HUANYU ELECTRIC

MCCB

PRODUCT CATALOG

MCCB SERIES

HUANYU HIGH TECH CO.,LTD.
HUYUELECTRIC.COM

EXM3 Moulded Case Circuit Breakers

Functions and Features

Product description

Circuit breaker description

EXM3 and EXM3K series plastic shell circuit breakers (hereinafter referred to as circuit breakers) are new products successfully developed advanced international technology. This product is designed advanced, with reliable performance, high technical indicators, easy maintenance, beautiful appearance and small size.

The circuit breaker is suitable for systems with alternating current of 50Hz/60Hz, rated insulation voltage up to 1000V (800V for products with 125 frames and below), and rated current up to 1250A. It is used to distribute electrical energy and protect lines and power equipment from the hazards of overloading short circuits, undervoltage, etc. It can also be used to control infrequent operations of motors.

Circuit breakers are divided into four categories according to their ultimate short-circuit breaking capacity: C type (basic type), S type (standard type), H type (high-break type), and R type (current type).

Product standards

The circuit breakers are in accordance with GB/T 14048.2 and IEC 60947-2 standards.

Features

- EXM3 series molded case circuit breakers(A): 63, 125, 160, 250, 400, 630, 800
- Rated operating voltage Ue (AC): 220V / 230V / 240V, 380V / 400V / 415V, 500V, 690V
- Breaking capacity code: C, S, H
- Number of poles: 1P,2P,3P, 4P
- Release type: electromagnetic, thermal magnetic
- Installation method: fixed, plug-in
- Certification: CCC, CE, CB

Normal operating conditions

1. Ambient temperature: not higher than 40°C and not lower than -5°C; the average value of 2h does not exceed 35°C. (Note: the ambient temperature for use can be extended to -35°C～70°C. For users in special environmentexceeding -5°C～40°C), it shall be used according to the data given in the product catalog and instructions or negotiated with the manufacturer.)

2. Altitude: the altitude does not exceed 2000m (for use over 2000m, please negotiate with the manufacturer).

3. Atheric conditions: the relative humidity of the air shall not exceed 50% when the highest temperature is 40°C; a higher relative humidity is allowed at a lower temperature the maximum relative humidity of the month with the highest average is 90%, and the average minimum temperature of the month is 25°C, and the condensation on the of the product due to the temperature change is considered;

4. Pollution level: Grade 3.

5. Installation category: the installation category of the main circuit is III.

6. Protection level: IP30 (except for the terminal).

7. Installation environment conditions: no significant shaking and impact vibration; in a medium explosion hazard, and the medium does not contain gases and dust (including conductive dust) that are sufficient to corrode metal and damage insulation; without rain and snow.

8 Storage and transportation conditions: the temperature range applicable to transportation and storage is -35°C～ 70°C; the relative humidity does not exceed 90%; the product be handled with care during transportation, should not be placed upside down, and should avoid severe collisions.

Product selection

EXM3	- □	□	/ □	□
Model number	Frame size	Breaking capacity	Operating mode	Number of poles
EXM3	63-800	C for basic type S for standard type H for high breaking type	N/A for direct handle operation P for motor operation Z for rotary handle operation	1: 1P 2: 2P 3: 3P 4: 3P (see Note)

□	□	□	□
Over-current release type	Internal accessory code	Application code	Wiring method code
See Table 1	See Table 2	N/A for power distribution and 2 for motor protection	N/A for front panel wiring H for rear panel wiring C for plug-in connection

Note: For 4P devices, two N-pole types are available

Type A: No over-current release is mounted on N-pole, and N-pole is always on without simultaneous opening/closing with the other three poles

Type B: No over-current is mounted on N-pole, and N-pole can be opened/closed simultaneously with the other three poles (first closed, then open for N-pole)

Table 1. Over-current release type

No.	Name	Description
1	Time delay release	Offer over-current inverse time protection characteristics
2	Instantaneous release	Electromagnetic type release, offering over-current instantaneous protection characteristics
3	Bi-function release	Offers both functions described above

Table 2. Internal accessory code

Inm (A)	I		II		III		Note
	Code	Description	Code	Description	Code	Description	
63 125 160 250	0	None	0～2	Numbers of auxiliary contact pairs	0～1	Number of alarm contact pairs	II + III ≤3
	1	Shunt release	0～2		0～1		II + III ≤2
	2	Under-voltage release	0～2		0～1		II + III ≤2
400 630 800	0	None	0～4		0～1		II + III ≤4
	1	Shunt release	0～2		0～1		II + III ≤2
	2	Under-voltage release	0～2		0～1		II + III ≤2
	3	Shunt and under-voltage release	0		0		

Technical data and performance

1、Technical data

Table3

Framesize		EXM3-63			EXM3-125			EXM3-160			EXM3-250		
Productmodel		C	S	H	C	S	H	C	S	H	C	S	H
RatedcurrentIn(A)		10、16、20、25、30 32、40、50、60、63			10、16、20、25、30、32、40、50、60、63、70、75、80、100、125			16、20、25、30、32、40、50、60、63、65、70、75、80、90、100、110、125、140、150、160			100、125、140、150、160、170、175、180、200、225、250		
Numberofpoles		1P/2P/3P/4P			1P/2P/3P/4P			3P/4P			3P/4P		
RatedinsulationvoltageUi(V)		AC800						AC1000					
Ratedimpulsewithstand voltageUimp(kV)		8									12		
Arcingdistance(mm)		⩽50(0)*											
Ratedultimate/ operatingshort-circuit breakingcapacityIcu/ Ics(kA)	690V	—	—	—	—	—	—	8/4	8/4	10/5	8/5	8/5	10/5
	500V	—	—	—	—	—	—	—	—	30/30	—	—	30/30
	400/415V	20/10	36/25	50/36	20/10	36/25	50/36	20/10	36/25	50/36	20/15	36/25	50/36
	240V	30/20	40/30	75/50	30/20	40/30	75/50	40/20	50/30	75/50	40/30	50/30	75/50
Mechanicallife (operations)	Maintenance free	20000											
	With maintenance	40000											
Electricallife(operations)	AC415V	10000											

Framesize		EXM3-400			EXM3-630			EXM3-800	
Productmodel		C	S	H	C	S	H	C	S
RatedcurrentIn(A)		250、280、300、315 320、350、380、400			250、280、300、315、320、350 380、400、450、500、550、600 630			630、700、800	
Numberofpoles		3P/4P							
RatedinsulationvoltageUi(V)		AC1000						AC800	
Ratedimpulsewithstand voltageUimp(kV)		12						8	
Arcingdistance(mm)		⩽100(0)*							
Ratedultimate/ operatingshort-circuit breakingcapacityIcu/ Ics(kA)	690V	10/10	10/10	15/10	10/10	10/10	15/10	20/15	35/25
	500V	—	—	36/36	—	—	36/36	20/15	35/25
	400/415V	40/30	50/36	70/50	40/30	50/36	70/50	50/36	75/50
	240V	50/50	75/50	100/75	50/50	75/50	100/75	—	—
Mechanicallife (operations)	Maintenance free	10000						8000	
	With maintenance	20000						10000	
Electricallife(operations)	AC415V	8000						5000	

*Ifthearcdistanceiszero,pleaseindicateitwhenordering.

2、Current protection characteristics: Refer to Table 4 for electrical distribution and Table 5 for motor protection use.

Table 4. Over-current protection characteristics of circuit breakers for electrical distribution use

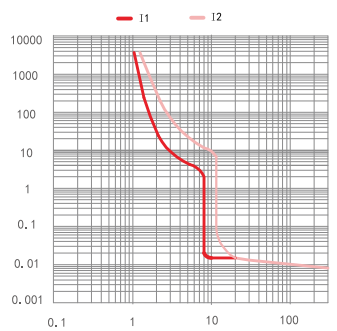
Rated current In (A)	Thermal release (ambient temperature at +40°C)		Electromagnetic release actuation current (A) (See Note)
	1.05In no actuation time (h) (Start state: cold state)	1.30In actuation time (h) (Start state: thermal state)	
⩽63	＞1	⩽1	(10±2)In
＞63	＞2	⩽2	

Table 5. Over-current protection characteristics of circuit breakers with motor protection use

Rated current In (A)	Thermal release (ambient temperature at +40°C)				Electromagnetic release actuation current (A) (See Note)
	1.0In no actuation time (h) (Start state: cold state)	1.0In no actuation time (h) (Start state: cold state)	1.2In for no actuation time (h) (Start state: thermal state)	1.5In actuation time (min) (Start state: thermal state)	
In⩽63	＞2	⩽2	⩽2	2＜Tp⩽10	(12±2 .4)In
63＜In⩽250			⩽4	4＜Tp⩽10	
250＜In⩽800			⩽8	6＜Tp⩽20	

3、See Figure 1 to Figure 14 for inverse time characteristic curves and temperature correction curves

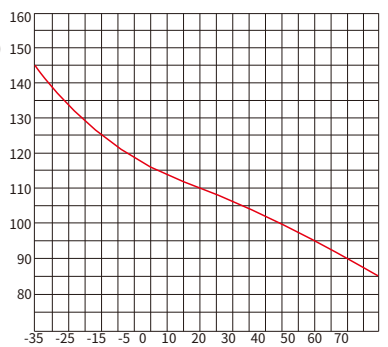
Table 1
Actuation time(S)



Rated current：50A-63A
10A-40A Instantaneous Operating Current Is 500A ±20%

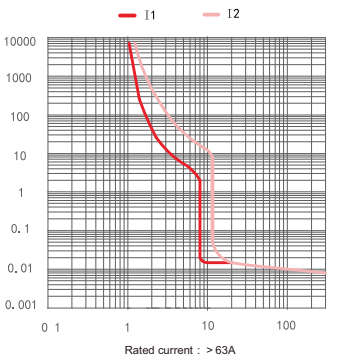
Rated current multiples
EXM3-63/125/160 actuation characteristic curve

Table 2
Rated current (%)



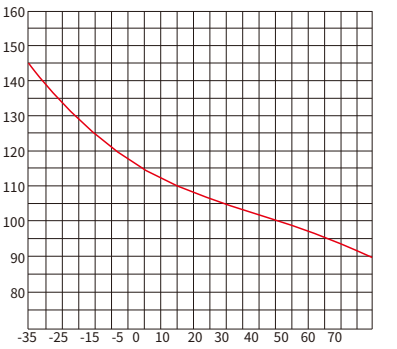
Ambient temperature (°C)
EXM3-63 temperature compensation curve

Table 3
Actuation time(S)



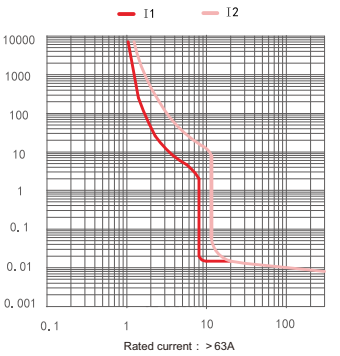
Rated current multiples
EXM3-125 actuation characteristic curve

Table4
Rated current (%)



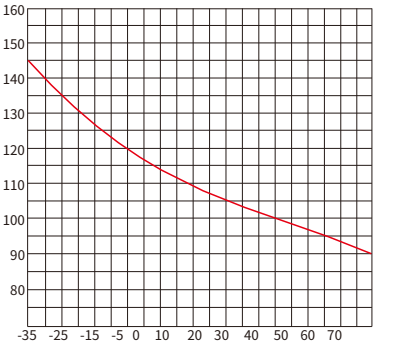
Ambient temperature (°C)
EXM3-125 temperature compensation curve

Table 5
Actuation time(S)



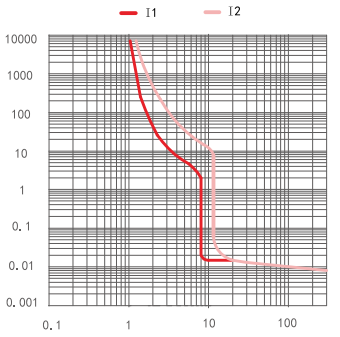
Rated current multiples
EXM3-160 actuation characteristic curve

Table 6
Rated current (%)



Ambient temperature (°C)
EXM3-160 temperature compensation curve

Table 7
Actuation time(S)

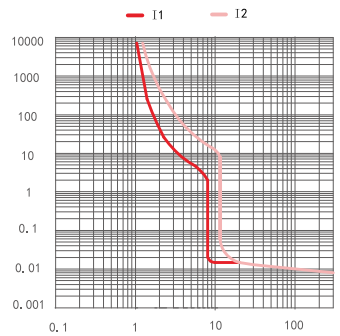


Rated current multiples
EXM3-250 actuation characteristic curve

Table8
Rated current (%)

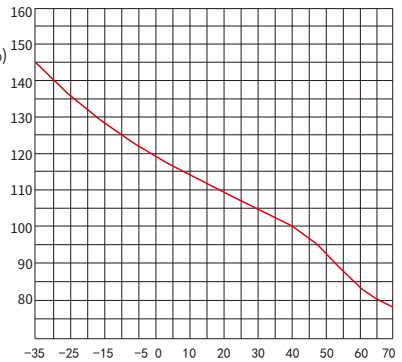
Ambient temperature (°C)
EXM3-250 temperature compensation curve

Table 9
Actuation time(S)



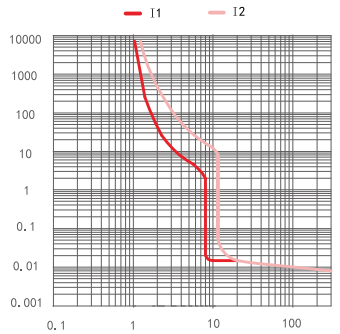
Rated current multiples
EXM3-400 actuation characteristic curve

Table 10
Rated current (%)



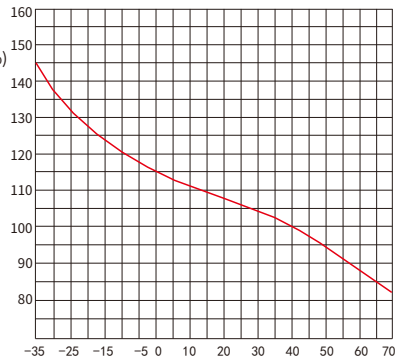
Ambient temperature (℃)
EXM3-400 temperature compensation curve

Table 11
Actuation time(S)



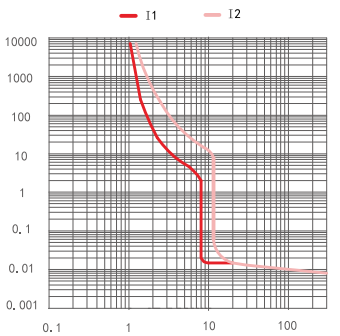
Rated current multiples
EXM3-630 actuation characteristic curve

Table 12
Rated current (%)



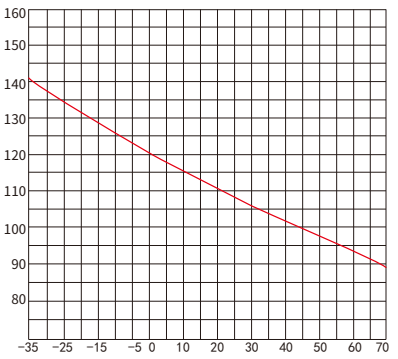
Ambient temperature (℃)
EXM3-630 temperature compensation curve

Table 13
Actuation time(S)



Rated current multiples
EXM3-630 actuation characteristic curve

Table 14
Rated current (%)



Ambient temperature (℃)
EXM3-800 temperature compensation curve

Accessories for circuit breakers

Table 6

Frame rated current Inm (A)			63、125	63R、125R、160	250	400、630	800
Internal accessory	Alarm contact		B1	B2	B3	B4	B5
	Auxiliary contact		F1	F2	F3	F4	F5
	Shunt release		FI1	FI2	FL3	FI4	FL5
	Under-voltage release		Qy1	QY2	QY3	QY4	QY5
	Accessory wiring terminal		JX				
External accessory	Rotary operating handle		CS1-63	CS1-100	CS1-250	CS1-400	CS1-800
	Electric operating		MDX0	MDX1	MDX2	MDX3	MDX4
	Mechanical interlocking	3P	N1-3	N2-3	N3-3	N4-3	-
		4P	—	N3-4	N3-4	N4-4	-

5.2 Auxiliary contact,alarm contact rating

Conventional heating current Ith=6A;

Rated operational current Ie=0.79A(230V、AC);Ie=0.47A(380V/400V/415V、AC);Ie=0.15A(110V、220V/250V、DC)。

5.3 Parameters of shunt trip

Rated Voltage Us:AC:110V、230V、400V,Input capacity:180VA;

DC:24V、48V、110V, Input capacity:60W。

(70%～110%)the circuit breaker under Us can be reliably broken,the action time is 10ms30ms.

When the rated control power supply voltage of shunt tripper is DC24V,the maximum length ofcopper wire shall meet the requirements of table 7.

Table 7. Maximum Length of the copper wire

Rated control power voltage Uc (DC24V) / Wire area	1.5mm²	2.5mm²
100% Uc	150m	250m
85% Uc	100m	160m

5.4 Parameters of undervoltage release

Rated voltage Ue:AC230V,400V.

(35%~70%)Ue circuit breaker can be reliably disconnected,and the operation time is 10ms~30ms.When the power supply voltageis<35%Ue,the circuit breaker can be prevented from closing;when the power supply voltage is≥85%Ue,the circuit breaker can bereliably closed.

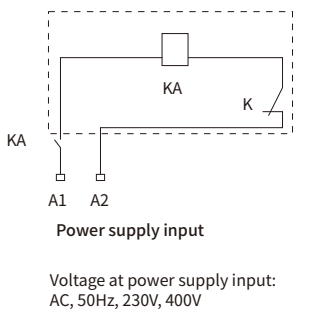
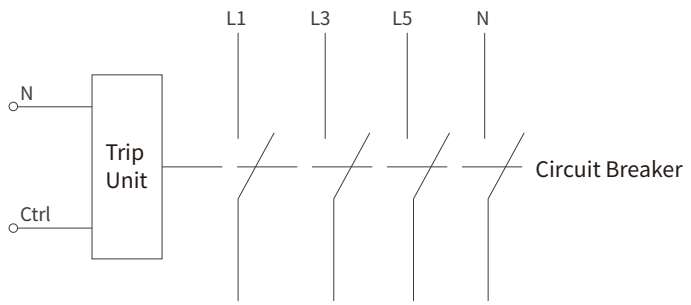


Figure 1. Shunt release control circuit design

5.5 Special release device for prepaid electric meter

The rated working voltage Ue of the special release for prepaid meters is AC240V/50Hz,which can worknormally in the Ue range of(65%～110%).When the Ctrl end is cut off,the circuit breaker will delay thebreaking of 0.5s～2s.



Note: The naught line of the power supply is connected to the N-pole, and the Ctrl is connected to the control signal terminal of the prepaid ammeter, with the voltage Ue of AC230V, AC400V under 50Hz

Figure 16. Pre-paid ammeter dedicated trip unit wiring diagram

Table 8 Main technical parameters of MDX electric operating mechanism

Frame size rated currentInm(A)	63、125	63R、125R、160	250	400、630	800
Model of electric operatingmechanism	MDX0	MDX1	MDX1	MDX3	MDX4
Rated voltage Ue(V)	AC 110～230V, 50Hz , DC 110V～220V				
Starting current(A)	≤0.5			≤2	
Actuation time(s)	≤0.8				
Rated operating frequency(times/h)	180			120	
Mechanical life(times)	15000		9000	5000	3000

The power supply capacity of the electric operating mechanism should be big enough to ensure thatthe voltage applied to the electric operating mechanism under the starting current is not less than 85%Ue.

The wiring diagram of the electric operating mechanism is shown in Fig.17

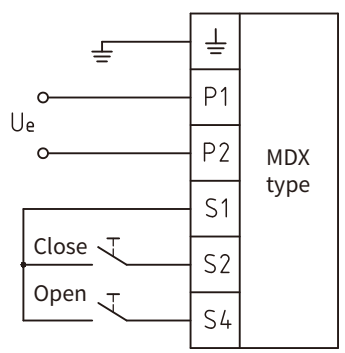


Fig.17 Wiring diagram of MDX electric operating mechanism.

5.7 The installation dimensions of manual operating mechanisms are shown in figure 19 and Table 9

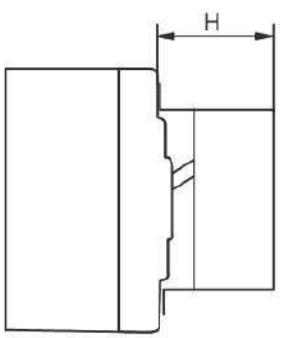


Fig.18 Installation dimensions of electric operating mechanism

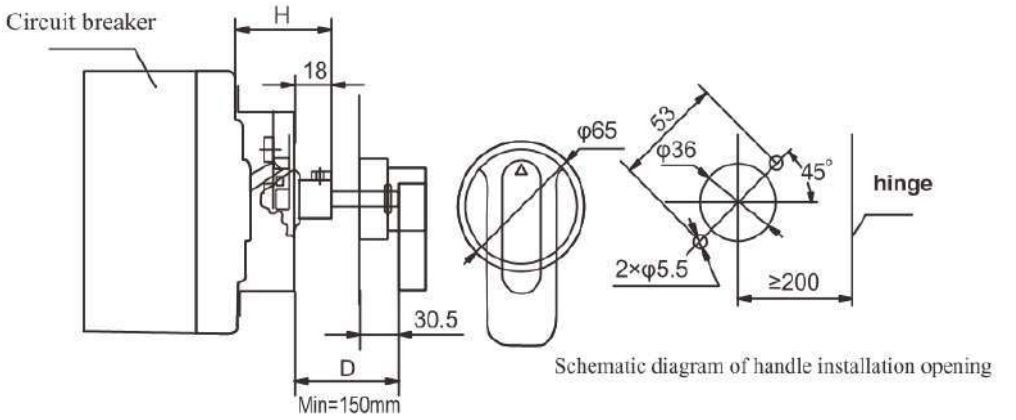


Fig.19 Installation dimensions of manual operatingmechanism

Table 9 Installation dimensions of electric operating mechanisms

Type	63、125	63R、125R、160	250	400、630	800
Installation dimension H	95	95	100. 5	95	143

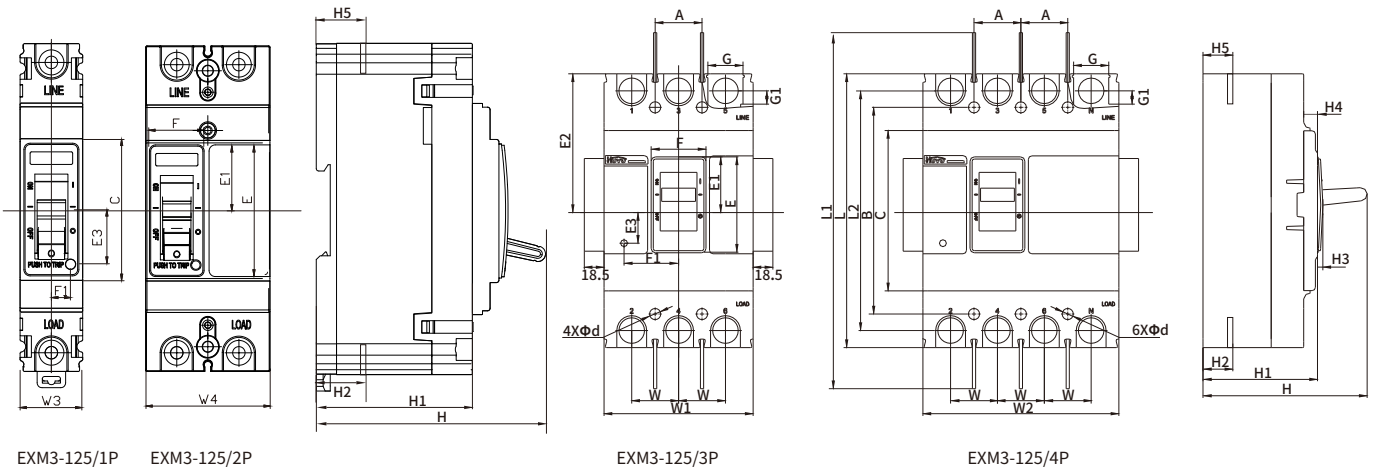
Table 10 Installation dimensions of manual operating mechanisms

Type	63、125	63R、125R、160	250	400、630	800
Installation dimension H	56	56	58	76	87

Overall and mounting dimensions

6.1 EXM3-63、125、160、250、400、630、800 The shape and installation size of the front boardwiring are shown in Fig.20 and Table 11.
6.2 The rear wiring,plug-in shape and installation size of EXM3 series circuit breaker are shownin Fig.21,Fig.22,Fig23,Fig24 and Table 12.
6.3 EXM3 series circuit breaker rear board wiring,plug-in special specifications need to be used toreduce capacity,capacity reduction current comparison table is shown in Table 13.

Figure 15



EXM3-125/1P EXM3-125/2P EXM3-125/3P EXM3-125/4P

Fig.20 Front board wiring shape and installation size of EXM3-63 to 800

Table 11 Front board wiring shape and installation size of EXM3-63 to 800

Category	Size code	Product model				
		EXM3-63 EXM3-125 2P/3P/4P	EXM3-160	EXM3-250	EXM3-400 EXM3-630	EXM3-800
Outline dimensions (mm)	C	83.5	97.5	104	150	156
	E	53	48.6	51.8	93	91
	E1	25.8	28	32.2	51.5	45.5
	E2	65.5	75	82.7	128.5	135
	E3	19.9	15	15.5	26.5	32
	F	22	27.5	34.8	54	53
	F1	16.5	37	43	57	58.5
	G	18.5	18.3	23.5	31.5	41
	G1	8.5	7.2	11.5	13	16
	H	87.9	93	95	156	160
	H1	66. 7	75.4	74	108	117
	H2	24.7	26	23.5	38(400)/40(630)	44
	H3	4	3.2	4.6	7.5	6
	H4	11	12	11.5	8.5	13
	H5	24.7	23	25	38(400)/40(630)	45.5
	L	131	150	165.5	257	270
	L1	229	250	289	480	486
	L2	116	132	145	225	235
	W	25	30	35	44	58

Category	Size code	Product model				
		EXM3-63 EXM3-125 2P/3P/4P	EXM3-160	EXM3-250	EXM3-400 EXM3-630	EXM3-800
Outline dimensions (mm)	W1	75	92	107	140	180
	W2	100	122	140	184	240
Mounting dimensions (mm)	A	25	30	35	44	58
	B	111	129	127	215	200
	Φd	4.2	4.5	5	6.5	7

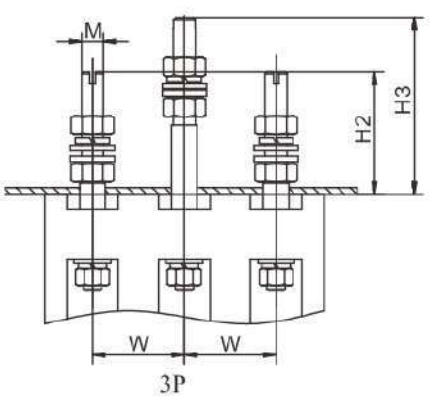


Fig.21 Back board wiring shape and installation size of EXM3-160 board

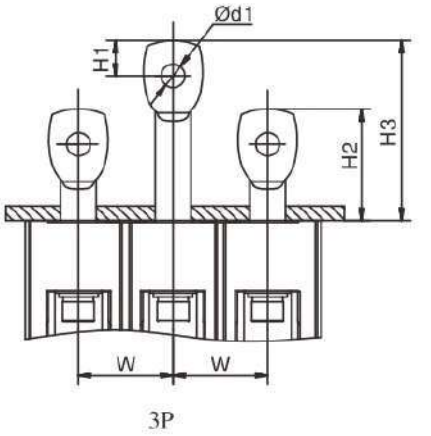


Fig.22 Back board wiring shape and installaion size of EXM3-250、400、630、800

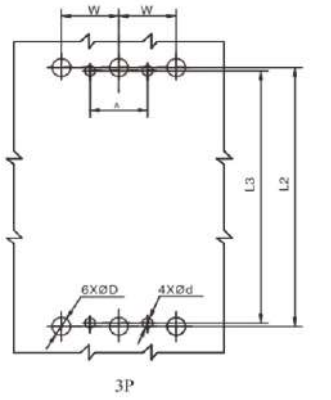


Fig.23 Opening hole drawing of back board wiring

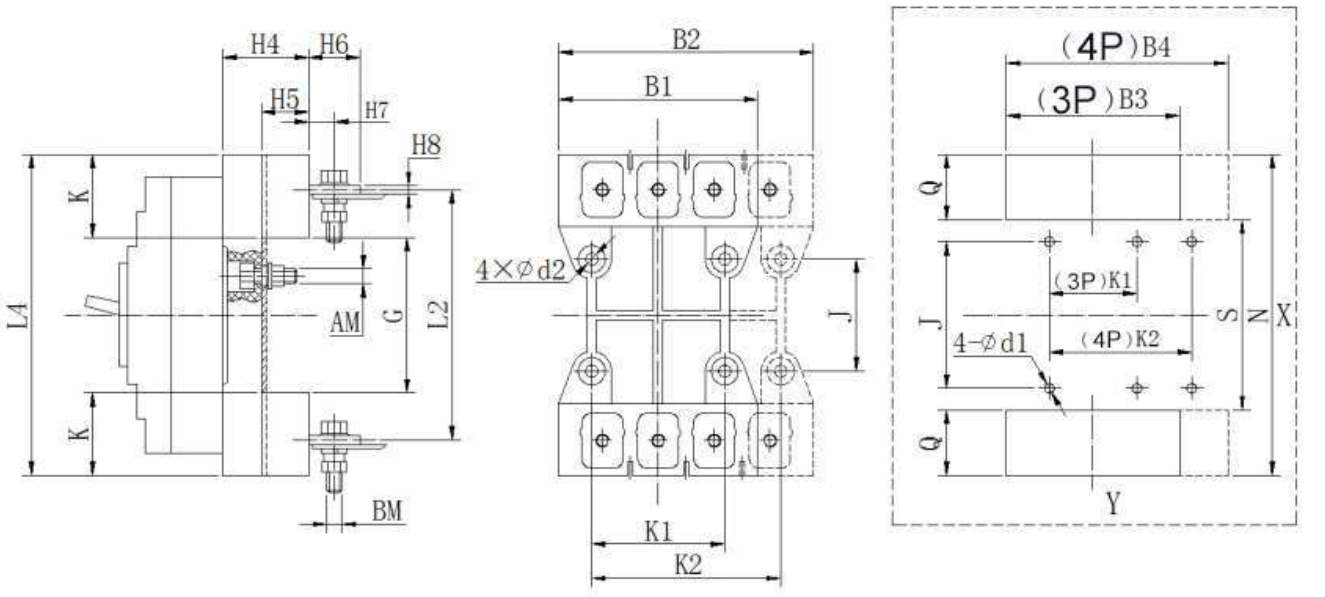


Fig.24 EXM3 Series plug-in shape and installation size

Table 12 Back board wiring and plug-in shape and installation dimensions

Category	Size code	Product model				
		EXM3-63 EXM3-125	EXM3-160	EXM3-250	EXM3-400 EXM3-630	EXM3-800
Outline dimensions (mm)	W	25	30	35	44	58
	H1	7	/	/	/	21
	H2	43.5	51	51	70	65
	H3	43.5	70	82	120	108
	H4	28.5	50	50	60	59
	H5	18	33	33	40	40
	H6	16	28	37	44	48
	H7	10	17	18	22	20
	H8	2	4	5.5	8	11
	ϕd1	5.5	6.5	6.5	8.5	16
	AM	M5	M6	M6	M8	M8
	BM	M5	M8	M8	M10	M12
Installation dimension (mm)	ϕd2	5.5	6.5	6.5	8	9
	ϕD	8	12	14	32	40
	L2	116	132	145	225	235
	L3	111	129	127	215	200
	L4	132	168	186	280	299
	J	58	58	54	143	123
	K	17.5	38	46	50	64.5
	K1	50	60	70	88	100
	K2	75	90	105	132	/
	B1	75	91	107	144	181
	B2	100	125	145	190	/
	B3	83	101	117	149	186
	B4	110	135	155	200	/
	G	97	92	94	175	170
	N	142	178	196	290	315
	S	87	82	84	170	165
	Q	28	48	56	60	75
	ϕd	4.5	6.5	6.5	6.5	7

Table 12 Back board wiring and plug-in shape and installation dimensions

Type	Rated current(A)	Insert and back-board wiring Volume drop using current(A)	Remarks
EXM3-160	160	140	Current specifications not specified in the table do not require capacity reduction
EXM3-400	400	400	
EXM3-630	500	450	
	630	520	
EXM3-800	700	650	
	800	720	

EXM3L Earth Leakage Circuit Breaker
Functions and Features

Product description

Product standards

The ELCB comply with IEC 60947-2 and GB/T 14048.2 standards.

Features

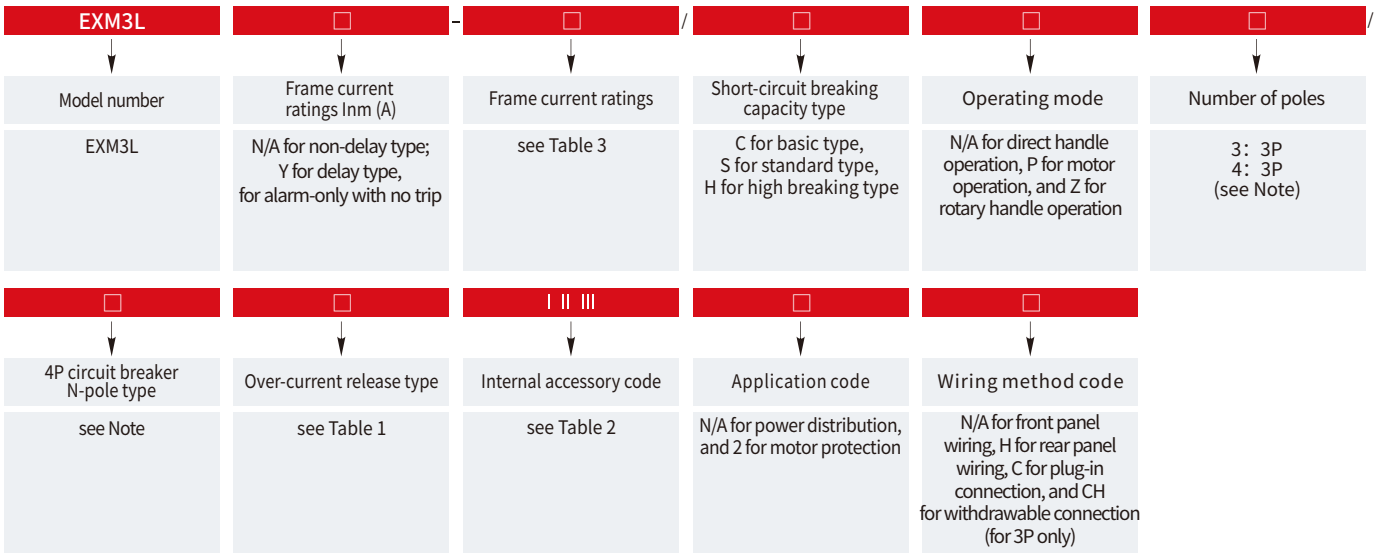
- Frame rating： 125A、160A、250A、400A、630A、800A
- Rated operating voltage Ue(AC)： 380V/400V/415V
- Breaking capacity code： C、S、H
- Number of poles： 3P、4P
- Release type:electromagnetic, thermal magnetic
- Installation method: fixed, plug-in
- Certification: CCC、CB、C

Normal operating conditions

1.Applicable temperature: Ambient air temperature: -5℃ to +40℃ , with the average temperature not exceeding +35℃ within 24 hours;
Note: The operating ambient temperature can be extended to -35℃∽+70℃. When -5℃∽+40℃ is exceeded, follow the instructions or data specified in the product catalogue, or consult the manufacturer;
2.Altitude: ⩽2,000m for mounting site (please consult with the manufacturer when above 2,000m);
3.Atmospheric conditions:
Air relative humidity: ⩽50% at the maximum temperature of +40℃,and a higher relative humidity is allowed when at a lower temperature;
In the wettest month, the average maximum relative humidity is up to 90% and the average minimum temperature is up to +25℃ , taking into account the condensation on product surface due to temperature changes;
4.Pollution level: Level 3;
5.Mounting type: III for main circuit;
6.Mounting conditions:
In places with no significant shaking, impulse and vibration;
In a medium with no explosive hazards, containing no gas and dust (including conductive dust) sufficient enough to corrode metals and damage insulation;
And in places with no rain/snow impact;
The inclination angle between the mounting and vertical surfaces should not exceed 5°;
7.The external magnetic field close to the mounting site should not exceed 5 times the geomagnetic field in any direction;
8.Storage and transportation conditions:
Storage and transportation conditions:
Temperature range: -35℃to +70℃, with the relative humidity not exceeding 90%;
During transportation, handle with care, no upside down, and avoid severe collisions.
9.Protection degree: IP30 (wiring terminals excluded)
10.Residual current type: Type AC residual current circuit breaker  ;Type A residual current circuit breaker  .

EXM3L Earth Leakage Circuit Breaker
Functions and Features

Product selection



Note: For 4P devices, two N-pole types are available

Type A: No over-current release is mounted on N-pole, and N-pole is always on without simultaneous opening/closing with the other three poles

Type B: No over-current is mounted on N-pole, and N-pole can be opened/closed simultaneously with the other three poles (first closed, then open for N-pole)

Table 1. Over-current release type

No.	Name	Description
1	Time delay release	Offer over-current inverse time protection characteristics
2	Instantaneous release	Electromagnetic type release, offering over-current instantaneous protection characteristics
3	Bi-function release	Offer both over-current inverse time protection characteristics, and over-current instantaneous protection characteristics

Table 2. Internal accessory code

Inm（A）	I		II		III		Remark
	Code	Description	Code	Description	Code	Description	
125、160、250	0	N/A	0～1	Numbers of auxiliary contact pairs	0～2	Number of alarm contact pairs	
	1	Shunt release	0～1		0～1		
	/	/	/		0～1		
400 630	0	N/A	0～3		0～2		II＋III≤5
	1	Shunt release	0～1		0～1		II＋III≤2
	2	Under-voltage release	0～1		0～1		II＋III≤2
800	0	N/A	0～6		0～3		II＋III≤9
	1	Shunt release	0～4		0～2		II＋III≤6
	2	Under-voltage release	0～4		0～2		II＋III≤6

Technical data and performance

1、Table 3:Key technical date of 125, 160, 250,400, 630 and 800 frames

Frame size		EXM3L-125			EXM3L-160			EXM3L-250		
Product model		C	S	H	C	S	H	C	S	H
Rated current In (A)		16、20、25、30、32、40、50、60、63、65、70、75、80、90、100、110、125			16、20、25、30、32、40、50、60、63、65、70、75、80、90、100、110、125、140、150、160			100、125、140、150、160、170、175、180、200、225、250		
Number of poles		3P/4P								
Rated insulation voltage Ui (V)		AC1000								
Rated impulse withstand voltage Uimp (kV)		8								
Arcing distance (mm)		⩽50								
Rated ultimate/operating short-circuit breaking capacity Icu/Ics (415V)		20/10	36/25	50/36	20/10	36/25	50/36	20/15	36/25	50/36
Rated residual operating current I△n	Non-delay type	Three adjustable settings								
	Delay type	30mA（only for non-delay type）/50mA /100mA /200 mA /300mA /400mA /500mA /600mA /800mA /1000mA								
Rated residual no operating current I△no (mA)		1 /2 I△n								
Rated residual short-circuit making/ breaking capacity I△m (kA)		1/4 Icu								
Mechanical life (operations)	Maintenance free	20000								
	With maintenance	40000								
Electrical life (operations)	AC415V	10000								

2、Maximum breaking time for non-delay type RCCB. See Table 4.

t(s) / Inm(A) / I△n(mA) / I△	125、160、250、400、630、800	
	30	50/100/200/300/400/500/600/800/1000
I△n	⩽0.1	⩽0.3
0.25A	⩽0.04	——
2I△n	——	⩽0.15
5I△n	——	⩽0.04
10I△n	——	⩽0.04

3、Delay type

The ultimate non-actuation time is specified to 2I△n for the delay type RCCBs, and see Table 5 for the actuation characteristics

4、See Table 3 for the RCCB's basic parameters

5、Operating reliability due to power supply voltage fault

5.1、At 0.85 Ue and with any phase disconnected to the three-phase power supply, when the residual current I△=I△n, the circuit breaker can still break reliably.

5.2、When the phase line to neutral line voltage of the three-phase power supply drops to 50V, if the residual current I△=I△n, the circuit breaker can still break reliably.

EXM3L-400			EXM3L-630			EXM3L-800		
C	S	H	C	S	H	C	S	H
250、280、300、315、320、350、380、400			250、280、300、315、320、350、380、400、450、500、550、600、630			400、500、630、700、800		
3P/4P								
AC1000								
12								
⩽100								
40/30	50/36	70/50	40/30	50/36	70/50	40/30	50/36	70/50
Three adjustable settings 30mA（only for non-delay type）/50 mA /100 mA /200 mA /300 mA /400 mA /500 mA /600 mA /800 mA /1000 mA								
1 /2 I△n								
1/4 Icu								
10000						8000		
20000						10000		
8000						5000		

Table 5. Actuation characteristics of delay type RCCBs

t(s) / Inm(A) / tn(s) / I△	125、160、250、400、630、800			
	0.2	0.4	1	2
I△n	0.2	0.6	1.2	2.2
2I△n	＞0.1	＞0.2	＞0.5	＞1
5I△n、10I△n	0.1⩽t＜0.15	0.2⩽t＜0.44	0.5⩽t＜1.04	1⩽t＜2.04
Note: tn is time delay setting				

6、 Residual current operating data

Type AC residual current operating data: The minimum rated residual non-operating current is 0.5 I△n and the maximum is 1 I△n;

Type A residual current operating data: See Table 6

Table 6. Residual current action values

Anglea	Tripping current/A	
	Upper limit	Lower limit
0°	0.35I△n	I△n⩽0.015 A，0.03A or I△n＞0.015 A，1.4I△n
90°	0.25I△n	
135°	0.11I△n	

7、Over-current protection characteristics: See Table 7 for power distribution use and Table 8 for motor use.

Table 7. Over-current protection characteristics of the power distribution use RCCBs

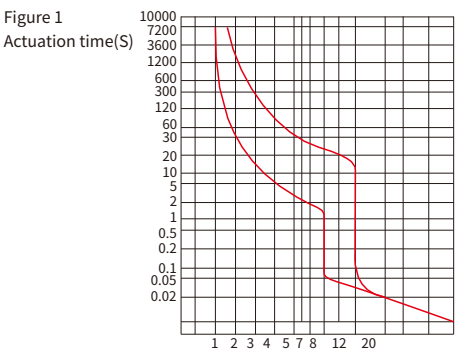
Rated current In (A)	Thermal release (ambient temperature +40°C)		Electromagnetic release operating current (A) (Note)
	1.05In non-operating time (h) (Start state: Cold state)	1.30In operating time (h) (Start state: Thermal state)	
63	＞1	≤1	(10±2)In
＞63	＞2	≤2	

Table 8. Over-current protection characteristics of the motor use RCCBs.

Rated current In (A)	Thermal release (ambient temperature +40°C)				Electromagnetic release operating current (A) (Note)
	1.05In non-operating time (h) (Start state: Cold state)	1.2In operating time (h) (Start state: Thermal state)	1.5In operating time (min) (Start state: Thermal state)	7.2In operating time (s) (Start state: Thermal state)	
In≤63	＞2	≤2	≤2	2＜Tp≤10	(12±2.4)In
63＜In≤250			≤4	4＜Tp≤10	
250＜In≤800			≤8	6＜Tp≤20	

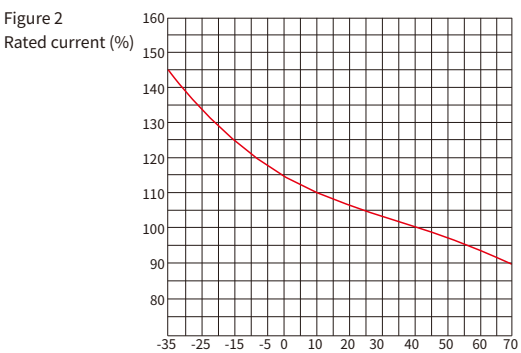
8、 See Figure 1 to Figure 12 for the RCCB's inverse time characteristic curves and temperature correction curves

Figure 1



EXM3L-125 operating characteristic curve

Figure 2

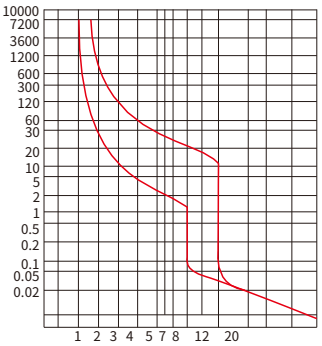


EXM3L-125 temperature compensation curve

EXM3L Earth Leakage Circuit Breaker

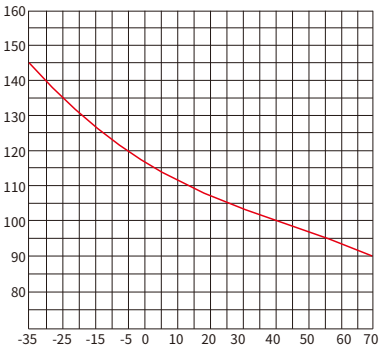
Functions and Features

Figure 3
Actuation time(S)



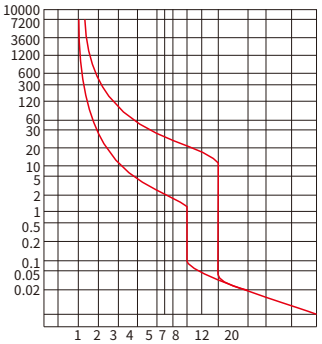
Rated current multiple
EXM3L-160 operating characteristic curve

Figure 4
Rated current (%)



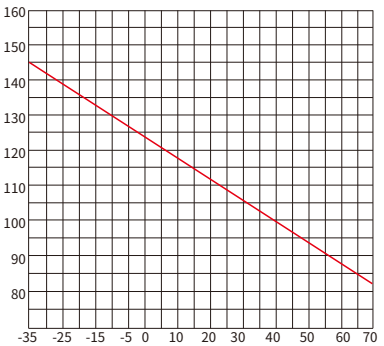
Ambient temperature (°C)
EXM3L-160 temperature compensation curve

Figure 5
Actuation time(S)



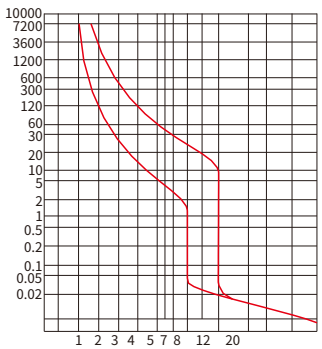
Rated current multiple
EXM3L-250 operating characteristic curve

Figure 6
Rated current (%)



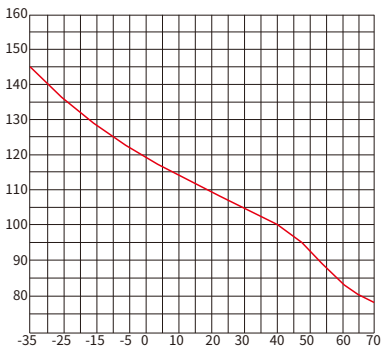
Ambient temperature (°C)
EXM3L-250 temperature compensation curve

Figure 7
Actuation time(S)



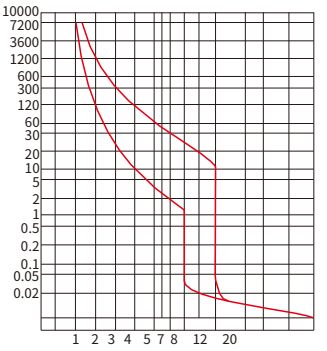
Rated current multiple
EXM3L-400 operating characteristic curve

Figure 8
Rated current (%)



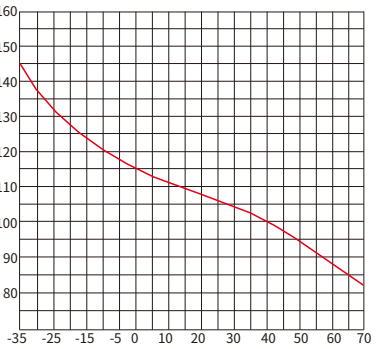
Ambient temperature (°C)
EXM3L-400 temperature compensation curve

Figure 9
Actuation time(S)



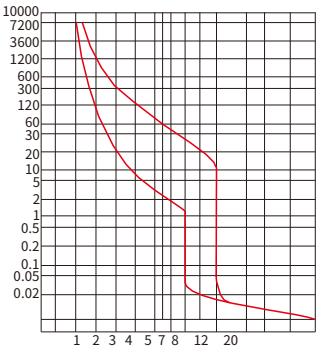
Rated current multiple
EXM3L-630 operating characteristic curve

Figure 10
Rated current (%)



Ambient temperature (°C)
EXM3L-630 temperature compensation curve

Figure 11
Actuation time(S)



Rated current multiple
EXM3L-800 operating characteristic curve

Figure 12
Rated current (%)

Ambient temperature (°C)
EXM3L-800 temperature compensation curve

Overall and mounting dimensions

1、 See Figure 13 and Table 9 for EXM3L-125, 160, 250, 400,630 and 800 front panel wiring outlines and mounting dimensions

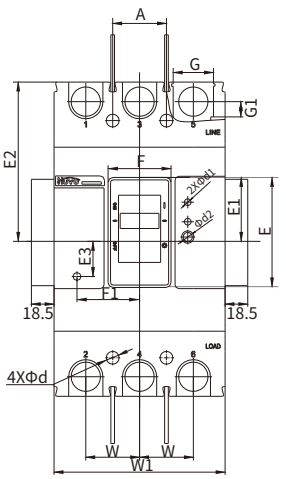


Figure 13

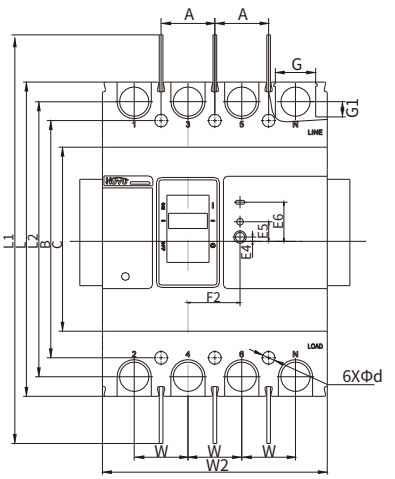


Figure 14

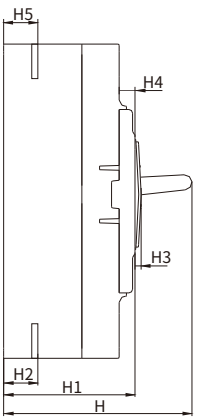


Figure 15

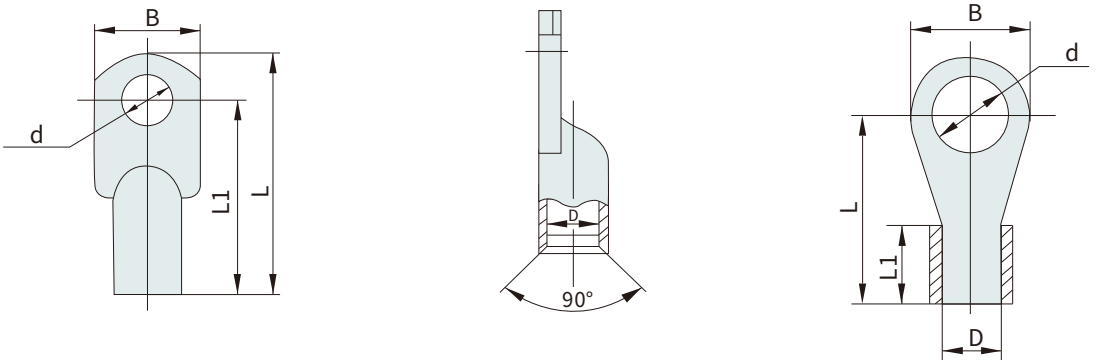
3、 EXM3L-125, 160, 250, 400,630 and 800 front panel wiring outlines and mounting dimensions

Table 9

Category	Dimension Code	Product model			
		EXM3L-125 EXM3L-160	EXM3L-250	EXM3L-400 EXM3L-630	EXM3L-800
Outline dimensions (mm)	C	99.5	103	150	207
	E	48.5	51.5	90	90
	E1	26.5	32.5	50.5	50.5
	E2	77.5	82.5	128.5	140.5
	E3	17	15.5	30.5	24.4
	E4	18.8	15.5	2.1	3P:21.5/4P:21
	E5	7.3	4	13.6	3P:9.7/4P:9.2
	E6	9.7	13	30.6	3P:6.8/4P:7.3
	F	27.5	34.8	51.5	63.5
	F1	37	43	51	52.7
	F2	32	37.5	44	3P:79.3/4P:80.3
	G	17.5	24.5	33	45
	G1	7.5	11.5	12.5	9.5
	H	91	92.5	155	157.5
	H1	72.5	72.5	107.5	115
	H2	23.5	25	29	42
	H3	3	4	5	8.2
	H4	12	11.5	13	11.7
	H5	23.5	25	29	41
	L	155	165	257	281
	L1	253	360	477	487
	L2	134	145	225	243
	W	30	35	44	70
	W1	90	105	140	210
	W2	120	140	184	280
	N1	4	4	4	4
	N2	9	9	9	10.2
	Φd2	9.5	9.5	10	8
Mounting dimensions (mm)	A	30	35	44	70
	B	132	126	194	243
	Φd	5	5	6.5	7.5

EXM3L Earth Leakage Circuit Breaker

Functions and Features



Item	Rated current(A)	Cross Section (mm^2)	Terminal type	B	L	L1	D	d	Reamrk
EXM3L-63 EXM3L-125	10、16、20	2.5	JBC2.5-5	10.4	18.2	9	¢2.6	¢5.2	
	25	4	JBC4-5	11.7	20.2	9	¢2.8	¢5.2	
	32	6	JBC6-5	12.8	22.6	10.3	¢3.5	¢5.2	
	40、50	10	JBC10-5	13.7	25.3	12.2	¢4.2	¢5.2	
	63	16	JBC16-5	12.5	38	31.5	¢6	¢5.2	
	80	25	JBC25-8	14	46	38.5	¢7	¢8.2	
	100	35	JBC35-8	15.5	52	44.5	¢8	¢8.2	
	125	50	JBC50-8	17	54	45	¢10	¢8.2	
EXM3L-160	16、20	2.5	JBC2.5-8	15	24.5	8.5	¢2.6	¢8.2	
	25	4	JBC4-8	13.4	20.4	9.2	¢2.8	¢8.2	
	32	6	JBC6-8	15	24.5	10	¢3.5	¢8.2	
	40、50	10	JBC10-8	15	24.5	11	¢4.5	¢8.2	
	63	16	JBC16-8	12.5	41	33.5	¢6	¢8.2	
	80	25	JBC25-8	14	46	38.5	¢7	¢8.2	
	100	35	JBC35-8	15.5	52	44.5	¢8	¢8.2	
	125、140	50	JBC50-8	17	54	45	¢10	¢8.2	
	150、160	70	JBC70-8	17	54	45	¢10	¢8.2	
EXM3L-250	100	35	JBC35-8	15.5	52	44.5	¢8	¢8.2	
	125、140	50	JBC50-8	17	54	45	¢10	¢8.2	
	150、160	70	JBC70-8	21.6	61	52	¢11	¢8.2	
	180、200、225、250	95	JBC95-8	22	66	57	¢13	¢8.2	
EXM3L-400 EXM3L-630	250、280、300	120	DT120-13	28	96	80	¢15	¢13	Front plate+Terminal
	315、320、350	185	DT185-16.5	36	115	96	¢18	¢16.5	Front plate+Terminal
	380、400	240	DT240-16.5	40	120	100	¢20	¢16.5	Front plate+Terminal
	500	150×2	DT150-13	32	103	86	¢16	¢13	Front plate+Terminal
	630	185×2	DT185-16.5	36	115	96	¢18	¢16.5	Front plate+Terminal

EXM3E Electronic-type Moulded Case Circuit Breakers

Functions and Features

Product description

Product standards

The circuit breakers are in accordance with GB/T 14048.2 and IEC 60947-2 standards.

Features

- Frame rating: 125A, 160A, 250A, 400A, 630A, 800A, 1000A, 1250A
- Rated working voltage Ue(AC): 220V/230V/240V, 380V/400V/415V, 500V, 690V
- Breaking capacity code: C, S, H, R
- Number of poles: 3P, 4P
- Release type: electronic
- Installation method: fixed, plug-in
- Certification: CCC, CB

Normal operating conditions

1.Applicable temperature:
Ambient air temperature: -5℃to +40℃, with the average temperature not exceeding +35℃ within 24 hours;
Note: The operating ambient temperature can be extended to 35℃～-5℃ or +40℃～+70℃. Please follow the instructions or data specified in the product catalogue and instruction manual, or consult the manufacturer;

2.Altitude: ≤2,000m for mounting site (please consult with the manufacturer when above 2,000m);

3.Atmospheric conditions:
Air relative humidity: ≤50% at the maximum temperature of +40℃,and a higher relative humidity is allowed when at a lower temperature;
In the wettest month, the average maximum relative humidity is 90% and the average minimum temperature is +25℃, taking into account the condensation on product surface due to temperature changes;

4.Pollution level: Level 3;

5.Mounting type: III for main circuit;

6.Protection degree: IP30 (wiring terminals excluded)

7.Mounting conditions:
In places with no significant shaking, impulse and vibration;
In a medium with no explosive hazards, containing no gas and dust (including conductive dust) sufficient enough to corrode metals and damage insulation;
And in places with no rain/snow impact;

8.Storage and transportation conditions:
Temperature: -35℃ to +70℃ for storage and transportation, with the relative humidity not exceeding 90%;
During transportation, handle with care, no upside down, and avoid severe collisions.

Product selection

EXM3E	- □	/ □	□
Model number	Frame current ratings Inm (A)	Breaking capacity type	Number of poles
EXM3E	N/A for non-delay type; Y for delay type, for alarm-only with no trip	C for basic type S for standard type H for high breaking type	3P 4P

□	□	I II III	□
4P circuit breaker N-pole type	Electronic type release code	Internal accessory code	Controller function code
see Note1		see Table 1	see Note 2

Note: For 4P devices, two N-pole types are available

-Type A: N-pole is always on, without simultaneous opening/closing with the other three poles

-Type B: N-pole can be opened/closed simultaneously with the other three poles

-Note 2: Basic type: N/A; Extended type: E1; Communication type: E2

Table 1. Internal accessory code

Inm（A）	I		II		III		Remark
	Code	Description	Code	Description	Code	Description	
125、160、250	0	N/A	0～2	Numbers of auxiliary contact pairs	0～2	Number of alarm contact pairs	
	1	Shunt release	0～1		0～1		
	2	Under-voltage release	0～1		0～1		
400 630	0	N/A	0～5		0～2		II＋III≤7
	1	Shunt release	0～3		0～2		II＋III≤5
	2	Under-voltage release	0～3		0～2		II＋III≤5
	3	Shunt and under-voltage release	0～1		0～1		II＋III≤2
800	0	N/A	0～8		0～3		II＋III≤11
	1	Shunt release	0～6		0～3		II＋III≤8
	2	Under-voltage release	0～6		0～3		II＋III≤8
	3	Shunt and under-voltage release	0～3		0～2		II＋III≤5
1000 1250	0	N/A	0～4		0		II＋III≤4
	1	Shunt release	0～2		0		II＋III≤2

EXM3E Electronic-type Moulded Case Circuit Breakers

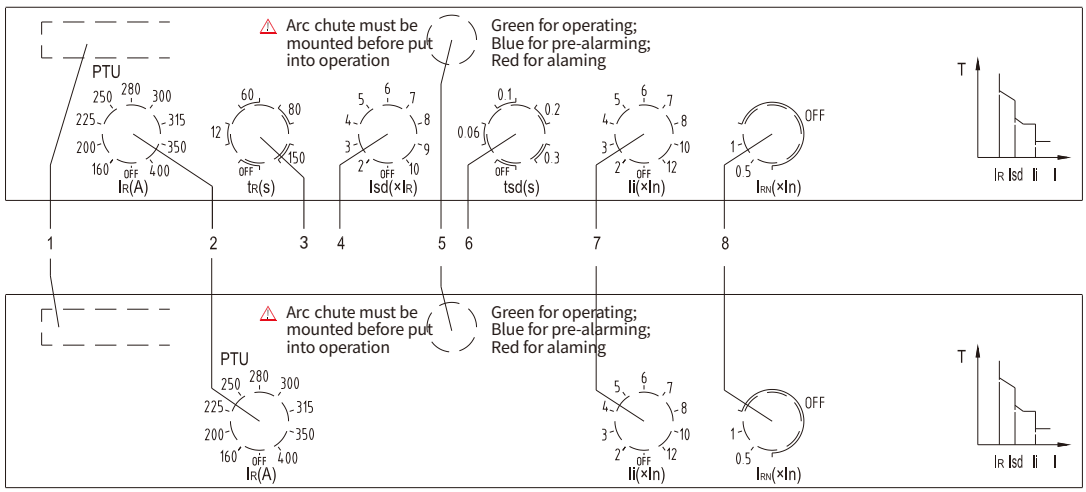
Functions and Features

1、Table 2:technical data

Frame size		EXM3E-125			EXM3E-160			EXM3E-250			EXM3E-400		
Product model		C	S	H	C	S	H	C	S	H	C	S	H
Rated current In (A)		125			160			250			400		
Number of poles		3P/4P											
Rated insulation voltage Ui (V)		AC1000											
Rated impulse withstand voltage Uimp (kV)		8									12		
Arcing distance (mm)		⩽50									⩽100		
Rated ultimate/ operating short-circuit breaking capacity Icu/Ics (kA)	690V	8/4	8/4	10/5	8/4	8/4	10/5	8/5	8/5	10/5	10/10	10/10	15/10
	500V	—	—	30/30	—	—	30/30	—	—	30/30	—	—	36/36
	400/415V	20/10	36/25	50/36	20/10	36/25	50/36	20/15	36/25	50/36	40/30	50/36	70/50
	240V	40/20	50/30	75/50	40/20	50/30	75/50	40/30	50/30	75/50	50/50	75/50	100/75
Rated short-time withstand current Icw (kA/1s)	AC415V	—			—			5					
Mechanical life (operations)	Maintenance free	20000									10000		
	With maintenance	40000									20000		
Electrical life (operations)	AC415V	10000									8000		

2、Electronic type release

Figure 1



①. Hand-held test unit interface; ②. Over-load long delay current setting; ③. Overload long delay time setting;

④. Short-circuit short delay current setting; ⑤. Operating pre-alarm and over-current indicator;

⑥. Short-circuit short delay time setting; ⑦. Short-circuit instantaneous current setting;

⑧. N-pole protection setting (not available for 3P devices)

EXM3E Electronic-type Moulded Case Circuit Breakers

Functions and Features

Table 3:technical data

Frame size		EXM3E-630			EXM3E-800		EXM3E-1000		EXM3E-1250	
Product model		C	S	H	S	H	S	H	S	H
Rated current In (A)		630			800		1000		1250	
Number of poles		3P/4P								
Rated insulation voltage Ui (V)		AC1000								
Rated impulse withstand voltage Uimp (kV)		12								
Arcing distance (mm)		⩽100								
Rated ultimate/ operating short-circuit breaking capacity Icu/Ics (kA)	690V	10/10	10/10	15/10	20/10	30/20	20/10	30/20	20/10	30/20
	500V	—	—	36/36	—	—	—	—	—	—
	400/415V	40/30	50/36	70/50	50/36	70/50	50/36	70/50	50/36	70/50
	240V	50/50	75/50	100/75	—	—	75/50	100/75	75/50	100/75
Rated short-time withstand current Icw (kA/1s)	AC415V	10			10(AC400V)		20			
Mechanical life (operations)	Maintenance free	10000			8000		5000			
	With maintenance	20000			10000		10000			
Electrical life (operations)	AC415V	8000			5000		2500			

2.1 EXM3E control panel description

① Hand-held test unit interface (PTU): The hand-held test unit is used for controller testing and parameter reading and setting;

② Over-load long delay current (IR)setting: Can be adjusted by users with tools. See Table 3 for detailed settings;

③ Overload long delay time (tR) setting: Can be adjusted by users with tools. See Table 4 for detailed settings;

④ Short-circuit short delay current (Isd) setting: Can be adjusted by users with tools, including 10 settings with Isd=(2, 3, 4, 5, 6, 7, 8, 9, 10)×I R+OFF;

⑤ Operating pre-alarm and over-current indicator: Turn green after powered up; blue with the operating current at 0.9*IR, and red when at 1.05 times IR.The indicator will be off when the device trips;

⑥ Short-circuit short delay time tsd setting: Can be adjusted by users with tools. See Table 5 for detailed settings;

⑦. Short-circuit instantaneous current li setting: : Can be adjusted by users with tools, including 10 settings with Ii=(2, 3, 4, 5, 6, 7, 8, 9, 10, 12)×In + OFF;

⑧. N-pole protection setting (for 4P devices): Can be adjusted by users with tools. See Table 6 for detailed settings

Table 3. Rated current adjustment table

Inm（A）	In（A）	Setting current IR (A)
125	125	40-50-63-70-80-90-100-110-125
160	160	63-80-90-100-110-125-140-150-160
250	250	100-125-140-150-160-180-200-225-250
400	400	160-200-225-250-280-300-315-350-400
630	630	350-400-450-480-500-530-560-600-630
800	800	320-400-480-560-640-720-800
1000	1000	630-680-720-780-820-900-950-1000
1250	1250	630-700-800-900-1000-1100-1200-1250

Table 4. Rated current adjustment table

Test current description	Test current	Conventional duration (S)				
		TR settings				
		12	60	80	100	150
Conventional non-tripping current	$1.05I_R$	2h				
Conventional tripping current	$1.2I_R$	<1h				
	$1.5I_R$	212	107	142	178	267
	$2.0I_R$	12	60	80	100	120
	$7.2I_R$	0.9	4.6	6.2	7.7	11.6

Note: When Inm ⩽250A, the delay actuation time can be adjustable among 12s-60s-80s-100s
When Inm ⩾400A, the delay actuation time can be adjustable among 12s-60s-80s-150s

Table 5. Circuit breaker short-circuit short delay setting table

Fixed time and inverse time	Current		Basic type (fixed)	Extended type (adjustable with four settings)			
Fixed time	t_{sd}		0.3±0.06	0.06±0.02	0.1±0.03	0.2±0.04	0.3±0.06
Inverse time + fixed time (It2 ON)	If I＞8IR	Delay time（s）	0.3±0.06	0.06±0.02	0.1±0.03	0.2±0.04	0.3±0.06
	If I⩽8IR	Inverse time delay(s)	$T=(8I_R^2)\times t_{sd}^2/I$				
		Accuracy	±10%				

2.2 Additional description of common features of electronic type release
2.2.1 Basic data and key performance indicators of the electronic release (see Table 6)

Table 6. Release current settings and error of the release

Long delay		Short delay		Instantaneous		N-pole protection	
I_R	Error	Isd	Error	Ii	Error	In	Error
See Table 3	±10%	(2，3，4，5，6，7，8，9，10)×IR+OFF	±10%	(2，3，4，5，6，7，8，10，12)×In+OFF	±15%	(0.5、1)×In+OFF	±10%

2.2.2 Factory default settings of the release (when without customer requirements)

a) The overload long delay IR is set to the maximum current setting position, and tR to "12" position.

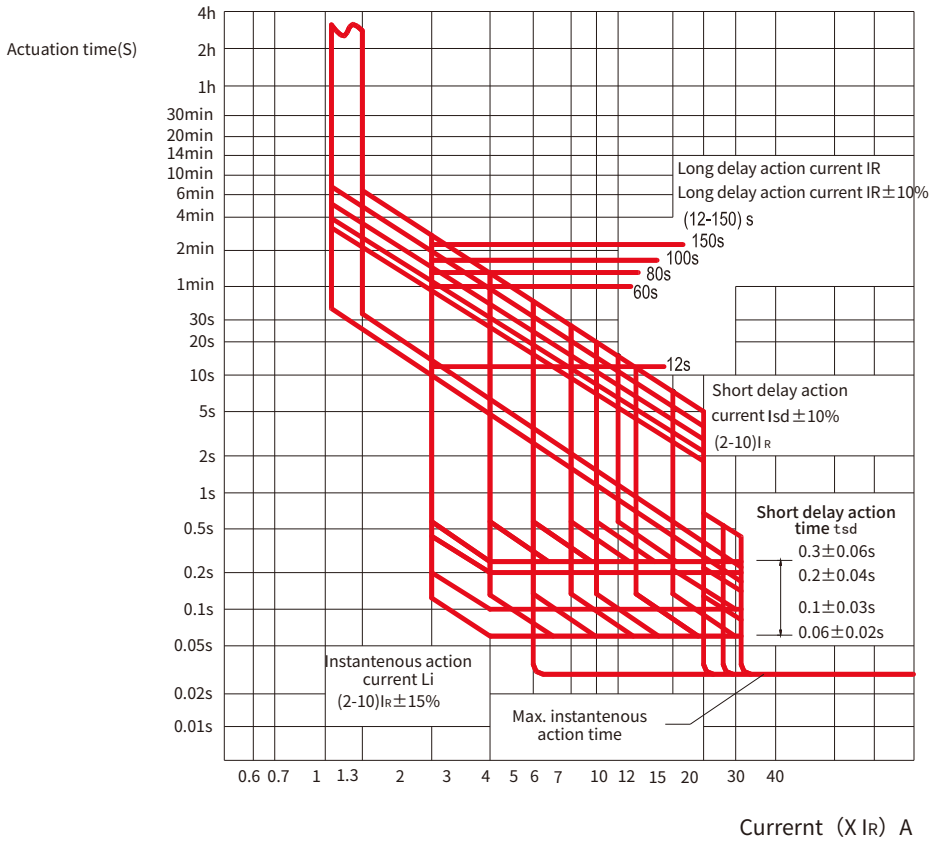
b) The short-circuit short delay Isd is set to "OFF" position for 125, 160, 250, 320 frames and to “8“position for other Frame sizes.

c) The short-circuit short delay tsd is set to 0.3s position.

d) The short-circuit instantaneous Ii is set to "12" position

e) The neutral pole protection is set to the "OFF" position.

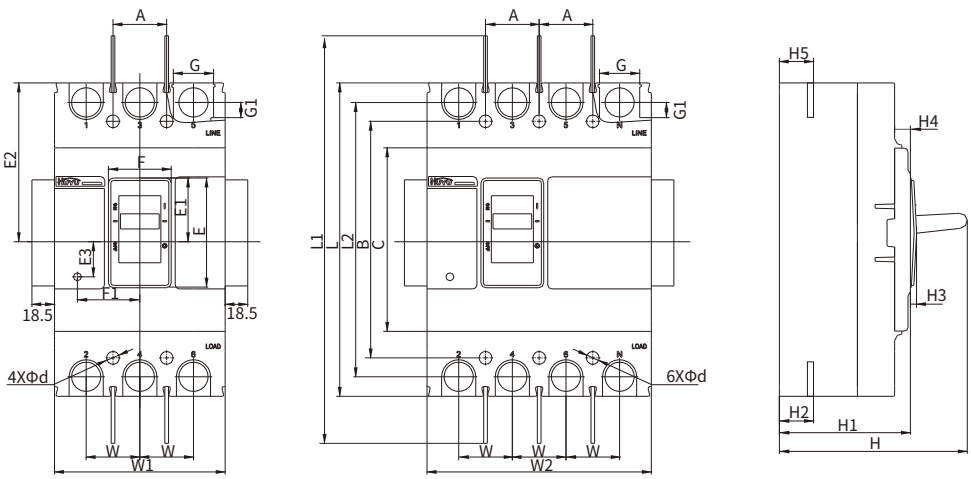
3. Circuit breaker's protection characteristic curves
Figure 2.



Overall and mounting dimensions

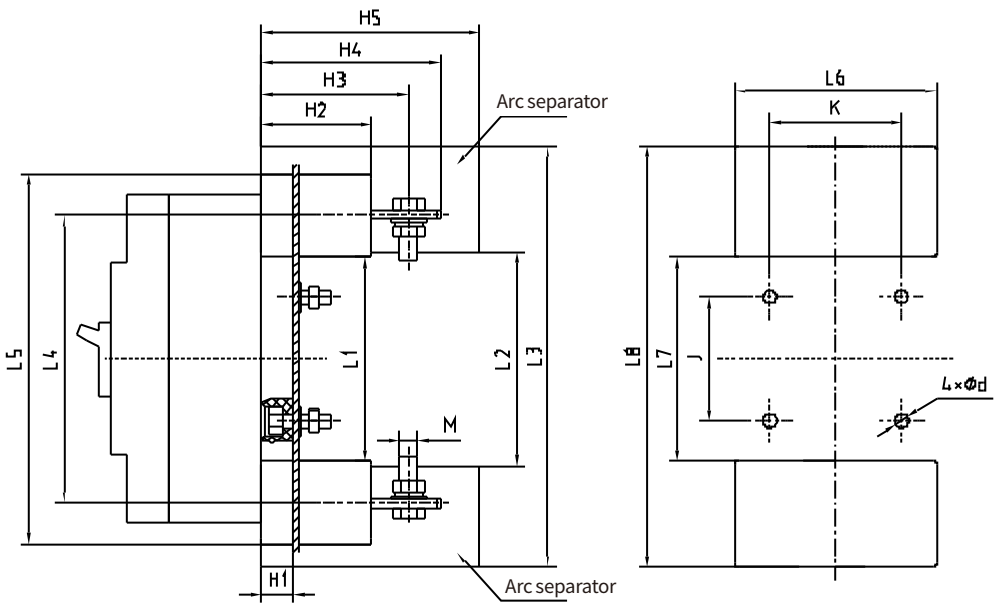
1、See Figure 3 and Table 7 for front panel wiring outlines and mounting dimensions

Figure 3



2、See Figure 4 and Table 8 for EXM3E series circuit breaker rear panel wiring and plug-in type outlines and mounting dimensions

Figure 4. Plug in appearance and installation dimensions



Installation drawing

Installation board opening diagram

Table 7. EXM3E-125, 160, 250, 400, 630,800,1000and 1250 front panel wiring outlines and mounting dimensions

Size category	Size Code	Product model				
		EXM3E-125 EXM3E-160	EXM3E-250	EXM3E-400 EXM3E-630	EXM3E-800	EXM3E-1000 EXM3E-1250
Installation size(mm)	C	99.5	103	150	211	179
	E	48.5	51.5	90	90	99
	E1	26.5	32.5	50.5	44.5	54.5
	E2	77.5	82.5	128.5	137.5	165
	E3	17	15.5	30.5	30.5	89.5
	F	27.5	34.8	51.5	51	77
	F1	37	43	51	78	30.5
	G	17.5	24.5	33	46	46.5
	G1	7.5	11.5	12.5	14	/
	H	91	92.5	155	155	192
	H1	72.5	72.5	107.5	107	147
	H2	23.5	25	29	46(44)	58
	H3	3	4	5	5	7
	H4	12	11.5	13	10	9
	H5	23.5	25	29	46(44)	42.5
	L	155	165	257	275	330
	L1	253	360	477	487	/
	L2	134	145	225	243	/
	W	30	35	44	70	70
	W1	90	105	140	210	210
	W2	120	140	184	280	280
Mounting dimensions (mm)	A	30	35	44	70	70
	B	132	126	194	243	299
	Φd	5	5	6.5	7	9

Table 8. Rear panel wiring and plug-in type outlines and mounting dimensions

Size category	Size Code	Product model			
		EXM3E-125 EXM3E-160	EXM3E-250	EXM3E-400 EXM3E-630	EXM3E-800
Installation size(mm)	H1	17.5	18	22.5	17
	H2	50	50.5	82	69.5
	H3	66.5	68	114.5	119.5
	H4	81.5	85	128.5	173
	H5	100	105	150	No arc separator
	L1	98	93	180	187.2
	L2	107	89	173	No arc separator
	L3	184	189	281	No arc separator
	L4	134	144	199	242.2
	L5	174	183	281	297.2
	M	M8	M8	M10	M12
Installation Dimension (mm)	Φd	7	7	9	9
	L6	96	111	149	214
	L7	96	87	171	185
	L8	186	191	283	299
	K	60	70	88	140
	J	62	54	144	142.2

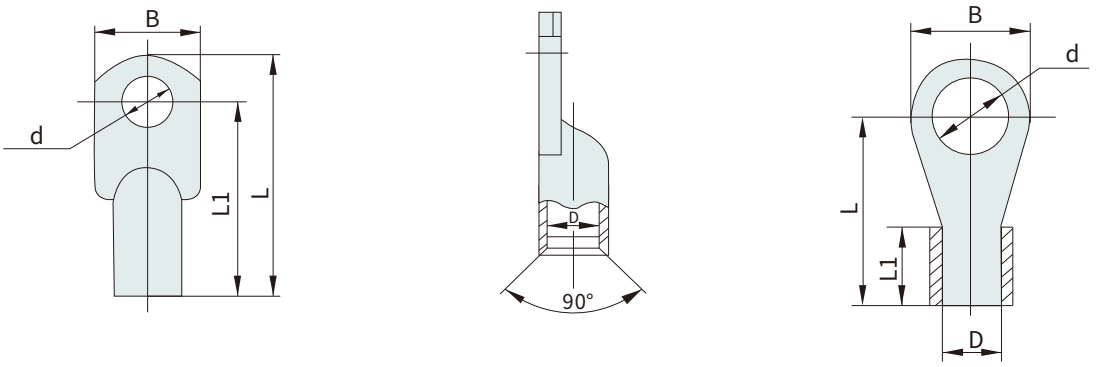
3、Derating is required for special specifications of EXM3 series circuit breakers rear panel wiring and plug-in types. Please see Table 9 for derating-use current comparison table.

Table9. Derating-use current comparison table for rear panel wiring and plug-in types

Product model	Rated current (A)	Derating use current for plug-in and rear panel wiring types (A)	Remark
EXM3-160	160	140	Derating is not needed for current ratings not specified int eh table
EXM3-630	500	450	
	630	520	
EXM3-800	700	650	
	800	720	

EXM3E Electronic-type Moulded Case Circuit Breakers

Functions and Features



Item	Rated current(A)	Cross Section (mm^2)	Terminal type	B	L	L1	D	d	Reamrk
EXM3E-63 EXM3E-125	10、16、20	2.5	JBC2.5-5	10.4	18.2	9	¢2.6	¢5.2	
	25	4	JBC4-5	11.7	20.2	9	¢2.8	¢5.2	
	32	6	JBC6-5	12.8	22.6	10.3	¢3.5	¢5.2	
	40、50	10	JBC10-5	13.7	25.3	12.2	¢4.2	¢5.2	
	63	16	JBC16-5	12.5	38	31.5	¢6	¢5.2	
	80	25	JBC25-8	14	46	38.5	¢7	¢8.2	
	100	35	JBC35-8	15.5	52	44.5	¢8	¢8.2	
	125	50	JBC50-8	17	54	45	¢10	¢8.2	
EXM3E-160	16、20	2.5	JBC2.5-8	15	24.5	8.5	¢2.6	¢8.2	
	25	4	JBC4-8	13.4	20.4	9.2	¢2.8	¢8.2	
	32	6	JBC6-8	15	24.5	10	¢3.5	¢8.2	
	40、50	10	JBC10-8	15	24.5	11	¢4.5	¢8.2	
	63	16	JBC16-8	12.5	41	33.5	¢6	¢8.2	
	80	25	JBC25-8	14	46	38.5	¢7	¢8.2	
	100	35	JBC35-8	15.5	52	44.5	¢8	¢8.2	
	125、140	50	JBC50-8	17	54	45	¢10	¢8.2	
	150、160	70	JBC70-8	17	54	45	¢10	¢8.2	
EXM3E-250	100	35	JBC35-8	15.5	52	44.5	¢8	¢8.2	
	125、140	50	JBC50-8	17	54	45	¢10	¢8.2	
	150、160	70	JBC70-8	21.6	61	52	¢11	¢8.2	
	180、200、225、250	95	JBC95-8	22	66	57	¢13	¢8.2	
EXM3E-400 EXM3E-630	250、280、300	120	DT120-13	28	96	80	¢15	¢13	Front plate+Terminal
	315、320、350	185	DT185-16.5	36	115	96	¢18	¢16.5	Front plate+Terminal
	380、400	240	DT240-16.5	40	120	100	¢20	¢16.5	Front plate+Terminal
	500	150×2	DT150-13	32	103	86	¢16	¢13	Front plate+Terminal
	630	185×2	DT185-16.5	36	115	96	¢18	¢16.5	Front plate+Terminal

Accessories for Explore MCCB

Accessories for Explore MCCB series

1、Table Accessory model summary table

Frame rated current Inm (A)			EXM3-63/125	EXM3-160 EXM3L-125/160 EXM3E-125/160	EXM3-250 EXM3L-250 EXM3E-250	EXM3-400/630 EXM3L-400/630 EXM3E-400/630	EXM3-800 EXM3E-800	EXM3L-800	EXM3E-1000 EXM3E-1250
Internal accessory	Alarm contact		B1	B2	B3	B4	B4	B5	/
	Auxiliary contact		F1	F2	F3	F4	F4	F5	F5
	Shunt release		FL1	FL2	FL3	FL4	FL4	FL5	FL5
	Under-voltage release		QY1	QY2	QY3	QY4	QY4	QY5	/
	Accessory wiring terminal			JX					/
External accessory	Rotary operating handle		CS1-63	CS1-100	CS1-250	CS1-400	CS1-800	CS1-800	/
	Motor operator		MDX0	MDX1	MDX2	MDX3	MDX4	MDX4	/
	Residual current alarm			LB(only for residual current devices)					/
	Mechanical interlocking	3P	N1-3	N2-3	N3-3	N4-3	N5-3	N5-3	/
		4P	——	N2-4	N3-4	N4-4	N5-4	N5-4	/

2、Ory contact and alarm contact ratings

Conventional thermal current Ith=6A

Rated operating current Ie=0.79A (230V AC), 0.47A (380V AC/400V AC/415V AC), 0.15A (110V DC/220V DC/250V DC)

3、Release data

Rated voltage Us:

AC: 110V, 230V, 400V, and input capacity: 180VA;

DC: 24V, 48V, 110V, and input capacity: 60W

At 70% to 110% of Us, the circuit breaker can perform reliable breaking, with actuation time of 10ms to 30ms.

The maximum length of the copper wire should meet the requirements set in Table 2, when the control power voltage of the shunt release is 24V DC.

Table 2. Maximum Length of the copper wire

Rated control power voltage Uc (DC24V) / Wire area	1.5mm²	2.5mm²
100% Uc	150m	250m
85% Uc	100m	160m

The schematic diagram of the shunt release is shown in the dashed box below

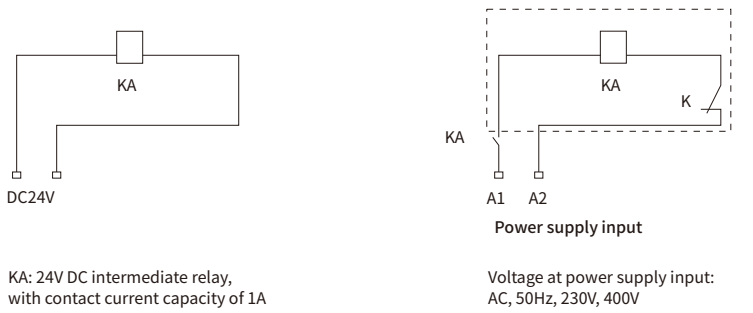


Figure 1. Shunt release control circuit design

4、Shunt release data

Rated voltage Ue: 110V AC, 230V AC, 400V AC, 24V DC, 48V DC, 110V DC

When the power supply is at 35% to 70% of Ue, the circuit breaker can perform reliable breaking with actuation time of 10ms to 30ms.

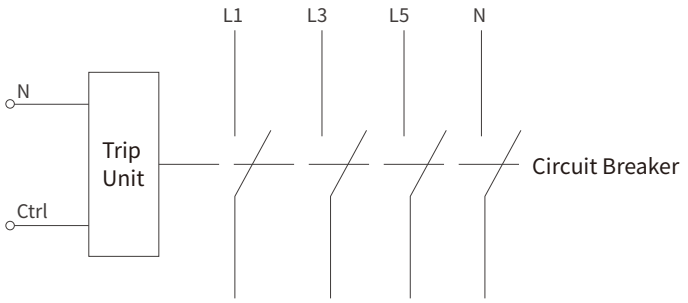
When the power supply is below 35% of Ue, the circuit breaker can be prevented from closing;

When the power supply is equal to or above 85% Ue, the circuit breaker can be closed reliably

5、Dedicated release for pre-paid ammeter

Rated operating voltage Ue: AC230V, AC240V, with 50Hz; when at 65% to 110% of Ue, the release can work normally.

When the Ctrl terminal is switched off, the circuit breaker will open with a time delay of 1s to 2s. The wiring diagram is shown in Figure 2.



Note: The naught line of the power supply is connected to the N-pole, and the Ctrl is connected to the control signal terminal of the prepaid ammeter, with the voltage Ue of AC230V, AC400V under 50Hz

Figure 2. Pre-paid ammeter dedicated trip unit wiring diagram

6、 LB type residual current alarm module

The LB type residual current alarm module should be mounted on the right side of the EXM3LB type residual current circuit breaker. Its wiring terminals P1-P2 are connected externally to an 400V AC or 230V AC power supply.

In the event of residual current fault in the circuit breaker's main circuit, and when I△≥I△n, the circuit breaker will not trip, the relay within the alarm module will then act, and the wiring terminals S1-S2, S3-S4 will be connected internally to the relay contacts to send out an alarm signal.

See Figure 3 for the wiring diagram and Figure 4 for the module outline diagram.

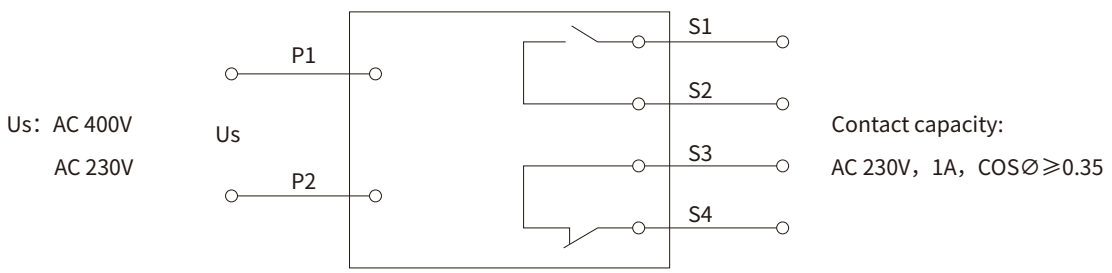


Figure 3. LB type residual current alarm module wiring diagram

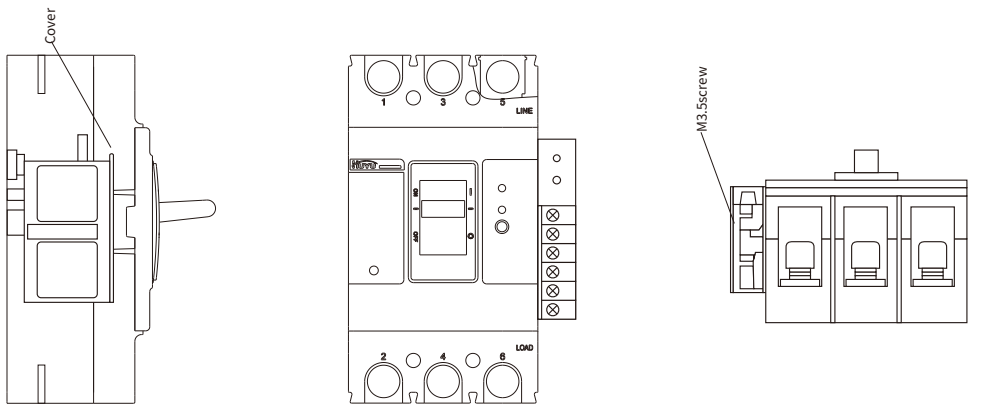


Figure 4. Lb type residual current alarm module outline diagram

7、See Table 3 for the data of the motor operator, and Figure 6 and Table 4 for its mounting dimensions.

Table 3. Key technical data for MDX type motor operator

Product model	EXM3-63/125	EXM3-160 EXM3L-125/160 EXM3E-125/160	EXM3-250 EXM3L-250 EXM3E-250	EXM3-400/630 EXM3L-400/630 EXM3E-400/630	EXM3-800 EXM3L-800 EXM3E-800
Motor operator model	MDX0	MDX1	MDX2	MDX3	MDX4
Rated operating voltage Ue (V)	AC 110V～230V，50Hz；DC 110V～220V				
Starting current (A)	⩽0.5			⩽2	
Actuation time (s)	⩽0.8				
Rated operating frequency (operations/h)	180			120	
Mechanical life (Operations)	15000		9000	5000	3000

The motor operator should have a power supply capacity large enough to ensure that the voltage applied to the motor operator under the starting current is not lower than 85% of Ue.

8、8.See Figure 5 for the wiring diagram of the motor operator

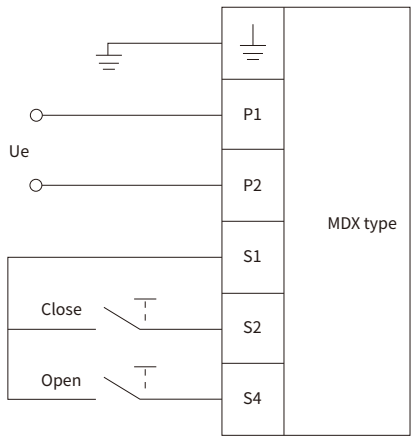


Figure 5. Wiring diagram of the MDX type motor operator

9、See Figure 7 and Table 5 for the manual operator

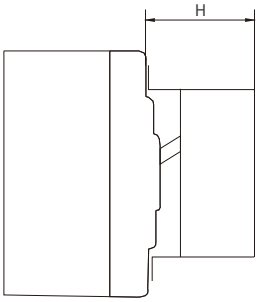


Figure 6. Mounting dimensions of the motor operator

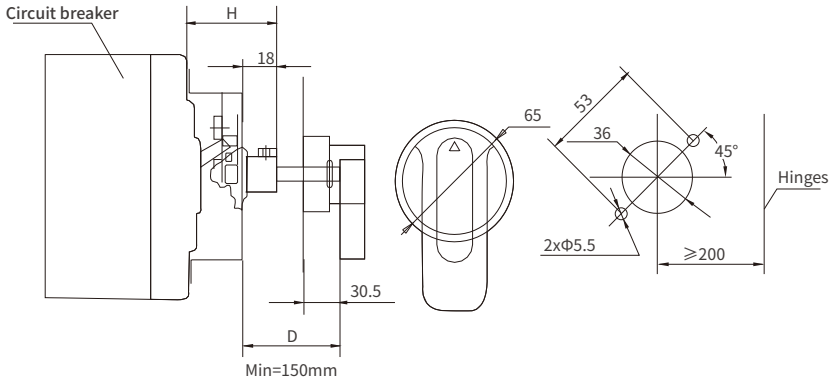


Figure 7. Mounting dimensions of the manual operator

Table 4. Mounting dimensions of the motor operator

Model	EXM3-63/125	EXM3-160 EXM3L-125/160 EXM3E-125/160	EXM3-250 EXM3L-250 EXM3E-250	EXM3-400/630 EXM3L-400/630 EXM3E-400/630	EXM3-800 EXM3E-800
Mounting dimensions H (mm)	96	90	92	154	154

Table 5. Mounting dimensions of the manual operator

Model	EXM3-63/125	EXM3-160 EXM3L-125/160 EXM3E-125/160	EXM3-250 EXM3L-250 EXM3E-250	EXM3-400/630 EXM3L-400/630 EXM3E-400/630	EXM3-800 EXM3E-800
Mounting dimensions H (mm)	59	57	60	98	100

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(Icu) of the high and Iow.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 Ue：
  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 ℃, the lower limit is not lower than -5 ℃, the average temperature value within 24h does not exceed +35 ℃.
3, atmospheric conditions: the relative humidity of the atmosphere in the surrounding air temperature of +40 ℃ 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 ℃, and take into account the temperature changes occurring on the surface of the product condensation.
4. Pollution level: 3.
5、Installation category III ,Inm=1250A circuit breaker for IV.

HYM1 Moulded Case Circuit Breakers

Functions and Features

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 as16, 20, 25, 32, 40, 50, 63, 80, 100 and 125A; HYM1-250is 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.

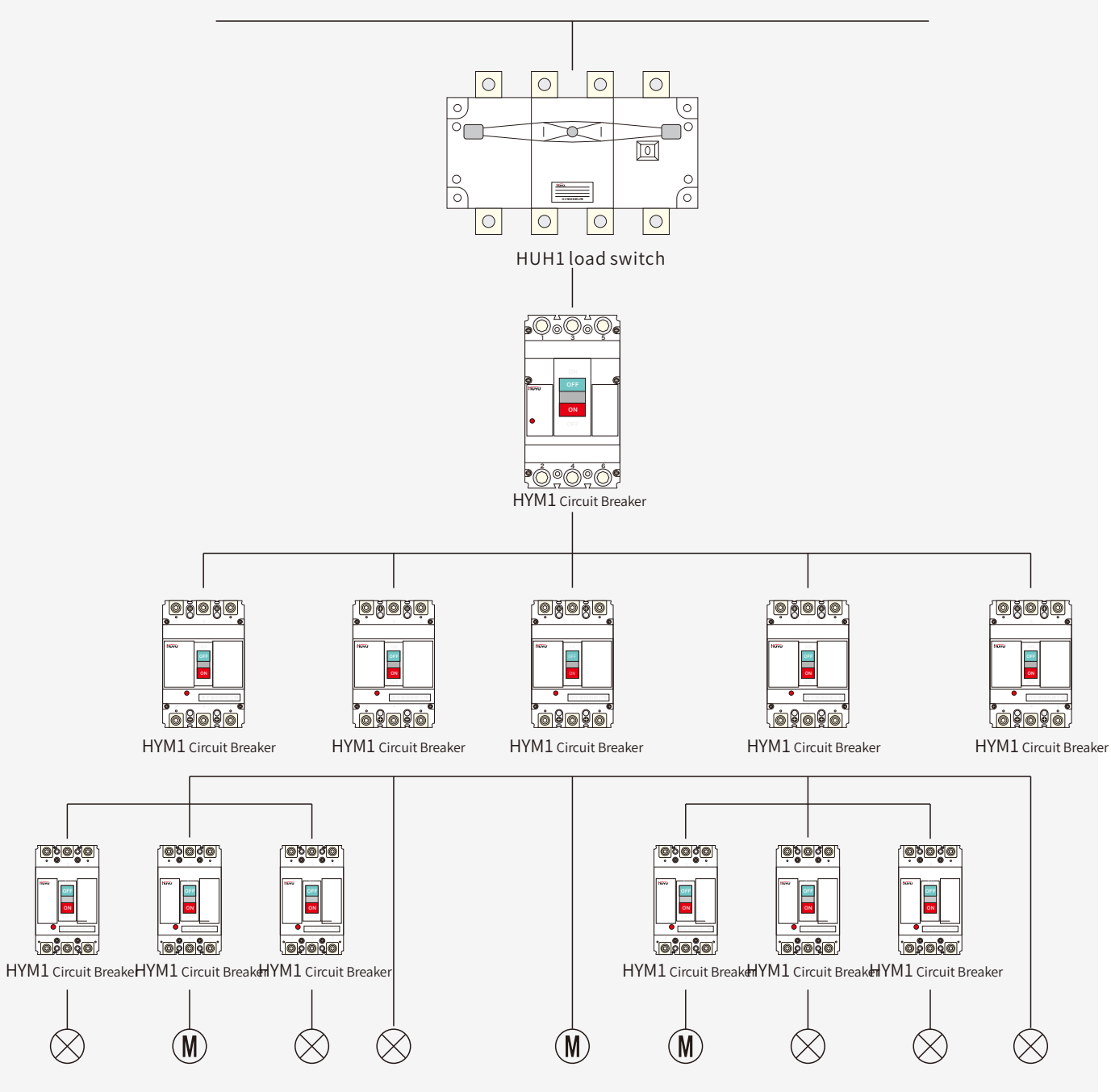
2.3 According to the type of overcurrent release, there are two types: thermal-electromagnetic (compound) type and electromagnetic (instantaneous) type.

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.

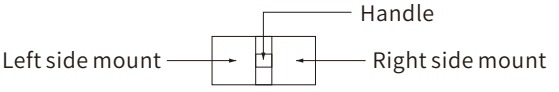
Device, undervoltage release, auxiliary contact, alarm contact, external devices are rotating handle operating mechanism, electric operating mechanism, etc.

HYM1 Moulded Case Circuit Breakers
Functions and Features

HYM1 series circuit breaker applicable structure diagram



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

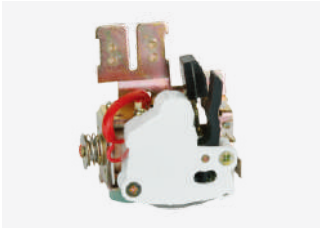


HYM1 Moulded Case Circuit Breakers

Functions and Features

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 contac	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	—		—		—			—

HYM1 Moulded Case Circuit Breakers
Functions and Features

Main technical indicators

1. The set value of instantaneous action characteristic of circuit breaker for power distribution is 10 In±20%, and that of HY M1-1250 is 7 In±20%; the set value of instantaneous action characteristic of motor protection circuit breaker is 12 In±20%.
2. The rated set values of the circuit breakers are shown in Table 2.
3. in the ambient temperature +40 °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			
		AC400V	L	35	26		2、3、4	
			M	50	35			
			H	85	50		3	
		AC690V	L	10	5		2、3、4	
			M	20	10			
			H	20	10		3	
HYM1-250	250	DC250V	L	20	15	100、125、160、180、200、225、250	2	
			M	25	18			
		AC400V	L	35	25		2、3、4	
			M	50	35			
			H	85	50		3	
		AC690V	L	10	5		2、3、4	
			M	20	10			
			H	20	10		3	
HYM1-400	400	AC400V	L	50	35	225、250、315、350、400	3、4	⩽100
			M	65	42			
			H	100	65		3	
		AC690V	L	15	8		3、4	
			M	20	10			
HYM1-630	630	AC400V	L	50	35	400、500、630	3、4	
			M	65	42			
			H	100	65		3	
		AC690V	L	15	8		3、4	
			M	20	10			
HYM1-800	800	AC400V	M	75	50	630、700、800	3	
			H	100	65			
		AC690V	M	30	15			
HYM1-1250	1250	AC400V		80	42	800、1000、1250	3	
		AC690V		25	12.5			

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.

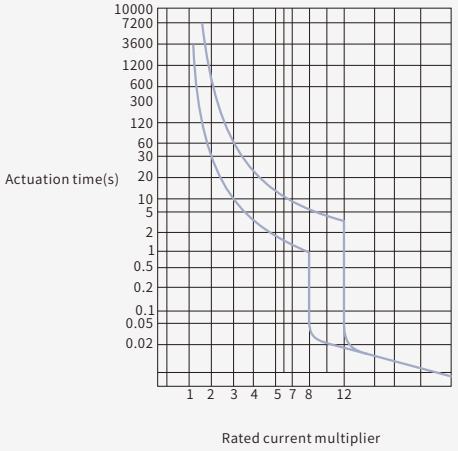


Fig. 2, HY M1-63 (40A～63A), HY M1-125 (40A～1 25A) Action Curve

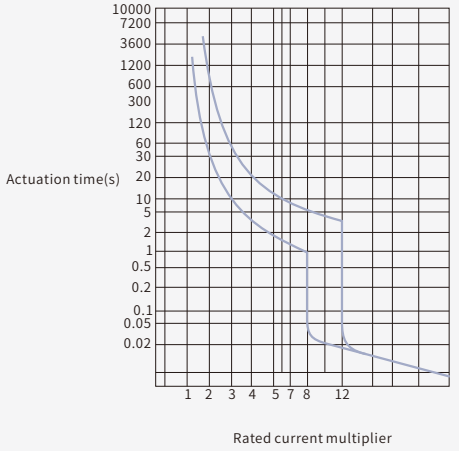


Figure 3, HY M1-250 action curve

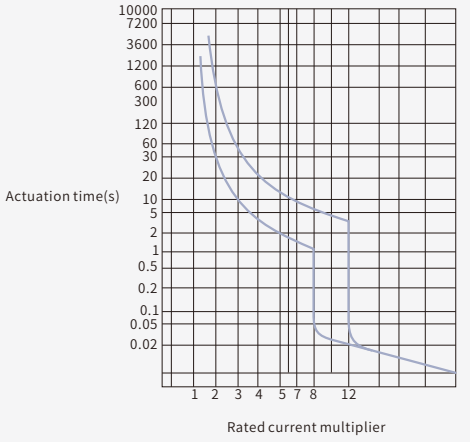


Figure 4: HYM1-400 operation curve

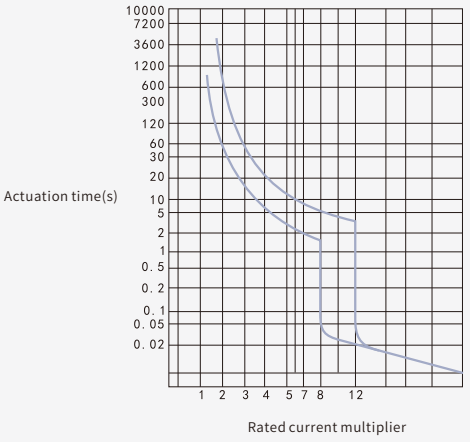


Figure 5, HY M1-630, 800 action curve

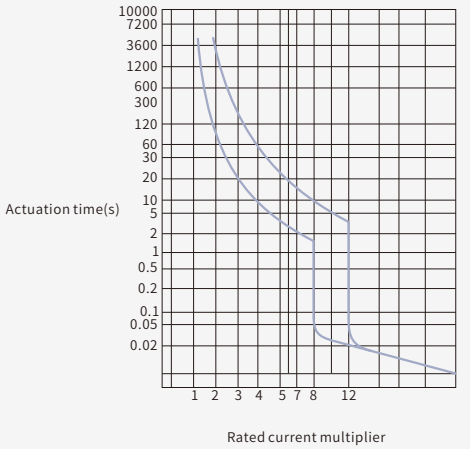


Figure 5, HY M1-630, 800 action curve

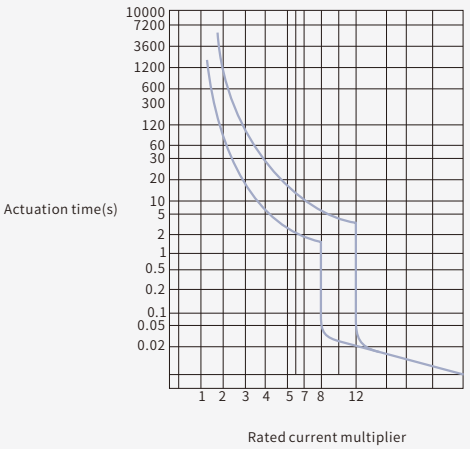


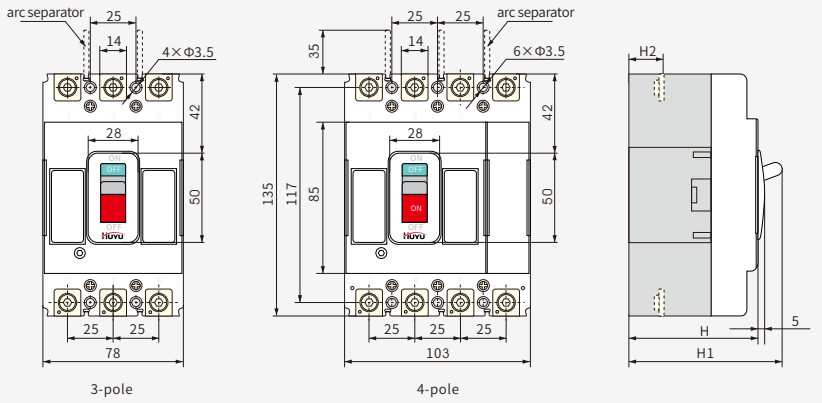
Table 5, Table of capacity reduction coefficients for temperature changes

Coefficient / Temperature / Model	+40℃	+45℃	+50℃	+55℃	+60℃
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

Shape and installation dimensions

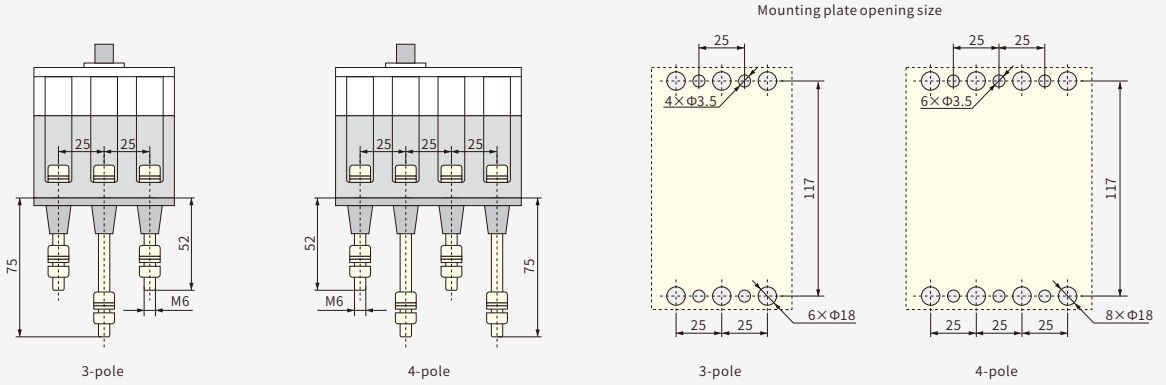
1、HYM1-63 shape and installation dimensions.

Wiring in front of the board

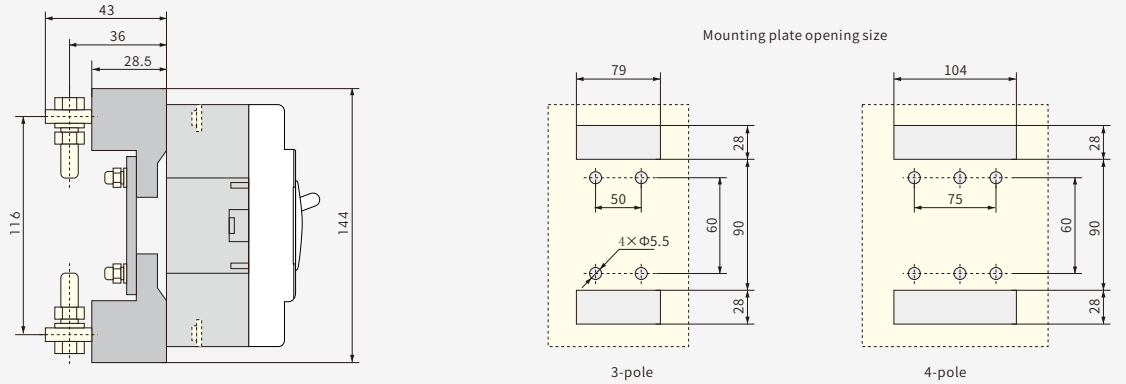


Model	H	H1	H2
HYM1-63L/3P	72	93.5	19
HYM1-63M/3P	82	101.5	28
HYM1-63/4P	82	101.5	28

Backplane Wiring



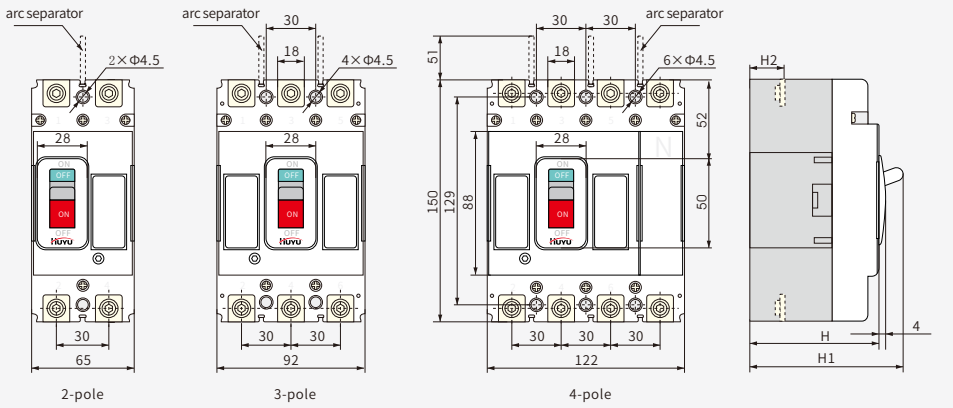
Plug-in wiring



HYM1 Moulded Case Circuit Breakers
Functions and Features

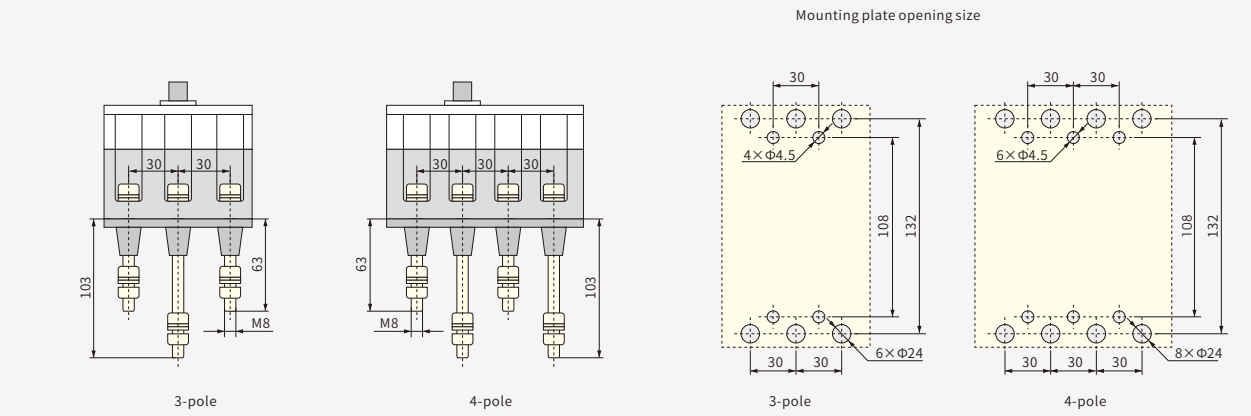
2、HY M1-125 shape and installation dimensions.

Wiring in front of the board

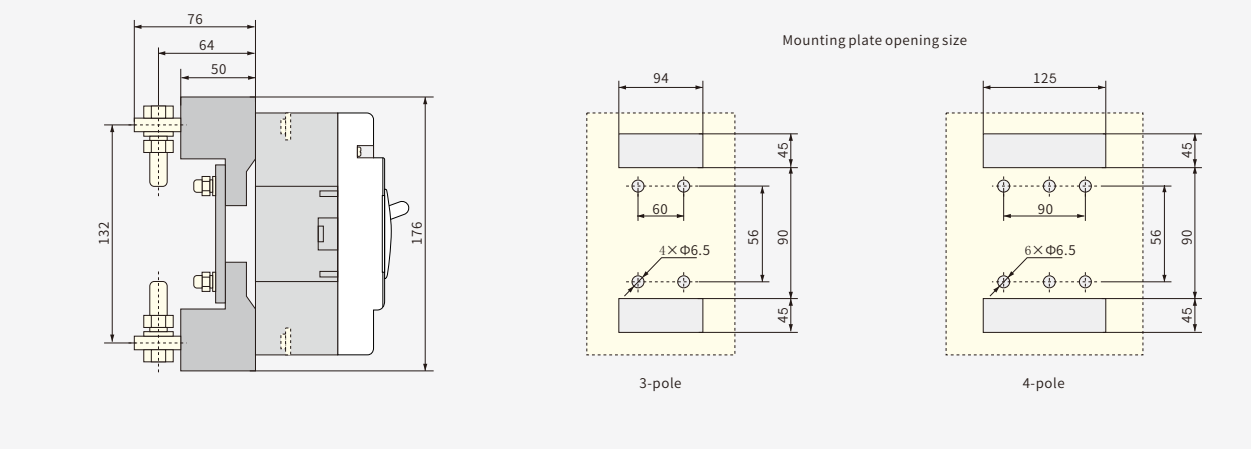


Model	H	H1	H2
HYM1-125L/2P	69	88	24
HYM1-125M/2P	86	106	24
HYM1-125L/3P	69	88	24
HYM1-125M/3P	86	106	24
HYM1-125H/3P	86	106	24
HYM1-125L/4P	69	88	24
HYM1-125M/4P	86	106	24

Backplane Wiring



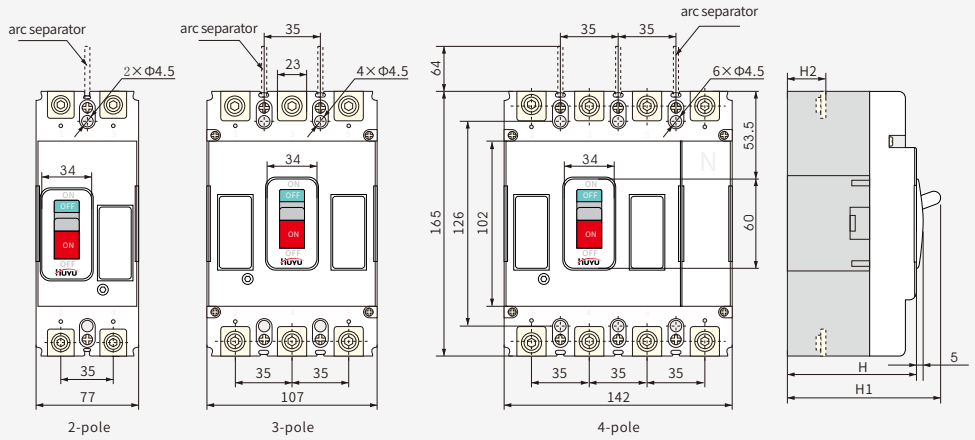
Plug-in wiring



HYM1 Moulded Case Circuit Breakers
Functions and Features

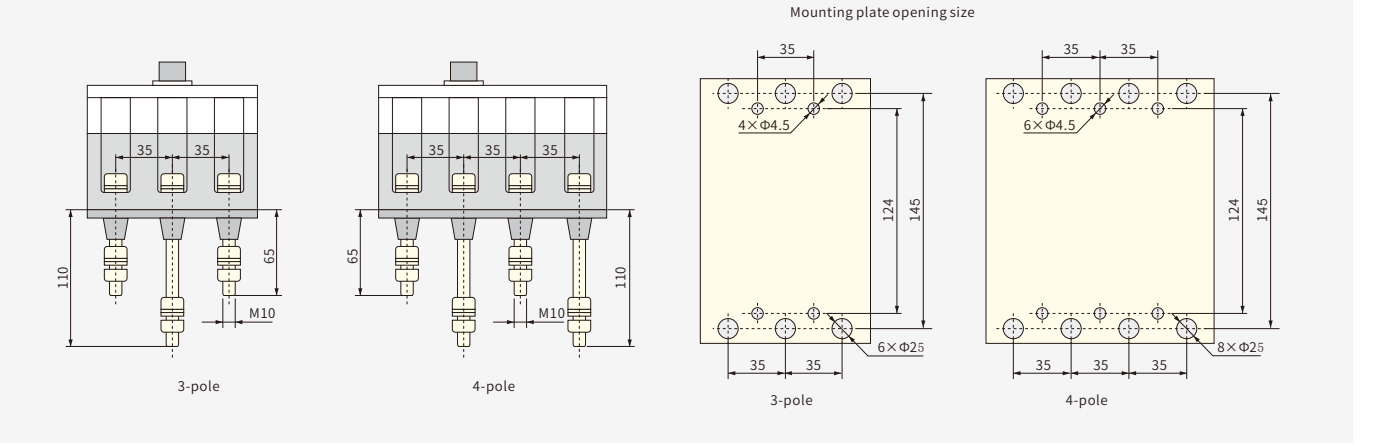
3、HY M1-250 shape and installation dimensions.

Wiring in front of the board

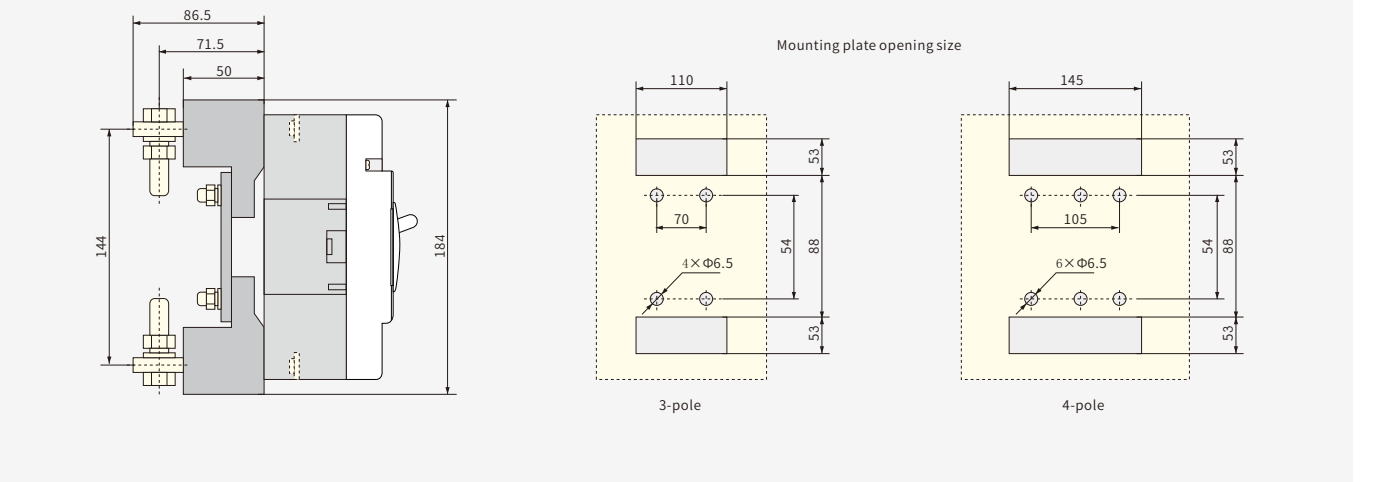


Model	H	H1	H2
HYM1-250L/2P	86	113	23
HYM1-250M/2P	104	130	23
HYM1-250L/3P	86	113	23
HYM1-250M/3P	104	130	23
HYM1-250H/3P	104	130	23
HYM1-250L/4P	86	113	23
HYM1-250M/4P	104	130	23

Backplane Wiring

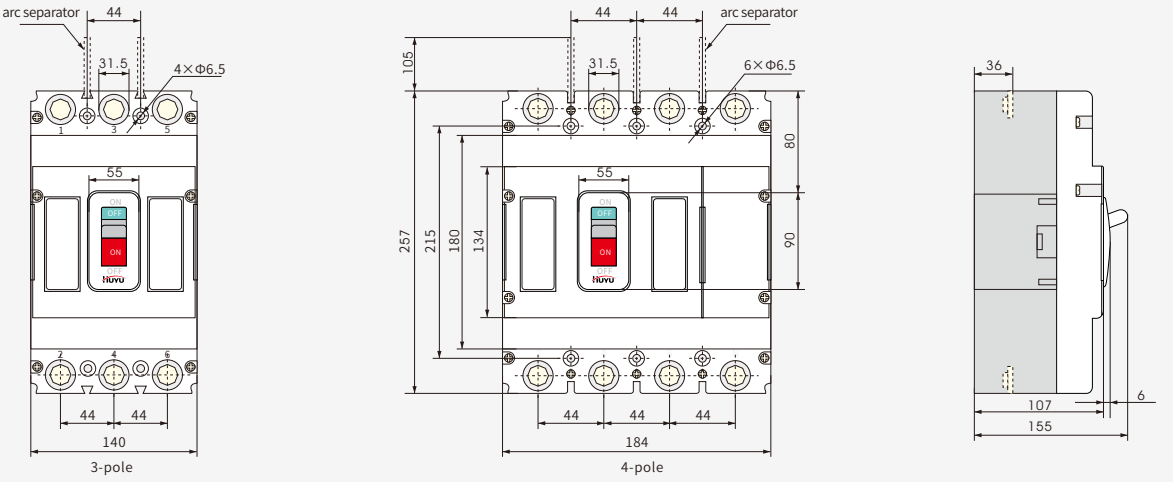


Plug-in wiring

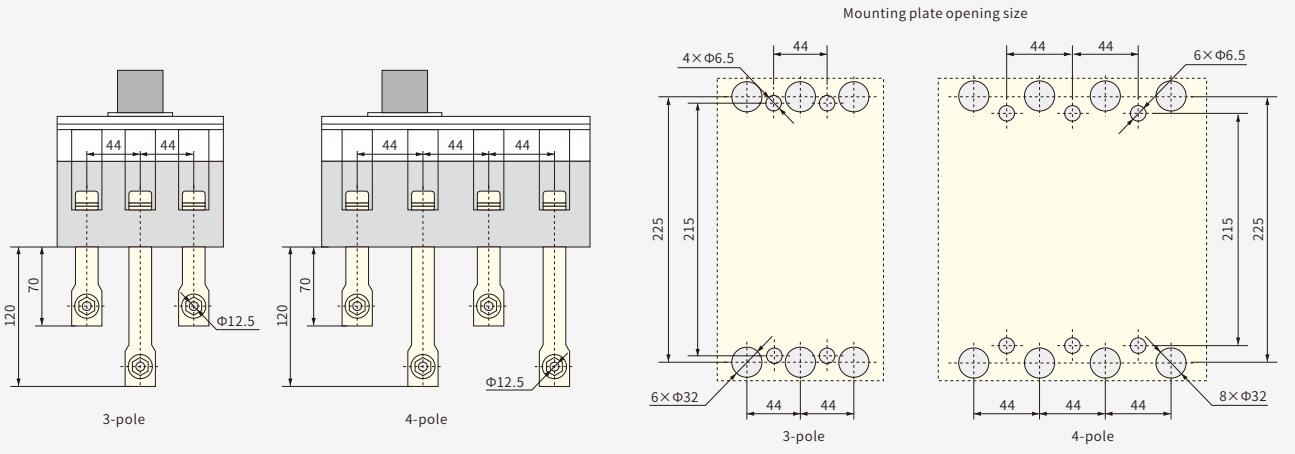


4、HYM1-400 shape and installation dimensions.

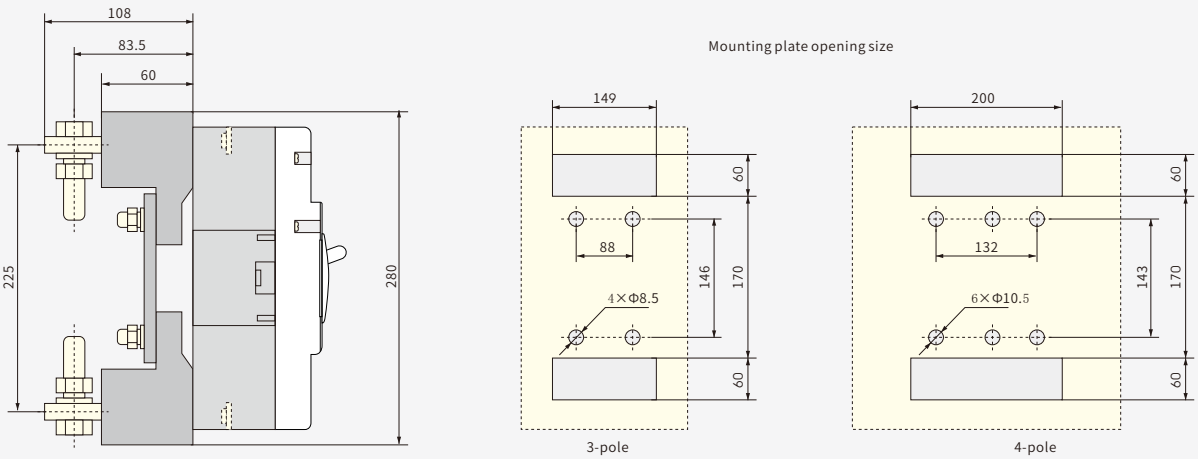
Wiring in front of the board



Backplane Wiring



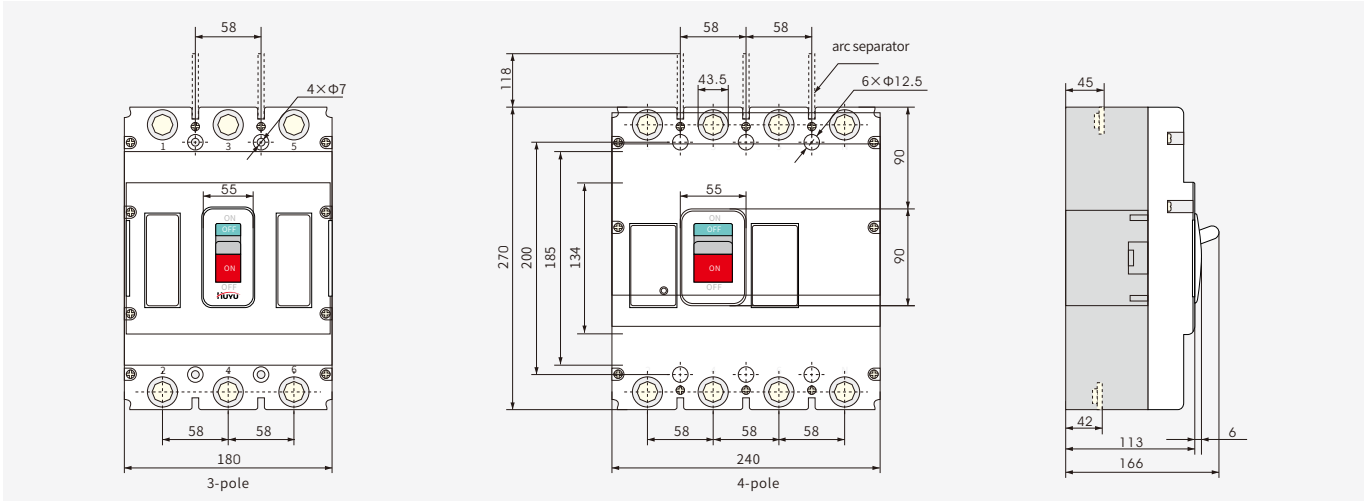
Plug-in wiring



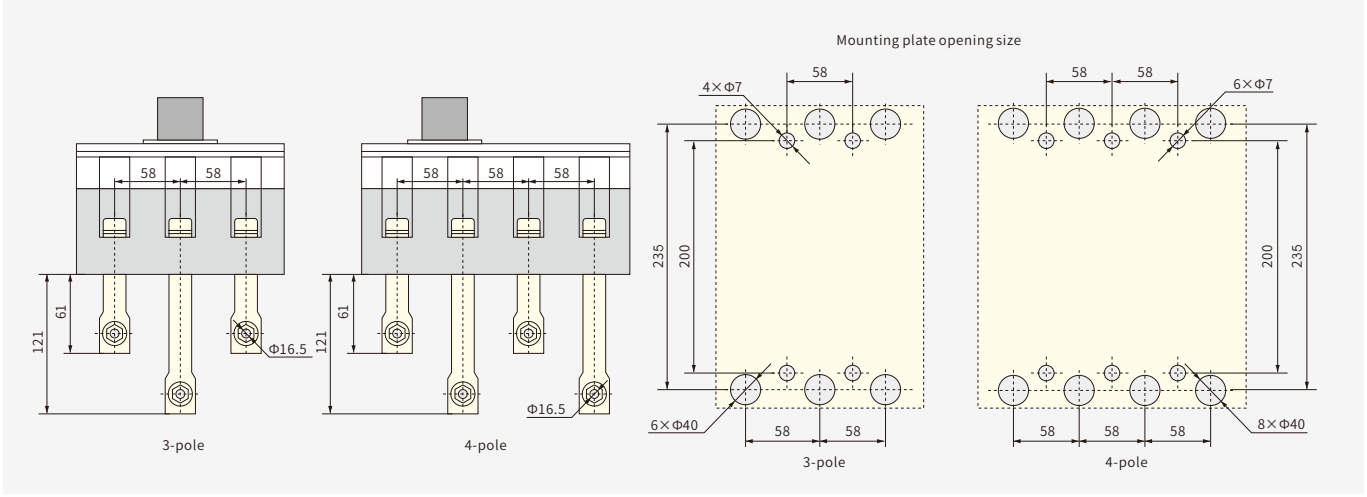
HYM1 Moulded Case Circuit Breakers
Functions and Features

5、HY M1-630 shape and installation dimensions.

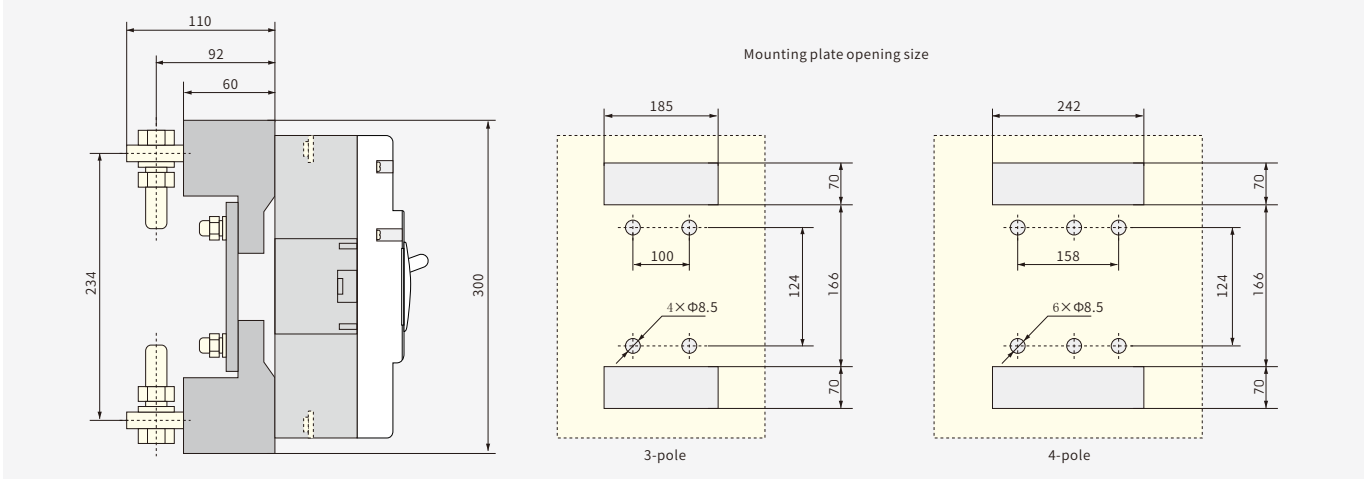
Wiring in front of the board



Backplane Wiring

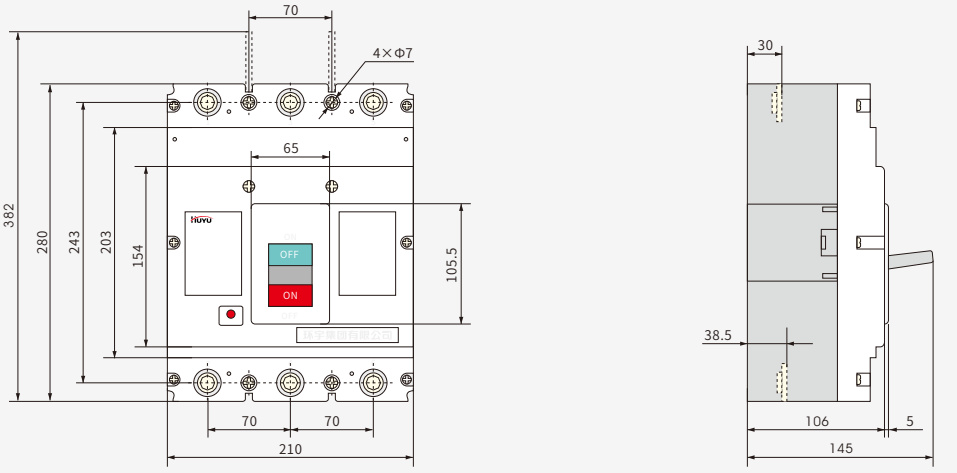


Plug-in wiring

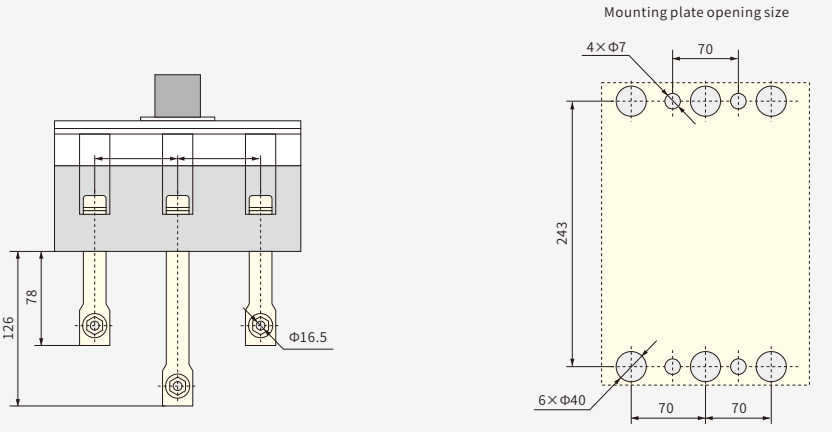


6、HY M1-800 shape and installation dimensions.

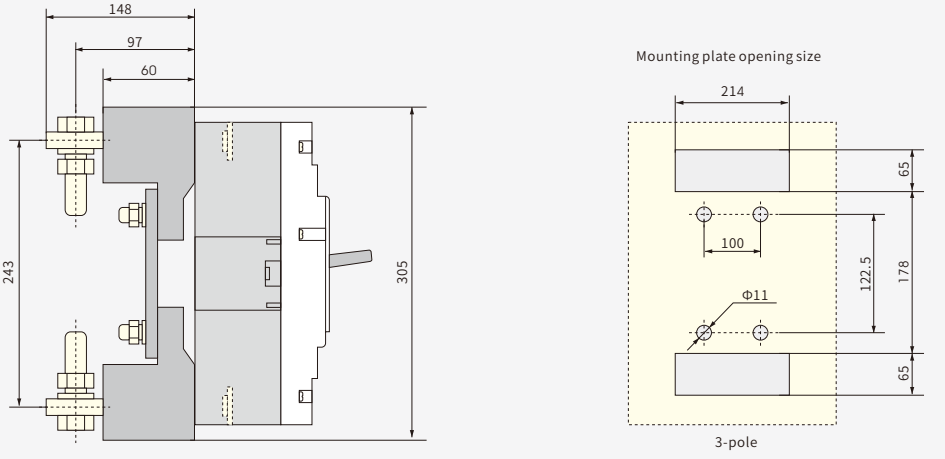
Wiring in front of the board



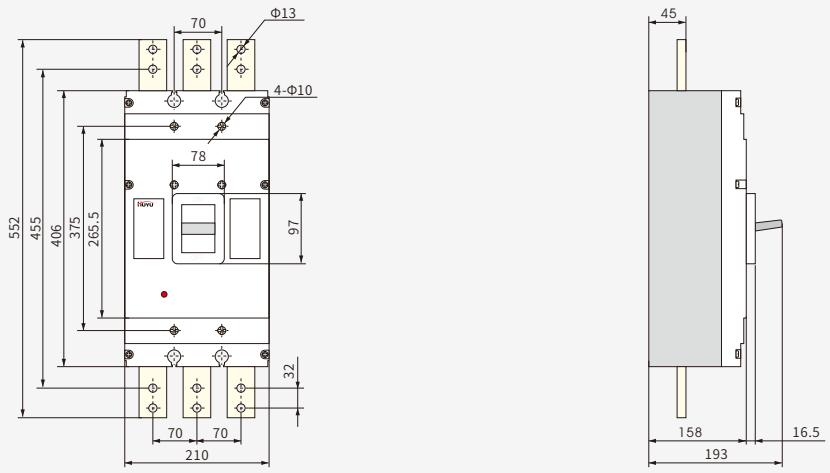
Backplane Wiring



Plug-in wiring



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



Accessories for circuit breakers

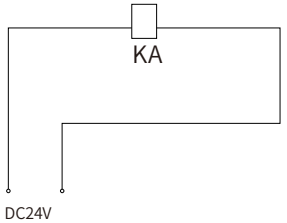
1、Internal accessories of circuit breaker

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

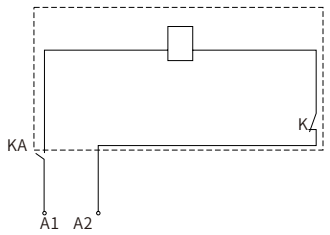
Rated control Power supply Voltage Uc (DC24V) / Conduc	1.5mm²	2.5mm²
100%Uc	150m	250m
85%Uc	100m	160m

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



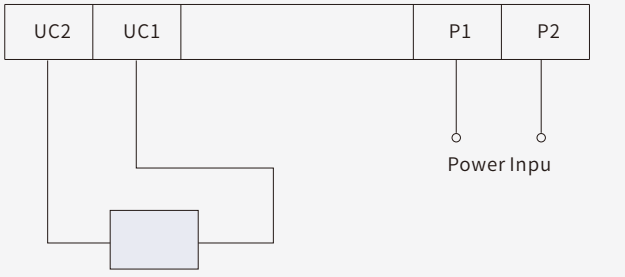
Power Input
Voltage specification of power input: AC230V, 400V, 50Hz

1.2 Undervoltage detent

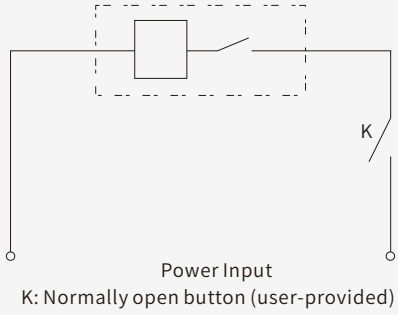
When the power supply voltage drops to the range of 70%~35% of the rated working voltage of the undervoltage tripper, the undervoltage tripper breaks the circuit breaker reliably; when the power supply voltage is lower than 35% of the rated working voltage of the undervoltage tripper, the undervoltage 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



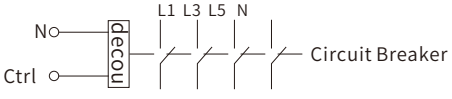
Shunt Detractor Wiring Diagram



Special disconnectors for prepaid meters

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

Wiring diagram of disconnector for prepaid meter

	L1-N (left mounted) or L5-N (right mounted) Ctr l-N Rated Operating Voltage Ue:AC230V/50Hz	N to power supply zero wire Ctr l is connected to the control signal terminal of the prepaid electricity meter.

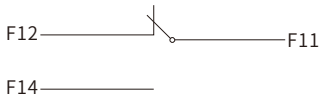
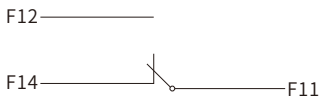
1.4 The ratings of the auxiliary and alarm contacts are given in Table 5.

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

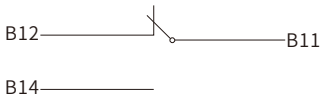
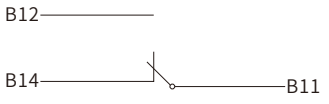
HYM1 Moulded Case Circuit Breakers
Functions and Features

a.Auxiliary contacts

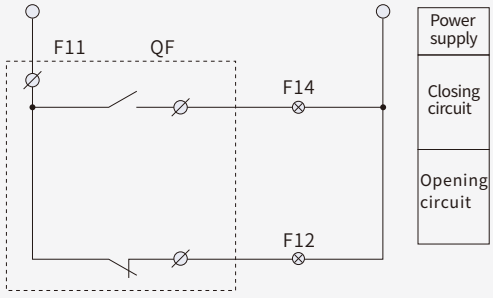
Circuit breaker in " min" position offline position	
Circuit breaker in the "close" position	

b. Alarm contacts

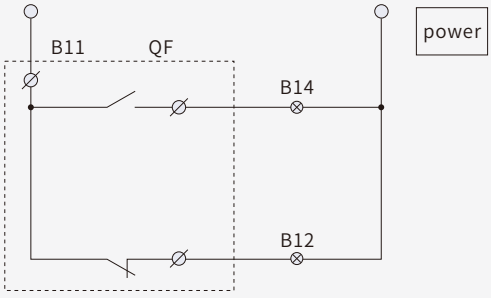
Alarm contacts do not operate when the circuit breaker is normally closed or divided, and the alarm contacts are switched only after free release or fault trip.

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

Auxiliary contact wiring diagram



Alarm contact wiring diagram



2、External accessories for circuit breakers

2.1 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.

HYM1 Moulded Case Circuit Breakers

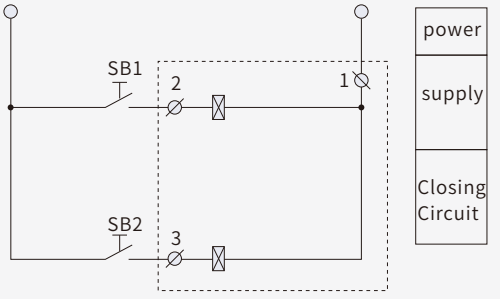
Functions and Features

HYM1-63～250electric operating mechanism

HYM1-400～1250electric operating mechanism

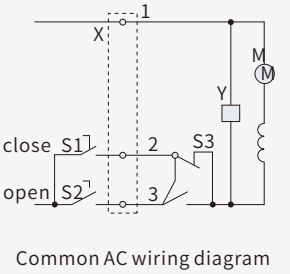
Manual operation mechanism

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

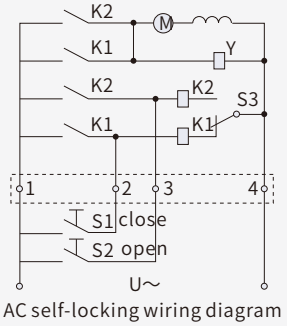


Specifications: AC 50Hz 230V or 400V

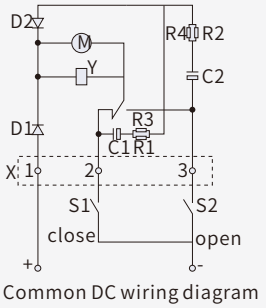
HYM1-400、630、800、1250 electric operating mechanism (AC) division, closing principle diagram



Common AC wiring diagram



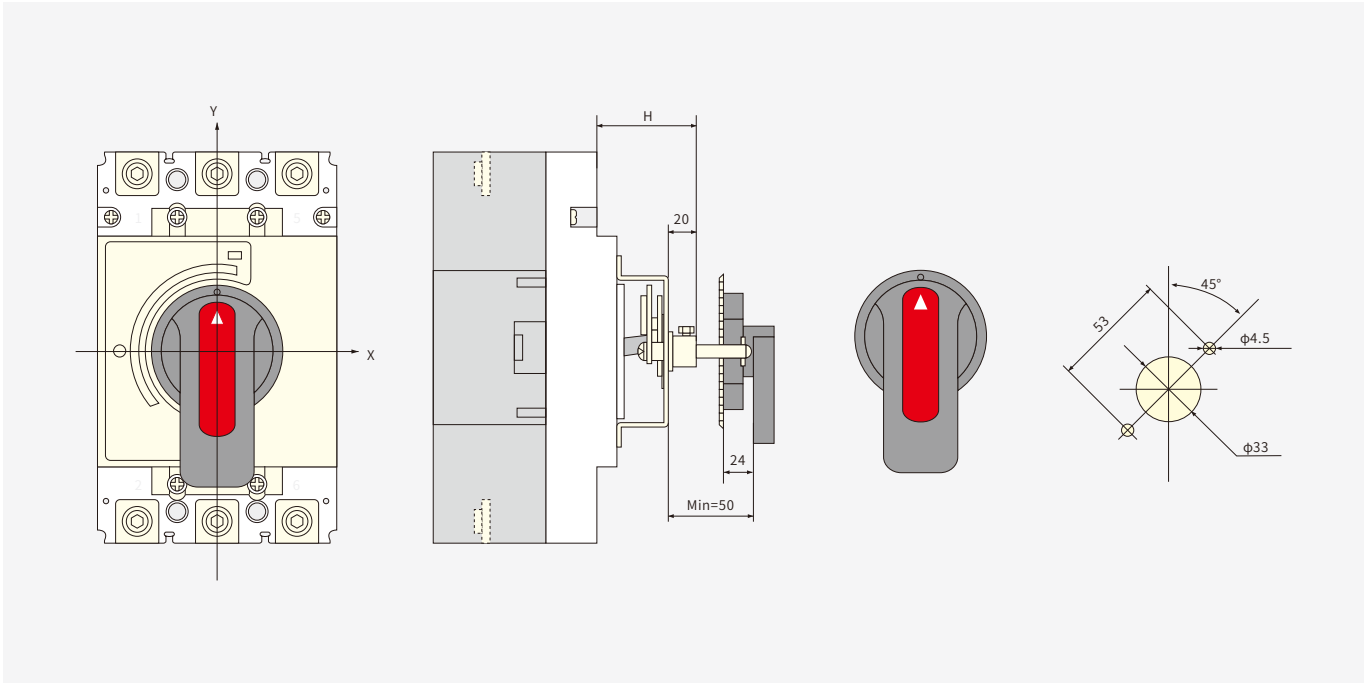
AC self-locking wiring diagram



Common DC wiring diagram

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

HYM1L Residual Current Action Circuit Breakers

Functions and Features

Product description

Product standards

HYM1L series leakage circuit breaker (hereinafter referred to as leakage circuit breaker) is one of the new leakage circuit breakers designed and developed by our company using international advanced technology.It is suitable for circuits with AC 50Hz, rated insulation voltage 800V, rated working voltage 400V, and rated current up to 630A and below. It provides indirect contact protection for fatal electric shock, and can also be used to prevent the danger of fire caused by ground fault current caused by insulation damage of equipment. It can also be used to protect the line from overload, short circuit and undervoltage, and can also be used for infrequent conversion of lines.

The leakage circuit breaker has the characteristics of small size (equal to the corresponding molded case circuit breaker), high breaking capacity, short arcing and adjustable residual current action time. It can also be equipped with accessories such as alarm contacts, shunt release, undervoltage release, auxiliary contacts, rotary handle operating mechanism, electric operating mechanism, etc., and can adopt various wiring methods such as front panel, back panel and plug-in, etc., which is an ideal product for users.

Product standards

It accords with the standard of GB 14048.2

Features

- Frame rating：125A、250A、400A、630A
- Rated operating voltage Ue：AC230V (for 2P products), AC400V (for 3P and 4P products)
- Breaking capacity code：L、M
- Number of poles：2P、3P、4P(2P is only applicable to 125A/250A frame products)
- Release type：instantaneous release, compound release, Delay release
- Installation method: fixed
- Certification: CCC

Normal operating conditions

1. The altitude of installation place should not exceed 2000m .
2. The maximum ambient temperature should be -5℃ ⩽T⩽ +40℃ ,average temperature should be ⩽35℃ at 24h .
3. The relative humidity of the atmosphere does not exceed 50% when the ambient air temperature is +40℃. The average maximum relative humidity in the wettest month is 90% and the average minimum temperature in that month is +20℃.
4. Installation type: III
5. Pollution grade: 3 .
6. Install it in a place without significant shaking and shock vibration.
7. The magnetic field near the installation site should not exceed 5 times the earth's magnetic field in any direction.
8. The leakage circuit breaker should generally be installed vertically.

HYM1L Residual Current Action Circuit Breakers

Functions and Features

Product selection

HYM1L	- □	□	□
Model number	Model type	Frame case grade rated current Inm(A)	Rated ultimate short-circuit breaking capacity level
HYM1L	No time delay type is no code , Y for time delay type , B for only alarm without tripping	125 250 400 630	M type: M, L type: L

□	□	□
Number of poles	Release mode and accessory code	Neutral pole type of 4 poles circuit breaker
see Note（1）	see Table 1	see Note（2）

Note:
(1) 2P is represented by 2, 3P is represented by 3, 3P+N and 4P are represented by 4;
(2) The types of neutral pole (N pole) of four-pole circuit breakers are divided into;
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).
Among them, type A four-pole circuit breaker is 3P+N type.
Among them, the frame grade rated current of Inm=400A and 630A types does not have L or M symbol after the rated current, and the overall dimensions and technical parameters are the same as those of M type.

HYM1L Residual Current Action Circuit Breakers

Functions and Features

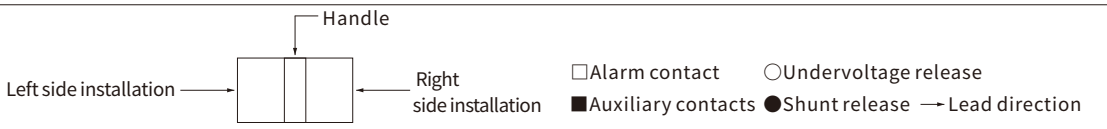
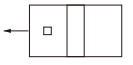
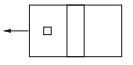
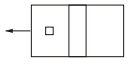
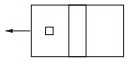
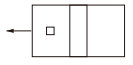
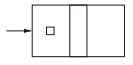
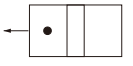
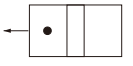
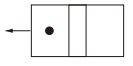
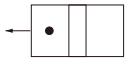
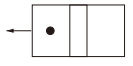
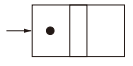
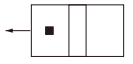
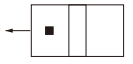
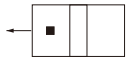
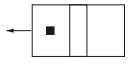
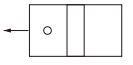
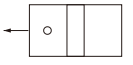
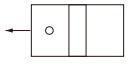
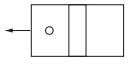
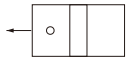
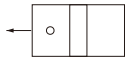
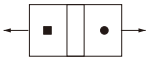
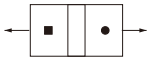
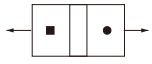
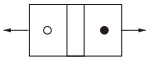
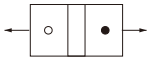
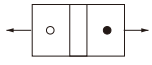
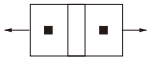
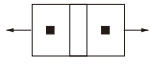
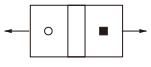
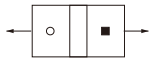
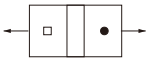
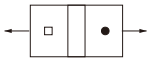
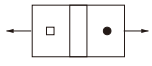


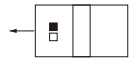
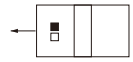
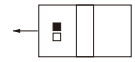
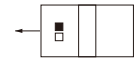
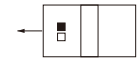
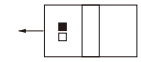
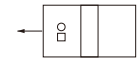
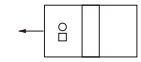
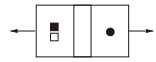
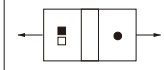
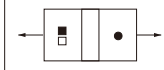
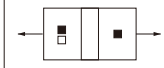
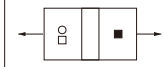
Table 1 Release mode and accessory code

Trip device Mode and internal accessory code / Attachment code	Attachment name	HYM1L-125 HYM1L-250 3P、4P A type	HYM1L-125 HYM1L-250 4P B type	HYM1L-400 3P、4P A type	HYM1L-400 4P B type	HYM1L-630 3P、4P A type	HYM1L-630 4P B type
208、308	Alarm contact						
210、310	Shunt release						
220、320	Auxiliary contacts						
230、330	Undervoltage release						
240、340	Shunt release Auxiliary contacts	—		—		—	
250、350	Shunt release Undervoltage release	—		—		—	
260、360	Two groups of Auxiliary contacts	—	—	—		—	
270、370	Auxiliary contacts Undervoltage release	—	—	—		—	
218、318	Shunt release Alarm contact	—		—		—	

HYM1L Residual Current Action Circuit Breakers

Functions and Features

Table 1 Release mode and accessory code

Trip device Mode and internal accessory code Attachment code / Attachment name / Number of poles and N-pole form / Model		HYM1L-125 HYM1L-250		HYM1L-400		HYM1L-630	
		3P、4P A type	4P B type	3P、4P A type	4P B type	3P、4P A type	4P B type
228、328▲	Auxiliary contacts Alarm contact						
238、338▲	Undervoltage release Alarm contact	—	—	—	—		
248、348	Shunt release Auxiliary contacts Alarm contact	—		—		—	
268、368	Two groups of Auxiliary contacts Alarm contact	—	—			—	
278、378	Auxiliary contacts Undervoltage release Alarm contact	—	—	—	—	—	

Note: 1. The first digit 2 of the release mode and internal accessory code indicates an electromagnetic (instantaneous) release, and 3 indicates a thermal-electromagnetic (compound) release; the last two digits indicate the internal accessory code, and 00 is used if there is no accessory.
2. In HYM1L-400 and 630, the auxiliary contacts of specifications 228, 328, 248 and 348 are one pair of contacts (i.e. one normally open and one normally closed), and the auxiliary contacts of specifications 268 and 368 are three pairs of contacts (i.e. three normally open and three normally closed); the auxiliary contacts of other specifications are configured as shown in Table 2.
3. The auxiliary contacts of 220, 320, 240 and 340 specifications in HYM1L-125 and 250 can provide two pairs of contacts (i.e. two normally open and two normally closed), but it must be indicated when ordering.
4. If the HYM1L series is equipped with a leakage alarm unit module (i.e. the leakage alarm does not trip), the accessories are only available in the ▲ specification.

Main technical parameters

1. The basic specifications and technical parameters of leakage circuit breakers are shown in Table 2, Table 3 and Table 4.

HYM1L Residual Current Action Circuit Breakers

Functions and Features

Table 2. Basic specifications and technical parameters

Model	Rated working voltage Un(V)	Number of poles	Rated current In(A)	Rated ultimate short-circuit breaking capacity Icu(kA)	Rated operating short-circuit breaking capacity Ics(kA)	Arcing distance	Rated residual operating current I△n(mA)	Rated residual non-operating current I△n(mA)	Rated residual short-circuit making and breaking	Residual current action type
HYM1L-125L	230	2	16、20、25、32、40、50、63、80、100、125	30	22	⩽50	30 (non-delay type only) 50、100、200、300、500	1/2 I△n	1/4 Icu	A type AC type
	400	3 4								
HYM1L-125M	230	2		50	35					
	400	3、4								
HYM1L-250L	230	2	100、125、160、180、200、225、250	35	25					
	400	3、4								
HYM1L-250M	230	2		50	35					
	400	3、4								
HYM1L-400M	400	3、4	225、250、315、350、400	50	35	⩽100	100、300、500			
HYM1L-630M	400	3、4	400、500、630	50	35		300、500、1000			

Note: The three levels of residual operating current adjustment can be selected by the user

Table 3. Disconnection time of non-delay type leakage circuit breaker

Residual current	IΔn	2IΔn	5IΔn	10IΔn
Maximum disconnection time(s)	0.2	0.1	0.04	0.04

4. Disconnection time of delayed leakage circuit breaker (limit non-driving time △t is 0.2s, 0.5s, 1s when 21△n)

t(s) Inm(A) / IΔn tn(s)	125、250、400、630			400、630
	0.2	0.4	1	2
IΔn	＜0.2	＜0.6	＜1.2	＜2.2
2IΔn	0.1＜t＜0.2	0.2＜t＜0.5	0.5＜t＜1.1	1＜t＜2.1
5IΔn	0.1⩽t⩽0.15	0.2＜t＜0.44	0.5＜t＜1.04	1＜t＜2.04
10IΔn	0.1⩽t⩽0.15	0.2＜t＜0.44	0.5＜t＜1.04	1＜t＜2.04

Note: tn is the delay setting value. Inm=125A and 250A models have only two levels of delay, while Inm=400A and 630A models have three levels of delay.

2、2. The inverse time action disconnection characteristics of the circuit breaker for power distribution are shown in Table 5.

Table 5

Test current name	Rated current multiple In	Agreed time h		Starting State
		In⩽63A	In＞63A	
Conventional non-tripping current	1.05In	⩾1	⩾2	Cold
Conventional tripping current	1.30In	＜1	＜2	Hot

The inverse time action disconnection characteristics of the leakage circuit breaker for motor protection are shown in Table 6
Table 6

Test current name	Setting current multiple	Agreed time	Starting State
Conventional non-tripping current	1.0In	⩾2h	Cold
Conventional tripping current	1.2In	＜2h	Hot

4、The instantaneous action characteristic of the leakage circuit breaker for power distribution is set to 10In, and the instantaneous action characteristic of the leakage circuit breaker for motor protection is set to 12In, and the setting accuracy is ±20%.

5、 Mechanical and electrical operating performance See Table 7
Table 7. Operation cycle times

Frame grade Rated current Inm (A)	Operating cycles per hour	Operation cycle times		
		power ups	No electricity	Total times
125	120	1500	8500	10000
250	120	1000	7000	8000
400	60	1000	4000	5000
630	60	1000	4000	5000

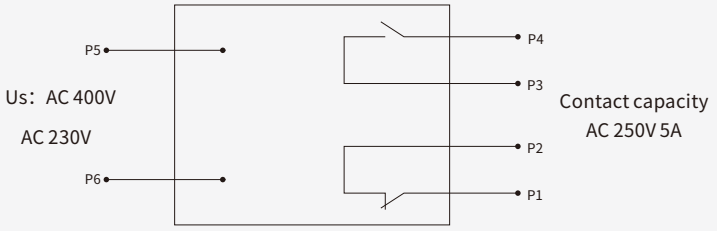
6、Electric operating **m**echanism
When the leakage circuit breaker uses an electric operating mechanism, it should be able to ensure that the circuit breaker can be closed and opened reliably at any voltage between 85% and 110% of the rated control power supply voltage.

7、Shunt release
When the power supply voltage is equal to any voltage between 70% and 110% of the rated control power supply voltage, the circuit breaker can be disconnected reliably by operating the shunt release.

8、Undervoltage release
When the power supply voltage drops to between 70% and 35% of the rated power supply voltage, the undervoltage release should operate to disconnect the leakage circuit breaker. When the power supply voltage is lower than 35% of the rated power supply voltage, the undervoltage release should prevent the leakage circuit breaker from closing. When the power supply voltage is equal to or greater than 85% of the rated power supply voltage, the leakage circuit breaker should be able to close reliably.

9、LB type leakage alarm module (see Figure 1)
The HYM1LB type leakage circuit breaker has an LB type leakage alarm module installed on the right side of the circuit breaker. The module's wiring terminals P5-P6 are connected to an AC 400V or AC 230V power supply. When leakage occurs in the main circuit of the leakage circuit breaker and I△⩾I△n, the leakage circuit breaker does not trip, the relay in the alarm module operates, and the relay contacts in the wiring terminals P1-P2 and P3-P4 send out an alarm signal.

Figure 1. LB type leakage alarm module wiring diagram



Among them, P1-P2 are normally closed contacts, and P3-P4 are normally open contacts:
A、 A. When I△＜I△n, the leakage indicator light is off. At this time, P1-P2 is connected and P3-P4 is disconnected.
A、When I△≥I△n, the leakage indicator light is on. At this time, P1-P2 is open and P3-P4 is open.
A、When the leakage indicator light is on:
If I△＜I△n at this time, press the "Reset" button to release the alarm state, the leakage indicator light goes out, the alarm state is released, and the module returns to the "A" state;
If the "Reset" button is pressed, the leakage indicator light goes out. After releasing the "Reset" button, the light comes on immediately, indicating that I△≥I△n and the alarm state has not been released. The module will remain in the "B" state until I△＜I△n, and then it will return to the "A" state.
Note: HYM1LB leakage circuit breaker will not trip due to leakage fault even if it is not connected to auxiliary power supply Us. Whether P1-P2 and P3-P4 are connected in each working state can be tested with a multimeter.

10、Cross-sectional area of the connecting wire of the leakage circuit breaker (see Table 8 and Table 9)

Table 8

Rated current In (A)	16 20	25	32	40 50	63	80	100	125	160	180 200 225	250	315 350	400
Conductor cross-sectional area S(mm^2)	2.5	4	6	10	16	25	35	50	70	95	120	185	240

Table 3

Rated current In(A)		500	630
Copper wire	root number	2	2
	Cross-sectional area(mm^2)	150	185
Copper busbar	root number	2	2
	Cross-sectional area(mm^2)	30×5	40×5

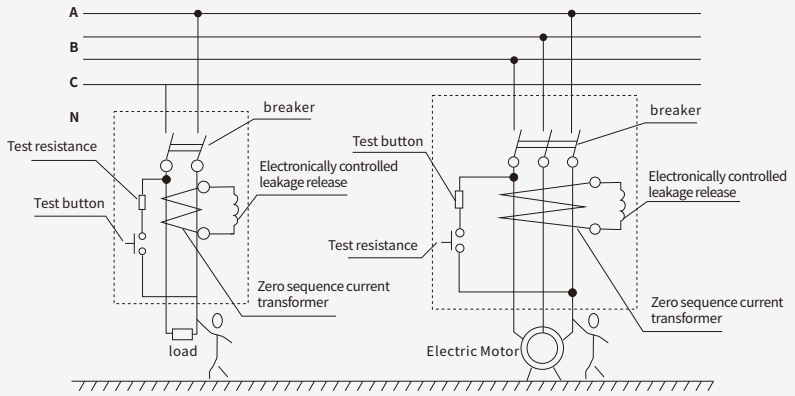
HYM1L Residual Current Action Circuit Breakers

Functions and Features

Structure and working principle

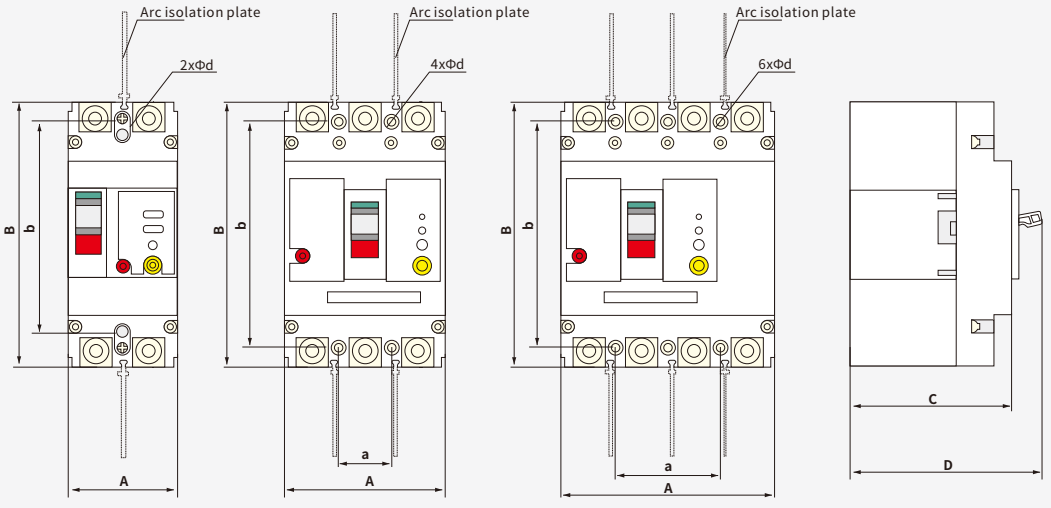
1. This series of leakage circuit breakers are electronic leakage circuit breakers, mainly composed of zero-sequence current transformer, electronically controlled leakage release and circuit breaker with overload and short-circuit protection. All components are installed in a plastic shell.
2. When there is leakage in the protected circuit or electric shock, as long as the leakage current reaches the set leakage action current value, the output signal of the secondary winding of the zero-sequence current transformer will trigger the thyristor to conduct, the leakage release will be energized and attracted, and the leakage circuit breaker will trip and open, thereby cutting off the power supply to protect against leakage and electric shock. Working principle diagram (see Figure 2).
3. When the protected circuit is overloaded or short-circuited, the thermal-magnetic release completes the delayed or instantaneous tripping action and activates the leakage circuit breaker, thereby cutting off the power supply to provide overload or short-circuit protection.

Figure 2. Working principle diagram



Appearance and installation dimensions

Figure 3. Overall dimensions and installation dimensions



HYM1L Residual Current Action Circuit Breakers

Functions and Features

Table 10

Model	pole	Dimensions				Installation Dimensions		
		A	B	C	D	a	b	ϕd
HYM1L-125L	2	62	150	75	94	-	129	4.5
	3	92	150	75	94	30	129	4.5
	4	122	150	75	94	60	129	4.5
HYM1L-125M	2	62	150	92	110	-	129	4.5
	3	92	150	92	110	30	129	4.5
	4	122	150	92	110	60	129	4.5
HYM1L-250L	2	75	165	72	94	-	127	4.5
	3	107	165	72	94	35	127	4.5
	4	142	165	72	94	70	127	4.5
HYM1L-250M	2	75	165	90	110	-	127	4.5
	3	107	165	90	110	35	127	4.5
	4	142	165	90	110	70	127	4.5
HYM1L-400	3	150	257	106.5	146.5	44	194	7
	4	198	257	106.5	146.5	94	194	7
HYM1L-630	3	210	280	115.5	155	70	243	7
	4	280	280	115.5	155	140	243	7

Use and Maintenance

1、1. Fix the leakage circuit breaker vertically (please use a cross screwdriver to prevent damage to the shell). The leakage circuit breaker should be in good appearance and operate normally under no-load conditions. The rated values of the leakage circuit breaker and its accessories should be consistent with the working conditions of the installation site. Since the leakage circuit breaker has an electronic circuit board, it is strictly forbidden to measure the same insulation resistance between the outlet terminals of the leakage circuit breaker to avoid damaging the electronic components. If an insulation test is performed, it is necessary to:

a. Use a 500V megohmmeter;

b. Measure the insulation resistance between terminals 1-2, 3-4 and 5-6 when the leakage circuit breaker is in the disconnected state;

c. When the leakage circuit breaker is in the closed state, measure the insulation resistance between the terminals of the main circuit connected together and the outer casing (covered with metal foil);d. The measured insulation resistance value should be no less than 1.5MΩ.

2. The power supply line must be directly above the residual current circuit breaker, that is, the side marked with "1, 3, 5, N". The load wires (including the neutral line) must pass through the residual current circuit breaker, and the load neutral line must be insulated from the ground.

3. The handle of the leakage circuit breaker can be in three positions: "closed", "opened" and "tripped". When the handle is in the tripped position, it should be moved in the "open" direction to make the circuit breaker trip again, and then the "closed" operation can be performed.

4. If the leakage circuit breaker is tripped due to a fault in the protected line, the cause should be found out and the circuit breaker can only be closed after the fault is eliminated.

5. The various characteristics of the leakage circuit breaker and its accessories are set by our company according to the order requirements and cannot be adjusted during use.
6. Set the rated residual operating current I△n and leakage operating time according to user needs (the leakage operating time of HYM1L non-delay type is not adjustable, and the leakage operating time of HYM1LY type is adjustable).
7. After checking and confirming that everything is correct according to Chapter 2 "Normal Working Conditions" of this manual and the above items of this chapter, the circuit breaker can be closed and put into operation. During the operation of the circuit breaker, the operation test device should be operated at least once a month to confirm that the leakage protection function of the circuit breaker is normal.

Notes

1. The leakage circuit breaker cannot protect against the risk of electric shock caused by the human body touching two wires of the load at the same time. Users are advised to pay attention to electrical safety.
2. Do not test the device by short-circuiting the phase line to the ground to avoid affecting the life of the device.

Ordering Instructions

When placing an order, the user must specify:
1. Name and model of the leakage circuit breaker
2. Rated current (A)
3. Rated residual operating current (mA)
4. Special specifications are subject to negotiation
5. Ordering example: Product model name: HYM1L-125L/4300A leakage circuit breaker, rated current 125A, rated residual operating current 100/300/500mA, non-delay type, 100 units.

HUM8 Moulded Case Circuit Breakers
Functions and Features

Product description

Product standards

Molded Case Circuit Breakers (M1-M6)
HUYU Electric offers a complete range of Molded Case Circuit Breakers in seven frame sizes: M0-63A, M1 - 100 A, M2 - 250 A,
M3 - 400 A, M4 - 600 A, M5 - 800 A, and M6 - 1,250 A. Each frame size offers a range of interrupting voltage ratings
from 240-690 Vac. The M series conforms to global standards that include UL 489 and IEC 60947-2.
• High-breaking capacity and a new patented arc extinguishing design
• New patented technology reduces the manual operating force
• High quality compact modular with energy saving and environmentally friendly design with RoHS compliant material
• Installation flexibility: Bus Bar Connection, Lug Line/Load Side Connection, Plug-In, Rear Connection, Draw-Out
• Fixed and adjustable trip setting units
• Wide range of accessories: Alarm Switch and Auxiliary Contact, Shunt and Under-Voltage Trip, Interlock, NEMA and IEC Type
Rotary Handle, Motor Operator
CE,CB,KEMA Approved

Product standards

The M series conforms to global standards that include UL 489 and IEC 60947-2.

Features

• Frame rating：63A、100A、125A、160A、250A、400A、630A、800A、1250A(160AF、1250AF Electronic only)
• Rated operating voltage Ue(AC)：220V/230V/240V，380V/400V/415V，500V，690V
• Breaking capacity code：C、S、H、U
• Number of poles：2P、3P、4P
• Release type：Electromagnetic type, thermomagnetic type, electronic type
• Installation method: fixed, plug-in, withdraw
• Certifications：CCC、CE、CB、KEMA(HUM8D only CCC)

Normal operating conditions

1.The maximum ambient temperature should be-5°C≤T≤+40°C,average temperature should be≤35°Cat 24h.
2.The relative humidity should not exceed 95%.
3.The altitude of installation place should not exceed 2000m.Higher than 2000m need to drop capacity forusage.
4.Pollution grade:3.There is no explosion in the surrounding air,and there is no corrosion of metals and destructionofinsulating gases and conductive dust.
5.Installation type:III
6."1,3,5,N1"terminalsare for power supply,"2,4,6,N2"terminals are for load,can no be reserved.
7.The installation surface of the breaker shall be perpendicular to the horizontal plane.The basic installation modeof the circuit breaker is vertical installation,the power source is on the top,the load end is below,anditcan beinstalledhorizontally.

HUM8 Moulded Case Circuit Breakers

Functions and Features

Product selection

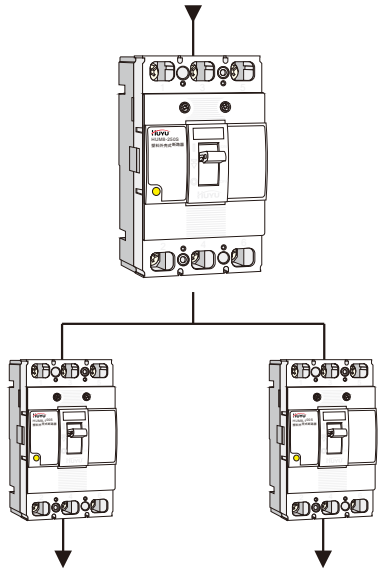
HUM8	– □	□	□	/ □	□
Moulded Case Circuit Breaker	Model type	Frame case grade rated current Inm(A)	Short circuitbreaking capacitygrade	Z:Operating mode	Number of pole
HUM8	Electronic type release code is D,thermal elecromagnetic release is no code	(refer to Table 4)	C-undamentalype S-standardype H-highcasstype U-curent imtingtype	Z:Operating mode: operating by handle is no mode,the code of motor operating is M,the code ofrotary handle operating is Z. Rated current of circuit breakerIn(A)(refer to Table 4)	2：2P 3：3P 4：4P

□	□	□ /	□	□	
	Over current release type	Inside accessories code	Usage code		
Neutral pole type of 4 poles circuit breaker(N pole)	Refer to Table 2	Refer to Table 3	no code is for power distribution,the code for motor protection is 2.	no code name for conventional products, Yfor product with prepayment meter dedicated release	"I"for overload alarming withouttripping

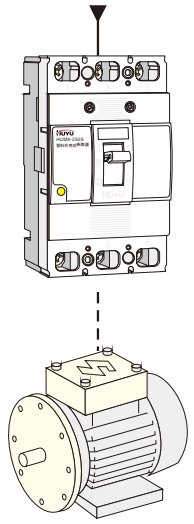
□	□	□	□	□
	Arcing distance	Connection mode		EN
the connection code ofinsert type is C, the connection code of drawout type is CH.	Wis no arcing, there is no code if it has arcing	the front panel connection is not code; back panel connection has code.	TH Hot and humid circuit breaker (conventional non-standard)	special use of new energy

Note:(1)The wet heat circuit breaker(TH)can withstand the influence of humid air,salt fog,oil mist and mold.
(2)The air humidity range of new energy products(EN)ranges from -40 to 70 degrees centigrade.

Low voltage distribution network protection



Control and protection of motor



Dual power conversion system

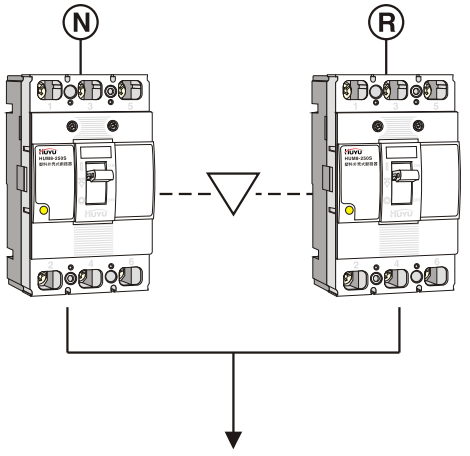


Table 1

Code	Type	Explanation
A	A type	Npole does notinstall ver current release,and switch on all the time, not switch on and switch oftogether with other 3 poles.
B	Btype	N pole does not install over current release,switch on and switch off together with other 3 poles.

Table 2

Code	Type	Explanation
1	Time delay release	Have protection characteristics of over current inverse time delay.
2	Instantaneous release	Namely electromagnetic release has protection characteristic of over current instantaneous operation.
3	Duplex release	Both of the functions mentioned above
4	Electronic type release (M type Intelligent Controller)	Current transformer and electronic apparatus with thermalelectromagnetic release, canprotect characteristicparameter accuracy.
5	Intelligent release (H type Intelligent Controller)	Intelligenttype release Have serial communication interface, can comply with the request of"four remote"communication.
6	Intelligent release (R type Intelligent Controller)	With LCD , with voltage measurement, with serial communication port, to meet the communication network

Table 3

Inm（A）	I		II		III		Note
	Code	Explanation	Code	Explanation	Code	Explanation	
63 100 160 250	0	None	0～2	Auxiiay cotactgroup quanty	0～2	Alarm cotactgroup quanty	
	1	Shuntrelease	0～1		0～1		
	2	Undervoltage release	0～1		0～1		
400	0	None	0～5		0～2		Ⅱ＋Ⅲ≤7
	1	Shuntrelease	0～3		0～2		Ⅱ＋Ⅲ≤5
	2	Undervoltage release	0～3		0～2		Ⅱ＋Ⅲ≤5
	3	Shuntrelease and undervoltagerelease	0～1		0～1		Ⅱ＋Ⅲ≤2
630 800	0	None	0～8		0～3		Ⅱ＋Ⅲ≤11
	1	Shuntrelease	0～6		0～3		Ⅱ＋Ⅲ≤8
	2	Undervoltage release	0～6		0～3		Ⅱ＋Ⅲ≤8
	3	Shunt releaseand undervoltagerelase	0～3		0～2		Ⅱ＋Ⅲ≤5

8.The capacity reduction factor ofcircuit breaker in different environments,seetable(a)
Table(a)

Ambient temperature	＋40℃	＋45℃	＋50℃	＋55℃	＋60℃	＋70℃
Allowable continuous workingcurrent	1In	0.95In	0.9In	0.85In	0.8In	0.72In

Note:under various environmental temperature conditions,the measured terminaltemperature of the circuit breakereaches 10 degrees centigrade asthebenchmark.

The electrical performance ofcircut breakers can bereferencedto thefllowing table,and the poster deratingfactor table is shown in hetable below(b)abovetheapplicable working environment of 2000m
Table(b)

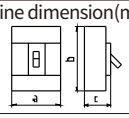
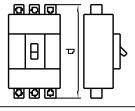
Altitude(m)	2000	3000	4000	5000
Working current correction factor	1	0.93	0.88	0.82

HUM8 Moulded Case Circuit Breakers

Functions and Features

Technical data and performance

Table 4

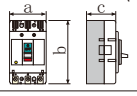
Frame size rated current Inm(A)		63	100(125)								160		250						
Type		HUM8-63S	HUM8-100C HUM8D-100C HUM8-125C		HUM8-100S HUM8D-100 HUM8-125S		HUM8-100H HUM8-125H		HUM8-100U HUM8-125U		HUM8D-160		HUM8-250C HUM8D-250C		HUM8-250S HUM8D-250		HUM8-250H		HUM8-250U
Photo																			
Rated current In(A)		10,16,20,25 32,40,50,63	10,16,20,25,32,40,50,63,75,100,(125)								160		100,125,150,160,175,200,225,250						
Pole number		3	3	4	2	3	4	3	4	3	3	4	3	4	3	4	3	4	3
Rated insulation voltage Ui(V)		AC800	AC1000								AC1000		AC1000						
Rated insulation voltage Ui(V)		8									12								
Rated short-time withstand current Icw(kA) (Electronic release, use category B)		—	—								5		5						
Arcing distinguish distance(mm)		⩽50(0)*	⩽50(0)*								⩽50(0)*		⩽50(0)*						
Rated limiting/operating shortcircuit breaking capacity Icu/Ics(kA)	AC690V	—	—		5/3		10/5		10/5		5/3		—		5/3		10/5		10/5
	AC400V	30/22	30/15		50/35		85/65		125/125		50/35		30/15		50/35		85/65		125/125
	AC230V	50/38	50/25		100/50		125/125		200/200		100/50		50/25		100/50		125/125		200/200
Operating times	Electrify	8000	8000								8000		8000						
	None-electrify	20000	20000								20000		20000						
Outline dimension(mm) 	a	75	90	120	60	90	120	90	120	90	105	140	105	140	105	140	105	140	105
	b	130	155							216	165		165						240
	c	68	68								68		68						
Dimensions of Aluminum Terminals 	d	163	197							/			248						/
Weight(kg)		0.75	1.0	1.3	1.1	1.4	1.8			1.8	1.5	1.9	1.5	1.9	1.5	1.9	2.6		2.6
Rated operatingfrequency times/h		120	120								120		120						

*Pleasegive clear indication of arcing distanceis zero when you place an order.

HUM8 Moulded Case Circuit Breakers

Functions and Features

Continuad 4

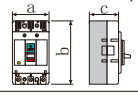
Frame size rated current Inm(A)		400						630					
Type		HUM8-400C HUM8D-400C		HUM8-400S HUM8D-400 HUM8D-M630		HUM8-400H HUM8D-400H	HUM8-400U HUM8D-400U	HUM8-630C HUM8D-630C		HUM8-630S HUM8D-630		HUM8-630H HUM8D-630H	HUM8-630U HUM8D-630U
Photo													
Rated current In(A)		250,300,315,350,400						400,500,630					
Pole number		3	4	3	4	3	3	3	4	3	4	3	3
Rated insulation voltage Ui(V)		AC1000						AC1000					
Rated insulation voltage Ui(V)		12											
Rated short-time withstand current Icw(kA) (Electronic release, use category B)		5						10					
Arcing distinguish distance(mm)		⩽100(0)*						⩽100(0)*					
Rated limiting/operating shortcircuit breaking capacity Icu/lcs(kA)	AC690V	10/10		10/10		15/10	35/35	10/10		15/15		20/15	35/35
	AC400V	45/45		70/70		100/100	125/125	45/45		70/70		100/100	125/125
	AC230V	85/85		100/100		150/100	200/200	85/85		100/100		150/100	200/200
Operating times	Electrify	7500						7500					
	None-electrify	10000						10000					
Outline dimension(mm) 	a	140	185	140	185	140	140	210	280	210	280	210	210
	b	257				297		275				322	
	c	105				200		105				200	
Weight(kg)		5.5	7.5	5.7	7.5	16.7	16.7	9.4	12.5	10.9	14.2	26.7	26.7
Rated operatingfrequency times/h		60						20					

*Pleasegive clear indication of arcing distanceis zero when you place an order.

HUM8 Moulded Case Circuit Breakers

Functions and Features

Continuad 4

Frame size rated current Inm(A)		800						1250	
Type		HUM8-800C HUM8D-800C		HUM8-800S HUM8D-800		HUM8-800H HUM8D-800H	HUM8-800U HUM8D-800U	HUM8D-1250S	
Photo									
Rated current In(A)		630,700,800						1250	
Pole number		3	4	3	4	3	3	3	4
Rated insulation voltage Ui(V)		AC1000						AC1000	
Rated insulation voltage Ui(V)		12							
Rated short-time withstand current Icw(kA) (Electronic release, use category B)		10						20	
Arcing distinguish distance(mm)		⩽100(0)*						⩽100	
Rated limiting/operating shortcircuit breaking capacity Icu/Ics(kA)	AC690V	10/10		15/15		20/15	35/35	25/13	
	AC400V	45/45		70/70		100/100	125/125	85/43	
	AC230V	85/85		100/100		150/100	200/200	125/63	
Operating times	Electrify	7500						5000	
	None-electrify	10000						7500	
Outline dimension(mm) 	a	210	280	210	280	210	210	210	280
	b	275				322		330	
	c	105				200		144	
Weight(kg)		9.9	13	11.4	15.7	27.3	27.3	18	24
Rated operatingfrequency times/h		20							

*Pleasegive clear indication of arcing distanceis zero when you place an order.

Thermoelectric Electromagnetic Current Releaser

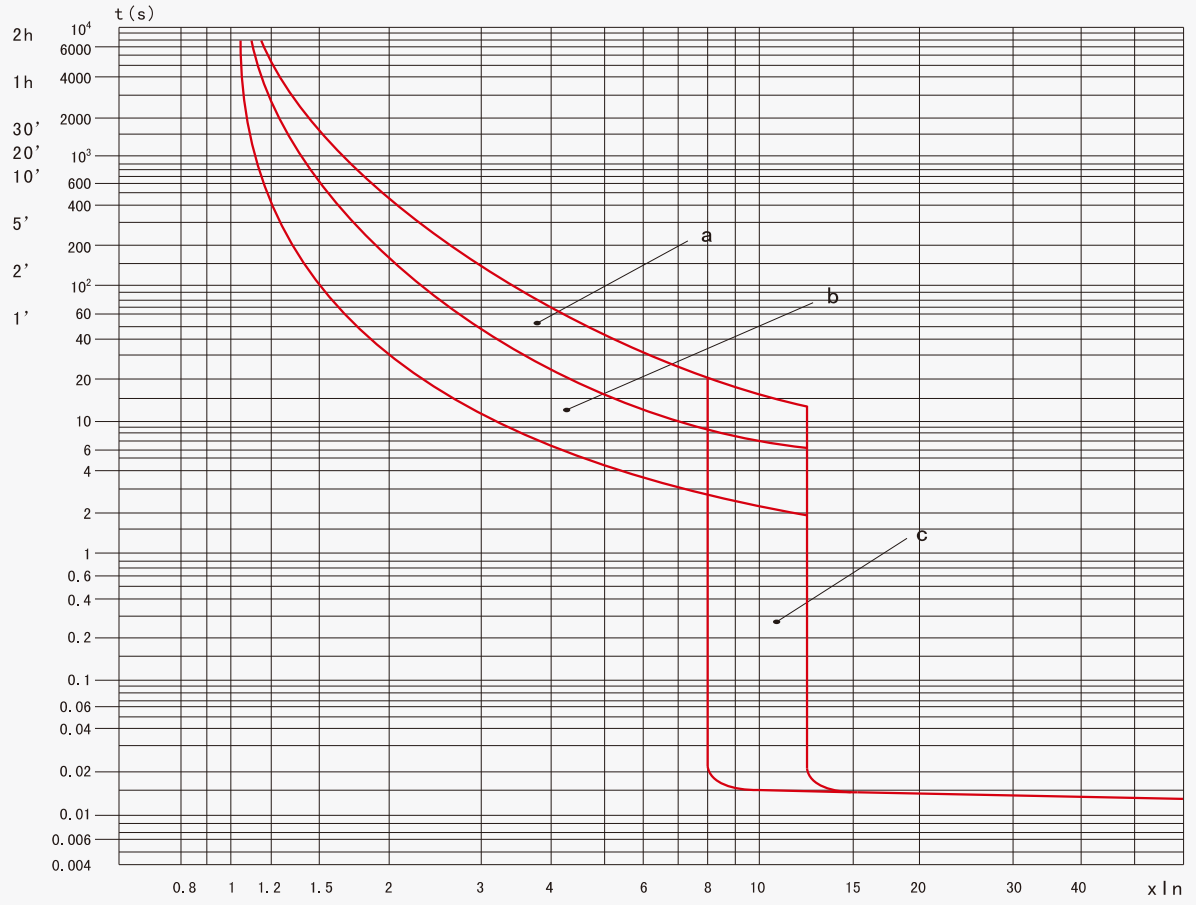
5.1.Longtimedelay releasesetup to current Ir1
Iri namelyrated current In of the circuitbreaker,thespecifications of In,please refer to Table 4.
Theneutral pole(N pole)of4-pole circui breakeraldoes notinstallwith over cureantrelease,the ratedfeverheating curentis he same as ather three poles.
5.2.Theovercurrent protection characteristics of circult breakers fordistribution are shown in Table 5
5.3.The over-currentprotectioncharacteristic curveofHUM8-63、HUM8-100is shown in picture 1a-Characteristics of cold thermaloverload protection

Table 5

Rated current In(A)	Thermal release(ambient temperature is+40℃		Electromagnetic release operatingcurrent(A)
	1.05In non operating time(h) (cold state)	1.30In operating time(h) (thermal state)	
≤63	>1	≤1	(10±2)In (Note)
>63	>2	≤2	

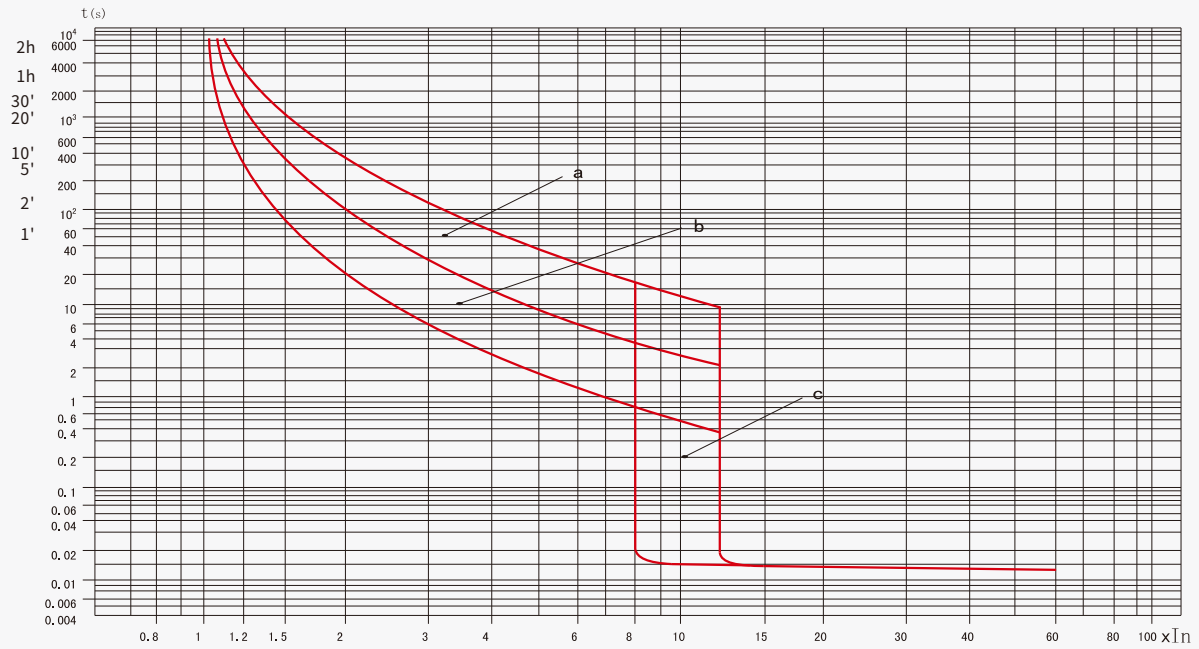
Ndote:the operding curent of HUM8-630,HUM8-800MCCB’S electromagnetic release is(5-14)nadjustable.Referance value:low(4-6)In，lower（6-8.3)In;higher(83-10.9)In;high(10.9-14)In

Picture1



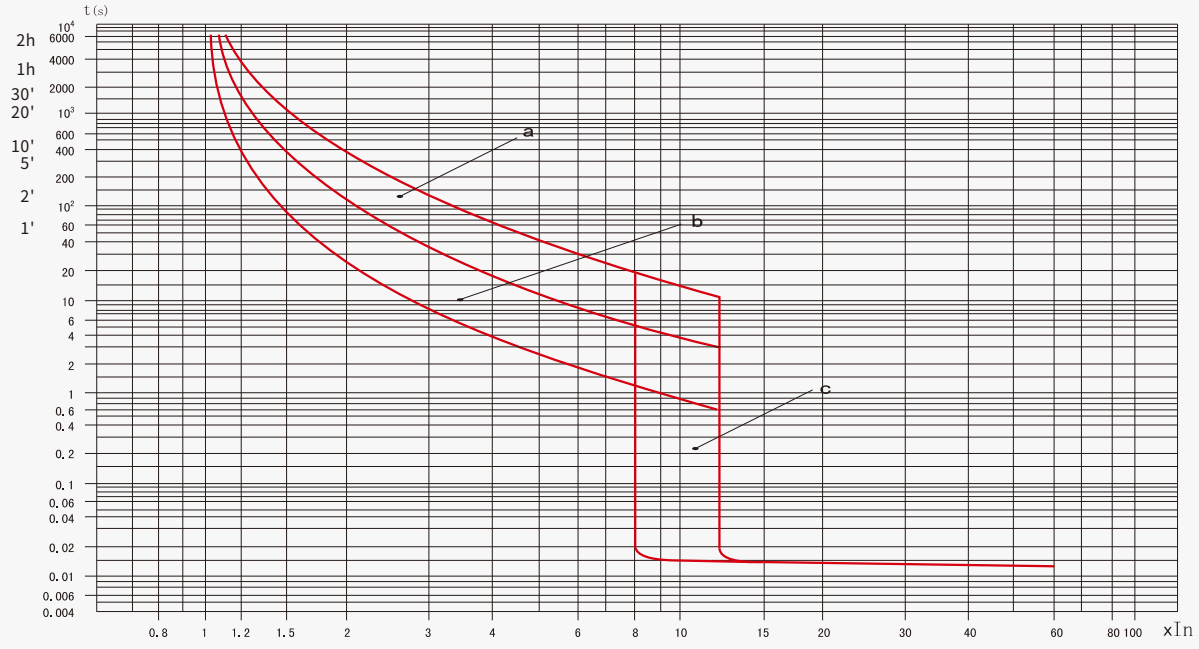
2.2 HUM8-250 Overcurrent Protection Characlerislic Curve See Figure 2

Picture 2



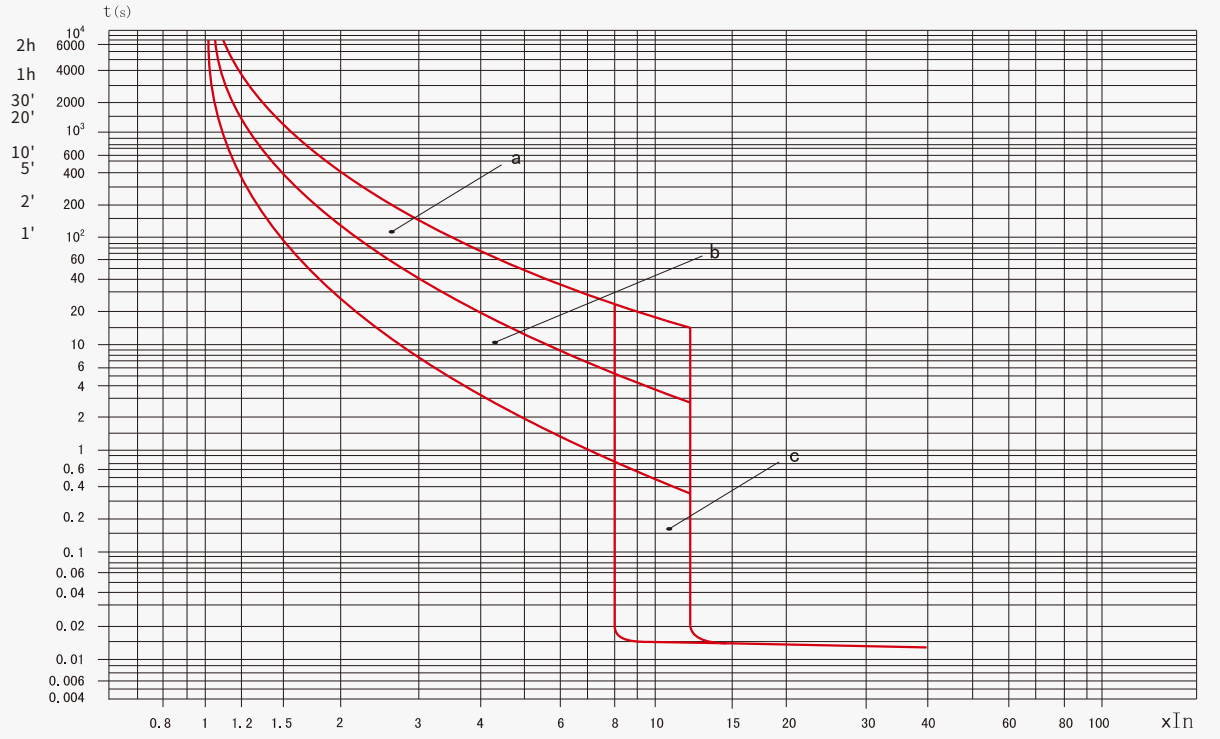
2.3 HUM8-400 Overcurrent Protection Characlerislic Curve See Figure 3

Picture 3



2.4 HUM8-630、HUM8-800 Overcurrent Protection Characlerislic Curve See Figure 2

Picture 4



3.The protection characteristics of over current for motor circuit breakers are shown in Table 6

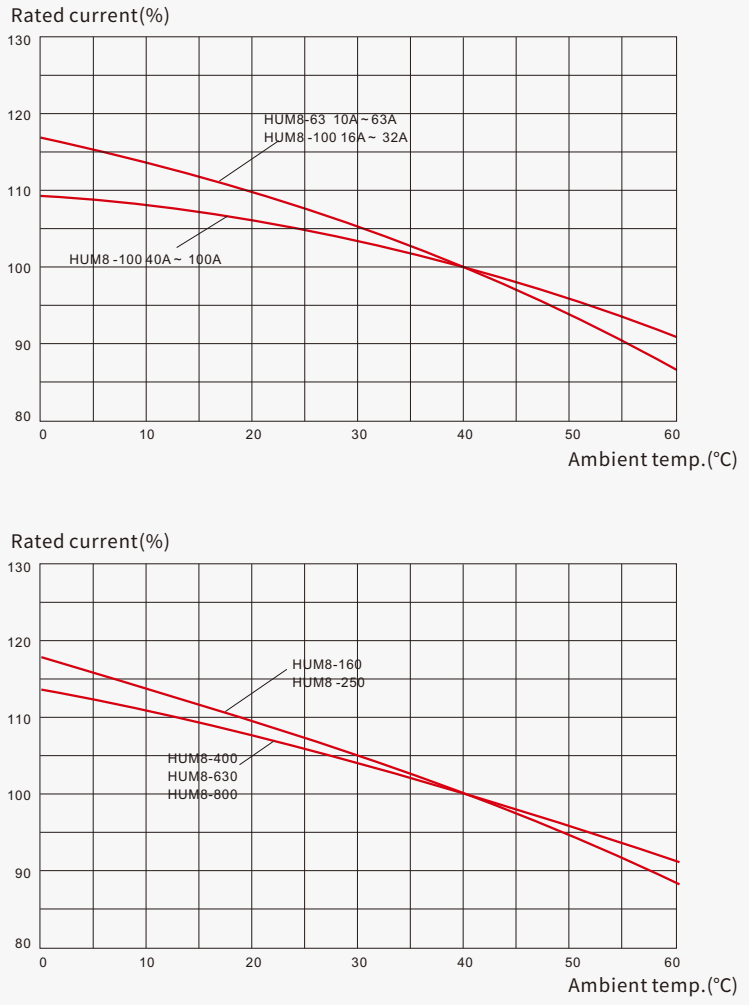
Table 6

Rated current In(A)	Thermal release(ambient temperature is+40°C)				Electromagnetic release operatingcurrent(A)
	1.0In non operating time(h)(cold state)	1.2In operating time(h) (thermal state)	1.5In operating time (min)(thermal state)	7.2In operating time Tp(s)(cold state)	
In≤63	>2	≤2	≤2	2<Tp≤10	(12±2.4)In (Note)
63<In≤250			≤4	4<Tp≤10	
250<In≤800			≤8	6<Tp≤20	

Ndote:the operding curent of HUM8-630,HUM8-800MCCB’S electromagnetic release is(5-14)nadjustable.Referance value:low(4-6)In，lower（6-8.3)In;higher(83-10.9)In;high(10.9-14)In

4.The temperature correction curve ofthermalrelease isshownin picture 5

Picture 5



5.The powerloss of circuit breakerls shown in Table 7

Table 7

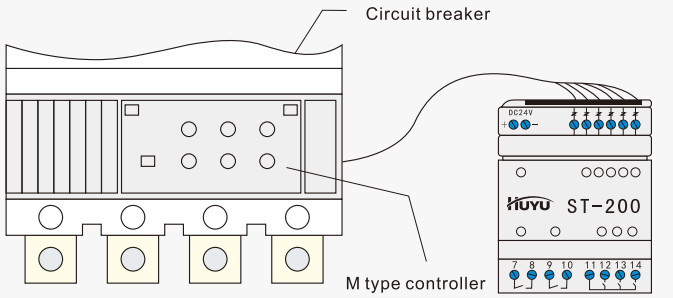
Frame size	Rated current In(A)	Resistance of per pole(mΩ)		Total power lossof triode(W)			
				Stationary type		Insert or draw out type	
		C.S type	H.U type	C.S type	H.U type	C.S type	H.U type
63	63	2.1	—	25	—	—	—
100	100	0.83	1.33	25	40	30	46
250	250	0.32	0.51	60	96	75	135
400	400	0.20	0.33	96	158	120	187
630	630	0.14	0.22	167	262	195	296
800	800	0.11	0.18	211	346	260	389

Intelligent controller

Rated curent of the MCCB's frame slze Inm=100A~1250A can be installed with intellient contrller.The curent ransformer set of ntellgent contrller forMCCB's powersupply,namely autogeny power suply.When the thre-phase curent is grater than 0.2In or single-phase current is grater than 0.5In,theintelligent controller can work raliably.Accordingto thedifferent functions,the intelligentcontroller is divided into two types:
Mtype intellgentcontroler:Curentransformer and electronic apparatus installed with themal electromagneterelease,soitisalsocalldelectronicrelease.H type intelient controler:in adition to the function of M inteligent contrller,it also has serial RS485 communication interface,which can meet therequirements oftelemetry,remote control,remote control and remote communication(i.a.,"four remote")of communicationnetwork.
When the main powersupplyofthe crcuitreakerdoesnot pass hrough the curent(le.no spontaneous power),the DC12Vauxilary power supply is needed.The M and H intellgent controlers have DC12V test power oute on the panel.Htype intelient contrller can also provide auxllary power supply through STprogrammer,ST-CM display module or ST-DPcommunicationprotocol module.6.1.Mtype intelligent controller
6.1.1 Function
a.Overload inverse time lag protection;
b.Shortcircuit,shorttime delay"ixed timelag"protection orshort circuit,short ime delay"fixed time lag+inverse time lag'protection:
c.Short circuit instantaneous operation protection;
d.Earthing protection(applicable to four polecircut breaker)
e.Auxiiary function:operation currentindication,power supply and slf diagnosis indication,warning alarm and groundingalarm indication;
The self diagnostie function ot the controler is mainly used for checking and protecting the operation of the single-chip computer chip.When the workingtemperature of he contrller s over 80 degrees,the MCU liaht emiting diode blinks;when the micro-controler works abnormaly,the MCU liaht emitin diodeblinks or extinguishes.
t.Optional function:wamning signal trpping alarm,grounding alarm (four pole circuit breaker and other optical isolation signal output.ST-200 control module is
needed at this time.The connection is shown in picture6.
g.Panel's parametersetting up and tripping test function
6.1.2The panel layout of M type intelligent controller shown by Drawing 76.1.3The over-current protection characteriste curve of Mtyp lntlgent controllershown by Drawing 8 and9,and the technical data are shown in table 8.
Drawing8:
Ir1 Is long time delay release setting up current,TLis longtime delayoperation time;Ir2Isshort time delayreleasesetting up current,TS is shorttime delay operation time;Ir23 is instantaneous releaseseting up current;TG is earthing fault operating current;Ir4 Is earthing fault setting up current;
lp ls forecast alarming current;
Explanation:4 pole for MCCB'sforecastalarmingcurrentlp=1.0Ir1.

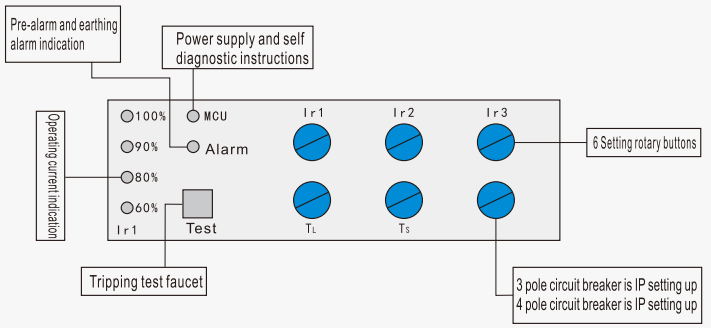
HUM8D-100、160、250 M-Type intelligent controller

Picture 6

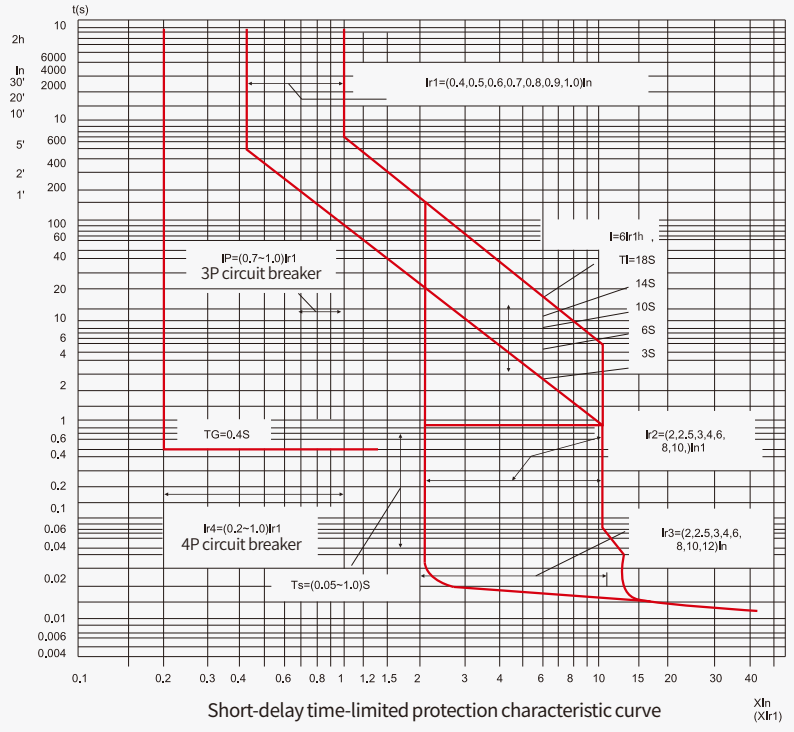


HUM8D-400～1250 M-Type intelligent controller

Picture 7

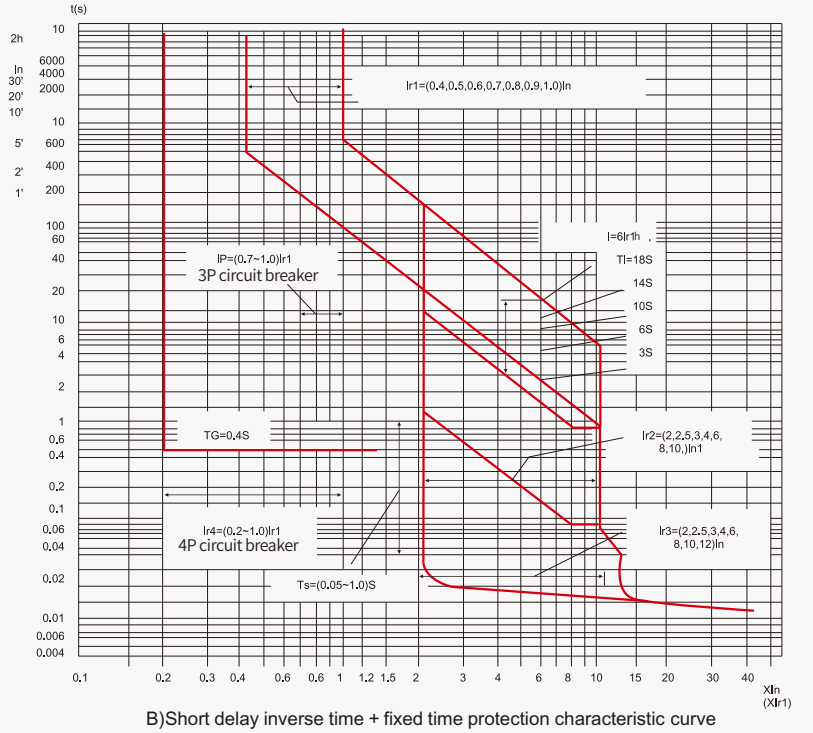


Picture 8



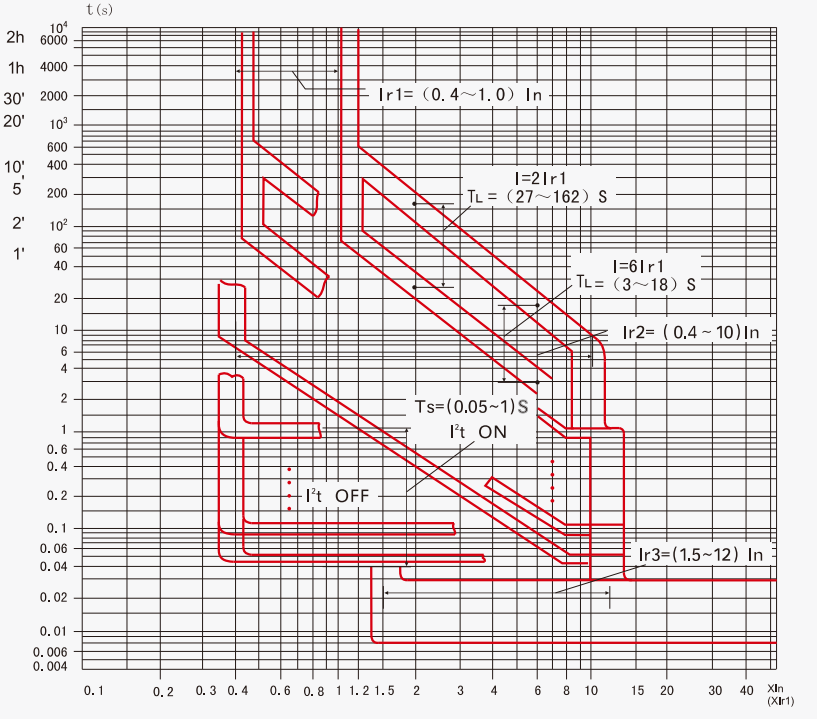
Short-delay time-limited protection characteristic curve

Picture 9



B)Short delay inverse time + fixed time protection characteristic curve

Picture 10



C)Characteristic curve of overcurrent protection of H type intelligent controller

2.Htype inteligenteontrolkr
2.1 Funatlon:
a.Overoad inwerse time lag proloclors
b.Shortcircuit shorttimedoly ked time lsgprotection orshor circuit,short timedelay"tfuedtime lg+inverse time lag'pwotection;
c.Short circuit instantaneous operatingproleciom
d.Earthing peotaction ffour pole breaker applicable);
0.Auxiarp funeclon operatian curantindicator.power supely and salf diagnatic instnuetians.,warning alarm and grounding alam irficato:
1.Bgpalouputunetion trpeing alaming,elasng breaking and athar opical separatian signaloupur,alam,ground alam oplieaidiaphragmsgnaloutput,andhas the function of datectian of unity and division.
g.Ithas RS485serlaloommunloatlon interfaoe.
h.Panel's parameter satting up and tripping test funclon;
2.2The panel layoutoftheHtpe inieligent controller is shown in picure112.3The ovar-curentpeotoclian charactiriahc curelHtypeimteligant contrellr is showmin picture 10,and tecrical dala s shown in able9

Picture 11

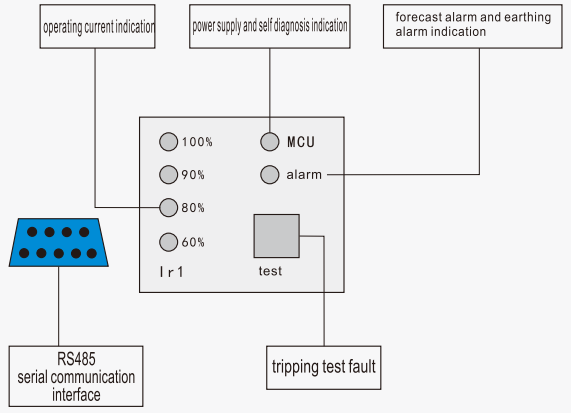


Table8:Over current protection characteristics of M intelligent controller In=100A,160A,250A,400A,630A,800A,1250A

• Overload long time delay																	
Setting current		Ir1=In ×…	0.4，0.5，0.6，0.7，0.8，0.9，1+OFF														
Movement characteristics		≤1.05Ir1	⩾2hNo action is more than or equal to 2h														
		>1.2Ir1	<1h1H long delay action														
Inverse time delay (s) $T=(6Ir1)^2\times T_L/I^2$		T_L=	3		6		10		14		18						
		Under 2Ir1	27		54		90		126		162						
		Under 6Ir1	3		6		10		14		18						
		Under7.2Ir1	2.2		4.38		6.94		10.22		13.14						
		Accuracy class	±10%														
Thermal memory(30min,powercleared)*			Standard＋OFF(turu pff)														
• Short time delay																	
Rated current		Ir2=Ir1 ×…	2，2.5，3，3.5，4，5，6，8，10+OFF														
Movement characteristics		≤0.9Ir2	Short delay without action														
		>1.1Ir2	Shortdelay action														
Time delay (s)	Timing limit (I^2t OFF)	Ts=	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.55	0.6	0.7	0.8	0.9	1.0
		delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9
		Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1
	Inverse time+ timelimit (I^2t ON)	If I> 8Ir1 delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9
		If I> 8Ir1 Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1
		If I⩽ 8Ir1 inverse time delay(s)	$T=(8Ir1)^2\times TL/I^2$														
		If I⩽ 8Ir1 Accuracy	±10%														
Thermal memory(30min,power cleared)*			Standard＋OFF(turu pff)														
• Short circuit instantaneous																	
Rated current		Ir3=In ×…	2，3，4，6，8，10，12+OFF														
Movement characteristics		≤0.85Ir3	nstantaneous non-action														
		>1.15Ir3	Instantaneous action														
• Earthing fault(4 pole circuit breaker applicable)																	
Rated current		Ir4=In ×…	0.2，0.3，0.4，0.5，0.6，0.8，1.0+OFF														
Movement characteristics		≤0.5Ir4	No alarm or no action														
		>1.0Ir4	Alarm or trip														
Time delay (s)		T_G=	0.4														
		delay(s)	0.36														
		Inverse time delay(s)	0.44														
• Overload forecast alarm																	
Rated current		Ip=Ir1 ×…	0.7，0.75，0.8，0.85，0.9，0.95，1.0														
Movement characteristics		≤0.9Ip	Non alarm														
		>1.0Ip	Alarm														

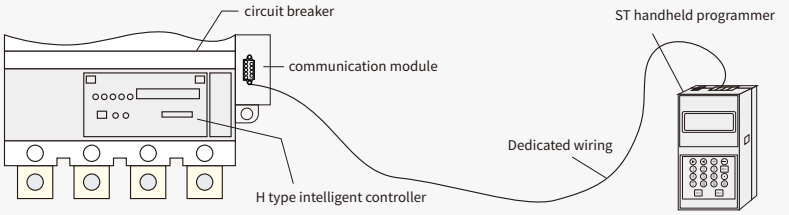
Note:1.Thefunctionoftheunitlocationinthetableisonlyavailablewhentheauxiliarypowersupplyisinoperation;
2.Shortdelaymodeforuserstochoose,butonlyonewaytowork;
• Timinglimitoperationmode;
• Theinversetime+timelimitmode,using8Ir1asthetransferpoint,I=8Ir1forinversetimework;I>8Ir¹fortimelimitmode.

Table 9:Over current protection characteristicsof H type intelligent controller In=100A,160A,250A,400A,630A,800A,1250A

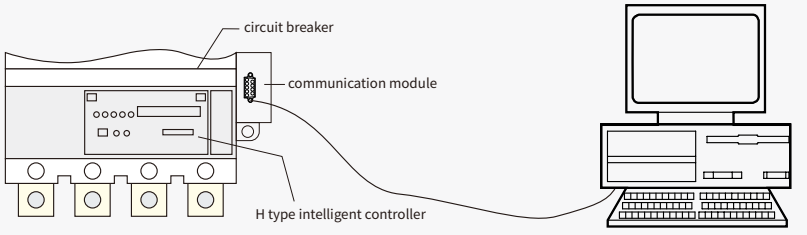
• Overload long time delay																		
Setting current		Ir1=In ×⋯	0.4-1(less than 2%+OFF(differential)exit position)															
Movement characteristics		⩽1.05Ir1	⩾2hNo action is more than or equal to 2h															
		＞1.2Ir1	<1h1H long delay action															
Inverse time delay (s) $T=(6Ir1)^2\times T_L/I^2$		T_L=	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Under 2Ir1	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162
		Under 6Ir1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Under7.2Ir1	2.2	2.92	3.65	4.38	5.11	5.84	6.57	6.94	8.03	8.76	9.49	10.22	10.95	11.68	12.41	13.14
		Accuracy class	±10%															
			Standard+OFF(turn off)															
• Short time delay																		
Setting current		Ir2=In ×⋯	0.4-1(less than 4%+OFF(differential)exit position)															
Movement characteristics		⩽0.9Ir2	Short delay without action															
		＞1.1Ir2	Short delay action															
Time delay (s)	Timing limit (I^2t OFF)	Ts=	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.55	0.6	0.7	0.8	0.9	1.0	
		Delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9	
		Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1	
	Inverse time+ timelimit (I^2t ON)	If I＞ 8Ir1 delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9	
		If I＞ 8Ir1 Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1	
		If I⩽ 8Ir1 inverse time delay(s)	$T=(8Ir1)^2\times TL/I^2$															
		If I⩽ 8Ir1 Accuracy	±10%															
Thermal memory(30min,power cleared)*			Standard+OFF(turn off)															
• Short circuit instantaneous																		
Setting current		Ir3=In ×⋯	1-12(less than 8%+OFF(differential)exit position)															
Movement characteristics		⩽0.85Ir3	Instantaneous non-action															
		＞1.15Ir3	Instantaneous action															
• Earthing fault(4 pole circuit breaker applicable)																		
Setting current		Ir4=In ×⋯	0.2-1(less than 8%+OFF(differential)exit position)															
Movement characteristics		⩽0.5Ir4	No alarm or no action															
		＞1.0Ir4	Alarm or trip															
Time delay (s)		T_G=	0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8	
		delay(s)	0.06		0.16		0.26		0.36		0.45		0.54		0.63		0.72	
		Inverse time delay(s)	0.14		0.24		0.34		0.44		0.55		0.66		0.77		0.88	
• Overload forecast alarm																		
Setting current		Ip=In ×⋯	0.2-1(less than2%range)															
Movement characteristics		⩽0.9Ip	Non alarm															
		＞1.0Ip	Alarm															

2.4.H-type intellgent controller parameter setting andcommunicatlion networking
a.H-type controller alone
Whenstting the protection parametersof the contrller,itis required to use the ST programmer to connect as shown inDrawing 12 and then to operate themanual of the programmer.Theliht alerm slgnals of the Htype contrller can be controlld through the ST200 ntllgent control Module to conver t contactsignaloutput.
b.H-type controller with ST-CM display module
During normal operation,the displaymodule monitors theoperating curent andfaultinformation of h contrller.When sting the protaction paramaterafthecontoller,Its necesBearyforthe profeseional to ueethe STprogrammerto conmect as shown in Drawing13and thento operate themanual of the programmer.
c.H-type controllercommunication network
The two connection solutions are shown inDrawing 14.Diferantprotocolmodules are optional fordfferent protocols.The followingis the solution for selectingthe ST-DP pratocol.Through the ST200 Intellent control module,contrele alarm slgnals,opening and cloelng slgnals can achleve the deslred contactconversion output.

Picture 12



Picture 13



HUM8 Moulded Case Circuit Breakers
Functions and Features

Structural features

Thiscircuitbreakerwassuccessfullydevelopedbyusinghigh-techwithinternationaladvancedlevelin1990s,anditsmainfeaturesareasfollows:：
1、Advancedarcextinguishingtechnology,highshort-circuitbreakingcapacity,thewholeseriestorealizezeroflyingarc.
Theproductinthedynamicandstaticcontactsplacednexttothearc-resistantinsulatingmaterials.Itsroleontheonehandistolimitthearcarcrootarea,ontheotherhand,theinsulatingmaterialinthearcunderthecactionofhightemperatureproducesalargenumberofgasestoincreasethearcpressure,andcoolthearc,andenhancethearcareaofthedissipativeeffect,sothatthearccolumnresistancerises,increasethearcvoltage.Inthecircuitelectromotiveforceandtheattractionoftheirongridunderthedualroleofthearcintothegridarcextinguishingchamber,isdividedintoshortarcs,duetothenear-negativeeffectcausedbythearcvoltagerisesdramatically.Whenthesupplyvoltagecannotmaintainthearcvoltage,thearcwillbeextinguished.Inthearcextinguishingchambersetupoutsidethemulti-layerconsumptionoffreenetwork,sothattheflyingarcdistanceiszero.
2、Advanceddesignofoperatingmechanism
Theproduct'soperatingmechanismlockingisstableandreliable,toensurereliableclosureduringnormaloperation,theagency'sreleaseforceissmall,400A~800Ashellframeagency'sreleaseforcetoincreasealevelofamplificationmechanismtoensurethattheovercurrentwhentherelibleunlockingandbreaking.
100A~250Ashellframeoperatingmechanismwhentheovercurrentdisconnectioncircuitbreakercontactopeningdistanceismuchlargerthanthenormalbreakingcontactopeningdistance(about50%)whichisconducivetoimprovetheshort-circuitbreakingcapacity.
3、Adoptingmicroelectronictechnologytorealizeintelligentcontrol.
100A~1250Ashellframecircuitbreakerwiththermalelectromagneticdetentvarieties,thereareelectronicdetentandintelligenttriptypes.

Arc-resistant insulating material is placed on the moving and static contacts;

The circuit breaker is in the normal breaking position.

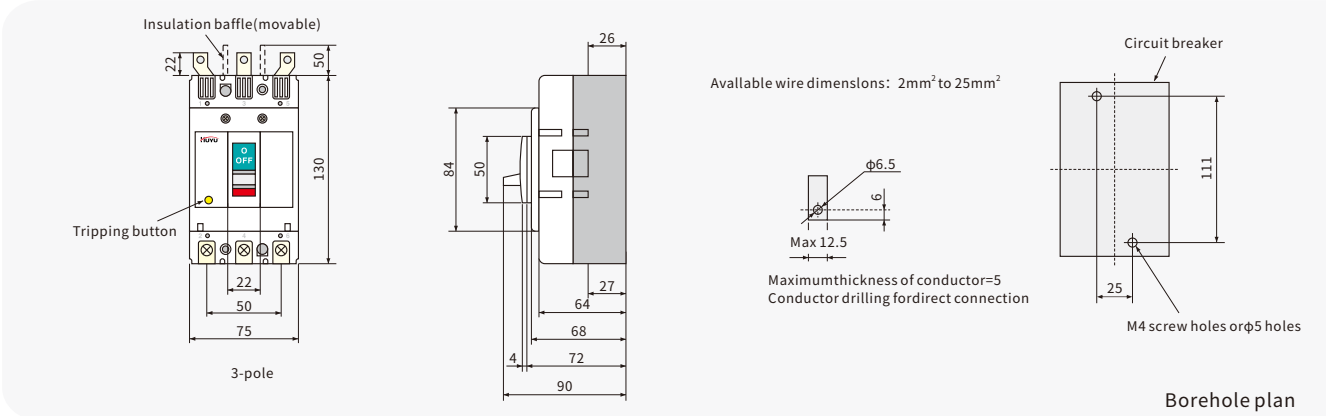
4、Complete accessories
Accessories for circuit breakers are divided into two categories: internal and external.
4.1、Internal accessories include Auxiliary switch, Alarm switch, shunt trip, and under-voltage trip. These accessories can be easily installed in the product's dedicated accessory box (see the right figure for the installation process) and have a dedicated terminal block.

1、Press the trip button to open the circuit breaker　2、Screw down the front cover screws　3、Press the internal accessories on　4、Close the front cover and tighten the screws

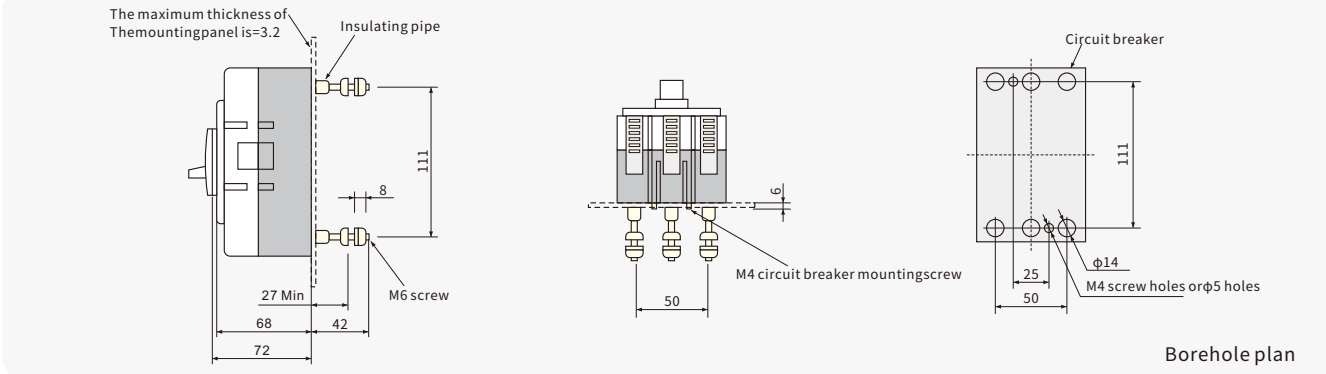
INTERNAL ACCESSORIES INSTALLATION : Be sure to trip the circuit breaker when installing accessories

Overall and mounting dimension

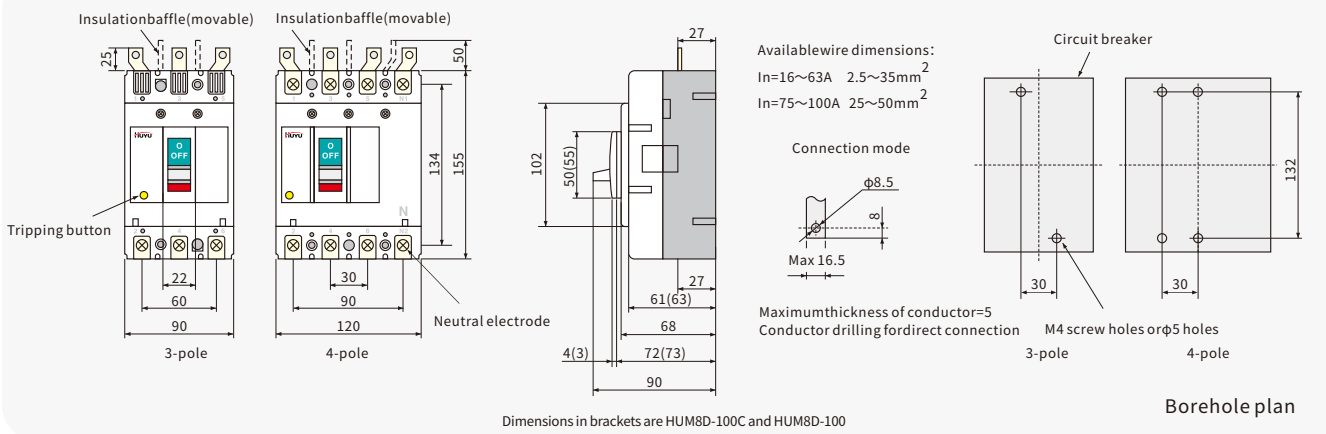
1.HUM8-63overall and mountingdimensions
Front panel connectlon



Post plateconnection



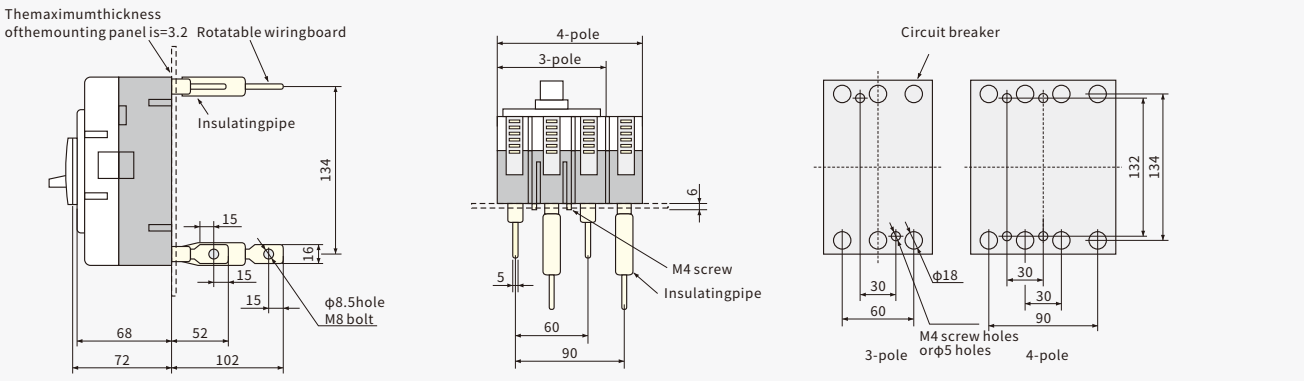
2.HUM8-100C、HUM8-100S、HUM8D-100C、HUM8D-100S overall and mounting dimensions
Front panel connectlon



HUM8 Moulded Case Circuit Breakers

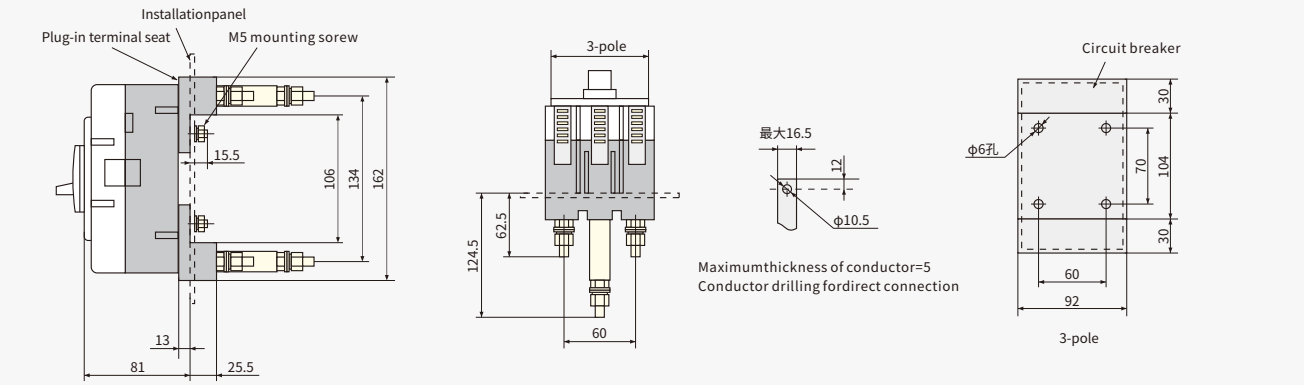
Functions and Features

Post plateconnection



Borehole plan

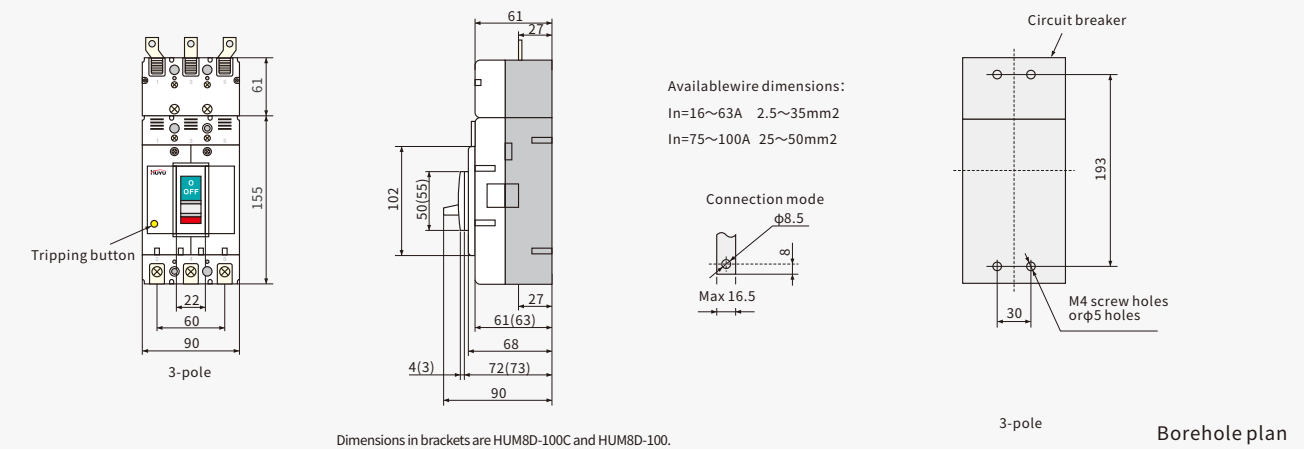
Plug-inconnection



Borehole plan

3. HUM8-100Uoverall andmounting dimensions

Front panel connectlon

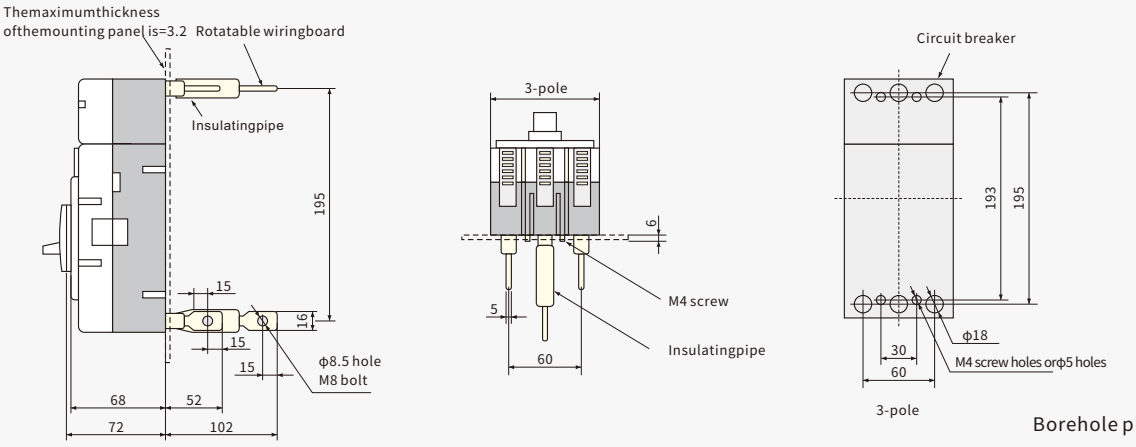


Dimensions in brackets are HUM8D-100C and HUM8D-100.

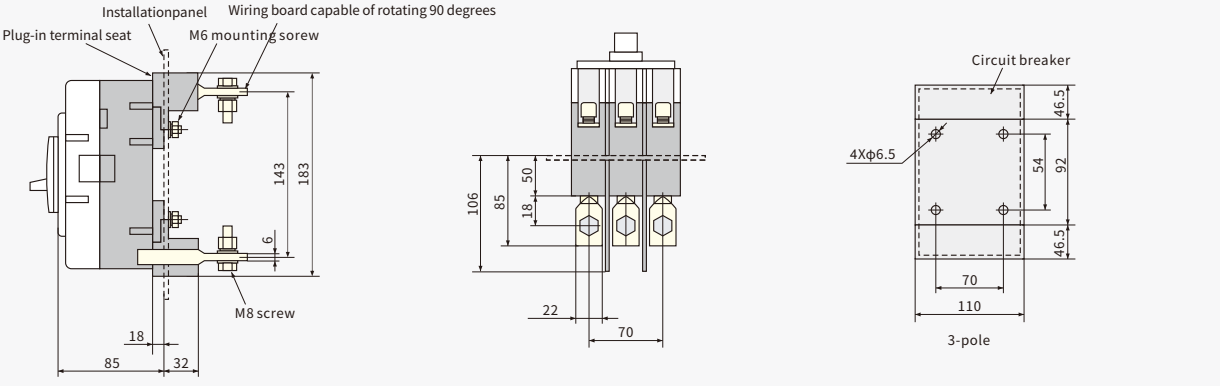
Borehole plan

HUM8 Moulded Case Circuit Breakers
Functions and Features

Post plateconnection

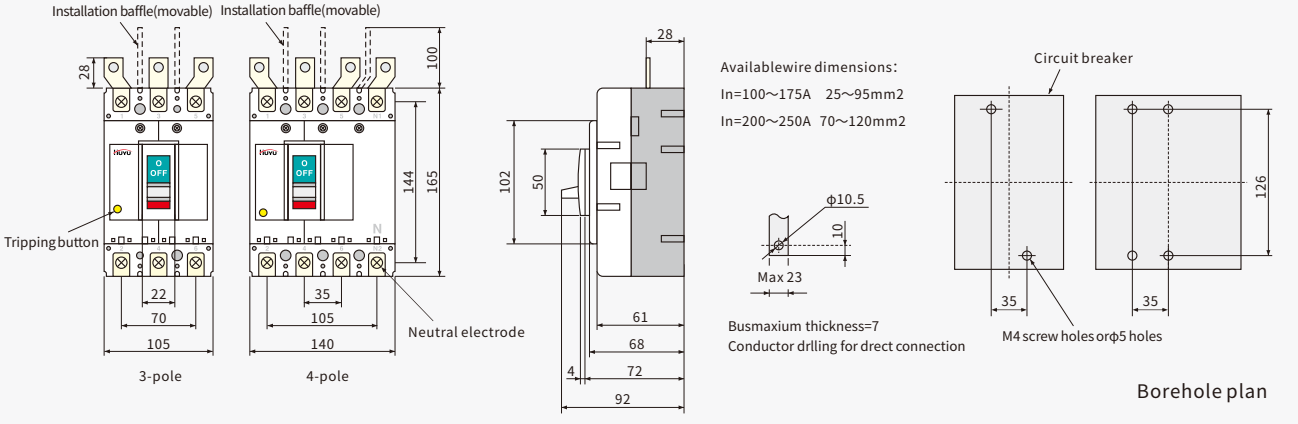


Plug-inconnection



4、HUM8-250C、HUM8-250S、HUM8-250H、HUM8D-160、HUM8D-250C、HUM8D-250、HUM8D-250H、HUM8D-250U overall and mounting dimensions

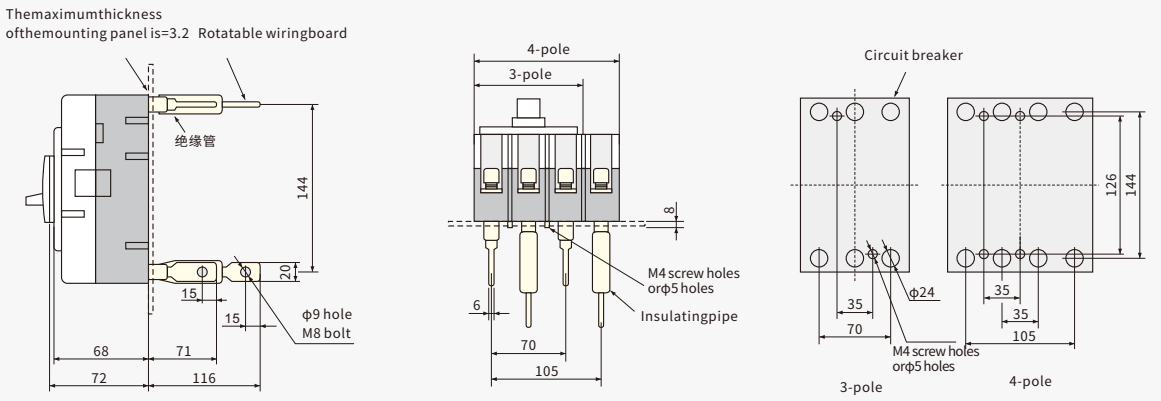
Front panel connectlon



HUM8 Moulded Case Circuit Breakers

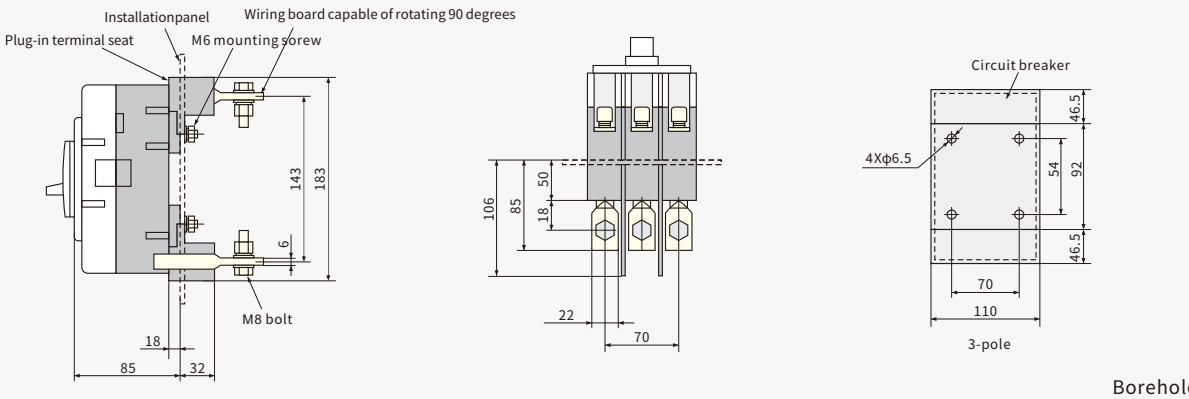
Functions and Features

Post plateconnection



Borehole plan

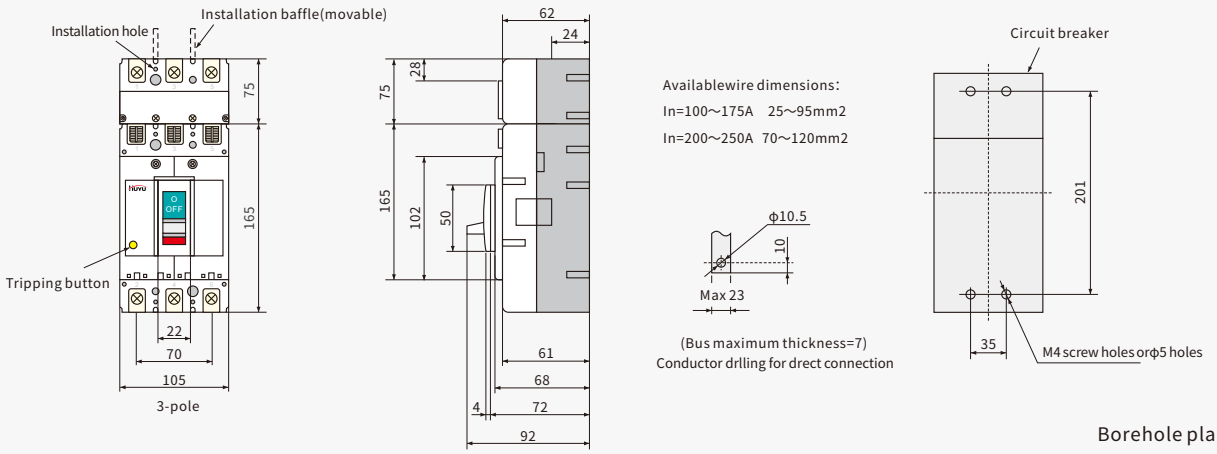
Plug-inconnection



Borehole plan

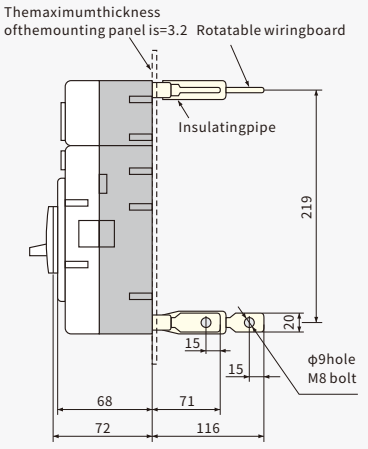
5、HUM8-250U overall and mounting dimensions

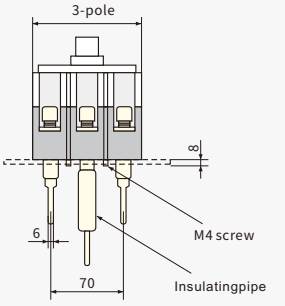
Front panel connectlon

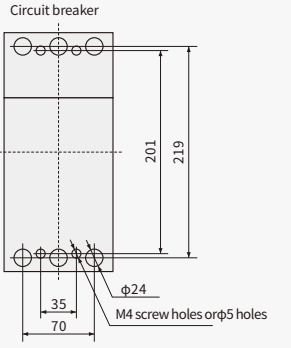


Borehole plan

Post plateconnection

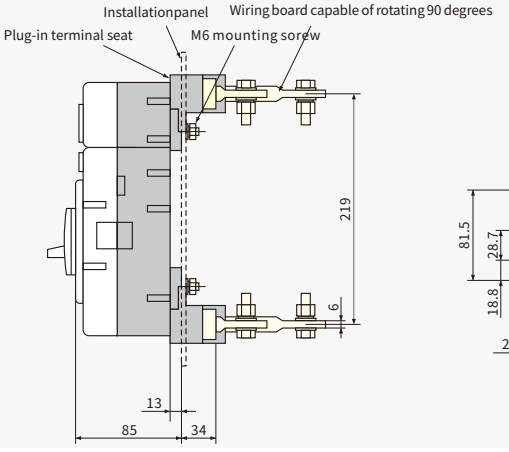


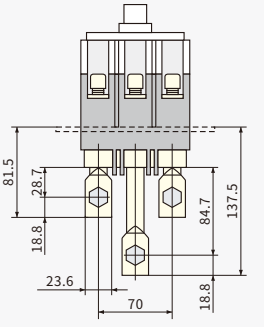


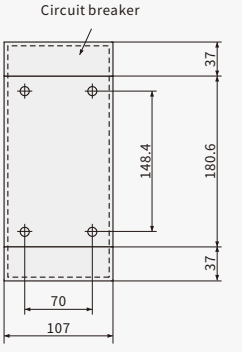


Borehole plan

Plug-inconnection



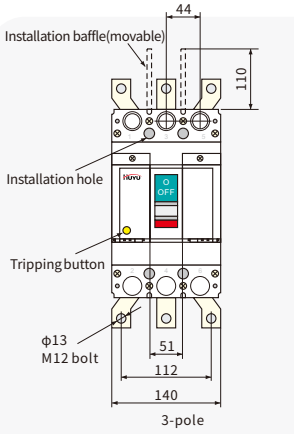


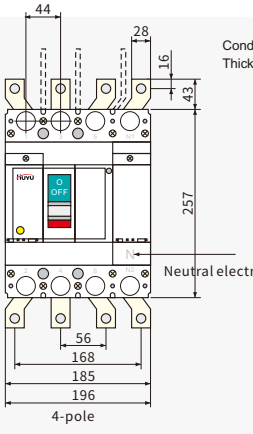


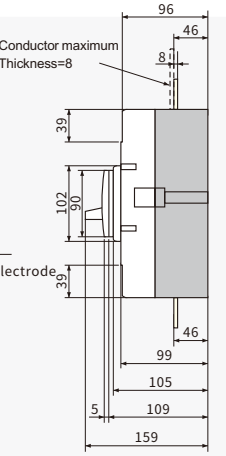
Borehole plan

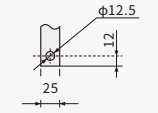
6、HUM8-400C、HUM8-400S、HUM8D-400C、HUM8D-400、HUM8D-M630 overall and mounting dimensions

Front panel connectlon

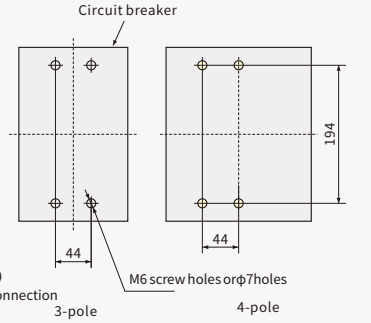








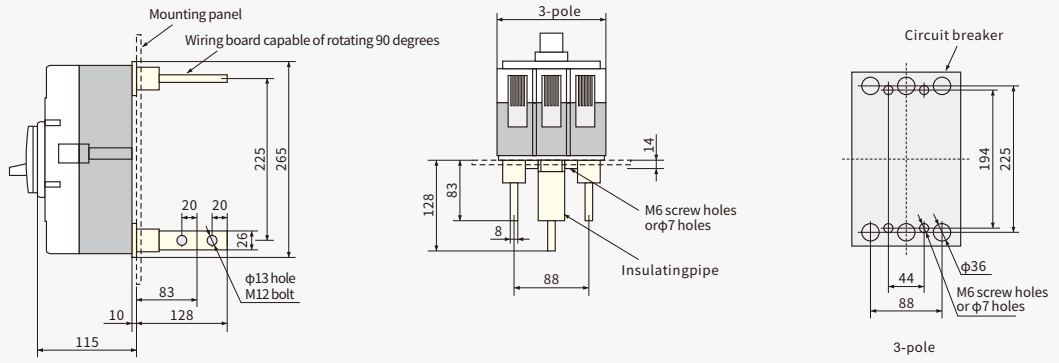
(Busmaxium thickness=8)
Conductor drlling for drect connection



Borehole plan

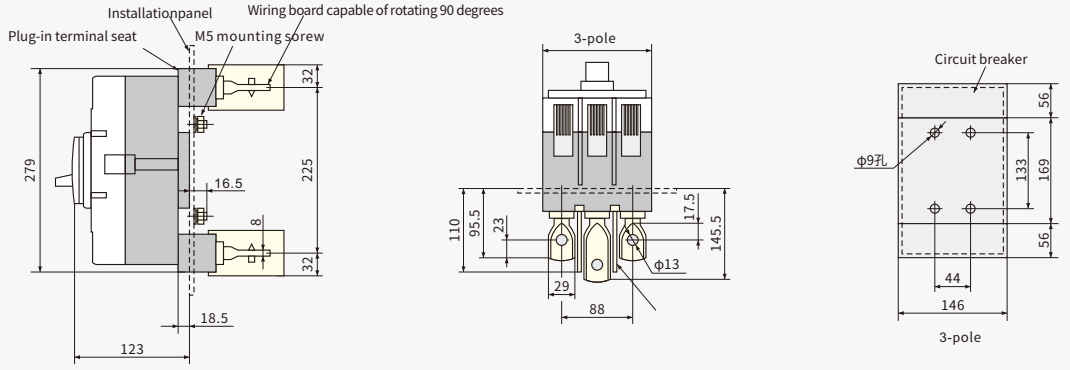
HUM8 Moulded Case Circuit Breakers
Functions and Features

Post plateconnection



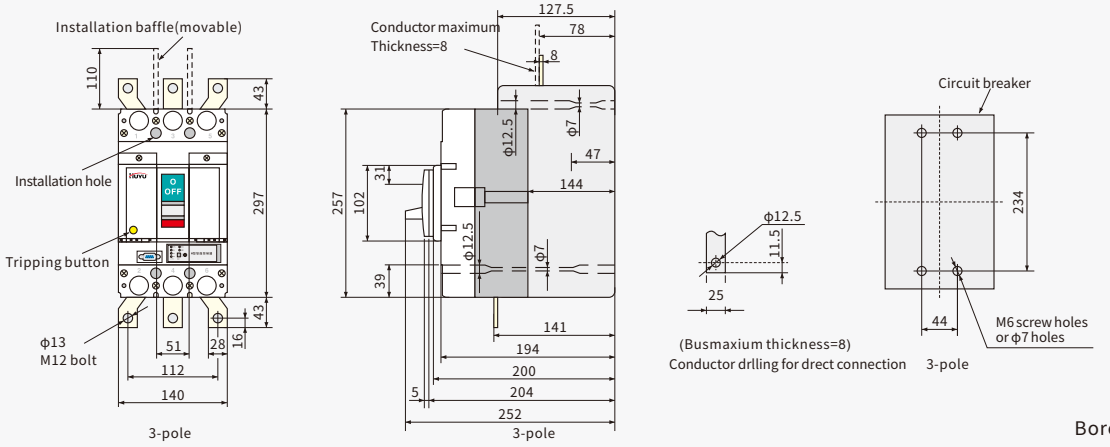
Borehole plan

Plug-inconnection



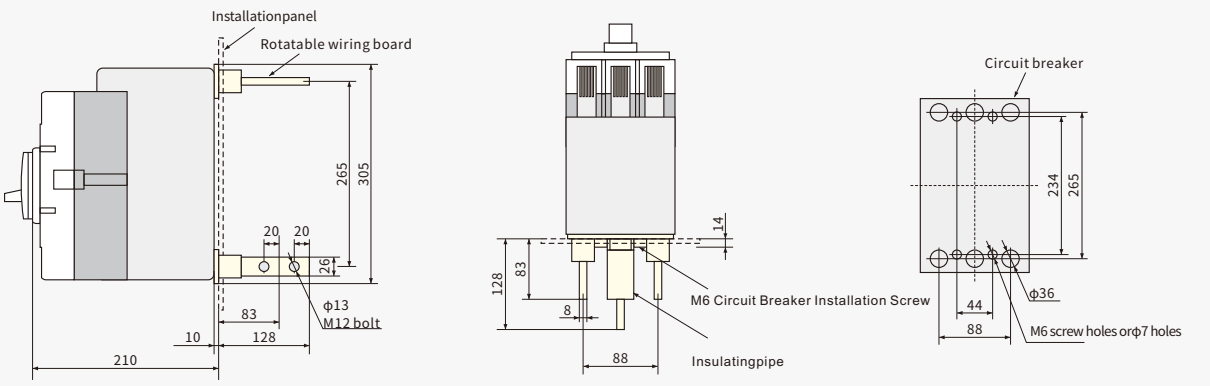
Borehole plan

7、HUM8-400H、HUM8-400U、HUM8D-400H、HUM8D-400U overall and mounting dimensions
Front panel connectlon



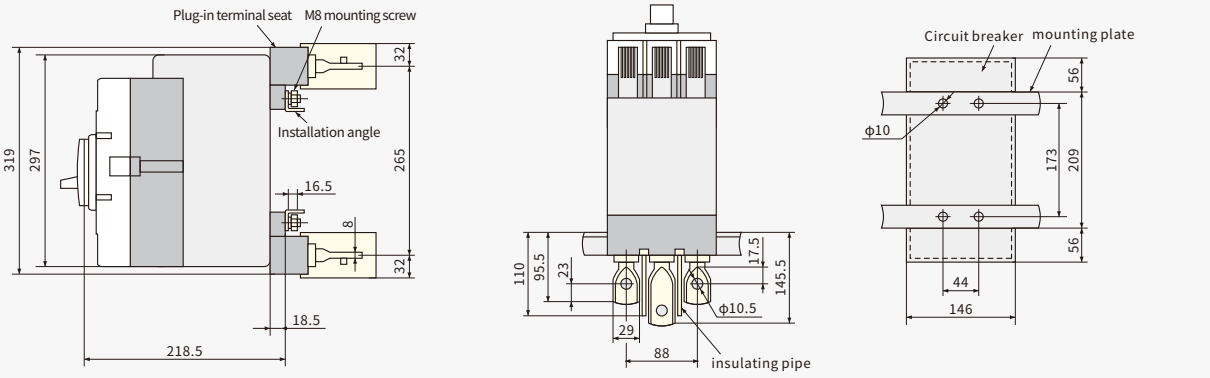
Borehole plan

Post plateconnection



Borehole plan

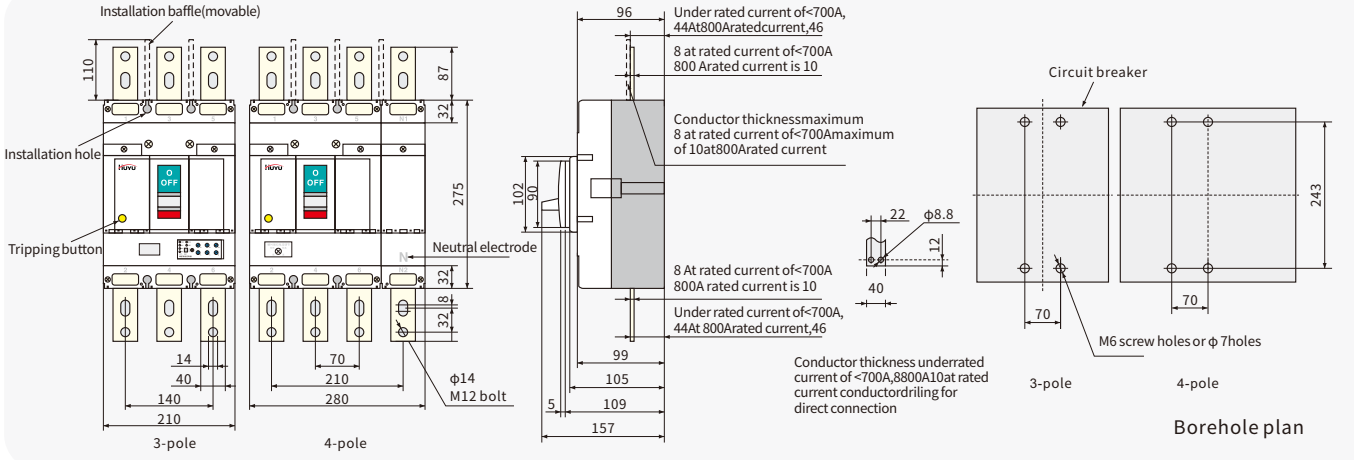
Plug-inconnection



Borehole plan

8、HUM8-630C、HUM8-630S、HUM8D-630C、HUM8D-630、HUM8-800C、HUM8-800S、HUM8D-800C、HUM8D-800 overall and mounting dimensions

Front panel connectlon

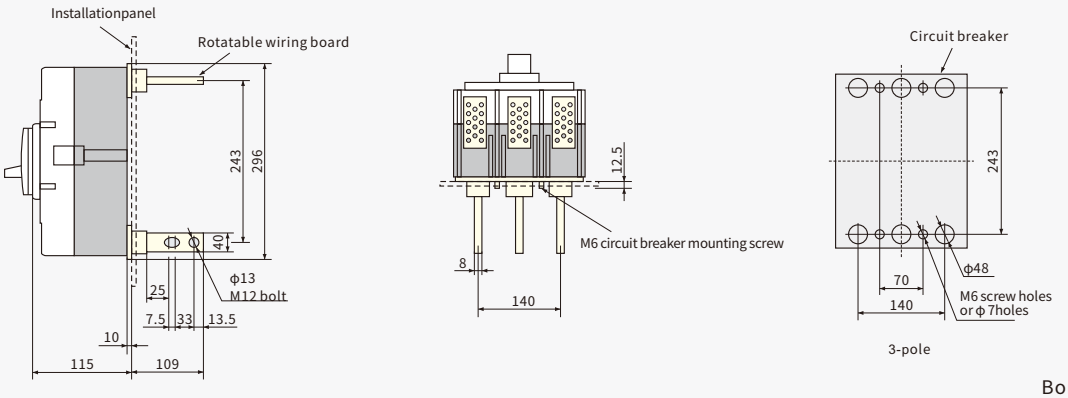


Borehole plan

HUM8 Moulded Case Circuit Breakers

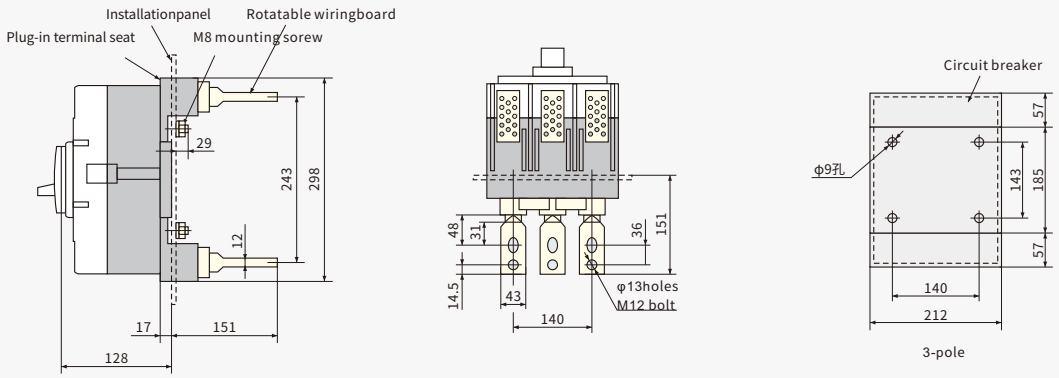
Functions and Features

Post plateconnection



Borehole plan

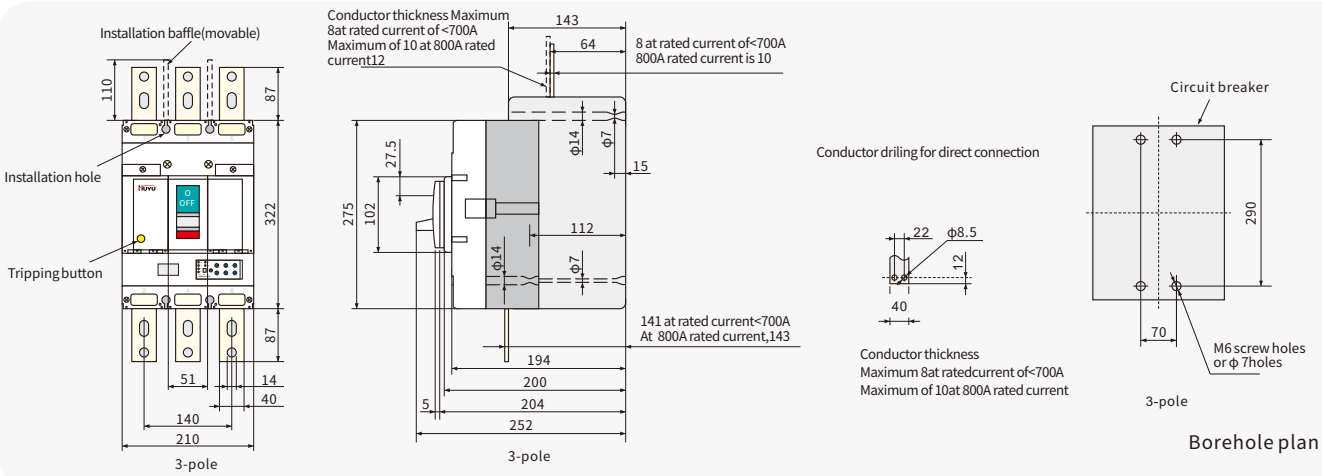
Plug-inconnection



Borehole plan

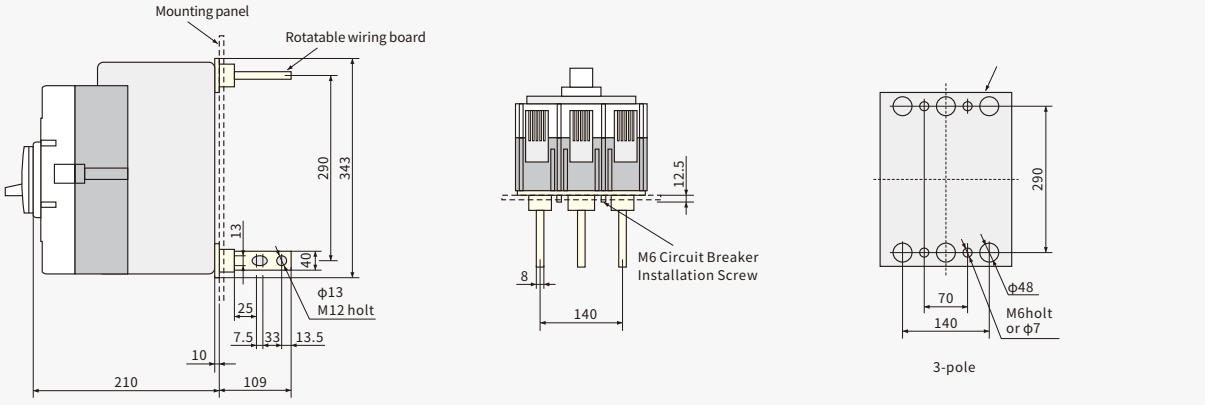
9、HUM8-630H、HUM8D-630H、HUM8-630U、HUM8D-630U、HUM8-800H、HUM8D-800H、HUM8-800U、HUM8D-800U overall and mounting dimensions

Front panel connectlon

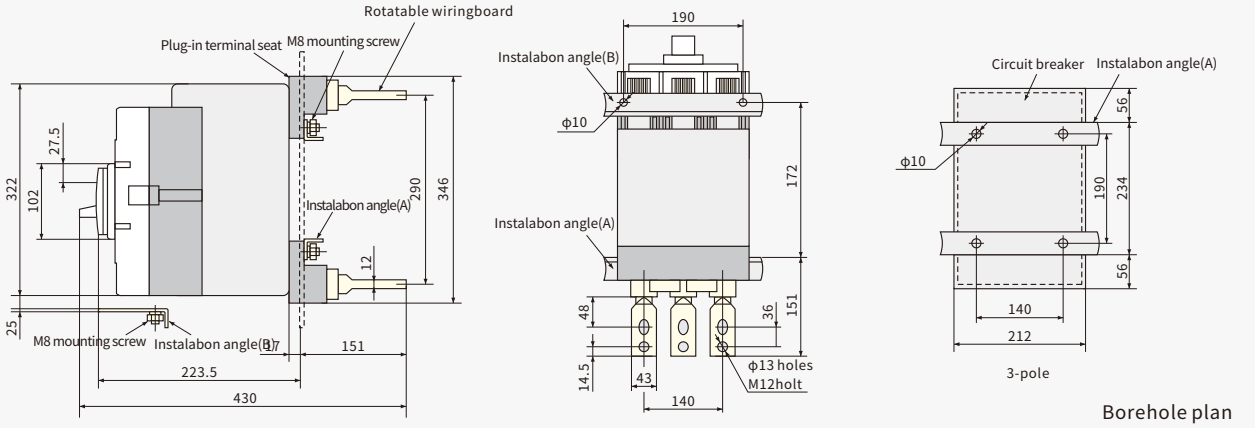


Borehole plan

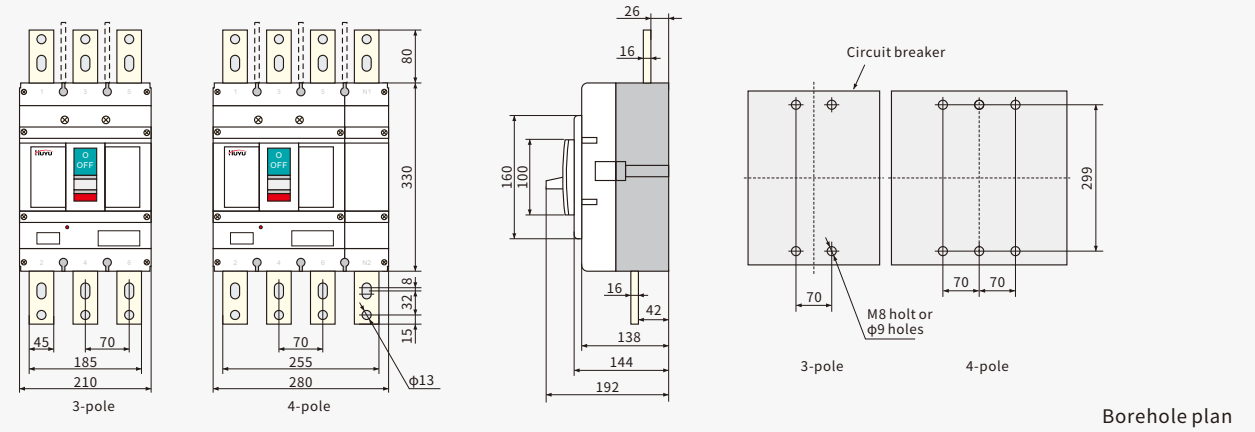
Post plateconnection



Plug-inconnection



10、HUM8D-1250S overall and mounting dimensions
Front panel connectlon



9.Accessoriesof the circuit breaker

9.1.Complete specifications
9.1.1According to the grade of the curentframe,it is divided into 7 specifications from 63Ato 1250A.
9.1.2According to the rated current ofthe tripping device,there are 34 grades from 10Ato 1250A.
9.1.3 Short circuit breaking capacity is divided into 4 kinds:C-fundamental type.,S-standard type,H-high-class type,U-current-limitingtype
9.1.4 There aretwotypes of over-current release.One kind isthe thermoelectic magnetic trpping device,the otheris the digital electronic triping device(intelligent controller).
9.1.5According tothe utilzation category,it is divided into:
ClassA:In case of shortelrcuit,th crcuit breakeris not lear as a series of shortcireuit rotection in the load side of the selectlve protection of electricalappliances
ClassB:inthe caseof shortcireuit,the circuit breaker is clarly used asaselective protection for another shortecicuit rotectiondeviein series onits loadside
9.1.6:According to the connection mode:
Front panel connection,post plate connection and plug-in connection.Circuit breakers for 630Aand above have withdrawable devices.Th device conectsorisolatesthe circutbreakerandthe circuitrough he rotation oftheremoterod

2.Annexmodel list:

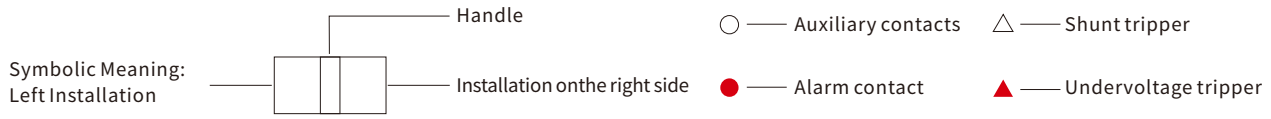
Accessory model	Frame size current	Specification	Note
Front plate 	HUM8-63		3P
	HUM8-100		3P、4P
	HUM8-160、250		3P、4P
	HUM8-400		3P、4P
	HUM8-630		3P、4P
	HUM8-800		3P、4P
Post board wiring board 	HUM8-63		3P
	HUM8-100		3P、4P
	HUM8-160、250		3P、4P
	HUM8-400		3P
	HUM8-630		3P
	HUM8-800		3P
Insert attachment 	HUM8-100	CR2	3P
	HUM8-160、250	CR3	3P
	HUM8-400	CR4	3P
	HUM8-630	CR5	3P
	HUM8-800	Cr5	3P
Cs1 rotating handle 	HUM8-63	CS1-63	3P、4P
	HUM8-100	CS1-100	3P、4P
	HUM8-160、250	CS1-250	3P、4P
	HUM8-400	CS1-400	3P、4P
	HUM8-630	CS1-630	3P、4P
	HUM8-800	CS1-800	3P、4P
Electricoperating mechanism 	HUM8-63	MDX0	AC110～230V 50Hz DC110～220V
	HUM8-100	MDX1	
	HUM8-160、250	MDX2	
	HUM8-400	MDX3	
	HUM8-630	MDX4	
	HUM8-800	MDX4	

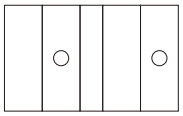
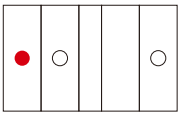
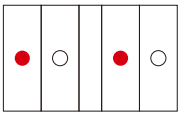
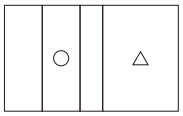
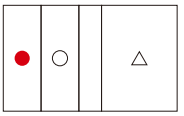
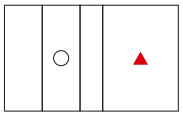
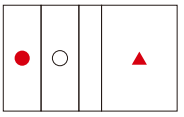
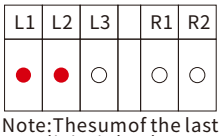
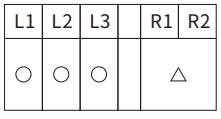
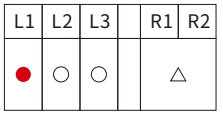
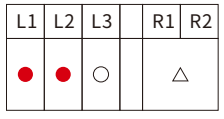
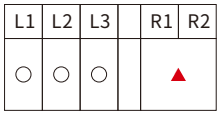
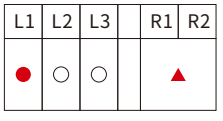
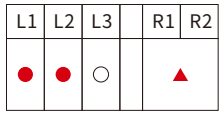
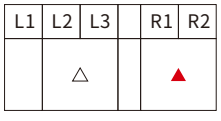
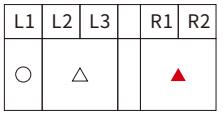
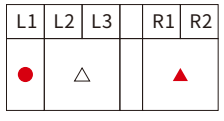
HUM8 Moulded Case Circuit Breakers
Functions and Features

Continuous 2.Annex model list:

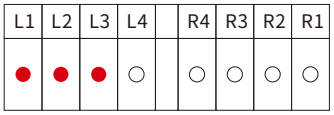
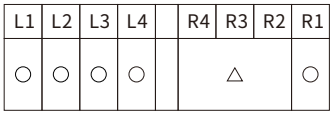
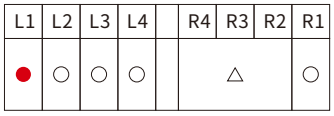
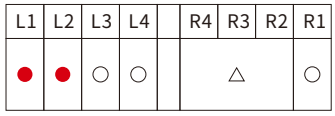
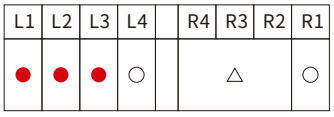
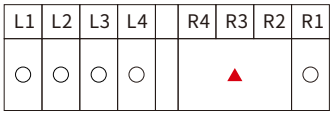
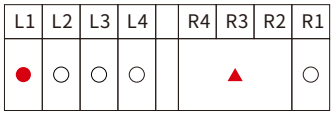
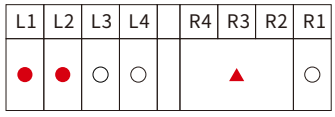
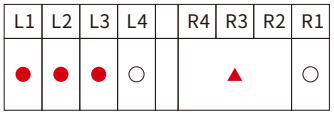
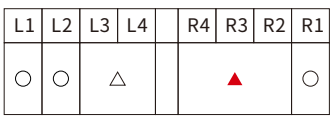
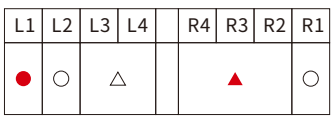
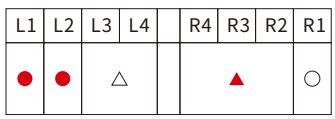
Accessory model	Frame size current	Specification	Note
Shunt relegse 	HUM8-63	FL1	AC：110V、230V、400V DC：24V、48V、110V
	HUM8-100	FL2	
	HUM8-160、250	FL3	
	HUM8-400	FL4	
	HUM8-630	FL4	
	HUM8-800	FL4	
Under-voltage release 	HUM8-63	QY1	AC：110V、230V、400V DC：24V、48V、110V
	HUM8-100	QY2	
	HUM8-160、250	QY3	
	HUM8-400	QY4	
	HUM8-630	QY4	
	HUM8-800	QY4	
Auxiliary contact 	HUM8-63	F1	
	HUM8-100	F2	
	HUM8-160、250	F3	
	HUM8-400	F4	
	HUM8-630	F4	
	HUM8-800	F4	
Alarm contact 	HUM8-63	B1	
	HUM8-100	B2	
	HUM8-160、250	B3	
	HUM8-400	B4	
	HUM8-630	B4	
	HUM8-800	B4	
N typemechanical interlock 	HUM8-63	3P(N1-3)	
	HUM8-100	3P(N2-3) 4P(N2-4)	
	HUM8-160、250	3P(N3-3) 4P(N3-4)	
	HUM8-400	3P(N4-3) 4P(N4-4)	
	HUM8-630	3P(N5-3) 4P(N5-4)	
	HUM8-800	3P(N5-3) 4P(N5-4)	

9.3 Internal annex code and installation position diagram



Frame size grade	63A，160A，100A，250A		
Accessoriescode	0(0～2)0	0(0～2)1	0(0～2)2
Position diagram			
Accessoriescode	1(0～1)0	1(0～1)1	
Position diagram			
Accessoriescode	2(0～1)0	2(0～1)1	
Position diagram			
Frame size grade	400A		
Accessoriescode	0(0～5) (0～2)		
Position diagram	 Note:Thesumof the last two digits is lesthan7		
Accessoriescode	1(0～3)0	1(0～2)1	1(0～1)2
Position diagram			
Accessoriescode	2(0～3)0	2(0～2)1	2(0～1)2
Position diagram			
Accessoriescode	300	310	301
Position diagram			

HUM8 Moulded Case Circuit Breakers
Functions and Features

Frame size grade	630、800		
Accessoriescode	0(0～8) (0～3)		
Position diagram	 Note:the additionof thelatter two digits≤11		
Accessoriescode	1(0～5)0	1(0～4)1	1(0～3)2
Position diagram			
Accessoriescode	1(0～2)3		
Position diagram			
Accessoriescode	2(0～5)0	2(0～4)1	2(0～3)2
Position diagram			
Accessoriescode	2(0～2)3		
Position diagram			
Accessoriescode	3(0～3)0	3(0～2)1	3(0～1)2
Position diagram			

9.4 Parameters ofauxiliary contactand alarm contact

9.4.1Dlagram of auxilary and alarmcontact in different working state of circuit breaker

Working conditions of circuit breaker	Auxiliary contact	Alarm contact
Close	Fa(F14) Fb(F12) — Fc(F11)	Ba(F14) Bb(F12) — Bc(F11)
Open	Fa(F14) Fb(F12) — Fc(F11)	
Release		Ba(F14) Bb(F12) — Bc(F11)

If there are more than one set of contacts, the ascending numerical order is ten digits, and the sequence starts from 1.

9.4.2Maintechnicalparameter

·RatedinsulationvoltageUi=400V,AC·ConventionalthermalcurrentIth=6A

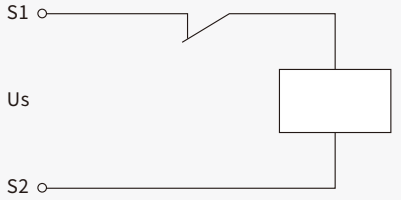
·RatedworkingvoltageUeandratedworkingcurrentleaccordingly·AC400V,0.47A;AC230V,0.79A;DC220V,0.15A

9.4.3 Electrical life andmaking and breakingcapacity

Utillzation category		Connection			Breaking			Cycle times	Operatio frequency (times/min)	Electrified time(s)
AC		I/Ie	U/Ue	COSϕ	I/Ie	U/Ue	COSϕ			
AC-15	Electrical life	10	1	0.3	1	1	0.3	6050	6	⩾0.05
	Making and breaking capacity	10	1.1	0.3	10	1.1	0.3	10	6	⩾0.05
DC		I/Ie	U/Ue	T0.95	I/Ie	U/Ue	T0.95			
DC-13	Electrical life	1	1	300ms	1	1	300ms	6050	6	⩾0.3
	Making and breaking capacity	1.1	1.1	300ms	1.1	1.1	300ms	10	6	⩾0.3

9.5 Parameter ofshunt release

Circuit diagram of shunt release

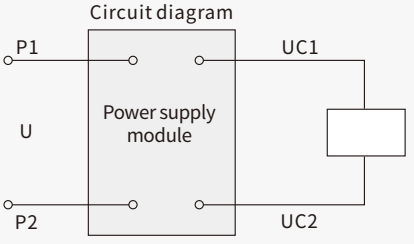


Rated voltage Us：AC：110V、230V、400V；DC：24V、48V、110V

Input capacity：AC：180VA；DC：60W

9.6 Parameter of undervoltage release

Circuit diagram



The power module can be inserted in the side of the circuit breaker and can be installed independently.

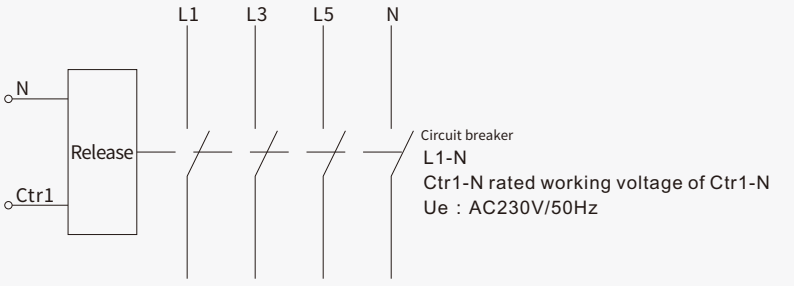
Rated voltagel：Ue：AC：110V、230V、400V；DC：24V、48V、110V

Nput capacity：AC：5VA；DC：2W

Action voltage:U=(70%～35%)Ue;circuit breakertripping(10~30)ms;U⩾85%Ue,U<35%Ue,

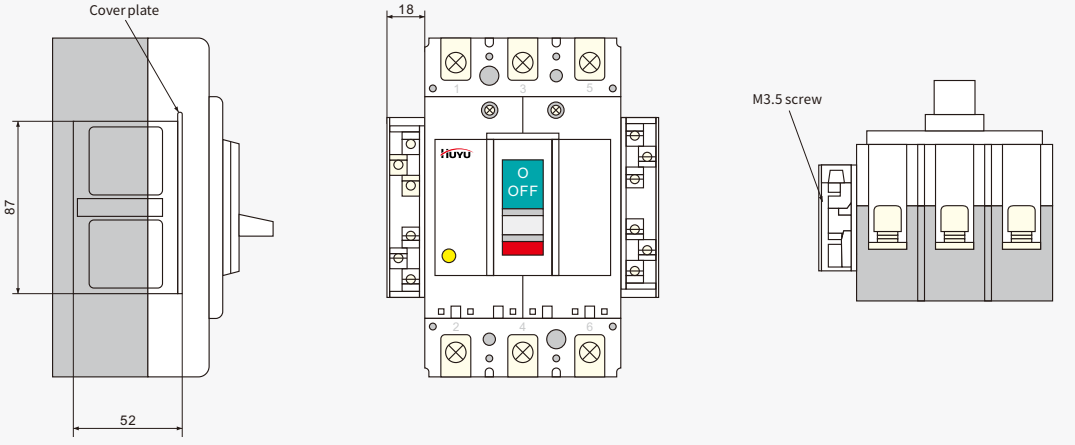
Operation time:(10~30)ms,U⩾85%Ue,the circuit breaker can close;U<35%Ue,the circuit breaker can not close.

9.7 Special tripping device for prepaid meter
The rated working voltage of the dedicated release ofthe prepald meter isAC230V/50Hz,which works normall within therange of (65%~110%)Ue.
The wiring diagram is shown below



Note:Nis connected withpower supply zero line,Ctrt is connected with prepaid meter control signal end

9.8JX type internal attachments terminal block base
The terminal block is plugged in the side of the circuit breaker



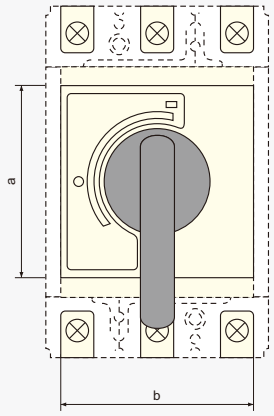
9.9CS1 type rotating operating mechanismThe operating mechanism apliesthe gear rackmechanism to push the handle ofthe cicuit breaker,with smalfiction,easyoperation and long service life.TheA(square)operating handle orthe Biround)perating handle can be selected.Apadlock can be used to lockthe handle to prevent the breakersfrom closing
or breaking.

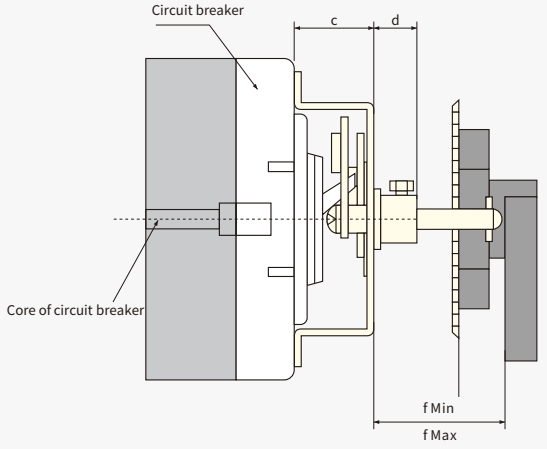
9.9.1Shape and hole dimension of CS1 type rotating operating mechanism

Model	Frame size grade	a	b	c	d	f Min	f Max
CS1-63	63	100	75	45	13.5	50	400
CS1-100	100	110	80	44	13.5	50	400
Cs1-160、250	160、250	110	90	46	13.5	50	400
CS1-400	400	185	140	80	20	50	350
CS1-630、800	630、800	226	210	80	20	50	350

9.9.2 Shape and hole dimension of CS1 type rotating operating mechanism

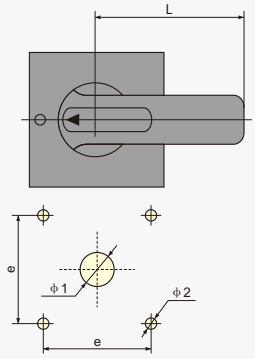
In general,the shaft length of the factory f=150mm.If other lengths are required,it should be noted when ordering.





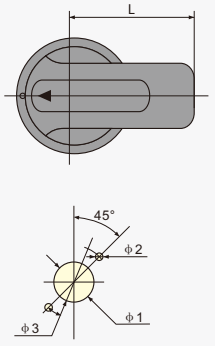
The distance between the centerof the handle and the hingesshould not be lessthan 200mm

Atypa handleinstallation dimension



	A1	A2
ϕ1	ϕ42	ϕ63
ϕ2	ϕ4.5	ϕ5.5
e	65	88
L	60	140
Frame rating	63～250	400～800

B Type handle installation dimension

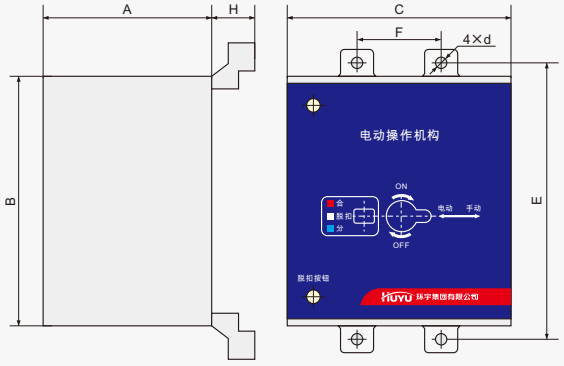


	B1	B2
ϕ1	ϕ33	ϕ33
ϕ2	ϕ4.5	ϕ4.5
ϕ3	ϕ53	ϕ53
L	65	125
Frame rating	63～250	400～800

9.10 Electric operating mechanism

The MDXtype electrleoperating mechanlsm changes the motorsrotation motion to a straight motion by the motor,gear and cam, which is used to close and break
the circuit breaker.

9.10.1 Overall instalation dimension of MDX type electric operating mechanism



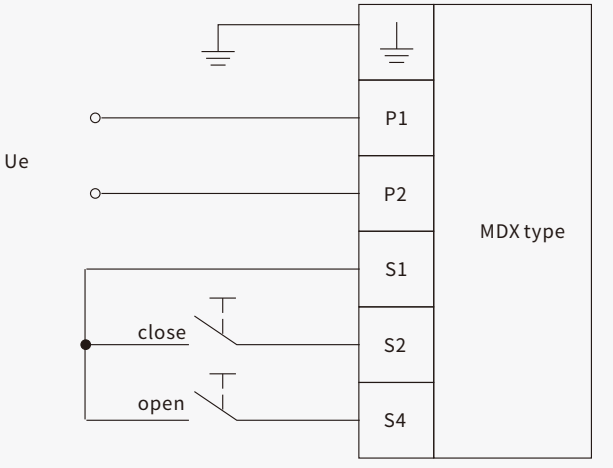
9.10.2Overall instalation dimension of MDXtype electric perating mechanism

Electric operating mechanism model	Installation size						
	A	B	C	E	F	H	d
MDX0	77	102	74	111	25	12	ϕ3.5
MDX1	77	116	90	132	30	13	ϕ4.5
MDX2	77	116	90	126	35	15	ϕ4.5
MDX3	115	176	130	194	44	36	ϕ6.5
MDX4	115	176	130	243	70	38	ϕ6.5

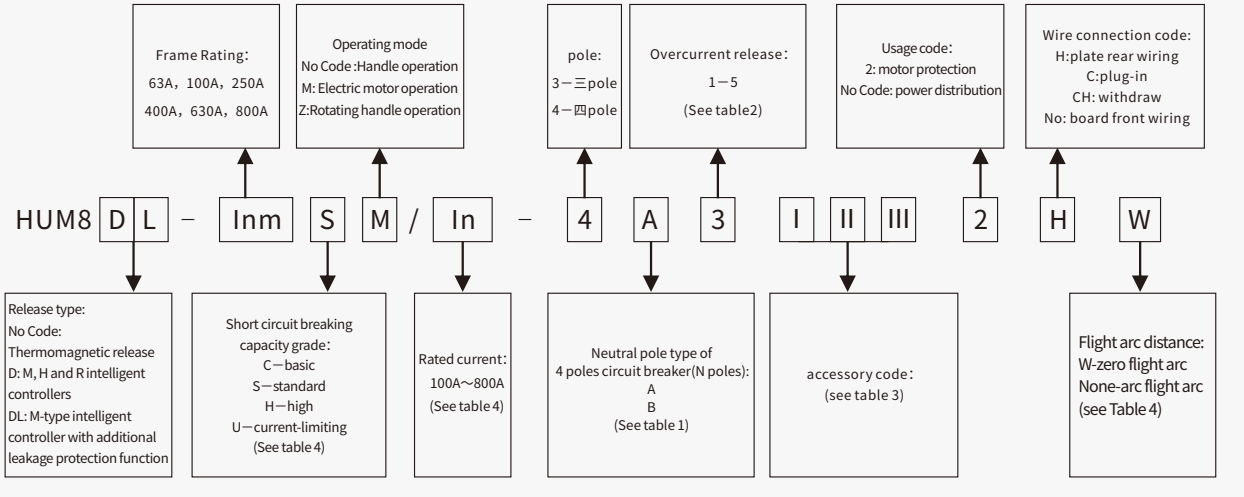
9.10.3 Main technical parameter of MDX type electric operating mechanism

Frame size grade	63	100	160、250	400	630、800
Model of electric operating mechanism	MDX0	MDX1	MDX2	MDX3	MDX4
Rated working voltage Ue(V)	AC110～230V 50Hz DC110～220V				
Operation current(A)	⩽0.5			⩽2	
Operation time(s)	⩽0.8				
Rated operation frequency(times/h)	180			120	
Mechanical lifetime(times)	15000		9000	5000	3000

10.4、MDX type electric operating mechanism wiring diagram



11、HUM8 Series Molded Case Circuit Breaker Selection Notes



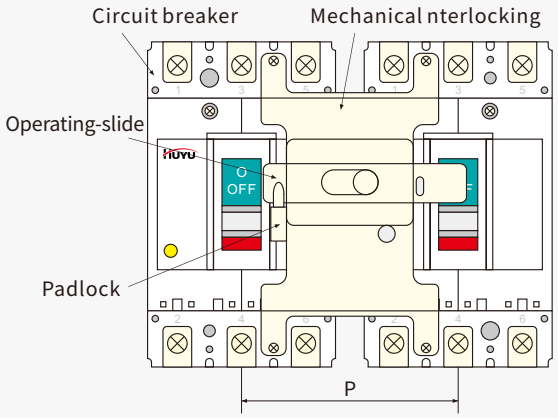
HUM8 Moulded Case Circuit Breakers

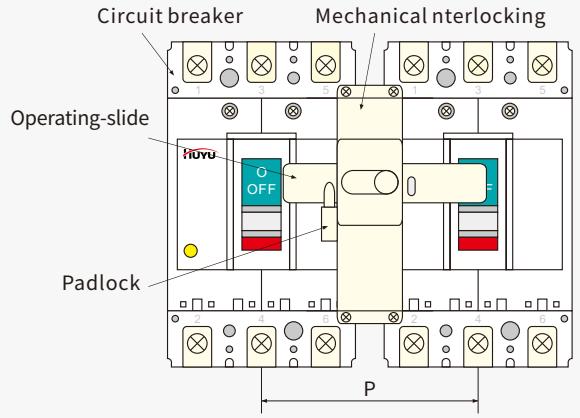
Functions and Features

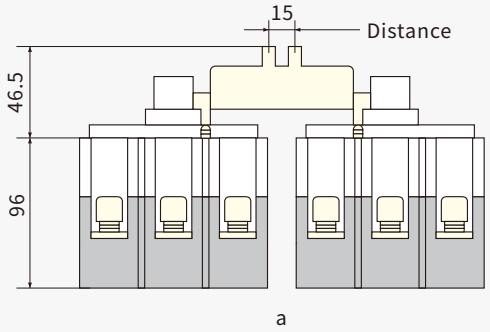
9.12N type mechanical interlockingThe N type mechanical interlock is used for two same shellframe grade HUM8 seriesplastic shl breakers which are installed side by side,to prevent theclosing of two circuitbreakers athe sametime.When used,the skateboard thatoperatesthe mechanicaliterbockis pushed tothe side of the circuit breakerwhichis not allowed to be closed,and the position of the slider can befixed with padlock to prevent mis-operation.The padlock is prepared by the user.

9.12.1 Central distance of two circuit breakers

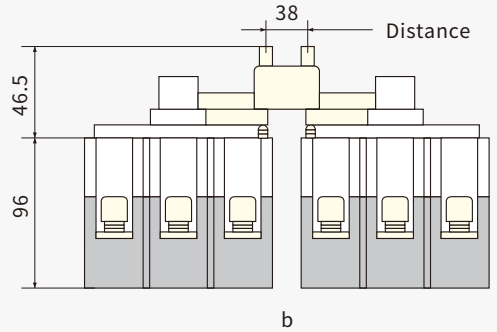
Frame size grade	3-pole		4-pole		Outside drawing
	Model	P(mm)	Model	P(mm)	
63	N1-3	120	-	-	a
100	N2-3		N2-4	150	
160、250	N3-3		N3-4	155	
400	N4-3	190	N4-4	235	b
630、800	N5-3	220	N5-4	290	







a



b

9.13 Sectional area and adaptable rated current of connecting conductor

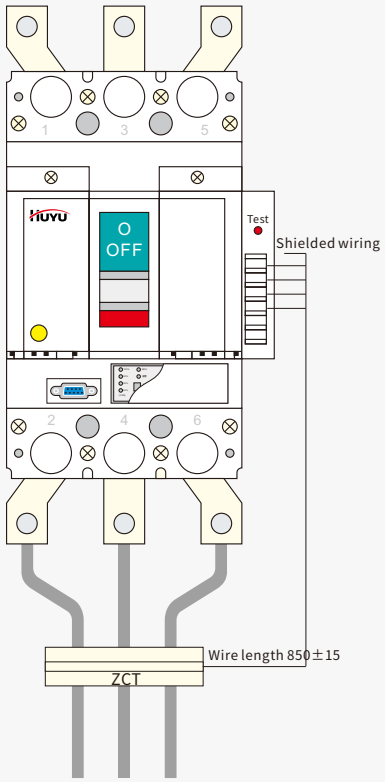
Rated current(A)	10	16、20	25	32	40、50	63	80	100	125	160	180、200、225	250	315、350	400
Conductor sectional(mm2)	1.5	2.5	4	6	10	16	25	35	50	70	95	120	185	240

Rated current(A)	Cable		Cable	
	Sectional area(mm^2)	Quantity	Size(mm×mm)	Quantity
500	150	2	30×5	2
630	185	2	40×5	2
700、800	240	2	50×5	2
1250	-	-	80×5	2

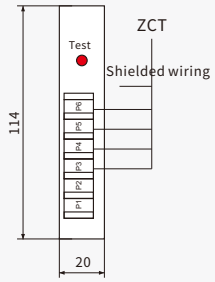
9.14 Circuit breaker(type DL)with intelligent controller with an additional leakage protection function
The HUM8DL type plasti case cicuit breakeralso has thefunction of leakage protection.It needs to plug the leakage module on theright side of the circuitbreaker,and the main crcuit goesthrough the externalzero sequence curent transformer.The module isP^1toP2.Power supply(UeoptionalAC230V or400V),P3to P4 connection leakage circuit,rated residual operation current IAn=0.1A~1A+OFF)adjustable.

HUM8 Moulded Case Circuit Breakers

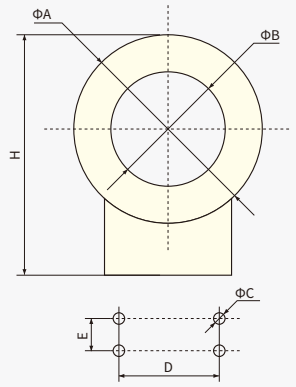
Functions and Features



Leakage madule

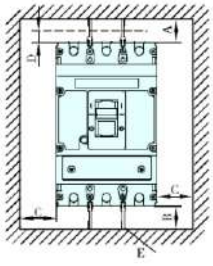


Dimenslon of installation hole of zero sequence transformer



Rated current	A	B	C	D	E	H
100/160/250	106.5	60	5	54	30	131
400/630/800	129	85	5	56	34	152

CircuitBreakerInstallationSafetyClearance



Model	A		B	C	D
	Without Zero Flying Arc Cover	With Zero Flying Arc Cover			
HUM8-63	50	25	25	25	25
HUM8-100	50	25	25	25	25
HUM8-250	50	25	25	25	25
HUM8-400	100	25	25	25	25
HUM8-630	100	25	25	25	25
HUM8-800	100	25	25	25	25

A：To conductive circuits (including unobstructed or grounded metal)

B: Circuit breaker terminals to bottom wal

C: Circuit breaker side to side wall (including no obstructions or grounded metal)

D: to non-conductive parts

Note: E is the phase separator. Phase-to-phase bulkheads or zero-flying arc shields must be installed

10、Ordering information

10.1.Model and ordering quantity

HUM8□-□□□/□-□□□□□□□□ Ifthe connection mode is CH draw outtype,thenit should be noted front plate connection or post plate connection.

10.2.Rated voltage of shunt release and undervoltage release.

10.3.External accessories:rotary peration handletype (typeAorB),square shaflengt and rotary operation handle number,electric operation mechanism typeand its rated voltage and quantity.

HUM8L Earth Leakage Circuit Breaker

Functions and Features

Product description

1 . Application range

HUM8Lseriesearthleakagecircuitbreaker(hereinafterreferredtoasthecircuitbreaker)powersystemfor AC50Hz,ratedvoltageto400V,ratedcurrentupto630A,fortheelectricitydistributionandpowersystem protection against overload and short-circuit fault harm , also can be used to control the infrequent operationofmotors.

The leakage current (residual current) protection function of the circuit breaker is to provide indirect contactprotectionforfatalelectrocution,andto preventelectricalfirescaused by long-existing groundingfaultcurrentwhicharenotdetectedbyover-currentprotectiondevices.

Theratedvalueoftheresidualoperationcurrentisadjustable,andtheleakageprotectionoperationtime can also be adjusted . Therefore , the selective protection of leakage can be realized in the distribution system.Whentheratedresidualoperationcurrentissetto30mA,inthecaseofthefailureoftheprotective device,thecircuitbreakercanalsobeusedasadevicefordirectcontactwiththeprotectiveeffect.

Accordingtotheclassificationof DCcomponent:ACtype,toensuretheCBRoftherelease fortheresidual sinusoidal current,whethersuddenly orslowly risingwithout DC component.Atype,with a specified residualpulsatingDCresidualsinusoidalACcurrent,ensurestheCBRoftherelease,whetheritissuddenly exertedorslowlyrising.

ItaccordswiththestandardofGB14048.2,IEC60947-2,GB/Z6829andIEC755.

2 . Features

- Framerating：100A、125A、250A、400A、630A
- RatedoperatingvoltageUe(AC)：400V50Hz
- Breakingcapacitycode：S、H、U
- Numberofpoles：3P、4P
- Releasetype：Instantaneousrelease,Compoundrelease,Delayrelease.
- Installationmethod:fixed,plug-in,withdraw
- Certifications：CCC

3 . Normal working condition

3.1 The maximum ambient temperature should be -5°C≤ T≤ +40°C ,average temperature should be ≤ 35°Cat24h.

3.2Therelativehumidityshouldnotexceed95%

3.3Thealtitudeofinstallationplaceshould notexceed2000m.Higherthan2000mneed todropcapacity forusage.

3.4Pollutiongrade:3.Thereisnoexplosioninthesurroundingair,andthereisnocorrosionofmetalsand destructionofinsulatinggasesandconductivedust.

3.5Installationtype:III

3.6 “1，3，5，N1” terminals are for power supply, “2，4，6，N2” terminals are for load , can no be reserved.

3.7 The installation surface of the breaker shall be perpendicular to the horizontal plane . The basic installationmodeofthecircuitbreakerisverticalinstallation,thepowersourceisonthetop,theloadendis below,anditcanbeinstalledhorizontally.

HUM8L Earth Leakage Circuit Breaker

Functions and Features

Product selection

HUM8L	– □	□	□	/ □	
Earth Leakage Circuit Breaker	Model type	Frame case grade rated current Inm(A)	Short circuitbreaking capacitygrade	Operating mode	Rated current of circuit breaker In(A)
HUM8L	No time delay type is no code , Y for time delay type , B for only alarm without tripping	(refer to Table 4)	S-standard type H-high-class type U-current- limiting type	operating by handle is no mode , the code of motor operating is M, the code of rotary handle operating is Z.	(refer to Table 4)

□	□	□ /	□	□	□
Pole		Over current release type	Inside accessories code	Usage code	Connection mode
3P 4P	Neutral pole type of 4 poles circuit breaker(N pole)	Refer to Table 2	Refer to Table 3	no code is for power distribution,the code for motor protection is 2.	the front panel connection is not code; H for post plate connection; C for plug-in connection; CH-for draw out connection (only for sples)

□	□	□
Arcing distance	TH Hot and humid circuit breaker	EN
Wis no arcing, there is no code if it has arcing	(conventional non-standard)	(special use of new energy)

Note: (1) The wet heat circuit breaker (TH) can withstand the influence of humid air, salt fog , oil mist and mold.

(2)The air humidity range of new energy products (EN) ranges from -40 to 70 degrees centigrade .

Table 1

Code	Type	Explanation
A	A type	N pole does not install over current release, and switch on all the time, not switch on and switch off together with other 3 poles .
B	B type	N pole does not install over current release , switch on and switch off together with other 3 poles .

Table 2

Code	Type	Explanation
1	Time delay release	Have protection characteristics of over current inverse time delay.
2	Instantaneous release	Namely electromagnetic release has protection characteristic of over current instantaneous operation .
3	Duplex release	Both of the functions mentioned above

HUM8L Earth Leakage Circuit Breaker

Functions and Features

Table 3

Frame size rated current Inm(A)	I		II		III		Note
	Code	Explanation	Code	Explanation	Code	Explanation	
100 250	0	None	0～1	Auxiliary contact group quantity	0～1	Alarm contact group quantity	
	1	Shunt release					
400	0	None	0～3		0～2		II＋III≤5
	1	Shunt release	0～1		0～1		II＋III≤2
	2	Undervoltage release	0～1		0～1		II＋III≤2
630	0	None	0～4		0～3		II＋III≤7
	1	Shunt release	0～2		0～2		II＋III≤4
	2	Undervoltage release	0～2		0～2		II＋III≤4

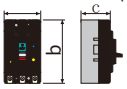
Main technical parameter

1. The basic specifications and parameters of the circuit breaker are shown in table 4:

Table 4

Type		100(125)					250				400				630			
Product model		HUM8L-100S HUM8L-125S		HUM8L-100H HUM8L-125H		HUM8L-100U HUM8L-125U	HUM8L-250S		HUM8L-250H	HUM8L-250U	HUM8L-400S		HUM8L-400H	HUM8L-400U	HUM8L-630S		HUM8L-630H	HUM8L-630U
Rated current In(A)		10、16、20、25、32、40、50、63、80、100、(125)					100、125、150、160、175、200、225、250				250、300、315、350、400				400、500、630			
Pole number		3	4	3	4	3	3	4	3	3	3	4	3	3	3	4	3	3
Rated insulation voltage Ui(V)		Ac800									AC1000							
Rated working voltage Ue(V)		AC400 50Hz																
Arcing distinguish distance(mm)		≤50(0)*					≤50(0)*				≤100(0)*				≤100(0)*			
Rated impulse withstand voltage：Uimpkv		8									12							
Rated limiting/ operating short circuit breaking capacity Icu/Ics(kA)		50/35		85/65		125/125	50/35		85/65	125/125	70/70		100/100	125/125	70/70		100/100	125/125
Rated residual operation current I△n(mA)	Non time delay	30mA（Only non-delayed type）、50mA、100mA、300mA、500mA Adjustable three gears (500、800、1000 Adjustable three gears)**																
	Time delay																	
Rated residual operation current I△n(mA)		1/2I△n																
Rated residual operation current I△n (mA)		1/4Icu																
Operating times	Electrify	1500					1000				500				500			
	Non-electrify	8500					7000				4000				2500			

Continued

Frame size rated current Inm(A)		100			250			400			630		
Outline dimension(mm) 	a	90	120	90	105	140	105	140	185	140	210	280	210
	b	155		216	165		240	257		297	275		322
	c	68			68			105		200	105		200

*：Please give clear indication of arcing distance is zero when you place an order. **：Please note when ordering if these three gears needed(only for 400 and 630A)

2. Earth leakage protection operation time refers to table 5 and table 6

Table 5: Non-time delay type residual current protection operation time t

t(s) / Frame size rated current Inm(A) / I△n(mA) / I△	100～630					
	30	100	300	500	800	1000
I△n	≤0.1	≤0.3				
0.25A	≤0.04					
2I△n		≤0.15				
5I△n		≤0.04				
10I△n		≤0.04				

Table 6 .Time delay type residual current protection operation time t

t(s) / Frame size rated current Inm(A) / I△n(mA) / I△	100～630		
	0.4	1	2
I△n	＜0.6	＜1.2	＜2.2
2I△n	＞0.2	＞0.5	＞1
5I△n	0.2≤t＜0.44	0.5≤t＜1.04	1≤t＜2.04

"t" in the table means the time delay setting up value.

3.Workingreliabilityofpowersupplyvoltagefailure

3.1At0.85Ue,andthethree-phasepowertodisconnectanyphase,whentheresidualcurrentI△=I△n,
the circuit breaker is still reliable breaking.

3.2 Whenthethree-phasepowerlinevoltagetoneutrallinevoltagedropto50V,theresidualcurrentI△=I△n,
the circuit breaker is still reliable breaking.

Thermal electromagnetic over current release

1. Setting up current of long tim edelay release Ir1

Ir1 namely rated current In of circuit breaker,the specification of Inrefers to table4.

The neutral pole(Npole) of the fourpoles circuit breaker doesnotinstall the over current release.The conventional the rmal current is notless than In/2,63A.

2.The power loss of circuit breaker is shown in table7

Table7

Frame size rated current Inm(A)	Rated current(A)	Each pole resistance (mΩ)	Total power losses of three poles (W)	
			Fixed type	Plug-in type or draw out type
100	100	0.83	25	30
250	250	0.32	60	75
400	400	0.20	87	110
630	630	0.14	167	195

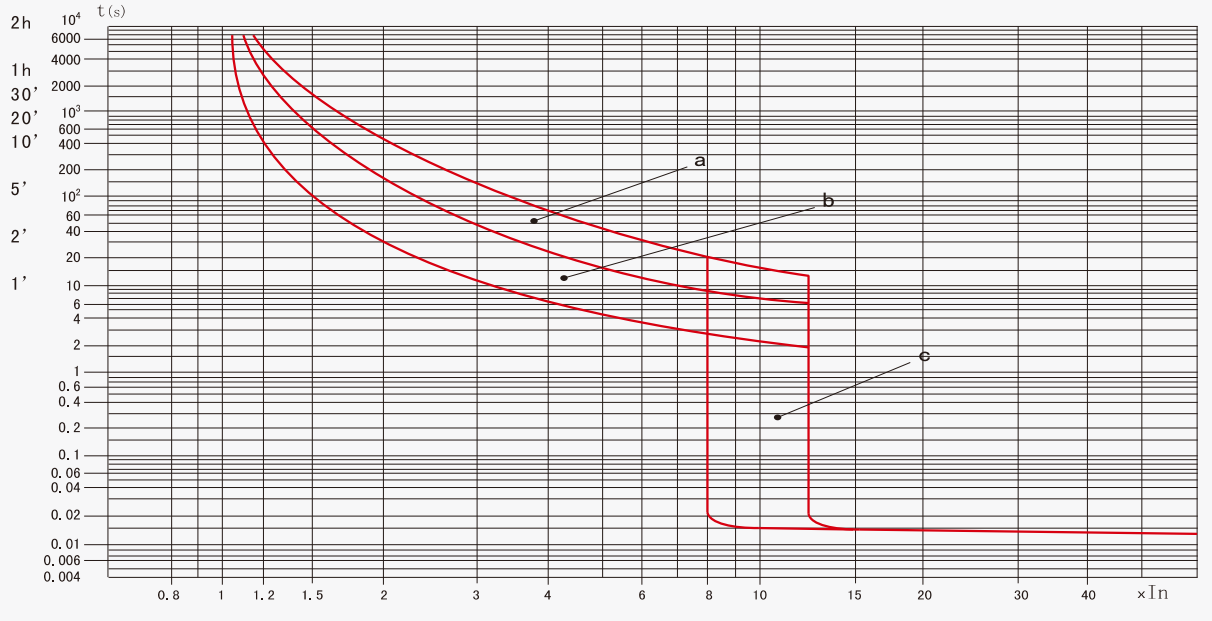
3 Over current protection characteristics of distribution circuit breaker, refers to table 8

Table 8

Rated current(A)	Thermal release(ambient temperature is＋40°C)		Electromagnetic release operating current(A)
	1.05 In Non-action time (h) (Initial status: cold)	1.30 In Non-action time (h) (Initial status: cold)	
⩽63	>1	⩽1	(10±2)In
>63	>2	⩽2	

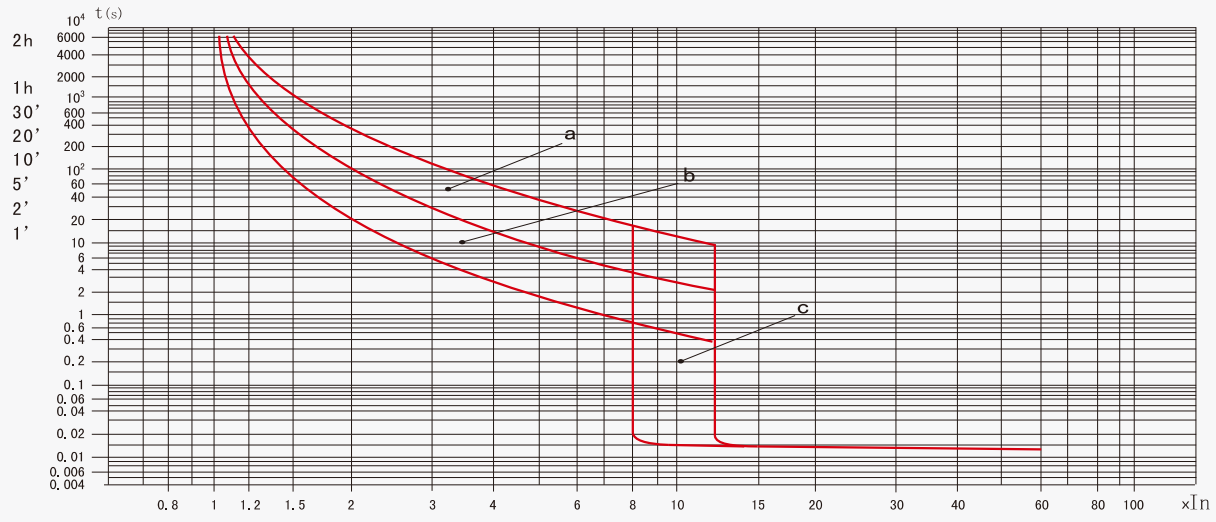
3.1Theover-currentprotectioncharacteristiccurveofHUM8L-100isshowninpicture1a-Characteristicsofcoldthermaloverloadprotection

Picture1



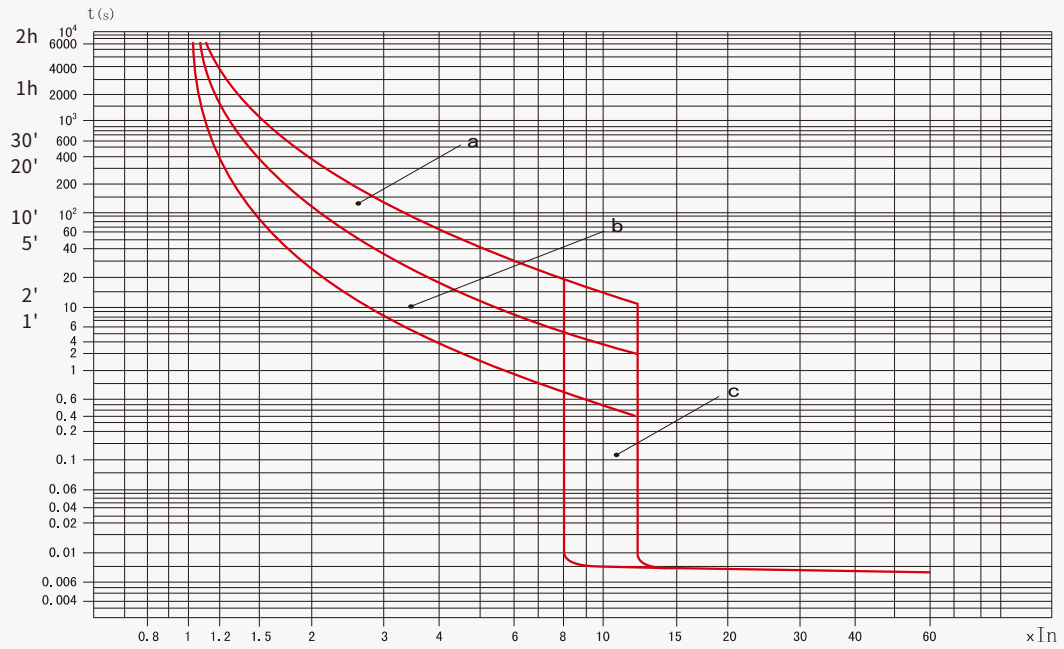
3 .2 The over-current protection characteristic curve of HUM8L-250 is shown in picture 2

Picture 2



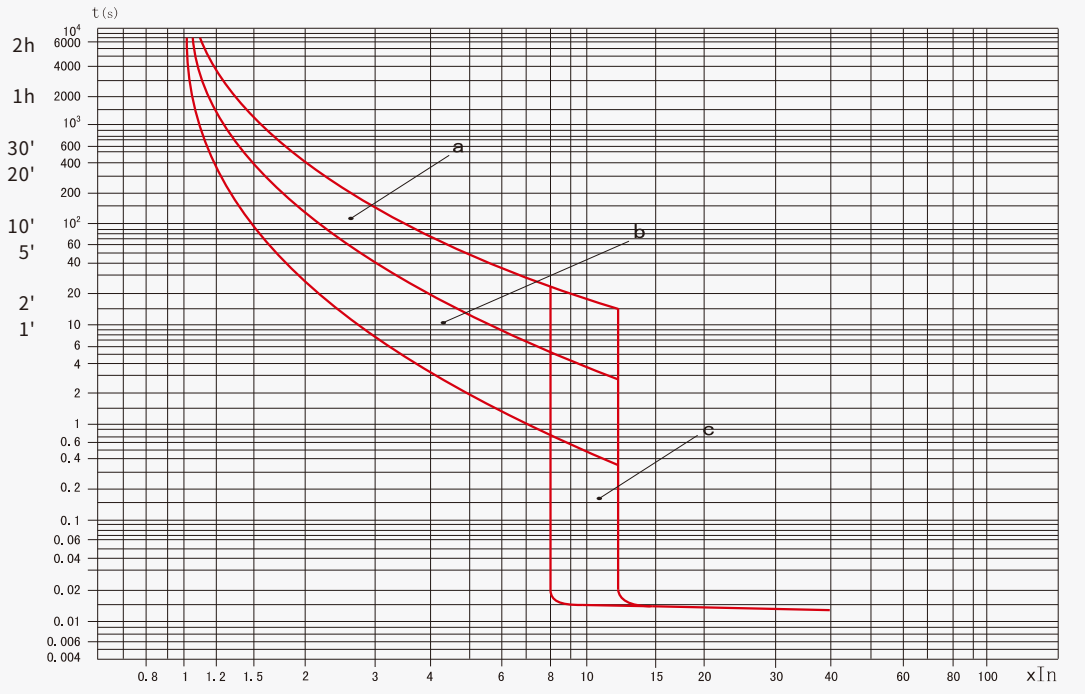
3 .3 The over-current protection characteristic curve of HUM8L-400 is shown in picture 3

Picture 3



3 .4 The over-current protection characteristic curve of HUM8L-630 is shown in picture 4

Picture 4



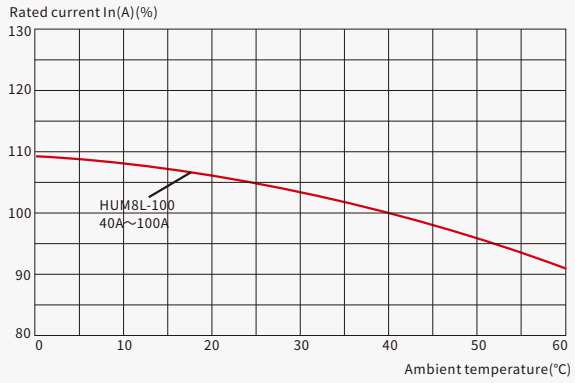
4. The protection characteristics of over current for motor circuit breakers are shown in table 9

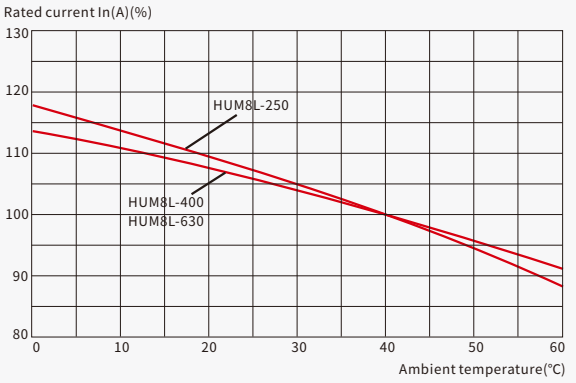
Table 9

Rated current(A)	Thermal release(ambient temperature is＋40℃)				Electromagnetic release operating current (A)
	1.0In non operating time(h) (cold state)	1.2In operating time(h) (thermal state)	1.5In operating time(min) (thermal state)	7.2In operating time Tp(s) (cold state)	
In≤63	>2	≤2	≤2	2<Tp≤10	(12±2.4)In
63<In≤250			≤4	4<Tp≤10	
250<In≤800			≤8	6<Tp≤20	

5. The temperature correction curve of the thermal release is shown in picture 5

Picture 5

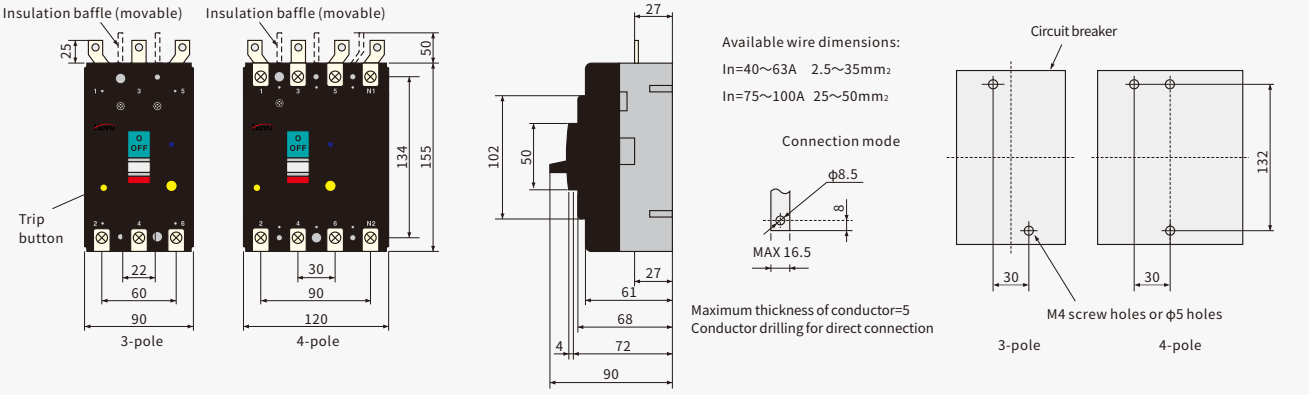




Overall and mounting dimension

1、HUM8L-100S overall and mounting dimension

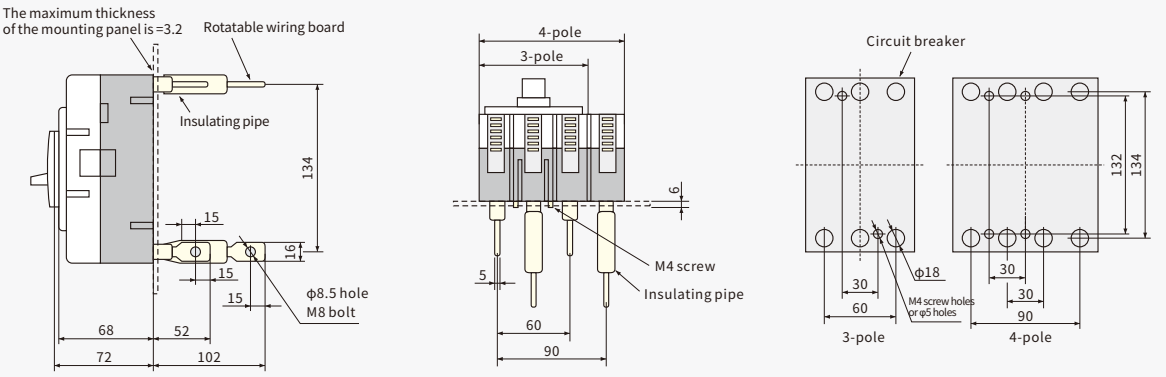
Front panel connection



HUM8L Earth Leakage Circuit Breaker

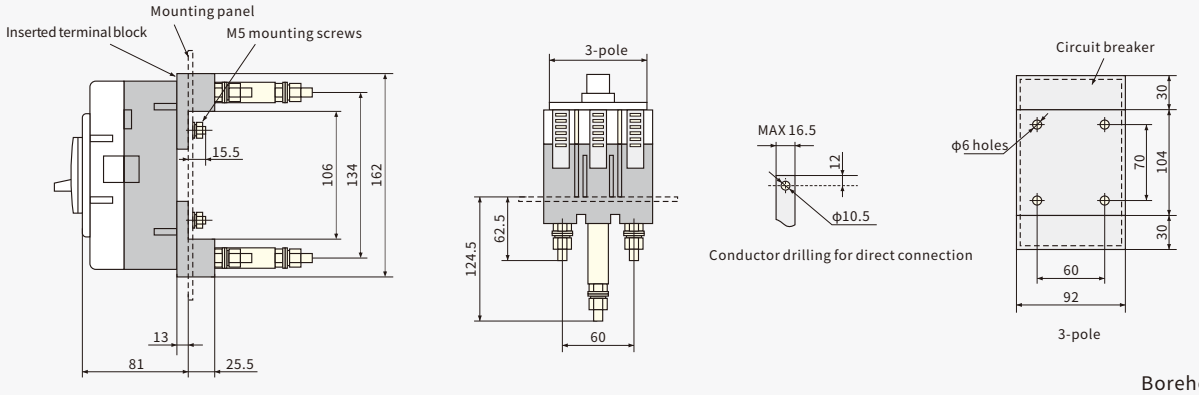
Functions and Features

Post plate connection



Borehole plan

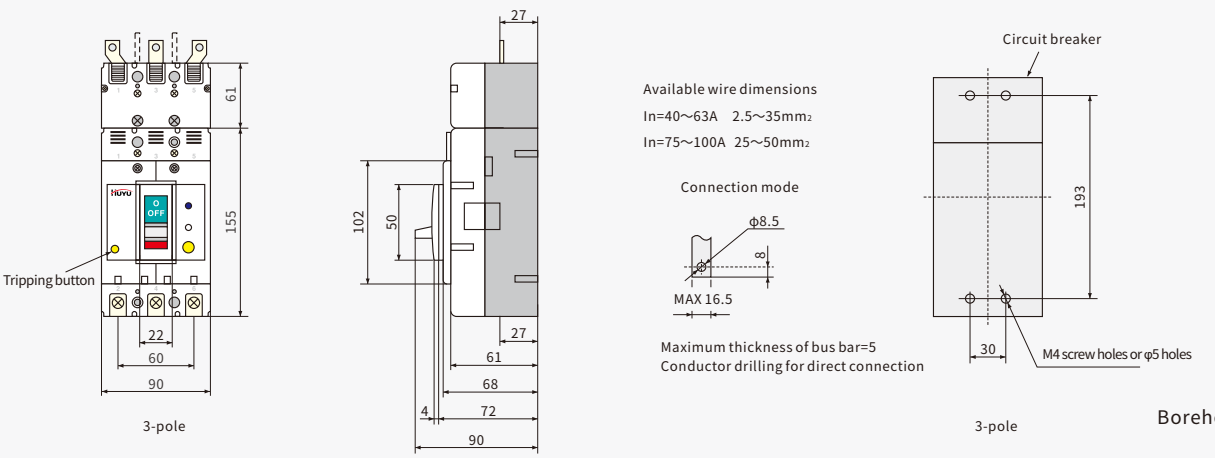
Plug-in connection



Borehole plan

2、HUM8L-100H、HUM8L-100U overall and mounting dimension

Front panel connection

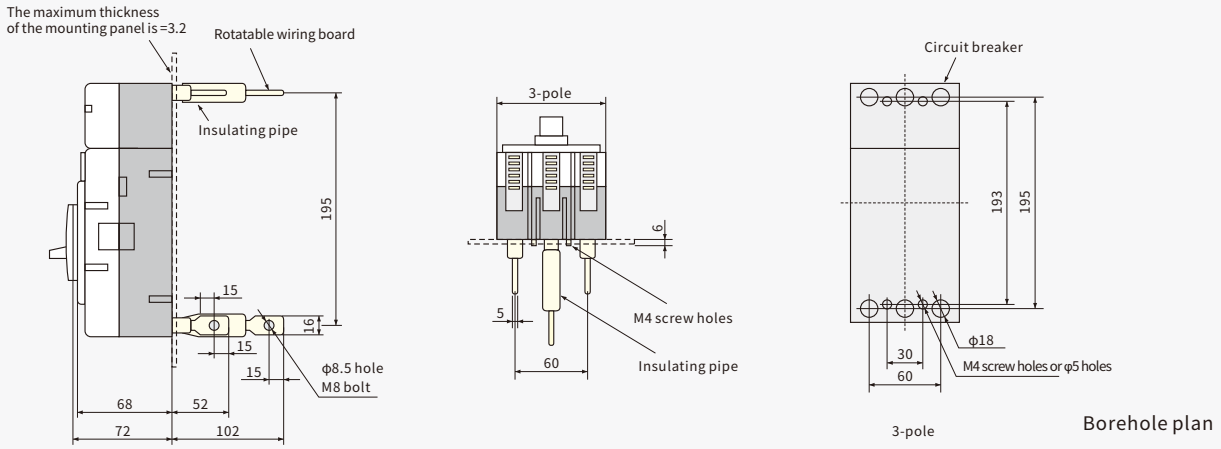


Borehole plan

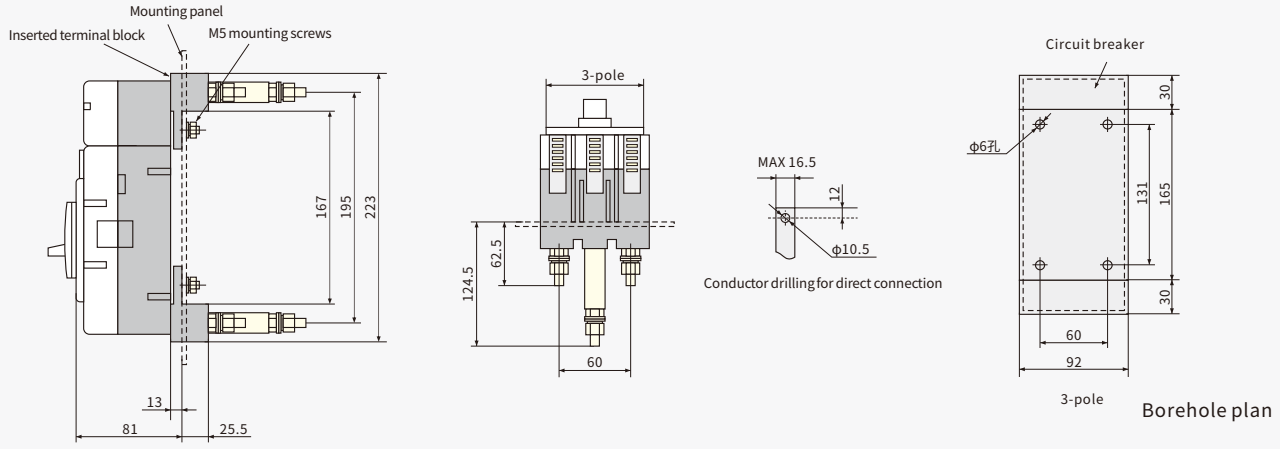
HUM8L Earth Leakage Circuit Breaker

Functions and Features

Post plate connection

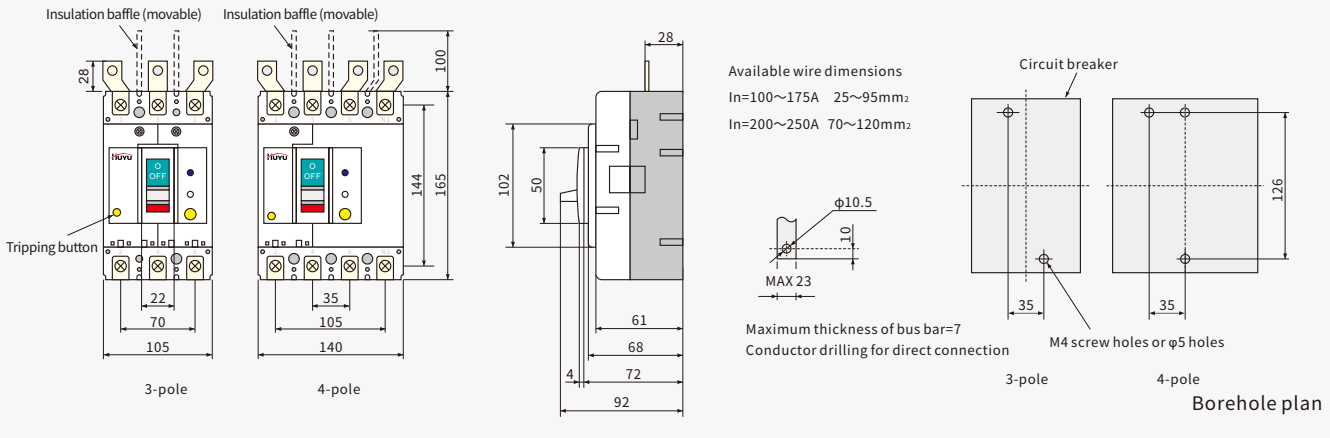


Plug-in connection



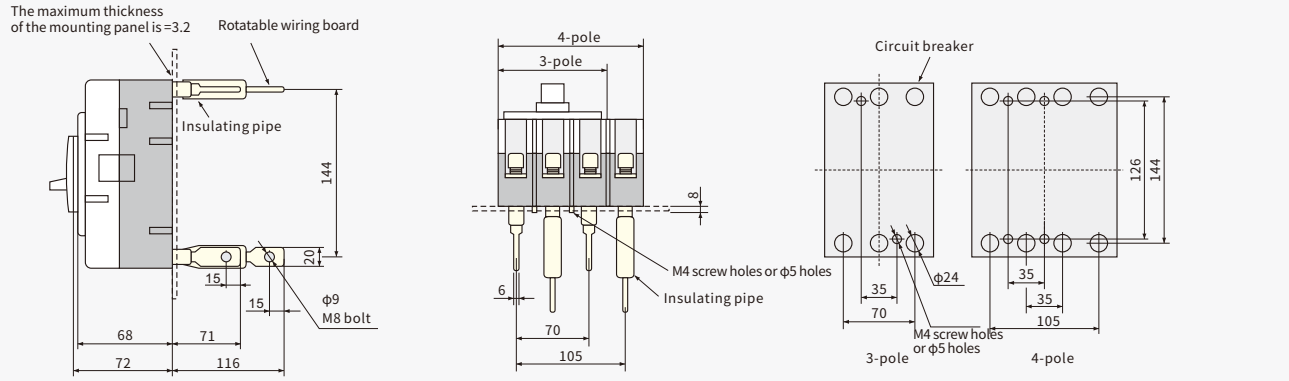
3、HUM8L-250S overall and mounting dimension

Front panel connection



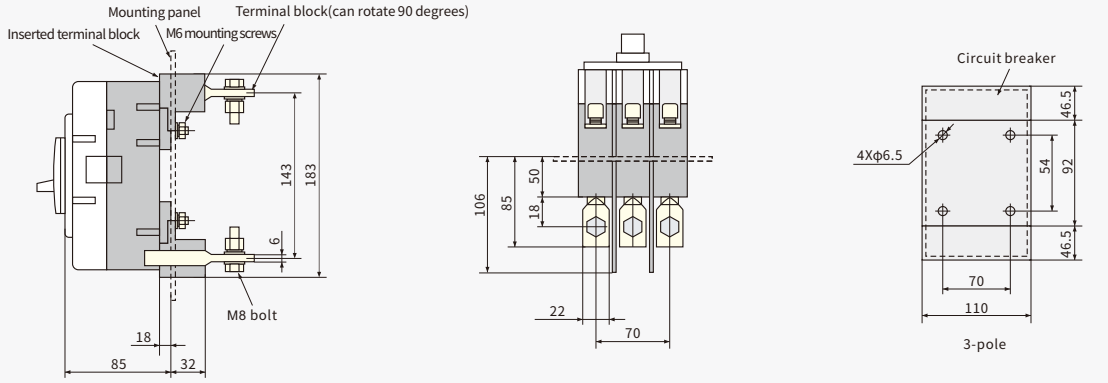
HUM8L Earth Leakage Circuit Breaker
Functions and Features

Post plate connection



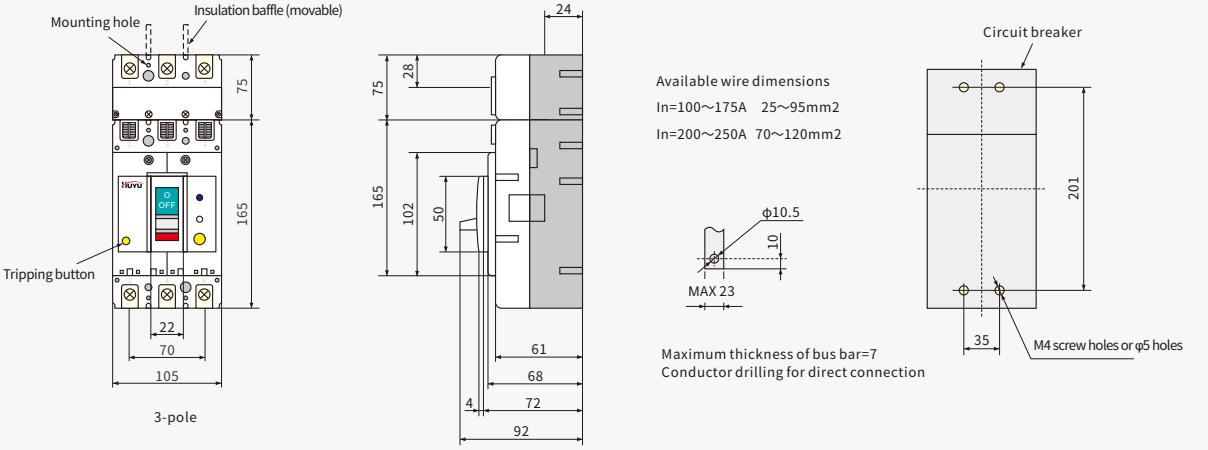
Borehole plan

Plug-in connection



4、HUM8L-250H、HUM8L-250U overall and mounting dimension

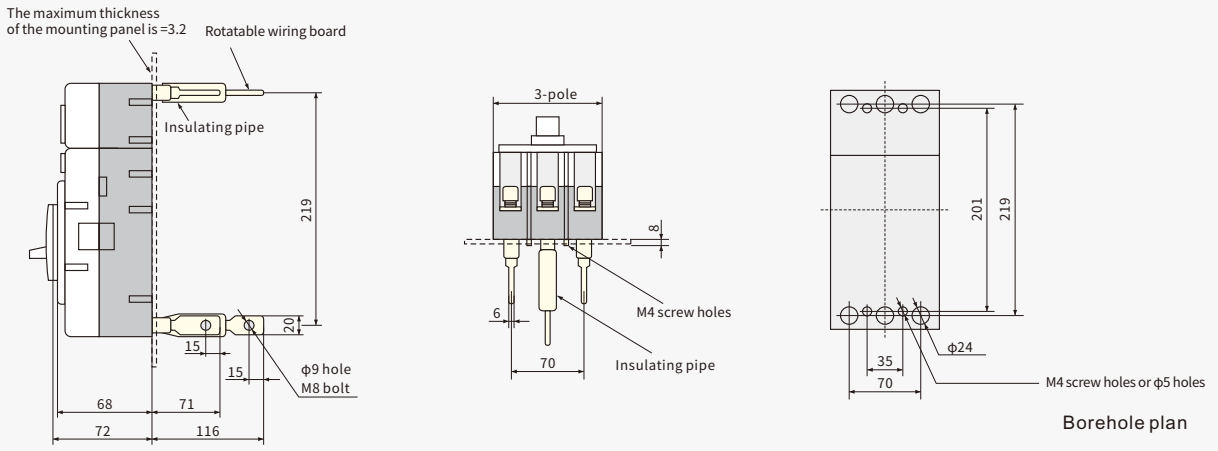
Front panel connection



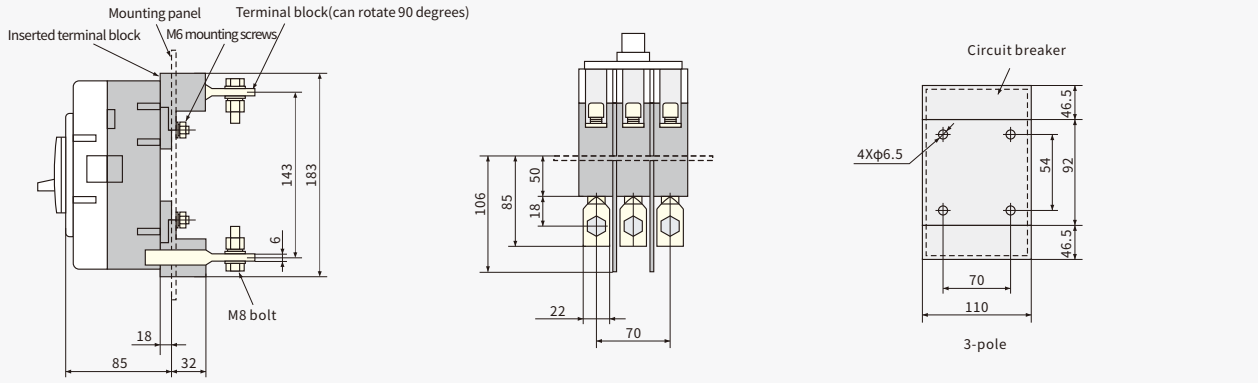
HUM8L Earth Leakage Circuit Breaker

Functions and Features

Post plate connection

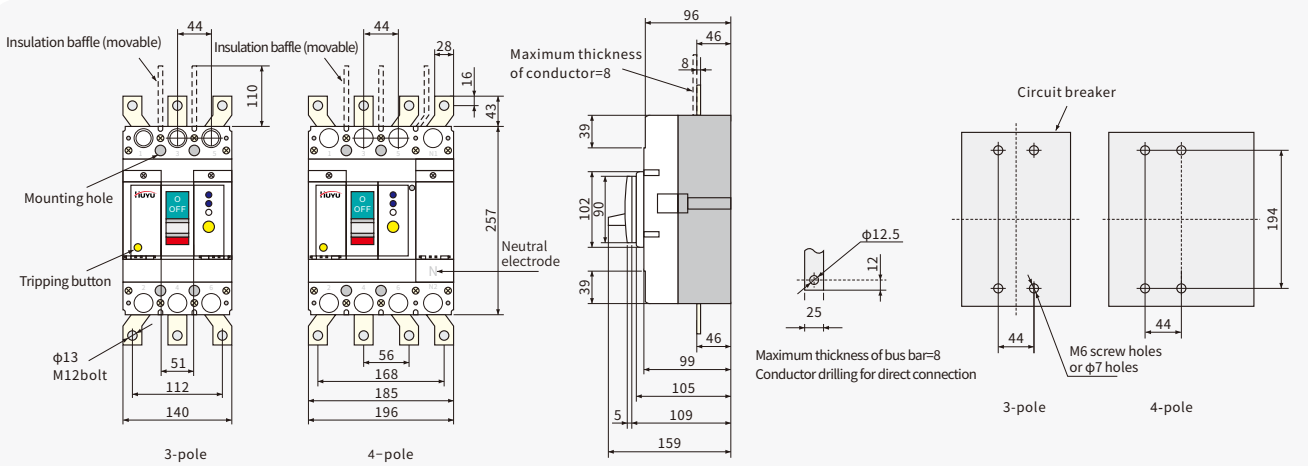


Plug-in connection



5、HUM8L-400S overall and mounting dimension

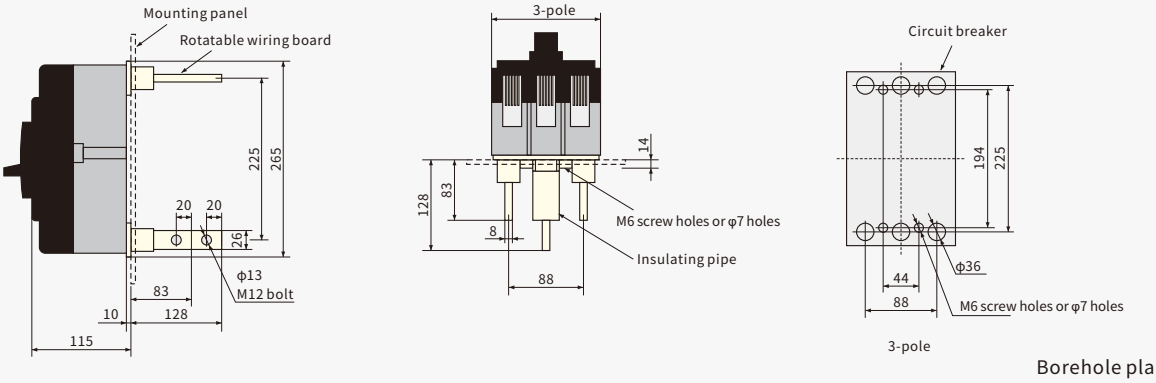
Front panel connection



HUM8L Earth Leakage Circuit Breaker

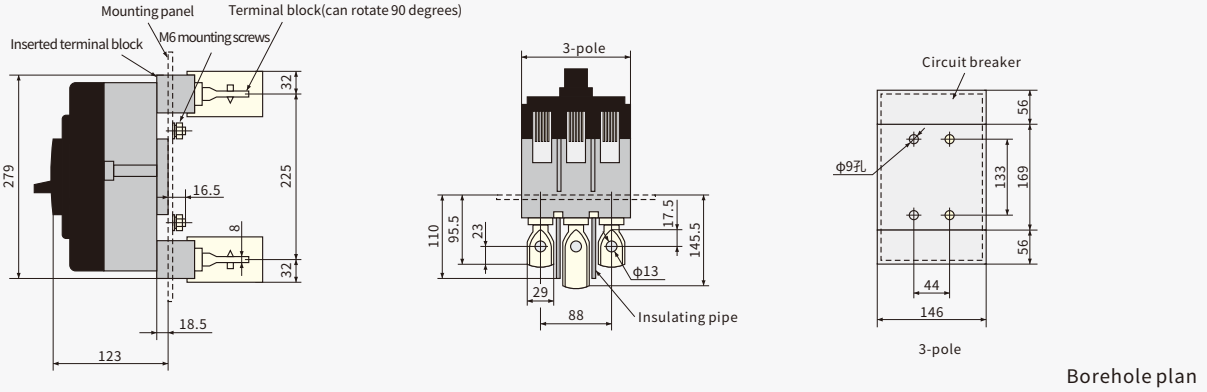
Functions and Features

Post plate connection



Borehole plan

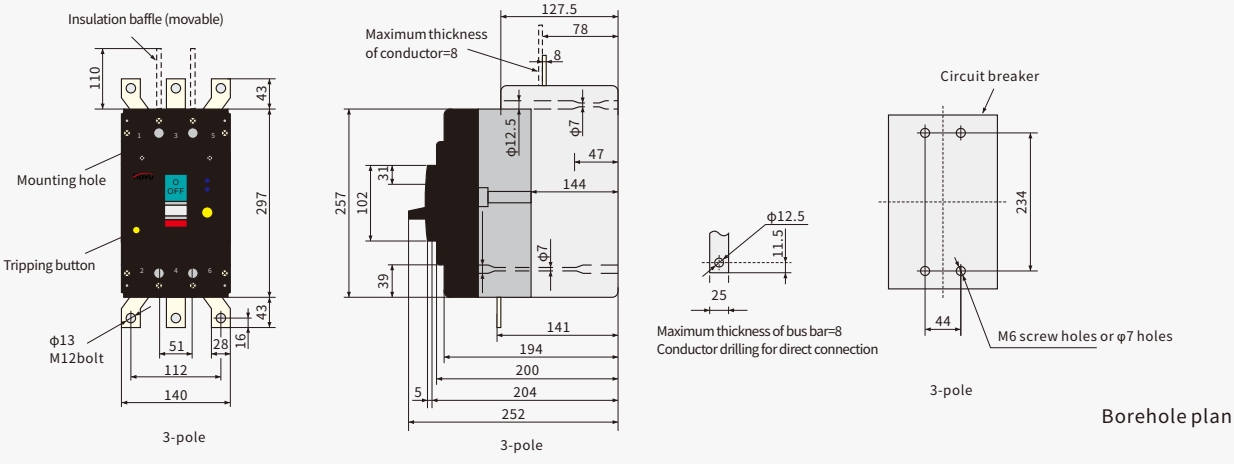
Plug-in connection



Borehole plan

6、HUM8L-400H、HUM8L-400U overall and mounting dimension

Front panel connection

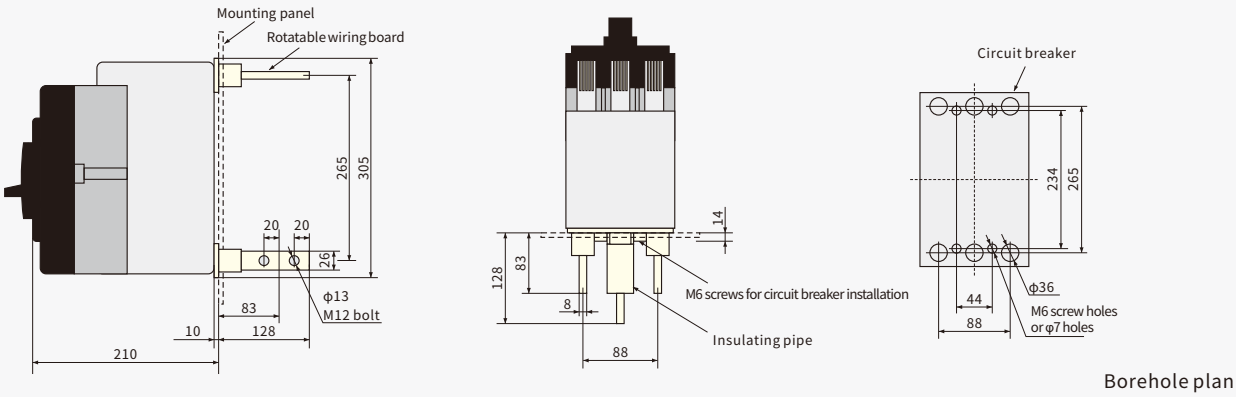


Borehole plan

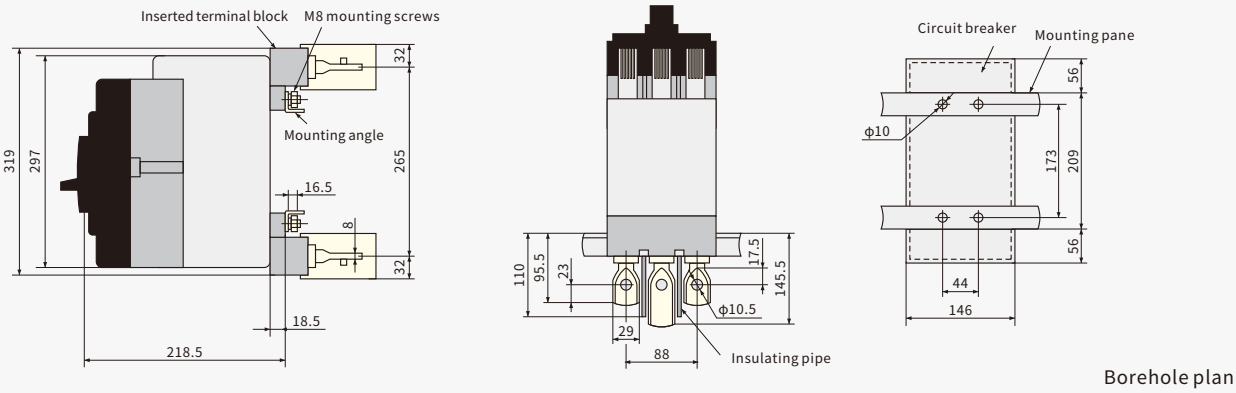
HUM8L Earth Leakage Circuit Breaker

Functions and Features

Post plate connection

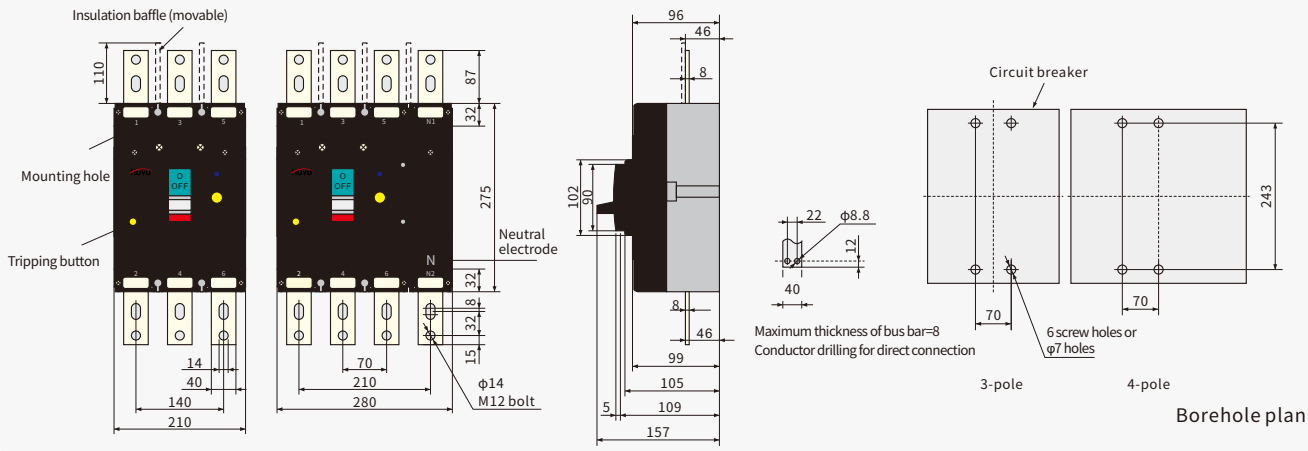


Plug-in connection



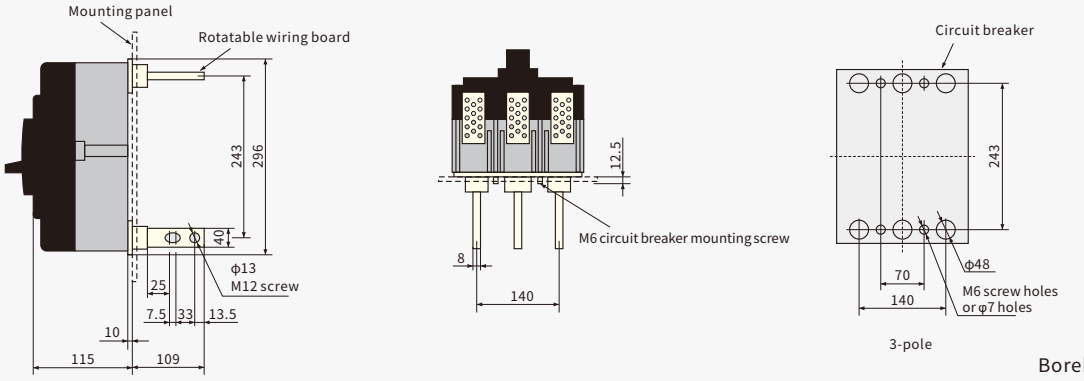
7、HUM8L-630S overall and mounting dimension

Front panel connection



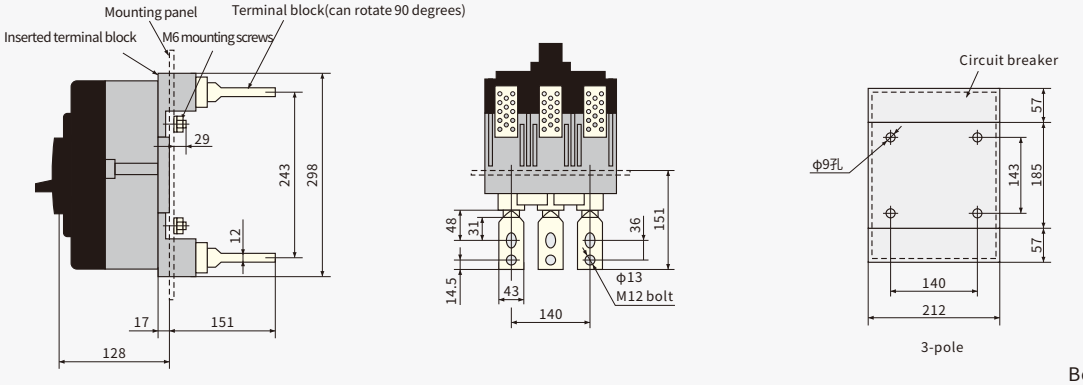
HUM8L Earth Leakage Circuit Breaker
Functions and Features

Post plate connection



Borehole plan

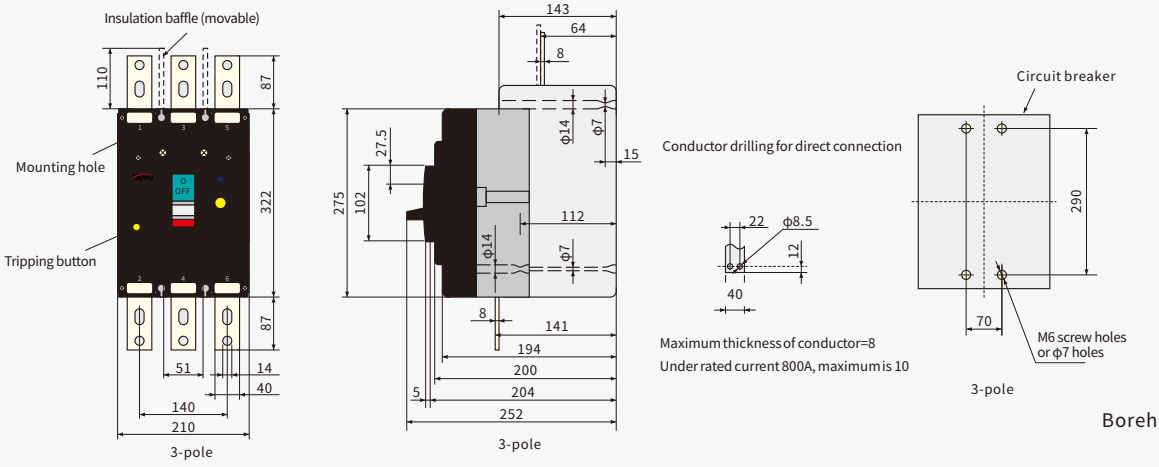
Plug-in connection



Borehole plan

8、HUM8L-630H、HUM8L-630U overall and mounting dimension

Front panel connection

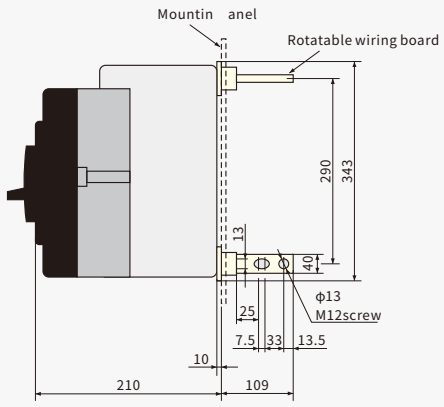


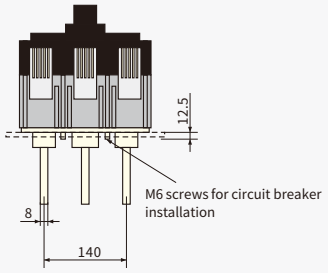
Borehole plan

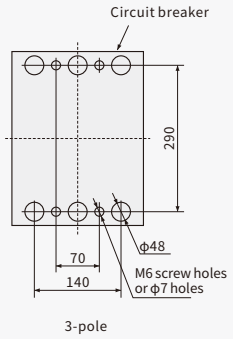
HUM8L Earth Leakage Circuit Breaker

Functions and Features

Post plate connection

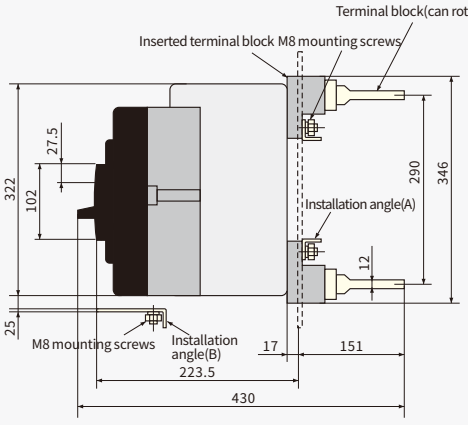


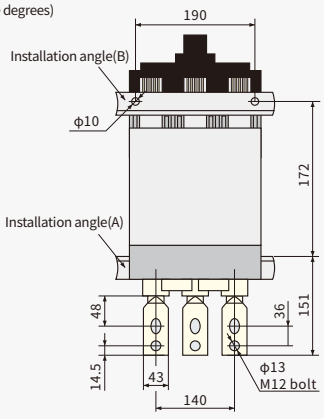


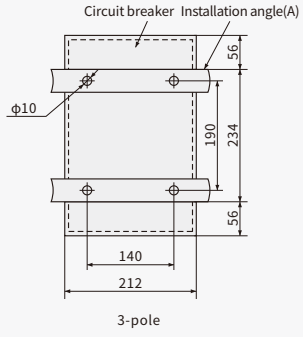


Borehole plan

Plug-in connection







Borehole plan

Accessories of the circuit breaker

1、 Annex model list

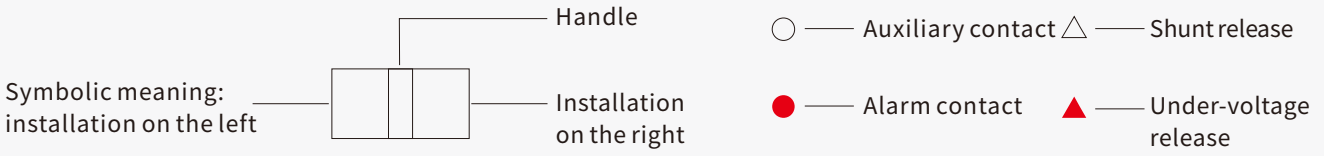
Accessory model	Frame size current	Specification	Note
Front plate 	HUM8L-100		3P、4P
	HUM8L-250		3P、4P
	HUM8L-400		3P、4P
	HUM8L-630		3P、4P
Post board wiring board 	HUM8L-100		3P、4P
	HUM8L-250		3P、4P
	HUM8L-400		3P
	HUM8L-630		3P
Insert attachment 	HUM8L-100	CR2	3P
	HUM8L-250	CR3	3P
	HUM8L-400	CR4	3P
	HUM8L-630	CR5	3P
	HUM8L-800	CR5	3P
CS1 rotating handle 	HUM8L-100	CS1-100	3P、4P
	HUM8L-250	CS1-250	3P、4P
	HUM8L-400	CS1-400	3P、4P
	HUM8L-630	CS1-630	3P、4P
Electric operating mechanism 	HUM8L-100	MDX1	AC110～230V 50Hz DC110～220V
	HUM8L-250	MDX2	
	HUM8L-400	MDX3	
	HUM8L-630	MDX4	
Shunt release 	HUM8L-100	LFL2	AC：110V、230V、400V DC：24V、48V、110V
	HUM8L-250	LF23	
	HUM8L-400	FL4	
	HUM8L-630	FL4	

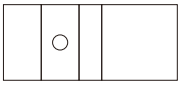
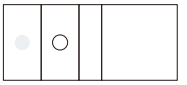
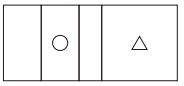
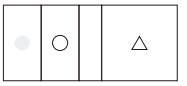
HUM8L Earth Leakage Circuit Breaker
Functions and Features

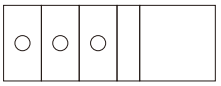
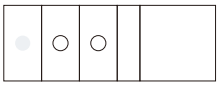
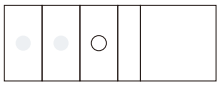
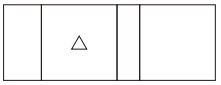
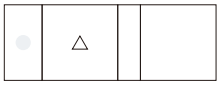
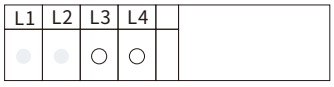
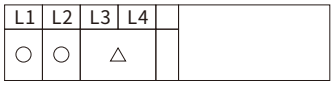
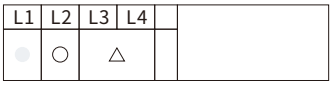
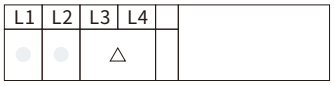
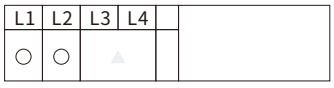
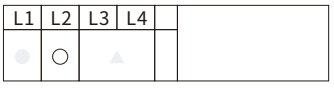
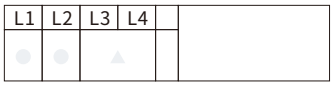
Continuation 1. List of Annex Types

Accessory model	Frame size curren	Specification	Note
Under-voltage release 	HUM8L-100	QY2	AC：110V、230V、400V DC：24V、48V、110V
	HUM8L-250	QY3	
	HUM8L-400	QY4	
	HUM8L-630	QY4	
Auxiliary contact 	HUM8L-100	F2	
	HUM8L-250	F3	
	HUM8L-400	F4	
	HUM8L-630	F4	
Alarm contact 	HUM8L-100	B2	
	HUM8L-250	B3	
	HUM8L-400	B4	
	HUM8L-630	B4	
N type mechanical interlock 	HUM8L-100	3P(N2-3) 4P(N2-4)	
	HUM8L-250	3P(N3-3) 4P(N3-4)	
	HUM8L-400	3P(N4-3) 4P(N4-4)	
	HUM8L-630	3P(N5-3) 4P(N5-4)	

2、Internal annex code and installation position diagram

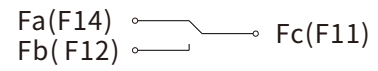
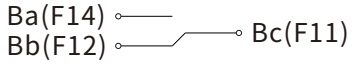
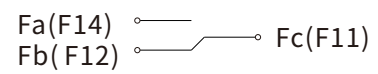


Frame size grade	100A，250A		
Accessories code	010	001	011
Position diagram			
Accessories code	1(0～1)0	10(0～1)	111
Position diagram			

Frame size grade	400A		
Accessories code	0(0～3)0	0(0～2)1	012
Position diagram			
Accessories code	100	110	101
Position diagram			
Accessories code	200	210	201
Position diagram			
Frame size grade	630A		
Accessories code	0(0～4) (0～3)		
Position diagram	 Note: the addition of the latter two digits≤7		
Accessories code	1(0～2)0	1(0～1)1	10(0～2)
Position diagram			
Accessories code	2(0～2)0	2(0～1)1	20(0～2)
Position diagram			

3、Parameters of auxiliary contact and alarm contact

3.1、 Diagram of auxiliary and alarm contact in different working state of circuit breaker

Working conditions of circuit breaker	Auxiliary contact	Alarm contact
Close		
Open		
Tripping		

If there are more than one set of contacts, the ascending numerical order is ten digits, and the sequence starts from 1.

3.2、Maintechnicalparameter

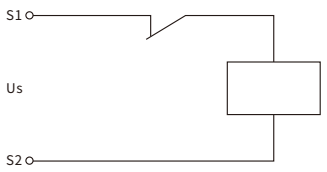
- RatedinsulationvoltageUi=400V
- ConventionalthermalcurrentIth=6A
- RatedworkingvoltageUeandratedworkingcurrentIeaccordingly
- AC400V，0.47A；AC230V，0.79A；DC220V，0.15A

3.3、Electrical life and making and breaking capacity

Utilization category		Connection			Breaking			Cycletimes	Operation frequency (times/min)	Electrified time (s)
AC		I/Ie	U/Ue	COSφ	I/Ie	U/Ue	COSφ			
AC-15	Electrified time	10	1	0.3	1	1	0.3	6050	6	⩾0.05
	Making and breaking capacity	10	1.1	0.3	10	1.1	0.3	10	6	⩾0.05
DC		I/Ie	U/Ue	T0.95	I/Ie	U/Ue	T0.95			
DC-13	Electrified time	1	1	300ms	1	1	300ms	6050	6	⩾0.3
	Making and breaking capacity	1.1	1.1	300ms	1.1	1.1	300ms	10	6	⩾0.3

4、Parameter of shunt release

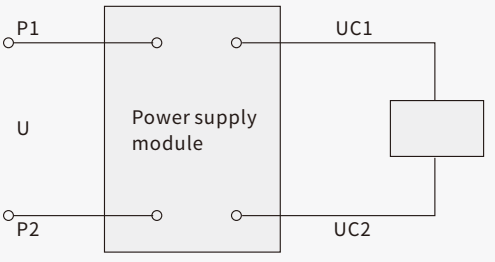
Circuit diagram of shuntrelease



LFL	Ratedvoltage Ue：AC：230V、400V DC：24V、48V Input capacity：AC：40VA DC：0.5W
FL4	Ratedvoltage Ue：AC：110V、230V、400V DC：24V、48V、110V Input capacity：AC：180VA DC：60W

5、Parameter of undervoltage release

Circuit diagram



Thepowermodulecanbeinsertedinthesideofthecircuitbreakerandcanbeinstalledindependently.

Ratedvoltage：Ue：AC：110V、230V、400V；DC：24V、48V、110V

Inputcapacity：AC：5VA；DC：2W

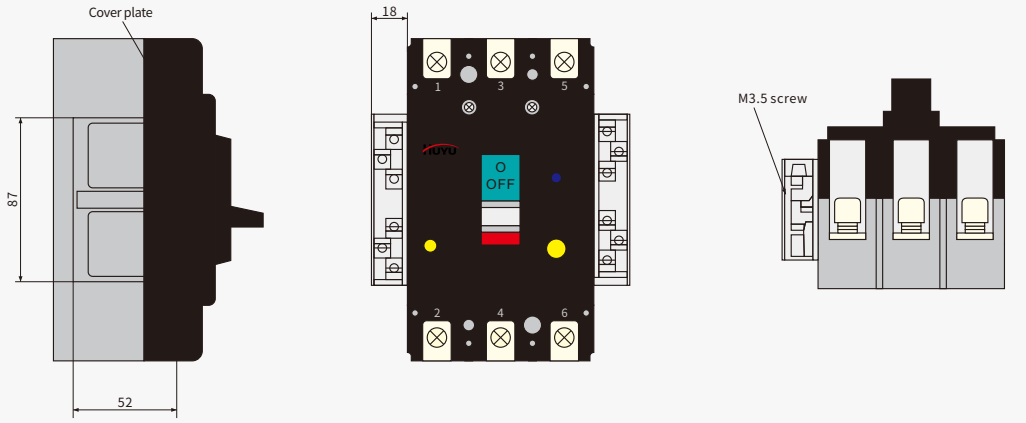
Actionvoltage:U=(70%~35%)Ue;circuitbreakertripping

Operationtime:(10～30)ms,U⩾85%Ue,thecircuitbreakercanclose;U<35%Ue,

thecircuitbreakercannotclose.

6、JX type internal attachments terminal block base

The terminal block is plugged in the side of the circuit breaker

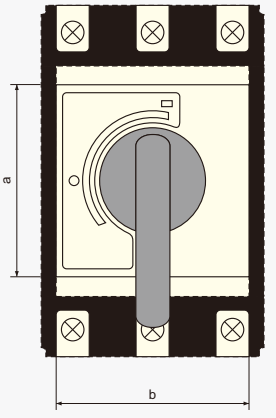


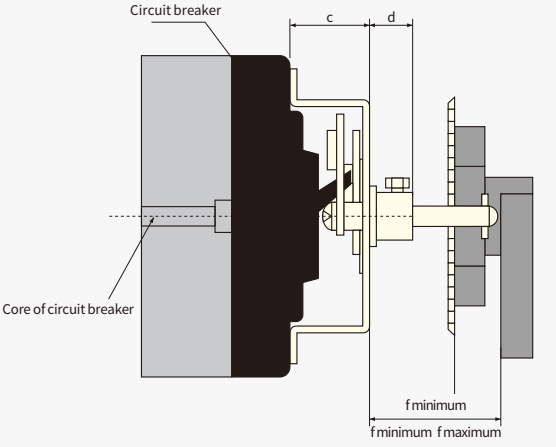
7、CS1 type rotating operating mechanism

The operating mechanism applies the gearrack mechanism to push the handle of the circuit breaker,with small friction,easy operation and long service life.The A(square) operating handle or theB(round) operating handle can beselected. Apadlock can be used to lock the handle to prevent the breakers from closing or breaking.

7.1、 ShapeandopeningsizeofCS1rotaryoperatingmechanism

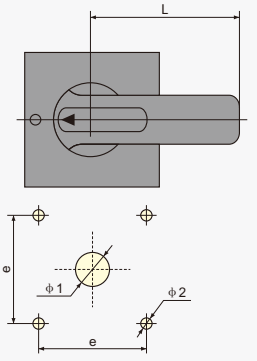
Generally, the length of the squareaxle of the factory is f= 150mm .
If other lengths are needed ,the order should be noted.





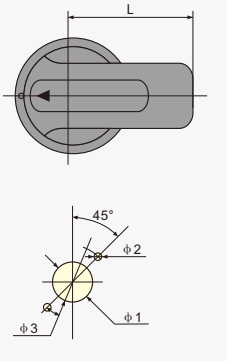
The distance between the center 200mm

A type handle installationdimension



	A1	A2
ϕ1	ϕ42	ϕ63
ϕ2	ϕ4.5	ϕ5.5
e	65	88
L	60	140
Frame size grade	63～250	400～800

B type handle installation dimension



	B1	B2
ϕ1	ϕ33	ϕ33
ϕ2	ϕ4.5	ϕ4.5
ϕ3	ϕ53	ϕ53
L	65	125
Frame size grade	63～250	400～800

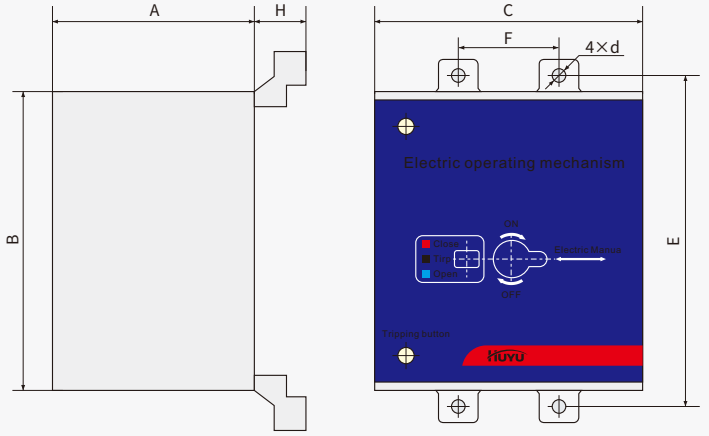
7.2 Shape and hole dimension of CS1 type rotating operating mechanism

Model	Frame size grade	a	b	c	d	f minimum	f maximum
CS1-100	100	110	80	44	13.5	50	400
CS1-250	250	110	90	46	13.5	50	400
CS1-400	400	185	140	80	20	50	350
CS1-630	630	226	210	80	20	50	350

8、Electric operating mechanism

The MDX type electric operating mechanism changes the motor's rotation motion to astraight motion by themotor,gear and cam, which is used to close and break the circuit breaker.

8.1 Overall installation dimension of MDX type electric operating mechanism



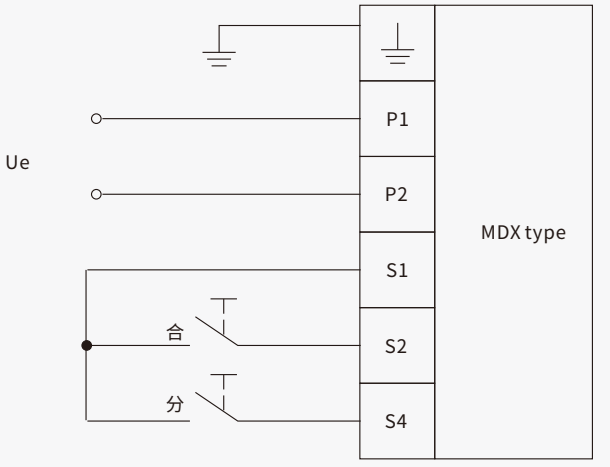
8.2 Overall installation dimension of MDX type electric operating mechanism

Model of electric operating mechanism	Installation dimension						
	a	b	c	e	f	h	d
MDX0	77	102	74	117	25	12	ϕ3.5
MDX1	77	116	90	129	30	13	ϕ4.5
MDX2	77	116	90	126	35	15	ϕ4.5
MDX3	115	176	130	194	44	36	ϕ6.5
MDX4	115	176	130	243	70	38	ϕ6.5

8.3、Main technical parameter of MDX type electric operating mechanism

Frame size grade	100	250	400	630
Model of electric operating mechanism	MDX1	MDX2	MDX3	MDX4
Rated working voltage Ue(V)	AC110～230V 50Hz DC110～220V			
Operation current (A)	⩽0.5		⩽2	
Operation time (s)	⩽0.8			
Rated operation frequency(times/h)	180		120	
Mechanical lifetime(times)	15000	9000	5000	3000

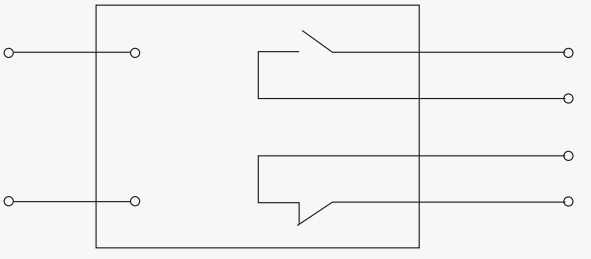
8.4、Connection Diagram of MDX Electric Operating Mechanism



9、LB type leakage alarm module

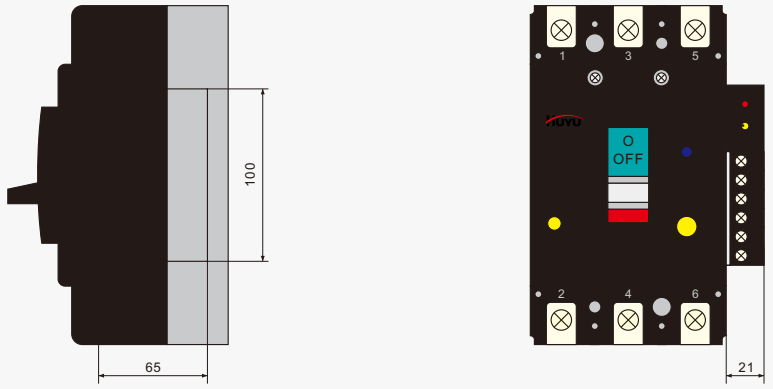
The LB type leakage alarm module need to be plugged to the right of the HUM8LB leakage circuit breaker. The module terminals P1-P2 are connected to AC400V or AC230VAC power supply. When the main circuit of the circuit breaker leaks , the circuit breaker does not trip , the relay in the alarm module works , and the terminals S1-S2 ,S3-S4 would be connected to the replay contact to deliver an alarm signal.

9.1、 LB type leakage alarm module wiring diagram



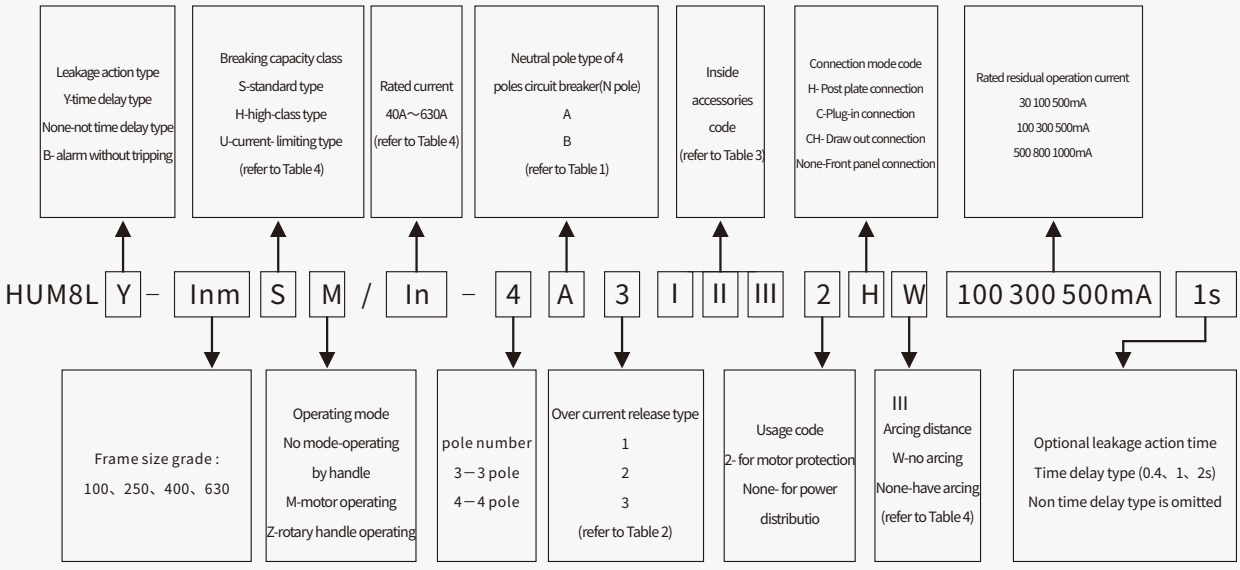
External power supply Us：AC230V or AC400V
Contact capacity：AC230V，1A，COSφ⩾0.35

9.2、 Outline drawing of LB leakage alarm module



Ordering information

1、 Annotation of order selection of HUM8L series moulded case circuit breaker



2、Please indicate the following information when ordering
2.1 Model and ordering quantity
HUM8L□-□□□/□-□□□□□□□□
2.2Ratedvoltage of shunt release and undervoltage release.
2.3External accessories
Rotary operation handle type(type A or B),square shaft length and rotary operation handle number,electric operation mechanism type and its rated voltage and quantity.

HUM8D Moulded Case Circuit Breakers

Functions and Features

Product description

Product standards

Molded Case Circuit Breakers (M1-M6)
HUYU Electric offers a complete range of Molded Case Circuit Breakers in seven frame sizes: M0-63A, M1 - 100 A, M2 - 250 A,
M3 - 400 A, M4 - 600 A, M5 - 800 A, and M6 - 1,250 A. Each frame size offers a range of interrupting voltage ratings
from 240-690 Vac. The M series conforms to global standards that include UL 489 and IEC 60947-2.

- High-breaking capacity and a new patented arc extinguishing design
- New patented technology reduces the manual operating force
- High quality compact modular with energy saving and environmentally friendly design with RoHS compliant material
- Installation flexibility: Bus Bar Connection, Lug Line/Load Side Connection, Plug-In, Rear Connection, Draw-Out
- Fixed and adjustable trip setting units
- Wide range of accessories: Alarm Switch and Auxiliary Contact, Shunt and Under-Voltage Trip, Interlock, NEMA and IEC Type
Rotary Handle, Motor Operator

Product standards

The M series conforms to global standards that include UL 489 and IEC 60947-2.

Features

- Frame rating：100A、160A、250A、400A、630A、800A、1250A
- Rated operating voltage Ue(AC)：220V/230V/240V，380V/400V/415V，500V，690V
- Breaking capacity code：S、H、U
- Number of poles：3P、4P
- Release type：Electromagnetic type, electronic type
- Installation method: fixed, plug-in, withdraw
- Certifications：CCC

Normal operating conditions

1.The maximum ambient temperature should be-5°C≤T≤+40°C,average temperature should be≤35°Cat 24h.
2.The relative humidity should not exceed 95%.
3.The altitude of installation place should not exceed 2000m.Higher than 2000m need to drop capacity forusage.
4.Pollution grade:3.There is no explosion in the surrounding air,and there is no corrosion of metals and destructionofinsulating gases and conductive dust.
5.Installation type:III
6."1,3,5,N1"terminalsare for power supply,"2,4,6,N2"terminals are for load,can no be reserved.
7.The installation surface of the breaker shall be perpendicular to the horizontal plane.The basic installation modeof the circuit breaker is vertical installation,the power source is on the top,the load end is below,anditcan beinstalledhorizontally.

HUM8D Moulded Case Circuit Breakers

Functions and Features

Product selection

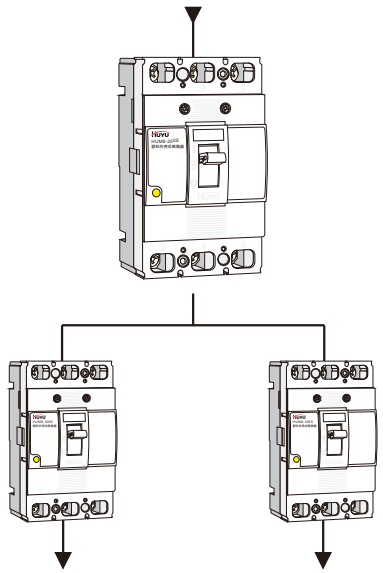
HUM8D	- □	□	/ □	□	□
Moulded Case Circuit Breaker	Frame case grade rated current Inm(A)	Short circuitbreaking capacitygrade	Z:Operating mode	Number of pole	
HUM8D	(refer to Table 4)	Standardype is no code H-highcasstype U-curent imtingtype	Z:Operating mode: operating by handle is no mode,the code of motor operating is M,the code ofrotary handle operating is Z. Rated current of circuit breakerIn(A)(refer to Table 4)	3：3P 4：4P	Neutral pole type of 4 poles circuit breaker(N pole)

□	□ /	□	□	□	□
Over current release type	Inside accessories code	Usage code			
Refer to Table 2	Refer to Table 3	no code is for power distribution,the code for motor protection is 2.	no code name for conventional products, Yfor product with prepayment meter dedicated release	"I"for overload alarming withouttripping	the connection code ofinsert type is C, the connection code of drawout type is CH.

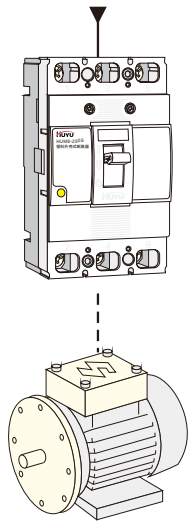
□	□	□	□
Arcing distance	Connection mode		EN
Wis no arcing, there is no code if it has arcing	the front panel connection is not code; back panel connection has code.	TH Hot and humid circuit breaker (conventional non-standard)	special use of new energy

Note:(1)The wet heat circuit breaker(TH)can withstand the influence of humid air,salt fog,oil mist and mold.
(2)The air humidity range of new energy products(EN)ranges from -40 to 70 degrees centigrade.

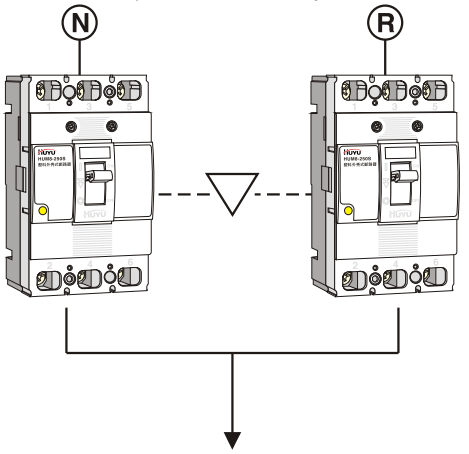
Low voltage distribution network protection



Control and protection of motor



Dual power conversion system



HUM8D Moulded Case Circuit Breakers
Functions and Features

Table 1

Code	Type	Explanation
A	A type	Npole does notinstall ver current release,and switch on all the time, not switch on and switch oftogether with other 3 poles.
B	Btype	N pole does not install over current release,switch on and switch off together with other 3 poles.

Table 2

Code	Type	Explanation
1	Time delay release	Have protection characteristics of over current inverse time delay.
2	Instantaneous release	Namely electromagnetic release has protection characteristic of over current instantaneous operation.
3	Duplex release	Both of the functions mentioned above
4	Electronic type release (M type Intelligent Controller)	Current transformer and electronic apparatus with thermalelectromagnetic release, canprotect characteristicparameter accuracy.
5	Intelligent release (H type Intelligent Controller)	Intelligenttype release Have serial communication interface, can comply with the request of"four remote"communication.
6	Intelligent release (R type Intelligent Controller)	With LCD , with voltage measurement, with serial communication port, to meet the communication network

Table 3

Inm（A）	I		II		III		Note
	Code	Explanation	Code	Explanation	Code	Explanation	
63 100 160 250	0	None	0～2	Auxiiay cotactgroup quanty	0～2	Alarm cotactgroup quanty	
	1	Shuntrelease	0～1		0～1		
	2	Undervoltage release	0～1		0～1		
400	0	None	0～5		0～2		Ⅱ＋Ⅲ≤7
	1	Shuntrelease	0～3		0～2		Ⅱ＋Ⅲ≤5
	2	Undervoltage release	0～3		0～2		Ⅱ＋Ⅲ≤5
	3	Shuntrelease and undervoltagerelease	0～1		0～1		Ⅱ＋Ⅲ≤2
630 800	0	None	0～8		0～3		Ⅱ＋Ⅲ≤11
	1	Shuntrelease	0～6		0～3		Ⅱ＋Ⅲ≤8
	2	Undervoltage release	0～6		0～3		Ⅱ＋Ⅲ≤8
	3	Shunt releaseand undervoltagerelase	0～3		0～2		Ⅱ＋Ⅲ≤5

8.The capacity reduction factor ofcircuit breaker in different environments,seetable(a)
Table(a)

Ambient temperature	+40℃	+45℃	+50℃	+55℃	+60℃	+70℃
Allowable continuous workingcurrent	1In	0.95In	0.9In	0.85In	0.8In	0.72In

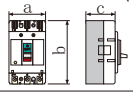
Note:under various environmental temperature conditions,the measured terminaltemperature of the circuit breakereaches 10 degrees centigrade asthebenchmark.

The electrical performance ofcircut breakers can bereferencedto thefllowing table,and the poster deratingfactor table is shown in hetable below(b)abovetheapplicable working environment of 2000m
Table(b)

Altitude(m)	2000	3000	4000	5000
Working current correction factor	1	0.93	0.88	0.82

Technical data and performance

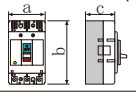
Table 4

Frame size rated current Inm(A)		100				160					250				
Type		HUM8D-100		HUM8D-100H		HUM8D-160		HUM8D-160H		HUM8D-160U	HUM8D-250		HUM8D-250H		HUM8D-250U
Rated current In(A)		40~100				64~160					100~250				
Pole number		3	4	3	4	3	4	3	4	3	3	4	3	4	3
Rated insulation voltage Ui(V)		800				1000					1000				
Rated insulation voltage Uimp(kV)		8													
Rated short-time withstand current Icw(kA) (Electronic release, use category B)		-				10					10				
Arcing distinguish distance(mm)		⩽50(0)*				⩽50(0)*					⩽50(0)*				
Rated limiting/operating shortcircuit breaking capacity Icu/Ics(kA)	AC690V	5/5		20/10		5/3		10/5		10/5	5/3		10/5		10/5
	AC400V	55/55		85/85		50/35		70/50		125/125	50/35		70/50		125/125
	AC230V	100/100		125/125		100/50		125/125		200/200	100/50		125/125		200/200
Operating times	Electrify	8000				8000					8000				
	None-electrify	20000				20000					20000				
Outline dimension(mm) 	a	90	120	90	125	105	140	105	140	105	105	140	105	140	105
	b	155				165				240	165				240
	c	68				68					68				
Installation dimensions	A	30				35					35				
	B	132				126				201	126				201
	φ	5				5					5				

*Pleasegive clear indication of arcing distanceis zero when you place an order.

HUM8D Moulded Case Circuit Breakers
Functions and Features

Continuad 4

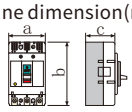
Frame size rated current Inm(A)		400					630				
Type		HUM8D-400		HUM8D-400H		HUM8D-400U	HUM8D-630C		HUM8D-630H		HUM8D-630U
Rated current In(A)		160~400					250~630				
Pole number		3	4	3	4	3	3	4	3	4	3
Rated insulation voltage Ui(V)		AC1000									
Rated insulation voltage Ui(V)		12									
Rated short-time withstand current Icw(kA) (Electronic release, use category B)		10KA/0.5s					10				
Arcing distinguish distance(mm)		⩽100(0)*					⩽100(0)*				
Rated limiting/operating shortcircuit breaking capacity Icu/Ics(kA)	AC690V	10/10		15/10		35/35	15/15		20/15		35/35
	AC400V	70/70		100/100		125/125	70/70		100/100		125/125
	AC230V	100/100		150/100		200/200	100/100		150/100		200/200
Operating times	Electrify	7500					7500				
	None-electrify	10000					10000				
Outline dimension(mm) 	a	140	185	140			210	280	210		
	b	257		297			275		322		
	c	103		200			103		200		
Installation dimensions	A	44					70				
	B	194		243			243		290		
	φ	7					5				

*Pleasegive clear indication of arcing distanceis zero when you place an order.

HUM8D Moulded Case Circuit Breakers

Functions and Features

Continuad 4

Frame size rated current Inm(A)		800					630	
Type		HUM8D-800		HUM8D-800H		HUM8D-800U	HUM8D-1250H	
Rated current In(A)		320~800					500~1250	
Pole number		3	4	3	4	3	3	4
Rated insulation voltage Ui(V)		AC1000						
Rated insulation voltage Ui(V)		12						
Rated short-time withstand current Icw(kA) (Electronic release, use category B)		10					20KA/0.6s	
Arcing distinguish distance(mm)		⩽100(0)*					⩽100(0)*	
Rated limiting/operating shortcircuit breaking capacity Icu/Ics(kA)	AC690V	15/15		20/15		35/35	25/13	
	AC400V	70/70		100/100		125/125	85/43	
	AC230V	100/100		150/100		200/200	125/63	
Operating times	Electrify	7500					5000	
	None-electrify	10000					7500	
Outline dimension(mm) 	a	210	280	210			210	280
	b	275		322			330	
	c	103		200			144	
Installation dimensions	A	70					70	
	B	243		290			299	
	φ	7					9	

*Pleasegive clear indication of arcing distanceis zero when you place an order.

Thermoelectric Electromagnetic Current Releaser

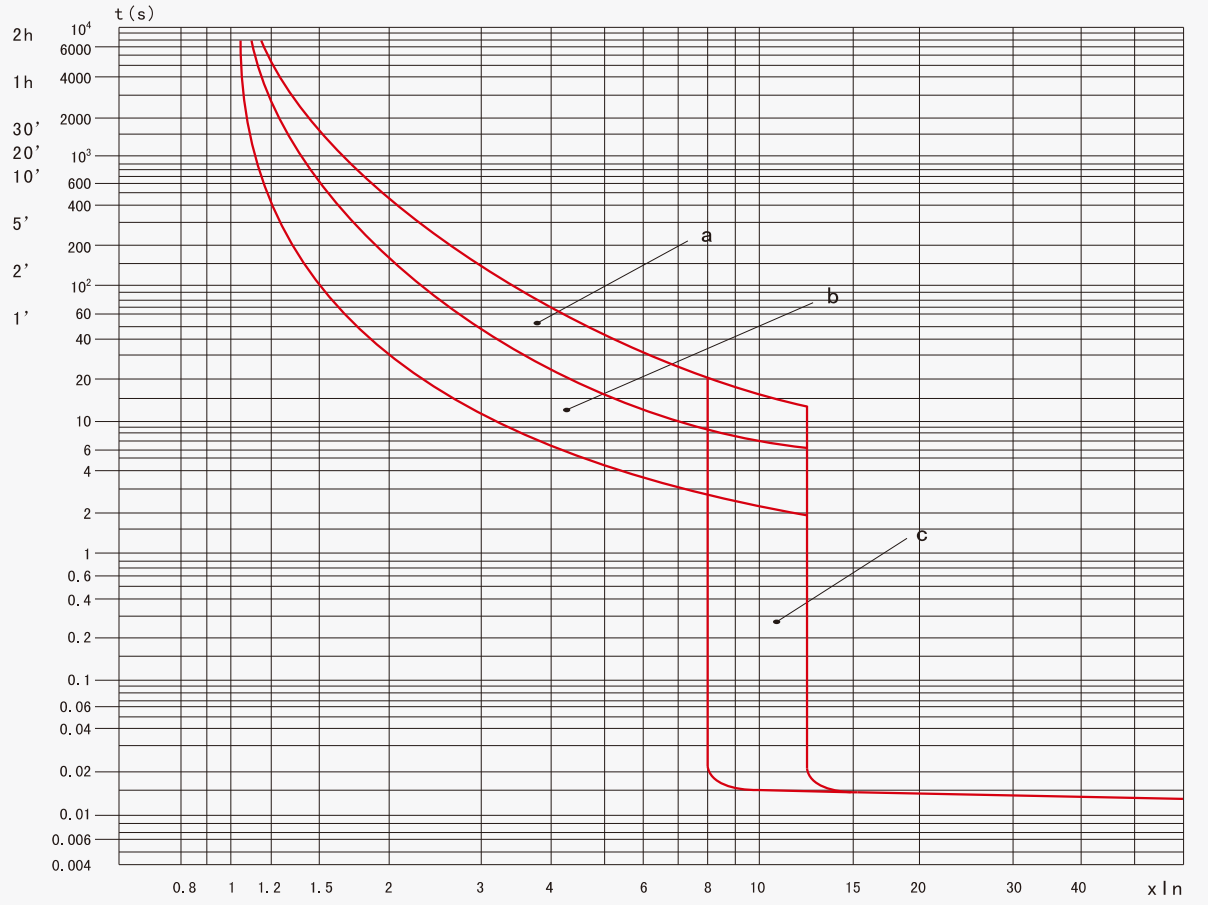
5.1.Longtimedelay releasesetup to current Ir1
Iri namelyrated current In of the circuitbreaker,thespecifications of In,please refer to Table 4.
Theneutral pole(N pole)of4-pole circui breakeraldoes notinstallwith over cureantrelease,the ratedfeverheating curentis he same as ather three poles.
5.2.Theovercurrent protection characteristics of circult breakers fordistribution are shown in Table 5
5.3.The over-currentprotectioncharacteristic curveofHUM8-63、HUM8-100is shown in picture 1a-Characteristics of cold thermaloverload protection

Table 5

Rated current In(A)	Thermal release(ambient temperature is+40℃		Electromagnetic release operatingcurrent(A)
	1.05In non operating time(h) (cold state)	1.30In operating time(h) (thermal state)	
≤63	>1	≤1	(10±2)In (Note)
>63	>2	≤2	

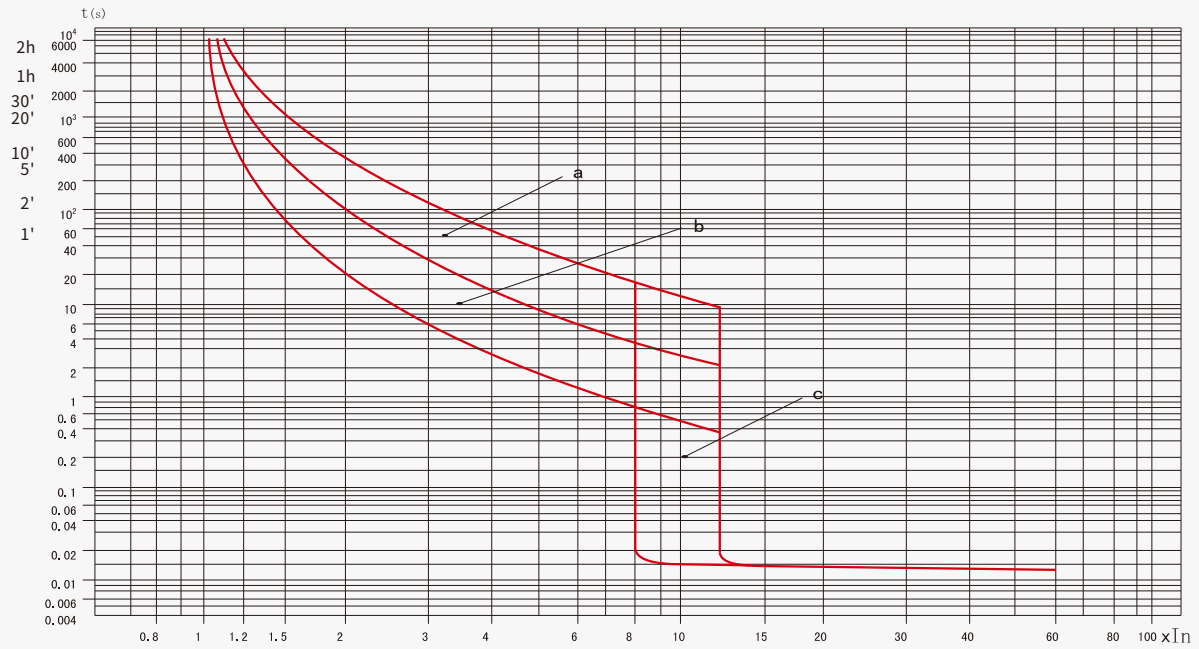
Ndote:the operding curent of HUM8-630,HUM8-800MCCB’S electromagnetic release is(5-14)nadjustable.Referance value:low(4-6)In，lower（6-8.3)In;higher(83-10.9)In;high(10.9-14)In

Picture1



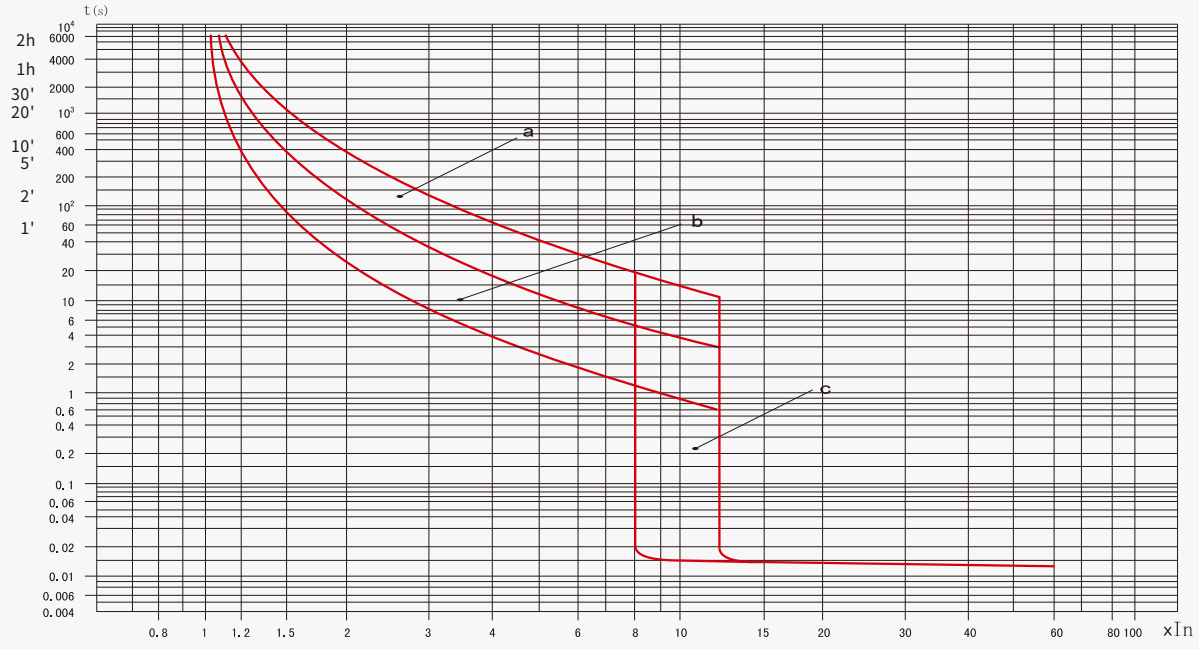
2.2 HUM8-250 Overcurrent Protection Characlerislic Curve See Figure 2

Picture 2



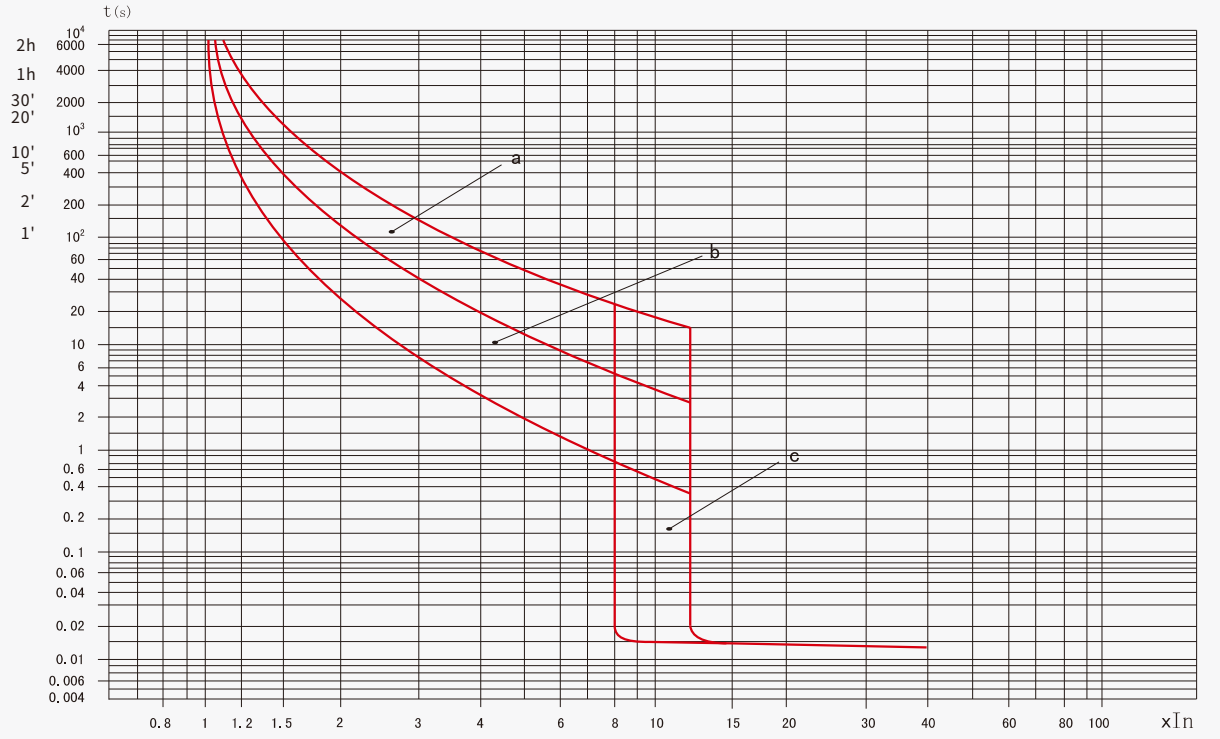
2.3 HUM8-400 Overcurrent Protection Characlerislic Curve See Figure 3

Picture 3



2.4 HUM8-630、HUM8-800 Overcurrent Protection Characlerislic Curve See Figure 2

Picture 4



3.The protection characteristics of over current for motor circuit breakers are shown in Table 6

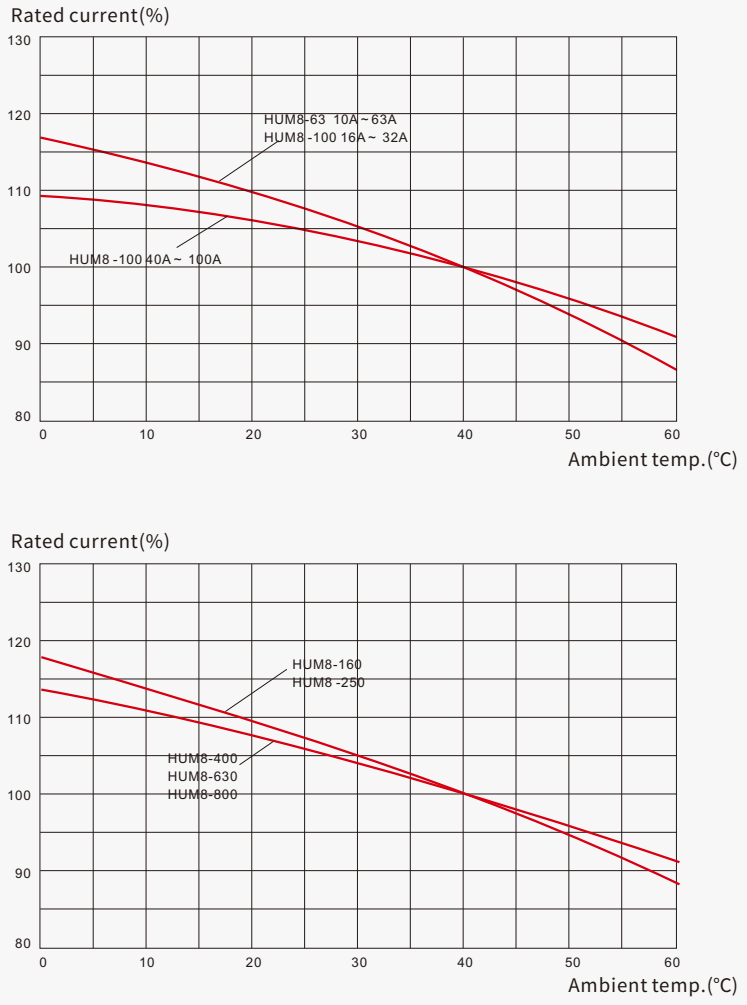
Table 6

Rated current In(A)	Thermal release(ambient temperature is+40°C)				Electromagnetic release operatingcurrent(A)
	1.0In non operating time(h)(cold state)	1.2In operating time(h) (thermal state)	1.5In operating time (min)(thermal state)	7.2In operating time Tp(s)(cold state)	
In≤63	>2	≤2	≤2	2<Tp≤10	(12±2.4)In (Note)
63<In≤250			≤4	4<Tp≤10	
250<In≤800			≤8	6<Tp≤20	

Ndote:the operding curent of HUM8-630,HUM8-800MCCB’S electromagnetic release is(5-14)nadjustable.Referance value:low(4-6)In，lower（6-8.3)In;higher(83-10.9)In;high(10.9-14)In

4.The temperature correction curve ofthermalrelease isshownin picture 5

Picture 5



5.The powerloss of circuit breakerls shown in Table 7

Table 7

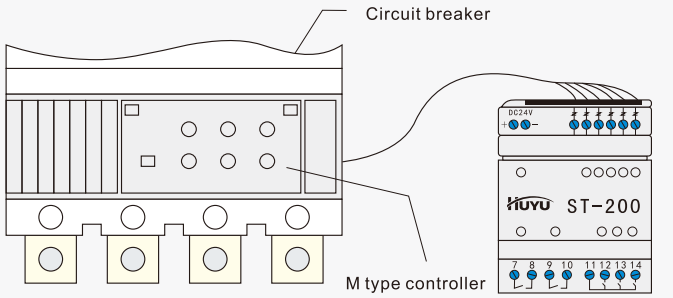
Frame size	Rated current In(A)	Resistance of per pole(mΩ)		Total power lossof triode(W)			
				Stationary type		Insert or draw out type	
		C.S type	H.U type	C.S type	H.U type	C.S type	H.U type
100	100	0.83	1.33	25	40	30	46
250	250	0.32	0.51	60	96	75	135
400	400	0.20	0.33	96	158	120	187
630	630	0.14	0.22	167	262	195	296
800	800	0.11	0.18	211	346	260	389

Intelligent controller

Rated curent of the MCCB's frame slze Inm=100A~1250A can be installed with intellient contrller.The curent ransformer set of ntellgent contrller forMCCB's powersupply,namely autogeny power suply.When the thre-phase curent is grater than 0.2In or single-phase current is grater than 0.5In,theintelligent controller can work raliably.Accordingto thedifferent functions,the intelligentcontroller is divided into two types:
Mtype intellgentcontroler:Curentransformer and electronic apparatus installed with themal electromagneterelease,soitisalsocalldelectronicrelease.H type intelient controler:in adition to the function of M inteligent contrller,it also has serial RS485 communication interface,which can meet therequirements oftelemetry,remote control,remote control and remote communication(i.a.,"four remote")of communicationnetwork.
When the main powersupplyofthe crcuitreakerdoesnot pass hrough the curent(le.no spontaneous power),the DC12Vauxilary power supply is needed.The M and H intellgent controlers have DC12V test power oute on the panel.Htype intelient contrller can also provide auxllary power supply through STprogrammer,ST-CM display module or ST-DPcommunicationprotocol module.6.1.Mtype intelligent controller
6.1.1 Function
a.Overload inverse time lag protection;
b.Shortcircuit,shorttime delay"ixed timelag"protection orshort circuit,short ime delay"fixed time lag+inverse time lag'protection:
c.Short circuit instantaneous operation protection;
d.Earthing protection(applicable to four polecircut breaker)
e.Auxiiary function:operation currentindication,power supply and slf diagnosis indication,warning alarm and groundingalarm indication;
The self diagnostie function ot the controler is mainly used for checking and protecting the operation of the single-chip computer chip.When the workingtemperature of he contrller s over 80 degrees,the MCU liaht emiting diode blinks;when the micro-controler works abnormaly,the MCU liaht emitin diodeblinks or extinguishes.
t.Optional function:wamning signal trpping alarm,grounding alarm (four pole circuit breaker and other optical isolation signal output.ST-200 control module is
needed at this time.The connection is shown in picture6.
g.Panel's parametersetting up and tripping test function
6.1.2The panel layout of M type intelligent controller shown by Drawing 76.1.3The over-current protection characteriste curve of Mtyp lntlgent controllershown by Drawing 8 and9,and the technical data are shown in table 8.
Drawing8:
Ir1 Is long time delay release setting up current,TLis longtime delayoperation time;Ir2Isshort time delayreleasesetting up current,TS is shorttime delay operation time;Ir23 is instantaneous releaseseting up current;TG is earthing fault operating current;Ir4 Is earthing fault setting up current;
lp ls forecast alarming current;
Explanation:4 pole for MCCB'sforecastalarmingcurrentlp=1.0Ir1.

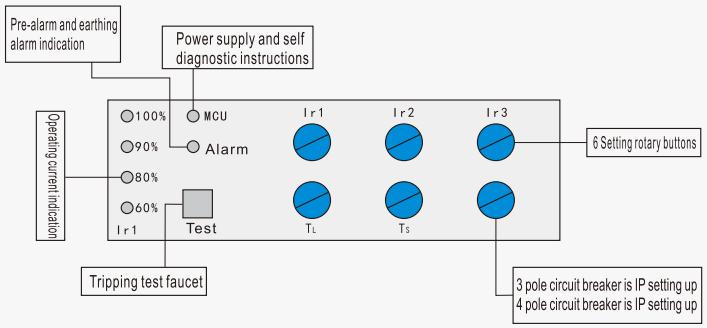
HUM8D-100、160、250 M-Type intelligent controller

Picture 6

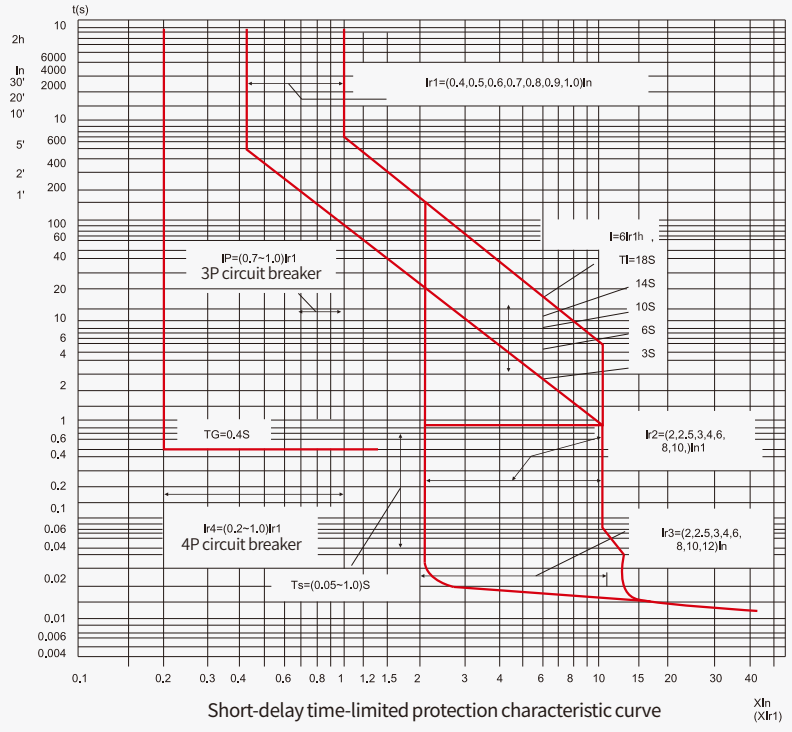


HUM8D-400～1250 M-Type intelligent controller

Picture 7

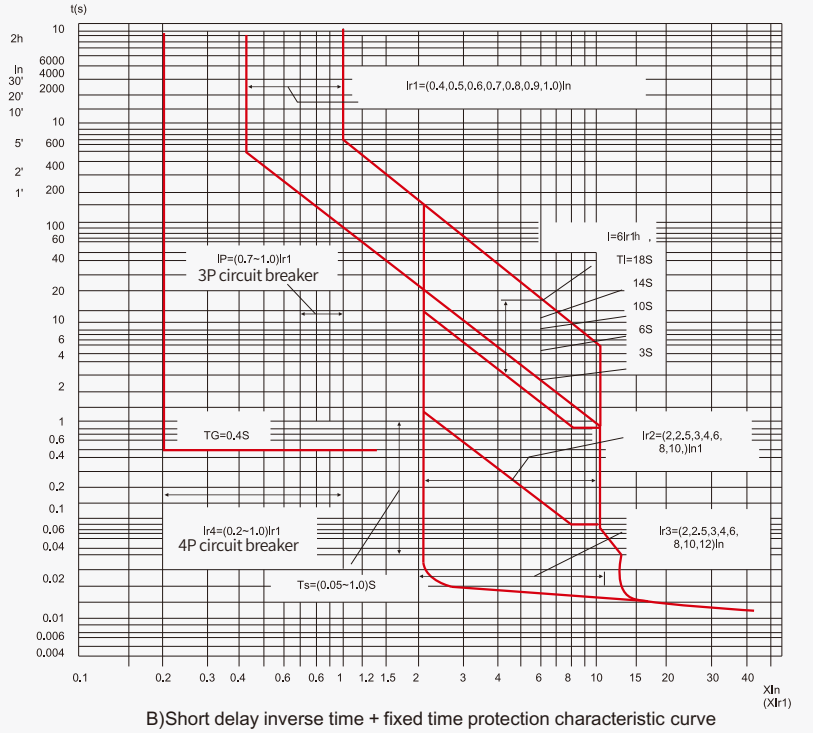


Picture 8



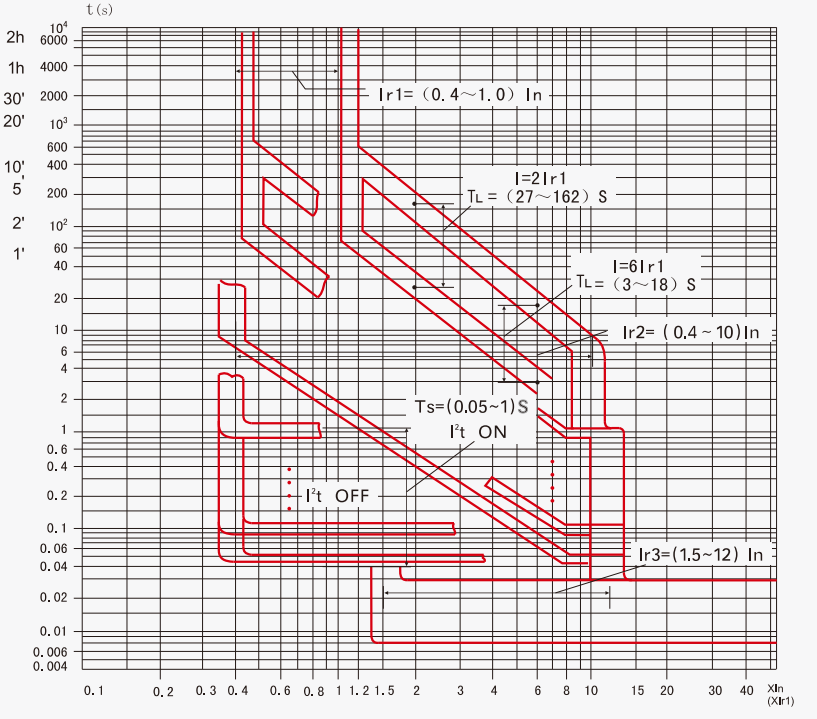
Short-delay time-limited protection characteristic curve

Picture 9



B)Short delay inverse time + fixed time protection characteristic curve

Picture 10



C)Characteristic curve of overcurrent protection of H type intelligent controller

2.Htype inteligenteontrolkr
2.1 Funatlon:
a.Overoad inwerse time lag proloclors
b.Shortcircuit shorttimedoly ked time lsgprotection orshor circuit,short timedelay"tfuedtime lg+inverse time lag'pwotection;
c.Short circuit instantaneous operatingproleciom
d.Earthing peotaction ffour pole breaker applicable);
0.Auxiarp funeclon operatian curantindicator.power supely and salf diagnatic instnuetians.,warning alarm and grounding alam irficato:
1.Bgpalouputunetion trpeing alaming,elasng breaking and athar opical separatian signaloupur,alam,ground alam oplieldiaphragmsgnaloutput,andhas the function of datectian of unity and division.
g.Ithas RS485serlaloommunloatlon interfaoe.
h.Panel's parameter satting up and tripping test funclon;
2.2The panel layoutoftheHtpe inieligent controller is shown in picure112.3The ovar-curentpeotoclian charactiriahc curelHtypeimteligant contrellr is showmin picture 10,and tecrical dala s shown in able9

Picture 11

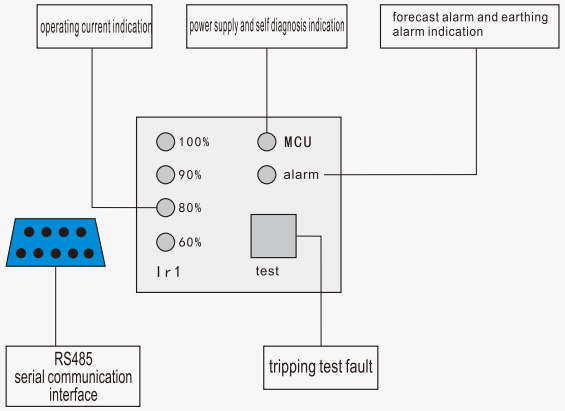


Table8:Over current protection characteristics of M intelligent controller In=100A,160A,250A,400A,630A,800A,1250A

●Overload long time delay																	
Setting current		Ir1=In ×…	0.4，0.5，0.6，0.7，0.8，0.9，1+OFF														
Movement characteristics		≤1.05Ir1	⩾2hNo action is more than or equal to 2h														
		>1.2Ir1	<1h1H long delay action														
Inverse time delay (s) $T=(6Ir1)^2\times T_L/I^2$		T_L=	3		6		10		14		18						
		Under 2Ir1	27		54		90		126		162						
		Under 6Ir1	3		6		10		14		18						
		Under7.2Ir1	2.2		4.38		6.94		10.22		13.14						
		Accuracy class	±10%														
Thermal memory(30min,powercleared)*			Standard＋OFF(turu pff)														
●Short time delay																	
Rated current		Ir2=Ir1 ×…	2，2.5，3，3.5，4，5，6，8，10+OFF														
Movement characteristics		≤0.9Ir2	Short delay without action														
		>1.1Ir2	Shortdelay action														
Time delay (s)	Timing limit (I^2t OFF)	Ts=	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.55	0.6	0.7	0.8	0.9	1.0
		delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9
		Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1
	Inverse time+ timelimit (I^2t ON)	If I> 8Ir1 delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9
		If I> 8Ir1 Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1
		If I≤ 8Ir1 inverse time delay(s)	$T=(8Ir1)^2\times TL/I^2$														
		If I≤ 8Ir1 Accuracy	±10%														
Thermal memory(30min,power cleared)*			Standard＋OFF(turu pff)														
●Short circuit instantaneous																	
Rated current		Ir3=In ×…	2，3，4，6，8，10，12+OFF														
Movement characteristics		≤0.85Ir3	nstantaneous non-action														
		>1.15Ir3	Instantaneous action														
●Earthing fault(4 pole circuit breaker applicable)																	
Rated current		Ir4=In ×…	0.2，0.3，0.4，0.5，0.6，0.8，1.0+OFF														
Movement characteristics		≤0.5Ir4	No alarm or no action														
		>1.0Ir4	Alarm or trip														
Time delay (s)		T_G=	0.4														
		delay(s)	0.36														
		Inverse time delay(s)	0.44														
●Overload forecast alarm																	
Rated current		Ip=Ir1 ×…	0.7，0.75，0.8，0.85，0.9，0.95，1.0														
Movement characteristics		≤0.9Ip	Non alarm														
		>1.0Ip	Alarm														

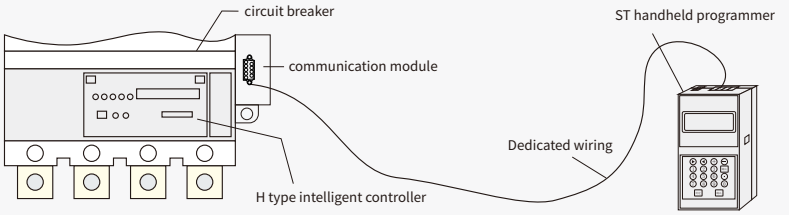
Note:1.Thefunctionoftheunitlocationinthetableisonlyavailablewhentheauxiliarypowersupplyisinoperation;
2.Shortdelaymodeforuserstochoose,butonlyonewaytowork;
● Timinglimitoperationmode;
● Theinversetime+timelimitmode,using8Ir1asthetransferpoint,I=8Ir1forinversetimework;I>8Ir[1]fortimelimitmode.

Table 9:Over current protection characteristicsof H type intelligent controller In=100A,160A,250A,400A,630A,800A,1250A

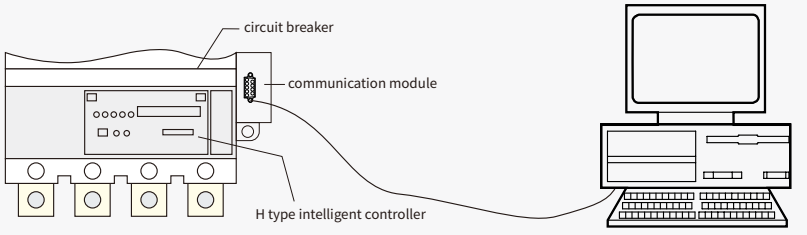
●Overload long time delay																		
Setting current		Ir1=In ×…	0.4-1(less than 2%+OFF(differential)exit position)															
Movement characteristics		≤1.05Ir1	⩾2hNo action is more than or equal to 2h															
		>1.2Ir1	<1h1H long delay action															
Inverse time delay (s) $T=(6Ir1)^2\times T_L/I^2$		T_L=	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Under 2Ir1	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162
		Under 6Ir1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Under7.2Ir1	2.2	2.92	3.65	4.38	5.11	5.84	6.57	6.94	8.03	8.76	9.49	10.22	10.95	11.68	12.41	13.14
		Accuracy class	±10%															
			Standard+OFF(turn off)															
●Short time delay																		
Setting current		Ir2=In ×…	0.4-1(less than 4%+OFF(differential)exit position)															
Movement characteristics		≤0.9Ir2	Short delay without action															
		>1.1Ir2	Short delay action															
Time delay (s)	Timing limit (I^2t OFF)	Ts=	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.55	0.6	0.7	0.8	0.9	1.0	
		Delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9	
		Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1	
	Inverse time+ timelimit (I^2t ON)	If I> 8Ir1	delay(s)	0.03	0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.50	0.54	0.63	0.72	0.81	0.9
			Maximum breaking time(s)	0.09	0.14	0.19	0.24	0.29	0.34	0.39	0.44	0.5	0.6	0.66	0.77	0.88	0.99	1.1
		If I≤ 8Ir1	inverse time delay(s)	$T=(8Ir1)^2\times TL/I^2$														
			Accuracy	±10%														
Thermal memory(30min,power cleared)*			Standard+OFF(turn off)															
●Short circuit instantaneous																		
Setting current		Ir3=In ×…	1-12(less than 8%+OFF(differential)exit position)															
Movement characteristics		≤0.85Ir3	Instantaneous non-action															
		>1.15Ir3	Instantaneous action															
●Earthing fault(4 pole circuit breaker applicable)																		
Setting current		Ir4=In ×…	0.2-1(less than 8%+OFF(differential)exit position)															
Movement characteristics		≤0.5Ir4	No alarm or no action															
		>1.0Ir4	Alarm or trip															
Time delay (s)		T_G=	0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8	
		delay(s)	0.06		0.16		0.26		0.36		0.45		0.54		0.63		0.72	
		Inverse time delay(s)	0.14		0.24		0.34		0.44		0.55		0.66		0.77		0.88	
●Overload forecast alarm																		
Setting current		Ip=In ×…	0.2-1(less than2%range)															
Movement characteristics		≤0.9Ip	Non alarm															
		>1.0Ip	Alarm															

2.4.H-type intellgent controller parameter setting andcommunicatlion networking
a.H-type controller alone
Whenstting the protection parametersof the contrller,itis required to use the ST programmer to connect as shown inDrawing 12 and then to operate themanual of the programmer.Theliht alerm slgnals of the Htype contrller can be controlld through the ST200 ntllgent control Module to conver t contactsignaloutput.
b.H-type controller with ST-CM display module
During normal operation,the displaymodule monitors theoperating curent andfaultinformation of h contrller.When sting the protaction paramaterafthecontoller,Its necesBearyforthe profeseional to ueethe STprogrammerto conmect as shown in Drawing13and thento operate themanual of the programmer.
c.H-type controllercommunication network
The two connection solutions are shown inDrawing 14.Diferantprotocolmodules are optional fordfferent protocols.The followingis the solution for selectingthe ST-DP pratocol.Through the ST200 Intellent control module,contrele alarm slgnals,opening and cloelng slgnals can achleve the deslred contactconversion output.

Picture 12



Picture 13



HUM8D Moulded Case Circuit Breakers

Functions and Features

Structural features

developedbyusinghigh-techwithinternationaladvancedlevelin1990s,anditsmainfeaturesareasfollows::

1、Advancedarcextinguishingtechnology,highshort-circuitbreakingcapacity,thewholeseriestorealizezeroflyingarc.

Theproductinthedynamicandstaticcontactsplacednexttothearc-resistantinsulatingmaterials.Itsroleontheonehandistolimitthearcarcrootarea,ontheotherhand,theinsulatingmaterialinthearcunderthecationofhightemperatureproducesalargenumberofgasestoincreasethearcpressure,andcoolthearc,andenhancethearcareaofthedissipativeeffect,sothatthearccolumnresistancerises,increasethearcvoltage.Inthecircuitelectromotiveforceandtheattractionoftheirongridunderthedualroleofthearcintothegridarcextinguishingchamber,isdividedintoshortarcs,duetothenear-negativeeffectcausedbythearcvoltagerisesdramatically.Whenthesupplyvoltagecannotmaintainthearcvoltage,thearcwillbeextinguished.Inthearcextinguishingchambersetupoutsidethemulti-layerconsumptionoffreenetwork,sothattheflyingarcdistanceiszero.

2、Advanceddesignofoperatingmechanism

Theproduct'soperatingmechanismlockingisstableandreliable,toensurereliableclosureduringnormaloperation,theagency'sreleaseforceissmall,400A~800Ashellframeagency'sreleaseforcetoincreasealevelofamplificationmechanismtoensurethattheovercurrentwhenthereliableunlockingandbreaking.

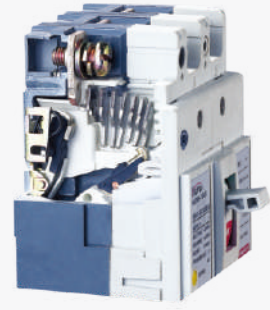
100A~250Ashellframeoperatingmechanismwhentheovercurrentdisconnectioncircuitbreakercontactopeningdistanceismuchlargerthanthenormalbreakingcontactopeningdistance(about50%)whichisconducivetoimprovetheshort-circuitbreakingcapacity.

3、Adoptingmicroelectronictechnologytorealizeintelligentcontrol.

100A~1250Ashellframecircuitbreakerwiththermalelectromagneticdetentvarieties,thereareelectronicdetentandintelligenttriptypes.

Arc-resistant insulating material is placed on the moving and static contacts;

The circuit breaker is in the normal breaking position.



4、Complete accessories

Accessories for circuit breakers are divided into two categories: internal and external.

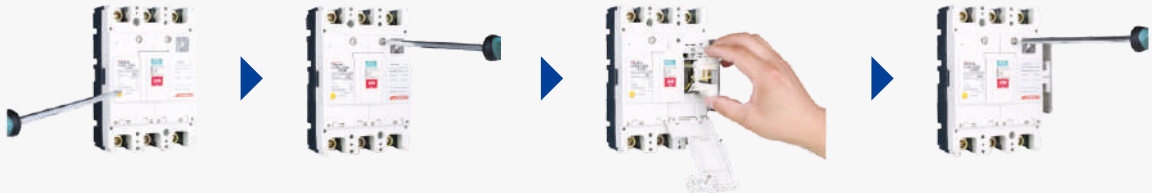
4.1、Internal accessories include Auxiliary switch, Alarm switch, shunt trip, and under-voltage trip. These accessories can be easily installed in the product's dedicated accessory box (see the right figure for the installation process) and have a dedicated terminal block.

1、Press the trip button to open the circuit breaker

2、Screw down the front cover screws

3、Press the internal accessories on

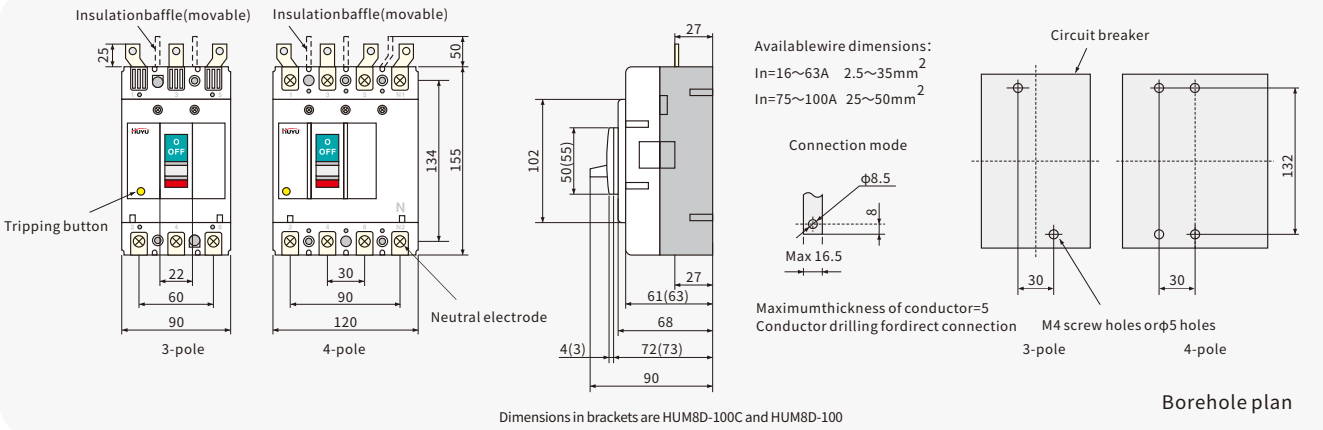
4、Close the front cover and tighten the screws



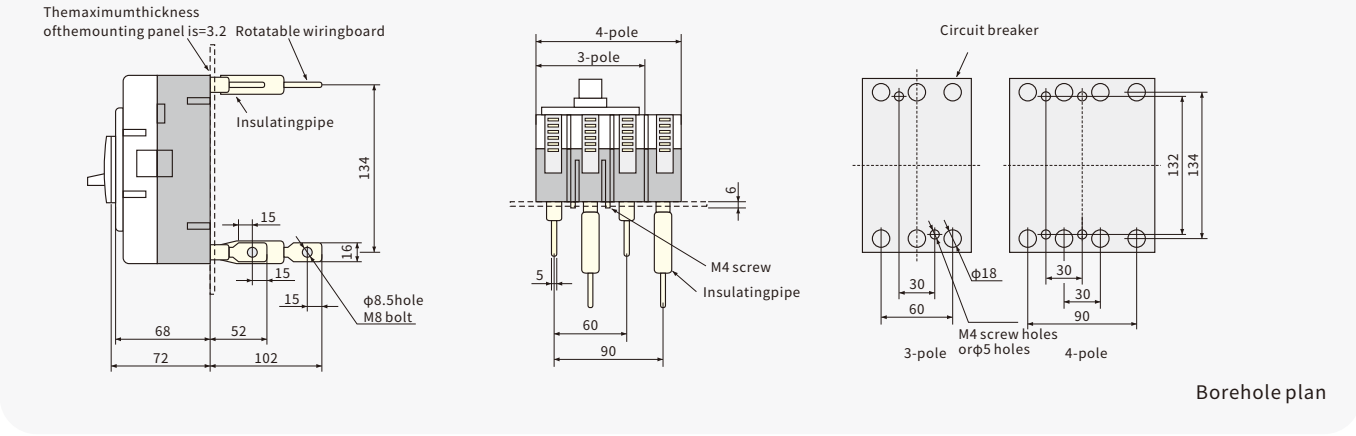
INTERNAL ACCESSORIES INSTALLATION : Be sure to trip the circuit breaker when installing accessories

Overall and mounting dimension

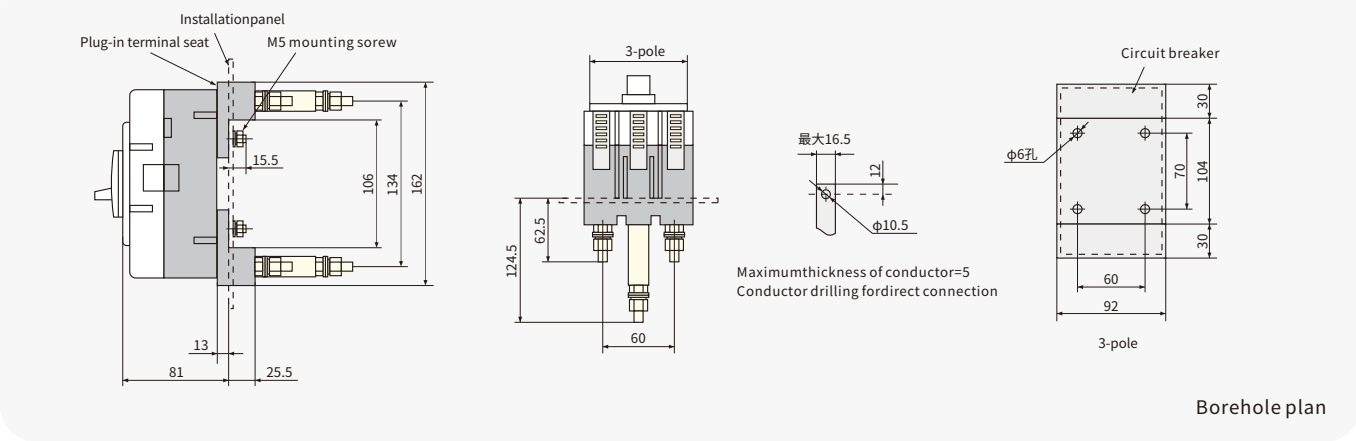
1.HUM8D-100、HUM8D-100H overall and mounting dimensions
Front panel connectlon



Post plateconnection



Plug-inconnection

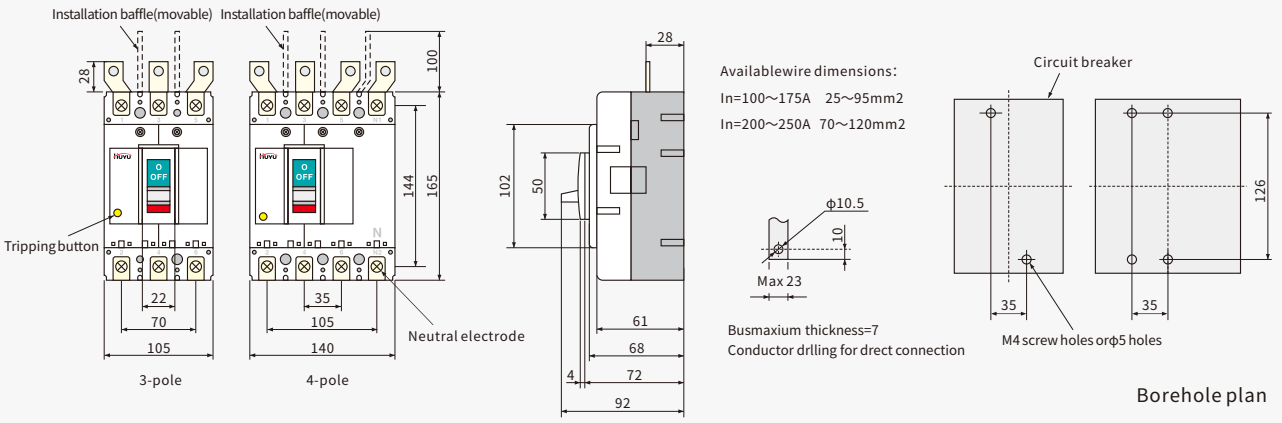


HUM8D Moulded Case Circuit Breakers

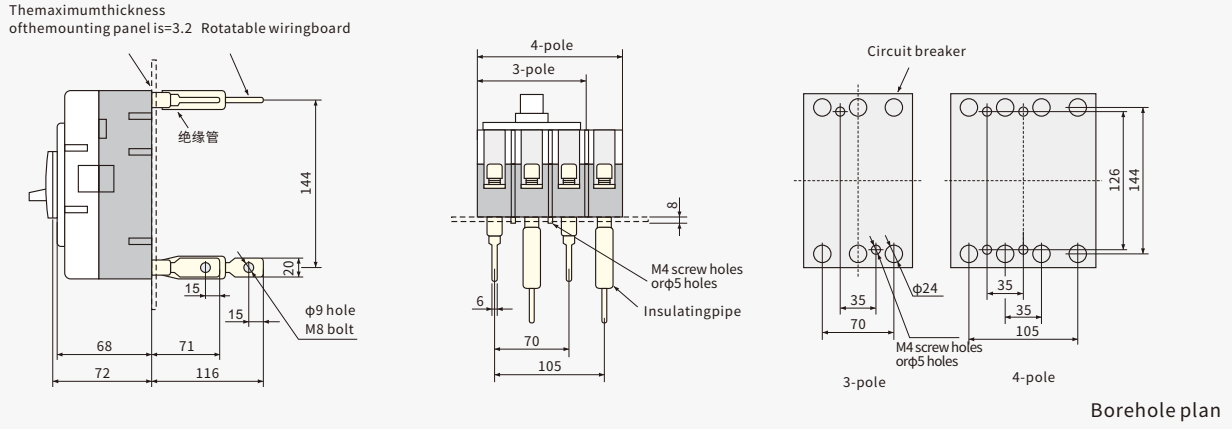
Functions and Features

2、HUM8D-160、HUM8D-160H、HUM8D-160U、HUM8D-250、HUM8D-250H、HUM8D-250U overall and mounting dimensions

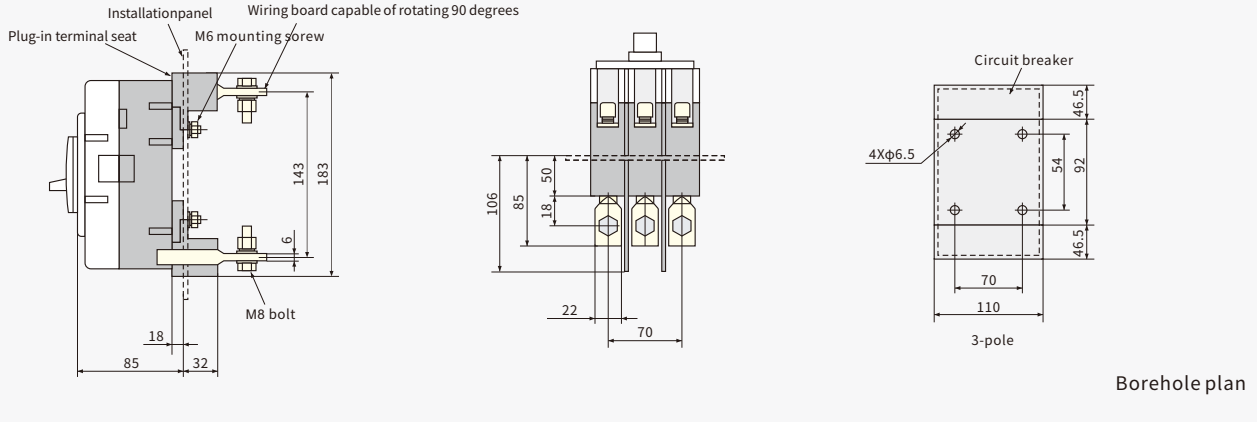
Front panel connectlon



Post plateconnection

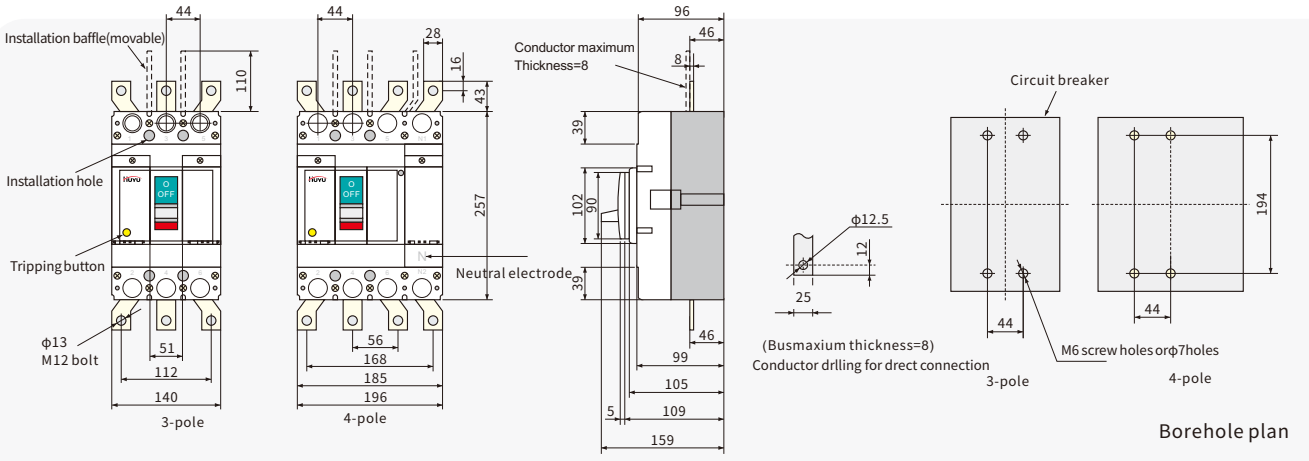


Plug-inconnection



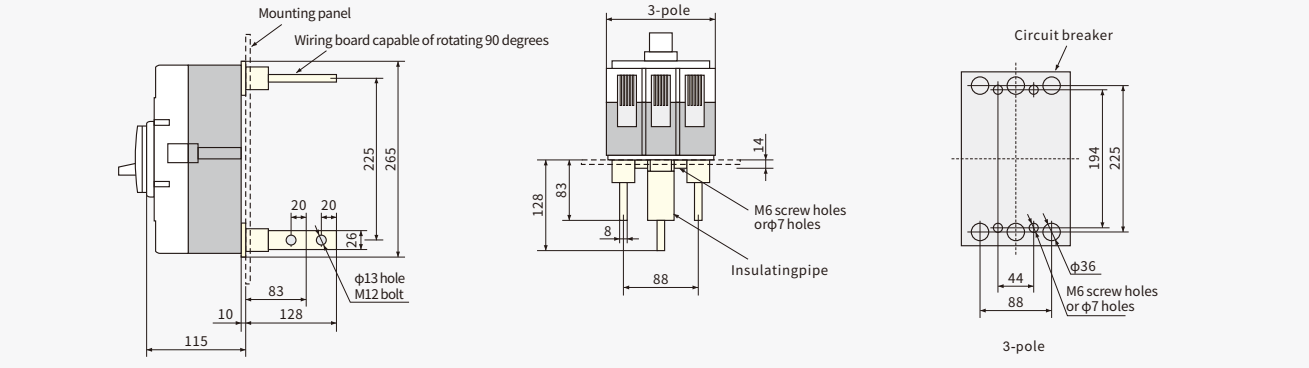
3、HUM8D-400 overall and mounting dimensions

Front panel connectlon



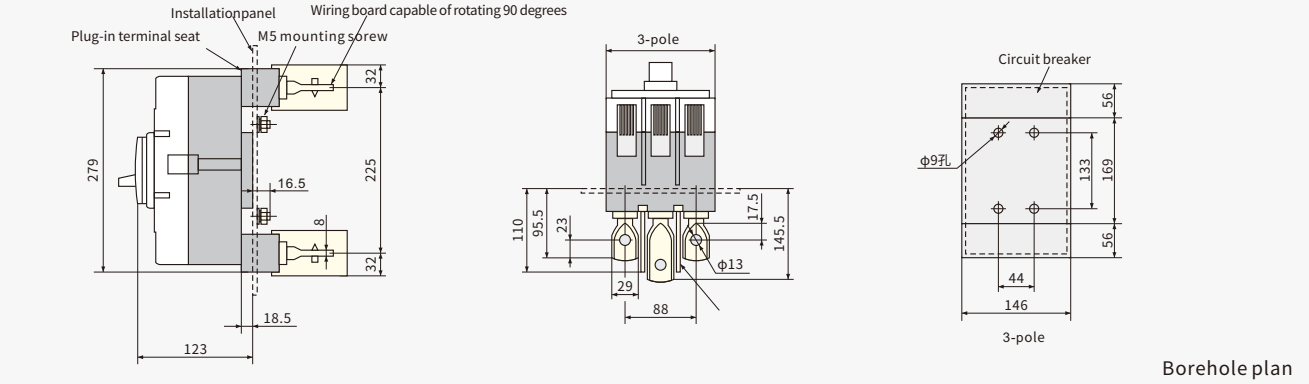
Borehole plan

Post plateconnection



Borehole plan

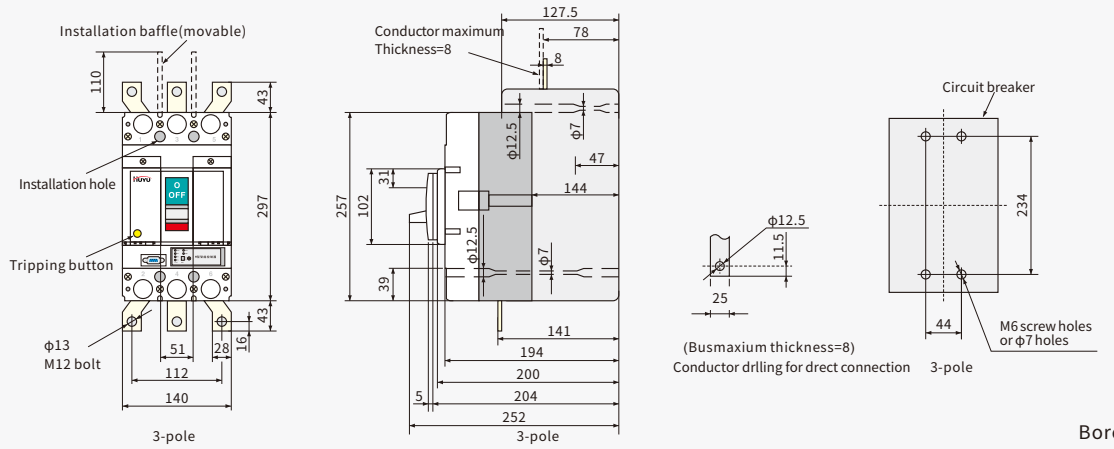
Plug-inconnection



Borehole plan

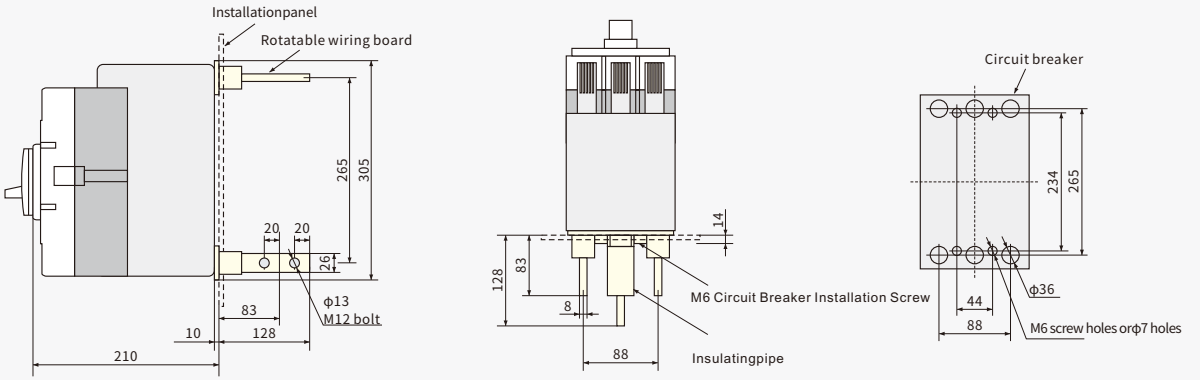
HUM8D Moulded Case Circuit Breakers
Functions and Features

4、HUM8D-400H、HUM8D-400U overall and mounting dimensions
Front panel connectlon



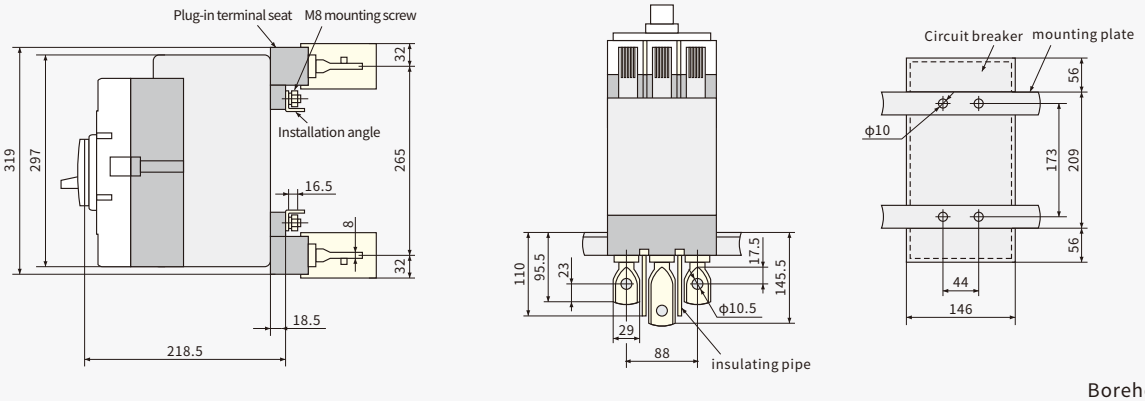
Borehole plan

Post plateconnection



Borehole plan

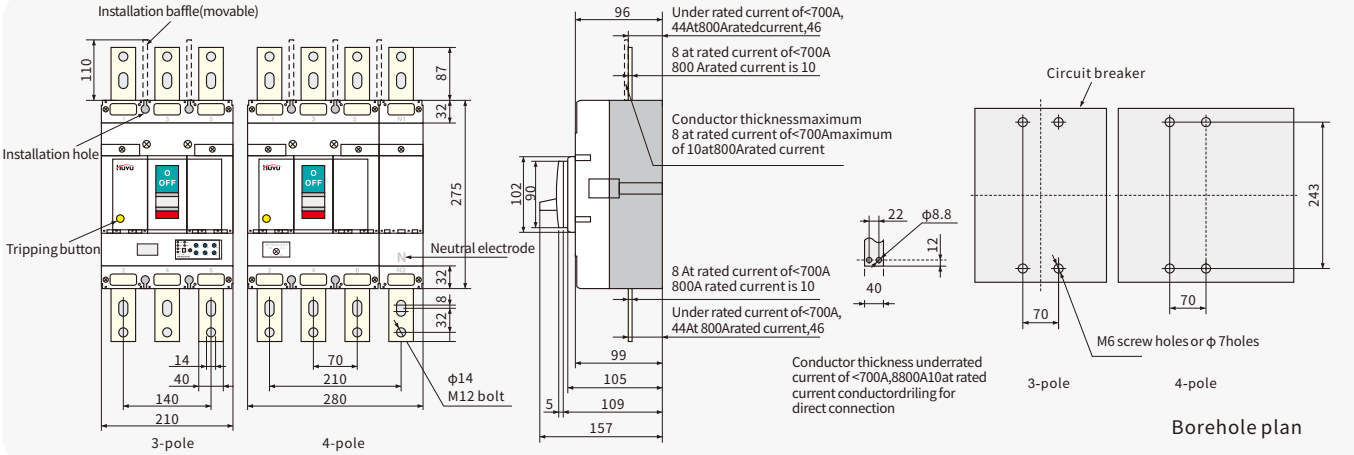
Plug-inconnection



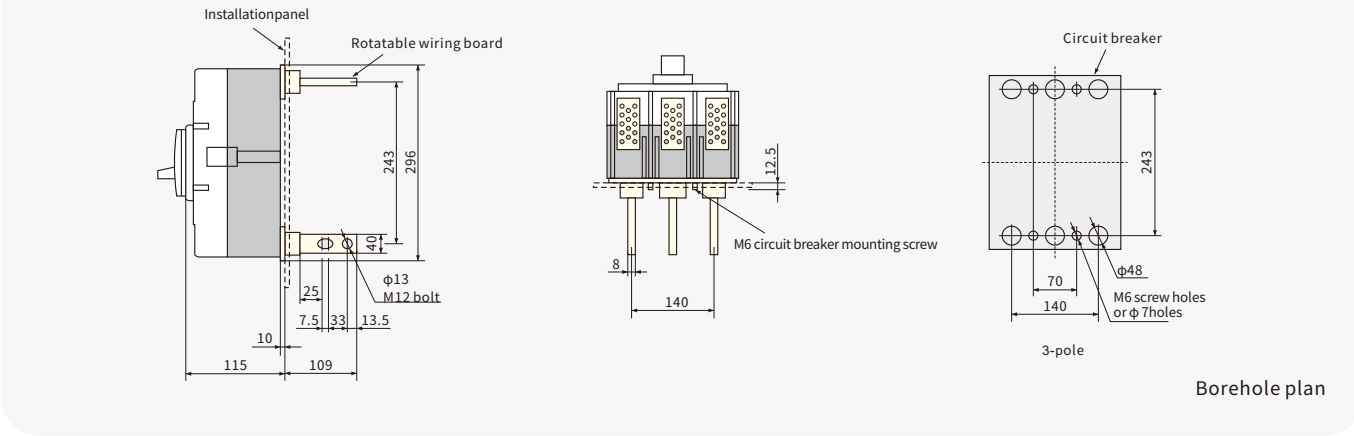
Borehole plan

5、HUM8D-630、HUM8D-800 overall and mounting dimensions

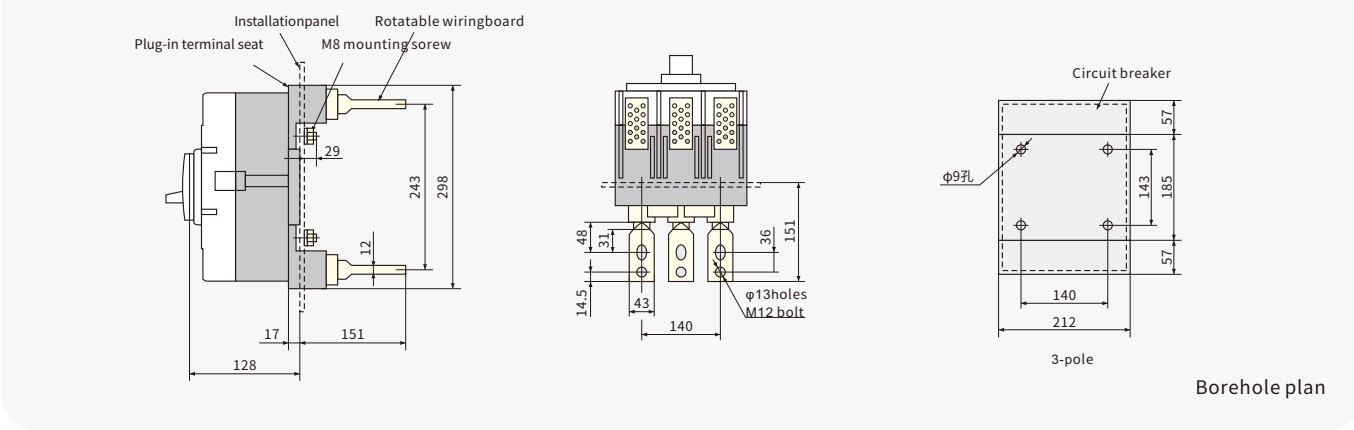
Front panel connectlon



Post plateconnection

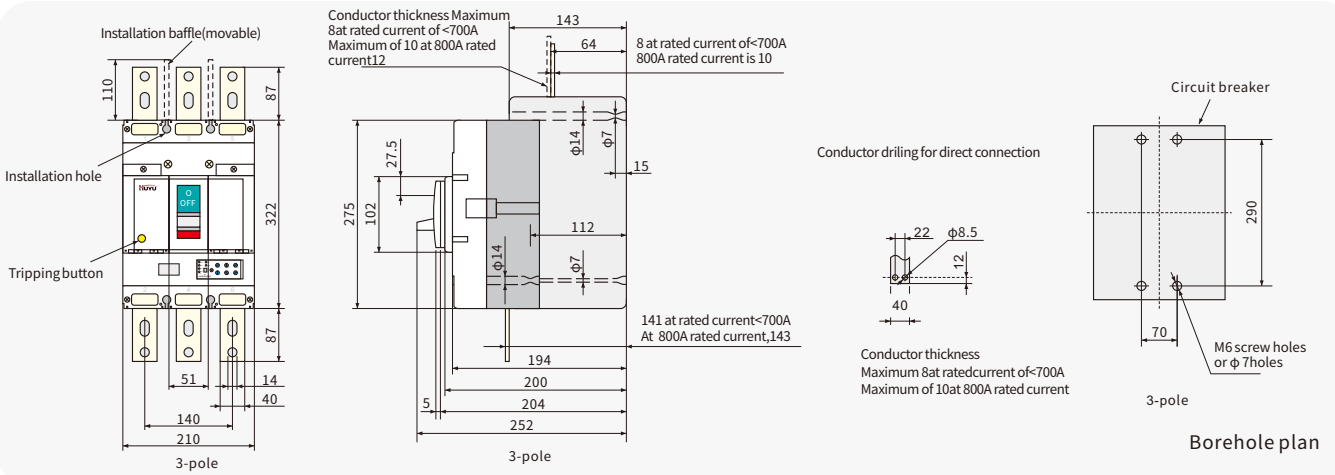


Plug-inconnection

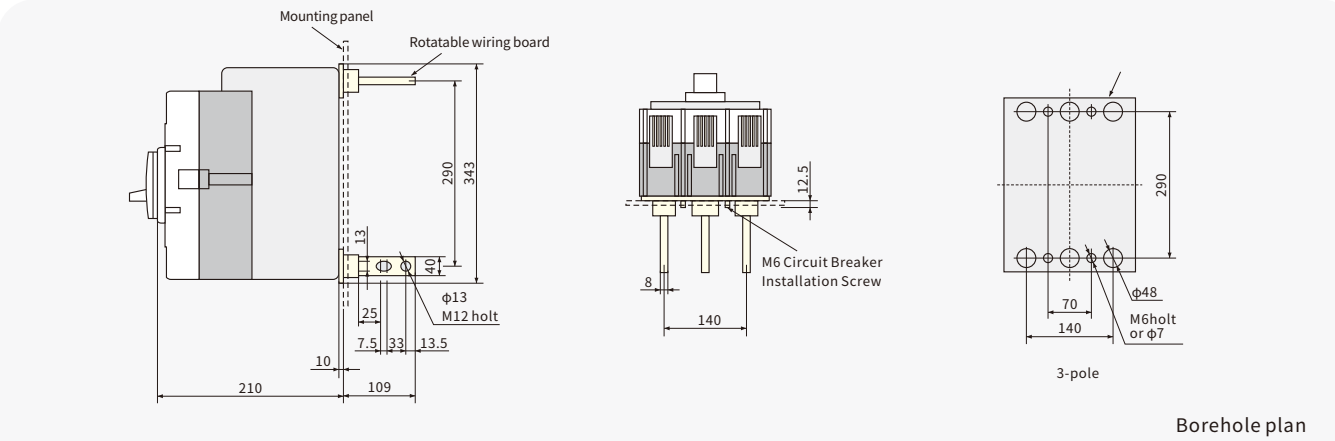


6、HUM8D-630H、HUM8D-630U、HUM8D-800H、HUM8D-800U overall and mounting dimensions

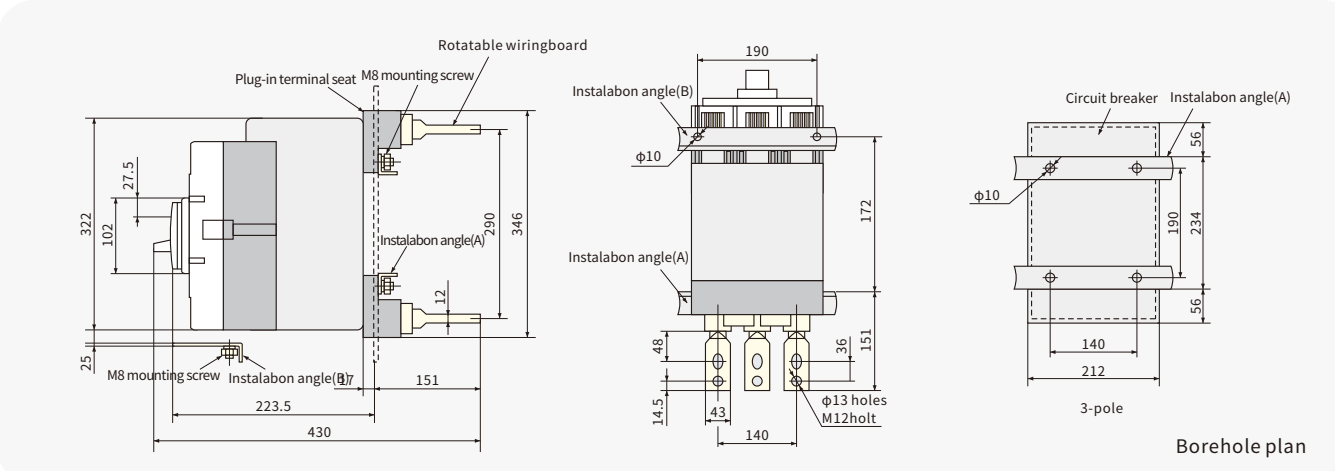
Front panel connectlon



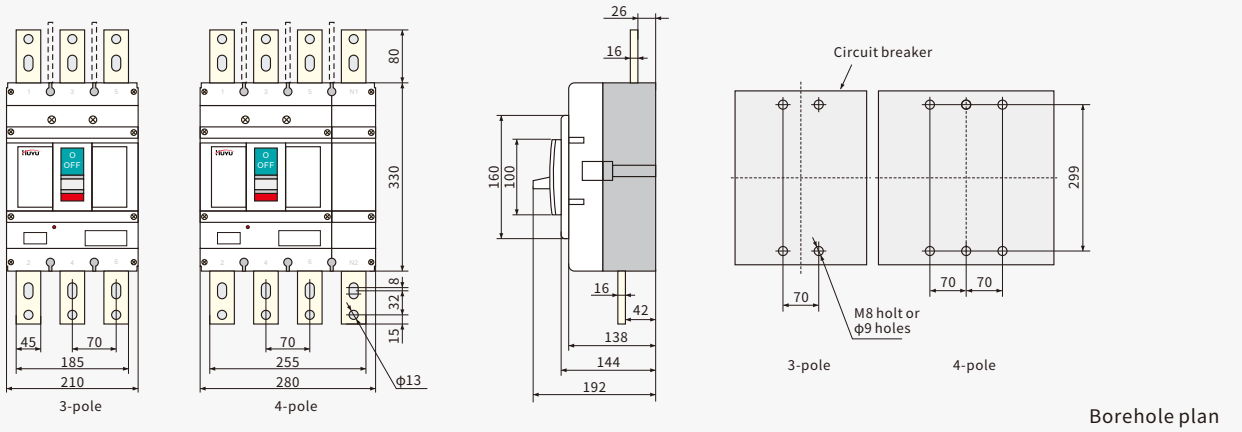
Post plateconnection



Plug-inconnection



7、HUM8D-1250S overall and mounting dimensions
Front panel connectlon



Borehole plan

9.Accessoriesof the circuit breaker

9.1.Complete specifications
9.1.1According to the grade of the curentframe,it is divided into 7 specifications from 63Ato 1250A.
9.1.2According to the rated current ofthe tripping device,there are 34 grades from 10Ato 1250A.
9.1.3 Short circuit breaking capacity is divided into 4 kinds:C-fundamental type.,S-standard type,H-high-class type,U-current-limitingtype
9.1.4 There aretwotypes of over-current release.One kind isthe thermoelectic magnetic trpping device,the otheris the digital electronic triping device(intelligent controller).
9.1.5According tothe utilzation category,it is divided into:
ClassA:In case of shortelrcuit,th crcuit breakeris not lear as a series of shortcireuit rotection in the load side of the selectlve protection of electricalappliances
ClassB:inthe caseof shortcireuit,the circuit breaker is clarly used asaselective protection for another shortecicuit rotectiondeviein series onits loadside
9.1.6:According to the connection mode:
Front panel connection,post plate connection and plug-in connection.Circuit breakers for 630Aand above have withdrawable devices.Th device conectsorisolatesthe circutbreakerandthe circuitrough he rotation oftheremoterod

2.Annexmodel list:

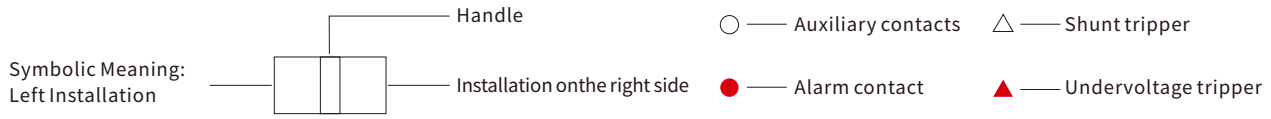
Accessory model	Frame size current	Specification	Note
Front plate 	HUM8-63		3P
	HUM8-100		3P、4P
	HUM8-160、250		3P、4P
	HUM8-400		3P、4P
	HUM8-630		3P、4P
	HUM8-800		3P、4P
Post board wiring board 	HUM8-63		3P
	HUM8-100		3P、4P
	HUM8-160、250		3P、4P
	HUM8-400		3P
	HUM8-630		3P
	HUM8-800		3P
Insert attachment 	HUM8-100	CR2	3P
	HUM8-160、250	CR3	3P
	HUM8-400	CR4	3P
	HUM8-630	CR5	3P
	HUM8-800	Cr5	3P
Cs1 rotating handle 	HUM8-63	CS1-63	3P、4P
	HUM8-100	CS1-100	3P、4P
	HUM8-160、250	CS1-250	3P、4P
	HUM8-400	CS1-400	3P、4P
	HUM8-630	CS1-630	3P、4P
	HUM8-800	CS1-800	3P、4P
Electricoperating mechanism 	HUM8-63	MDX0	AC110～230V 50Hz DC110～220V
	HUM8-100	MDX1	
	HUM8-160、250	MDX2	
	HUM8-400	MDX3	
	HUM8-630	MDX4	
	HUM8-800	MDX4	

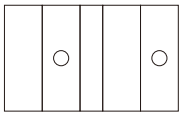
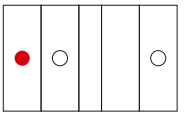
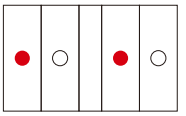
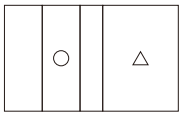
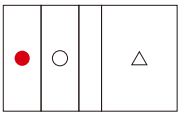
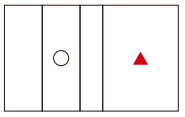
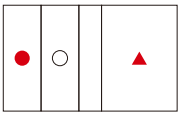
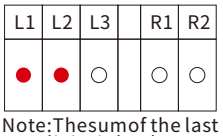
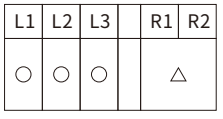
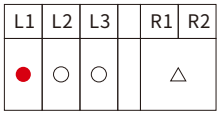
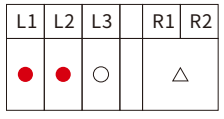
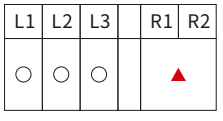
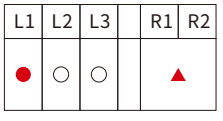
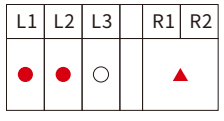
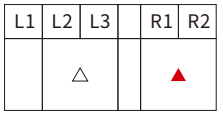
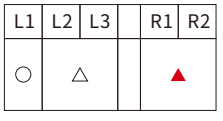
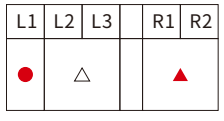
HUM8D Moulded Case Circuit Breakers
Functions and Features

Continuous 2.Annex model list:

Accessory model	Frame size current	Specification	Note
Shunt relegse 	HUM8-63	FL1	AC：110V、230V、400V DC：24V、48V、110V
	HUM8-100	FL2	
	HUM8-160、250	FL3	
	HUM8-400	FL4	
	HUM8-630	FL4	
	HUM8-800	FL4	
Under-voltage release 	HUM8-63	QY1	AC：110V、230V、400V DC：24V、48V、110V
	HUM8-100	QY2	
	HUM8-160、250	QY3	
	HUM8-400	QY4	
	HUM8-630	QY4	
	HUM8-800	QY4	
Auxiliary contact 	HUM8-63	F1	
	HUM8-100	F2	
	HUM8-160、250	F3	
	HUM8-400	F4	
	HUM8-630	F4	
	HUM8-800	F4	
Alarm contact 	HUM8-63	B1	
	HUM8-100	B2	
	HUM8-160、250	B3	
	HUM8-400	B4	
	HUM8-630	B4	
	HUM8-800	B4	
N typemechanical interlock 	HUM8-63	3P(N1-3)	
	HUM8-100	3P(N2-3) 4P(N2-4)	
	HUM8-160、250	3P(N3-3) 4P(N3-4)	
	HUM8-400	3P(N4-3) 4P(N4-4)	
	HUM8-630	3P(N5-3) 4P(N5-4)	
	HUM8-800	3P(N5-3) 4P(N5-4)	

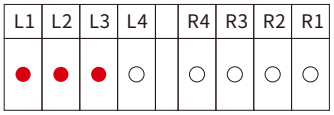
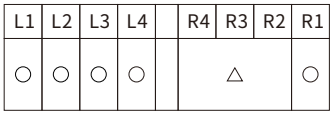
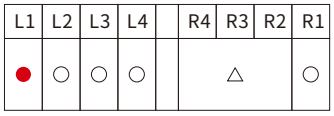
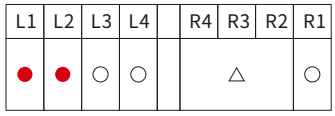
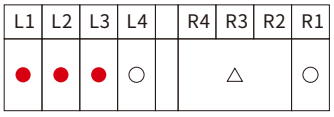
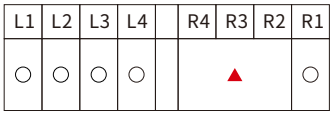
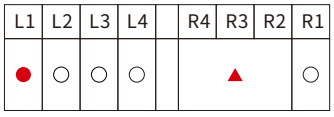
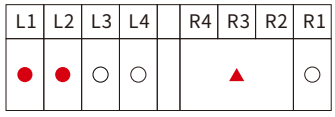
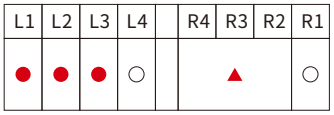
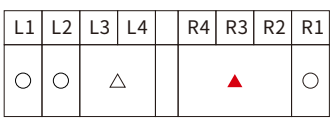
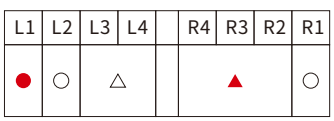
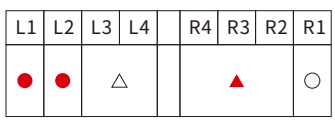
9.3 Internal annex code and installation position diagram



Frame size grade	63A，160A，100A，250A		
Accessoriescode	0(0～2)0	0(0～2)1	0(0～2)2
Position diagram			
Accessoriescode	1(0～1)0	1(0～1)1	
Position diagram			
Accessoriescode	2(0～1)0	2(0～1)1	
Position diagram			
Frame size grade	400A		
Accessoriescode	0(0～5) (0～2)		
Position diagram	 Note:Thesumof the last two digits is lesthan7		
Accessoriescode	1(0～3)0	1(0～2)1	1(0～1)2
Position diagram			
Accessoriescode	2(0～3)0	2(0～2)1	2(0～1)2
Position diagram			
Accessoriescode	300	310	301
Position diagram			

HUM8D Moulded Case Circuit Breakers

Functions and Features

Frame size grade	630、800		
Accessoriescode	0(0～8) (0～3)		
Position diagram	 Note:the additionof thelatter two digits≤11		
Accessoriescode	1(0～5)0	1(0～4)1	1(0～3)2
Position diagram			
Accessoriescode	1(0～2)3		
Position diagram			
Accessoriescode	2(0～5)0	2(0～4)1	2(0～3)2
Position diagram			
Accessoriescode	2(0～2)3		
Position diagram			
Accessoriescode	3(0～3)0	3(0～2)1	3(0～1)2
Position diagram			

9.4 Parameters ofauxiliary contactand alarm contact

9.4.1Dlagram of auxilary and alarmcontact in different working state of circuit breaker

Working conditions of circuit breaker	Auxiliary contact	Alarm contact
Close	Fa(F14) Fb(F12) — Fc(F11)	Ba(F14) Bb(F12) — Bc(F11)
Open	Fa(F14) Fb(F12) — Fc(F11)	
Release		Ba(F14) Bb(F12) — Bc(F11)

If there are more than one set of contacts, the ascending numerical order is ten digits, and the sequence starts from 1.

9.4.2Maintechnicalparameter

·RatedinsulationvoltageUi=400V,AC·ConventionalthermalcurrentIth=6A

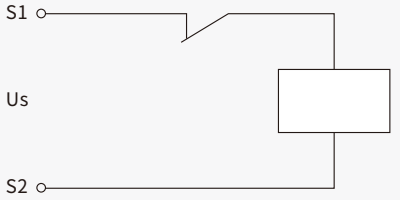
·RatedworkingvoltageUeandratedworkingcurrentleaccordingly·AC400V,0.47A;AC230V,0.79A;DC220V,0.15A

9.4.3 Electrical life andmaking and breakingcapacity

Utillzation category		Connection			Breaking			Cycle times	Operatio frequency (times/min)	Electrified time(s)
AC		I/Ie	U/Ue	COSϕ	I/Ie	U/Ue	COSϕ			
AC-15	Electrical life	10	1	0.3	1	1	0.3	6050	6	⩾0.05
	Making and breaking capacity	10	1.1	0.3	10	1.1	0.3	10	6	⩾0.05
DC		I/Ie	U/Ue	T0.95	I/Ie	U/Ue	T0.95			
DC-13	Electrical life	1	1	300ms	1	1	300ms	6050	6	⩾0.3
	Making and breaking capacity	1.1	1.1	300ms	1.1	1.1	300ms	10	6	⩾0.3

9.5 Parameter ofshunt release

Circuit diagram of shunt release

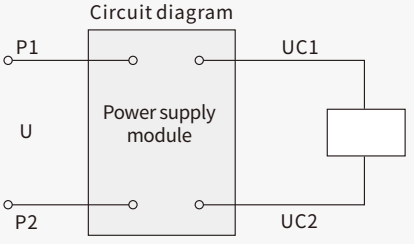


Rated voltage Us：AC：110V、230V、400V；DC：24V、48V、110V

Input capacity：AC：180VA；DC：60W

9.6 Parameter of undervoltage release

Circuit diagram



The power module can be inserted in the side of the circuit breaker and can be installed independently.

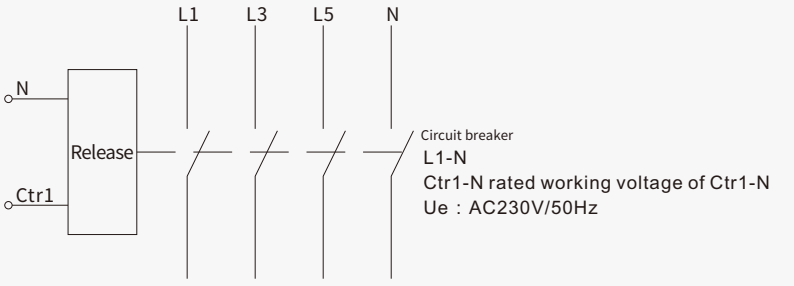
Rated voltagel：Ue：AC：110V、230V、400V；DC：24V、48V、110V

Nput capacity：AC：5VA；DC：2W

Action voltage:U=(70%～35%)Ue;circuit breakertripping(10~30)ms;U⩾85%Ue,U<35%Ue,

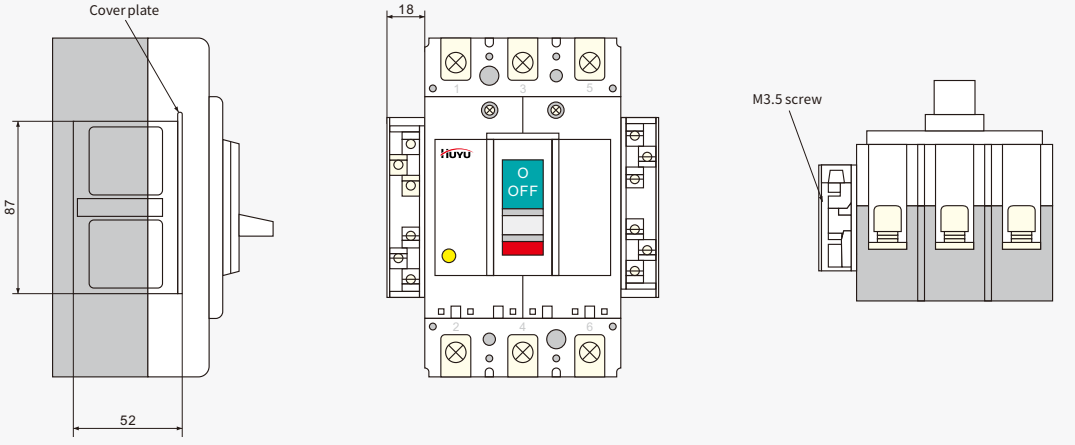
Operation time:(10~30)ms,U⩾85%Ue,the circuit breaker can close;U<35%Ue,the circuit breaker can not close.

9.7 Special tripping device for prepaid meter
The rated working voltage of the dedicated release ofthe prepald meter isAC230V/50Hz,which works normall within therange of (65%~110%)Ue.
The wiring diagram is shown below



Note:Nis connected withpower supply zero line,Ctrt is connected with prepaid meter control signal end

9.8JX type internal attachments terminal block base
The terminal block is plugged in the side of the circuit breaker



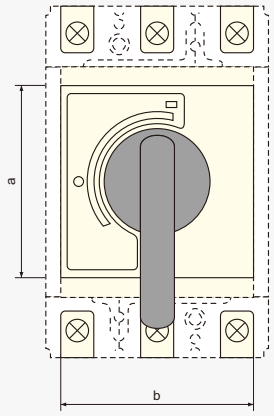
9.9CS1 type rotating operating mechanismThe operating mechanism apliesthe gear rackmechanism to push the handle ofthe cicuit breaker,with smalfiction,easyoperation and long service life.TheA(square)operating handle orthe Biround)perating handle can be selected.Apadlock can be used to lockthe handle to prevent the breakersfrom closing
or breaking.

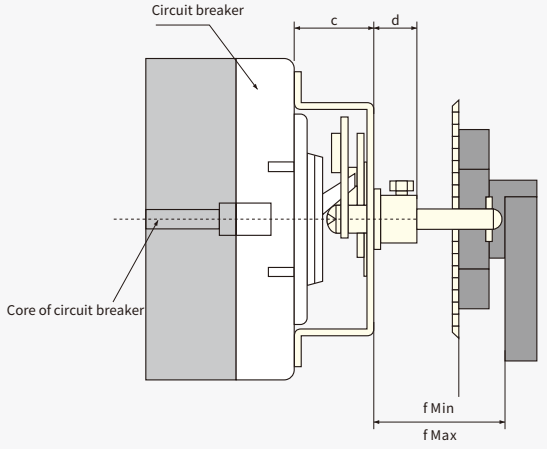
9.9.1Shape and hole dimension of CS1 type rotating operating mechanism

Model	Frame size grade	a	b	c	d	f Min	f Max
CS1-63	63	100	75	45	13.5	50	400
CS1-100	100	110	80	44	13.5	50	400
Cs1-160、250	160、250	110	90	46	13.5	50	400
CS1-400	400	185	140	80	20	50	350
CS1-630、800	630、800	226	210	80	20	50	350

9.9.2 Shape and hole dimension of CS1 type rotating operating mechanism

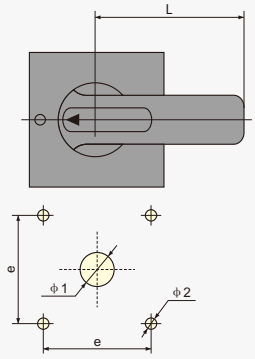
In general,the shaft length of the factory f=150mm.If other lengths are required,it should be noted when ordering.





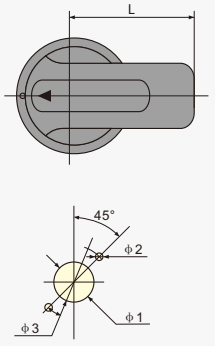
The distance between the centerof the handle and the hingesshould not be lessthan 200mm

Atypa handleinstallation dimension



	A1	A2
ϕ1	ϕ42	ϕ63
ϕ2	ϕ4.5	ϕ5.5
e	65	88
L	60	140
Frame rating	63～250	400～800

B Type handle installation dimension

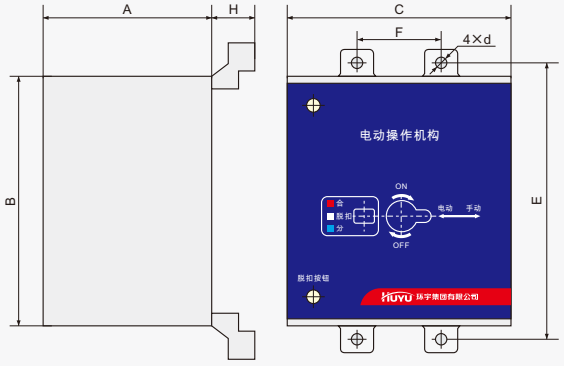


	B1	B2
ϕ1	ϕ33	ϕ33
ϕ2	ϕ4.5	ϕ4.5
ϕ3	ϕ53	ϕ53
L	65	125
Frame rating	63～250	400～800

9.10 Electric operating mechanism

The MDXtype electrleoperating mechanlsm changes the motorsrotation motion to a straight motion by the motor,gear and cam, which is used to close and break
the circuit breaker.

9.10.1 Overall instalation dimension of MDX type electric operating mechanism



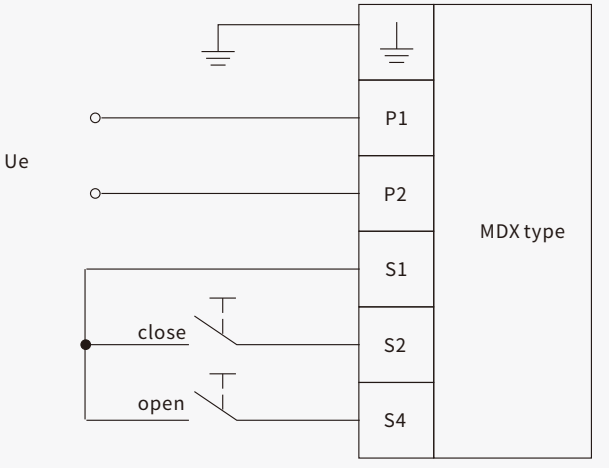
9.10.2Overall instalation dimension of MDXtype electric perating mechanism

Electric operating mechanism model	Installation size						
	A	B	C	E	F	H	d
MDX0	77	102	74	111	25	12	ϕ3.5
MDX1	77	116	90	132	30	13	ϕ4.5
MDX2	77	116	90	126	35	15	ϕ4.5
MDX3	115	176	130	194	44	36	ϕ6.5
MDX4	115	176	130	243	70	38	ϕ6.5

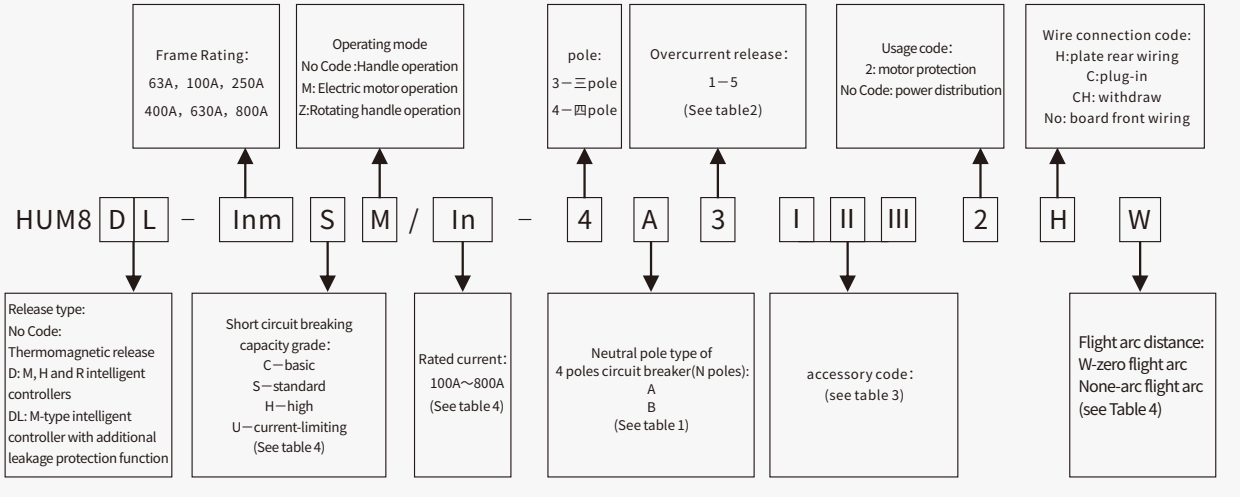
9.10.3 Main technical parameter of MDX type electric operating mechanism

Frame size grade	63	100	160、250	400	630、800
Model of electric operating mechanism	MDX0	MDX1	MDX2	MDX3	MDX4
Rated working voltage Ue(V)	AC110～230V 50Hz DC110～220V				
Operation current(A)	⩽0.5			⩽2	
Operation time(s)	⩽0.8				
Rated operation frequency(times/h)	180			120	
Mechanical lifetime(times)	15000		9000	5000	3000

10.4、MDX type electric operating mechanism wiring diagram



11、HUM8 Series Molded Case Circuit Breaker Selection Notes



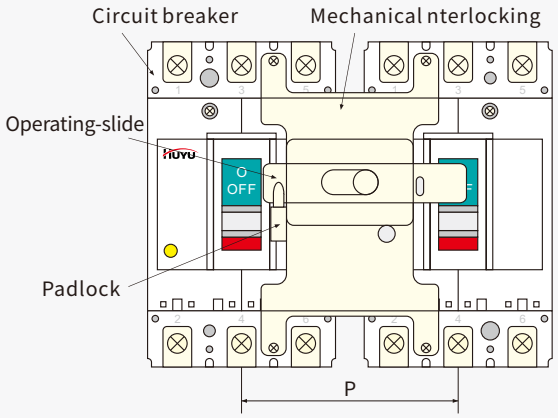
HUM8D Moulded Case Circuit Breakers

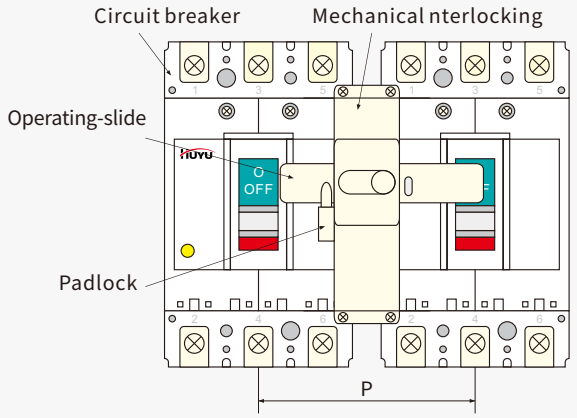
Functions and Features

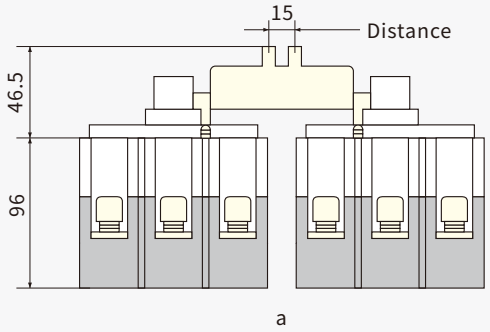
9.12N type mechanical interlockingThe N type mechanical interlock is used for two same shellframe grade HUM8 seriesplastic shl breakers which are installed side by side,to prevent theclosing of two circuitbreakers athe sametime.When used,the skateboard thatoperatesthe mechanicaliterbockis pushed tothe side of the circuit breakerwhichis not allowed to be closed,and the position of the slider can befixed with padlock to prevent mis-operation.The padlock is prepared by the user.

9.12.1 Central distance of two circuit breakers

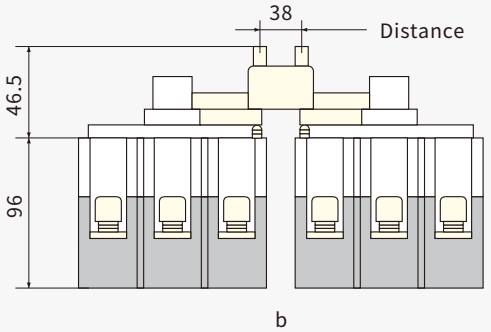
Frame size grade	3-pole		4-pole		Outside drawing
	Model	P(mm)	Model	P(mm)	
63	N1-3	120	-	-	a
100	N2-3		N2-4	150	
160、250	N3-3		N3-4	155	
400	N4-3	190	N4-4	235	b
630、800	N5-3	220	N5-4	290	







a



b

HUM8D Moulded Case Circuit Breakers
Functions and Features

9.13 Sectional area and adaptable rated current of connecting conductor

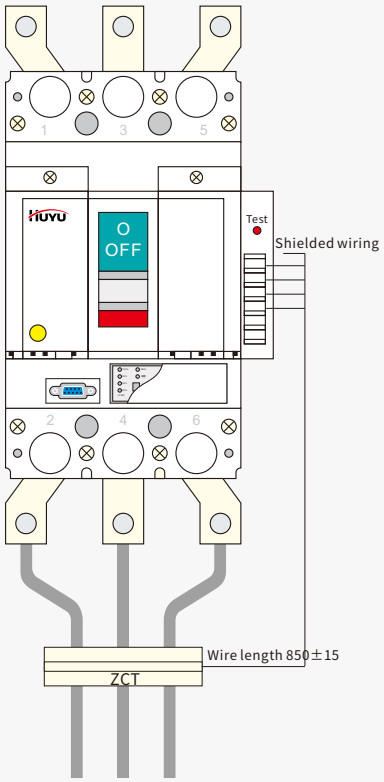
Rated current(A)	10	16、20	25	32	40、50	63	80	100	125	160	180、200、225	250	315、350	400
Conductor sectional(mm2)	1.5	2.5	4	6	10	16	25	35	50	70	95	120	185	240

Rated current(A)	Cable		Cable	
	Sectional area(mm^2)	Quantity	Size(mm×mm)	Quantity
500	150	2	30×5	2
630	185	2	40×5	2
700、800	240	2	50×5	2
1250	-	-	80×5	2

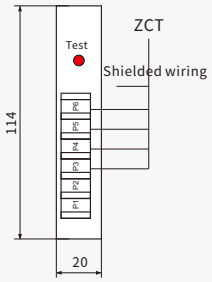
9.14 Circuit breaker(type DL)with intelligent controller with an additional leakage protection function
The HUM8DL type plasti case cicuit breakeralso has thefunction of leakage protection.It needs to plug the leakage module on theright side of the circuitbreaker,and the main crcuit goesthrough the externalzero sequence curent transformer.The module isP^1toP2.Power supply(UeoptionalAC230V or400V),P3to P4 connection leakage circuit,rated residual operation current IAn=0.1A~1A+OFF)adjustable.

HUM8D Moulded Case Circuit Breakers

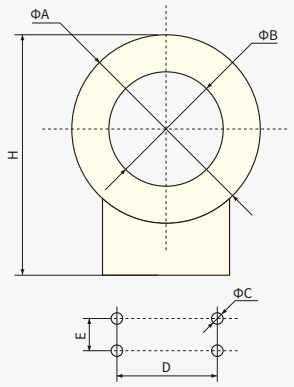
Functions and Features



Leakage madule

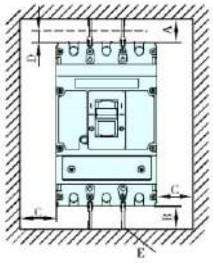


Dimenslon of installation hole of zero sequence transformer



Rated current	A	B	C	D	E	H
100/160/250	106.5	60	5	54	30	131
400/630/800	129	85	5	56	34	152

CircuitBreakerInstallationSafetyClearance



Model	A		B	C	D
	Without Zero Flying Arc Cover	With Zero Flying Arc Cover			
HUM8-63	50	25	25	25	25
HUM8-100	50	25	25	25	25
HUM8-250	50	25	25	25	25
HUM8-400	100	25	25	25	25
HUM8-630	100	25	25	25	25
HUM8-800	100	25	25	25	25

A：To conductive circuits (including unobstructed or grounded metal)

B: Circuit breaker terminals to bottom wal

C: Circuit breaker side to side wall (including no obstructions or grounded metal)

D: to non-conductive parts

Note: E is the phase separator. Phase-to-phase bulkheads or zero-flying arc shields must be installed

10、Ordering information

10.1.Model and ordering quantity

HUM8□-□□□/□-□□□□□□□□ Ifthe connection mode is CH draw outtype,thenit should be noted front plate connection or post plate connection.

10.2.Rated voltage of shunt release and undervoltage release.

10.3.External accessories:rotary peration handletype (typeAorB),square shaflengt and rotary operation handle number,electric operation mechanism typeand its rated voltage and quantity.

HYM3LCK Residual Current Action Circuit Breakers

Functions and Features

Product description

Circuit breaker description

HYM3LCK series residual current circuit breaker is a new type of product developed by our company according to the market demand, and it is the preferred product to cooperate with the operation of national smart grid.

This series of products adopts liquid crystal display in Chinese, which is multi-functional and intuitive. The circuit breaker part adopts high breaking HUM8 circuit breaker, with high breaking capacity, accurate breaking time, integrated power distribution protection, small size, easy to install and use, adjustable action value, easy to operate, and can adapt to users around the world, various environments, and set up according to needs. In addition, the product has high-precision metering and measuring functions, Beidou positioning function, temperature protection function and

Communication functions such as HPLC carrier, wireless Bluetooth, RS485, etc., and also has the function of station topology identification.

Passed the test of Low Voltage Electric Apparatus Research Institute of China Electric Power Research Institute on communication standard. Passed the communication consistency test of the authorised unit of communication test of the State Grid.

Product standards

The circuit breakers are in accordance with GB/T 14048.2, GB/T 32902 standards.

Features

- HYM3LC series molded case circuit breakers: 160A, 250A, 400A, 630A, 800A
- Rated working voltage Ue (AC): 400V 50Hz
- Breaking capacity code: Standard type: None; Low breaking type: L
- Number of poles: 3N, 4P
- Release type: leakage reclosing
- Installation method: Fixed
- Certification: CCC

Normal operating conditions

3.1 Product use environment

3.1.1 Ambient temperature -15℃ ~ +40℃, average daily maximum temperature ≤ +35℃.

3.1.2 When the average minimum temperature of the wettest month of relative air humidity does not exceed 25°C, the average maximum relative humidity for the month shall not exceed 90%, taking into account condensation on the surface of the product due to temperature changes.

3.1.3 Altitude not exceeding 2000m.

3.1.4 Pollution Class Level 3.

3.1.5 Installation category III.

3.1.6 The external magnetic field at the installation site shall not exceed 5 times the geomagnetic field in any direction.

3.1.7 The installation site should be free of conductive dust, corrosive gases, flammable and explosive gases, and rain and snow.
3.1.8 The installation location should be free from intense direct sunlight to avoid damage to the LCD screen.
3.1.9 The installation location should be well ventilated for heat dissipation.

3.2 Product use requirements
3.2.1 Wiring in strict accordance with the provisions of the phase sequence can not be connected wrong.
3.2.2 The product must be mounted vertically.
3.2.3 Installation in a place out of reach of non-electrical professionals and minors to prevent electric shock or alteration of the correct configuration and wiring of the product.
3.2.4 The cross-sectional area of the inlet and outlet wires should be in accordance with the standard construction requirements, prohibit the conductive part of the exposed more than the shell.
3.2.5 Power supply sine wave distortion of less than 5 per cent.
3.2.6 Please read this instruction manual carefully before use to ensure proper installation and routine maintenance.

Product selection

HYML3CK	– □	□	/ □	□
Model number	Frame Class Rated Current	Short-circuit breaking capacity level	4P	Number of poles
HYM3LCK	160 250 400 630 800	Standard: None Low-break: L	4P (3 protection poles, N pole can be opened and closed)	3N: 3P+N (3 protection poles, N pole cannot be opened or closed).

Remarks: where 3N stands for N-pole straight through, and 4P stands for N-pole splitting and combining with the remaining three poles.

HYM3LCK Residual Current Action Circuit Breakers
Functions and Features

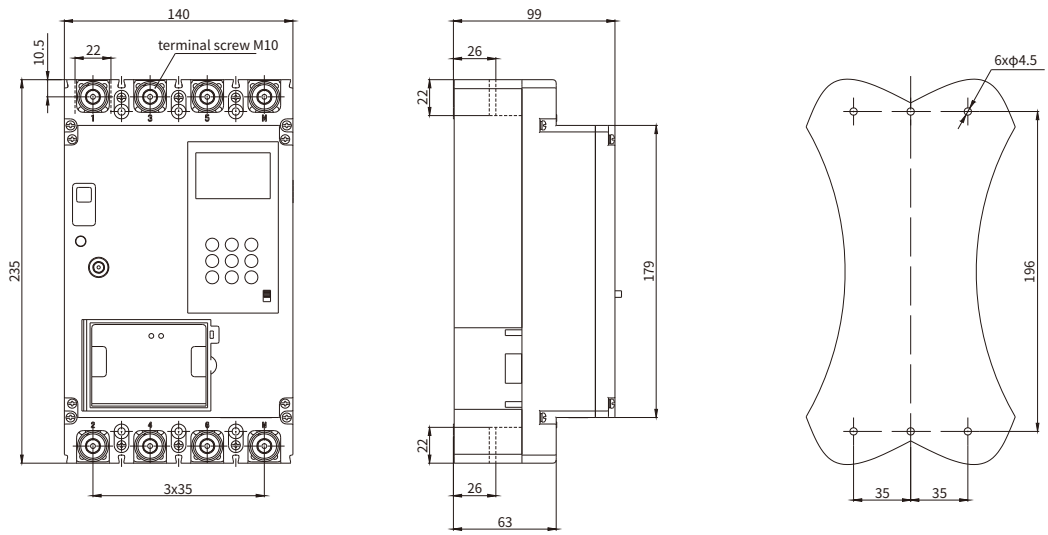
Technical data and performance

1、Technical data

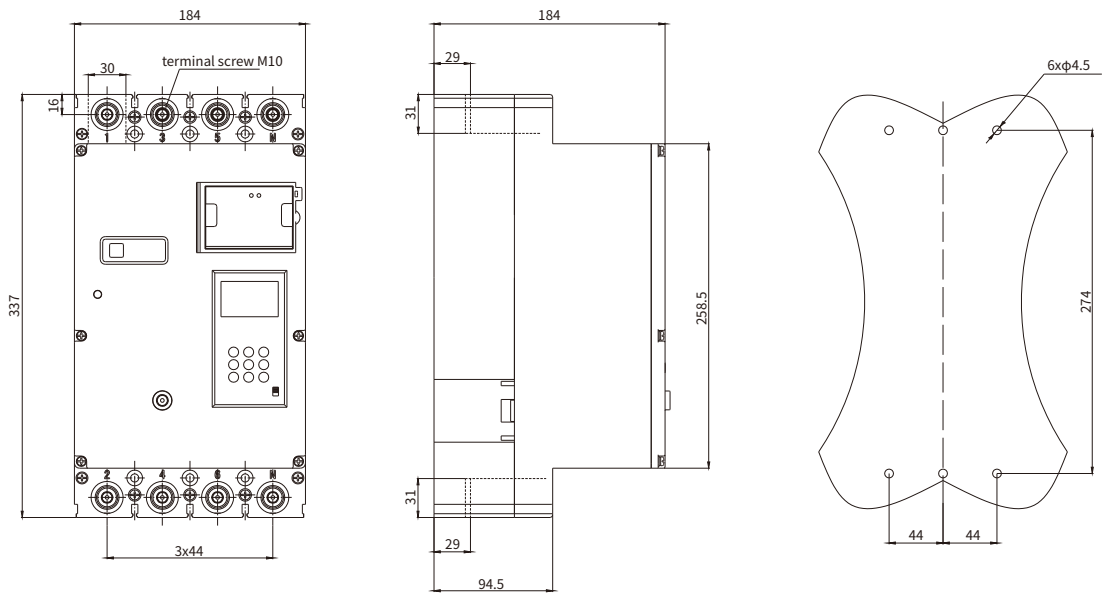
Model		HYM3LCK-160	HYM3LCK-250	HYM3LCK-400	HYM3LCK-630	HYM3LCK-800
Frame current In		160	250	400	630	800
Adjustable range of setting current		64 ~ 160	100 ~ 250	160 ~ 400	252 ~ 630	320 ~ 800
Pole		3P+N、4P				
Frequency		50Hz				
Rated operational voltage Ue		AC 400				
Rated auxiliary voltage Us		AC 230				
Rated insulation voltage Ui		AC 1000				
Rated impulse withstand voltage U imp		12				
Arc distance (mm)		⩽50		⩽100		
Icu/Ics		50/36		70/70		
Icu/ Ics		36/20(L type)		50/36(L type)		
Rated residual short-circuit switching and breaking capacity I△m		12.5/9(L type)		17.5/12.5(L type)		
Rated short-time withstand current Icw		5/1		5/1	10/1	10/1
Residual type		AC type				
Rated residual current I△n (mA)		50/100/200/300/400/500/800/1000				
Max. breaking time at I△n		time-delayed				
Delay type limit non-trip time △t		0.06、0.1、0.2				
Surge residual current		30 ~ 99				
Automatic reclosing time		20 ~ 60				
Operational (times)	Electrical	1000	1000	1000	1000	500
	Mechanical	7000	7000	4000	4000	2500
	Total Number Of Times	8000	8000	5000	5000	3000
Short circuit, overload characteristics		Three levels of protection, electronically adjustable, see "Description of protective characteristics".				
Rated undervoltage value		(150～200) adjustable, default off				
Rated overvoltage value		(250～300) adjustable, default off				
Rated phase failure value		(10～120) adjustable, default off				

Overall and mounting dimensions

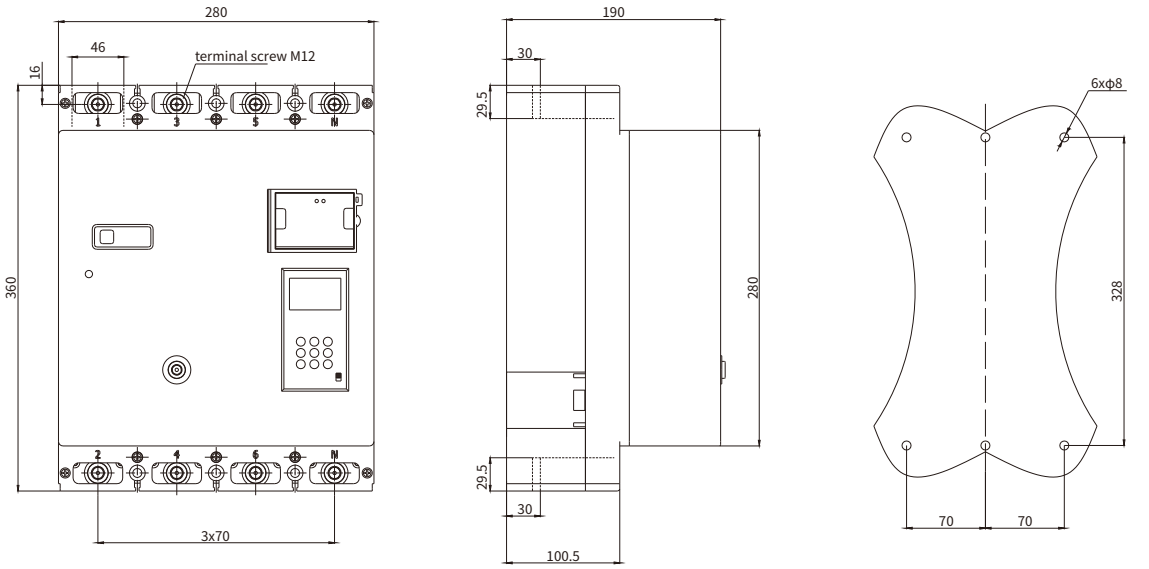
HYM3LCK-160、HYM3LCK-250 Outline and Installation Dimension



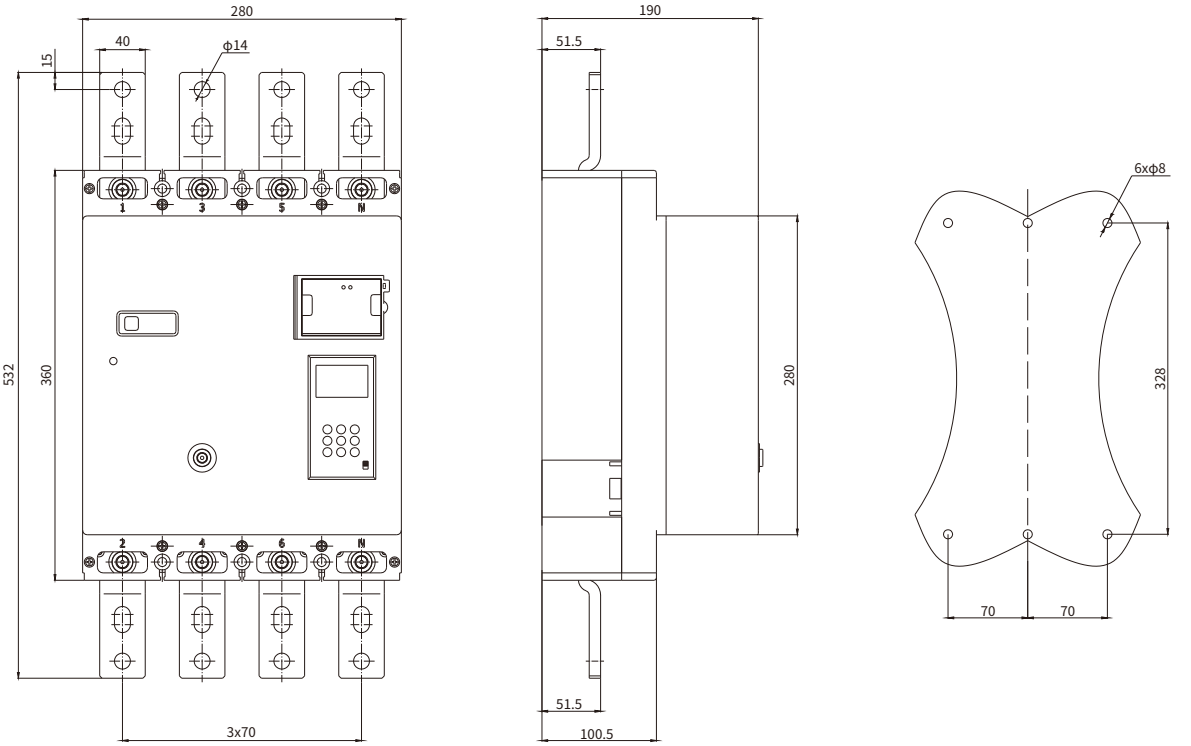
HYM3LCK-400 Outline and Installation Dimension



HYM3LCK-630 Outline and Installation Dimension



HYM3LCK-800 Outline and Installation Dimension



Description of protective characteristics

7.1 Overload protection characteristics (inverse time action)

Parameters	Constant value	Factory set value
Rated current IR	0.4In～1.0In adjustable	1.0In
Overload long delay setting time tR	3s～18s adjustable	10s

7.1.2 Protective

Rated operating current of the disconnector (A)	Tripper (ambient temperature +40°C)	
	1.05In (cold)	1.30In (thermal)
In≤63A	≥1h No action	<1h Action
In > 63A	≥2h No action	<2h Action

Calculation formula for overload long delay time: $T = (6IR/I)^2$

7.2 Short-circuit short-delay protection

7.2.1 Parameter setting

Parametric	Constant value	Factory set value
Short-circuit short-delay tripping setting current Isd	$2I_R$、$3I_R$、$4I_R$、$5I_R$、$6I_R$、$7I_R$、$8I_R$、$9I_R$、$10I_R$	$6I_R$
Short-circuit short delay setting time tsd (ms)	100 to 1000 continuously adjustable (fixed time limit)	400

7.2.2 Protective

characterisation	Test current	Decoupling Time
Non-motion characteristics	≤0.9 I_{sd}	No Movement
Motion Characteristics	>1.1 I_{sd}	Movement

7.3 Transient protection

7.3.1 Parameter setting

Parameters	Constant value	Factory set value
Short-circuit instantaneous release setting current Ii	$4I_R$、$5I_R$、$6I_R$、$7I_R$、$8I_R$、$9I_R$、$10I_R$、$11I_R$、$12I_R$	$10I_R$

7.3.2 Protective action characteristics

characterisation	Test current	Decoupling Time
Non-motion characteristics	≤0.85 I_i	No Movement
Motion Characteristics	>1.15 I_i	Movement

7.4 Residual current protection characteristics

7.4.1 Parameter setting

parametric	Constant value	Factory set value
Rated residual action current I△n(mA)	50、100、200、300、400、500、800、1000	500

7.4.2 Protective action characteristics

Leakage current \ △t cut-off time	0.06s	0.1s	0.2s
I△n	200 < t < 300	400 < t < 500	600 < t < 700
2I△n	60 < t < 200	100 < t < 350	200 < t < 550
5I△n	60 < t < 150	100 < t < 240	200 < t < 440
10I△n	60 < t < 150	100 < t < 240	200 < t < 440

Note: The rated residual inoperative current is 0.5I△n, and the delay type limit inoperative time△t is 0.06s, 0.1s, 0.2s.

7.4.3 Automatic slotting mode

7.4.3.1 The automatic slotting function of the circuit breaker and its action requirements conform to the relevant provisions of B7.2 and B7.3 in Appendix B of GB/T 14048.2.

7.4.3.2 The rated residual current operating value I△n can be divided into: 50mA, 100mA, 200mA, 300mA, 400mA, 500mA, 800mA, 1000mA. When using the circuit breaker, you need to manually select the best I△n among the above eight grades according to the size of the residual current in the line. When the circuit breaker selects automatic setting, its I△n takes the manual setting value as the current setting.

Steps to enable the automatic slotting function:

① After installation and confirming that the wiring is correct, set I△n to a reasonable gear according to the wiring;

②Set the AutoFix function to be turned on with the function setting key (AutoFix ON).

③If you want to exit this function, set the AutoFix function to be turned off (AutoFix Off).

All the above settings can be set by communication mode. When the I△n slot of the circuit breaker is set (no matter manual setting or automatic slotting), if the residual current exceeds the set value, the circuit breaker will immediately trip, and the automatic reclosing will be completed in 20s～60s after tripping; if the circuit breaker is tripped again within 3 minutes after closing due to the residual current is still exceeding the limit, it will be closed and no longer reclosed after tripping.

7.4.3.3 Automatic slotting mode of operation

7.4.3.3.1 When the automatic gear setting function is switched on, the manual gear setting value will be used as the current gear, and the highest automatic gear setting will be the maximum system gear.

7.4.3.3.2 When the circuit breaker is in the auto-setting operating mode, it can automatically track the I△ (actual residual current) of the line and automatically determine I△n according to its size, i.e., measure the line first.

When I△ exceeds half of I△n, the system automatically adjusts I△n upward by one step according to the change of I△ in the line, and so on, until I△n is adjusted to the highest level.

If I△ is smaller than the next step of I△n current gear, the system will automatically adjust I△n downward by one step according to the change of I△ in the line, and so on, and keep adjusting downward until I△n is adjusted to the smallest gear.

7.4.3.4 The circuit breaker is in the automatic setting mode of operation, with a manual setting of 300 mA as an example.

7.4.3.4.1 After the first switch-on (or setting to enable the auto-fixing function), I △n=300mA remains unchanged.

7.4.3.4.2 If I△ suddenly increases and exceeds 300mA, the circuit breaker trips immediately, and the circuit breaker is automatically adjusted upwards to 400mA and reclosed automatically. If the I△ value still exceeds 400mA within 3 minutes after closing, the circuit breaker trips and blocks again. If I△ is less than 400mA, the circuit breaker will be closed successfully and put into operation normally.

7.4.3.4.3 If I△ in the line is less than 150 mA and continues for a period of time, the circuit breaker automatically shifts down to 300 mA and so on.

7.4.3.4.4 If I△ in the line is greater than 200mA and continues for a period of time, the circuit breaker automatically shifts up to 500mA and so on.

7.4.4 Mutant protection

The "mutation protection" function can be set to open, close or alarm, for example, adjusting the mutation threshold to 30mA, this is the load side of the power supply line in any phase of the line to the ground surge current is greater than 30mA, the circuit breaker action, and there is a reclosing; after reclosing if the ground fault is not eliminated, the switch is again action and locking, maximise the safety of the power supply line. This maximises the safety of the power supply line.

7.4.5 Automatic reclosing locking

When the residual current exceeds the action current value stall action trip, after 20s ~ 60s can automatically reclosing, but manual closing is not limited by time. If the fault current is eliminated, the closing is successful and the circuit breaker operates normally; if the fault current is not eliminated within 3 minutes after the closing, the circuit breaker trips again and locks up, it cannot be reclosed automatically and must be closed manually.

ial waveform residual current protection function of the technical elements of the human and animal direct contact with the ground current generated by digital circuits on the special waveform residual current identification and separation, and has a protective function, this function has a high commissioning rate, but also to a considerable extent to protect human and animal life safety. It is closed by factory default, and the user can set the protection to be opened, alarmed or closed by himself.

7.10 Power-up test closing and total loss of voltage protection

The circuit breaker protection trips when power is lost at the power end of the line. When the line is re-energised, it can be automatically closed and put into operation. Factory default off, user can set on or off.

7.11 Temperature protection

Normal operation when terminal temperature T≤60℃;

When the temperature of terminal is 60℃ < T < 90℃, it will operate normally, report over-temperature alarm and record data actively;

When the terminal temperature is 90℃ ≤ T < 100℃, detect continuously for 60s, and if the temperature still exceeds the standard after 60s, the protection will be tripped and reported; When the terminal temperature is T≥110℃, the protection will be tripped within 0.2s and reported.

Operating Instructions

8.1 Description of Keys

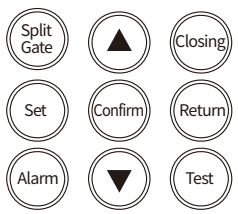


Figure 8-1

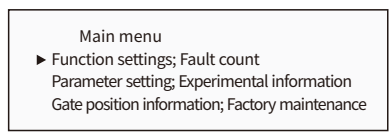


Figure 8-2

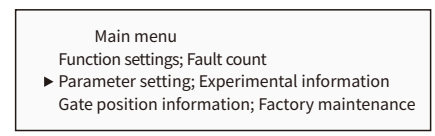


Figure 8-3

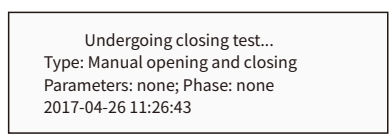


Figure 8-4

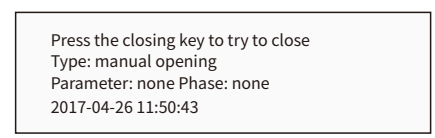


Figure 8-5

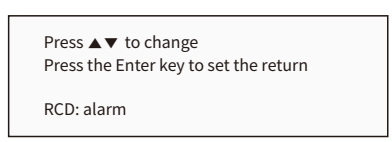


Figure 8-6

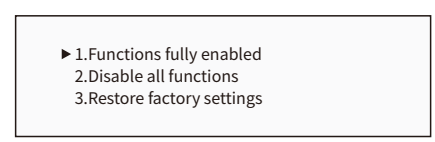


Figure 8-7

HYM3LCK Residual Current Action Circuit Breakers
Functions and Features

The key functions are listed below and in Figure 8-1:

Name	Functional Description
[Settings]	Enter the main menu and press [▲] or [▼] to switch menu options. (See Figure 8-2)
[Confirmation]	Accesses each submenu and saves various parameter setting values.
【▲】 【▼】	Press [▲] or [▼] to switch between the submenu and each parameter in "Parameter Setting", and press [Confirm] to enter the parameter modification. (Press [Set] key to start realising left or right shift, and press [▲], [▼] to change the value). Press the [Return] key to return to the upper menu. (See Figure 8-3)
[Return]	Return to the previous operation;
[Closing]	With the circuit breaker in the breaking state, press the [Closing] key to start reclosing. (See Figure 8-4)
[Split Gate]	When the circuit breaker is in the closed state, press the [Break] key to immediately break the circuit breaker. (See Figure 8-5)
[Test]	Simulation of earth leakage tripping for testing the performance of the earth leakage protection function of the circuit breaker and the striker mechanism.
[Alarm]	Three modes of residual current protection can be set: alarm, on or off. (See figure 8-6.)
special function	Long press 【Return】button for 3s, enter the function open close option (1.Function All Enable 2.Function All Disable 3.Restore Factory Settings), press 【Confirm】button to confirm the change after choosing. (See Figure 8-7)

8.2 Product operation

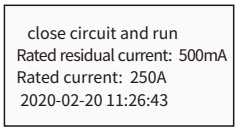


Figure 8-8

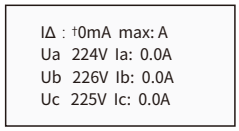


Figure 8-9

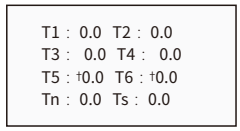


Figure 8-10

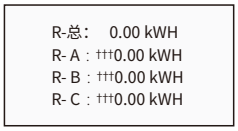


Figure 8-11

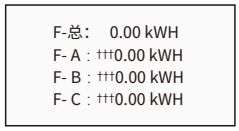


Figure 8-12

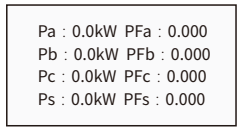


Figure 8-13

After the circuit breaker is connected to the power supply in the closing state, the opening interface is shown in Fig. 8-8, and after 3 seconds, it enters the closing operation rotating display interface, as shown in Figs. 8-9, 8-10, 8-11, 8-12 and 8-13 (see 8.2.2 for details).

8.2.1 Motorised closing

If there is no voltage on the initial power supply side, the circuit breaker is in the open state and the function of "power-on trial closing" has been enabled, the circuit breaker will automatically reclosing when power is applied at this time. If there is power on the power supply side and the circuit breaker is in the open state, press the [Close] key, the screen will display the words "Trying to close..." and the circuit breaker will automatically reclosing. The circuit breaker will be reclosed automatically.

8.2.2 Normal closing operating conditions

Page 1 displays the rated residual current value, the opening and closing status of the circuit breaker, the rated current value and the current Beijing time (Fig. 8-9). Page 2 displays the real-time residual current I△ and the maximum phase of residual current, three-phase voltage value, three-phase current value (Figure 8-10).

Page 3 shows the power-side ABC three-phase terminal temperature (T1/T3/T5) , and the load-side terminal ABC three-phase terminal temperature (T2/T4/T6).

Zero wire incoming terminal temperature (Tn), zero wire outgoing terminal temperature (Ts) (Figure 8-10). Page 4 shows three-phase positive active energy and positive total active energy (Figure 8-12).

Page 5 shows three-phase active power and total active power, three-phase power factor and total power factor (Figure 8-13).

8.2.3 Residual current protection

8.2.3.1 If the "mutation protection" function is switched off and the circuit breaker trips due to residual current in the line, the type of trip will be displayed: residual current, and automatic reclosing will be completed within 20s to 60s. If the circuit breaker trips again due to residual current within 3 minutes after closing, the circuit breaker is blocked and no further reclosing operation is carried out.

8.2.3.2 If the "mutation protection" function is turned on and the circuit breaker trips due to the "mutation residual current" of the line, the type of trip is displayed: mutation, and the automatic reclosing is completed within 20s to 60s. If the circuit breaker trips again due to "mutant residual current" within 3 minutes after closing, the circuit breaker will be blocked and no further reclosing operation will be carried out.

8.2.3.3 If the circuit breaker trips due to simulated leakage of electricity by pressing the [Test] key, the trip type will be displayed: push-button test trip, and automatic reclosing will be completed within 20s～60s. If the circuit breaker is tripped again by pressing the [Test] key within 3 minutes after closing, the circuit breaker will be blocked and no further reclosing operation will be carried out.

8.2.3.4 Residual current warning function: If the residual current in the line (60%～80%) I△n maintenance time exceeds 60s, the residual current warning interface is displayed, and the circuit breaker does not trip, and once it exceeds 80% I△n, the circuit breaker will be protected by tripping.

8.2.4 Overcurrent protection

8.2.4.1 The overload long delay protection breaks, the trip type is displayed: overload, and the overload phase and fault current value are displayed, and the circuit breaker does not automatically reclosing.

8.2.4.2 Short-circuit short-delay protection breaking, trip type display: short-circuit delay, and display short-circuit phase and fault current value, the circuit breaker will not automatically reclosing.

External terminal description

The functions of the external terminals are shown in Figures 9-1 and 9-2.

1	2	3	4	5	6	7	8	9
B-	A+	FZ	COM	HZ	U+	U-	F11	F12
RS485 communication port		Shorting 3-4 Opening Shorting 4-5 Closing			DC12V Output		Auxiliary interface	

1	2	3	4
P+	P-	Q+	Q-
Active pulse		Reactive pulse	

Figure 9-1 External port (160/250 type)

1	2	3	4	5	6	7
B-	A+	FZ	COM	HZ	F11	F12
RS485 communication port		Shorting 3-4 Opening Shorting 4-5 Closing			Auxiliary interface	

1	2	3	4	5	6
U+	U-	P+	P-	Q+	Q-
DC12V Output		Active pulse		Reactive pulse	

Figure 9-2 External ports (400/630/800 type)

HYM3ZK Series Moulded Case Circuit Breakers (Metering, Carrier Type)

Functions and Features

Product description

Circuit breaker description

HYM3ZK series plastic shell type circuit breaker (metering, carrier type) (hereinafter referred to as circuit breaker) is our high-tech products.

The product design is advanced, reliable performance, high technical indicators; beautiful appearance, small size, using microelectronics technology, with intelligent over-current protection.

The circuit breaker is suitable for AC 50Hz, rated insulation voltage 1000V, rated working voltage up to 400V, rated current up to 800A power system, used to distribute power and protect the line and power equipment from overload, short circuit, undervoltage, power failure, automatic trip and other faults, can also be used to control the infrequent operation of the motor.

The circuit-breaker has an isolation function, symbolised as "I^-".

The circuit-breaker's intelligent overcurrent tripper is microprocessor-controlled and has three protection features, i.e., overload inverse time delay, short-circuit time delay and short-circuit instantaneous protection. Due to the artificially adjustable short-circuit short-delay protection, the circuit-breaker is classified for use in category B. This series of circuit breakers is therefore clearly capable of fulfilling the requirements of another short-circuit protection characteristic connected in series on the load side to achieve the following

The circuit breaker has running current indication, overload pre-warning indication and tripper power supply and self-diagnosis indication. Standard: GB/T14048.2, IEC 60947-2.

Product standards

The circuit breakers are in accordance with GB/T 14048.2, GB/T 32902 standards.

Features

- HYM3ZK series molded case circuit breakers: 250A, 400A, 630A, 800A
- Rated operating voltage Ue (AC): 400V 50 Hz
- Breaking capacity code： C, S, H
- Number of poles : 3N, 4P
- Release type: Intelligent LCD type
- Installation method: Fixed
- certification: CCC

HYM3ZK Series Moulded Case Circuit Breakers (Metering, Carrier Type)

Functions and Features

Normal operating conditions

1. Ambient air temperature: -40°C ~ +70°C, and the 24h average value does not exceed +35°C; Normal operating ambient temperature range: -5°C ~ +40°C; for operating conditions under -40°C ~ -5°C ambient temperature. 2. The altitude of the installation site does not exceed 2000m.

2. The altitude of the installation site does not exceed 2000m above sea level.

3. The relative humidity of the air does not exceed 50% at the maximum temperature of +40°C; higher relative humidity is allowed at lower temperatures, the average monthly temperature of the wettest month does not exceed +25°C, and the average monthly maximum relative humidity of that month does not exceed 90%.

4. Pollution level: Level 3. There is no danger of explosion in the surrounding air, and no corrosive metals and damage to the insulation of the gas and conductive dust. 5. Installation category is III.

6. The terminals "1,3,5,N" of the circuit breaker are connected to the power supply, and the terminals "2,4,6,N" are connected to the load, and cannot be reversed.

7. The mounting surface of the circuit breaker should be perpendicular to the horizontal plane. The basic installation mode of circuit breaker is vertical installation, with the power terminal on the top and the load terminal on the bottom, and it can also be installed horizontally.

Product selection

HYM3Z	K	-	□	□
Model number	Use category		Frame grade	Breaking capacity
Intelligent electronic moulded case circuit breaker	Power supply		250 400 630 800	C-Basic S-Standard H-High breaking capacity

□	□	□	000
Number of poles	4P	Intelligent Tripper	Internal accessories
3P 4P	N-pole type (Note)	6 LCD display	000No accessories

Note: Among the four-pole products, there are two types of neutral poles (N-pole): Type A: N-pole is always on and does not merge with the other three poles;

Type B: N-pole merges with the other three poles.

Main Technical Parameters

Main Technical Parameters Table 1

Model No. HYM3ZK-250		HYM3ZK-250			HYM3ZK-400			HYM3ZK-630			HYM3ZK-800
Shell frame current Inm(A)		250			400			630			800
Number of poles		3、4			3、4			3、4			3、4
Rated insulation voltage Ui(V)		1000									
Rated working voltage Ue(V)		400									
Rated impulse withstand voltage Uimp(kV)		8									
Short-circuit breaking capacity Icu/Ics(kA)		C	S	H	C	S	H	C	S	H	/
		50/36	70/50	85/55	50/50	70/70	85/85	50/50	70/70	85/85	70/70
Rated short-time withstand current "Icw(kA)/ls		5			5			10			10
Applicable category		B			B			B			B
Flying arc distance(mm)		≯50			≯100			≯100			≯100
Operating performance	Power on (times)	1000			1000			1000			500
	No power (times)	7000			4000			4000			2500

Controller Main Performance Indicators Table 2

Rated Current Inm(A) for Shell Frame Grade	Customised according to user requirements
Rated current In (A)	0.4 - l.OInm(A) continuously adjustable
Auxiliary supply voltage Ue(ACV)	400
Applicable poles	3P, 4P
Rated residual action current (mAlAn)	Gear value is selectable, 8 groups of parameter values can be customised according to customer requirements
Over-voltage action value (M)	Default 285±5% (user adjustable)
Under-voltage action value (V)	Default 165 earth 5% (user adjustable)
Out-of-phase value (V)	Default 120±5% (user adjustable)
Classification of operating characteristics	AC type

Overload protection characteristics (inverse time action) Table 3

Rated operating current of the tripper (A)	Tripper (ambient temperature 40°C)	
	1.05In (Cold)	1.05In (cold)
1.3IR	⩾1h no trip	⩾1h no trip
2IR	⩾2h no trip	⩾2h no trip

Calculation of overload long delay time: Tl = (6Irl/I)2x Trl (Irl: M fixed current, I: for the actual applied current, Tri: for the time factor)

HYM3ZK Series Moulded Case Circuit Breakers (Metering, Carrier Type)

Functions and Features

Short delay time overcurrent protection characteristics Table 4

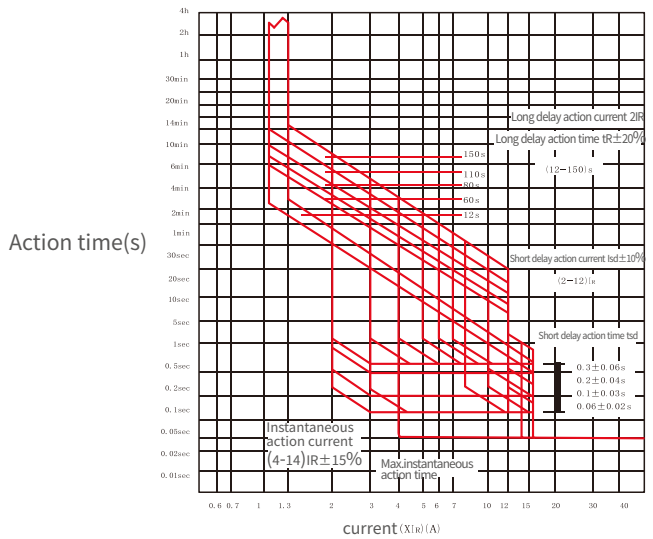
Protective Characteristics	Test current	Tripping time
Short-circuit short-delay protection	1 llsd	0.1s~ls

Isd : short-circuit short-delay tripping setting current, Isd= (2~12)Xlr+OFF.

Short-circuit instantaneous protection characteristics Table 5

	Current	Action time (S)
Action Characteristics	⩽0.8Li	⩾0.2s no release
	⩾1.2Li	＜0.2s off-trigger

Tripping Curve



Outline and Mounting Dimensions

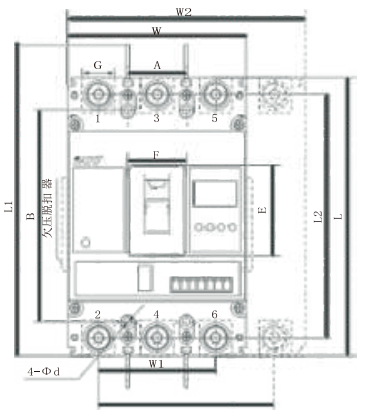


Figure 2

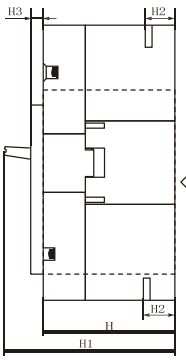
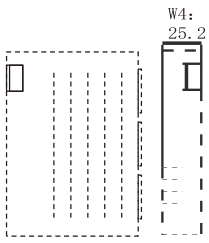


Figure 3



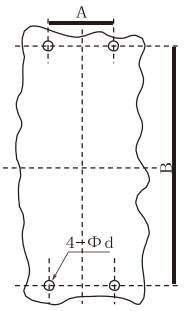


Figure 4

Front Wiring Mounting Dimensions (mm) Table 6

Model Number	Front Wiring																
	W	W1	L	L1	L2	H	H1	H2	H3	E	F	G	W2	W3	A	B	Φd
HYM3ZK-250	107	70	165.5	132.5	144	83.5	112	22.5	12.8	54	35	22	142	105	35	126	4.5
HYM3ZK-400	150	96	259	220.5	225	98	150	38	17.5	89.5	65.5	30	198	144	44	194	7
HYM3ZK-800(630)	210	140	283	240	243	103.5	159	45.3	18.7	89.5	65	44	282	210	70	243	7

Operating Instructions

The circuit breaker has four keys: [Shift], [Increment], [Menu] and [Return]. In addition to the above basic functions, shortcut keys are also defined, as described below:

When the circuit breaker is in the tripping state, the cause of tripping will be locked: Press in the rotating state:

[Menu] to enter the menu inquiry interface, enter the menu can be determined.

[Return] to exit the menu and return to the main interface, press and hold to set the function to be fully opened, closed, restored to the factory settings and press OK to split the gate.

[Incremental] The interface information can be displayed in the main interface, and can be incremented by entering the menu.

[Shift]: You can quickly enter the parameter setting interface. It can be shifted by entering the menu. Enter the function on, off, interface, press [Shift] or [Increment] key to switch between on, off or alarm.

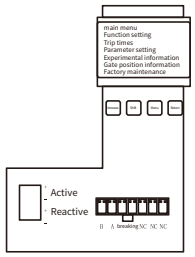


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Figure 5

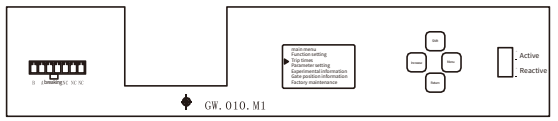

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Figure 6

Figure 6 - Operation display description:

(1) Protector operation display: During the normal operation of the protector, the protector operates for closing the gate as shown in Fig. 7. When the protector is in gate open status, the protector will display the current gate jump information and protector status as shown in Fig. 8.

The information and status of the protector are shown in Fig. 8.

(2) Overload delay release: When the current value of any phase exceeds 1.3 times of the rated current value, the protector will automatically display the overload parameters and the overload delay will be displayed as shown in Fig. 9.

Closing operation

ua : 220 . 2A Ia : 99 . 99A
ub : 219 . 2A Ib : 99 . 98A
ub : 219 . 9A Ic : 100 . 03A

Figure 7

Please try to close manually
Type: Manually open
Parameters: None
Phase: None
2020-08-12 10 : 18 : 19

Figure 8

A phase overload: 432A
Rated current: 250A
Delayed release
in progress .....
2020-08-12 18 : 15 : 55

Figure 9

1) 【Return】:Return to the main interface of the system; exit the setting and inquiry functions and return to the rotating state (when the circuit breaker is in the tripping state, it will return to the stop display state).

2) 【Menu】: It can be used to enter the menu and set the cursor in the setting and password input status. As shown in Fig. 10. After entering the menu, press [Shift] and [Incremental] to check the latest gate information. As shown in Fig. 10-11, phase A current overload tripped, the maximum current value at the time of tripping is 425 A, and the time of tripping is 12/08/2020 at 18:16:20. Enter the menu and select Trip Count to enter the Trip Count Inquiry status. The trip count parameter is displayed. As shown in Fig. 12, there are 13 trips, 5 overvoltage trips, 7 overload trips and 1 manual trip.

3) 【Return】: It can be used to return during operation.

3) [Shift]: For upward movement when querying parameters, and for digit shift when setting and password inputting status. After entering menu, press [Incremental] and [Menu] key to enter function setting status, as shown in Fig. 13, Fig. 14 and Fig. 15, over-voltage protection, under-voltage protection, phase failure protection, total loss of voltage protection, overload protection, short-circuit delay protection, unbalance protection, zero-default protection, etc. can be set. Overvoltage protection, undervoltage protection, phase failure protection, full undervoltage protection, overload protection, short-circuit delay protection, unbalance protection, zero-deficiency protection, etc. After determining the option, press [Shift], [Increment] to turn on, alarm or turn off the function. In rotating display or tripping

When the display stops, press 【Shift】key to prompt the key verification state, the key realizes the cursor moving, press 【Shift】, 【Increment】key to change the parameter value" (Note: If the input parameter exceeds the allowable setting range, the system discards the new parameter, the key confirms successfully, and then enters the parameter verification state.

(Note: If the input parameter exceeds the allowable setting range, the system discards the new parameter.) After the key is confirmed successfully, enter the parameter adjustment interface, press 【Shift】, 【Increment】key to confirm the completion of parameter input, press 【Menu】key to confirm the input parameter and enter the next parameter setting, and the original parameter setting will be retained). Press 【Return】key to abort the setting and exit the setting status.

Press 【Return】key to abort the setting and exit the setting status. The parameters such as rated current, overload long delay time, user password, current time, etc. are shown in Figs. 16, 17 and 18. As shown in Figures 16, 17 and 18, the parameters such as overload current, long delay time, short delay time, short delay time, etc. are set.

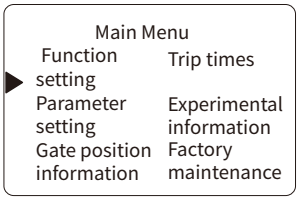

Figure 10

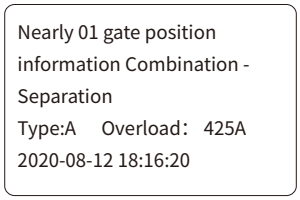

Figure 11

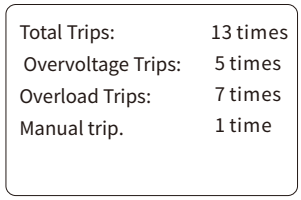

Figure 12

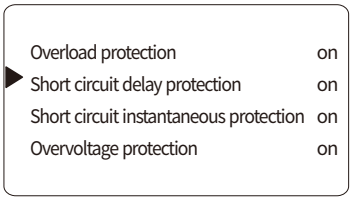

Figure 13

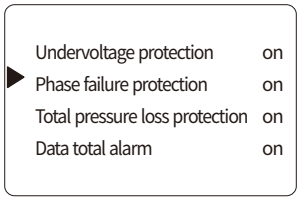

Figure 14

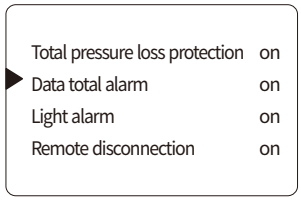

Figure 15

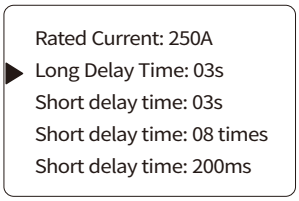

Figure 16

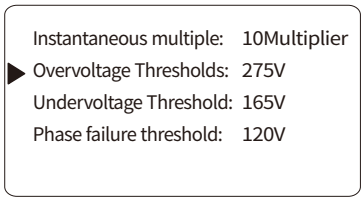

Figure 17

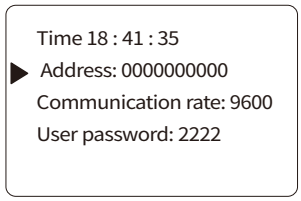

Figure 18

4) Enter into the menu, select factory maintenance, enter into the state of key verification (input: 1001), after the key verification is successful, allow to enter into the factory setting interface, through the following steps

The combination of [Shift], [Increment] and [Menu] keys can be used to calibrate the voltage of A, B and C phases, the current of A, B and C phases, the power calibration of A, B and C phases, and the instantaneous calibration of current to change the voltage of shell frame, the display of grey colour, and the display of grey colour.

The key can be used to calibrate the voltage, current, power, current instantaneous calibration, instantaneous calibration, change the frame current, adjust the grey scale of the display, and calibrate or check the manufacturer's information. Figure 19, 20, and 21 below.

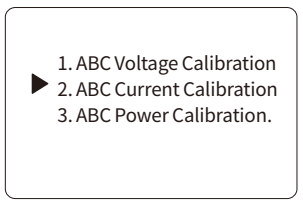

Figure 19

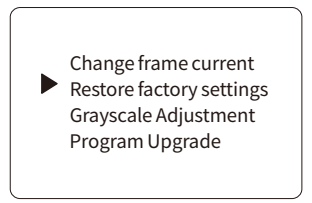

Figure 20

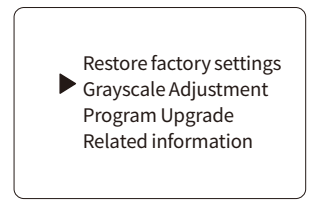

Figure 21

- ABC Voltage Calibration: Menu Zero Shift Calibration;
- ABC Current Calibration: Reference 50 Menu Zero Shift Calibration 250; - ABC Power Calibration: Voltage 220V, Current 250V.

ABC power calibration: voltage 220V, current 250A calibration;

- ABC phase voltage calibration: as shown in Figs. 19, 20 and 21, press [Shift],

Press [Shift], [Incremental] key to select ABC voltage calibration, press [Menu] key to enter ABC voltage calibration interface, as shown in Fig. 22, after confirming to apply standard 220 V to the protector's A, B and C phases, press [Menu] key, within 5 seconds, automatically calibrate the 3-phase voltage parameter; then press [Shift] key, within 5 seconds, automatically calibrate the 3-phase voltage parameter; after the calibration is completed, press [Return] key to return to the upper level interface.

- ABC phase current calibration: as shown in Figs. 19, 20 and 21, press the [Shift],

As shown in Figs. 19, 20 and 21, press [Shift] and [Increment] to select ABC current calibration, firstly apply the rated current value (e.g. 250A) to the circuit breaker, then press [Menu], and then calibrate the rated current within 5 seconds.

After applying rated current (e.g. 250A) to the circuit breaker first, press [Menu] key to calibrate the rated current within 5 seconds, then apply 20% of rated current (e.g. 50A) to the circuit breaker and press [Shift] key to calibrate 20% of current automatically. As shown in Figures 23, 24 and 25, the circuit breaker will be calibrated automatically by pressing the [Shift] key.

Press [Back] key to return to the upper interface when calibration is completed.

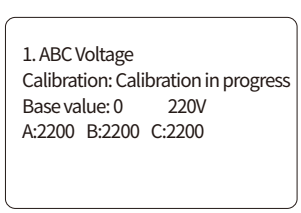

Figure 22

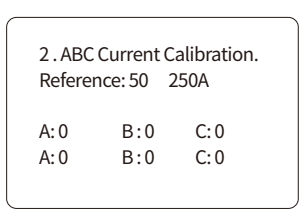

Figure 23

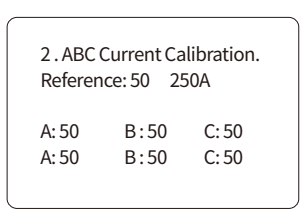

Figure 24

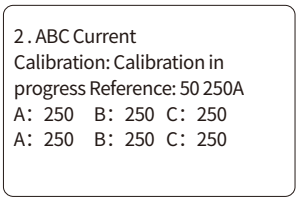

Figure 25

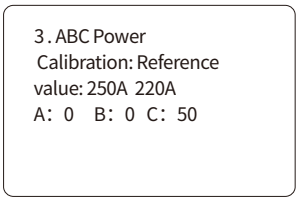

Figure 26

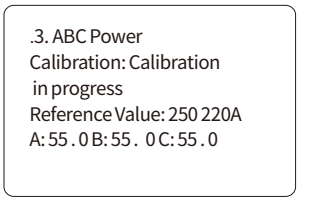

Figure 27

- Power calibration: As shown in Figs. 19, 20 and 21, press [Shift] and [Incremental] keys to select BC power calibration, input rated current (e.g. 250 A), input rated voltage 220V, press the key to select the power calibration.

Input rated current (e.g. 250 A), input rated voltage 220V, press [Menu] key, within 5 seconds, the three-phase power parameters will be calibrated automatically; press [Shift] key again, within 5 seconds, the three-phase power parameters will be calibrated automatically. Press 【Return】key to return to the upper interface after calibration.

-Change the shell frame current: As shown in Figs. 19, 20 and 21, press [Shift] and [Increment] to select change the shell frame current, and then press [Confirm] to enter the interface of changing shell frame current.

Press [Shift] and [Increment] key to change the shell holder current. When finished, press [Return] key to return to the upper interface.

-Display grey scale adjustment:: As shown in Figs. 19, 20 and 21, press [Shift],

incremental] key to select display grey adjustment, and press 【Menu】key to enter the grey adjustment interface, according to the actual display, press 【Shift】, 【Incremental】to adjust the grey level, and then press 【Return】key to return to the upper interface.

Press 【Return】key to return to Fig. 27 interface after adjustment.

Precautions for calibration: 1. The calibration must end at the end of calibration, not at the end of zero calibration.

Voltage is calibrated first, then calibrate, the first time to calibrate zero, the voltage will show 300V or so, calibrate again, calibration can be.

When calibrating the action current and display current, calibrate the full scale gear first, then calibrate 20% of the small scale gear, and finally calibrate the full scale gear again. The signal supplied should be a precise signal synchronised to the gear.

External Connection

-3.5-7 External terminals: 1 and 2 pins are for RS485 communication interface; 3 and 4 pins are for external disconnection; 5, 6 and 7 pins are empty. (As shown in Figure 28)

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