

HYM1 Moulded Case Circuit Breakers

Functions and Features

Product description



Product standards

HYM1 series plastic shell circuit breaker (hereinafter referred to as circuit breaker) is a new type of circuit breaker designed and developed by our company by adopting the international advanced technology, with a rated insulation voltage of 800V (500V for HYM1-63), and is suitable for distribution networks with AC 50Hz, rated working voltage of 690V (400V for HYM1-63) and below, and a rated working current up to 1250A, for distributing electric energy and as overload, short-circuit and under-voltage protection for lines and power supply equipment. It is used for distributing electric energy and as overload, short-circuit and under-voltage protection of lines and power supply equipments in power distribution network, and can also be used for infrequent switching of lines and infrequent starting and overload, short-circuit and under-voltage protection of electric motors (the use category is AC-3). According to its rated ultimate short circuit breaking capacity (I_{cu}) of the high and low, divided into L-type (standard), M-type (higher interrupting type), H-type (high interrupting type) three categories. The product has a small size, high breaking capacity, short flying arc, anti-vibration and other characteristics.

Product standards

This product conforms to GB14048.2 standard.

Features

- Frame rating: 63A, 125A, 160A, 250A, 400A, 630A, 800A, 1250A
- Rated operating voltage U_e:
63AF: AC400V
125/250AF: DC250V, AC400V, AC690V
250A~1250AF: AC400V, AC690V
- Breaking capacity code: L, M, H
- Number of poles: 2P, 3P, 4P (2P is only applicable to 125A/250A frame products)
- Release type: instantaneous release, compound release
- Installation method: fixed, plug-in
- Certification: CCC, CE

Normal operating conditions

1. Altitude 2000m and below.
- 2, the upper limit of the surrounding air temperature is not higher than +40 °C, the lower limit is not lower than -5 °C, the average temperature value within 24h does not exceed +35 °C.
- 3, atmospheric conditions: the relative humidity of the atmosphere in the surrounding air temperature of +40 °C does not exceed 50%; in the lower temperature can be higher relative humidity, the wettest monthly average maximum relative humidity of 90%, while the average monthly temperature of the month for +25 °C, and take into account the temperature changes occurring on the surface of the product condensation.
4. Pollution level: 3.
- 5、 Installation category III, I_{nm}=1250A circuit breaker for IV.

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Product selection

HYM1	□	□	□	□	□
Model number	Frame case grade rated current Inm(A)	Short circuit breaking capacitygrade	Operating mode	Number of poles	Release mode and accessory code
HYM1	63、125 160、250 400、630 800、1250	L tpye:L M type:M H type:H	See Note(3)	2P: 2 3P : 3 4P: 4	See Table1
□	□	□			
Usage code	Neutral pole type of 4 poles circuit breaker(N poles)	Derived code			
See Note(2)	See Note(1)	Conventional products have no code ; Transparent cover products :T			

Note:

(1) The type of neutral pole (N) for four-pole products is divided into four types ;

Type A: The N pole is not equipped with an overcurrent release element, and the N pole is always connected and does not close or open together with the other three poles (code A);

Type B: The N pole is not equipped with an overcurrent release element, and the N pole is closed and opened together with the other three poles (code B).

Type C: The N pole is equipped with an overcurrent release element, and the N pole is closed and opened together with the other three poles (code C)

Type D: The N pole is equipped with an overcurrent release element, and the N pole is closed and opened together with the other three poles (code D).

(2) The circuit breaker for power distribution has no code, and the circuit breaker for motor protection is indicated by 2.

(3) The direct operation of the handle has no code, the electric operation is represented by D, and the operating mechanism of rotating the handle is represented by Z.

2. Classification

2.1 According to the rated current (A) of the overcurrent release, HYM1-63 is classified as (6), 10, 16, 20, 25, 32, 40, 50 and 63A; HYM1-125 is classified as 16, 20, 25, 32, 40, 50, 63, 80, 100 and 125A; HYM1-250 is classified as 100, 125, 140, 160, 180, 200, 225 and 250A; HYM1-400 is classified as 225, 250, 315, 350 and 400A; HYM1-630 is classified as 400, 500 and 630A ; HYM1-800 is classified as 630, 700 and 800A; HYM1-1250 is classified as 800, 1000 and 1250A.

Note: a.6A specification only has electromagnetic (instantaneous) type; b. The specification with () is not recommended.

2.2 According to the wiring mode, it can be divided into three types: front panel, back panel and plug-in.

2.3 According to the type of overcurrent release, there are two types: thermal-electromagnetic (compound) type and electromagnetic (instantaneous) type.

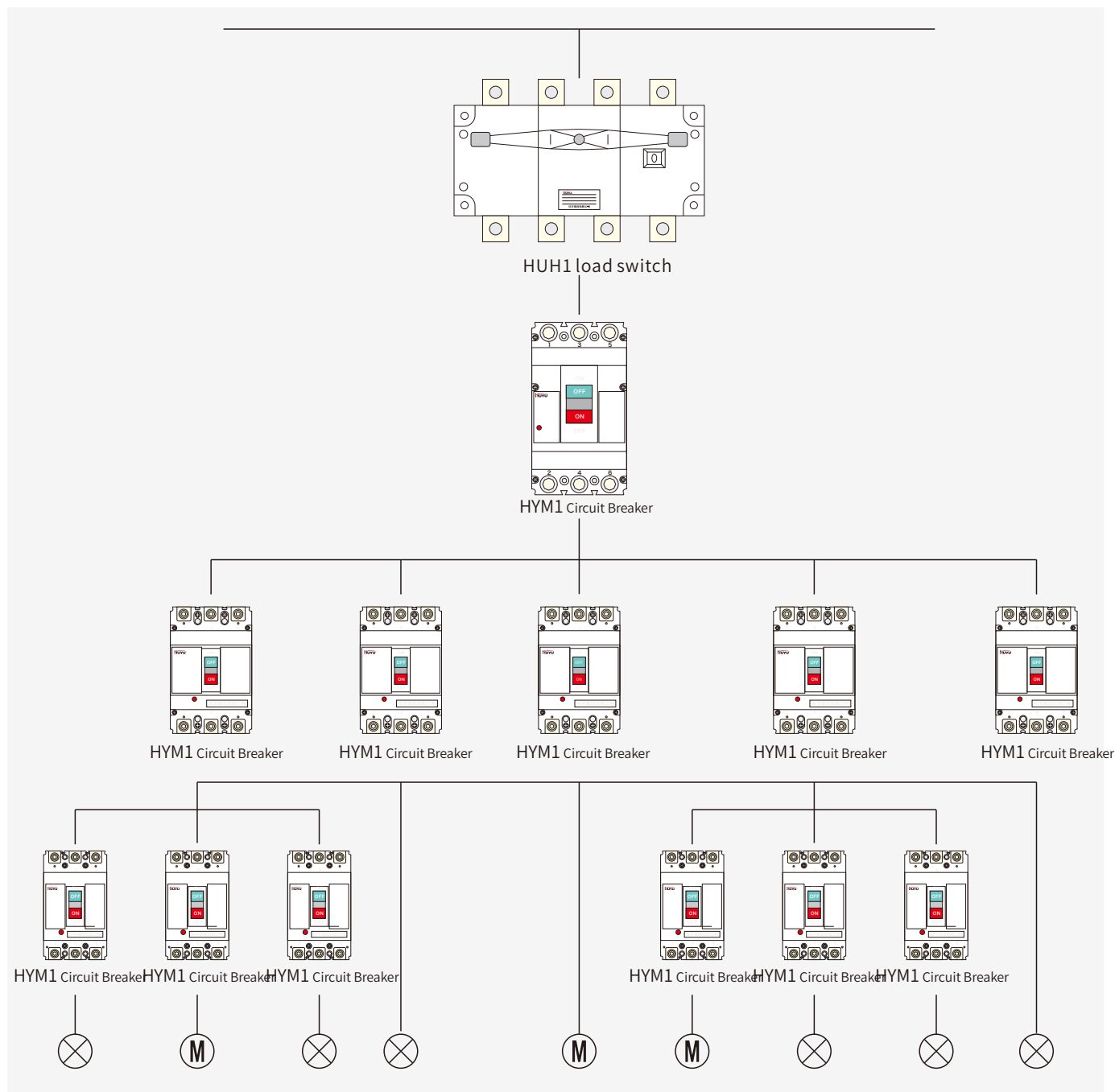
2.4 According to accessory devices, there are two types: accessory devices are divided into internal devices and external devices; Internal device has shunt tripping.

Device, undervoltage release, auxiliary contact, alarm contact, external devices are rotating handle operating mechanism, electric operating mechanism, etc.

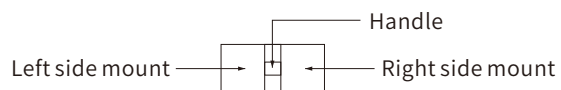
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HYM1 series circuit breaker applicable structure diagram



3、 See Table 1 for detacher mode and accessory designations.



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Alarm contact ●



Shunt release ○



Auxiliary contact ■



Undervoltage release ▲

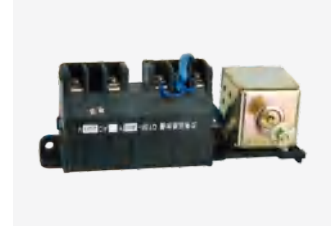


Table 1, Note: Flying arc distance includes both horizontal and vertical mounting.

Name of annex	Annex code		Accessory installation and wiring method						
	Instantaneous Tripper	Compound Striker	63A,125A	63A,125A,250A,400A		630A		800A	1250A
			diode	triple-pole	quadrupole	triple-pole	quadrupole	triple-pole	triple-pole
Without accessories	200	300							
warning contact	208	308							—
shunt derailer	210	310							
Detent for prepaid meters	210Y	310Y							
Auxiliary Contacts	220	320							
Undervoltage detent	230	330							
Shunt release, auxiliary contact	240	340	—						
Special disconnectors and auxiliary contacts for prepaid meters	240Y	340Y							
Shunt release, undervoltage release	250	350							
Pre-payment meter detent, under voltage detent	250Y	350Y							
Two sets of auxiliary contacts	260	360	—						
Auxiliary contacts, Undervoltage detent	270	370	—						
Shunt release, alarm contacts	218	318	—						—
Special disconnectors and alarm contacts for prepaid meter	218Y	318Y							
Auxiliary Contacts, Alarm Contacts	228	328	—						—
Undervoltage detent, alarm contacts	238	338	—		—				—
Shunt release, auxiliary contact, alarm contact	248	348	—						—
Shunt release, auxiliary contact, alarm contact	248Y	348Y							
Shunt release, undervoltage release, alarm contacts	258	358	—	—		—		—	—
Two auxiliary contacts, alarm contacts	268	368	—						—
Auxiliary Contacts, Undervoltage Detent, Alarm Contacts	278	378	—		—				—

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Main technical indicators

1. The set value of instantaneous action characteristic of circuit breaker for power distribution is $10 I_n \pm 20\%$, and that of HY M1-1250 is $7 I_n \pm 20\%$; the set value of instantaneous action characteristic of motor protection circuit breaker is $12 I_n \pm 20\%$.
2. The rated set values of the circuit breakers are shown in Table 2.
3. in the ambient temperature $+40^\circ\text{C}$, power distribution circuit breaker overcurrent tripper action characteristics see table 3, motor protection circuit breaker overcurrent tripper action characteristics see table 4.

Table 2, Circuit Breaker Ratings

Model number	Shell frame class Rated current (A)	Rated Voltage(V)	Rated short circuit Disconnectivity level	Rated Ultimate Short Circuit Breaking capacity Icu (kA)	Rated operating short circuit Breaking capacity Ics (kA)	Circuit Breaker Rated Current (A)	extremity	Flying Arc Distance(mm)
HYM1-63	63	AC400V	L	25	18	10、16、20、25、32、 40、50、63	3、4	≤ 0
			M	50	35			
HYM1-125	125	DC250V	L	15	10	16、20、25、32、40、 50、63、80、100、125	2	≤ 50
			M	20	15		2、3、4	
		AC400V	L	35	26		3	
			M	50	35		2、3、4	
			H	85	50		3	
		AC690V	L	10	5		2、3、4	
			M	20	10		3	
			H	20	10		3	
HYM1-250	250	DC250V	L	20	15	100、125、160、180、 200、225、250	2	≤ 50
			M	25	18		2、3、4	
		AC400V	L	35	25		3	
			M	50	35		2、3、4	
			H	85	50		3	
		AC690V	L	10	5		2、3、4	
			M	20	10		3	
			H	20	10		3	
HYM1-400	400	AC400V	L	50	35	225、250、315、350、 400	3、4	≤ 100
			M	65	42		3	
			H	100	65		3、4	
		AC690V	L	15	8		3、4	
			M	20	10		3	
HYM1-630	630	AC400V	L	50	35	400、500、630	3、4	≤ 100
			M	65	42		3	
			H	100	65		3、4	
		AC690V	L	15	8		3、4	
			M	20	10		3	
HYM1-800	800	AC400V	M	75	50	630、700、800	3	≤ 100
			H	100	65		3	
		AC690V	M	30	15		3	
HYM1-1250	1250	AC400V		80	42	800、1000、1250	3	≤ 100
		AC690V		25	12.5		3	

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Table 3: Operating characteristics of overcurrent trippers for distribution circuit breakers

serial number	Test current name	I/In	appointed time	starting state
1	Conventional non-disconnecting current	1.05	2h(In>63)	cold state
			1h(In≤63)	
2	Approximate Withdrawal Current	1.30	2h(In>63)	Starting immediately after the sequence 1 test
			1h(In≤63)	

Table 4: Operating characteristics of overcurrent trippers of circuit breakers for motor protection

serial number	Test current name	Setting current	appointed time	starting state
1	Conventional non-disconnecting current	1.0	2h	cold state
2	Approximate Withdrawal Current	1.2	2h	Starting immediately after the sequence 1 test

Inverse Time Protection Characteristic Curve of Circuit Breakers for Power

Fig. 1, HY M1-63 (10A~32A), HY M1-125 (16A~32A) Action Curve Fig.

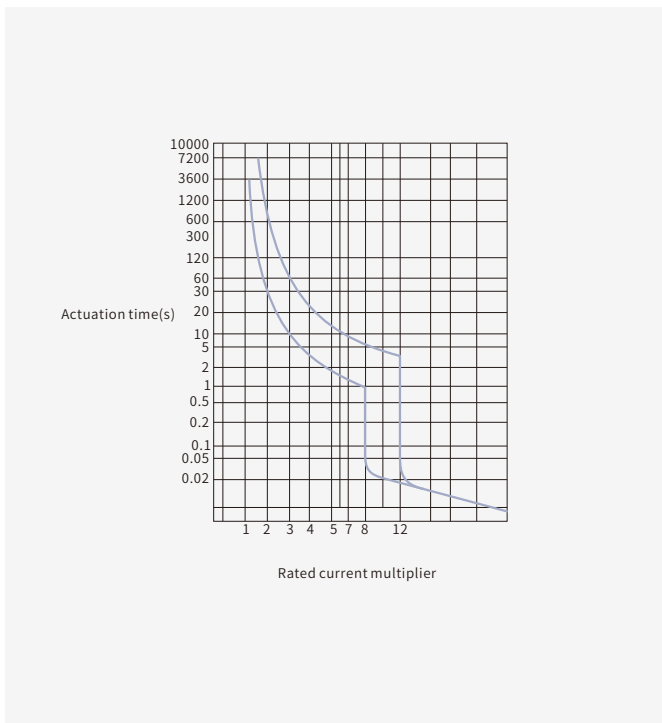
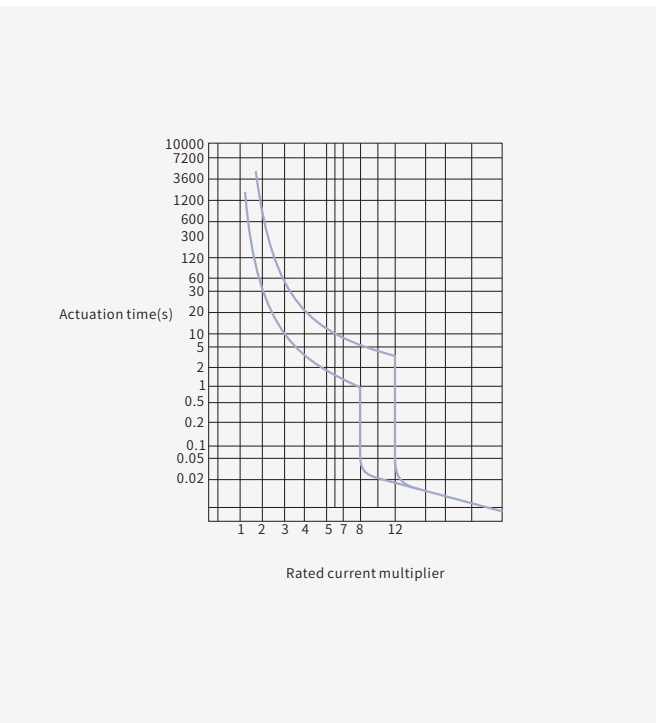


Fig. 2, HY M1-63 (40A~63A), HY M1-125 (40A~1 25A) Action Curve



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Figure 3, HY M1-250 action curve

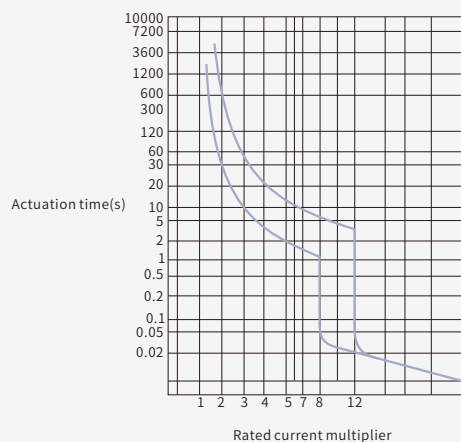


Figure 4: HYM1-400 operation curve

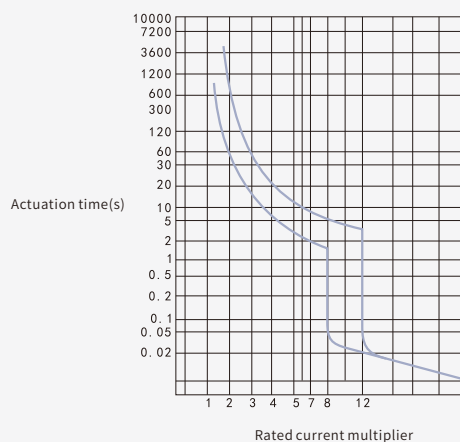


Figure 5, HY M1-630, 800 action curve

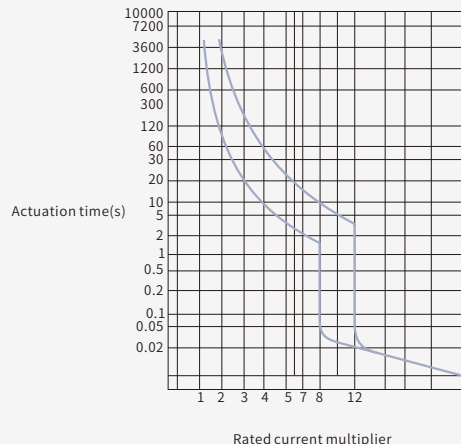


Figure 5, HY M1-630, 800 action curve

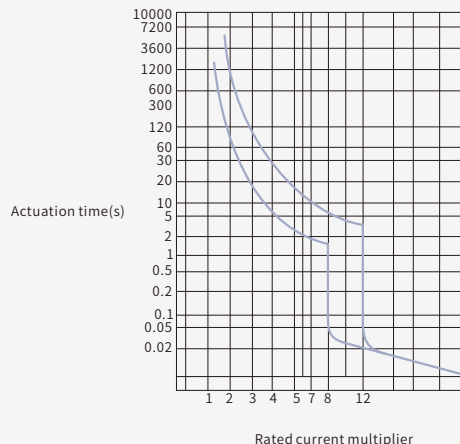


Table 5, Table of capacity reduction coefficients for temperature changes

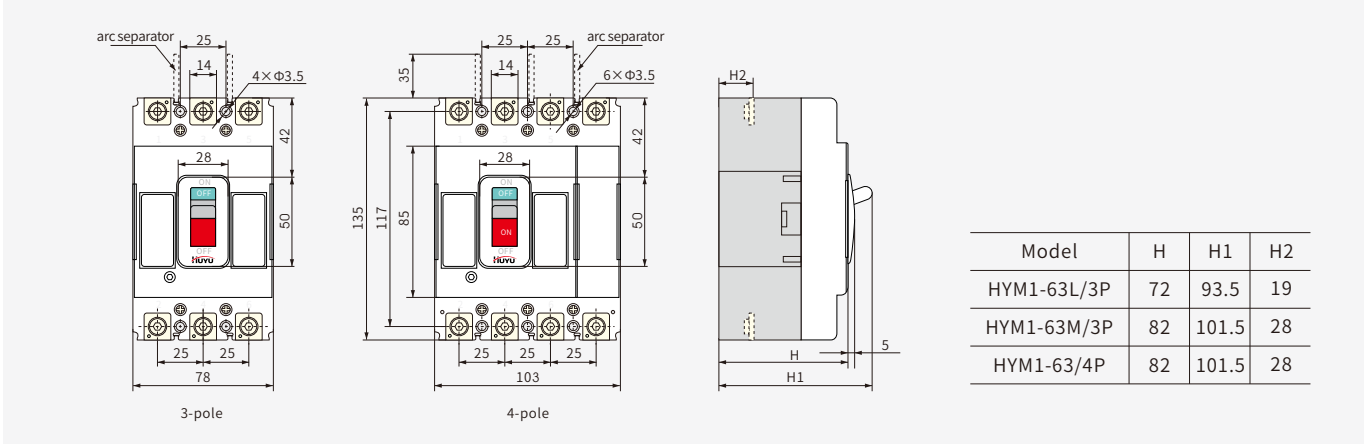
Model	Coefficient	Temperature				
		+40°C	+45°C	+50°C	+55°C	+60°C
HYM1-63		1	0.94	0.88	0.80	0.72
HYM1-125		1	0.95	0.89	0.84	0.76
HYM1-250		1	0.96	0.91	0.87	0.82
HYM1-400		1	0.94	0.87	0.80	0.73
HYM1-630,800		1	0.93	0.88	0.83	0.76
HYM1-1250		1	0.88	0.83	0.79	0.76

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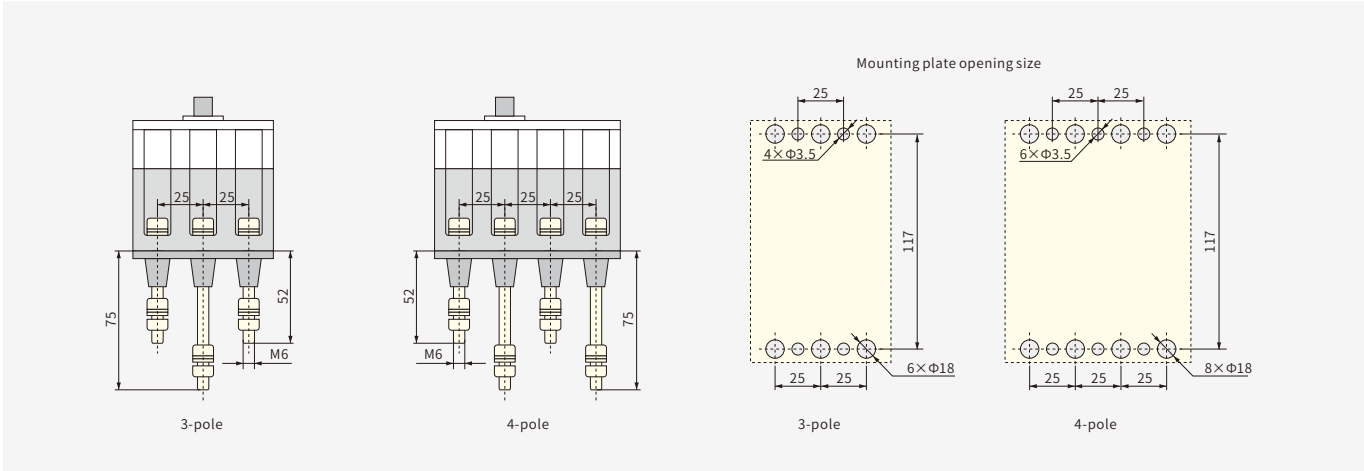
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Shape and installation dimensions

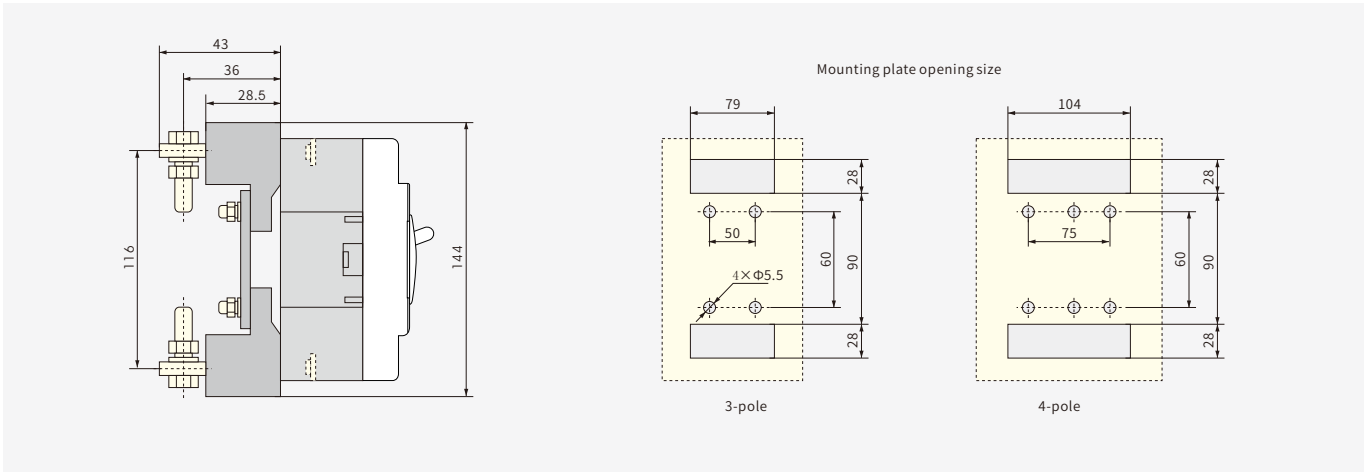
1、HYM1-63 shape and installation dimensions.
Wiring in front of the board



Backplane Wiring



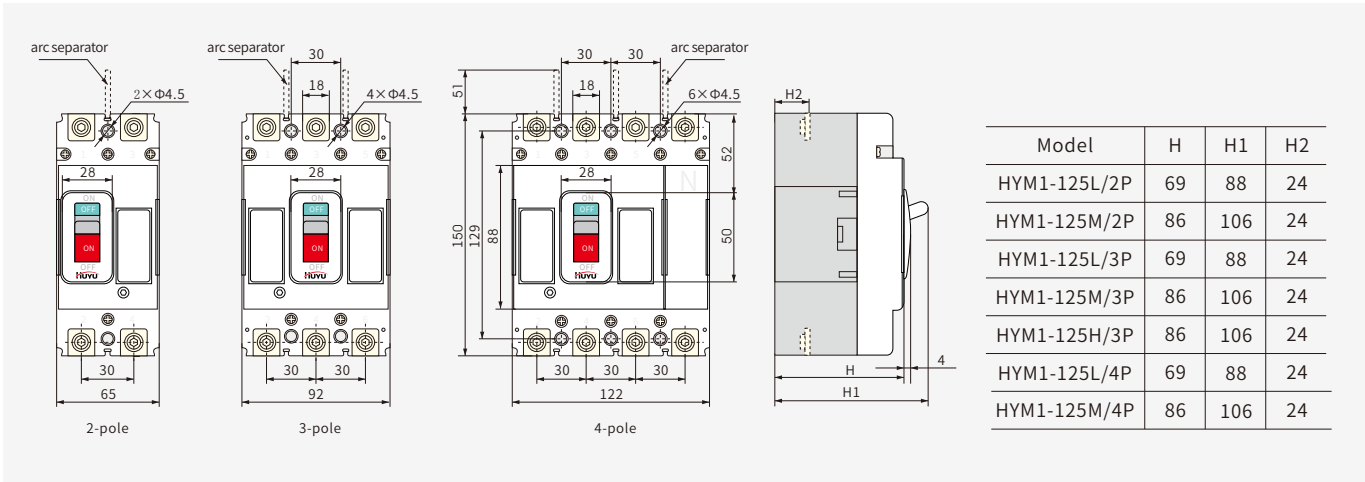
Plug-in wiring



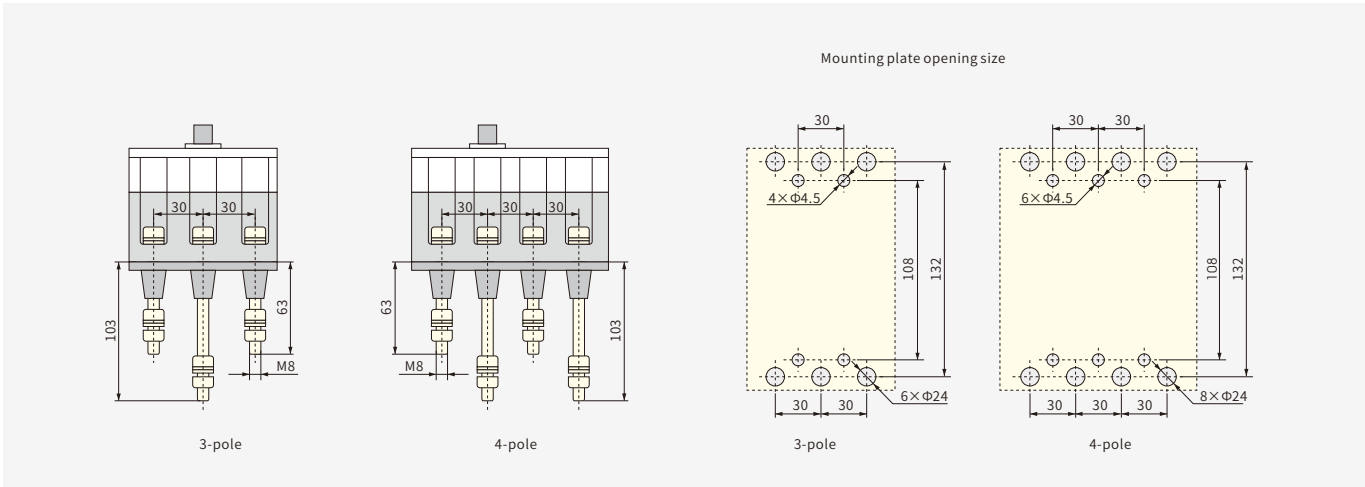
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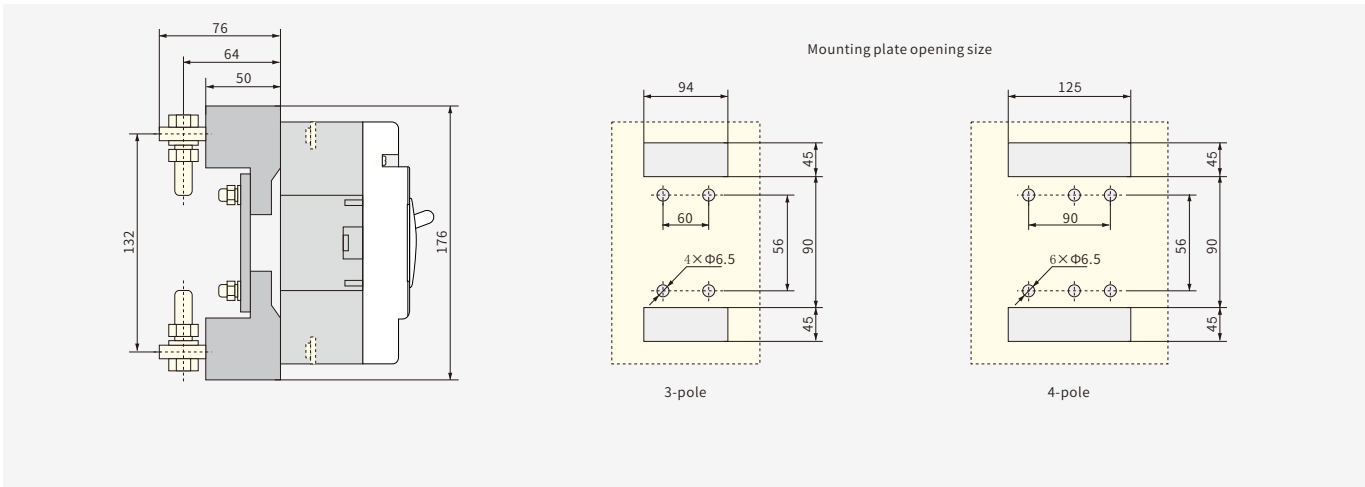
2、HY M1-125 shape and installation dimensions.
Wiring in front of the board



Backplane Wiring



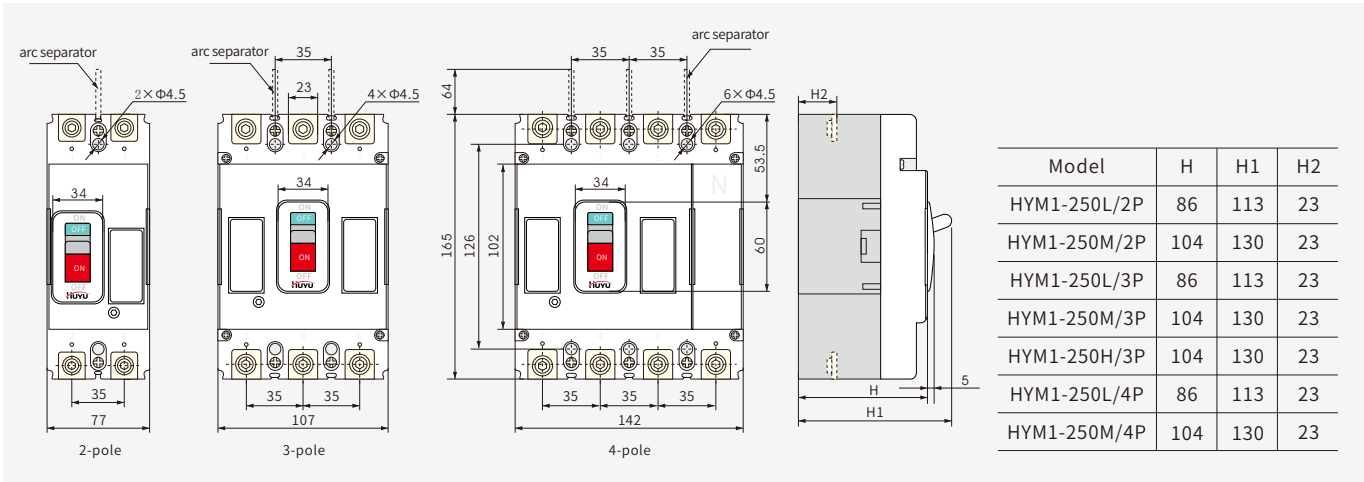
Plug-in wiring



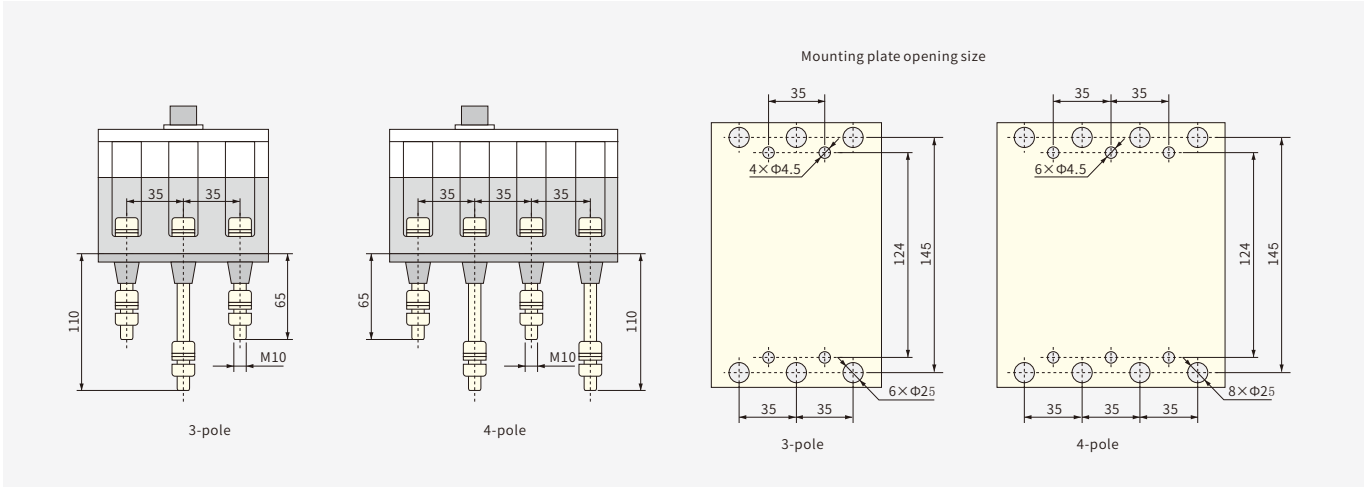
HYM1 Moulded Case Circuit Breakers

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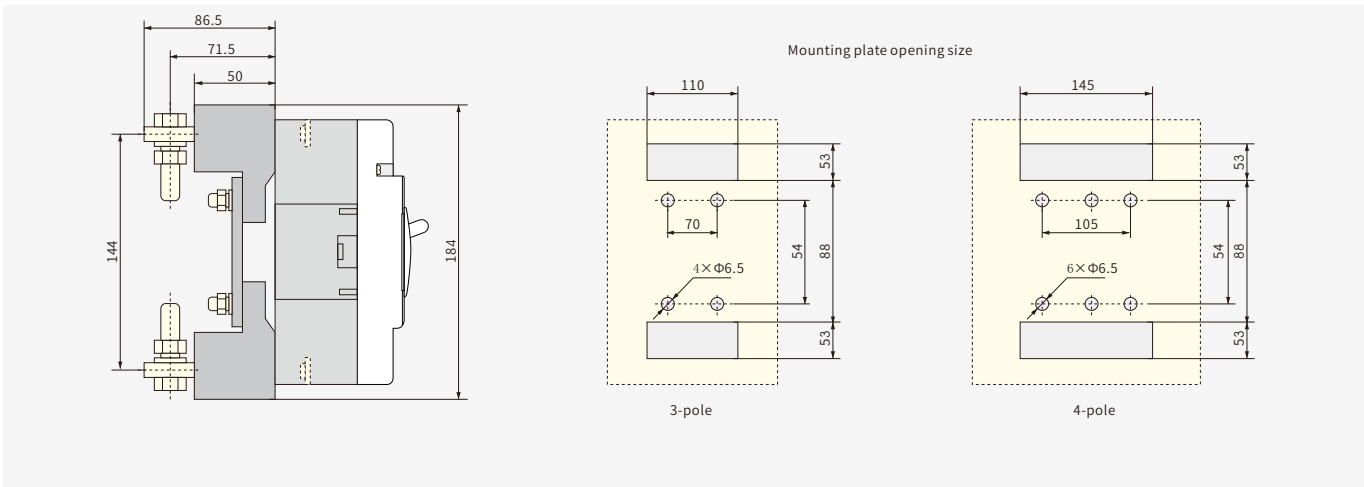
3、HY M1-250 shape and installation dimensions.
Wiring in front of the board



Backplane Wiring



Plug-in wiring

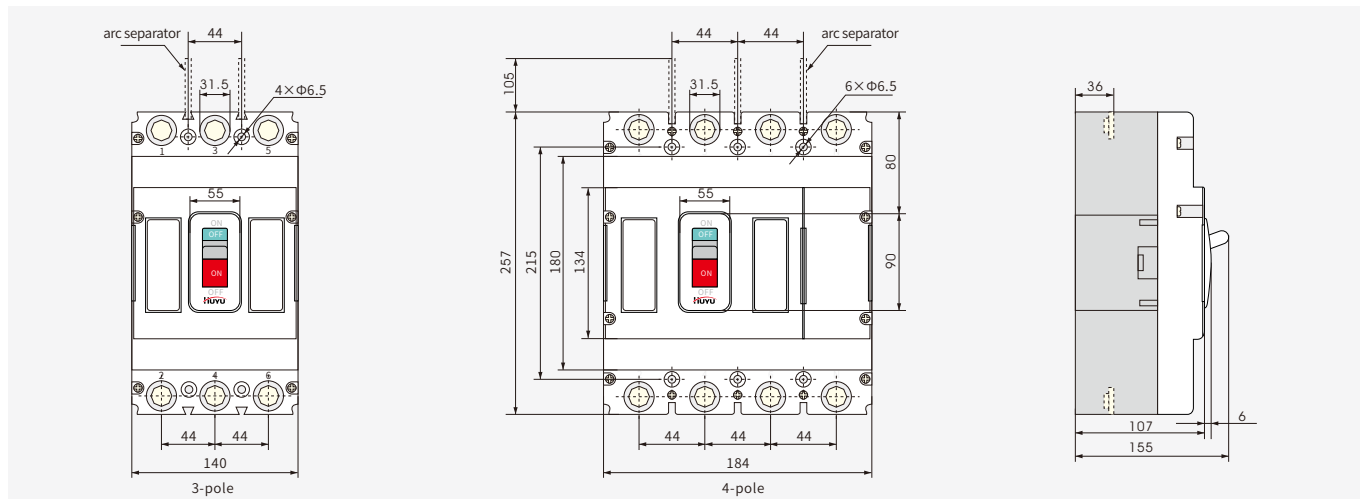


HYM1 Moulded Case Circuit Breakers

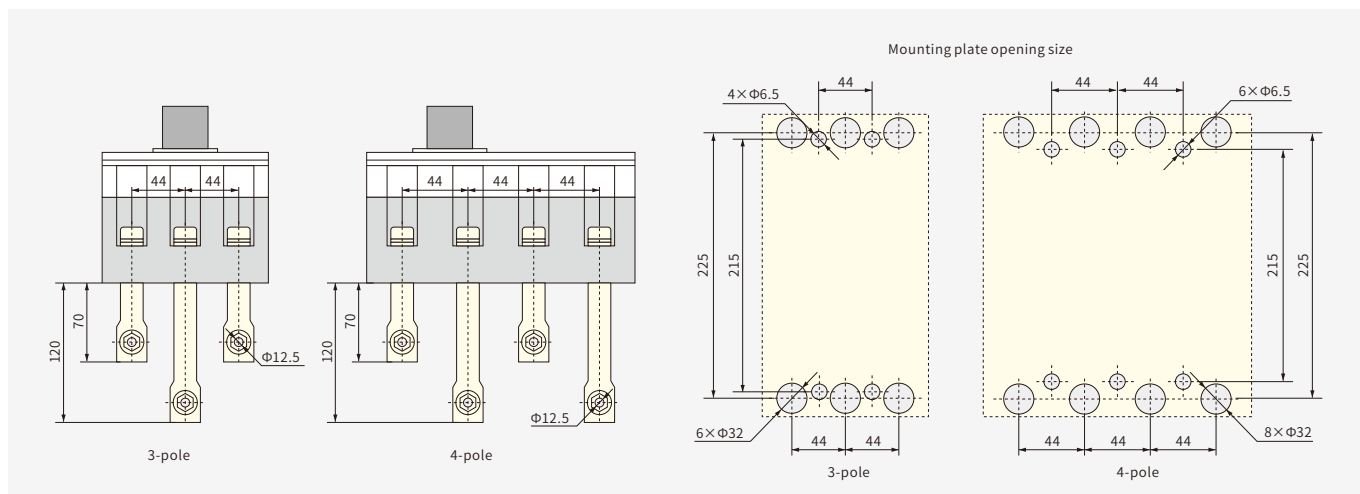
Functions and Features

4、HYM1-400 shape and installation dimensions.

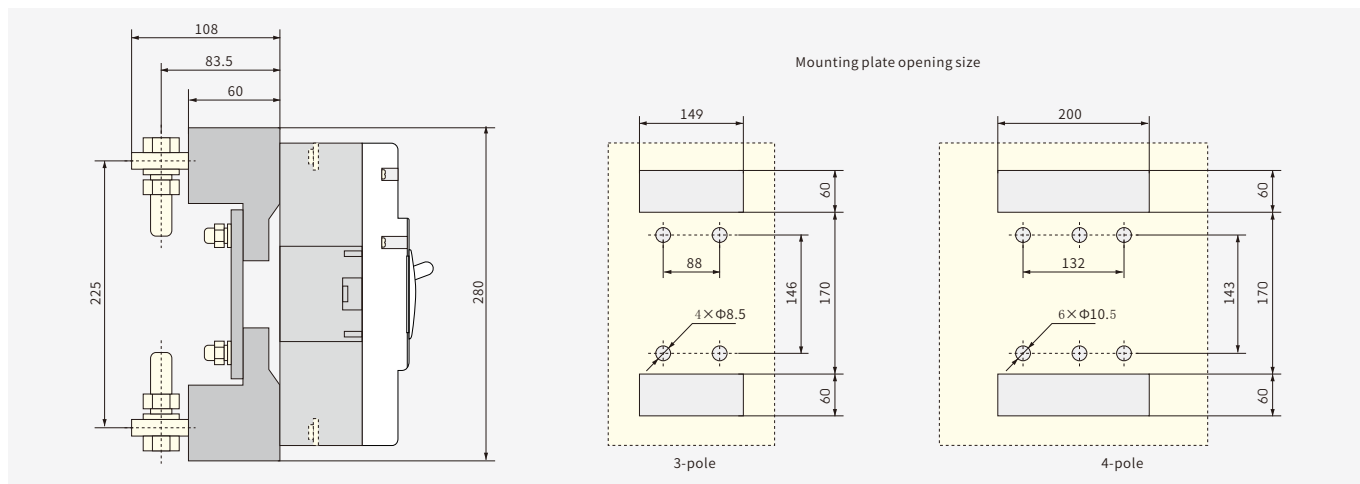
Wiring in front of the board



Backplane Wiring



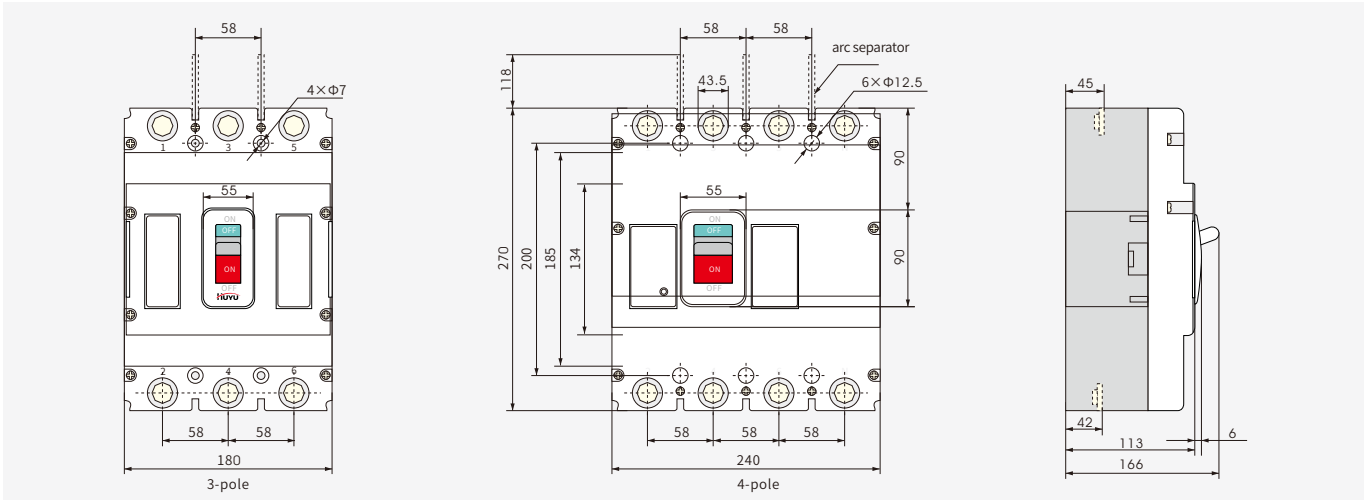
Plug-in wiring



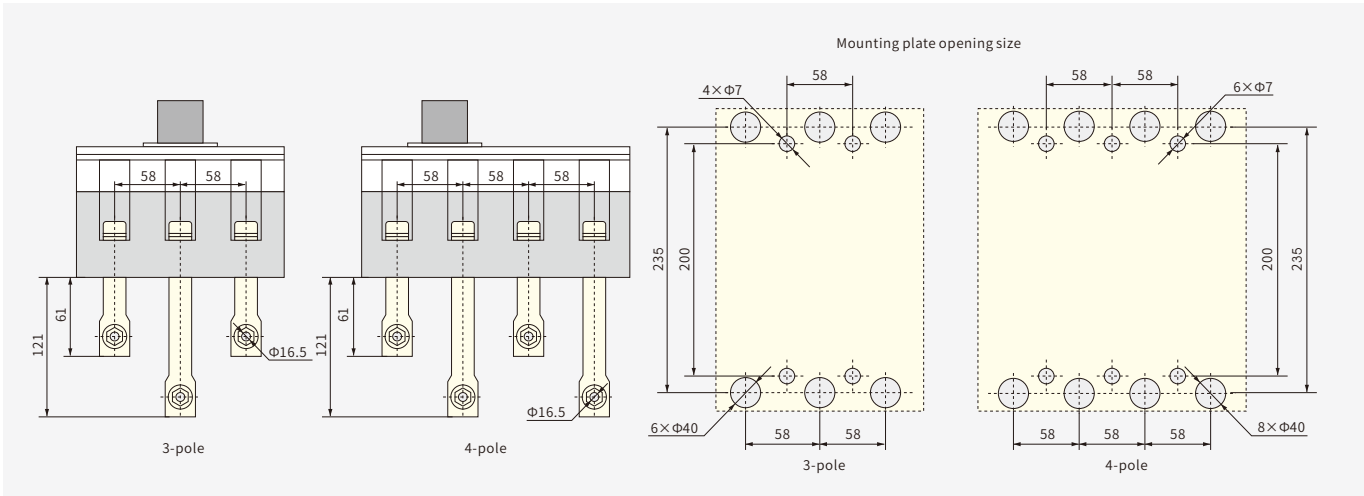
HYM1 Moulded Case Circuit Breakers

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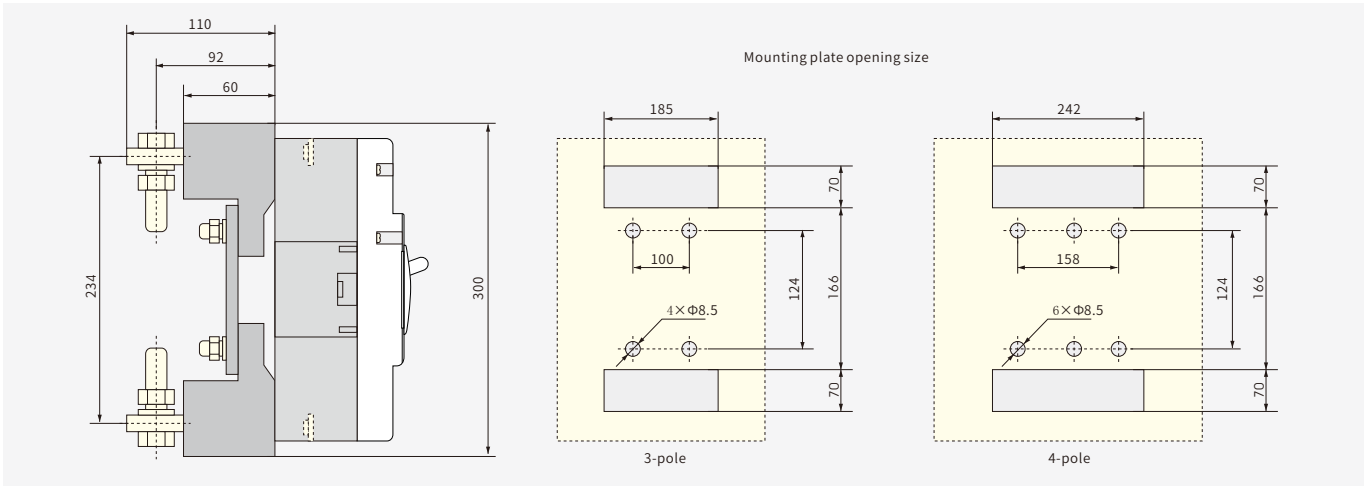
5、HY M1-630 shape and installation dimensions.
Wiring in front of the board



Backplane Wiring



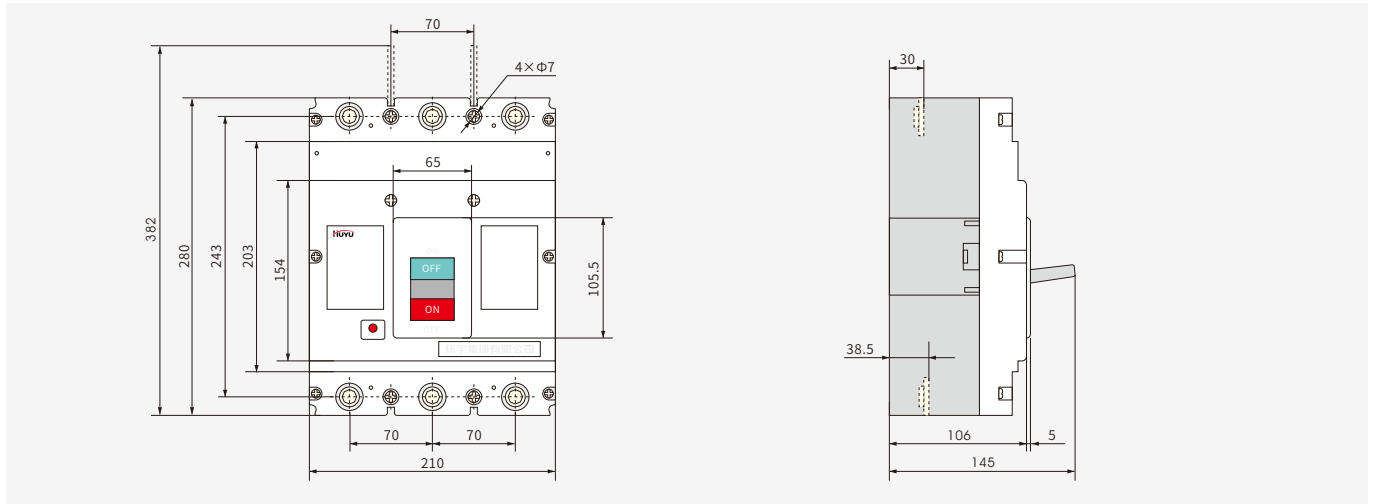
Plug-in wiring



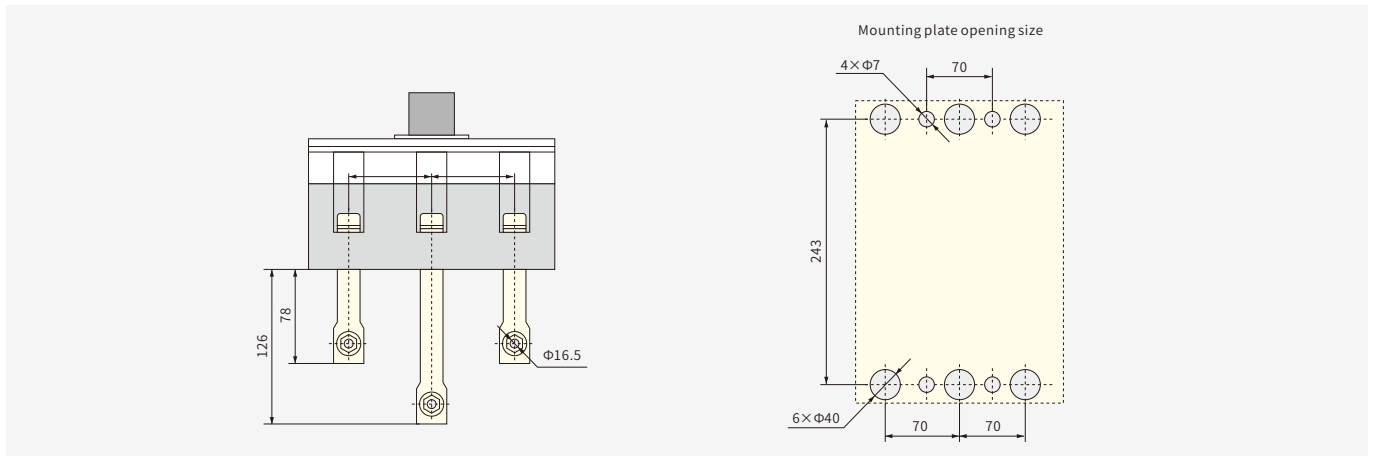
HYM1 Moulded Case Circuit Breakers

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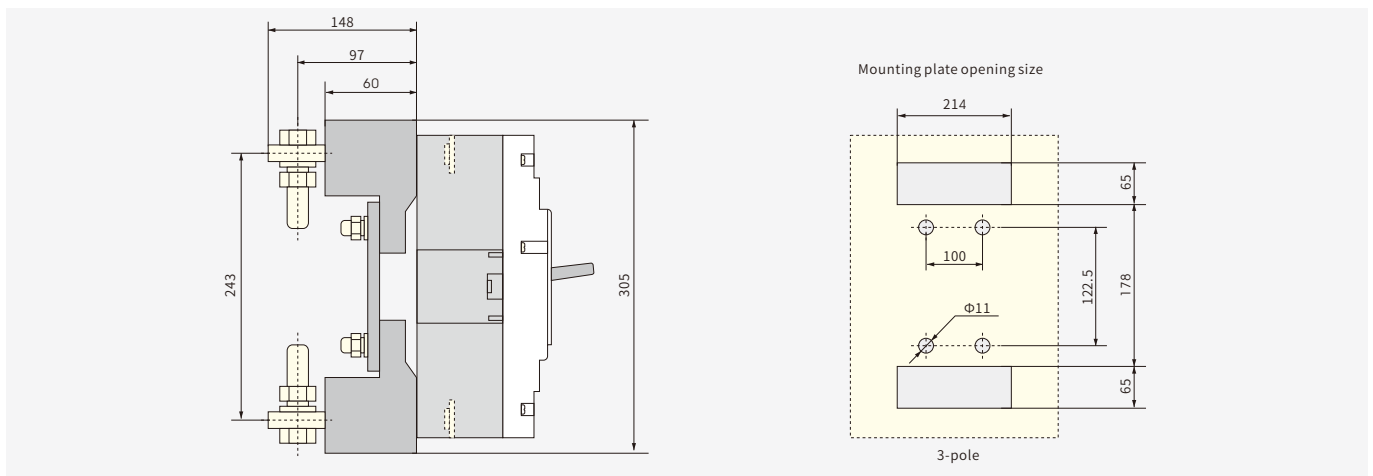
6、HY M1-800 shape and installation dimensions.
Wiring in front of the board



Backplane Wiring



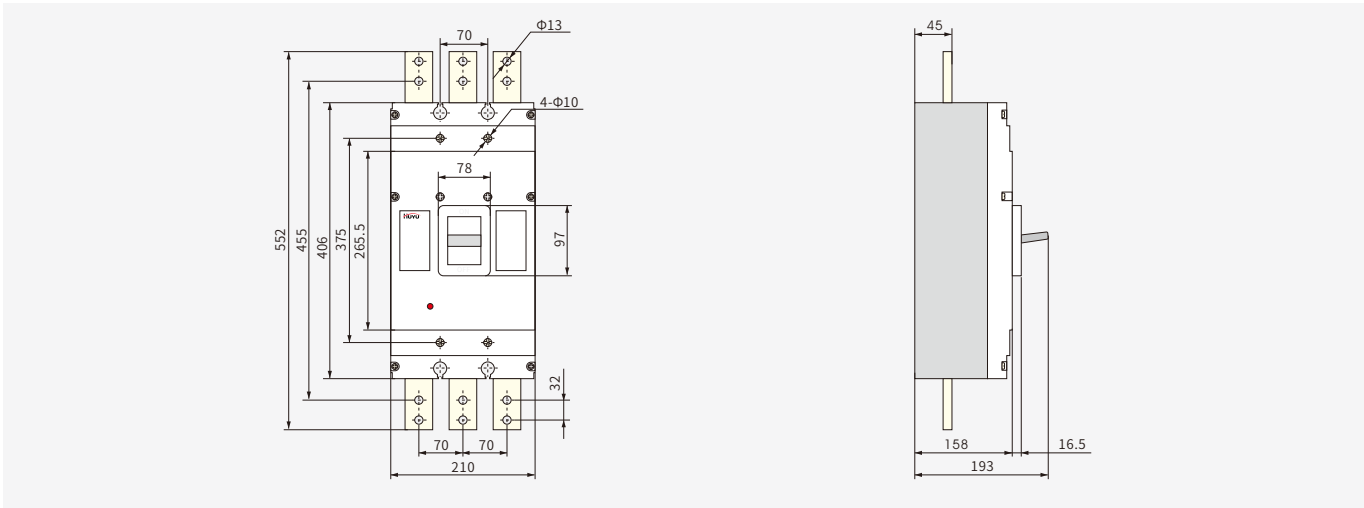
Plug-in wiring



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7、HY M1-1250 shape and installation dimensions.
Wiring in front of the board



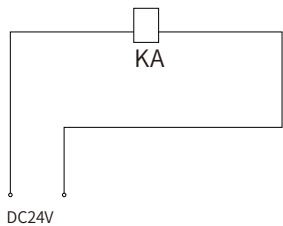
Accessories for circuit breakers

- 1、Internal accessories of circuit breaker
- 1.1 Shunt disconnectors

The rated control power supply voltage of the shunt disconnector: AC230V, 400V, 50Hz; DC110V, 220V, 24V; in the range of 70% to 110%, it can reliably disconnect the circuit breaker. When the rated control power supply voltage of the shunt disconnector is DC24V, the maximum length of the copper conductor should meet the following requirements

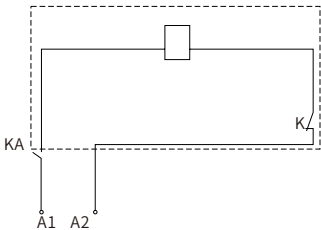
Rated control Power supply Voltage Uc (DC24V) Conduc	1.5mm²	2.5mm²
100%Uc	150m	250m
85%Uc	100m	160m

If the requirements of the above table are not met,
the following diagram is recommended for the control loop design of the shunt disconnectors



KA: for DC24V intermediate relay
contact Current capacity 1A

The dotted box shows the schematic diagram of the shunt disconnector



Power Input
Voltage specification of power input: AC230V, 400V, 50Hz

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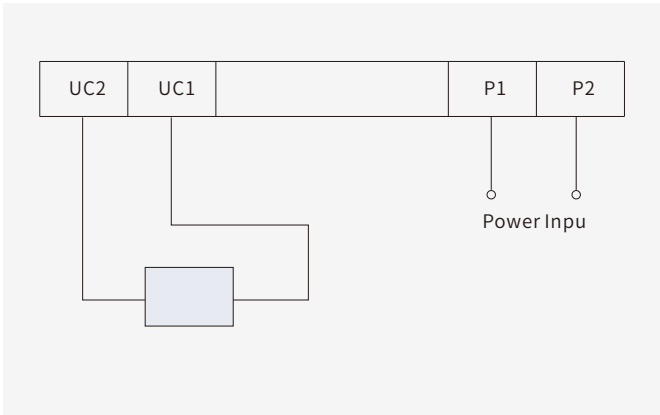
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1.2 Undervoltage detent

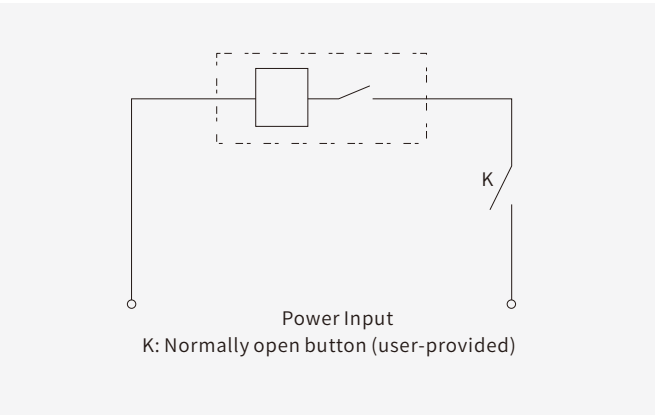
When the power supply voltage drops to the range of 70%~35% of the rated working voltage of the undervoltage tripper, the undervoltage tripper breaks the circuit breaker reliably; when the power supply voltage is lower than 35% of the rated working voltage of the undervoltage tripper, the undervoltage tripper prevents the circuit breaker from closing; when the power supply voltage is higher than 85% of the rated working voltage of the undervoltage tripper, the undervoltage tripper ensures that the circuit breaker closes reliably. The rating of the undervoltage tripper is: AC230V, 400V, 50Hz.

Special Reminder: Circuit breakers equipped with undervoltage trippers can only open and close normally if the undervoltage is applied to the rated voltage.

Under Voltage Detractor Wiring Diagram



Shunt Detractor Wiring Diagram



Special disconnectors for prepaid meters

The rated working voltage U_e for prepaid meter is AC230V/50Hz, and it can work normally in the range of (65%~110%) U_e . When Ctr I is cut off, the circuit breaker will delay 0.5s~2s.

Wiring diagram of disconnector for prepaid meter

The diagram shows a terminal block with terminals N, Ctr I, L1, L3, L5, and N. Wires connect N and Ctr I to a blue square representing the disconnector. Wires also connect L1, L3, L5, and N to a 'Circuit Breaker'.	L1-N (left mounted) or L5-N (right mounted) Ctr I-N Rated Operating Voltage U_e:AC230V/50Hz	N to power supply zero wire Ctr I is connected to the control signal terminal of the prepaid electricity meter.
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1.4 The ratings of the auxiliary and alarm contacts are given in Table 5.

Table 5

categorisation	Approximate heating current (It h)	Rated current Ie at 400V AC (AC-15)	Rated current Ie at 220V DC (DC-13)
Auxiliary Contacts	3	0.4	0.15
warning contact	3	0.3	0.15

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a.Auxiliary contacts

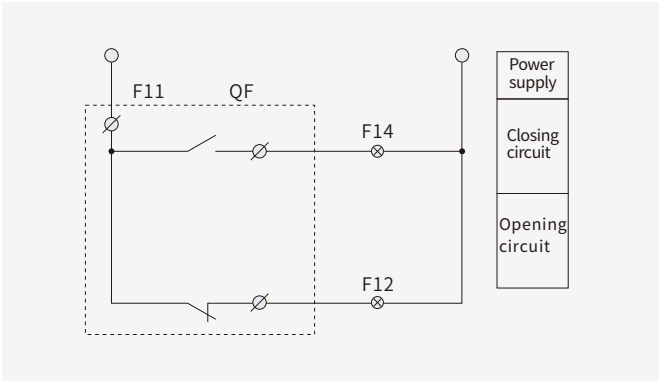
Circuit breaker in " min" position offline position	F12 F11 F14
Circuit breaker in the "close" position	F12 F14 F11

b. Alarm contacts

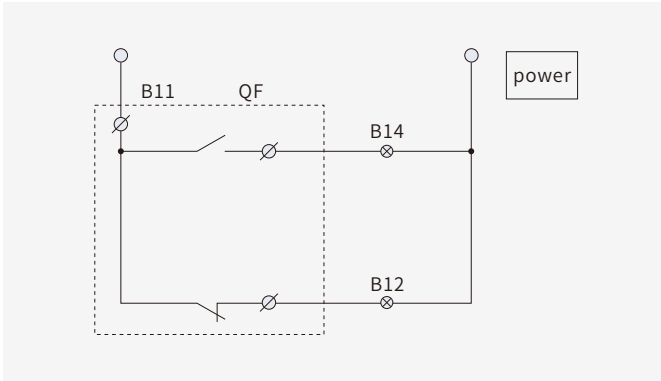
Alarm contacts do not operate when the circuit breaker is normally closed or divided, and the alarm contacts are switched only after free release or fault trip.

State of the circuit breaker in the " minus " and " close " positions	B12 B11 B14
Circuit breaker status at free release	B12 B14 B11

Auxiliary contact wiring diagram



Alarm contact wiring diagram



- External accessories for circuit breakers
 - Motor operating mechanism . See Table 6 for ratings and designations.
- Table 6

form	Model	HYM1-63、125、250	HYM1-400、630、800、1250
structural form		Solenoid	Electric motor
AC Voltage Designator		AC230V、400V、50Hz	AC230V、400V、50Hz
DC Voltage Designator		DC110V、220V	DC110V、220V

Note: After the circuit breaker with electric operating mechanism is tripped, the electric operating mechanism must make the circuit breaker buckle again before closing.

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HYM1-63~250electric operating mechanism



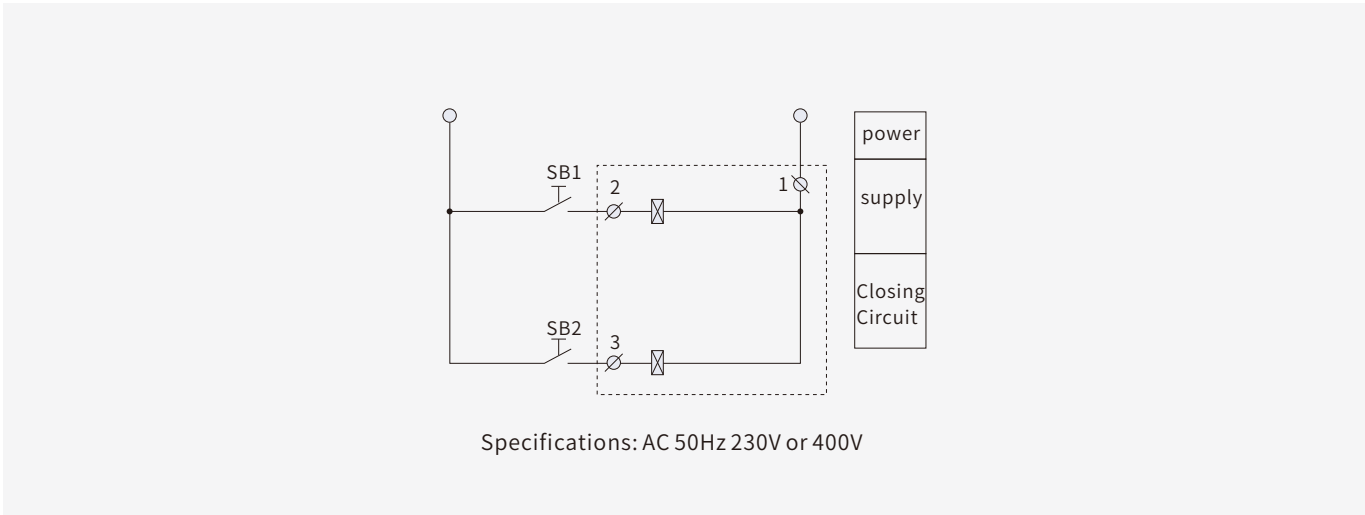
HYM1-400~1250electric operating mechanism



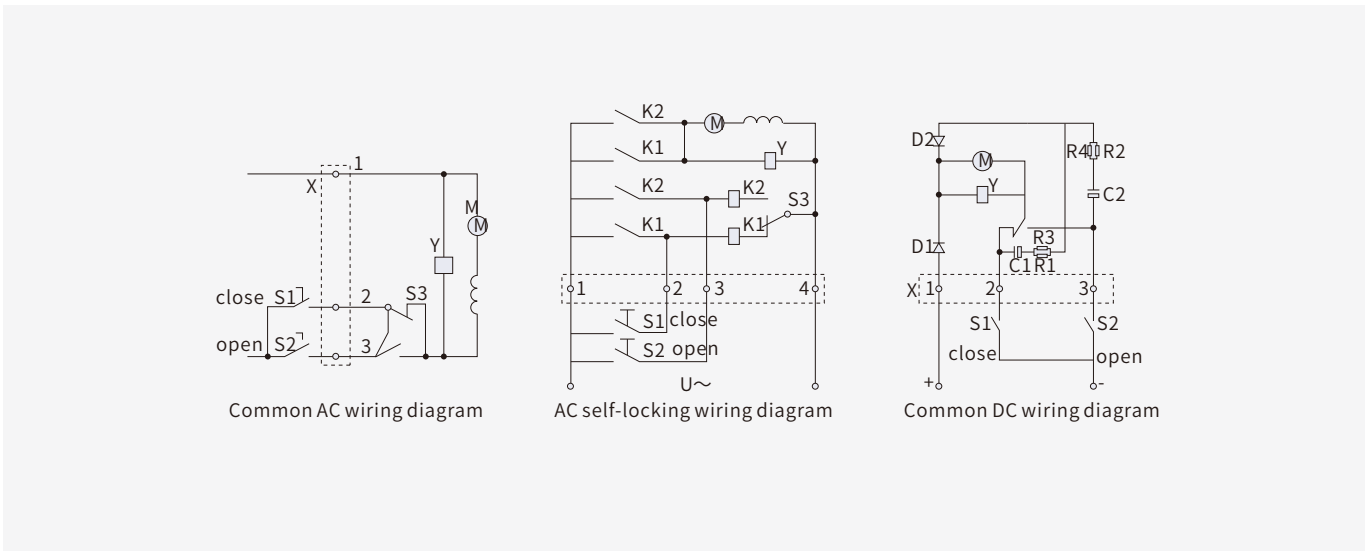
Manual operation mechanism



HYM1-63、125、250 electric operating mechanism (AC) division, closing principle diagram



HYM1-400、630、800、1250 electric operating mechanism (AC) division, closing principle diagram

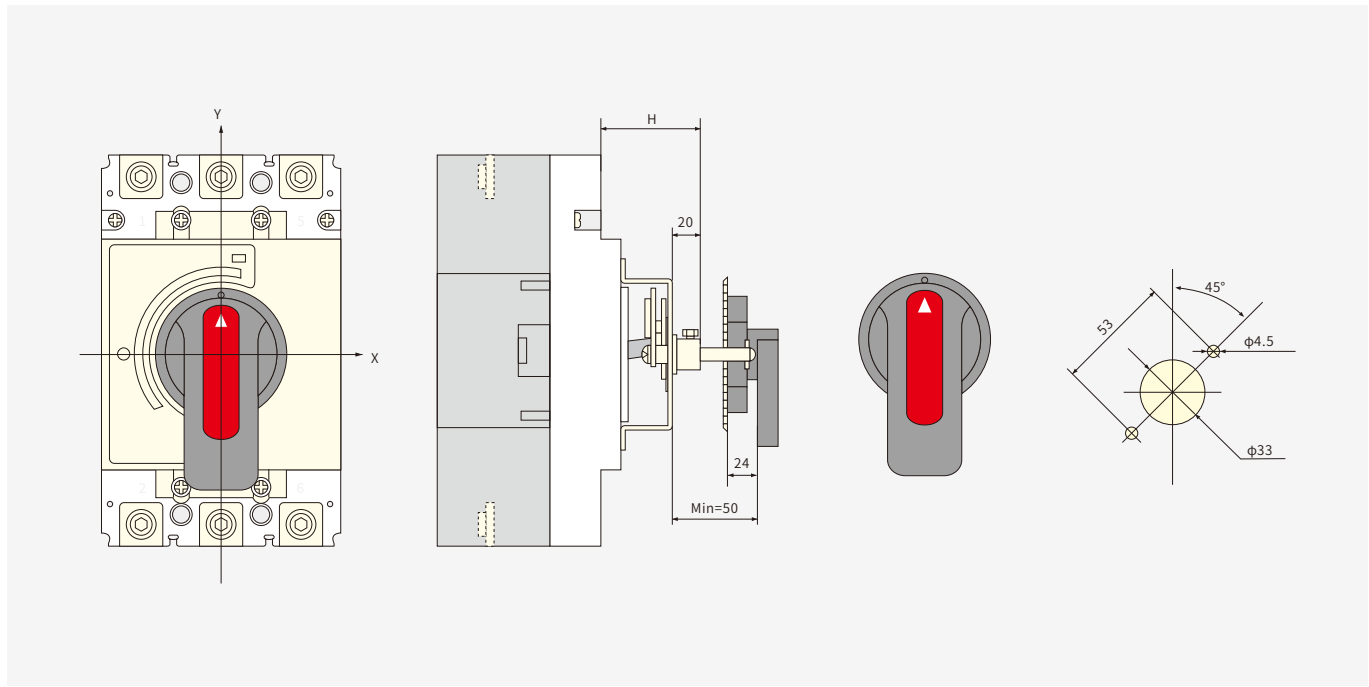


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2.2 Manual operating mechanism installation dimensions see table 10

HY M1-63 ~ 800 handle mounting openings schematic diagram



Ordering instructions

- 1.1 Product name and model number must be specified at the time of ordering;
- 1.2 Rated current of circuit breaker, mode of disconnecting device, instantaneous disconnecting device fixing current multiplier (if the user does not have special requirements, then 10 times of the fixing value shall be supplied for power distribution protection, and 12 times of the fixing value shall be supplied for motor protection);
- 1.3 Name and specification of accessories (if a shunt or undervoltage tripper is required, the rated working voltage should be indicated);
- 1.4 Wiring method (front, rear, plug-in), if not required, supply according to the front of the board.
- 1.5 Quantity