

Two stage power distribution

HUM8

Series Moulded Case Circuit Breaker



1. Application range

HUM8 series moulded case circuit breaker (hereinafter referred to as the circuit breaker) is applied in the network circuit of AC 50Hz, rated voltage to 690V, rated current to 1250A power system, used to distribute electric energy and power system protection against overload, short circuit, undervoltage fault, also can be used to control the infrequent operation of electric machines.

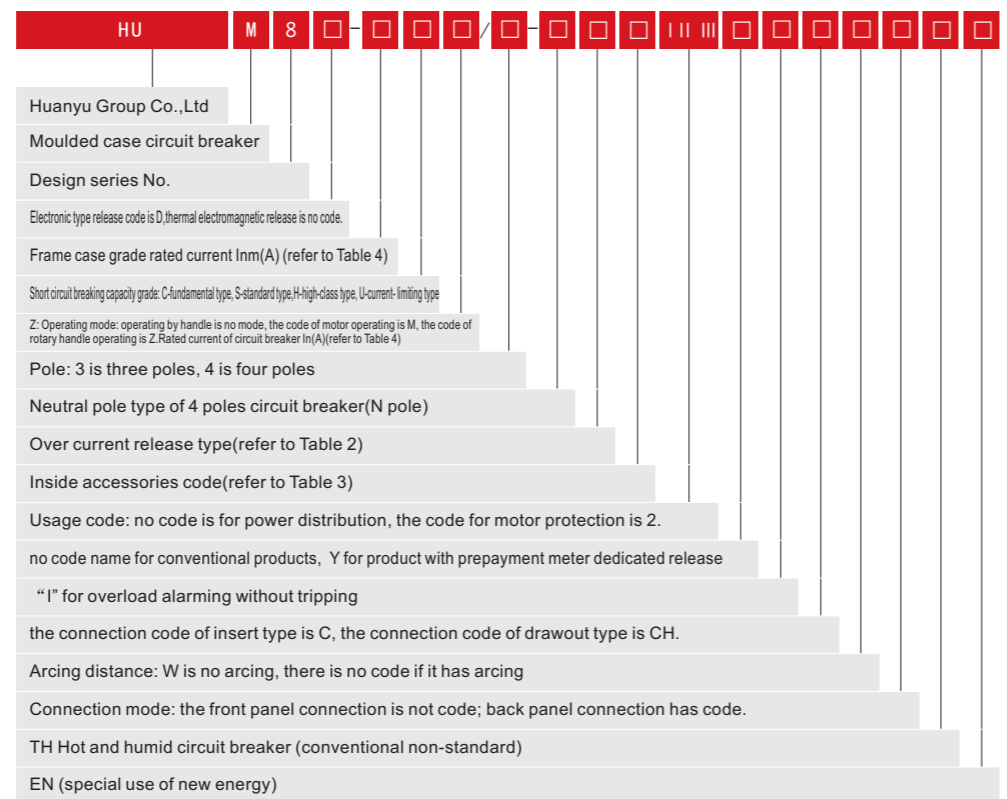
The characteristics of electronic release and intelligent release are accurate and convenient. Intelligent release has serial communication interface, which can meet the "four remote" requirements of communication networking.

The full series can be equipped with unique "overload alarm without tripping" function, to ensure continuity of power supply, to meet the requirements of article 6.3.6 under GB 50054. Full range circuit breakers are available for isolation.

It accords with the standard of GB 14048.2 and IEC 60947-2.



2. Model and meaning



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.

3. Normal working condition

- 3.1 The maximum ambient temperature should be $-5^{\circ}\text{C} \leq T \leq +40^{\circ}\text{C}$, average temperature should be $\leq 35^{\circ}\text{C}$ at 24h.
- 3.2 The relative humidity should not exceed 95%
- 3.3 The altitude of installation place should not exceed 2000m. Higher than 2000m need to drop capacity for usage.
- 3.4 Pollution grade: 3. There is no explosion in the surrounding air, and there is no corrosion of metals and destruction of insulating gases and conductive dust.
- 3.5 Installation type: 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 installation mode of the circuit breaker is vertical installation, the power source is on the top, the load end is below, and it can be installed horizontally.

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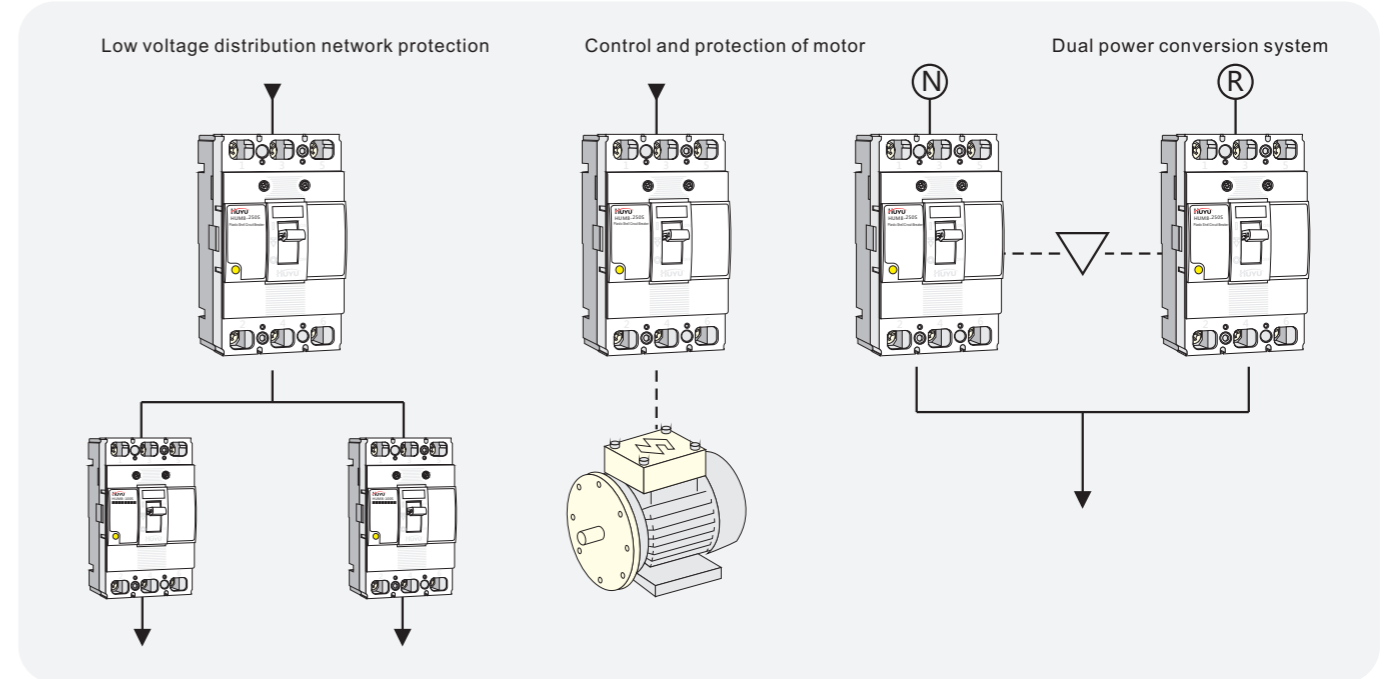


Table 1

Code	Type	Explanation
A	Atype	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	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	Electron type release (M Type Intelligent Controller)	Current transformer and electronic apparatus with thermal electromagnetic release, can protect characteristic parameter accuracy.
5	Intelligent release (H Type Intelligent Controller)	Intelligent type release Have serial communication interface, can comply with the request of "four remote" communication.

Table 3

$I_{nm}(A)$	I		II		III		Note
	Code	Explanation	Code	Explanation	Code	Explanation	
63 100 250	0	None	0~2	Auxiliary contact group quantity	0~2	Alarm contact group quantity	
	1	Shunt release	0~1		0~1		
	2	Undervoltage release	0~1		0~1		
400	0	None	0~5	Auxiliary contact group quantity	0~2	Alarm contact group quantity	II + III ≤ 7
	1	Shunt release	0~3		0~2		II + III ≤ 5
	2	Undervoltage release	0~3		0~2		II + III ≤ 5
	3	Shunt release and undervoltage release	0~1		0~1		II + III ≤ 2
630 800	0	None	0~8	Auxiliary contact group quantity	0~3	Alarm contact group quantity	II + III ≤ 11
	1	Shunt release	0~6		0~3		II + III ≤ 8
	2	Undervoltage release	0~6		0~3		II + III ≤ 8
			3	Shunt release and undervoltage release	0~3	0~2	II + III ≤ 5

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3.8 The capacity reduction factor of circuit breaker in different environments, see table (a)
Table (a)

Ambient temperature	+40°C	+45°C	+50°C	+55°C	+60°C	+70°C
Allowable continuous working current	1 I _n	0.95 I _n	0.9 I _n	0.85 I _n	0.8 I _n	0.72 I _n

Note: under various environmental temperature conditions, the measured terminal temperature of the circuit breaker reaches 110 degrees centigrade as the benchmark.

The electrical performance of circuit breakers can be referenced to the following table, and the poster derating factor table is shown in the table below (b) above the applicable working environment of 2000m
Table (b)

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

4. Main technical parameter

Table 4

Frame size rated current I _{nm} (A)	63	100						250							
Type	HUM8-63S	HUM8-100C HUM8D-100C	HUM8-100S HUM8D-100S	HUM8-100H HUM8D-100H	HUM8-100U HUM8D-100U	HUM8-250C HUM8D-250C	HUM8-250S HUM8D-250S	HUM8-250H HUM8D-250H	HUM8-250U HUM8D-250U						
Photo															
Rated current I _n (A)	10, 16, 20, 25, 32, 40, 50, 63	16, 25, 32, 40, 50, 63, 80, 100						100, 125, 150, 160, 175, 200, 225, 250							
Pole number	3	3	4	3	4	3	3	3	4	3	4	3	3		
Rated insulation voltage U _i (V)	AC800	AC800						AC800							
Rated impulse withstand voltage: U _{imp} kV	8														
Rated short-time withstand current I _{cw} (kA)	—	—						5							
Arcing distinguish distance (mm)	≤50 (0) *	≤50 (0) *						≤50 (0) *							
Rated limiting/operating short circuit breaking capacity I _{cu} /I _{cs} (kA):	AC690V	—	—	5/3	10/5	10/5	—	5/3	10/5	10/5	—	—	—	—	—
	AC500V	—	—	40/30	—	—	—	40/30	—	—	—	—	—	—	—
	AC400V	30/22	30/15	50/35	85/85	125/125	30/15	50/35	85/85	125/125	30/15	50/35	85/85	125/125	200/200
	AC230V	50/38	50/25	100/50	125/125	200/200	50/25	100/50	125/125	200/200	50/25	100/50	125/125	200/200	200/200
Operating times	Electrify	8000	8000						8000						
	Non-electrify	20000	20000						20000						
Outline dimension (mm)	a	75	90	120	90	120	90	90	105	140	105	140	105	105	
	b	130	155			216			165			240			
	c	68	68						68						
Weight(kg)	0.75	1.0	1.3	1.1	1.4	1.8	1.8	1.5	1.9	1.5	1.9	2.6	2.6		
Rated operating frequency times/h	120	120						120							

*Please give clear indication of arcing distance is zero when you place an order.

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Frame size rated current I _{nm} (A)	400						630							
Type	HUM8-400C HUM8D-400C	HUM8-400S HUM8D-400S	HUM8-400H HUM8D-400H	HUM8-400U HUM8D-400U	HUM8-630C HUM8D-630C	HUM8-630S HUM8D-630S	HUM8-630H HUM8D-630H	HUM8-630U HUM8D-630U						
Photo														
Rated current I _n (A)	250, 300, 350, 400						400, 500, 630							
Pole number	3	4	3	4	3	3	3	4	3	4	3	3		
Rated insulation voltage U _i (V)	AC800						AC800							
Rated impulse withstand voltage: U _{imp} kV	8													
Rated short-time withstand current I _{cw} (kA)	5						10							
Arcing distinguish distance (mm)	≤100 (0) *						≤100 (0) *							
Rated limiting/operating short circuit breaking capacity I _{cu} /I _{cs} (kA):	AC690V	10/10	10/10	15/10	35/35	10/10	15/15	20/15	35/35	—	—	—	—	—
	AC500V	—	50/50	—	—	—	50/50	—	—	—	—	—	—	—
	AC400V	45/45	70/70	100/100	125/125	45/45	70/70	100/100	125/125	45/45	70/70	100/100	125/125	200/200
	AC230V	85/85	100/100	150/100	200/200	85/85	100/100	150/100	200/200	85/85	100/100	150/100	200/200	200/200
Operating times	Electrify	7500						7500						
	Non-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	103			200			103			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 operating frequency times/h	60						20							

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Continued.4

Frame size rated current I_n (A)	800						1250		
Type	HUM8-800C HUM8D-800C		HUM8-800S HUM8D-800S		HUM8-800H HUM8D-800H	HUM8-800U HUM8D-800U	HUM8D-1250		
Photo									
Rated current I_n (A)	630, 700, 800						1250		
Pole number	3	4	3	4	3	3	3	4	
Rated insulation voltage U_i (V)	AC800								
Rated impulse withstand voltage: U_{imp} kV	8								
Rated short-time withstand current I_{cw} (kA)	10						20		
Arcing distinguish distance (mm)	≤ 100 (0) *						≤ 100		
Rated limiting/operating short circuit breaking capacity I_{cu}/I_{cs} (kA):	AC690V	10/10	15/15	20/15	35/35	25/13			
	AC500V	—	50/50	—	—	—			
	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	
	Non-electrify	10000						7500	
Outline dimension (mm)	a	210	280	210	280	210	210	210	280
	b	275				322		330	
	c	103				200		144	
Weight(kg)	9.9	13	11.4	15.7	27.3	27.3	18	24	
Rated operating frequency times/h	20								

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5. Thermoelectric Electromagnetic Current Releaser

5.1 Long time delay release set up to current I_{r1}

I_{r1} namely rated current I_n of the circuit breaker, the specifications of I_n , please refer to Table 4.

The neutral pole (N pole) of 4-pole circuit breaker all does not install with over current release, the rated fever heating current is the same as other three poles.

5.2 The overcurrent protection characteristics of circuit breakers for distribution are shown in Table 5

5.3 The over-current protection characteristic curve of HUM8-63, HUM8-100 is shown in picture 1

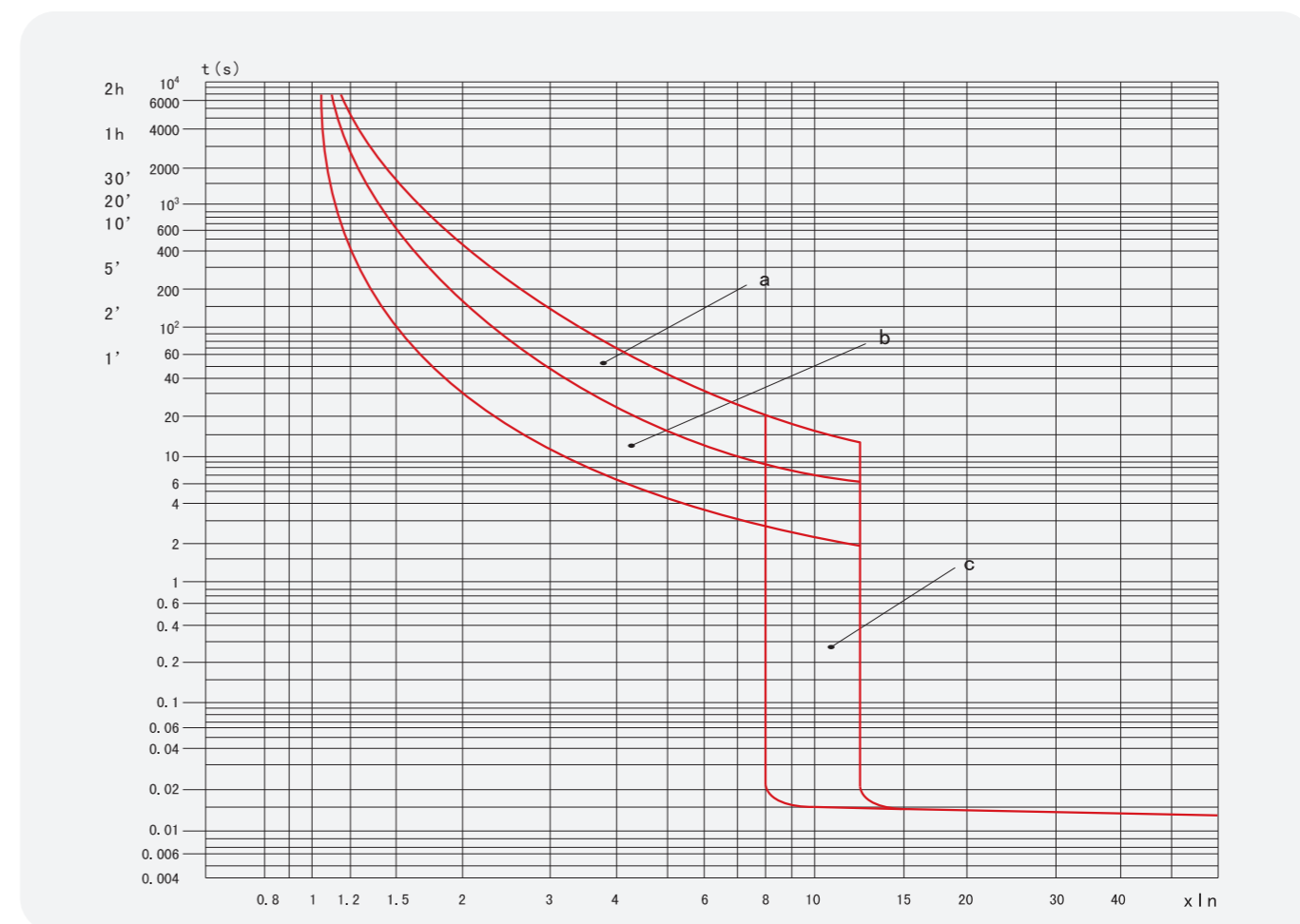
a-Characteristics of cold thermal overload protection

Table 4

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

Note: the operating current of HUM8-630, HUM8-800 MCCB'S electromagnetic release is (5-14) I_n adjustable. Reference value: low (4-6) I_n ; lower (6 - 8.3) I_n ; higher (8.3 - 10.9) I_n ; high (10.9 - 14) I_n .

Picture1



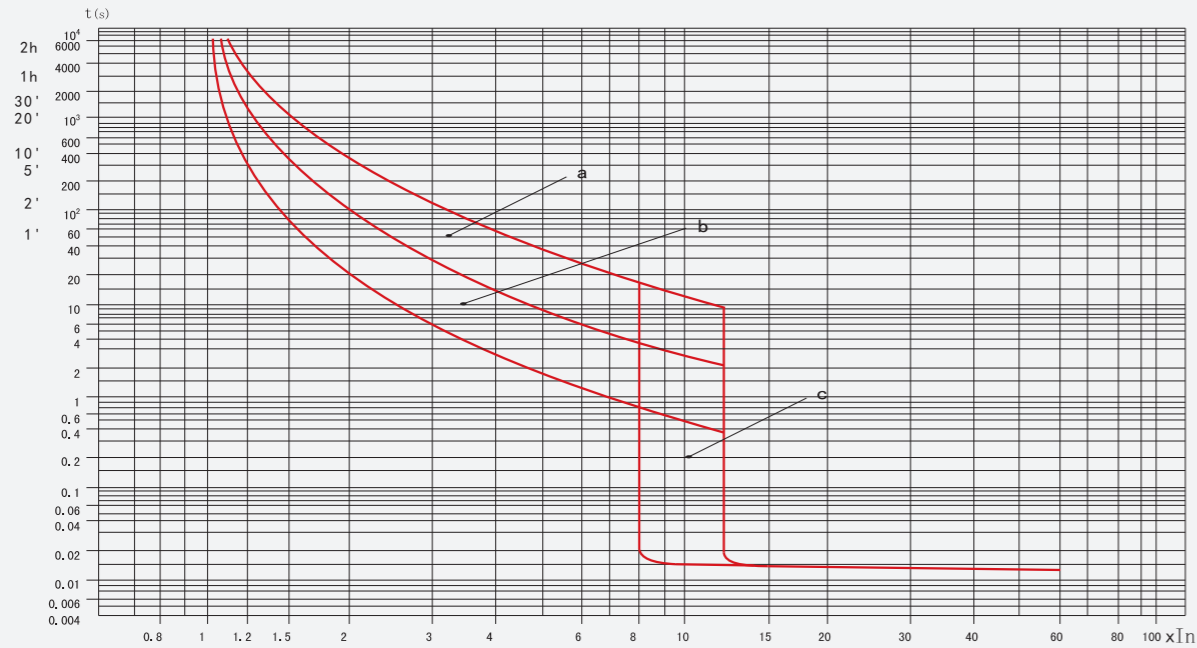
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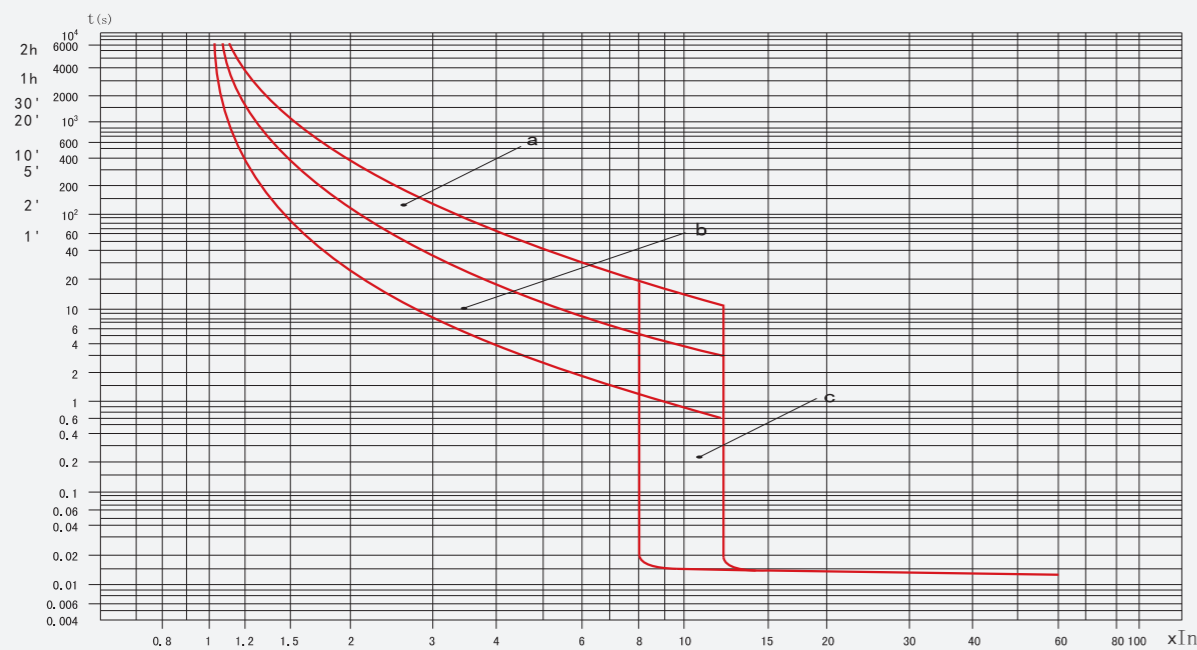
2.2 HUM8-250 Overcurrent Protection Characteristic Curve See Figure 2

Picture 2



2.3 HUM8-400 Overcurrent Protection Characteristic Curve See Figure 3

Picture 3



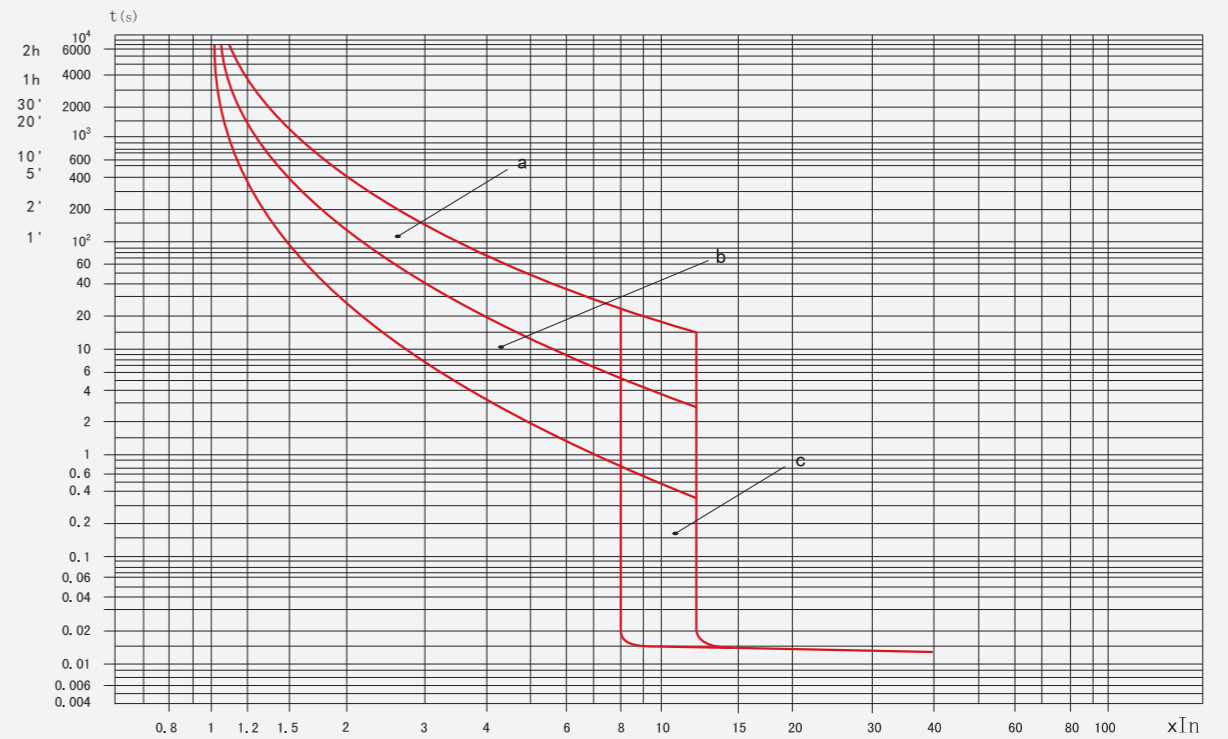
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2.4 The over-current protection characteristic curve of HUM8-630, HUM8-800 is shown in picture 4

Picture 4



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

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

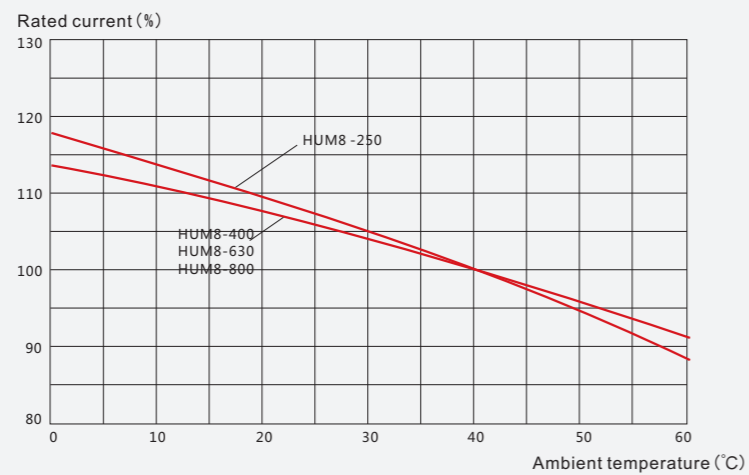
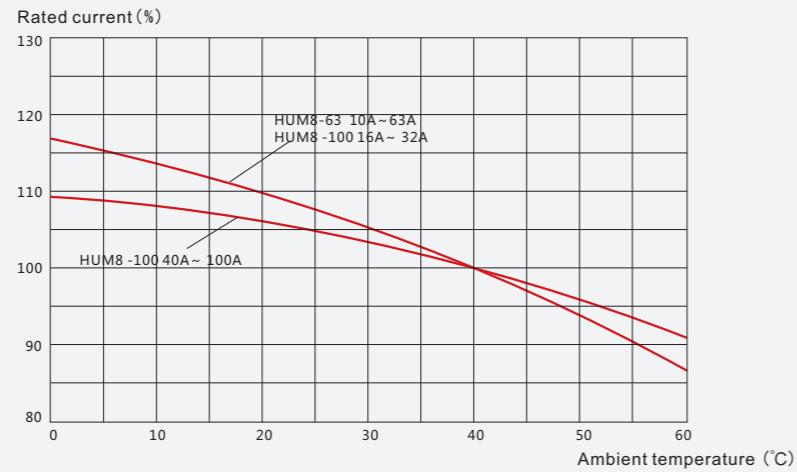
Note: the operating current of HUM8-630, HUM8-800 MCCB'S electromagnetic release is (5~14) I_n , adjustable. Reference value: low (4~6) I_n ; lower (6 - 8.3) I_n ; higher (8.3 - 10.9) I_n ; high (10.9 - 14) I_n .

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4: The temperature correction curve of thermal release is shown in picture 5
Picture 5



5: The power loss of circuit breaker is shown in Table 7
Table 7

Frame size	Rated current In(A)	Resistance of per pole(mΩ)		Total power loss of triode(W)			
				Stationary type		Insert or draw out type	
		C. Stype	H. Utype	C. Stype	H. Utype	C. Stype	H. Utype
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

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6. Intelligent controller

Rated current of the MCCB's frame size $I_n = 100A \sim 1250A$ can be installed with intelligent controller. The current transformer set of intelligent controller for MCCB's powersupply, namely autogeny power supply. When the three-phase current is greater than $0.2I_n$ or single-phase current is greater than $0.5I_n$, the intelligent controller can work reliably. According to the different functions, the intelligent controller is divided into two types:

M type intelligent controller: Current transformer and electronic apparatus installed with thermal electromagnetic release, so it is also called electronic release. H type intelligent controller: in addition to the function of M intelligent controller, it also has serial RS485 communication interface, which can meet the requirements of telemetry, remote control, remote control and remote communication (i.e., "four remote") of communication network.

When the main power supply of the circuit breaker does not pass through the current (i.e., no spontaneous power), the DC12V auxiliary power supply is needed. The M and H intelligent controllers have DC12V test power outlet on the panel. H type intelligent controller can also provide auxiliary power supply through ST programmer, ST-CM display module or ST-DP communication protocol module.

6.1. M type intelligent controller

6.1.1 Function

- Overload inverse time lag protection;
- Short circuit, short time delay "fixed time lag" protection or short circuit, short time delay "fixed time lag + inverse time lag" protection;
- Short circuit instantaneous operation protection;
- Earthing protection (applicable to four pole circuit breaker)
- Auxiliary function: operation current indication, power supply and self diagnosis indication, warning alarm and grounding alarm indication;

The self diagnostic function of the controller is mainly used for checking and protecting the operation of the single-chip computer chip. When the working temperature of the controller is over 80 degrees, the MCU light emitting diode blinks; when the micro-controller works abnormally, the MCU light emitting diode blinks or extinguishes.

f. Optional function: warning signal, tripping 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 picture 6.

g. Panel's parameter setting up and tripping test function

6.1.2 The panel layout of M type intelligent controller shown by Drawing 7

6.1.3 The over-current protection characteristic curve of M type intelligent controller shown by Drawing 8 and 9, and the technical data are shown in table 8.

Drawing 8:

Ir1 Is long time delay release setting up current, TL is long time delay operation time;

Ir2 Is short time delay releasesetting up current, TS is short time delay operation time;

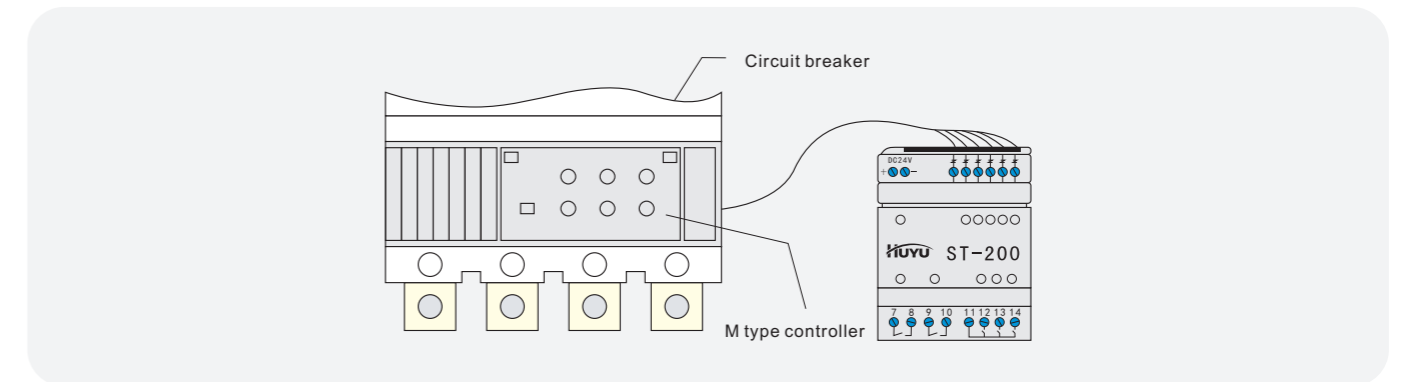
Ir23 is instantaneous releasesetting up current;TG is earthing fault operating current;

Ir4 Is earthing fault setting up current;

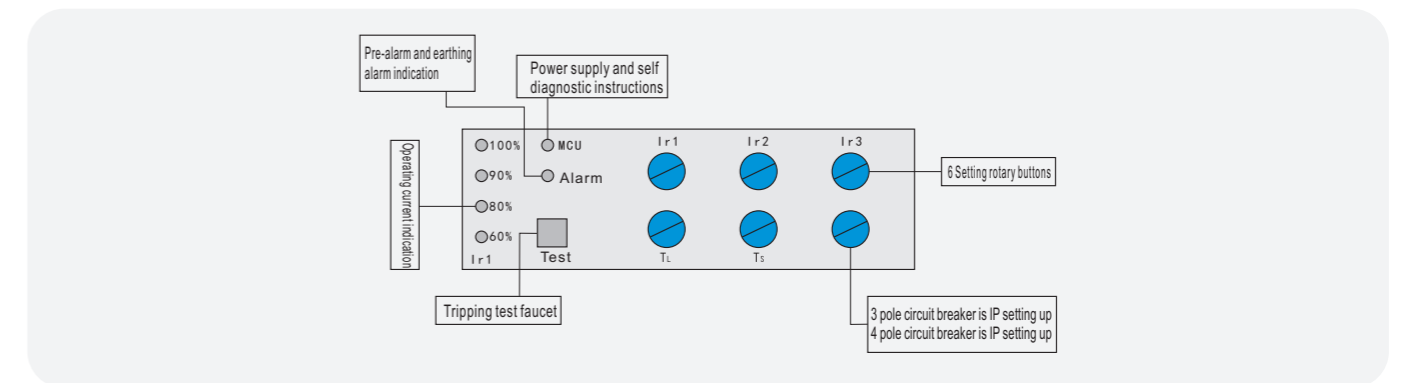
Ip Is forecast alarming current;

Explanation: 4 pole for MCCB's forecast alarming current $I_p = 1.0I_{r1}$.

Picture 6



Picture 7

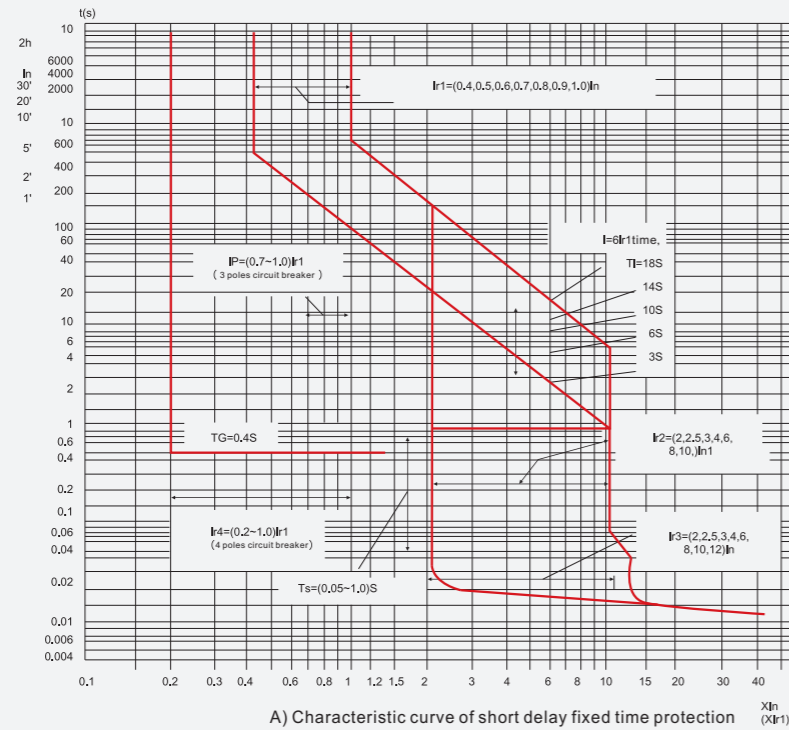


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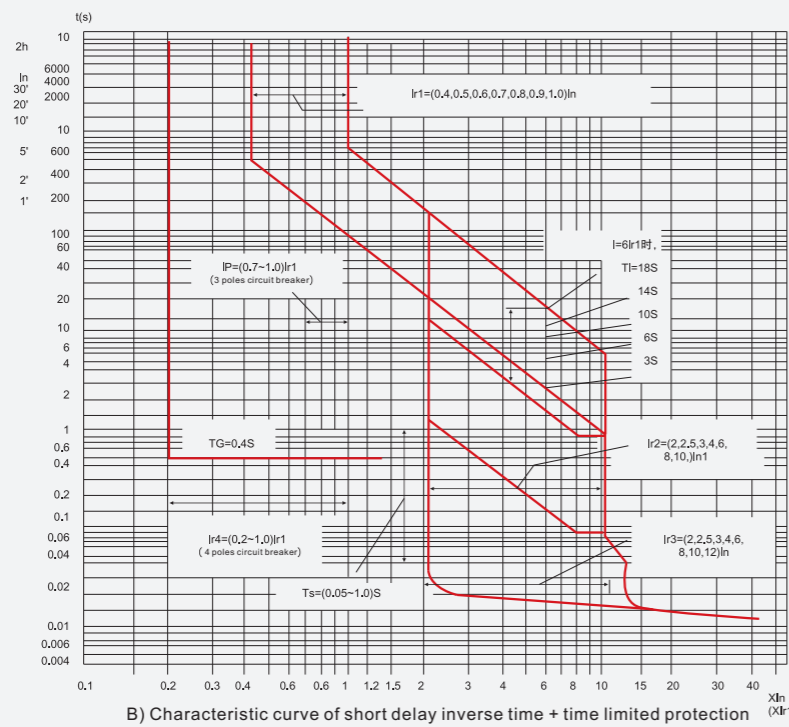
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Picture 8



Picture 9

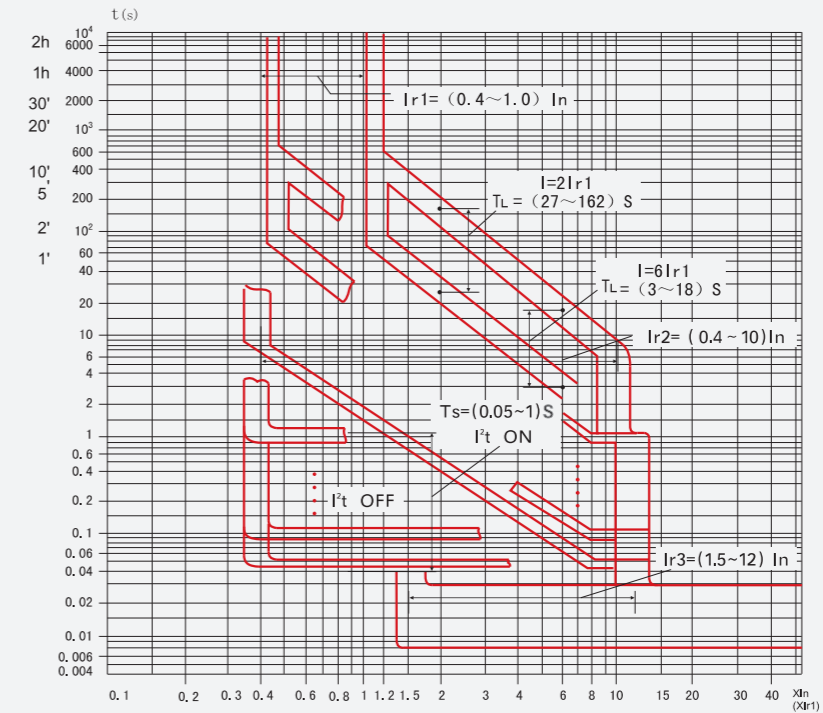


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Picture 10



2. H type intelligent controller

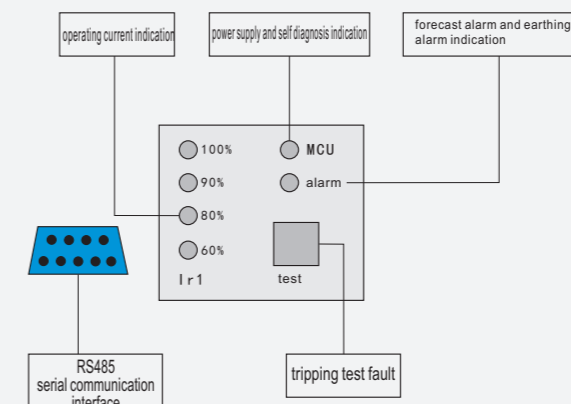
2.1 Function:

- Overload inverse time lag protection;
- Short circuit, short time delay "fixed time lag" protection or short circuit, short time delay "fixed time lag +inverse time lag" protection;
- Short circuit instantaneous operating protection;
- Earthing protection (four pole breaker applicable);
- Auxiliary function: operation current indicator, power supply and self diagnostic instructions, warning alarm and grounding alarm indicator.
- Signal output function: tripping, alarming, closing, breaking and other optical separation signal output, alarm, ground alarm optical diaphragm signal output, and has the function of detection of unity and division.
- It has RS485 serial communication interface.
- Panel's parameter setting up and tripping test function;

2.2 The panel layout of the H type intelligent controller is shown in picture 11.

2.3 The over-current protection characteristic curve of H type intelligent controller is shown in picture 10, and technical data is shown in table 9.

Picture 11



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Table 8 : Over current protection characteristics of M intelligent controller In=100A,250A,400A,630A,800A,1250A

● Overload long time delay																		
Setting current	$I_{r1}=I_n \times \dots$	0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1+OFF (Exit position)																
Movement characteristics	$\leq 1.05 I_{r1}$	$\geq 2h$ No action is more than or equal to 2h																
	$> 1.2 I_{r1}$	$< 1h$ 1H long delay action																
Inverse time delay (s) $T = (6 I_{r1})^2 \times T_L / I^2$	$T_L =$	3	6	10	14	18												
	2I _{r1} 下: Under 2I _{r1}	27	54	90	126	162												
	6I _{r1} 下: Under 6I _{r1}	3	6	10	14	18												
	7.2I _{r1} 下: Under 7.2I _{r1}	2.2	4.38	6.94	10.22	13.14												
Accuracy class	±10%																	
Thermal memory (30min, power cleared) *	Standard + OFF (turn off)																	
● Short time delay																		
Rated current	$I_{r2}=I_{r1} \times \dots$	2, 2.5, 3, 3.5, 4, 5, 6, 8, 10+OFF Standard + OFF (turn off)																
Movement characteristics	$\leq 0.9 I_{r2}$	Short delay without action																
	$> 1.1 I_{r2}$	Short delay action																
Time delay (s)	Timing limit (I _{zt} OFF)	$T_s =$	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 + time limit (I _{zt} ON)	If $I > 8I_{r1}$	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 $I \leq 8I_{r1}$	Inverse time delay (s)	$T = (8 I_{r1})^2 \times T_L / I^2$														
Accuracy	±10%																	
Thermal memory (30min, power cleared) *	Standard + OFF (turn off)																	
● Short circuit instantaneous																		
Setting current	$I_{r3}=I_n \times \dots$	2, 3, 4, 6, 8, 10, 12+OFF (exit position)																
Movement characteristics	$\leq 0.85 I_{r3}$	Instantaneous non-action																
	$> 1.15 I_{r3}$	Instantaneous action																
● Earthing fault (4 pole circuit breaker applicable)																		
Setting current	$I_{r4}=I_n \times \dots$	0.2, 0.3, 0.4, 0.5, 0.6, 0.8, 1.0+OFF (exit position)																
Movement characteristics	$\leq 0.5 I_{r4}$	No alarm or no action																
	$> 1.0 I_{r4}$	Alarm or trip																
Delay (s)	$T_e =$	0.4																
	delay (s)	0.36																
	Inverse time delay (s)	0.44																
● Overload forecast alarm																		
Setting current	$I_p=I_{r1} \times \dots$	0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1.0																
Movement characteristics	$\leq 0.9 I_p$	Non alarm																
	$> 1.0 I_p$	Alarm																

Note: 1. The function of the unit location in the table is only available when the auxiliary power supply is in operation;

2. Short delay mode for users to choose, but only one way to work;

● Timing limit operation mode;

● The inverse time + time limit mode, using 8I_{r1} as the transfer point, I = 8I_{r1} for inverse time work; I > 8I_{r1} for time limit mode.

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

● Overload long time delay																		
Setting current	$I_{r1}=I_n \times \dots$	0.4-1 (less than 2% +OFF (differential) exit position)																
Movement characteristics	$\leq 1.05 I_{r1}$	$\geq 2h$ No action is more than or equal to 2h																
	$> 1.2 I_{r1}$	$< 1h$ 1H long delay action																
Inverse time delay (s) $T = (6 I_{r1})^2 \times T_L / I^2$	$T_L =$	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	2I _{r1} lower: Under 2I _{r1}	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	
	6I _{r1} lower: Under 6I _{r1}	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	7.2I _{r1} lower: Under 7.2I _{r1}	2.2	2.92	3.65	4.38	5.11	5.84	6.57	7.30	8.03	8.76	9.49	10.22	10.95	11.68	12.41	13.14	
Accuracy class	±10%																	
Thermal memory (30min, power cleared) *	Standard + OFF (turn off)																	
● Short time delay																		
Rated current	$I_{r2}=I_n \times \dots$	0.4-1 (less than 4% +OFF (differential) exit position)																
Movement characteristics	$\leq 0.9 I_{r2}$	Short delay without action																
	$> 1.1 I_{r2}$	Short delay action																
Time delay (s)	Timing limit (I _{zt} OFF)	$T_s =$	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 + time limit (I _{zt} ON)	If $I > 8I_{r1}$	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 $I \leq 8I_{r1}$	Inverse time delay (s)	$T = (8 I_{r1})^2 \times T_L / I^2$														
Accuracy	±10%																	
Thermal memory (30min, power cleared) *	Standard + OFF (turn off)																	
● Short circuit instantaneous																		
Setting current	$I_{r3}=I_n \times \dots$	1-12 (less than 8% +OFF (differential) exit position)																
Movement characteristics	$\leq 0.85 I_{r3}$	Instantaneous non-action																
	$> 1.15 I_{r3}$	Instantaneous action																
● Earthing fault (4 pole circuit breaker applicable)																		
Setting current	$I_{r4}=I_n \times \dots$	0.2-1 (less than 8% +OFF (differential) exit position)																
Movement characteristics	$\leq 0.5 I_{r4}$	No alarm or no action																
	$> 1.0 I_{r4}$	Alarm or trip																
Delay (s)	$T_e =$	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	$I_p=I_n \times \dots$	0.2-1 (less than 2% range)																
Movement characteristics	$\leq 0.9 I_p$	Non alarm																
	$> 1.0 I_p$	Alarm																

Two stage power distribution

HUM8

Series Moulded Case Circuit Breaker

2.4. H-type intelligent controller parameter setting and communication networking

a. H-type controller alone

When setting the protection parameters of the controller, it is required to use the ST programmer to connect as shown in Drawing 12 and then to operate the manual of the programmer. The light alarm signals of the H type controller can be controlled through the ST200 intelligent control Module to convert to contact signal output.

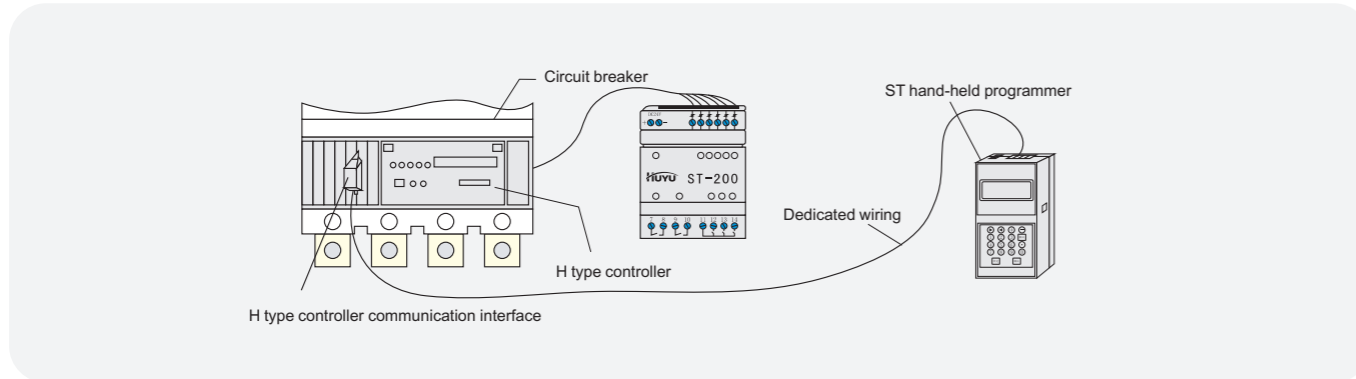
b. H-type controller with ST-CM display module

During normal operation, the display module monitors the operating current and fault information of the controller. When setting the protection parameter of the controller, it is necessary for the professional to use the ST programmer to connect as shown in Drawing 13 and then to operate the manual of the programmer.

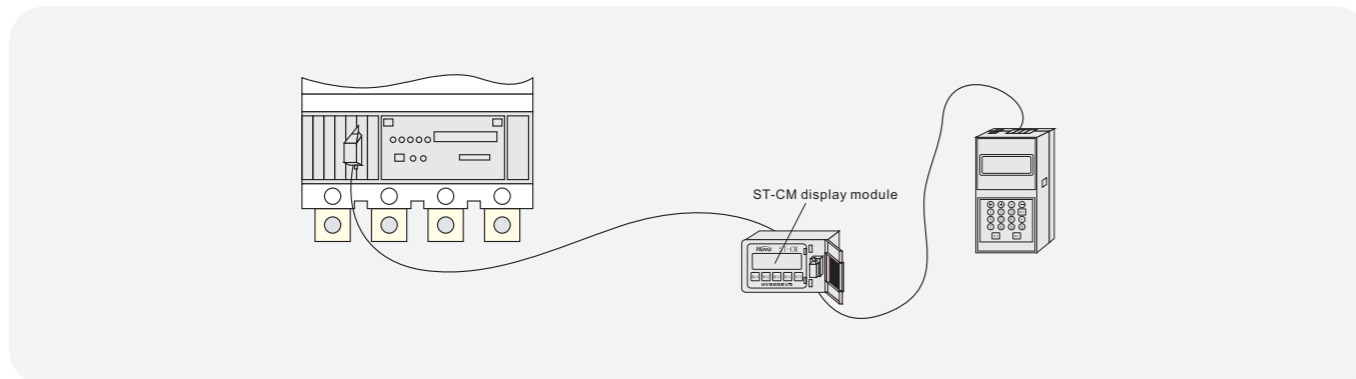
c. H-type controller communication network

The two connection solutions are shown in Drawing 14. Different protocol modules are optional for different protocols. The following is the solution for selecting the ST-DP protocol. Through the ST200 intelligent control module, controller alarm signals, opening and closing signals can achieve the desired contact conversion output.

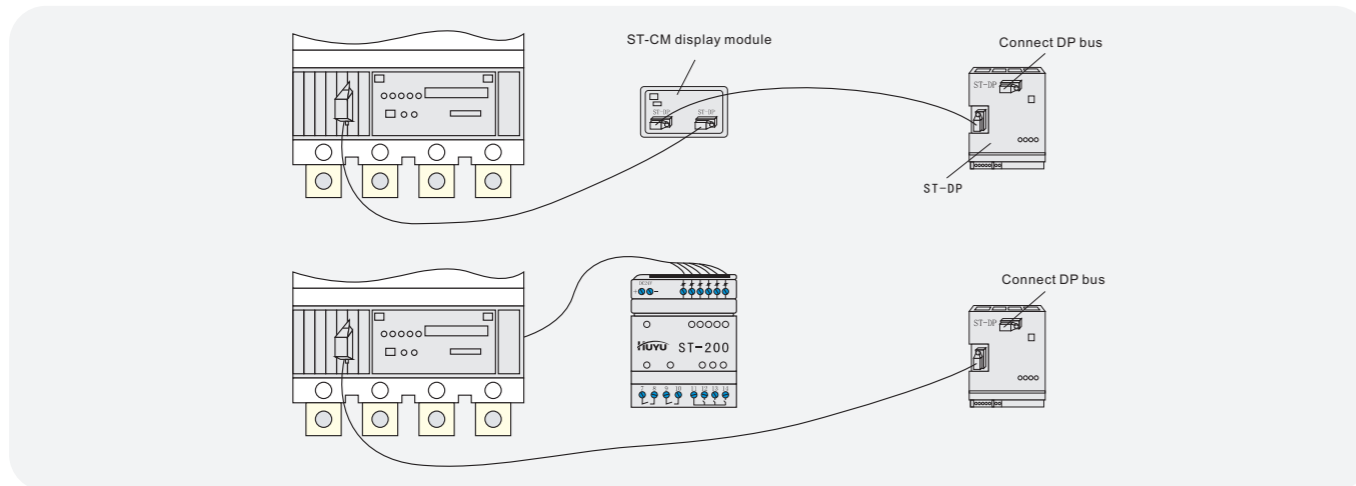
Picture 12



Picture 13



Picture 14



Two stage power distribution

HUM8

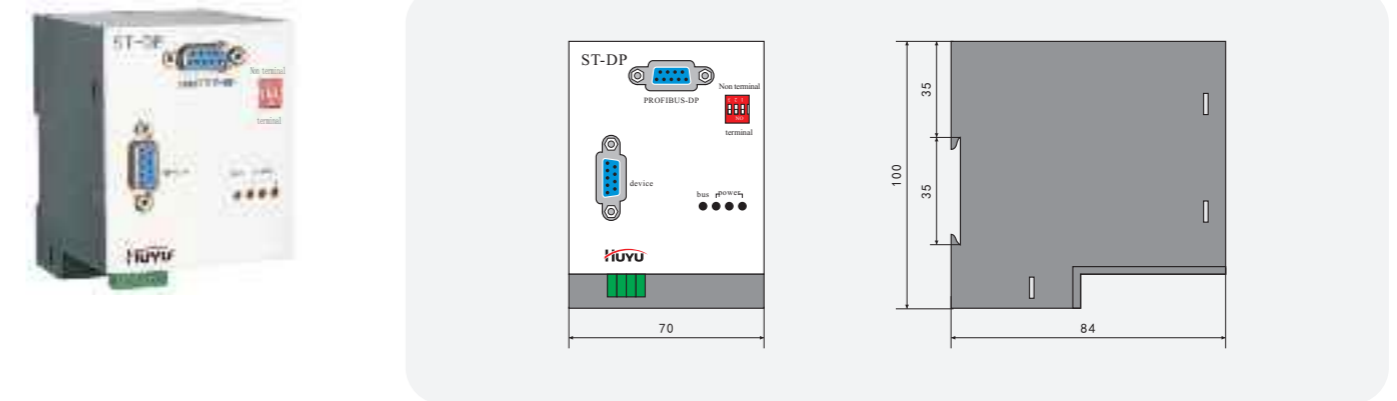
Series Moulded Case Circuit Breaker

3. Accessories matched with intelligent controller

3.1. ST-DP communication protocol module

ST-DP is the communication interface converter, which is compatible with the H type intelligent controller (see Drawing 14), and can realize the centralized monitoring and management of the microcomputer based on the Profibus-DP protocol. ST-DP module installs rail safety with 35mm standard mounting, shape and mounting dimensions are shown in picture 15.

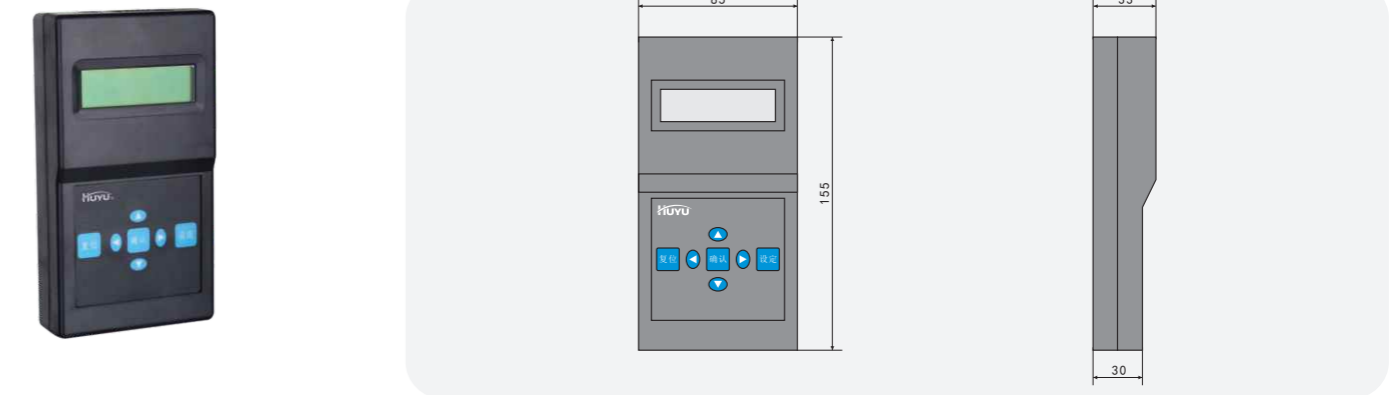
Picture 15



3.2. ST Type hand-held programmer

ST hand-held programming uses RS485 interface, can be used for H type intelligent controller parameters tuning (see Drawing 12, 13). The outline dimension of ST hand-held programmer is shown in picture 16.

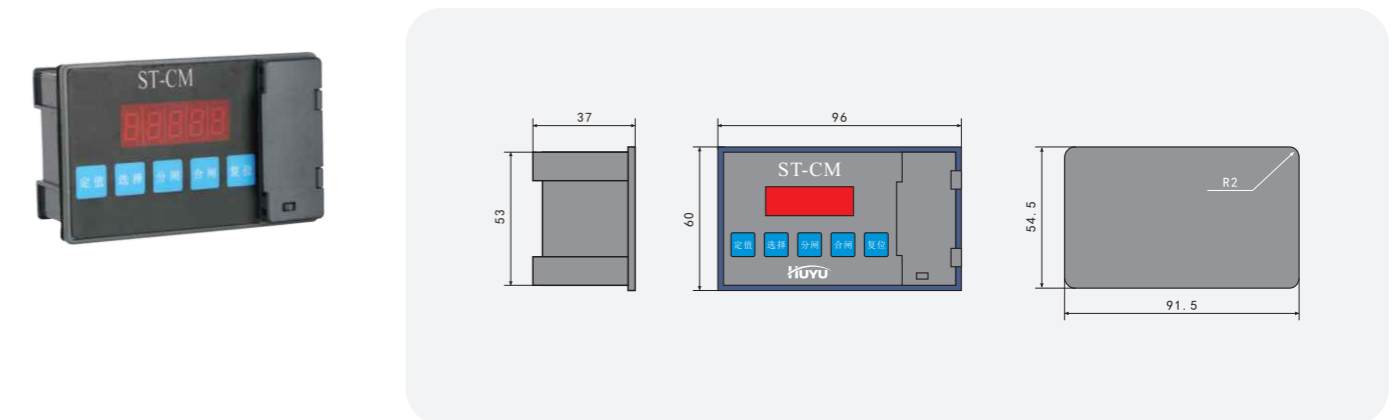
Picture 16



3.3 ST-CM Display module

The ST-CM Display module is used in conjunction with the H type intelligent controller for monitoring the field operating parameters (see Drawing 13, 14). The module needs DC24V Auxiliary power supply. ST-CM display module size see picture 17.

Picture 17



Two stage power distribution

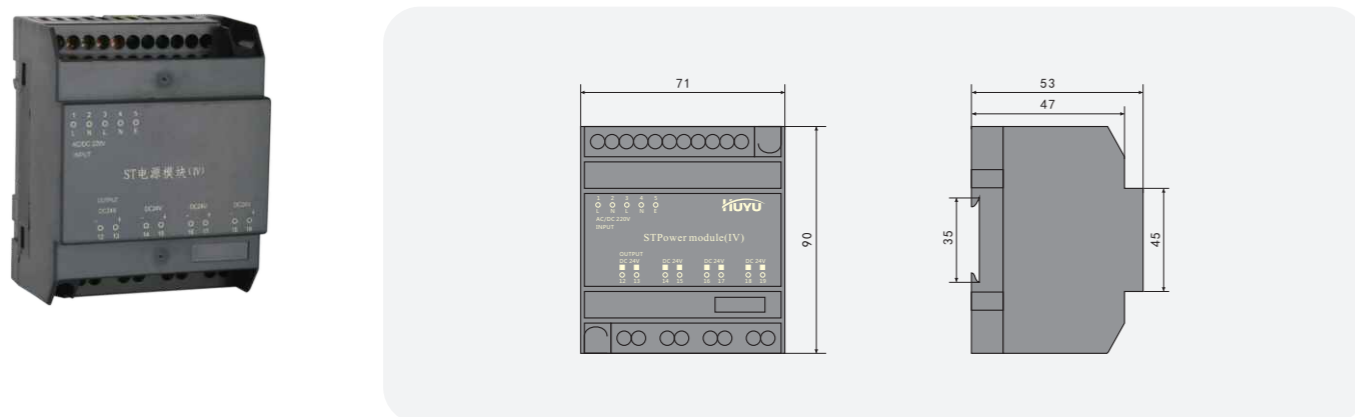
HUM8

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3.4 ST200 control module

The ST200 control module is used in conjunction with the H type intelligent controller, and the light dividing signal of the intelligent controller is converted into the contact signal output (see Drawing 12 and 14), and the ST200 module is installed with the 35mm standard mounting, shape and mounting dimensions are shown in picture 18.

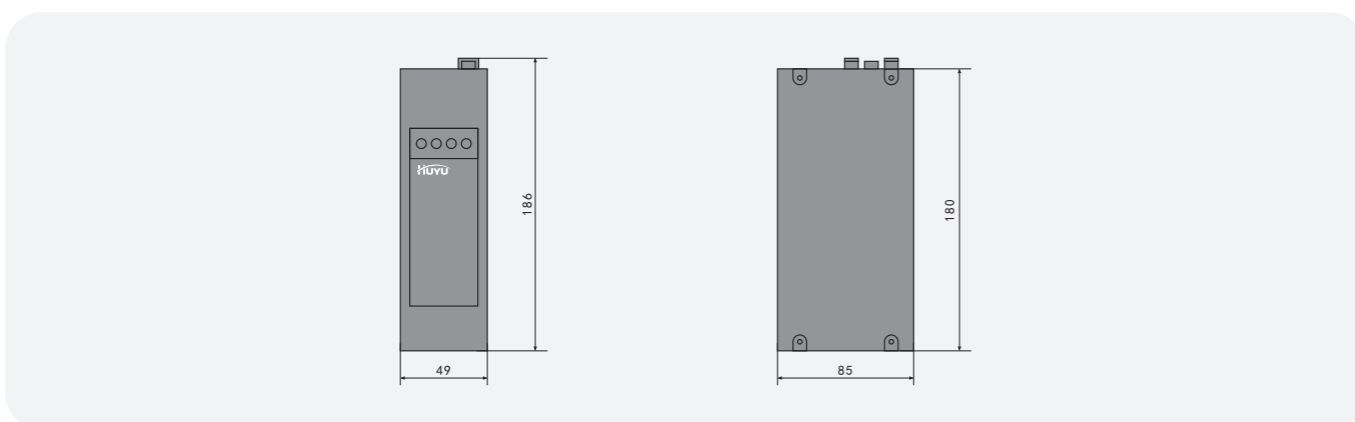
Picture 18



3.5 Testing power module

It is used for tripping test of M and H type intelligent controllers, and its shape and mounting dimensions are shown in picture 19.

Picture 19



4. The use of intelligent controllers and precautions

4.1 Intelligent controller over-current protection features tuning

If the user re-adjusts the over-current protection feature of the intelligent controller, it should be operated by a professional

4.1.1 M-type intelligent controller tuning

Open the M-type intelligent controller panel protective cover, then use a small screwdriver to rotate the six tuning buttons (see picture 7) to tune the parameters.

4.1.2 H-type intelligent controller tuning

ST-type hand-held programmer is necessary to tune the protection characteristics of H-type intelligent controller, see "ST programmer's manual."

4.1.3. Note: Require $I_{r1} < I_{r2} < I_{r3}$.

4.2 Intelligent controller tripping test

After setting the intelligent controller, after the repairment of the circuit breaker and during periodic inspection of it, the user needs to use the test power module to carry out the tripping test through the test socket on the intelligent controller panel to check whether the release device is intact and whether the circuit breaker can trip.

4.3 H-type intelligent controller fault checking function

After the over-current breaking of circuit breaker, H-type intelligent controller still has the fault memory function when there is auxiliary power supply. After re-energizing, press the "Check" key of the ST-CM display module to display the cause of the fault. If a new fault occurs again, the previous fault memory will be cleared and a new fault memory will be retained.

4.4 Maintenance of intelligent controller

4.4.1 Circuit breaker in transportation, installation and use, should pay attention to the protection of intelligent controller, to prevent violent vibration and impact.

4.4.2 The panel cover of intelligent controller should not be opened at random, in case that the protective characteristic parameters have been changed or the electronic devices in the panel are damaged.

4.4.3 Before the operation of circuit breaker, the professional personnel should check whether the various characteristic parameters of the intelligent controller are

Set correctly, whether the connection between the intelligent controller and the supporting module is correct, and whether the intelligent controller is in the normal working state.

4.4.4 During the operation of intelligent controller, the user can check the operation status of circuit breaker and intelligent controller by observing the indicator light on the panel, and deal with the abnormal situation in time.

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7. Structure characteristic

The circuit breaker has been successfully developed with the advanced international advanced technology in 90s, its main features are as follows:

7.1. The use of advanced arc extinguishing technology, short circuit breaking ability, a full range of zero arc

The product is placed with arc insulation material beside the static and dynamic contacts. On the one hand, the function is to limit the arc root area; on the other hand, the insulating material produces a large amount of gas under high arc temperature, improves the arc zone pressure, cools the arc, enhances the arc zone elimination effect, increases the arc column resistance and increases the arc voltage. Under the dual action of the loop electric force and the iron grid attraction, the arc enters the gate arc extinguishing chamber and is divided into multi section short arc, which makes the arc voltage rise greatly due to the near cathode effect. When the supply voltage does not maintain the arc voltage, the arc will be extinguished. A multi layer free net is installed outside the arc extinguishing chamber to make the arc distance zero.

7.2. Advanced design of operating mechanism

The operating mechanism of the product is stable and reliable. The lock of the mechanism is reliably closed during normal operation. The tripping force of the mechanism is small. The tripping force of the 400A ~ 800A frame mechanism is increased by a magnifying mechanism to ensure the reliable disconnection when over current.

100 A ~ 250A shell of the operating mechanism is more novel. When tripping at over current, the contact distance of circuit breaker is much larger than the normal tripping (about 50% increase). This is conducive to improve the short circuit breaking capacity.

7.3. Adopt micro-electronic technology and achieve intelligent control

$I_{nm}=100A\sim 1250A$ not only has thermal electromagnetic release, it also has electronic release and intelligent release.

7.3.1. Electronic release is replaced by current transformer and electronic device for traditional thermal and electromagnetic release. It has the function of setting protective characteristic parameters on the panel, easy to use and maintain accuracy.

7.3.2. Intelligent release has serial communication interface, no panel parameter setting function. Through the communication interface, use the programmer or host computer to set protection characteristic parameter, also meets the communication network "four remote".

The dynamic and static contacts are placed with arc resistant insulating materials; the circuit breaker is in the normal breaking position



The breaker is in the tripping and breaking position, and the contact opening distance is greater than the normal breaking position



4. Complete accessories

The accessories of circuit breaker are divided into two types: internal accessories and external accessories.

4.1. Internal accessories have auxiliary contacts, alarm contacts, shunt release, under-voltage release. These accessories can be easily installed in the special accessory box (the installation process, refer to under pictures), which has a special terminal block.

1. Press the tripping button to break the circuit breaker
2. Unscrew the front cover screw
3. Install the internal accessories
4. Close the front cover and tighten the screw



Attention should be paid to the release of the circuit breaker when installing accessories.

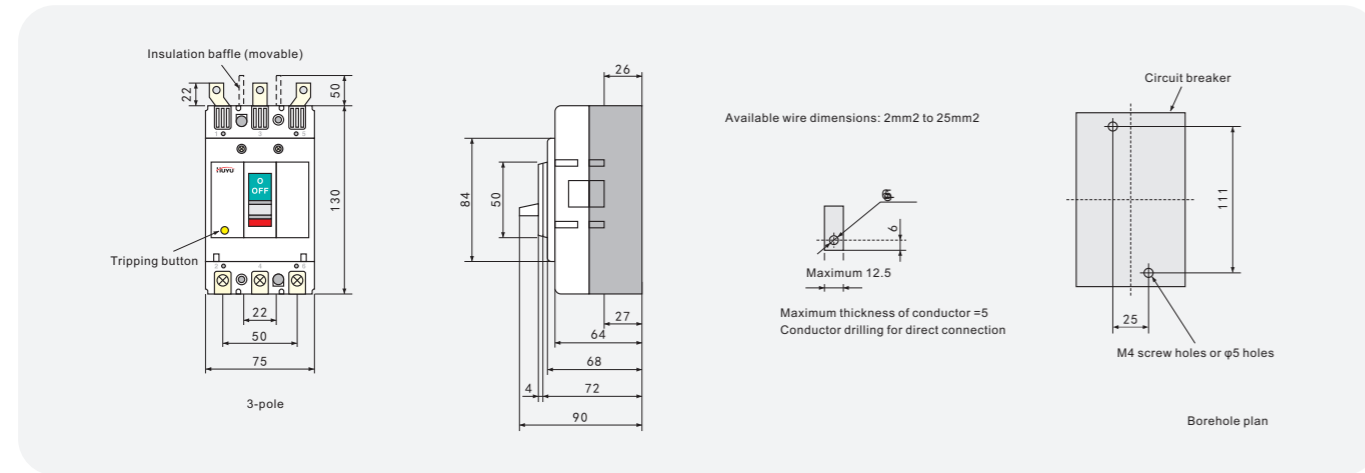
Two stage power distribution

HUM8

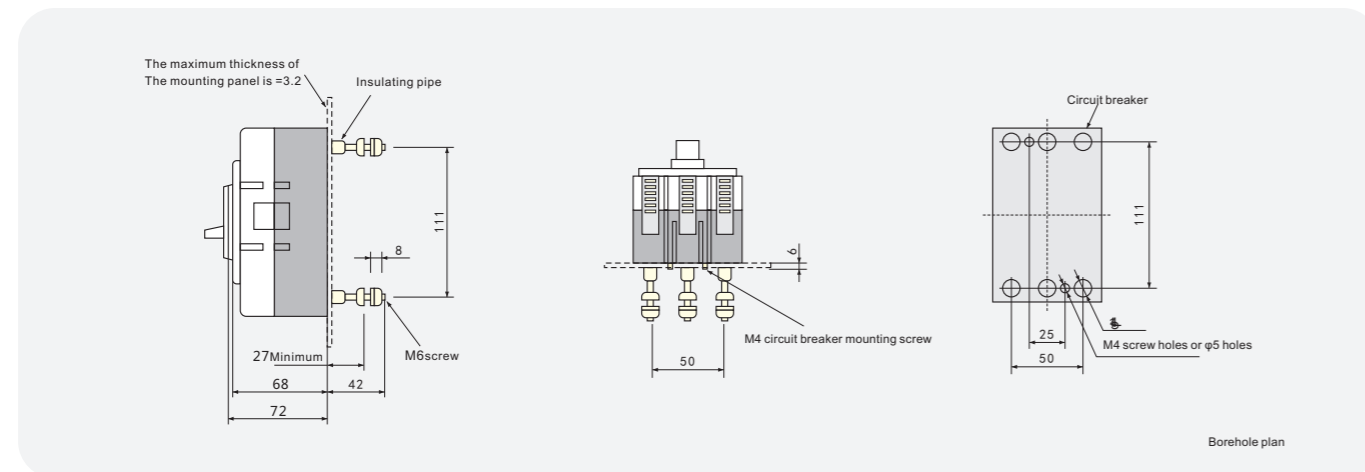
Series Moulded Case Circuit Breaker

8. Overall and mounting dimension

1. HUM8-63 overall and mounting dimensions:
Front panel connection

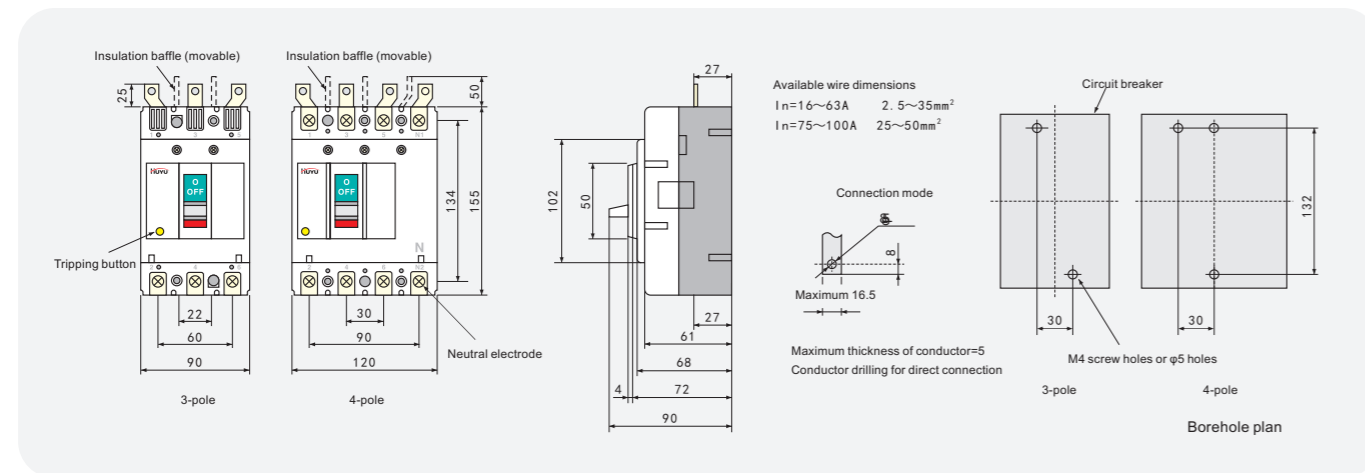


Post plate connection



2. HUM8-100C, HUM8-100S, HUM8D-100C, HUM8D-100S overall and mounting dimensions

Post plate connection

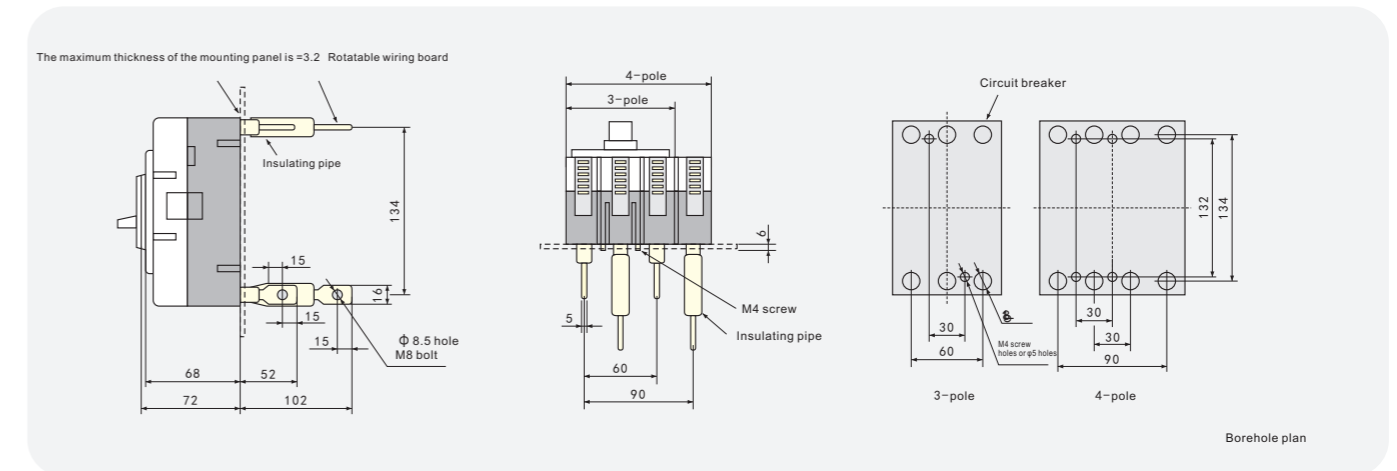


Two stage power distribution

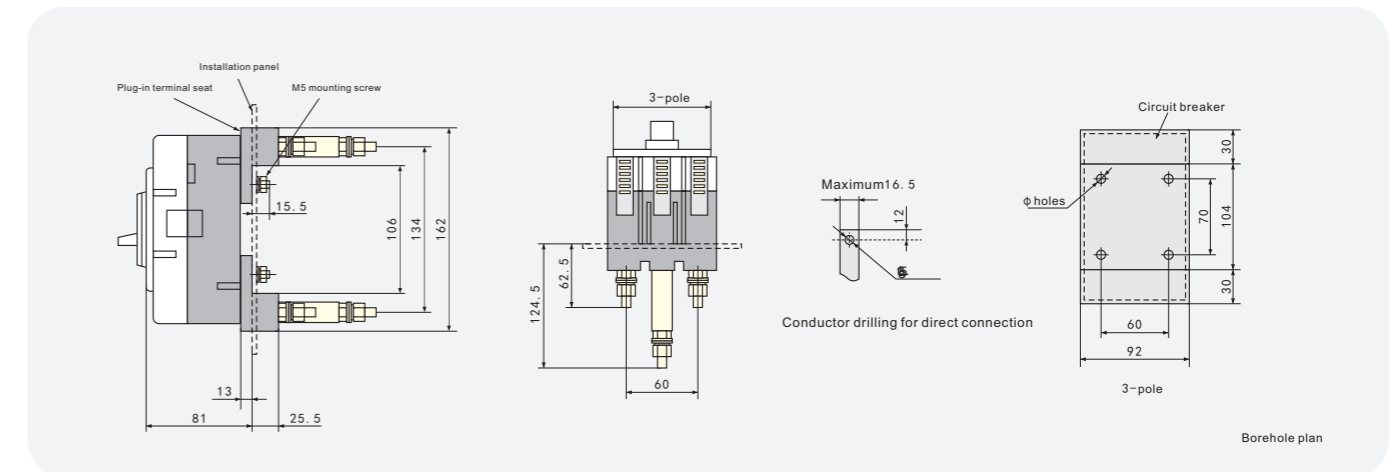
HUM8

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Post plate connection

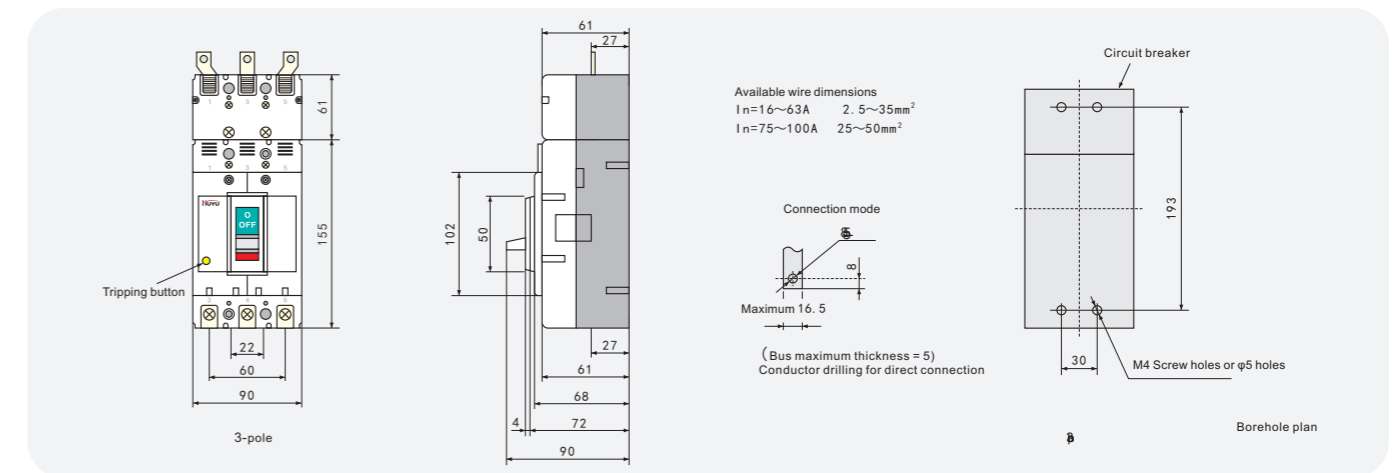


Plug-in connection



3. HUM8-100H, HUM8-100U, HUM8D-100H overall and mounting dimensions

Front panel connection

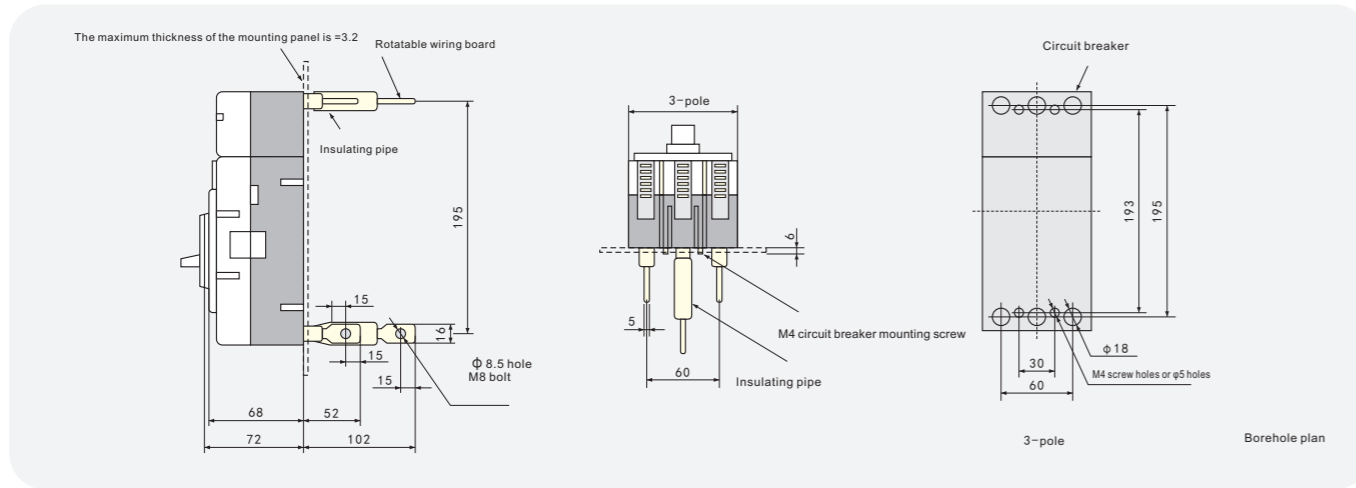


Two stage power distribution

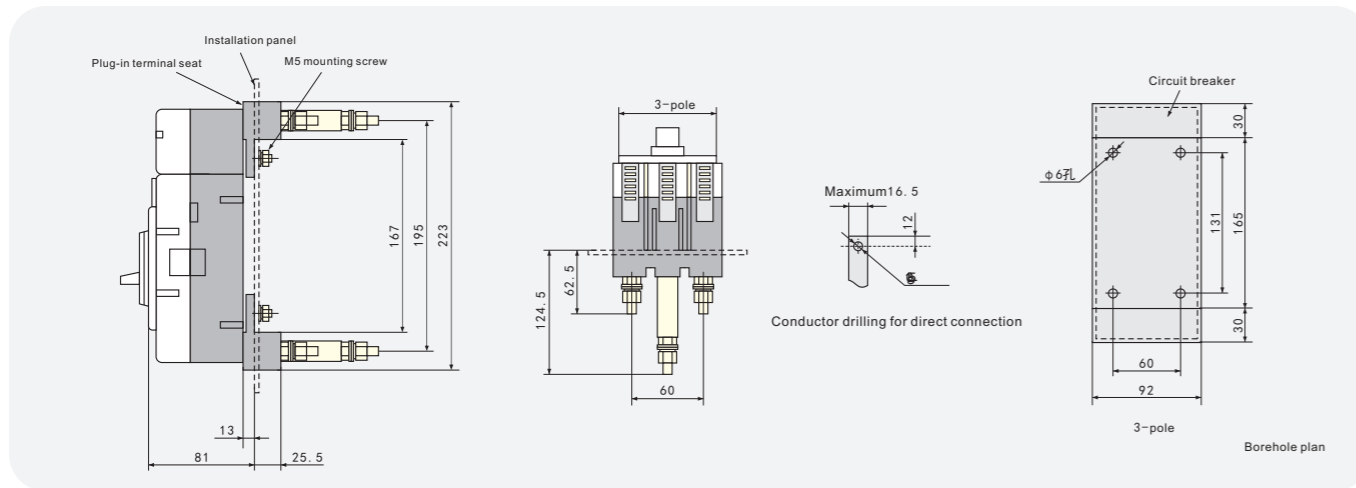
HUM8

Series Moulded Case Circuit Breaker

Post plate connection

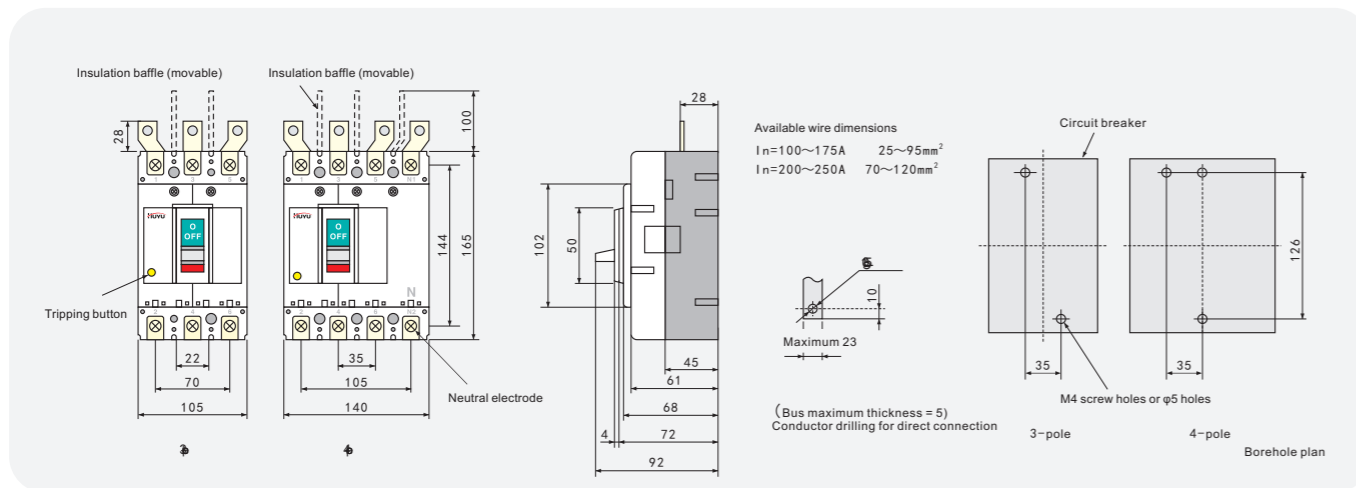


Plug-in connection



4. HUM8-250C, HUM8-250S, HUM8D-250C, HUM8D-250S overall and mounting dimensions

Front panel connection

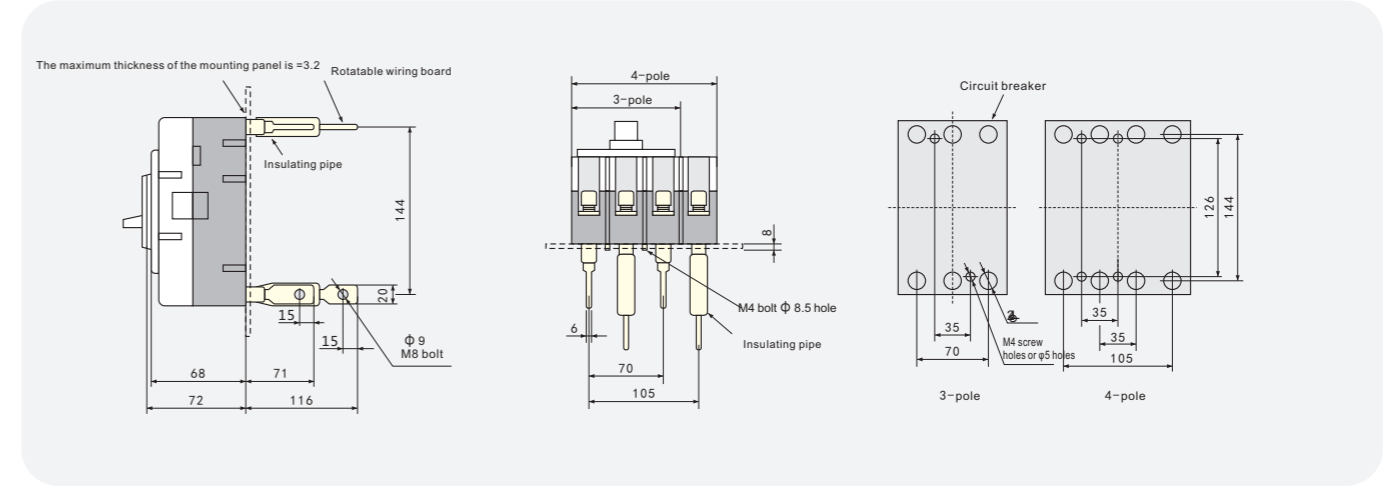


Two stage power distribution

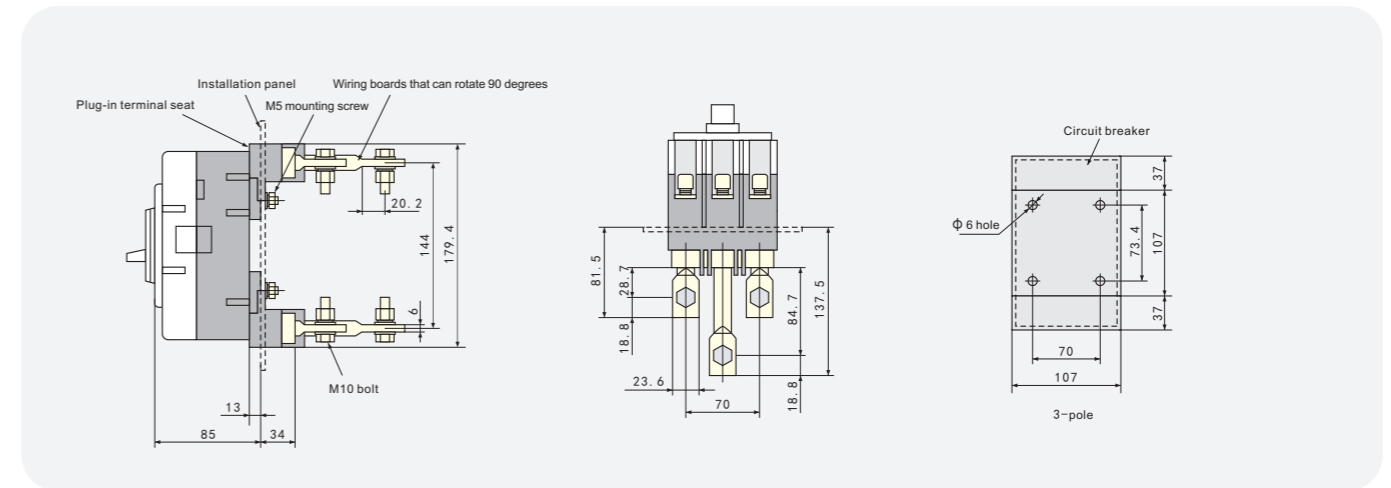
HUM8

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Post plate connection

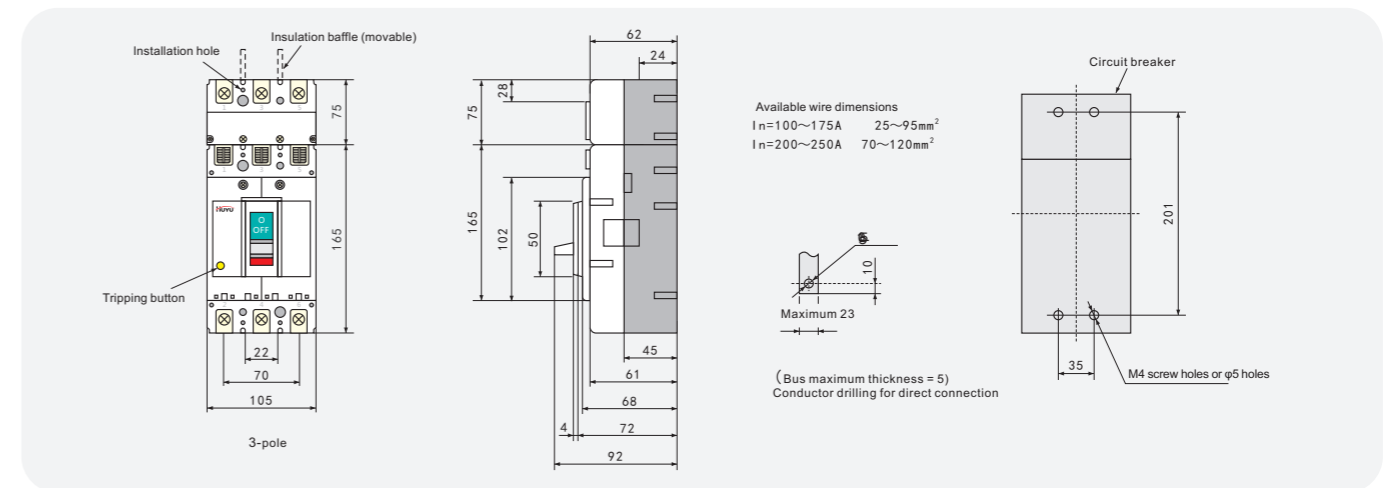


Plug-in connection



5. HUM8-250H, HUM8-250U, HUM8D-250H, HUM8D-250U overall and mounting dimensions

Front panel connection

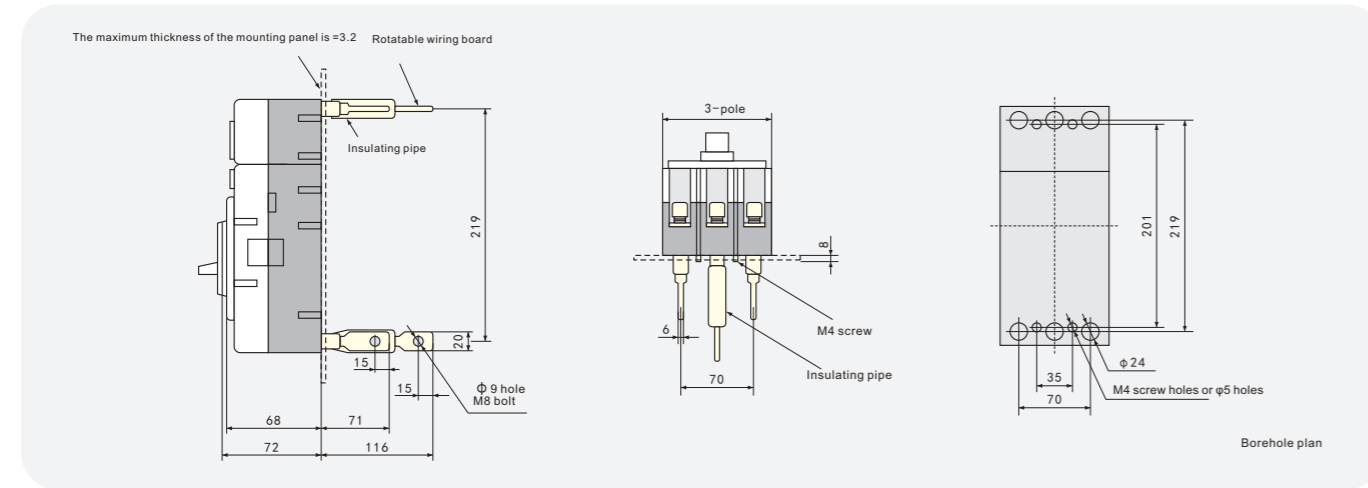


Two stage power distribution

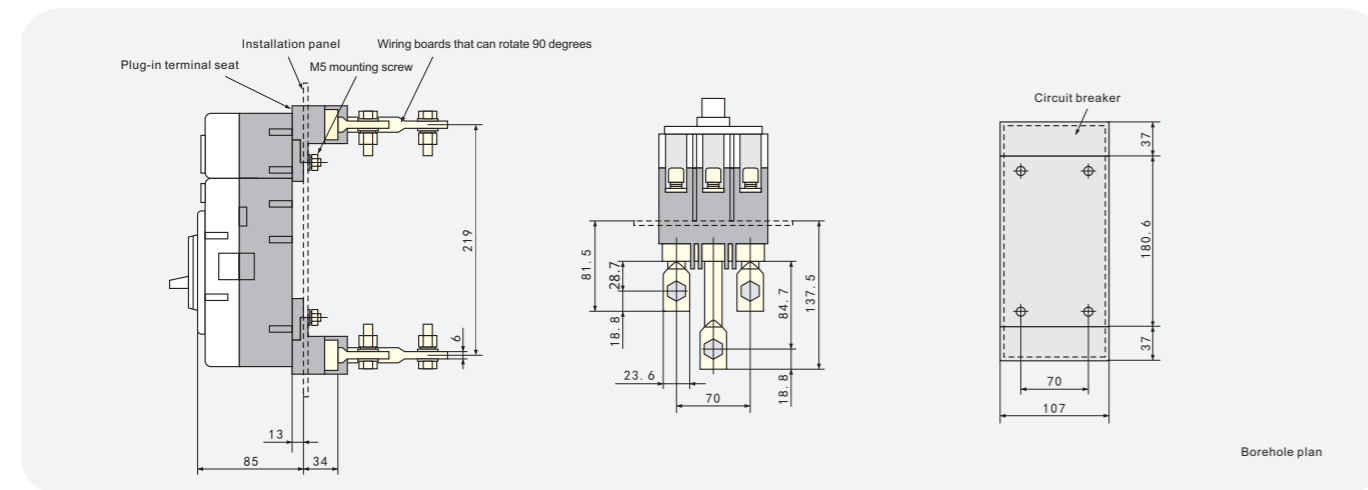
HUM8

Series Moulded Case Circuit Breaker

Post plate connection

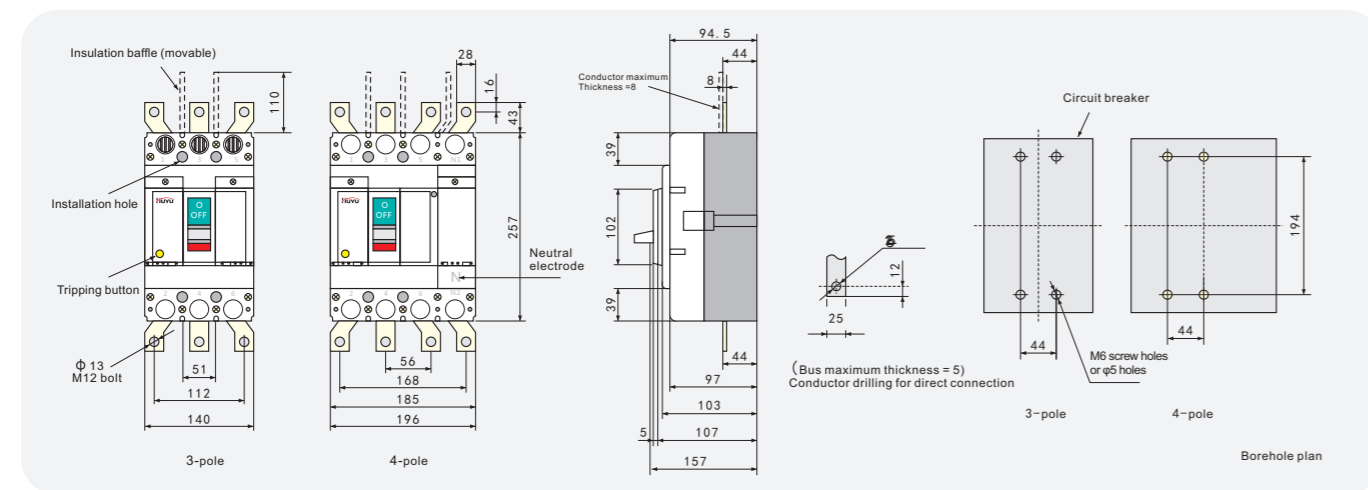


Plug-in connection



6. HUM8-400C, HUM8-400S, HUM8D-400C, HUM8D-400S overall and mounting dimensions

Front panel connection

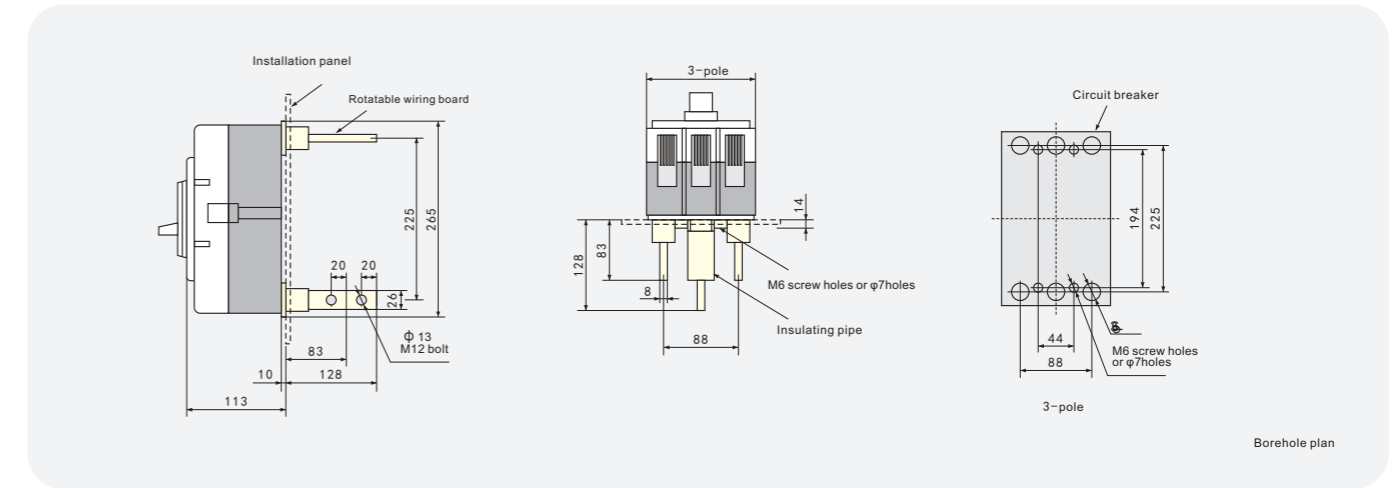


Two stage power distribution

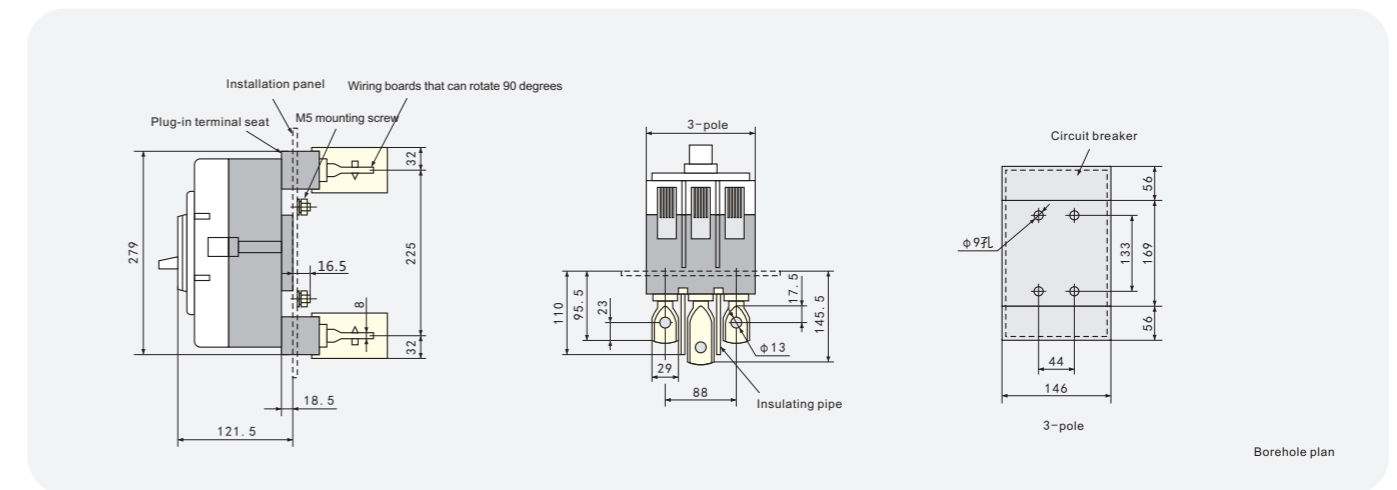
HUM8

Series Moulded Case Circuit Breaker

Post plate connection

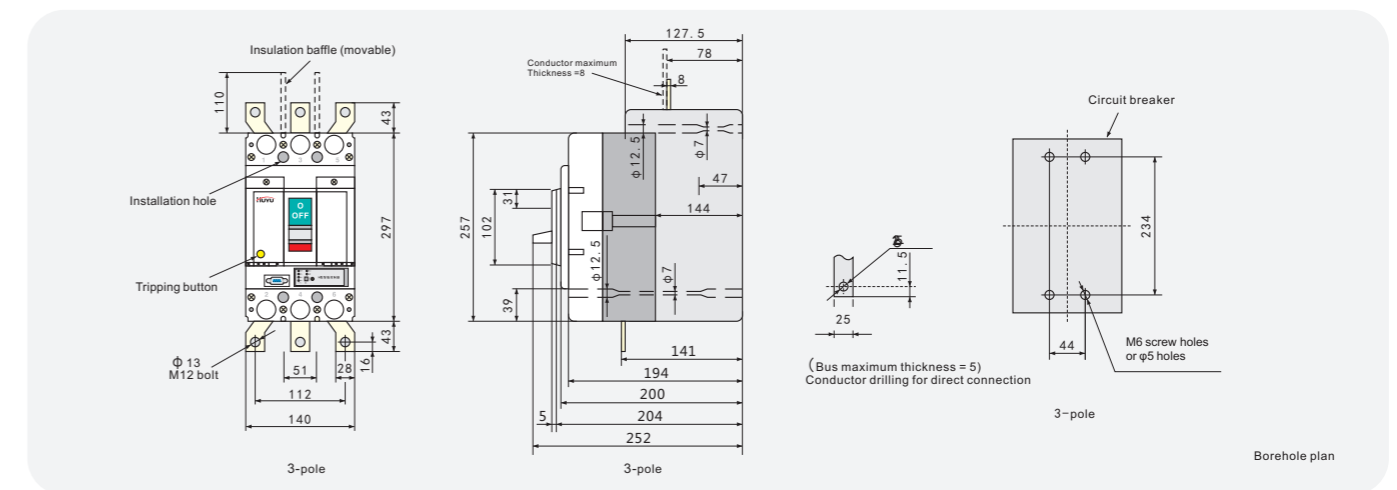


Plug-in connection



7. HUM8-400H, HUM8-400U, HUM8D-400H, HUM8D-400U overall and mounting dimensions

Front panel connection

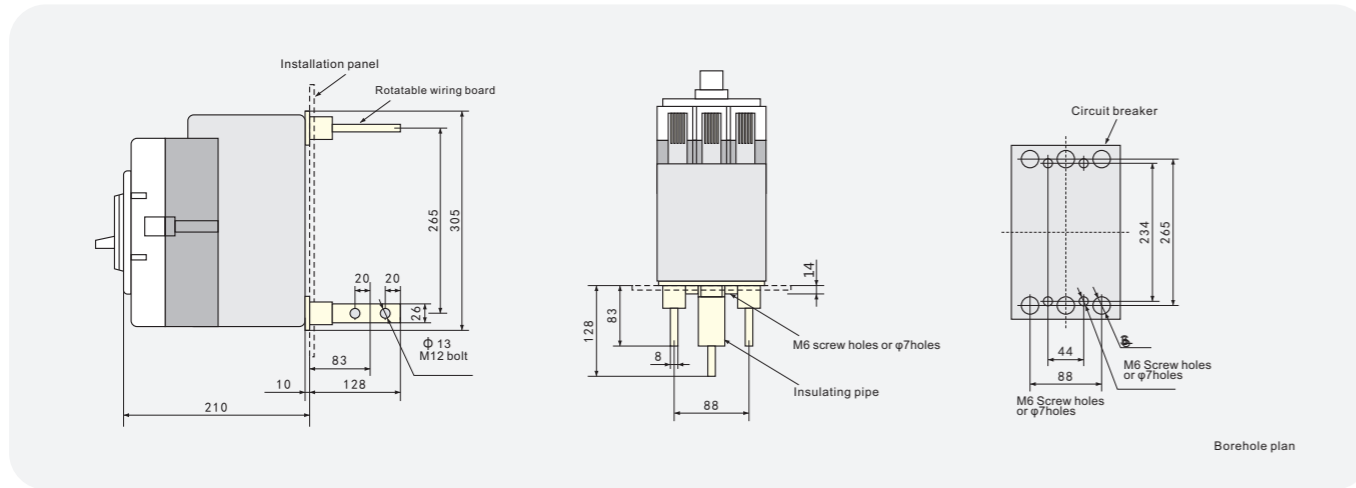


Two stage power distribution

HUM8

Series Moulded Case Circuit Breaker

Post plate connection

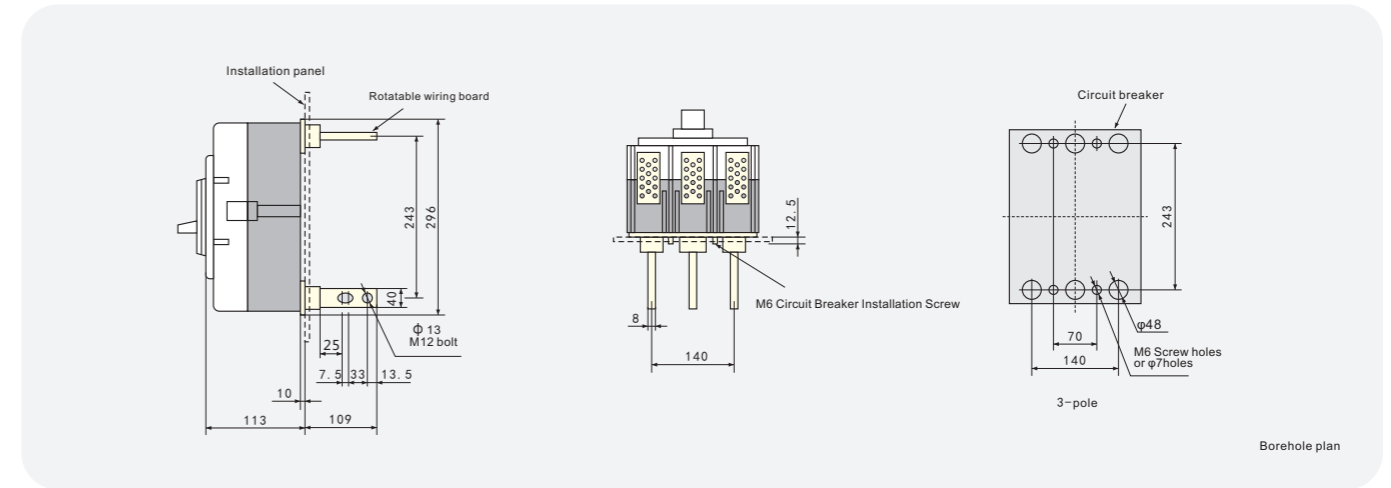


Two stage power distribution

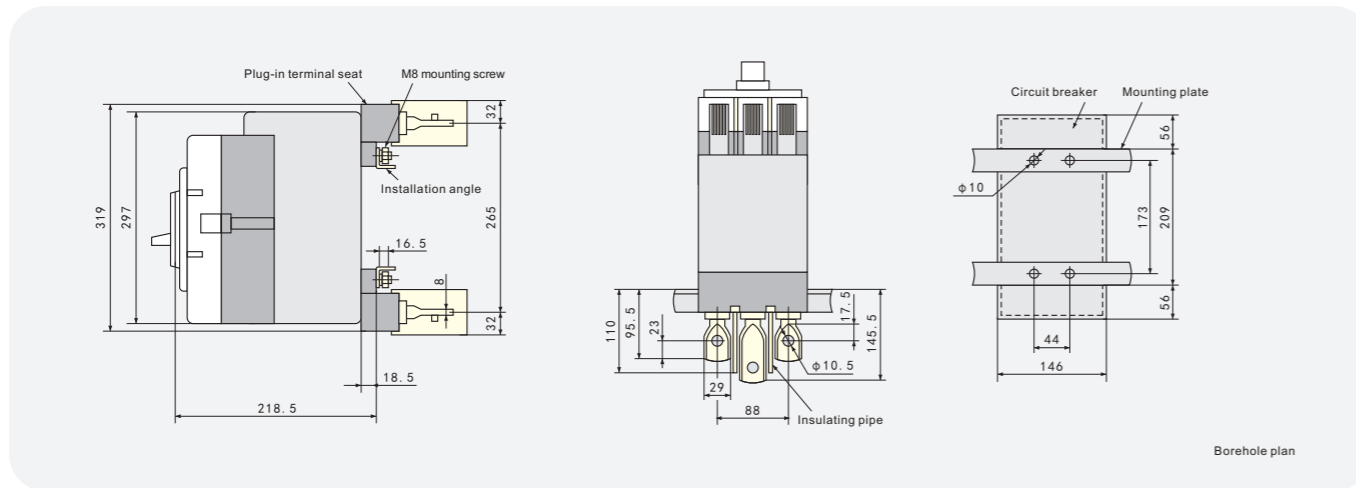
HUM8

Series Moulded Case Circuit Breaker

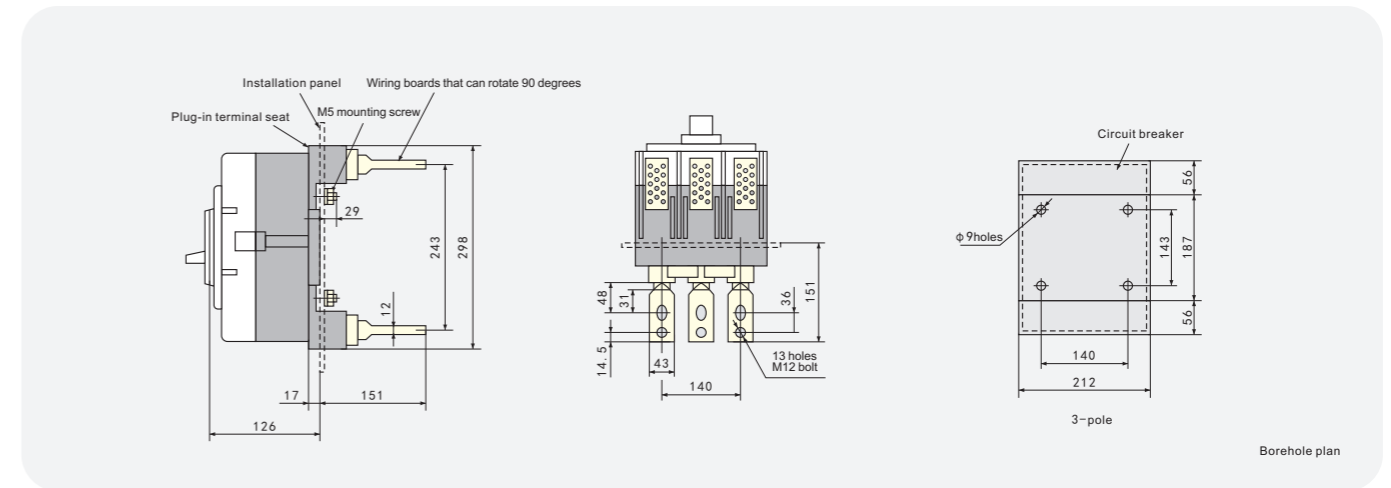
Post plate connection



Plug-in connection

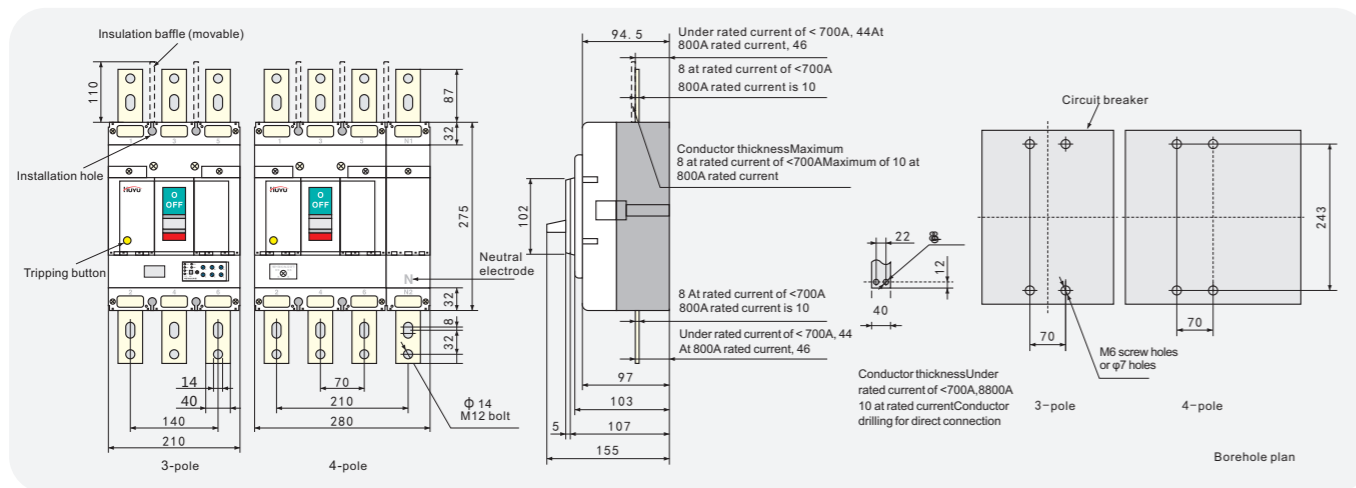


Plug-in connection



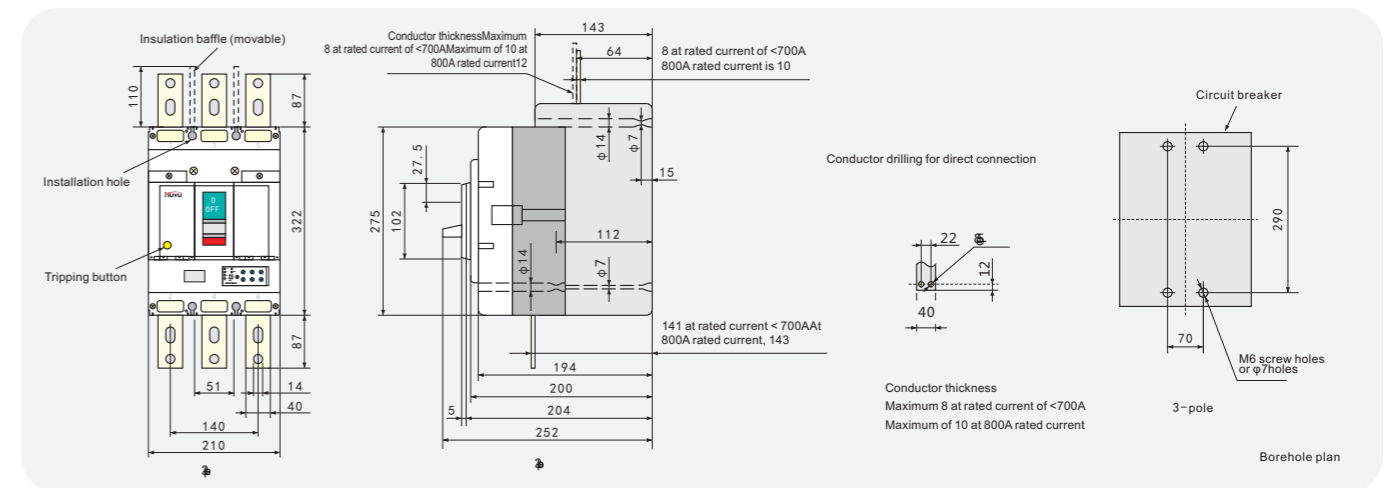
8. HUM8-630C, HUM8-630S, HUM8D-630C, HUM8D-630S, HUM8-800C, HUM8-800S, HUM8D-800C, HUM8D-800S Overall and mounting dimensions

Front panel connection



9. HUM8-630H, HUM8D-630H, HUM8-630U, HUM8D-630U, HUM8-800H, HUM8D-800H, HUM8-800U, HUM8D-800U Overall and mounting dimensions

Front panel connection

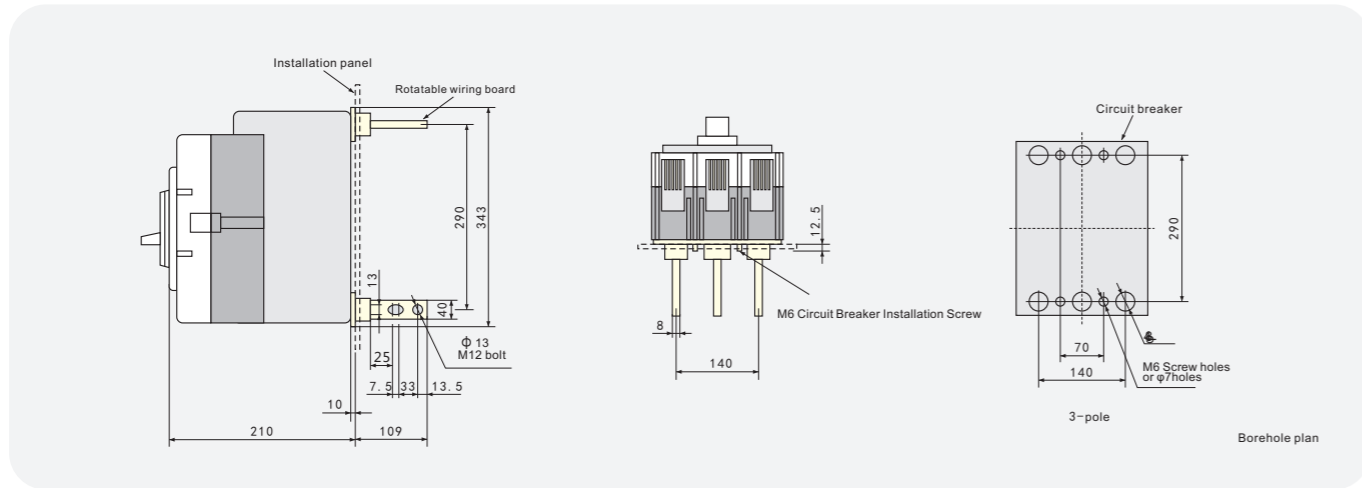


Two stage power distribution

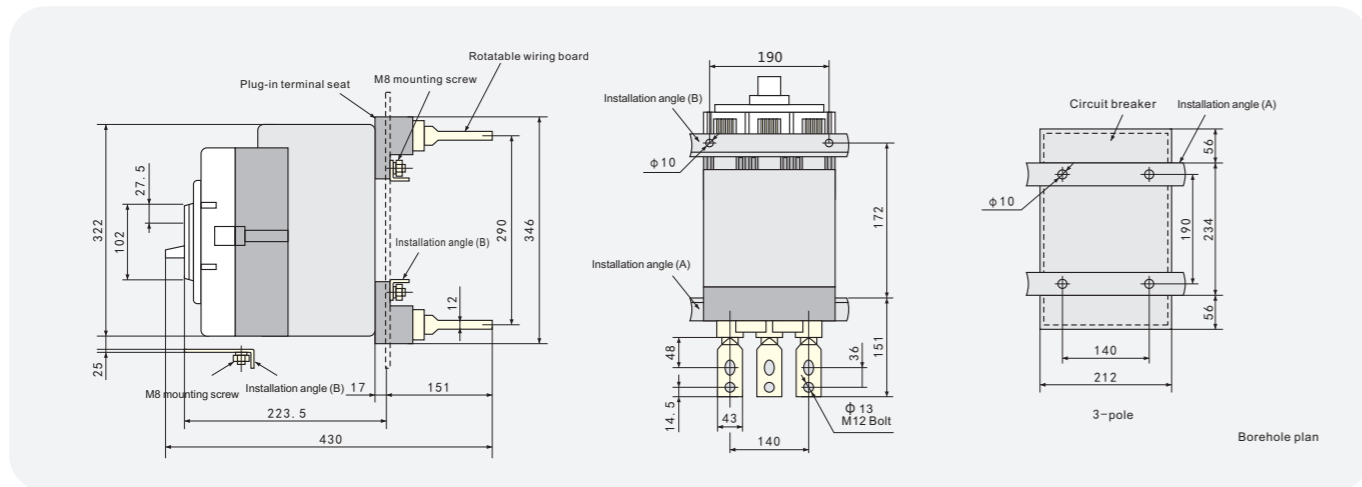
HUM8

Series Moulded Case Circuit Breaker

Post plate connection

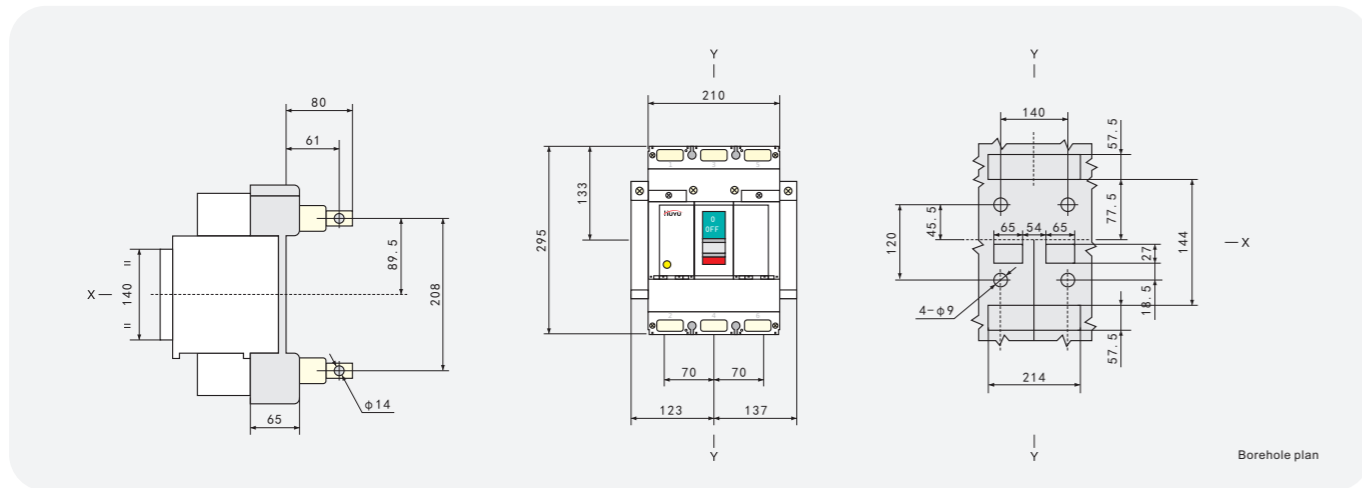


Plug-in connection



10. Shape and installation dimensions of CH-1 plate back wiring extraction device (only three poles)

Applicable products: HUM8-630C, HUM8-630S, HUM8D-630C, HUM8D-630S, HUM8-800C, HUM8-800S, HUM8D-800C, HUM8D-800S



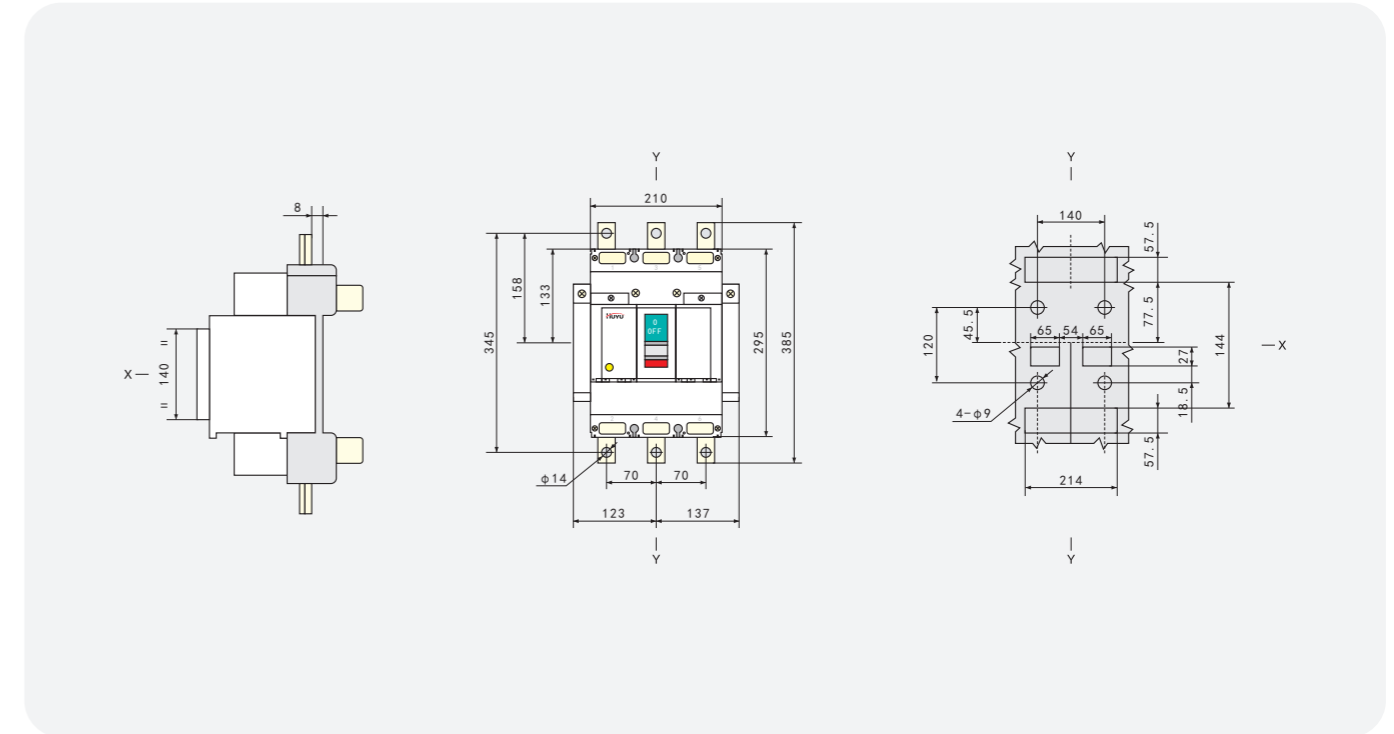
Two stage power distribution

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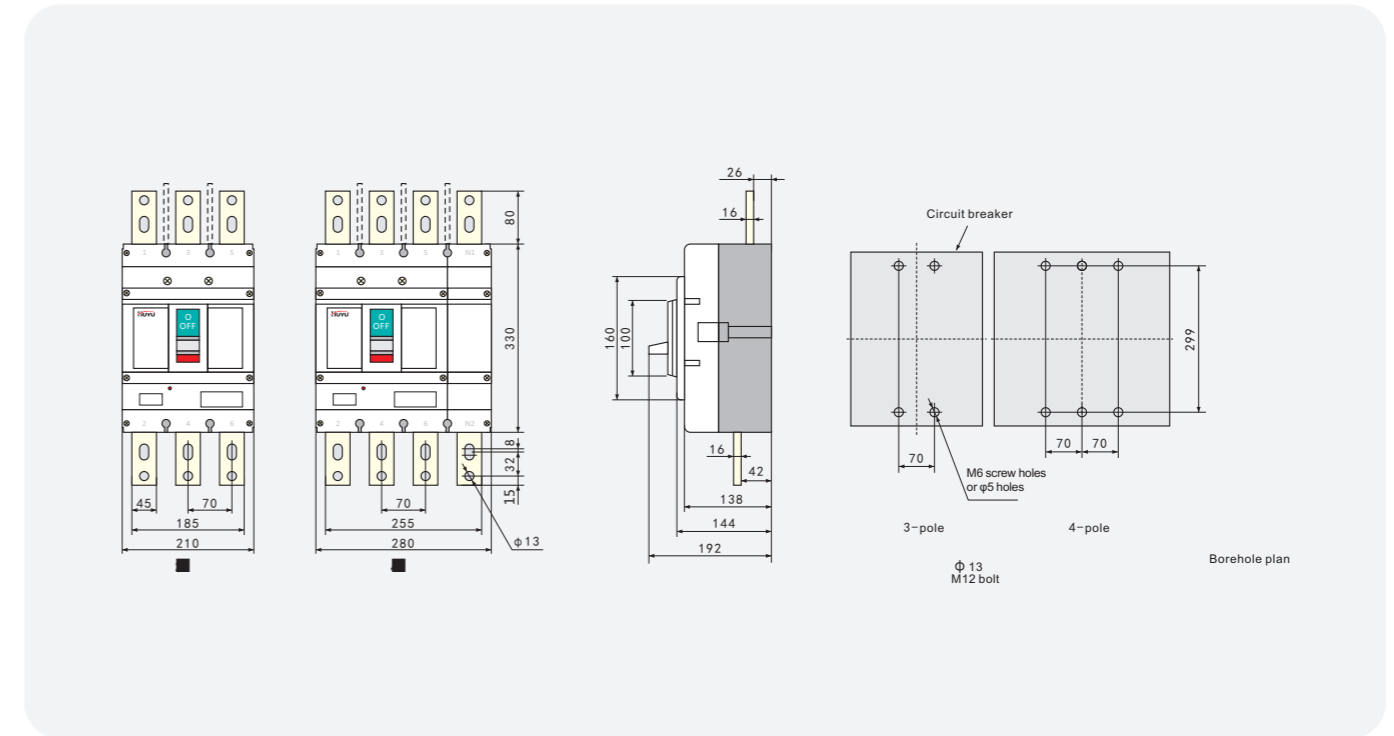
11. Shape and Installation Dimension of CH-1 Type Plate Front Wiring Pull-out Device (Only Three Poles)

Applicable products: HUM8-630C, HUM8-630S, HUM8D-630C, HUM8D-630S, HUM8-800C, HUM8-800S, HUM8D-800C, HUM8D-800S



12. HUM8D-1250 Configuration and Installation Dimensions

Post plate connection



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9. Accessories of the circuit breaker

9.1. Complete specifications

9.1.1 According to the grade of the shell frame, it is divided into 7 specifications from 63A to 1250A.

9.1.2 According to the rated current of the tripping device, there are 34 grades from 10A to 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-limiting type

9.1.4 There are two types of over-current release. One kind is the thermoelectric magnetic tripping device, the other is the digital electronic tripping device (intelligent controller).

9.1.5 According to the utilization category, it is divided into:

Class A: In case of short circuit, the circuit breaker is not clear as a series of short circuit protection in the load side of the selective protection of electrical appliances

Class B: in the case of short circuit, the circuit breaker is clearly used as a selective protection for another short circuit protection device in series on its load side.

9.1.6 : According to the connection mode:

Front panel connection, post plate connection and plug-in connection.

Circuit breakers for 630A and above have withdrawable devices. The device connects or isolates the circuit breaker and the circuit through the rotation of the remote rod.

2. Annex model list:

Accessory model	Frame size current	Specification	Note
	HUM8-63		3P
	HUM8-100		3P、4P
	HUM8-250		3P、4P
	HUM8-400		3P、4P
	HUM8-630		3P、4P
	HUM8-800		3P、4P
	HUM8-63		3P
	HUM8-100		3P、4P
	HUM8-250		3P、4P
	HUM8-400		3P
	HUM8-630		3P
	HUM8-800		3P
	HUM8-100	CR2	3P
	HUM8-250	CR3	3P
	HUM8-400	CR4	3P
	HUM8-630	CR5	3P
	HUM8-800	Cr5	3P
		HUM8-63	CS1-63
HUM8-100		CS1-100	3P、4P
HUM8-250		CS1-250	3P、4P
HUM8-400		CS1-400	3P、4P
HUM8-630		CS1-630	3P、4P
HUM8-800		CS1-800	3P、4P
	HUM8-63	MDX0	AC110~230V 50Hz DC110~220V
	HUM8-100	MDX1	
	HUM8-250	MDX2	
	HUM8-400	MDX3	
	HUM8-630	MDX4	
	HUM8-800	MDX4	

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Continuous 2. Annex model list:

Accessory model	Frame size current	Specification	Note
	HUM8-63	FL1	AC: 110V、230V、400V DC: 24V、48V、110V
	HUM8-100	FL2	
	HUM8-250	FL3	
	HUM8-400	FL4	
	HUM8-630	FL4	
	HUM8-800	FL4	
	HUM8-63	QY1	AC: 110V、230V、400V DC: 24V、48V、110V
	HUM8-100	QY2	
	HUM8-250	QY3	
	HUM8-400	QY4	
	HUM8-630	QY4	
	HUM8-800	QY4	
	HUM8-63	F1	
	HUM8-100	F2	
	HUM8-250	F3	
	HUM8-400	F4	
	HUM8-630	F4	
	HUM8-800	F4	
	HUM8-63	B1	
	HUM8-100	B2	
	HUM8-250	B3	
	HUM8-400	B4	
	HUM8-630	B4	
	HUM8-800	B4	
	HUM8-63	3P (N1-3)	
	HUM8-100	3P (N2-3) 4P (N2-4)	
	HUM8-250	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)	