

HYM1

Series Molded Case Circuit Breaker

A Primary power distribution

B Secondary distribution

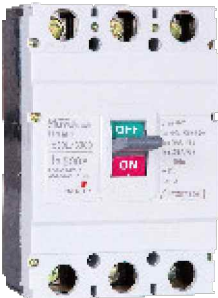
C Terminal power distribution

D Industrial control and protection

E power device

F Power management

G High voltage components



I. Scope of Application

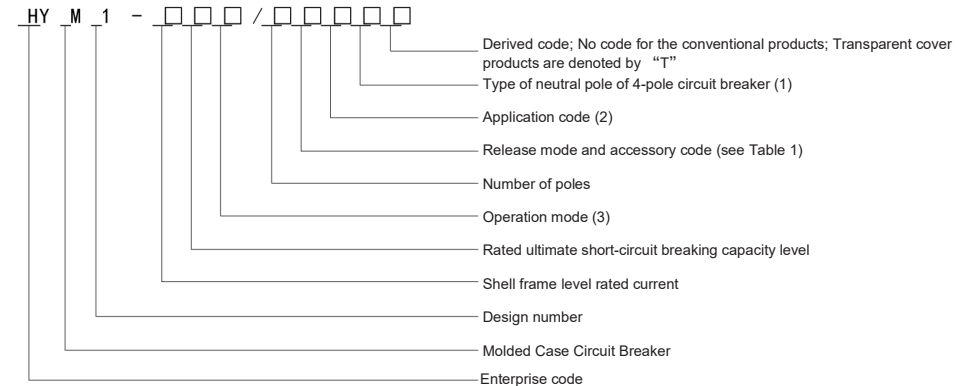
The HYM1 Series Molded Case Circuit Breaker (hereinafter referred to as “circuit breaker”) is a new type of circuit breaker designed and developed by our company with comprehensive international advanced technology. The circuit breaker has the rated isolation voltage of 800 V (500 V for HYM1-63), which is suitable for the distribution network with AC 50 Hz, rated working voltage of 690 V (400 V for HYM1-63) and below, and rated working current up to 1,250 A. It is used to distribute electric energy and as overload, short-circuit and undervoltage protection of lines and power supply equipment, as well as infrequent switching of lines and infrequent starting and overload, short-circuit and undervoltage protection of motors (use category: AC-3). Such circuit breakers can be divided into L-type (standard type), M-type (relatively high breaking type) and H-type (high breaking type) according to their rated ultimate short circuit breaking capacity (Icu). The product is characterized by small size, high breaking capacity, short flashover and anti-vibration. This product complies with the requirements of GB14048.2.

II. Normal Working Conditions

- Altitude ≤ 2,000 m.
- The upper limit of ambient air temperature shall not exceed +40°C, the lower limit shall not be lower than -5°C, and the average value within 24 hours shall not exceed +35°C.
- Atmospheric conditions: The relative air humidity shall not exceed 50% when the ambient air temperature is +40°C. A higher relative humidity is allowed at a lower temperature. The average maximum relative humidity of the wettest month can be up to 90%, and the average temperature of that month is 25°C. The condensation that occurs on the product surface due to temperature changes shall also be considered.
- Contamination grade: Grade 3.
- The installation category is III, and the circuit breaker with 1,250 A Inm is IV.

III. Model Description and Classification

1. Model and meaning



Note:

- The neutral pole (N) of the 4-pole product can be divided into four types:
 - Type A: The N pole is not equipped with an overcurrent tripping element and is normally on, and is not closed/opened with the other three poles.
 - Type B: The N pole is not equipped with an overcurrent tripping element, and is closed/opened with the other three poles (the N pole is closed first and then opened).
 - Type C: The N pole is equipped with an overcurrent tripping element, and is closed/opened with the other three poles (the N pole is closed first and then opened).
 - Type D: The N pole is equipped with an overcurrent tripping element and is normally on, and is not closed/opened with the other three poles.
- The circuit breaker for distribution has no code, and the circuit breaker for motor protection is denoted by 2.
- The handle direct operation has no code, the electric operation is denoted by D, and the handle rotation operating mechanism is denoted by Z.

2. Classification

2.1 According to the rated current of overcurrent release (A): HYM1-63: (6), 10, 16, 20, 25, 32, 40, 50, 63 A; HYM1-125: 16, 20, 25, 32, 40, 50, 63, 80, 100, 125 A; HYM1-250: 100, 125, 140, 160, 180, 200, 225, 250 A; HYM1-400: 225, 250, 315, 350, 400 A; HYM1-630: 400, 500, 630 A; HYM1-800: 630, 700, 800A; HYM1-1250: 800, 1,000, 1,250 A.

Note: a. 6A specifications are only for the electromagnetic (instantaneous) type; b. The current with () is not recommended.

2.2 The wiring mode can be divided into three types: wiring in front of the plate, wiring behind the plate, and plug-in connection.

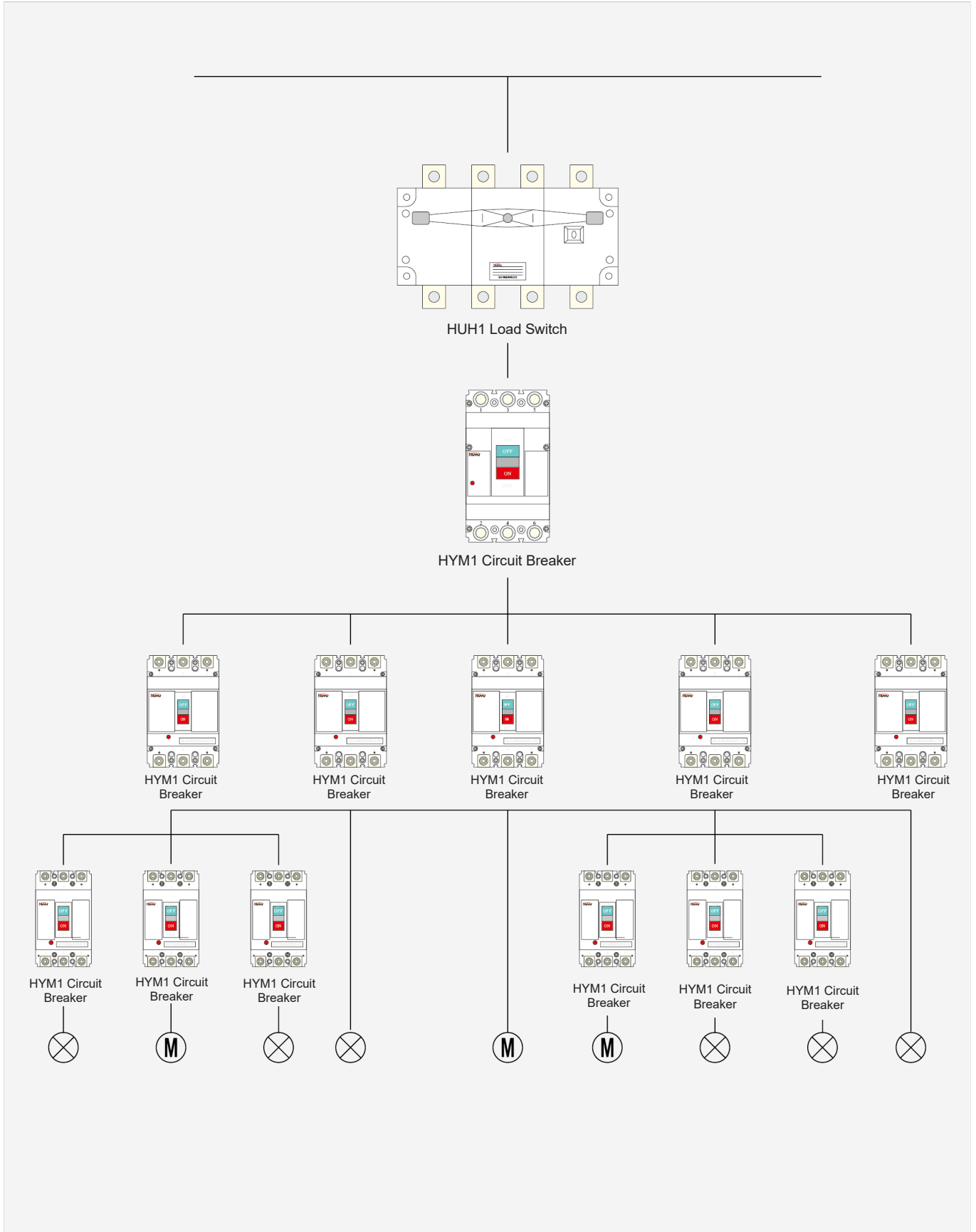
2.3 According to the type of overcurrent release, it can be divided into thermal-electromagnetic (compound) type and electromagnetic (instantaneous) type.

2.4 According to the auxiliary devices, it can be divided into the types with or without auxiliary devices: Auxiliary devices are divided into internal devices and external devices. Internal devices include shunt trip, undervoltage release, auxiliary contact and alarm contact, and external devices include handle rotating operation mechanism and electric operating mechanism.

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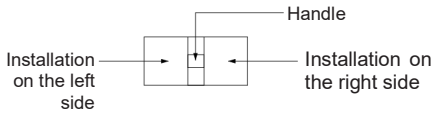
Structure diagram for the HYM1 Series Circuit Breaker with different application occasions



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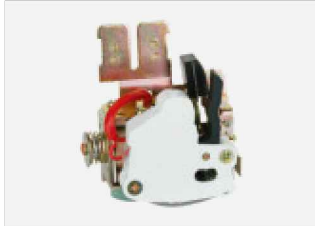
3. Release mode and accessory code (see Table 1).



Alarm contact ●



Shunt trip ○



Auxiliary contact ■



Undervoltage release ▲



Table 1 Note: The flashover distance includes the distances under horizontal and vertical installations.

Accessory name	Accessory code		Accessory installation and lead mode						
	Instantaneous release	Complex release	63A, 125A	63A, 125A, 250A, 400A		630A		800A	1,250A
			2 poles	3 poles	4 poles	3 poles	4 poles	3 poles	3 poles
No accessories	200	300							
Alarm contact	208	308							—
Shunt trip	210	310							
Special release with prepaid kilowatt-hour meter	210 Y	310 Y							
Auxiliary contact	220	320							
Undervoltage release	230	330							
Shunt trip, auxiliary contact	240	340	—						
Special release with prepaid kilowatt-hour meter, auxiliary contact	240 Y	340 Y	—						
Shunt trip, undervoltage release	250	350	—						—
Special release with prepaid kilowatt-hour meter, undervoltage release	250 Y	350 Y	—						—
2 sets of auxiliary contacts	260	360	—						
Auxiliary contact, undervoltage release	270	370	—						
Shunt trip, alarm contact	218	318	—						—
Special release with prepaid kilowatt-hour meter, alarm contact	218 Y	318 Y	—						—
Auxiliary contact, alarm contact	228	328	—						—
Undervoltage release, alarm contact	238	338	—						—
Shunt trip, auxiliary contact, alarm contact	248	348	—						—
Special trip with prepaid kilowatt-hour meter, auxiliary contact, alarm contact	248 Y	348 Y	—						—
Shunt trip, undervoltage release, alarm contact	258	358	—						—
2 sets of auxiliary contacts, alarm contact	268	368	—						—
Auxiliary contact, undervoltage release, alarm contact	278	378	—						—

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IV. Main Technical Indicators

1. The setting value of instantaneous operation characteristics of the circuit breaker for power distribution is $10 I_n \pm 20\%$, and the HYM1-1250 is $7 I_n \pm 20\%$. The setting value of instantaneous operation characteristics of the circuit breaker for motor protection is $12 I_n \pm 20\%$.
2. See Table 2 for the rated setting values of the circuit breaker.
3. When the ambient temperature is $+40^\circ\text{C}$, see Table 3 for the operation characteristics of overcurrent release of the circuit breaker for power distribution and Table 4 for the operation characteristics of overcurrent release of the circuit breaker for motor protection.

Table 2 Rated values of the circuit breaker

Model	Shell frame level Rated current (A)	Rated voltage (V)	Rated short-circuit breaking capacity level	Rated ultimate short-circuit breaking capacity I _{cu} (kA)	Rated service short-circuit breaking capacity I _{cs} (kA)	Circuit breaker rated current (A)	Number of poles	Flashover distance (mm)																																																																																																																																							
HYM1-63	63	AC 400V	L	25	18	10, 16, 20, 25, 32, 40, 50, 63	3, 4	≤0																																																																																																																																							
			M	50	35				HYM1-125	125	DC 250V	L	15	10	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	2	≤50	M	20	15	AC 400V	L	35	26	2, 3, 4	M	50	35	H	85	50	AC 690V	L	10	5	2, 3, 4	M	20	10	H	20	10	HYM1-250	250	DC 250V	L	20	15	100, 125, 160, 180, 200, 225, 250	2	≤50	M	25	18	AC 400V	L	35	25	2, 3, 4	M	50	35	H	85	50	AC 690V	L	10	5	2, 3, 4	M	20	10	H	20	10	HYM1-400	400	AC 400V	L	50	35	225, 250, 315, 350, 400	3, 4	≤50	M	65	42	H	100	65	AC 690V	L	15	8	M	20	10	HYM1-630	630	AC 400V	L	50	35	400, 500, 630	3, 4	≤100	M	65	42	H	100	65	AC 690V	L	15	8	M	20	10	HYM1-800	800	AC 400V	M	75	50	630, 700, 800	3	≤50	H	100	65	AC 690V	M	30	15	HYM1-1250	1250	AC 400V		80	42	800, 1,000, 1250
HYM1-125	125	DC 250V	L	15	10	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	2	≤50																																																																																																																																							
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		AC 690V	L	10	5		2, 3, 4																																																																																																																																								
			M	20	10																																																																																																																																										
			H	20	10																																																																																																																																										
HYM1-250	250	DC 250V	L	20	15	100, 125, 160, 180, 200, 225, 250	2	≤50																																																																																																																																							
			M	25	18																																																																																																																																										
		AC 400V	L	35	25		2, 3, 4																																																																																																																																								
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		AC 690V	L	10	5		2, 3, 4																																																																																																																																								
			M	20	10																																																																																																																																										
			H	20	10																																																																																																																																										
HYM1-400	400	AC 400V	L	50	35	225, 250, 315, 350, 400	3, 4	≤50																																																																																																																																							
			M	65	42																																																																																																																																										
			H	100	65																																																																																																																																										
		AC 690V	L	15	8																																																																																																																																										
			M	20	10																																																																																																																																										
HYM1-630	630	AC 400V	L	50	35	400, 500, 630	3, 4	≤100																																																																																																																																							
			M	65	42																																																																																																																																										
			H	100	65																																																																																																																																										
		AC 690V	L	15	8																																																																																																																																										
			M	20	10																																																																																																																																										
HYM1-800	800	AC 400V	M	75	50	630, 700, 800	3	≤50																																																																																																																																							
			H	100	65																																																																																																																																										
		AC 690V	M	30	15																																																																																																																																										
HYM1-1250	1250	AC 400V		80	42	800, 1,000, 1250	3	≤50																																																																																																																																							
		AC 690V		25	12.5																																																																																																																																										

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Table 3 Overcurrent release operation characteristics of the circuit breaker for the power distribution

Serial number	Test current name	I/ In	Conventional time	Initial state
1	Conventional non-tripping current	1.05	2h (In>63)	Cold state
			1h (In≤63)	
2	Conventional tripping current	1.30	2h (In>63)	Start immediately after the test in S/N 1
			1h (In≤63)	

Table 4 Overcurrent release operation characteristics of the circuit breaker for the motor protection

Serial number	Test current name	Setting current	Conventional time	Initial state
1	Conventional non-tripping current	1.0	2h	Cold state
2	Conventional tripping current	1.2	2h	Start immediately after the test in S/N 1

V. Inverse Time Protection Characteristic Curve of the Circuit Breaker for the Power Distribution

Figure 1. Operation curves of HYM1-63 (10 A~32 A) and HYM1-125 (16 A~32 A)

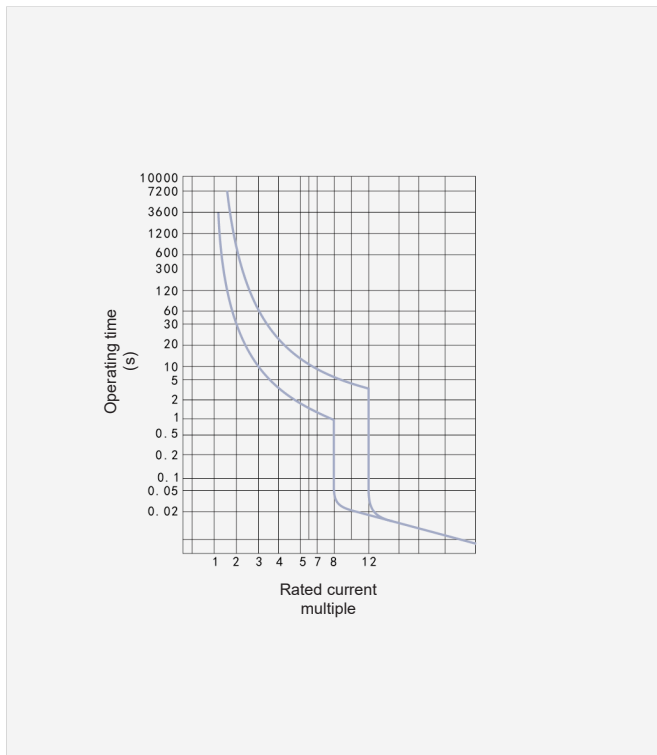
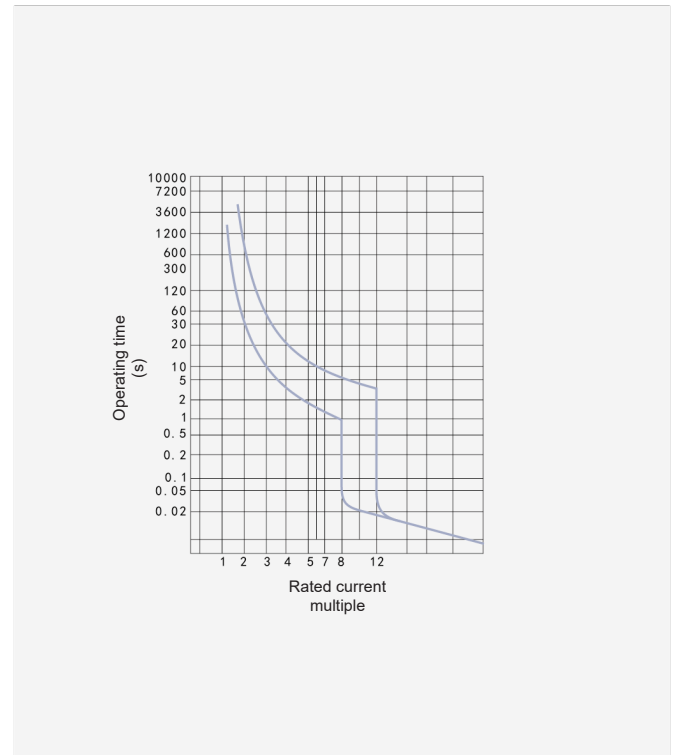


Figure 2. Operation curves of HYM1-63 (40 A~63 A) and HYM1-125 (40 A~125 A)



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Figure 3 Operation curves of HYM1-250

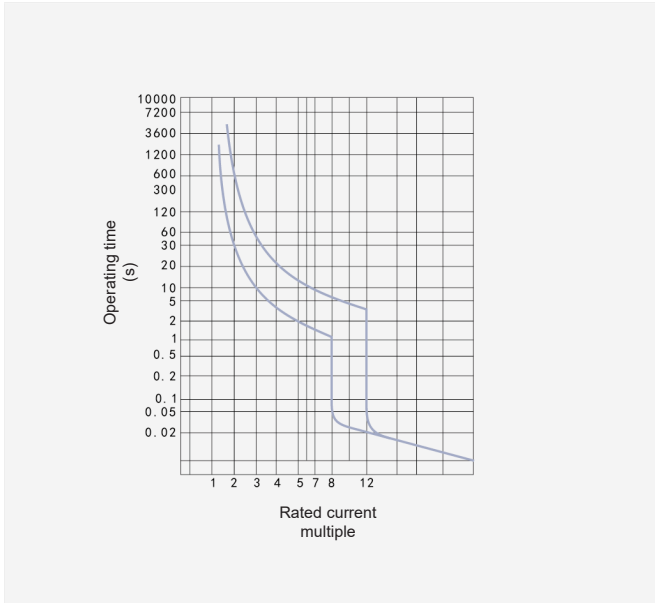


Figure 4 Operation curves of HYM1-400

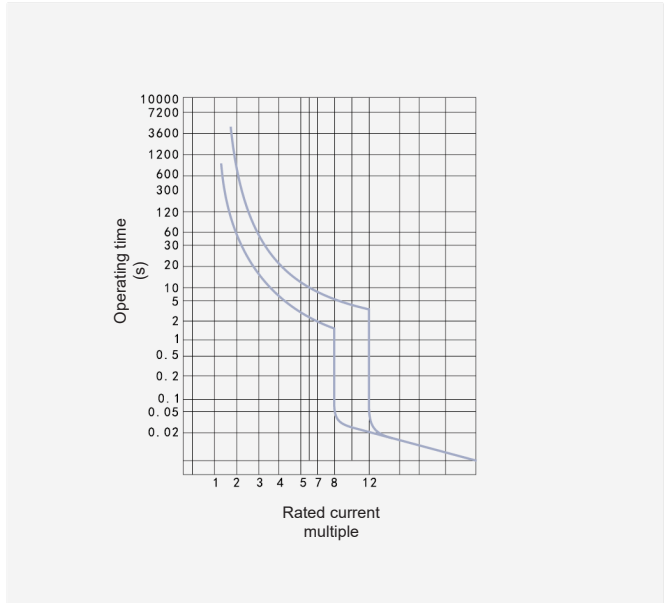


Figure 5 Operation curves of HYM1-630, 800

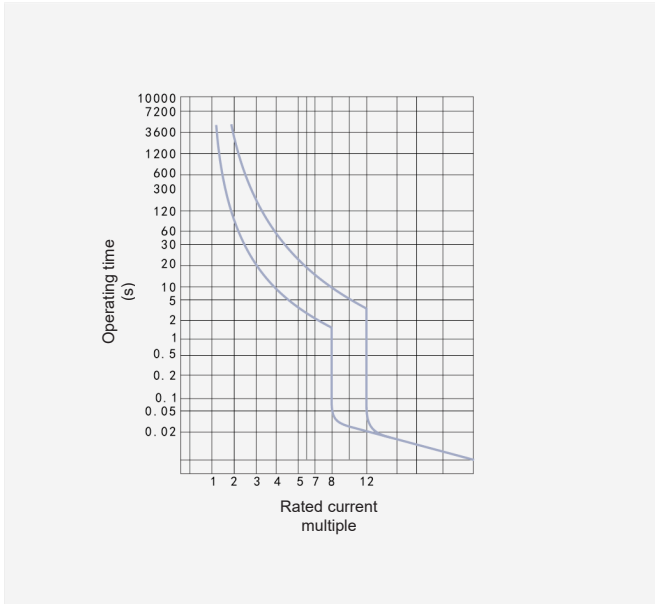


Figure 6 Operation curves of HYM1-1250

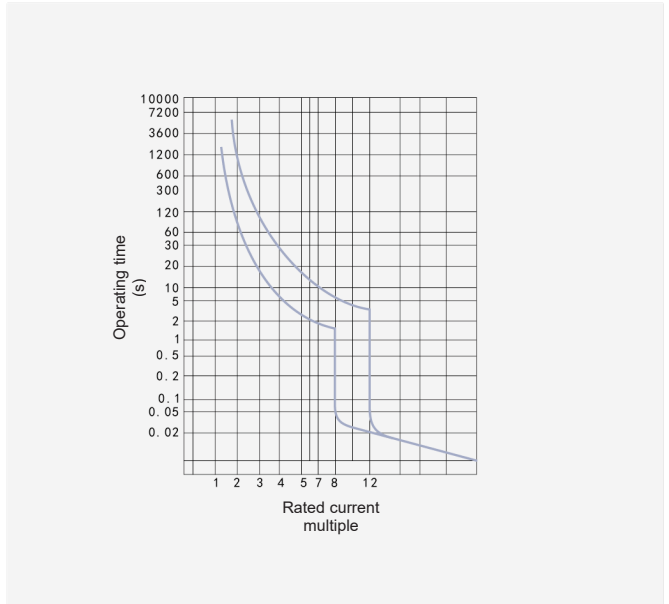


Table 5 Derating coefficient of the temperature change

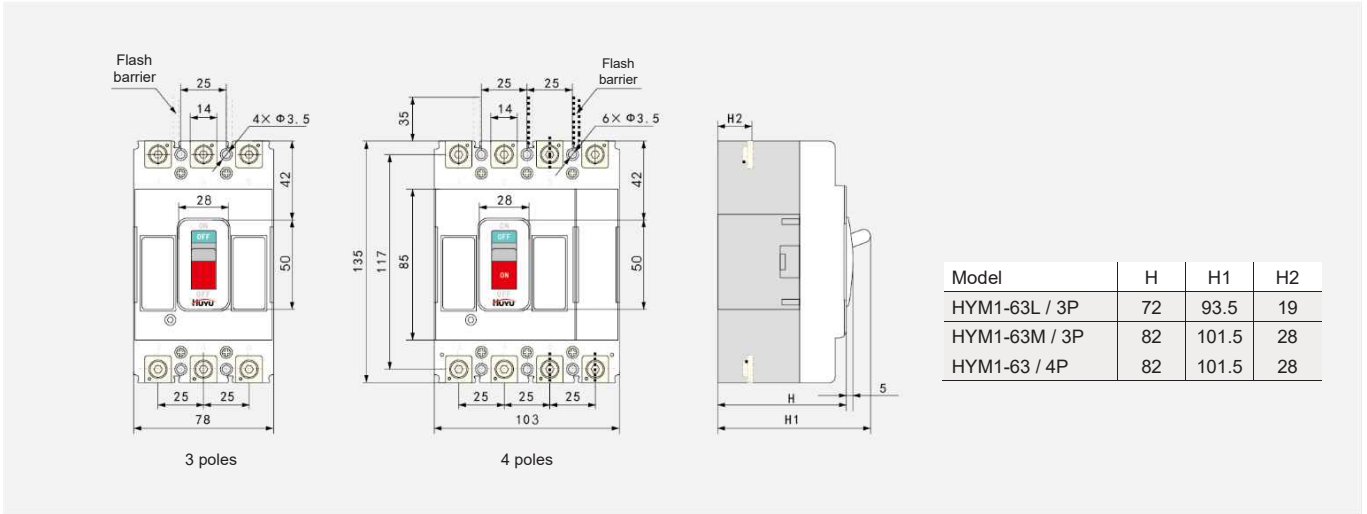
Model	Coefficient	Temperature				
		+ 40°C	+ 45°C	+ 50°C	+ 55°C	+ 60°C
HYM1-63		1	0.94	0.88	0.80	0.72
HYM1-125		1	0.95	0.89	0.84	0.76
HYM1-250		1	0.96	0.91	0.87	0.82
HYM1-400		1	0.94	0.87	0.80	0.73
HYM1-630.800		1	0.93	0.88	0.83	0.76
HYM1-1250		1	0.88	0.83	0.79	0.76

HYM1

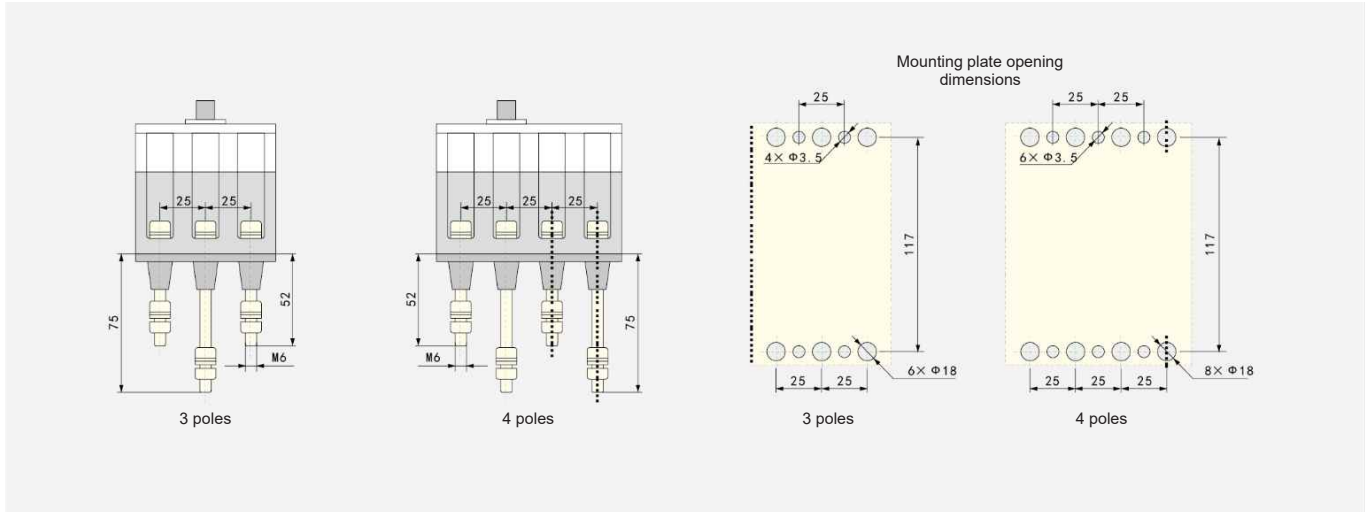
Series Molded Case Circuit Breaker

VI. Outline and Installation Dimensions

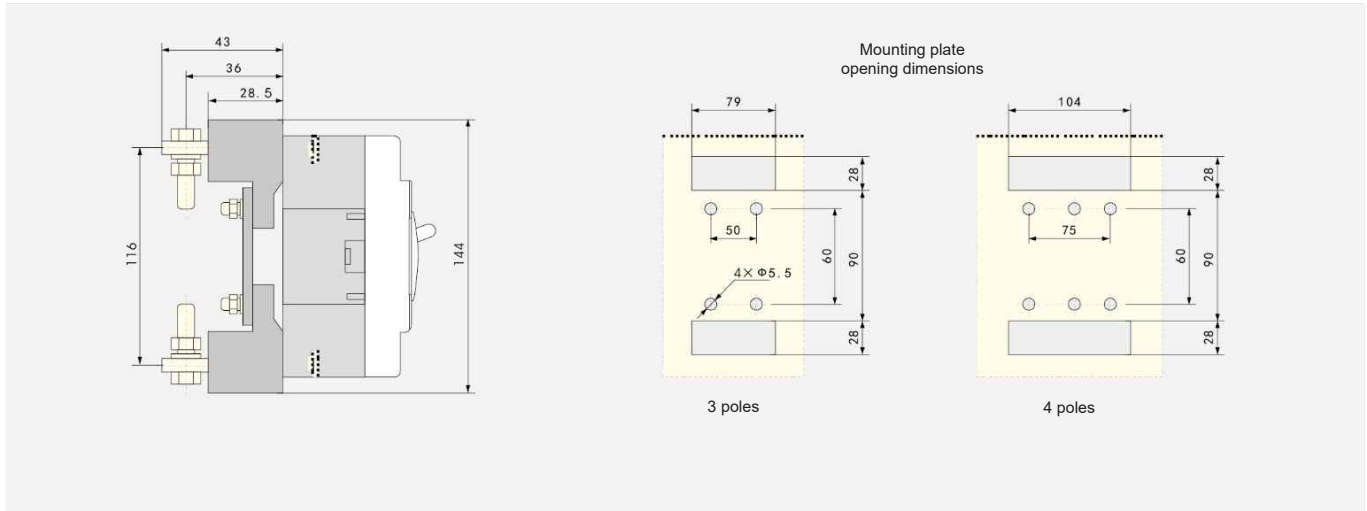
1. Outline and installation dimensions of HYM1-63
Wiring in front of the plate



Wiring behind the plate



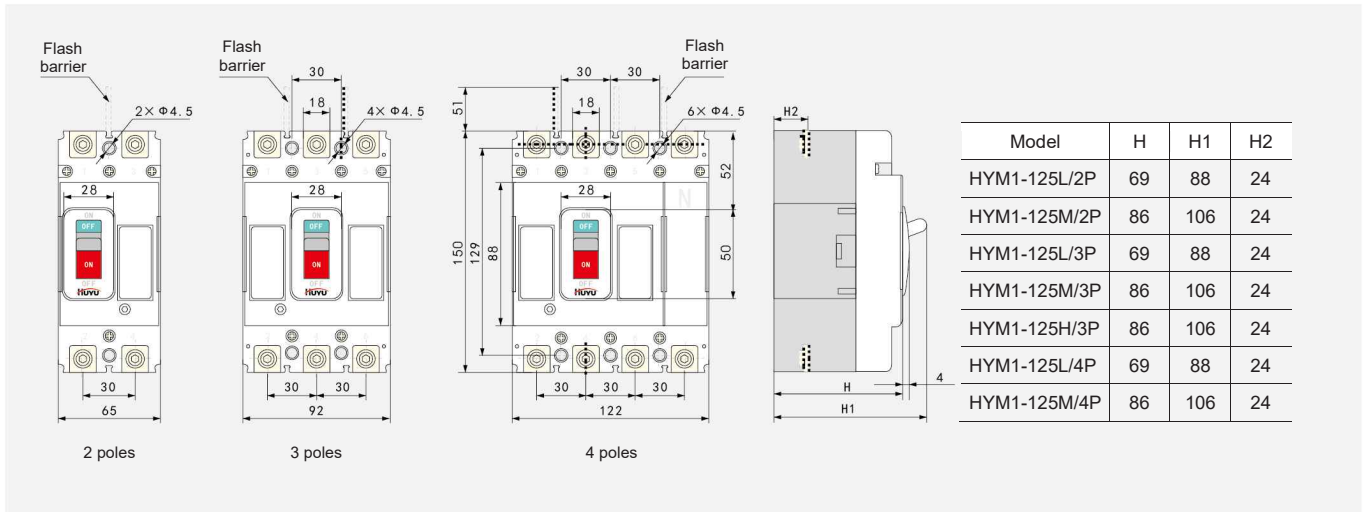
Plug-in wiring



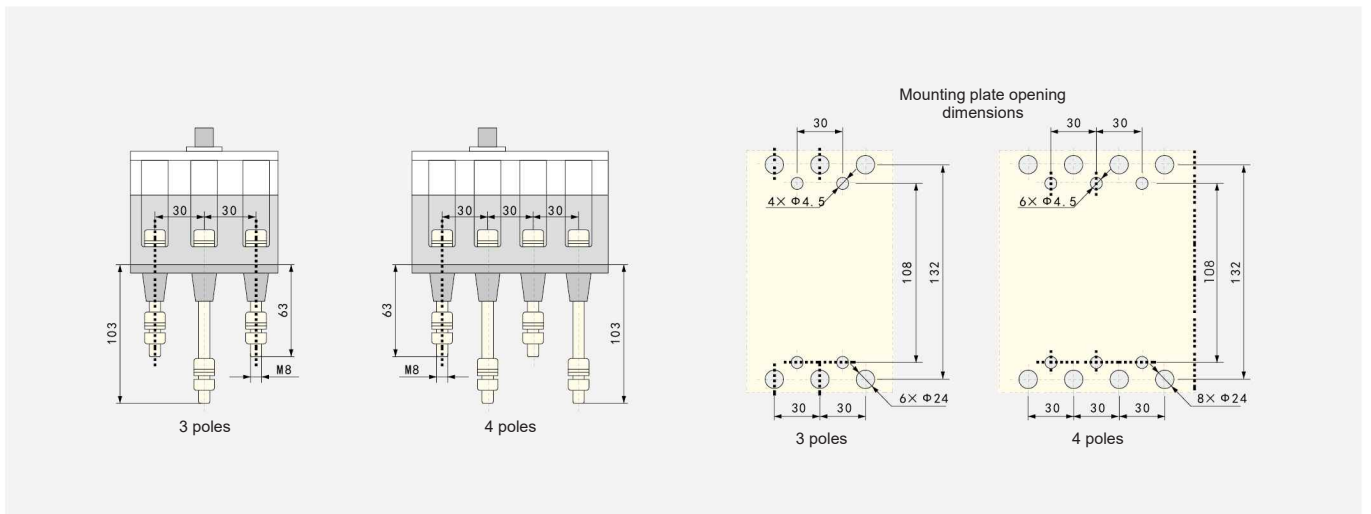
HYM1

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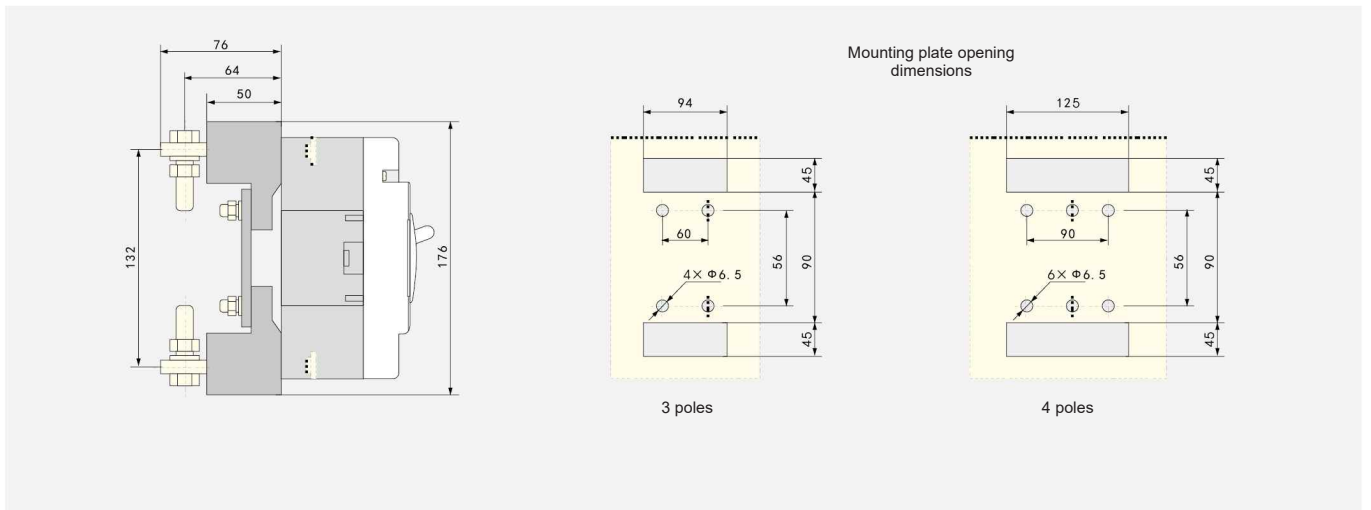
2. Outline and installation dimensions of HYM1-125 Wiring in front of the plate



Wiring behind the plate



Plug-in wiring

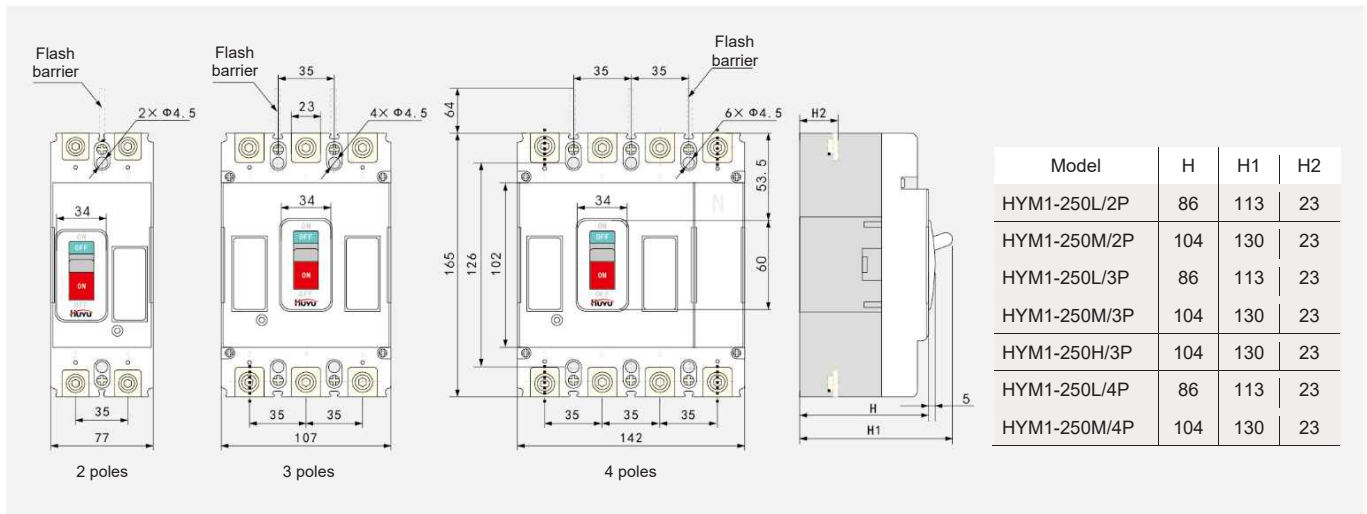


HYM1

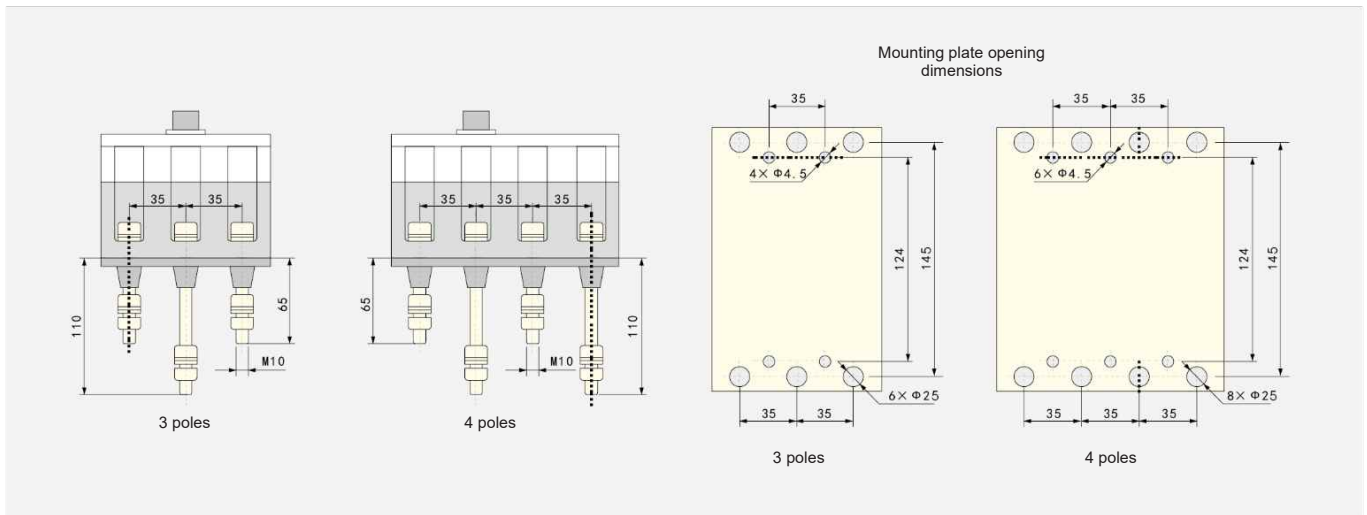
Series Molded Case Circuit Breaker

3. Outline and installation dimensions of HYM1-250

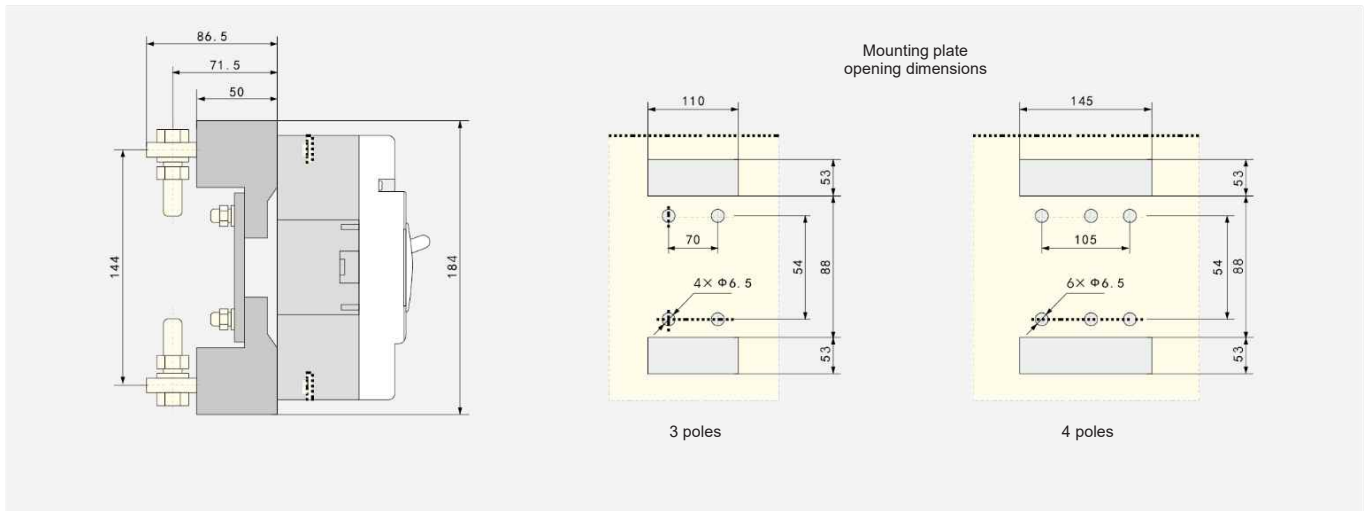
Wiring in front of the plate



Wiring behind the plate



Plug-in wiring

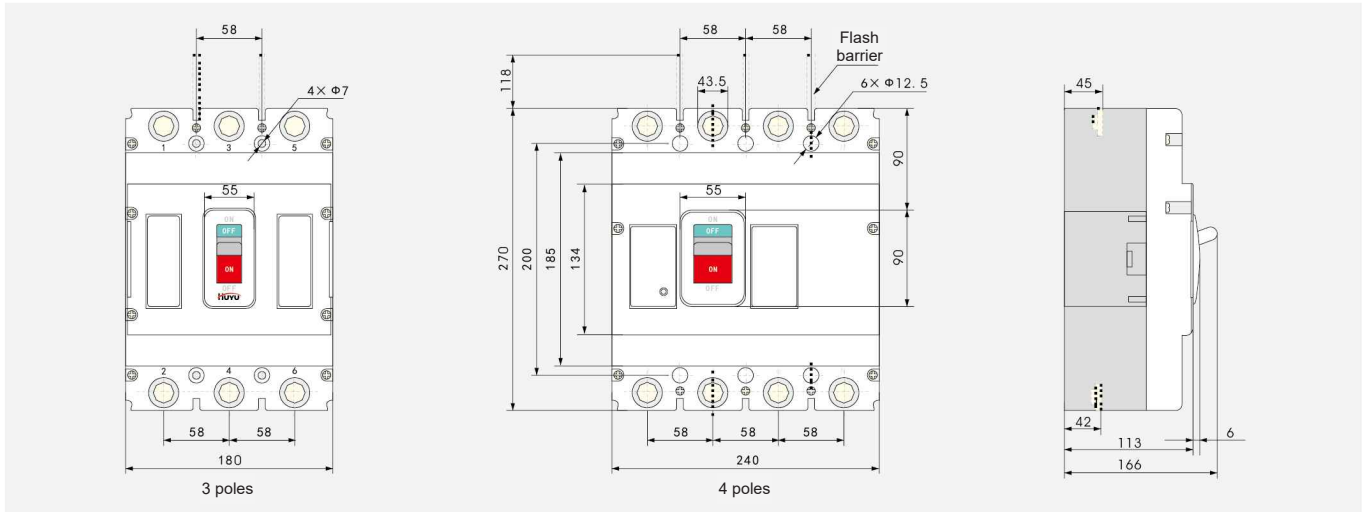


HYM1

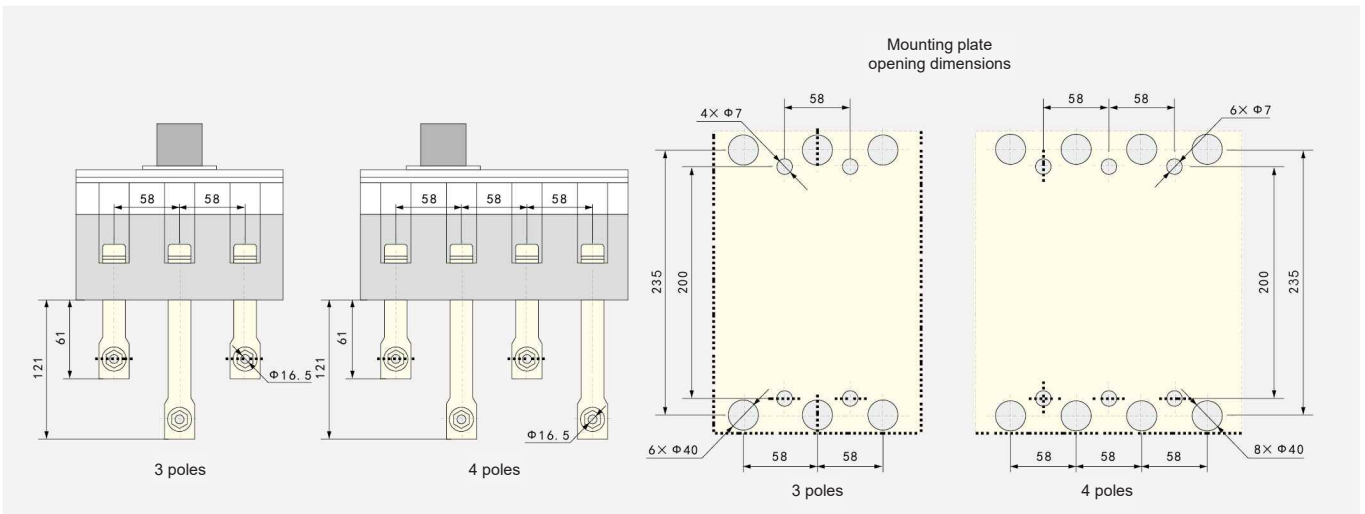
Series Molded Case Circuit Breaker

5. Outline and installation dimensions of HYM1-630

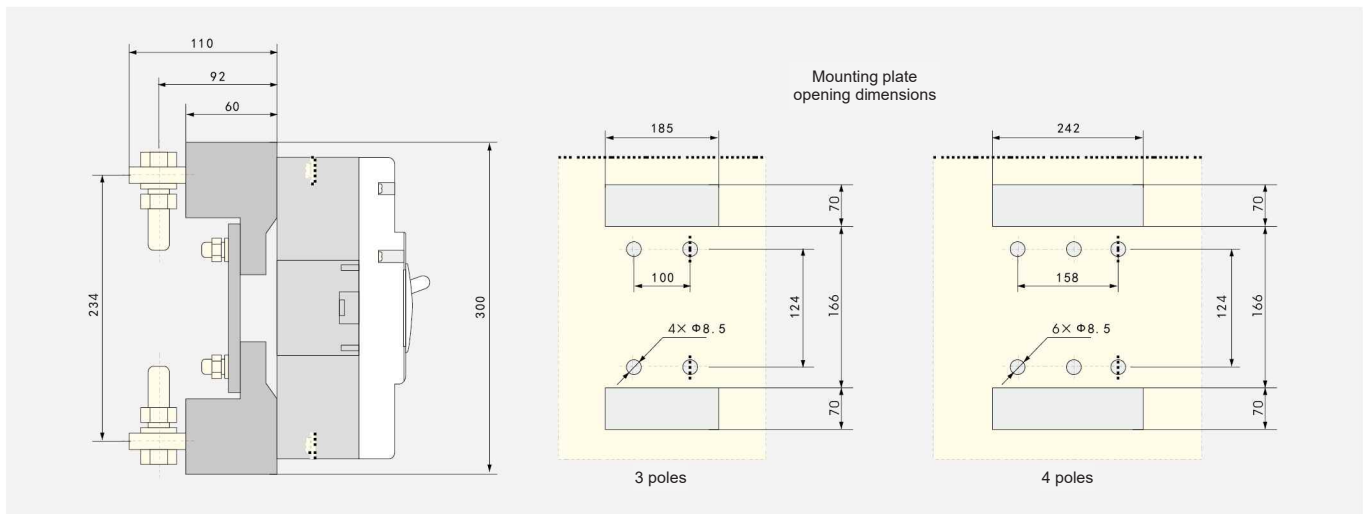
Wiring in front of the plate



Wiring behind the plate



Plug-in wiring

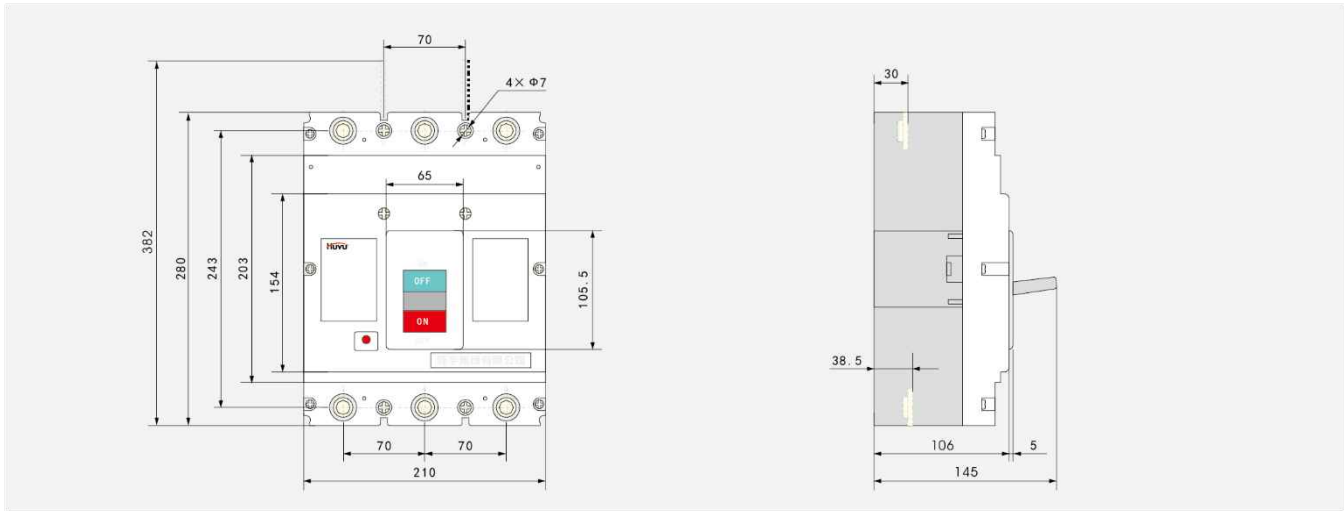


HYM1

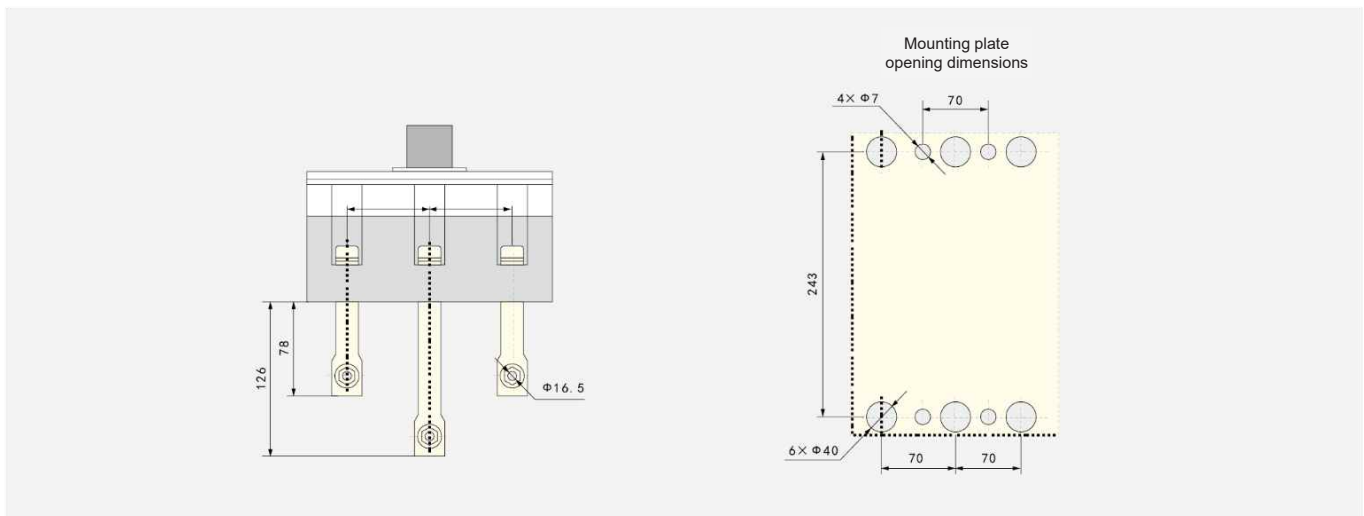
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6. Outline and installation dimensions of HYM1-800

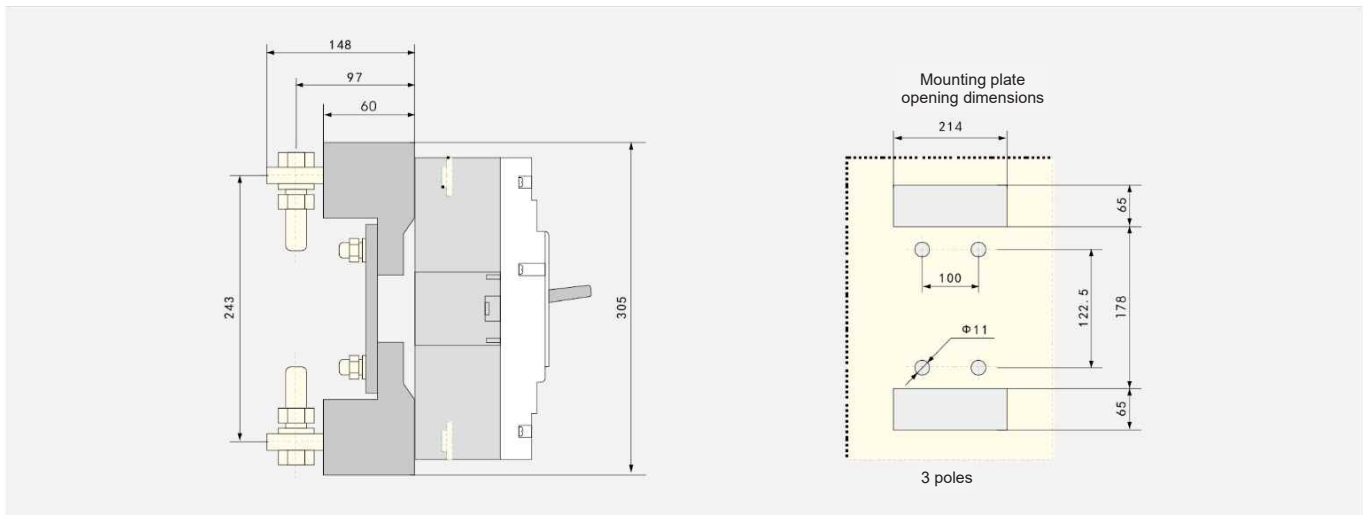
Wiring in front of the plate



Wiring behind the plate



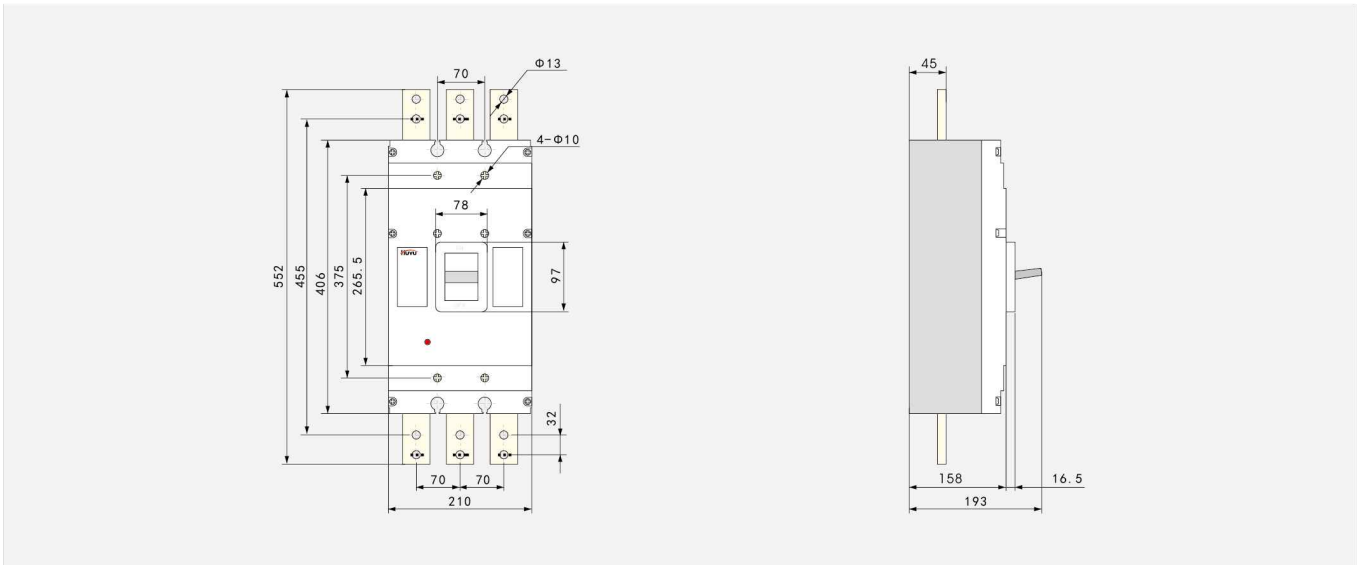
Plug-in wiring



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7. Outline and installation dimensions of HYM1-1250 Wiring in front of the plate



VII. Circuit Breaker Accessories

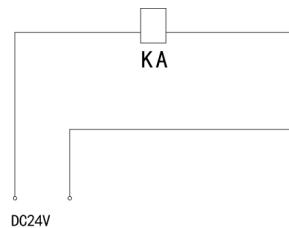
1. Internal accessories of the circuit breaker 1.1 Shunt trip

Rated control power supply voltage of the shunt trip: AC 230 V, 400 V, 50 Hz; DC 110 V, 220 V, 24 V. Between 70% and 110%, the circuit breaker can be reliably interrupted.

When the rated control power supply voltage of the shunt trip is DC 24 V, the maximum length of the copper conductor shall meet the following requirements.

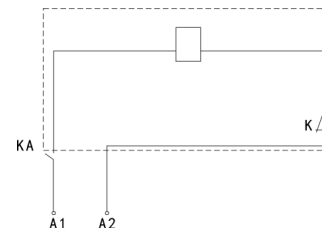
Rated control power supply voltage (DC 24 V)	Conductor area	1.5 mm ²	2.5 mm ²
100% U _c		150 m	250 m
85% U _c		100 m	160 m

If the requirements of the above table are not met, it is recommended to design the control circuit of the shunt trip according to figure below.



KA: DC 24V intermediate relay.
The current capacity of the contact is 1 A.

Inside the dotted line box is the schematic diagram of the shunt trip



Power supply input
The voltage of the input terminal of the power supply is:
AC 230 V, 400 V, 50 Hz.

1.2 Undervoltage release

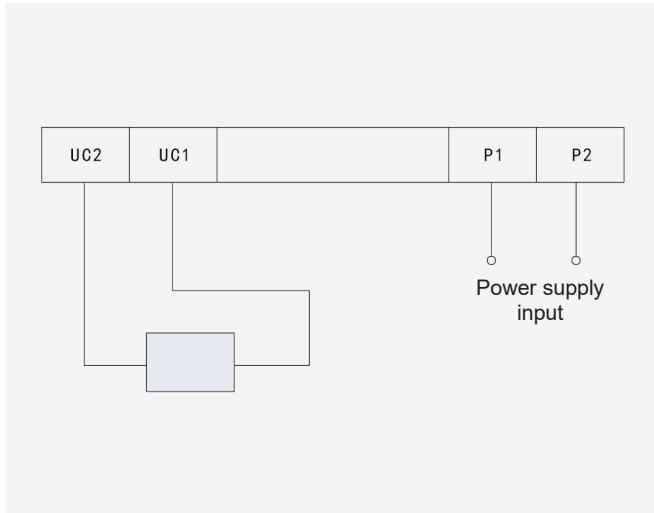
When the power supply voltage drops to 70% ~ 35% of the rated working voltage of the undervoltage release, the undervoltage release can reliably interrupt the circuit breaker. When the power supply voltage is lower than 35% of the rated working voltage of the undervoltage release, the undervoltage release can prevent the circuit breaker from closing. When the power supply voltage is higher than 85% of the rated working voltage of the undervoltage release, the undervoltage release can ensure the reliable closing of the circuit breaker. The rated values of the undervoltage release are: AC 230 V, 400 V, 50 Hz.

Special reminder: The circuit breaker equipped with undervoltage release can be normally opened and closed only when rated voltage is applied.

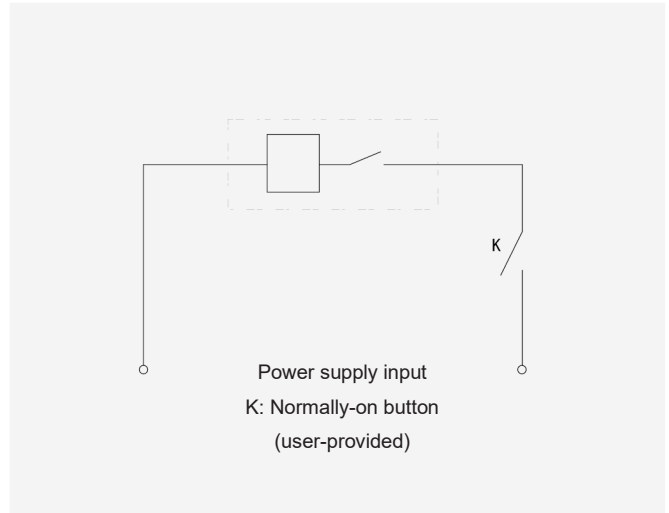
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Wiring diagram of the undervoltage release



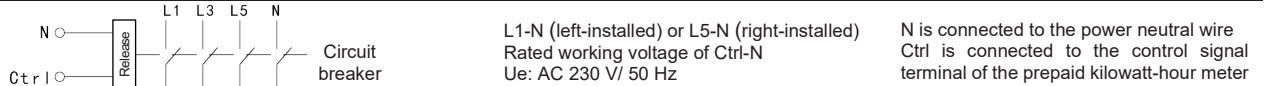
Wiring diagram of the shunt trip



1.3 Special release with prepaid kilowatt-hour meter

The rated working voltage U_e of the special release with prepaid kilowatt-hour meter is AC 230 V/50 Hz. It can work normally in the range of (65 % ~ 110 %) U_e . When the Ctrl terminal is cut off, the breaker will delay opening by 0.5 s ~ 2 s.

Wiring diagram of the special release with prepaid watt-hour meter



1.4 See Table 5 for the rated values of auxiliary contacts and alarm contacts.

Table 5

Classification	Conventional thermal current (I _{th})	Rated current I _e at 400 V AC (AC-15)	Rated current I _e at 220 V DC (DC-13)
Auxiliary contact	3	0.4	0.15
Alarm contact	3	0.3	0.15

a. Auxiliary contact

The circuit breaker is at the "Open" offline position	
The circuit breaker is at the "Closed" position	

b. Alarm contact

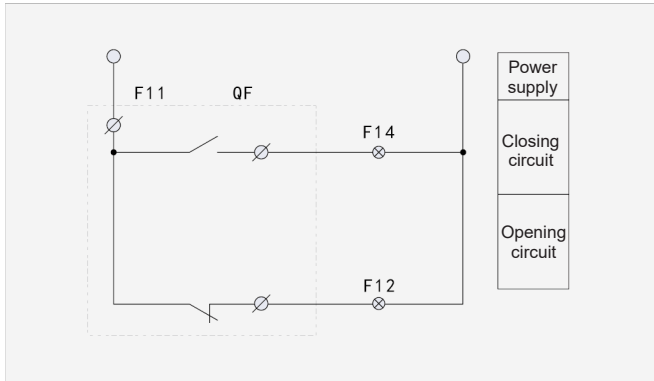
The alarm contact does not operate when the circuit breaker is normally opened or closed, and the normally open and normally closed alarm contact can be switched only after free tripping or fault tripping.

The circuit breaker is at the "Open" and "Closed" positions	
The circuit breaker is in free tripping	

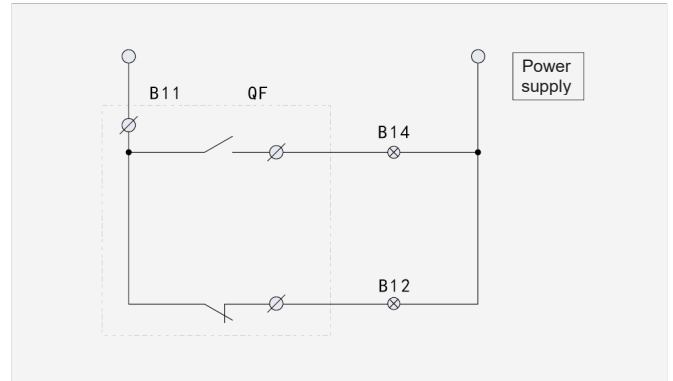
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Wiring diagram of the auxiliary contact



Wiring diagram of the alarm contact



2. External accessories of the circuit breaker

2.1 Motor operating mechanism. See Table 6 for the rated values and codes.

Table 6

Category	Model	HYM1-63, 125, 250	HYM1-400, 630, 800, 1250
Construction type		Electromagnet	Motor
AC voltage code		AC 230V, 400V, 50Hz	AC 230V, 400V, 50Hz
DC voltage code		DC 110V, 220V	DC 110V, 220V

Note: After the circuit breaker with electric operating mechanism trips, the breaker must be tripped again through the electric operating mechanism before closing.

HYM1-63~250 Electric Operating Mechanism



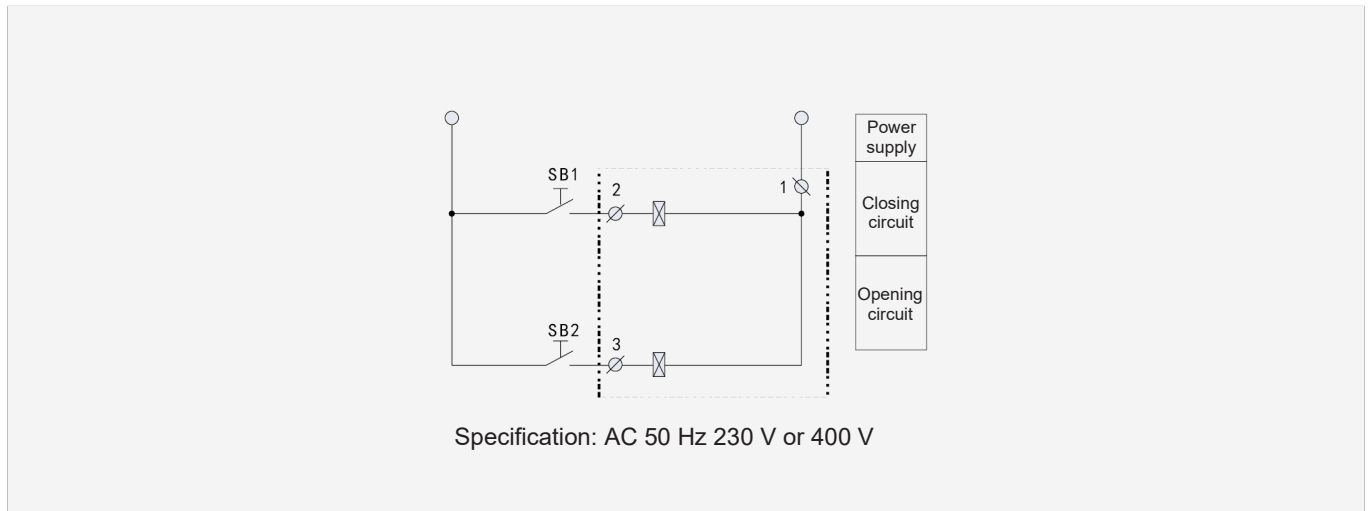
HYM1-400~1250 Electric Operating Mechanism



Manual Operating Mechanism



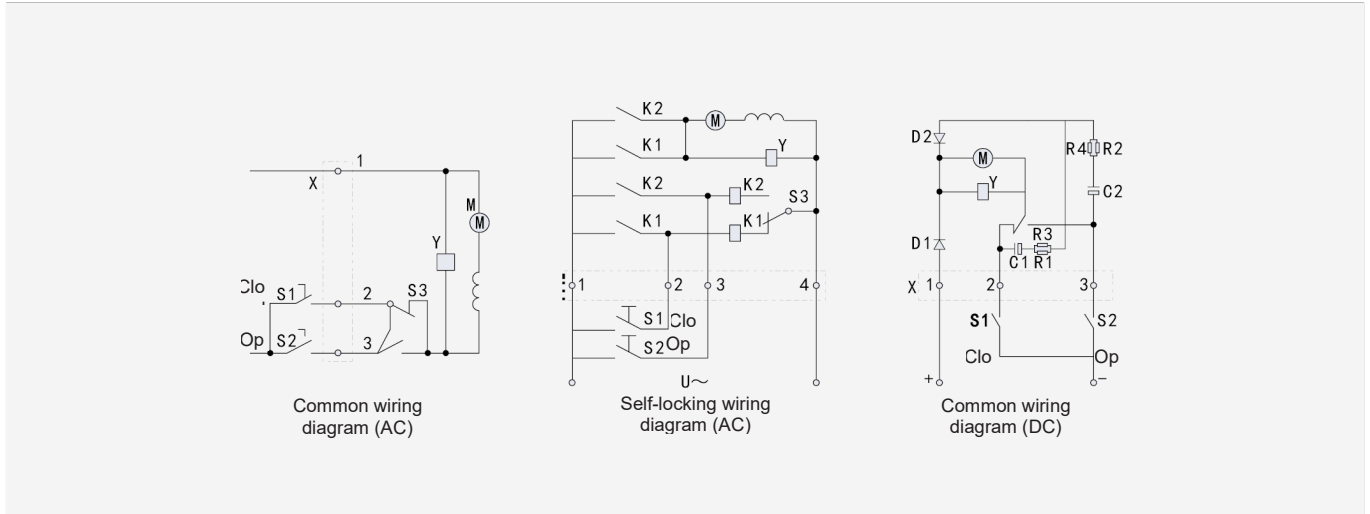
Opening/closing schematic diagrams of the HYM1-63, 125, 250 Electric Operating Mechanism (AC)



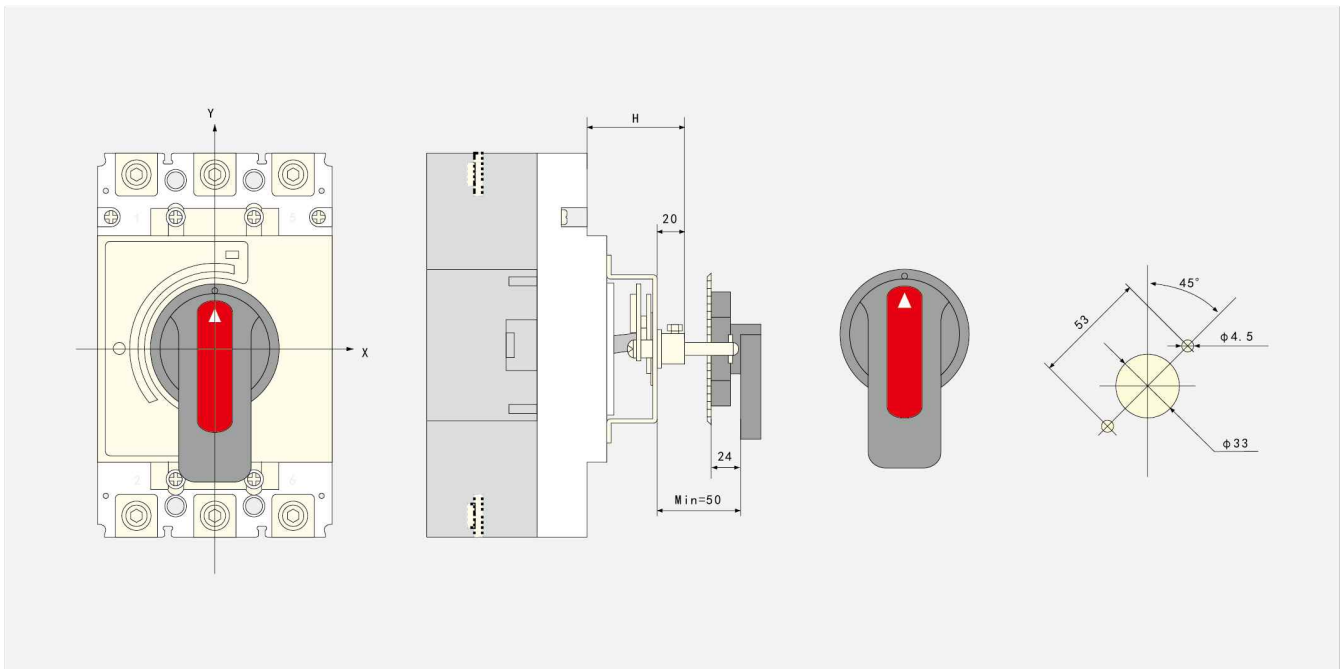
HYM1

Series Molded Case Circuit Breaker

Opening/Closing schematic diagrams of the HYM1-400, 630, 800, 1250 Electric Operating Mechanism (AC)



2.2 See Table 10 for the installation dimensions of the manual operating mechanism
Schematic diagram of the mounting opening of the HYM1-63 ~ 800 Handle



VIII. Ordering Information

1. When ordering, the following items must be indicated:
 - 1.1 Product name and model.
 - 1.2 Rated current of circuit breaker, tripping mode, setting current multiple of instantaneous release (if the user has no special requirements, the circuit breaker for power distribution protection is supplied with 10 times setting value, and the one for motor protection is supplied with 12 times setting value).
 - 1.3 Accessory name and specification (rated working voltage value shall be indicated for the shunt trip or undervoltage release).
 - 1.4 Wiring modes, including in front of the plate, behind the plate and plug-in, shall be supplied as the first type if not required.
 - 1.5 Quantity