the customer uses special crews and nuts, such as nylok, need to communicate and confirm with Hongfa.
- When the customer has special installation requirement, such as upside down, multi busbar connection, need to communicate and confirm with Hongfa.
- Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 50mm², otherwise the terminal parts may have abnormal heating.
- The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
- Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

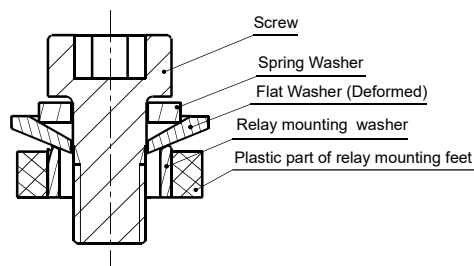
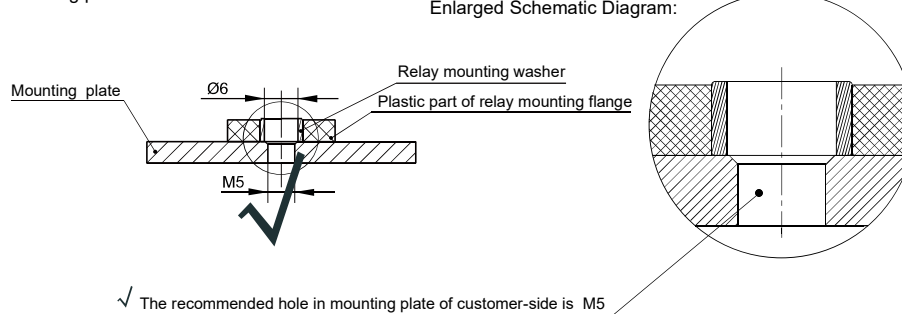
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

Disclaimer

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HFE88P-250

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt; the contact resistance is low and stable, and contact part can meet IP67 protection level.
- Carrying current 250A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.3mΩ(at 250A)
Contact rating	250A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	1500 VDC
Max. breaking current	1500A(1000 VDC) 1op
Max. switching power	500kW
Electrical endurance ²⁾	Swithing:6000ops(1500VDC,100A) ³⁾
	Swithing:1000ops(1000VDC,350A) ³⁾
	Swithing:6000ops ³⁾ (150VDC, 320A(L/R=0.3ms)
Current carrying ⁴⁾ capacity	250A:Cont.
	320A:7000s
	500A:350s
	1000A:37s
	1500A:15s
	2000A:9s
	2500A:7s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified,the temperature of eletrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 75mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1.2	Switch on:50W Holding:5W
24	≤18	≥2.4	

CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	4000VAC 1min
	Between contacts & auxiliary contacts	4000VAC 1min
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	98m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx. 1150g
Outline Dimensions		104.0x70.0x107.9mm

Notes:The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE88	P	-250/1500	-24	-H	A	-C	5	-6	(XXX)
Application	P: PV and energy storage									
Contact rating	250: 250A									
Load voltage	1000: 1000 VDC 1500: 1500 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Aux. contact arrangement	A: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Coil characteristic	6: Double coil with PCBA									
Special code ¹⁾	XXX: Customer special requirement					Nil: Standard				

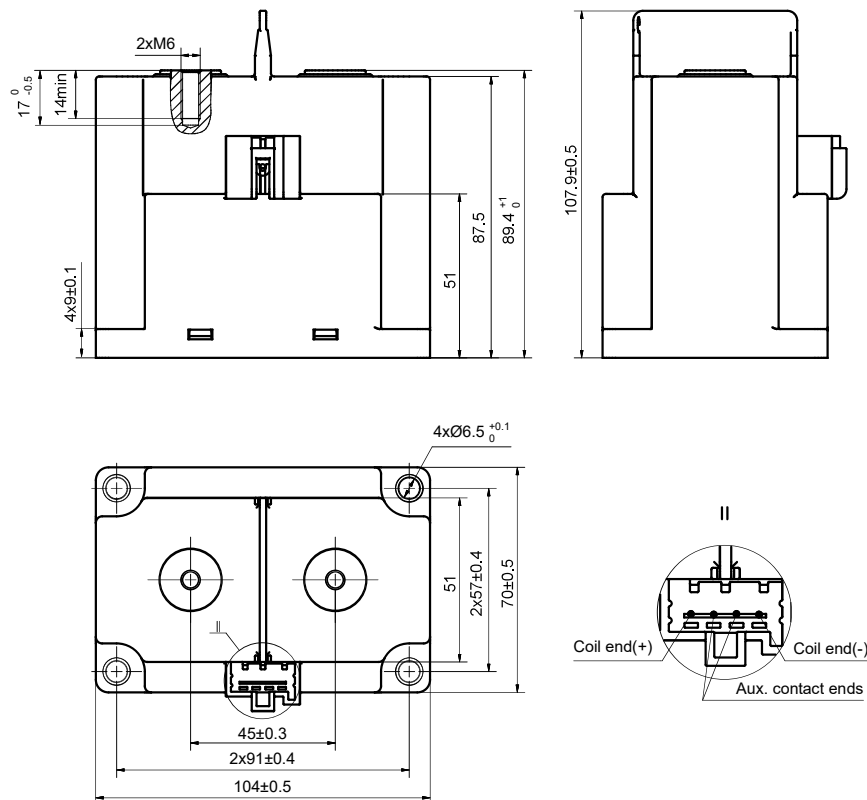
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

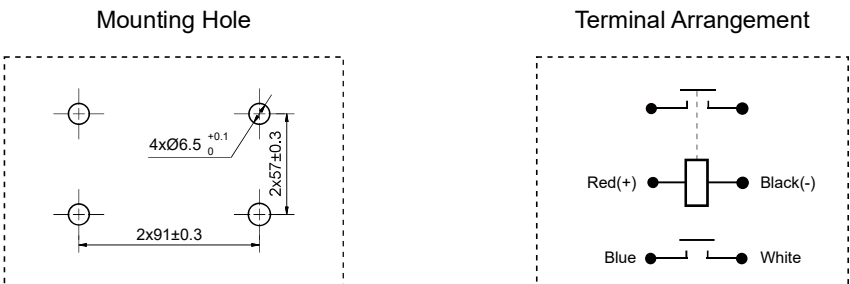
Outline Dimensions

HFE88P-250/XXX-XX-HA-C5-6



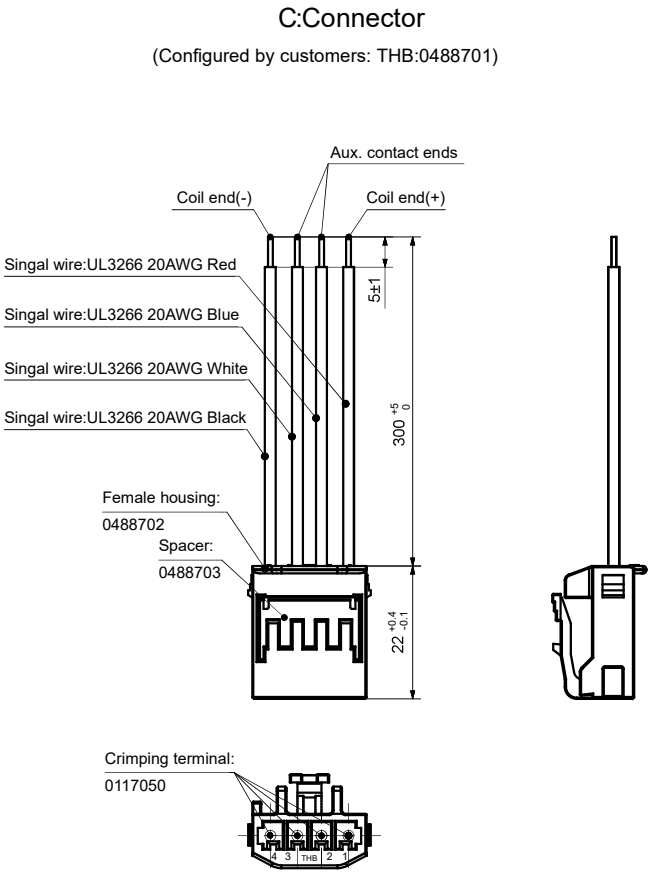
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm



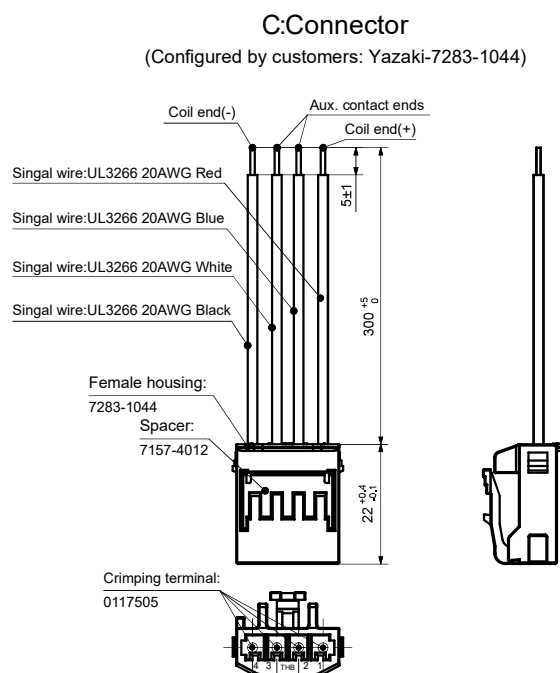
WIRING DIAGRAM

Unit: mm

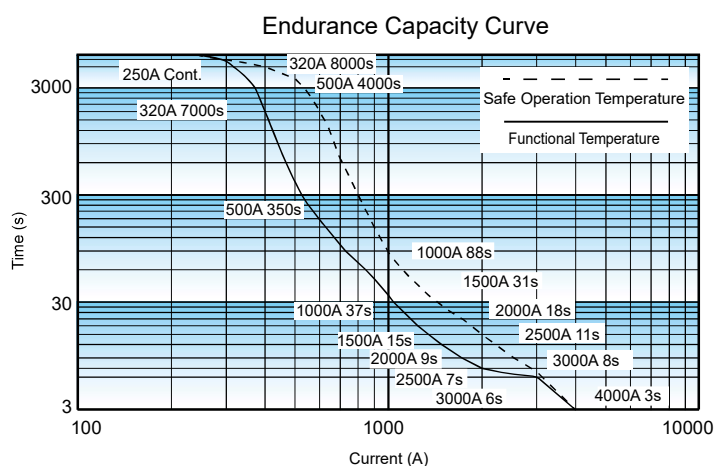


WIRING DIAGRAM

Unit: mm

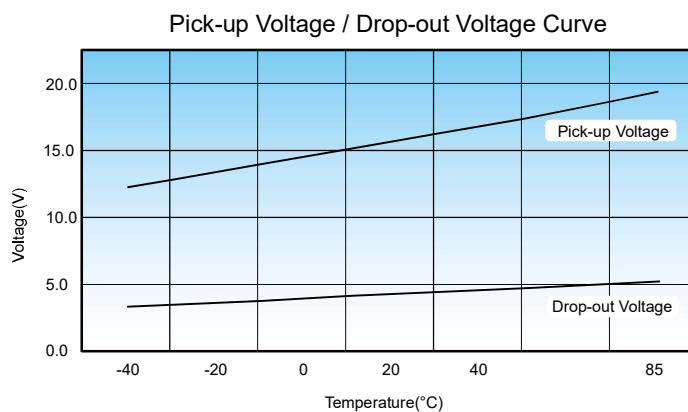


CHARACTERISTIC CURVES



Notes:

- 1.The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
- 2.To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
- 3.The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 75\text{mm}^2$.
- 4.When the current is $\geq 2500\text{A}$, the relay is likely to be welded, but without any fire or explosion.



CAUTIONS

1.Please use washers when mounting the relay in order to prevent loosening. Please mount the relay and the load terminal in the way specified in the following table, and control the torque within the required range. In case of exceeding the range, damage may be caused.

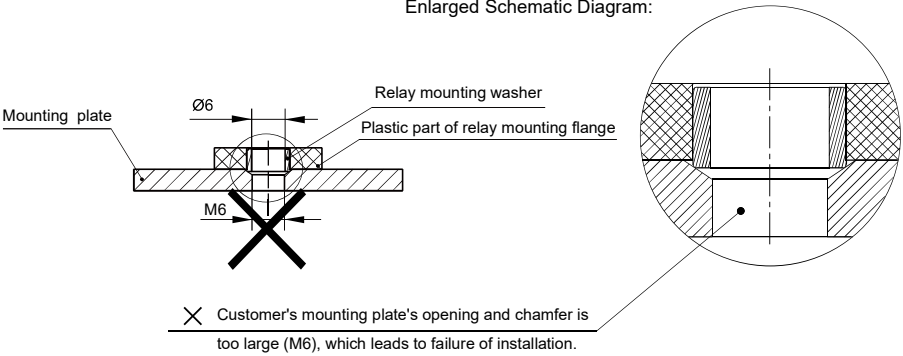
Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M6 Screw	6N·m ~ 8N·m	Ø6.0mm~Ø6.5mm	2mm~3mm	M5 Screw	3N·m ~ 4N·m

2. Relay terminal lock vertically,please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 75mm², otherwise the terminal parts may have abnormal heating.
- 6.The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
- 7.Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

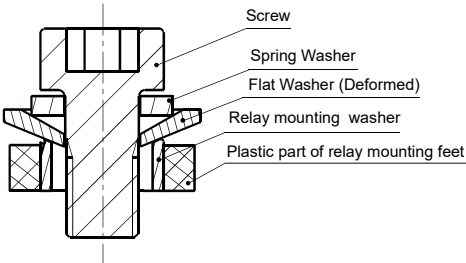
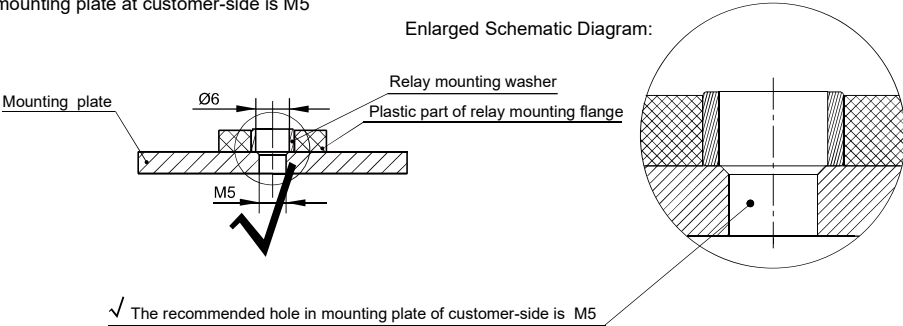
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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HFE88P-350

DIRECT CURRENT RELAY



File No.:E133481
RoHS compliant



Features

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion.
- Filled with gas (mostly hydrogen) to effectively prevent the oxidation burnt; the contact resistance is low and stable, and contact part can meet IP67 protection level.
- Carrying current 350A continuously at 85°C.
- Insulation resistance is 1000MΩ(1000 VDC), and dielectric strength between the coil and contacts is 4kV, which meets the requirements of IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤0.3mΩ(at 350A)
Contact rating	350A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	1500VDC
Max. breaking current	2000A(1000 VDC)1op
Max. switching power	700kW
Electrical endurance ²⁾	Swithing:6000ops(1500VDC,100A) ³⁾
	Swithing:1000ops(1000VDC,350A) ³⁾
	Swithing:6000ops ³⁾ (150VDC,320A(L/R=0.3ms)
Current carrying ⁴⁾ capacity	350A:Cont.
	400A:7000s
	600A:275s
	1500A:23s
	2000A:14s
	3000A:8s
	4000A:5s

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 100mm² min. See Fig. Endurance Capacity Curve for more information.

COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	≤9	≥1.2	Switch on:50W Holding:5W
24	≤18	≥2.4	

CHARACTERISTICS

Insulation resistance		1000MΩ(1000VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	4000VAC 1min
	Between contacts & auxiliary contacts	4000VAC 1min
Operate time (at rated volt.)		≤50ms
Release time (at rated volt.)		≤30ms
Shock resistance	Functional	98m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 55Hz
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		M6 screw terminal female
Unit weight		Approx. 1150g
Outline Dimensions		104.0x70.0x107.9mm

Notes: The above values are the initial values measured at room temperature.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

ORDERING INFORMATION

Type	HFE88	P	-350/1500	-24	-H	A	-C	5	-6	(XXX)
Application	P: PV and energy storage									
Contact rating	350: 350A									
Load voltage	1000: 1000 VDC 1500: 1500 VDC									
Coil voltage	12: 12 VDC 24: 24 VDC									
Contact arrangement	H: 1 Form A									
Auxiliary contact type	A: 1 Form A									
Coil terminal structure	C: Connector									
Load terminal structure	5: Screw terminal female									
Coil characteristic	6: Double coil with PCBA									
Special code ¹⁾	XXX: Customer special requirement					Nil: Standard				

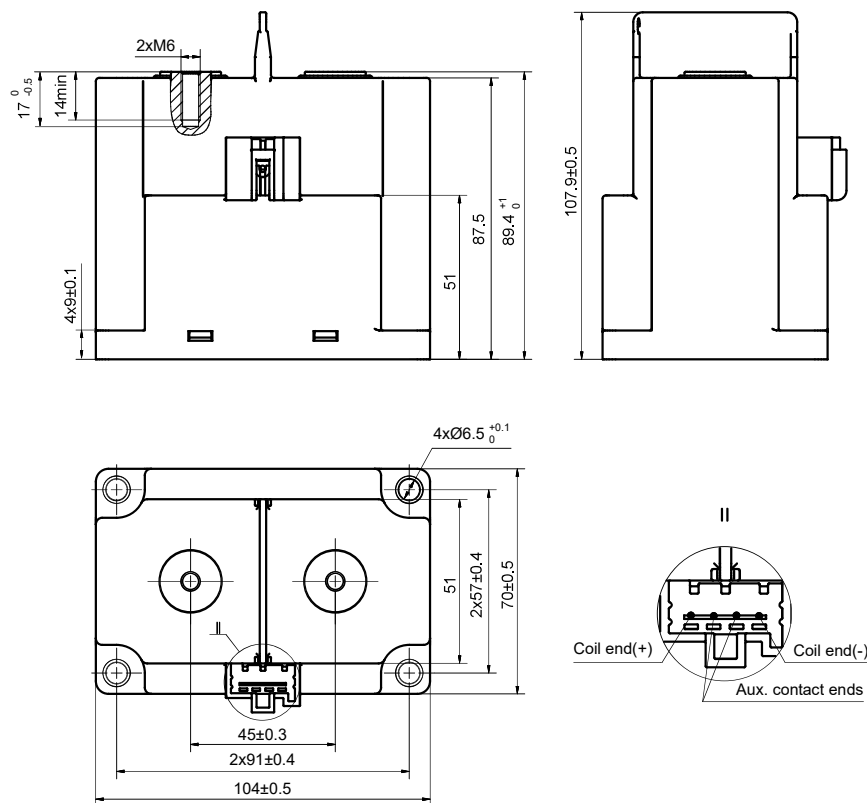
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

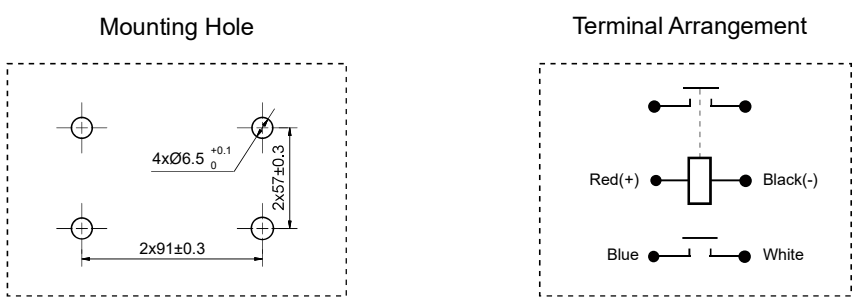
Outline Dimensions

HFE88P-350/XXX-XX-HA-C5-6



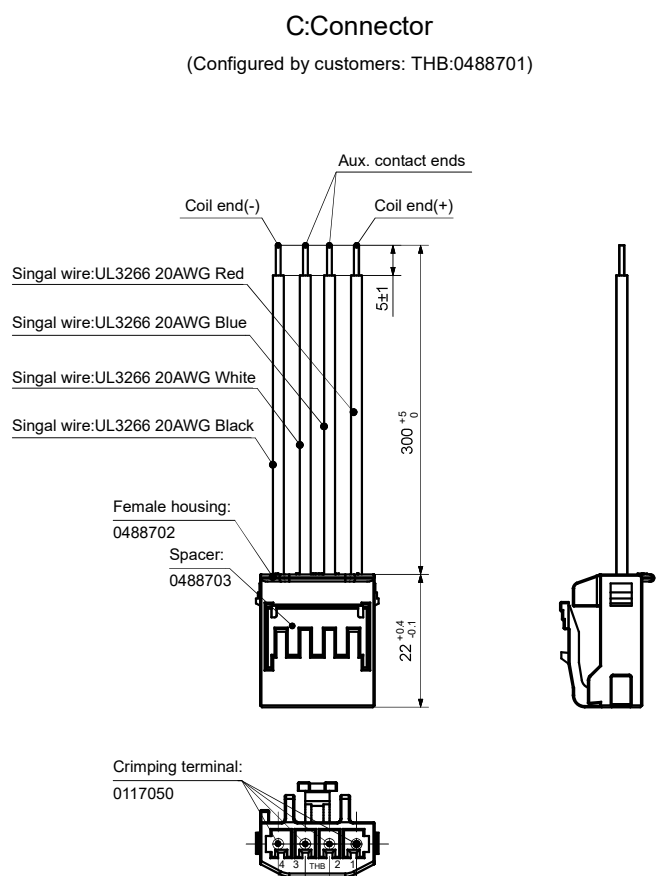
OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm



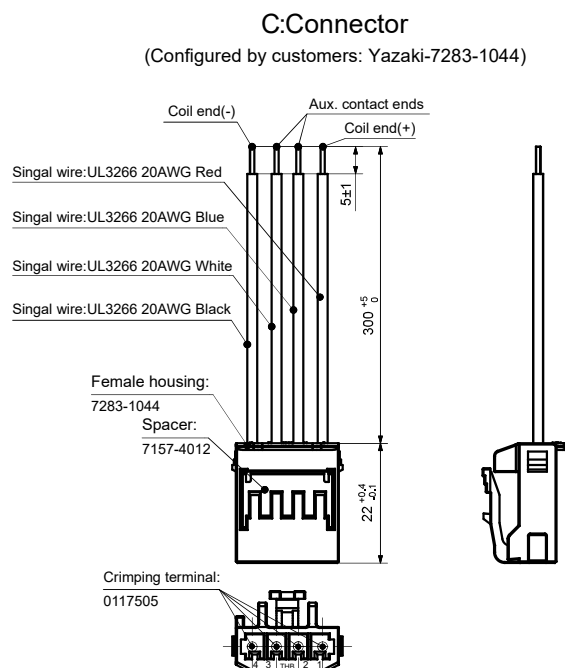
WIRING DIAGRAM

Unit: mm



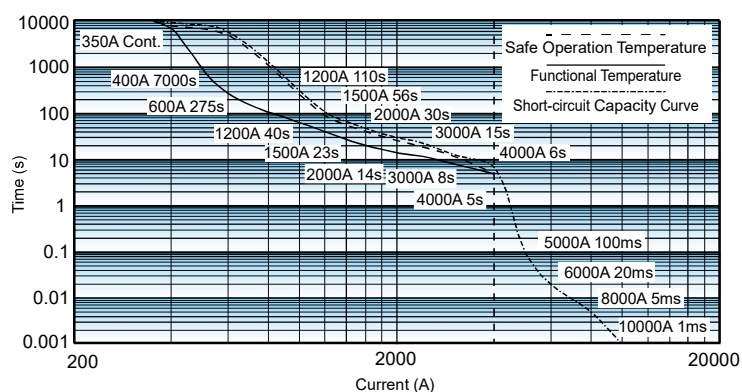
WIRING DIAGRAM

Unit: mm



CHARACTERISTIC CURVES

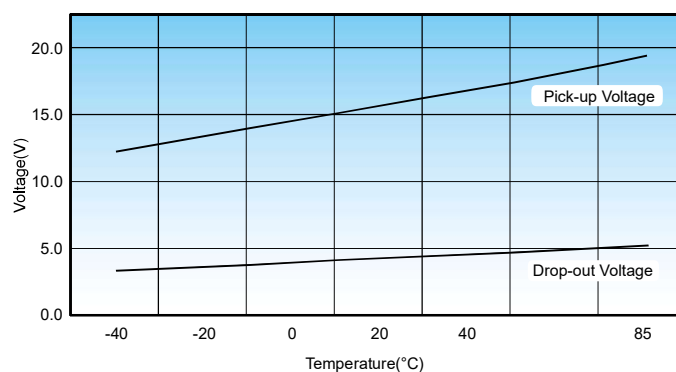
Endurance Capacity Curve



Notes:

1. The upper limit of safe operation temperature and functional temperature are set for 180°C and 130°C respectively.
2. To maintain the maximum long-term operating performance, absolute temperature should not exceed 130°C.
3. The data above is measured at the environment temperature 85°C with cross section area of wire $\geq 100\text{mm}^2$.
4. When the current is $\geq 2500\text{A}$, the relay is likely to be welded, but without any fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



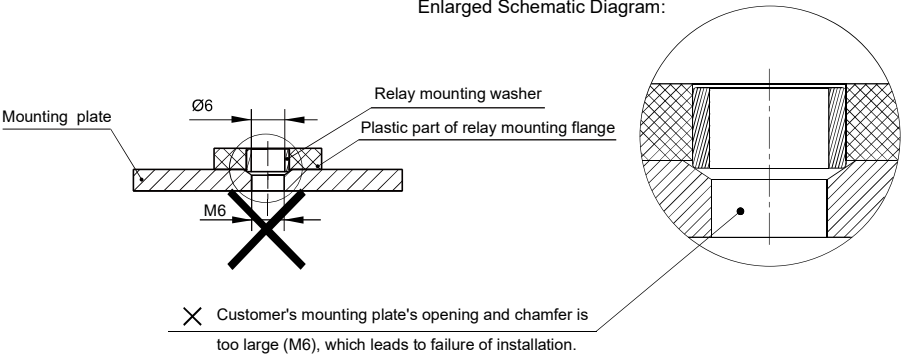
CAUTIONS

- 1.Please use washers when mounting the relay in order to prevent loosening. Please mount the relay and the load terminal in the way specified in the following table, and control the torque within the required range. In case of exceeding the range, damage may be caused.
- | Mounting for load terminal | | | | Mounting for relay body | |
|----------------------------|--------------------|-----------------------------|-----------------------------|-------------------------|--------------------|
| Mounting way | Torque requirement | Hole dia. of copper bus bar | Thickness of copper bus bar | Mounting way | Torque requirement |
| M6 screw | 6N·m ~ 8N·m | Ø6.0mm~Ø6.5mm | 2mm~3mm | M5 Screw | 3N·m ~ 4N·m |
2. Relay terminal lock vertically,please pre-lock first and then lock when installing ,repeat locking is not recommended.
3. When the customer uses special crews and nuts,such as nylok,need to communicate and confirm with Hongfa.
4. When the customer has special installation requirement,such as upside down,multi busbar connection,need to communicate and confirm with Hongfa.
5. Be careful that oils and foreign matter do not stick to the main terminal part and please use the wire with min. cross section area 75mm², otherwise the terminal parts may have abnormal heating.
- 6.The recommended thickness of copper bus-bar is 3mm, otherwise it may cause screw loose or can not guarantee a tight mounting.
- 7.Cautions of mounting for relay body:

Unrecommended method

The hole of mounting plate at customer-side is too large.

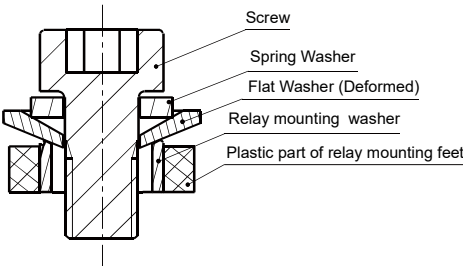
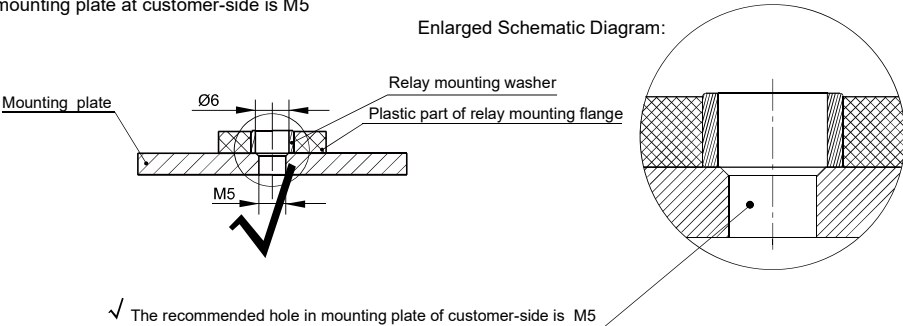
Enlarged Schematic Diagram:



Recommended method

The hole in mounting plate at customer-side is M5

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

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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Cross reference guide

HONGFA	PANASONICS	TYCO	OMRON	LS
HFE82V-20	AEV520**★		G9EB/G9EJ	
HFE82V-40	AEVG160**			GER040 ★
HFE82V-60B	AEVG160**★			
HFE82V-100D	AEVS160**M15 ★			GER100 ★
HFE82V-150D	AEVS160**M16 ★			
HFE82V-150F	AEVH900122 M03 ★			
HFE82V-200B	AEVF140**			GER200
HFE82V-250	AEV170**M04 ★			
HFE82V-250C	AEVA1251 M02 ★			GER250
HFE82V-300C	AEVA1251 M03 ★			
HFE82V-600		TE600		
HFE80V-20B	AEC510**★			
HFE80V-20C				GER010 ★
HFE80V-20D	AECN110**★	mini K		
HFE80V-40		mini K		GER010
HFE88P-350				GPR-H500-A

Note: the model with ★ mark is a completely replaceable type.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

Packing list

Relay	Internal Package Method	Carton Size L x W x H mm	QTY/CTN pcs	Approx. N.W. kg	Approx. G.W. kg	Stacking Layers Limit n
HFE82V-20	12pcs/box Plastic tray	372 x 275 x 265	60	9.06	10.5	5
HFE82V-40	10pcs/box Plastic tray	372 x 275 x 265	60	9.6	11	5
HFE82V-60	12pcs/box Plastic tray	372x275x265	60	11.88	13.32	5
HFE82V-60B	15pcs/box Plastic tray	372 x 275 x 265	90	14.67	16.2	4
HFE82V-100D	10pcs/box EPE cushion	545 x 248 x 235	30	9.45	10.5	5
HFE82V-150D	10pcs/box EPE cushion	545 x 248 x 235	30	9.45	10.5	5
HFE82V-150F	10pcs/box EPE cushion	545 x 248 x 235	30	8.55	9.6	5
HFE82V-200B	10pcs/box EPE cushion	545 x 248 x 235	30	9.95	11	5
HFE82V-200D	10pcs/box EPE cushion	545 x 248 x 235	40	11.32	12.5	5
HFE82V-200W	10pcs/box EPE cushion	545 x 248 x 235	30	12.9	13.9	5
HFE82V-250	10pcs/box EPE cushion	570 x 310 x 175	20	11.4	12.4	5
HFE82V-250C	10pcs/box EPE cushion	545 x 248 x 235	30	10.71	11.71	5
HFE82V-300C	10pcs/box EPE cushion	545 x 248 x 235	30	10.71	11.71	5
HFE85V-300M	24pcs/box EPE cushion	552 x 367 x 145	24	10.4	11.4	5
HFE82V-400M	10pcs/box EPE cushion	570 x 310 x 175	20	14.8	15.8	4
HFE82V-600	5pcs/box EPE cushion	477 x 357 x 218	10	18.3	19.3	4
HFE82V-1000	4pcs/box EPE cushion	477 x 357 x 172	4	13.76	14.8	4
HFE80V-20B	20pcs/box Plastic tray	382 x 285 x 300	160	15	11	5
HFE80V-20C	20pcs/box Plastic tray	382 x 285 x 300	160	8.2	9.6	5
HFE80V-40	20pcs/box Plastic tray	382 x 285 x 300	160	8.2	9.6	5
HFE80V-60	15pcs/box EPE cushion	545 x 248 x 235	45	8.6	9.6	5
HFE80V-200	10pcs/box EPE cushion	545 x 248 x235	30	10.8	11.8	5
HFE82P-20	12pcs/box Plastic tray	372 x 275 x 265	60	9.06	10.5	5
HFE82P-60B	15pcs/box Plastic tray	372 x 275 x 265	90	14.67	16.2	4
HFE82P-200B	10pcs/box EPE cushion	545 x 248 x 235	30	9.95	11	5
HFE82P-250	10pcs/box EPE cushion	570 x 310 x 175	20	11.5	12.5	5
HFE82P-250C	10pcs/box EPE cushion	545 x 248 x 235	30	11	12	5



HONGFA RELAY

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2022 Rev. 1.00

Packing list

Relay	Internal Package Method	Carton Size L x W x H mm	QTY/CTN pcs	Approx. N.W. kg	Approx. G.W. kg	Stacking Layers Limit n
HFE88P-150	6pcs/box EPE cushion	477 x 357 x240	12	13.86	14.8	4
HFE88P-250	6pcs/box EPE cushion	477 x 357 x240	12	13.86	14.8	4
HFE88P-350	6pcs/box EPE cushion	477 x 357 x240	12	13.86	14.8	4
HFE85P-150	10pcs/box EPE cushion	545 x 248 x 295	30	12	13.2	4
HFE85P-250	10pcs/box EPE cushion	545 x 248 x 295	30	12	13.2	4
HFE85P-300	10pcs/box EPE cushion	545 x 248 x 295	30	12	13.2	4

Precautions of DC relay

In order to make correct use of the relay, while selecting the relay and understanding its characteristics, it is also necessary to understand some precautions in use to ensure the reliability of the relay.

1. Usage, storage and transport conditions

- 1.1 Please avoid direct sun radiation and keep ambient temperature, humidity and air pressure during usage, storage and transport. The allowable range of temperature and humidity are shown in non-shaded area of Figure 1:

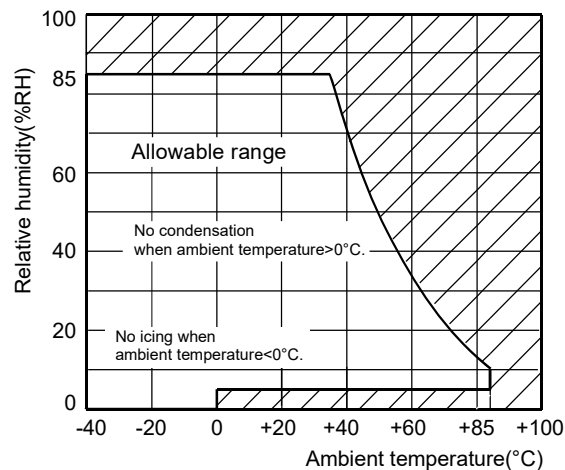


Figure 1

The recommended ambient temperature and humidity ranges for usage, storage and transport are as follows:

- A) Ambient temperature: -40°C ~85°C
- B) Humidity: 5%RH-85%RH
- C) Air pressure: 86kPa~106kPa

1.2 For condensation: condensation occurs when the ambient temperature drops sharply from a high temperature and humidity, or when the relay is transported from a low temperature to a high temperature and humidity. Condensation may cause the failures such as insulation deterioration, coil disconnection and rust etc., which Hongfa cannot guarantee.

1.3 For low temperature and low humidity atmosphere: If the relay is exposed to a low temperature, low humidity environment for a long time, it may cause embrittlement of plastic parts.

1.4 Because the contacts of HFE82V, HFE85V-300M, HFE88P series are enclosed in the hermetically sealed chamber, which is filled with gas, and the leakage rate of gas in the chamber is proportional to the temperature inside the chamber (ambient temperature and temperature rise due to electricity applied on contacts), so please ensure the ambient temperature is within -40°C~ 85°C.

1.5 Please avoid using relay near strong magnetic fields (around transformers, magnets) and heating objects.

1.6 Please avoid the ultrasonic, high frequency and other vibration conditions which will affect the performance of relay.

1.7 Please make sure that the relay is evaluated under the worst conditions in actual use to improve the reliability during actual use.

2. Safety precautions

2.1 Please pay attention not to touch the relay when it is at work, due to the electric shock risk.

2.2 Please pay attention to cut off the power supply before relay (including terminal, socket and other connecting parts) mounting, maintaining and fault handling.

2.3 Please refer to the wiring diagram in the specification and connect the load terminals correctly. If any wrong connection, it may cause unexpected malfunction, abnormal heating, fire, etc.

2.4 In principle, do not use the relay again in case of unexpected drop.

2.5 All Hongfa relay are RoHS compliant.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2022 Rev. 1.00

3. Precautions of DC relay applications

3.1 For polarized relay, please make correct use according to the specification and the identification on the product surface (as shown in Figure 2). The electrical characteristics promised in the specification will not be guaranteed due to the reverse polarity connection of load. See Table 1 for polarity description of each series.

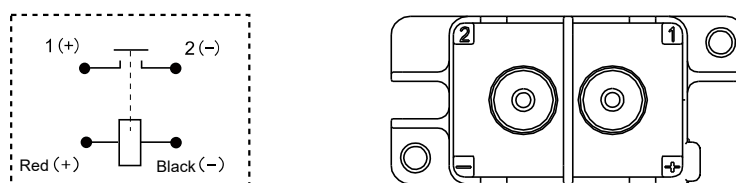


Figure 2

Table 1

Series	Without polarity		With polarity	
	Coil	Load terminal	Coil	Load terminal
HFE82V series	HFE82V-60B HFE82V-100D HFE82V-150D HFE82V-200B HFE82V-250 HFE82V-250C HFE82V-300C HFE82V-400M	HFE82V-60B HFE82V-150F HFE82V-250C HFE82V-300C HFE82V-400M HFE82V-1000	HFE82V-600 HFE82V-1000	HFE82V-100D HFE82V-150D HFE82V-200B HFE82V-250 HFE82V-600
HFE80V series	Without-polarity for all series	HFE80V-60 HFE80V-80 HFE80V-200	—	HFE80V-20B/C/D
HFE85V-300M	—	—	HFE85V-300M	HFE85V-300M
HFE88P series	—	HFE88P-150 HFE88P-250 HFE88P-350	HFE88P-150 HFE88P-250 HFE88P-350	—

3.2 Please apply rated voltage to relay to achieve the specified performance during operation. It is not allowed to apply maximum voltage to coil continuously. The performance of relay can not be ensured in case of the applied voltage exceeds the maximum allowable voltage range.

Operation under overvoltage or undervoltage condition for a long time may affect the service life of relay. In order to better ensure the life cycle of relay, it is recommended to operate relay under the rated voltage.

It is required to ensure the stable coil voltage when starting, disconnecting and operating to avoid the failure of welding and even continuous arcing burnout due to unstable voltage, such as frequent coil power failure.

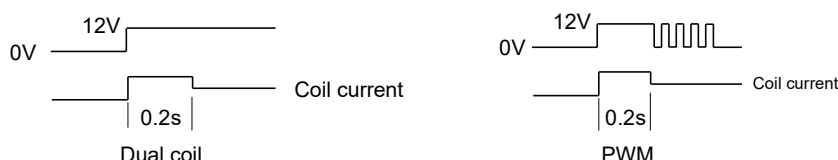
Please contact with Hongfa for confirmation in case of PWM control or power switching is required in your application.

3.3 In order to suppress the reverse electromotive force of the coil, it is recommended to use transient voltage suppressor(TVS), varistor(ZNR) or zener diode(ZN). Please take care that if the freewheeling diode is used, it may cause the release time gets longer and the deterioration of breaking performance. (For economized relay, such as 600A,1000A type of HFE82V series, HFE85V-300M, which is equipped with built-in reverse electromotive force suppression circuit,the surge suppressor is not needed.)

3.4 The rated values in the contact parameters are the values under resistive load. When inductive load ($L/R > 1\text{ms}$) is applied, please connect surge current protection device in parallel with the load. If no measures are taken, it may cause the electrical endurance deterioration and on-off failure. Please consider sufficient margin in the design.

3.5 The relay is a high-voltage DC switching device, which may cause failure when exceeding the service life times and load capacity specified in the specification. The protection circuit that can cut off the load in case of emergency shall be applied. As a product with limited service life, the relay shall be replaced in time to ensure safety.

3.6 Please take care that the coil of economized relay, such as 600A,1000A type of HFE82V series,HFE85V-300M with dual coil, and HFE85P-150/200/250 with PWM, will switch automatically after making for 0.2s, and multiple on-off operation less than 0.2s will cause malfunction.



Precautions of DC relay

3.7 When measuring operation voltage of relay with dual coil economizer, such as and 600A,1000A type of HFE82V series and HFE85-300M, the slow ramp-up mode is not allowed. Please energize coil (see Figure 3) with quick start-up voltage (step power supply mode), otherwise the relay will not operate.

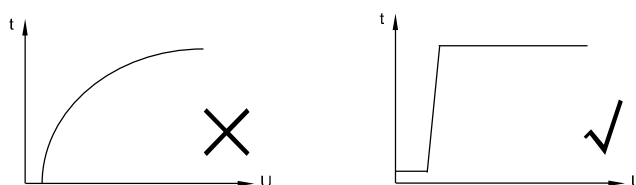


Figure 3

3.8 The screw tightening torque of each part of the relay shall be within the following specified range. The looseness of screw may cause fire due to abnormal heat when power on. Beyond the maximum range may result in damage of sealed chamber and screw. The mounting direction is not limited. See Table 2 for mounting way, torque range of each model.

Table 2

Model	Mounting for load terminal					Mounting for relay body	
	Mounting way	Length of thread	Torque	Hole dia. of copper busbar	Thickness of copper busbar	Mounting way	Torque
HFE82V-60B	M4 screw	6.5mm	2N·m~3N·m	Ø4.0~Ø4.5mm	1~2mm	M5 screw	3N·m~4N·m
HFE82V-100D	M4 screw	6mm	2N·m~3N·m	Ø4.0~Ø4.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-150D	M4 screw	6mm	2N·m~3N·m	Ø4.0~Ø4.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-150F	M5 screw	8.6mm	3N·m~4N·m	Ø5.0~Ø5.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-200B	M6 screw	7.5mm	5N·m~6N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-200W	M6 screw	10mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-200D	M6 screw	8.5mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-250	M6 screw	8.5mm	9N·m~11N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-250C	M6 screw	9.5mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-300C	M6 screw	9.5mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82V-400M	M6 screw	9.5mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M6 screw	6N·m~8N·m
HFE82V-600	M10 bolt	22mm	20N·m~25N·m	Ø10~Ø10.5mm	≥4mm	M5 screw	3N·m~4N·m
HFE82V-1000	M10 bolt	22mm	20N·m~25N·m	Ø10~Ø10.5mm	≥8mm	M6 screw	6N·m~8N·m

HFE85V-300M

HFE85V-300M (Female screw)	M6 screw	13	6N·m~8N·m	Ø6.8~Ø7.5mm	3~4mm	M5 screw	3N·m~4N·m
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HFE80V series

HFE80V-20B	-	-	-	-	-	M4 screw	2N·m~3N·m
HFE80V-20C	-	-	-	-	-	M4 screw (HTQ2B/LJ)	2N·m~3N·m
HFE80V-20D	-	-	-	-	-	M4 screw	2N·m~3N·m
HFE80V-40	-	-	-	-	-	M4 screw (HTQ2BJ)	2N·m~3N·m
HFE80V-200	M6 screw	8mm	6N·m~8N·m	Ø6~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m

HFE82P/85P/88P series

Table 2

Model	Mounting for load terminal					Mounting for relay body	
	Mounting way	Length of thread	Torque	Hole dia. of copper busbar	Thickness of copper busbar	Mounting way	Torque
HFE82P-20	-	-	-	-	-	M5 screw	3N·m~4N·m
HFE82P-60B	M4 screw	6.5mm	2N·m~3N·m	Ø4.0~Ø4.5mm	1~2mm	M5 screw	3N·m~4N·m
HFE82P-200B	M6 screw	7.5mm	5N·m~6N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82P-250C	M6 screw	9.5mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE82P-250	M6 screw	8.5mm	9N·m~11N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE85P-150	M6 screw	8mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE85P-250	M6 screw	8mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE85P-300	M6 screw	8mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE88P-150	M6 screw	14mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE88P-250	M6 screw	14mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m
HFE88P-350	M6 screw	14mm	6N·m~8N·m	Ø6.0~Ø6.5mm	2~3mm	M5 screw	3N·m~4N·m

3.9 The screws shall be pre-tightened before tightening. If the pre-tightening is insufficient or exceeds the value recommended in Table 2, it will cause loose mounting or thread sliding. It is not recommended to mount two copper busbars on the same side to avoid short circuit or spark due to small clearance.

Note: it is recommended to mount the load less than 2 times to avoid poor tightening of the relay due to multiple mounting.

3.10 For products with female screw of the load terminal, it is recommended that the length of thread engagement of load shall be 70% - 80% of the thread length.

3.11 The insertion strength of tab terminal for quick connection model, such as HFE82V-60, 20A, 40A, 60A, 80A type of HFE80V series, shall be within 40N ~ 70N.

Please select the specifications of tab terminals according to table 3.

Table 3

Model	Coil side	Load side
HFE82V-60	#250 t=0.8mm	#375 t=1.2mm
HFE80V-20/20B/20C/20D/40	#187 t=0.5mm	#250 t=0.8mm
HFE80V-60	#250 t=0.8mm	#375 t=1.2mm

Notes: 1. For HFE80V-20B/450-XX-HTQ2BJ relay, the tab terminal is #187 with thickness of 0.5mm for coil side, #250 tab terminal with thickness of 0.8mm for load side.

2. For HFE80V-20C/450-XX-HTQ2BJ relay, the tab terminal is #187 with thickness of 0.8mm both for coil and load side.

It is required to make sure that the main power supply line is closest to the relay terminal, and then mount and tighten it in the order of flat washer, spring washer and nut, or directly use self-locking nut when mounting. Incorrect mounting sequence may cause severe overheating and melting of the insulation layer of the connecting cable.

3.12 Please make sure that there is sufficient insulation distance between each terminal and the grounding wire when mounting.

3.13 When multiple relays are mounted adjacently to each other, please pay attention to abnormal heating caused by mutual interference of heat and magnetic field, insufficient insulation distance between external terminals and copper busbars of the relay, and magnetic field interference of energized conductor under high current, which may cause failure. Please contact with Hongfa in time.

3.14 Please take care that the bending of the terminal and connector terminal shall meet the specified requirements when terminal or connector wiring. Do not apply force on it after wiring, otherwise it will cause wire disconnection.

3.15 The service life of the relay is closely related to the environment and use conditions. We hope customer to confirm the relay status under actual conditions before use.

Continued use of relay with deteriorated performance may cause insulation degradation, abnormal heating, smoking or fire. In order to avoid the above situation, it is recommended that customers can consider protection or error prevention design for safety, including design to prevent fire spread, design to prevent failure and design for regular maintenance, so as not to cause casualties, fire and other risks due to relay with reduced performance or service life.

3.16 The on-off lifetime is specified under the standard test conditions in IEC60664-1 (at temperature 15 °C to 35 °C, humidity 25% RH to 85% RH) with the recommended copper busbar and tightening torque.

The on-off lifetime varies with coil drive circuit, load type, duty factor and ambient conditions. Please confirm the service life under actual conditions.

3.17 Unless otherwise specified, the load promised by Hongfa refers to the rated load. Hongfa is not responsible for any usage beyond our guarantee.

3.18 The guarantee range of overcurrent is limited to single energization only. The malfunction may be caused by overheating when multiple energization. Please confirm in actual installation. When multiple overcurrent is required, the temperature of each part shall be restored to the allowable ambient temperature before the next energizing.

3.19 Please use the product with reference to Hongfa specifications and instructions. Hongfa cannot guarantee any failure caused by the use beyond the conditions specified in the specification. When the use conditions are out of the specification, please contact with Hongfa for confirmation in time.

3.20 For Hongfa, it is impossible to evaluate all the performance requirements of the relay in each specific application field. Therefore, the customer should select the appropriate products according to the specific application conditions. If any inquiries, please contact us for more technical support. However, it is only customer's responsibility for product selection.

3.21 Hongfa reserves the right to make change for the product. The customer shall confirm the content of this specification before making an order for the first time, and request a new specification if necessary.

For more information, please access our web site:

www.hongfa.com





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