



General

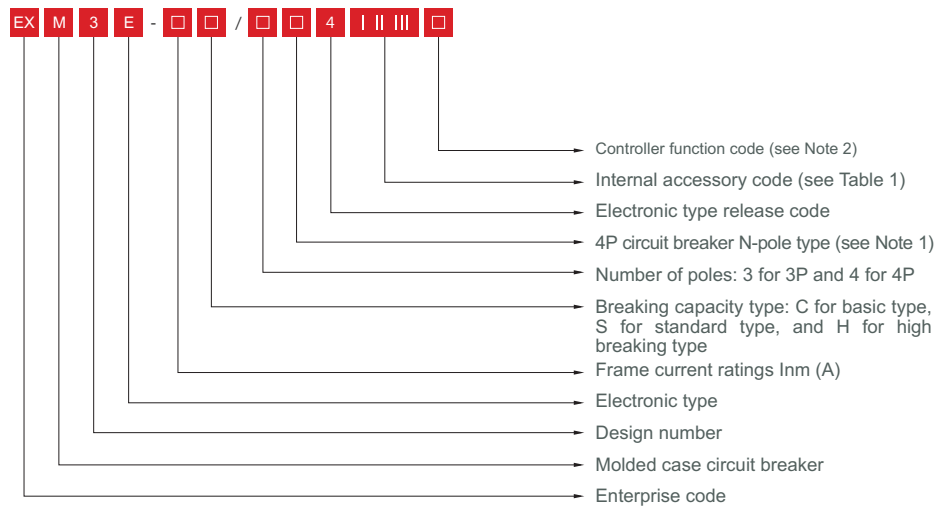
The EXM3E electronic-type molded case circuit breakers (hereafter as the MCCBs) are developed with global leading technology, featuring advanced design, offering reliable performance, powerful technical features, easy maintenance, sleek design, and small size.

The EXM3E MCCBs are suitable for use in electric systems of AC 50Hz/60Hz, with the rated insulation voltage of up to 1,000V and rated current of up to 630A, to distribute electrical energy, protect circuits and power equipment from hazards due to overload, short-circuit, under-voltage, and other faults, and control infrequent motor operations.

The EXM3E MCCBs offer Type C (basic), Type S (standard), and Type H (high breaking) based on the rated ultimate short-circuit breaking capacity.

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

Product Model Description



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、 320	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	Numbers of auxiliary contact pairs	0~2	Number of alarm contact pairs	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

Normal Operating Conditions

1. Applicable temperature:

Ambient air temperature: -5°C to +40°C, with the average temperature not exceeding +35°C within 24 hours;

Note: The operating ambient temperature can be extended to 35°C ~ -5°C or +40°C ~ +70°C. 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°C, 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°C, 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°C to +70°C for storage and transportation, with the relative humidity not exceeding 90%;

During transportation, handle with care, no upside down, and avoid severe collisions.

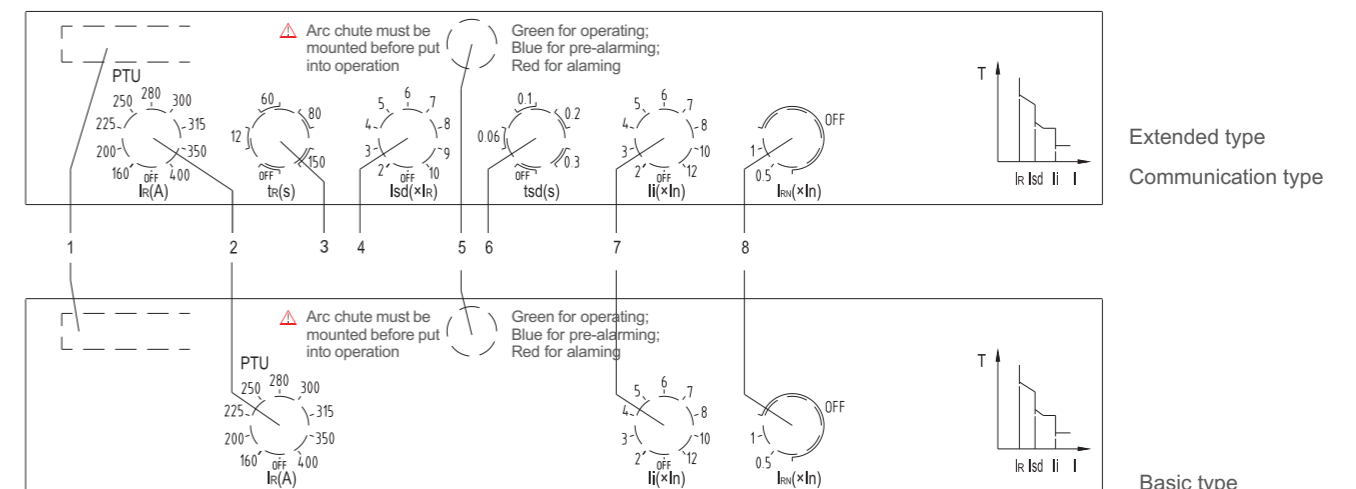
Technical data

1、 Table 2: technical data

Frame size	125			160			250			
Product model	HYM3E-125C	HYM3E-125S	HYM3E-125H	HYM3E-160C	HYM3E-160S	HYM3E-160H	HYM3E-250C	HYM3E-250S	HYM3E-250H	
Rated current In (A)	125			160			250			
Number of poles	3P/4P			3P/4P			3P/4P			
Rated insulation voltage Ui (V)	AC1000			AC1000			AC1000			
Rated impulse withstand voltage Uimp (kV)	8						12			
Arcing distance (mm)	≤50			≤50			≤50			
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
	500V	-	-	30/30	-	-	30/30	-	-	30/30
	400/415V	20/10	36/20	50/36	20/10	36/25	50/36	20/15	36/25	50/36
	240V	40/20	50/30	75/50	40/20	50/30	75/50	40/30	50/30	75/50
Rated short-time withstand current Icw (kA/1s)	AC415V	-			-			5		
Mechanical life (operations)	Maintenance free	20000								
	With maintenance	40000								
Electrical life (operations)	AC415V	10000								

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)

Table 3:technical data

Frame size	320			400			630			
Product model	EXM3E-320C	EXM3E-320S	EXM3E-320H	EXM3E-400C	EXM3E-400S	EXM3E-400H	EXM3E-630C	EXM3E-630S	EXM3E-630H	
Rated current In (A)										
Number of poles	3P/4P			3P/4P			3P/4P			
Rated insulation voltage Ui (V)										
Rated impulse withstand voltage Uimp (kV)	12									
Arcing distance (mm)										
Rated ultimate/operating short-circuit breaking capacity Icu/Ics (kA)	690V	8/5	8/5	10/5	7.5/7.5	10/7.5	15/10	7.5/7.5	10/7.5	15/10
	500V	—	—	30/30	—	—	36/36	—	—	36/36
	400/415V	20/15	36/25	50/36	40/30	50/36	70/50	40/30	50/36	70/50
	240V	40/30	50/30	75/50	50/50	75/50	100/75	50/50	75/50	100/75
Rated short-time withstand current Icw (kA/1s)	AC415V	5			5			10		
Mechanical life (operations)	Maintenance free	20000			10000			10000		
	With maintenance	40000			20000			20000		
Electrical life (operations)	AC415V	10000			8000			8000		

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 (I_{sd}) setting: Can be adjusted by users with tools, including 10 settings with I_{sd}=(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×I_R, and red when at 1.05 times I_R.The indicator will be off when the device trips;
- ⑥ Short-circuit short delay time t_{sd} setting: Can be adjusted by users with tools. See Table 5 for detailed settings;
- ⑦ Short-circuit instantaneous current I_i setting: : Can be adjusted by users with tools, including 10 settings with I_i=(2, 3, 4, 5, 6, 7, 8, 9, 10, 12)×I_n + 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
320	320	140-160-180-200-225-250-280-300-320
400	400	160-200-225-250-280-300-315-350-400
630	630	350-400-450-480-500-530-560-600-630

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 ≤320A, 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)			
	I _{sd}	Delay time (s)		0.06±0.02	0.1±0.03	0.2±0.04	0.3±0.06
Inverse time + fixed time (It2 ON)	If I > 8I _R	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 ≤ 8I _R	Inverse time delay (s)	T=(8I _R ²)×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

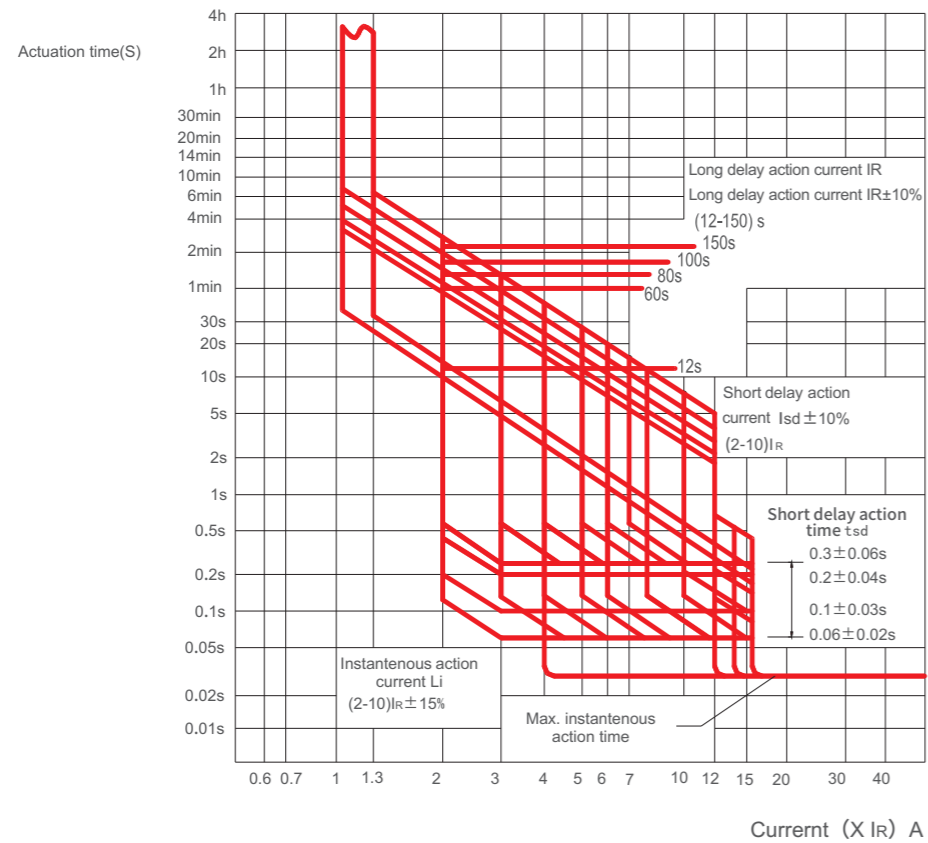
Long delay		Short delay		Instantaneous		N-pole protection	
I_r	Error	I_{sd}	Error	I_i	Error	I_n	Error
See Table 3	$\pm 10\%$	(2, 3, 4, 5, 6, 7, 8, 9, 10) $\times I_r + OFF$	$\pm 10\%$	(2, 3, 4, 5, 6, 7, 8, 10, 12) $\times I_n + OFF$	$\pm 15\%$	(0.5, 1) $\times I_n + OFF$	$\pm 10\%$

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

- a) The overload long delay I_r is set to the maximum current setting position, and t_r to "12" position.
- b) The short-circuit short delay I_{sd} 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 t_{sd} is set to 0.3s position.
- d) The short-circuit instantaneous I_i is set to "12" position
- e) The neutral pole protection is set to the "OFF" position.

3. Circuit breaker's protection characteristic curves

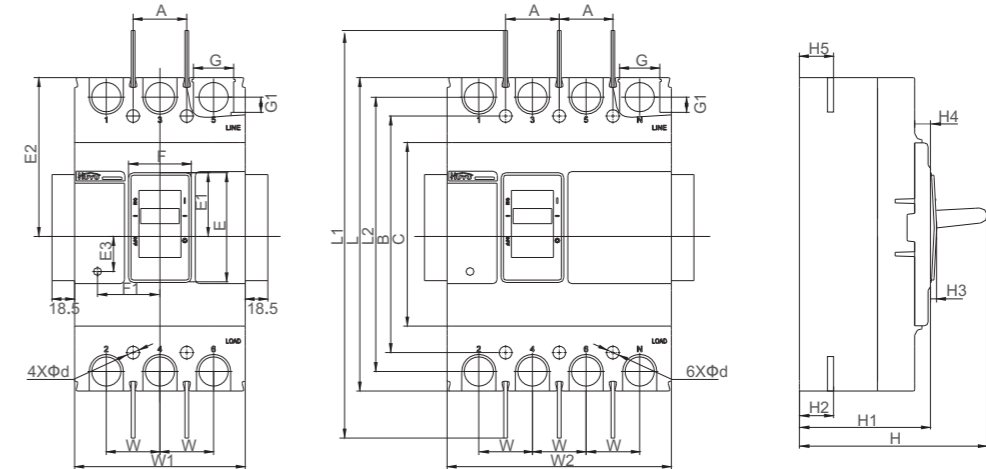
Figure 2.



Overall and mounting dimensions

1. See Figure 3 and Table 7 for EXM3E-125, 160, 250, 320, 400 and 630 front panel wiring outlines and mounting dimensions

Figure 3



2. See Figure 4 to 7 and Table 8 for EXM3E series circuit breaker rear panel wiring and plug-in type outlines and mounting dimensions

Figure 4. EXM3E-125 and 160 rear panel wiring outline and mounting dimensions

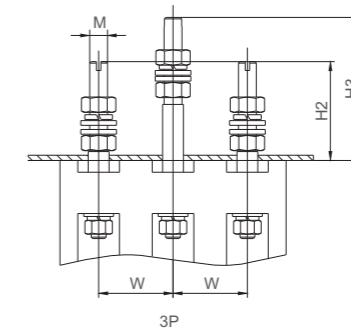


Figure 5. EXM3E-250 to 630 rear panel wiring outline and mounting dimensions

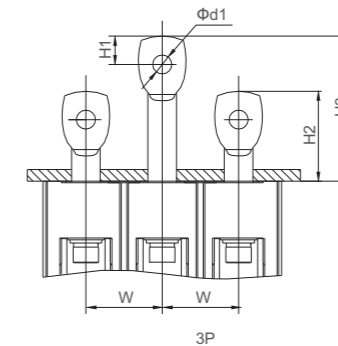


Figure 6. Rear panel wiring cutout diagram

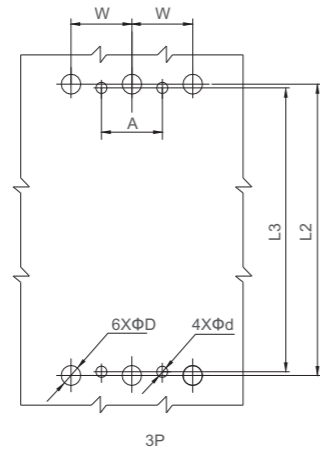


Figure 7. EXM3E series plug-in type outline and mounting dimensions

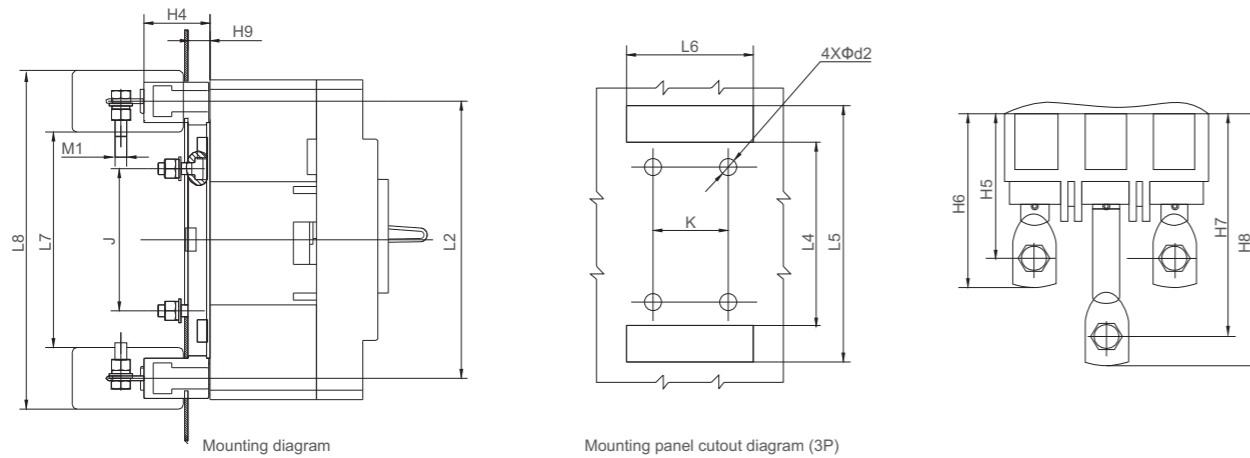


Table 7. EXM3E-125, 160, 250, 320, 400, and 630 front panel wiring outlines and mounting dimensions

Category	Dimension code	Product model		
		EXM3E-125 EXM3E-160	EXM3E-250 EXM3E-320	EXM3E-400 EXM3E-630
Outline dimensions (mm)	C	99.5	103	150
	E	48.5	51.5	90
	E1	26.5	32.5	50.5
	E2	77.5	82.5	128.5
	E3	17	15.5	30.5
	F	27.5	34.8	51.5
	F1	37	43	51
	G	17.5	24.5	33
	G1	7.5	11.5	12.5
	H	91	92.5	155
	H1	72.5	72.5	107.5
	H2	23.5	25	29
	H3	3	4	5
	H4	12	11.5	13
	H5	23.5	25	29
	L	155	165	257
	L1	253	360	477
	L2	134	145	225
W	30	35	44	
W1	90	105	140	
W2	120	140	184	
Mounting dimensions (mm)	A	30	35	44
	B	132	126	194
	Φd	5	5	6.5

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

Category	Dimension code	Product model			
		EXM3E-125 EXM3E-160	EXM3E-250 EXM3E-320	EXM3E-400 EXM3E-630	
Outline dimensions (mm)	W	30	35	44	
	H1	/	/	23	
	H2	54.5	71.5	86	
	H3	103	108	130	
	H4	39	47.5	49	
	H5	/	76	91	
	H6	76	94	110	
	H7	/	132.5	156	
	H8	137	149.5	165	
	H9	11	13.5	20	
	M	10	/	/	
	Φd1	/	Φ10	Φ13	
	M1	/	M10	M12	
	Mounting dimensions (mm)	Φd2	5	5	9
		ΦD	10	13	34
		L2	134	145	226
L3		132	126	195	
L4		98	94	168	
L5		165	181	279	
L6		3P:92	3P:107	3P:146	
L7		/	/	157	
L8		/	/	288	
K		3P:60	3P:70	3P:88/3P:146	
J		73	75	133	
A		30	35	44	
Φd	5	5	6.5		

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	160	Derating is not needed for current ratings not specified in the table
EXM3-320	320	280	
EXM3-630	500	450	
	630	520	

Accessories for Qizhi MCCB

Accessories for Qizhi MCCB series

1、Table 1.ory model summary table

	Frame rated current Inm (A)	EXM3-63 EXM3-125	EXM3-160 EXM3L-125、EXM3L-160 EXM3E-125、EXM3E-160	EXM3-250、EXM3-320 EXM3L-250、EXM3L-320 EXM3E-250、EXM3E-320	EXM3-400、EXM3-630 EXM3L-400、EXM3L-630 EXM3E-400、EXM3E-630
		Internal accessory	Alarm contact	B1	B2
Auxiliary contact	F1		F2	F3	F4
Shunt release	FL1		FL2	FL3	FL4
Under-voltage release	QY1		QY2	QY3	QY4
Accessory wiring terminal	JX				
External accessory	Rotary operating handle	CS1-63	CS1-100	CS1-250	CS1-400
	Motor operator	MDX0	MDX1	MDX2	MDX3
	Residual current alarm	LB(only for residual current devices)			
	Mechanical interlocking	3P	N1-3	N2-3	N3-3
4P		—	N2-4	N3-4	N4-4

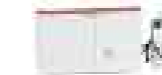
2、Ory contact and alarm contact ratings



Conventional thermal current I_{th}=6A

Rated operating current I_e=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 U_s:

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

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

At 70% to 110% of U_s, 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 U _c (DC24V)	Wire area	1.5mm ²	2.5mm ²
	100% U _c		150m
85% U _c		100m	160m

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

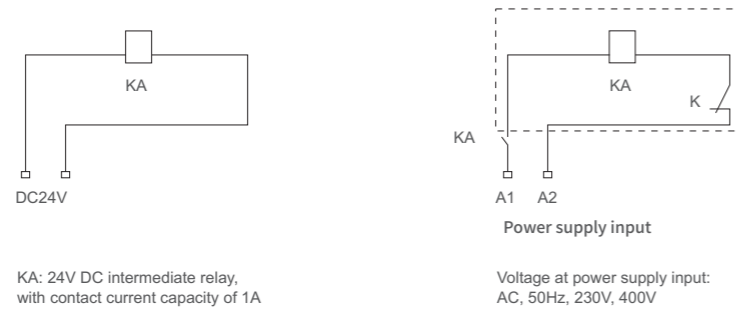


Figure 1. Shunt release control circuit design

4. Shunt release data



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

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

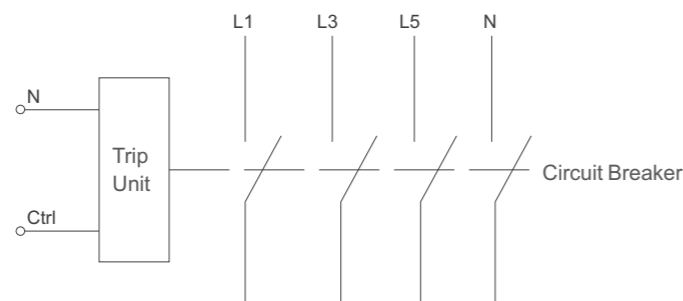
When the power supply is below 35% of U_e , the circuit breaker can be prevented from closing;

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

5. Dedicated release for pre-paid ammeter

Rated operating voltage U_e : AC230V, AC240V, with 50Hz; when at 65% to 110% of U_e , 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 U_e 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 HYM3LB 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 $I\Delta \geq I\Delta_n$, 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.

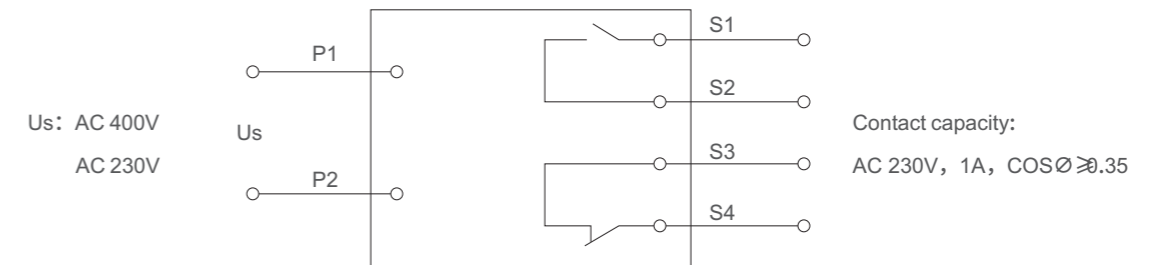


Figure 3. LB type residual current alarm module wiring diagram

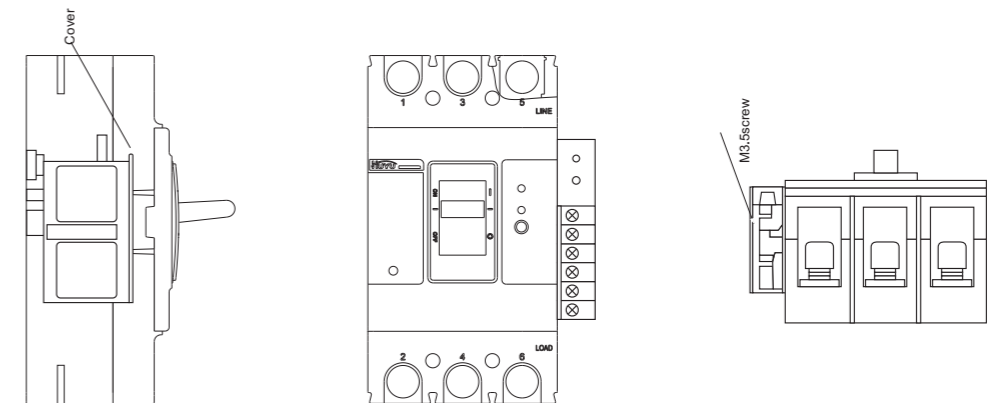


Figure 4. Lb type residual current alarm module outline diagram

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 EXM3-125	EXM3-160 EXM3L-125 EXM3L-160 EXM3E-125 EXM3E-160	EXM3-250 EXM3-320 EXM3L-250 EXM3L-320 EXM3E-250 EXM3E-320	EXM3-400 EXM3-630 EXM3L-400 EXM3L-630 EXM3E-400 EXM3E-630
Motor operator model	MDX0	MDX1	MDX2	MDX3
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

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

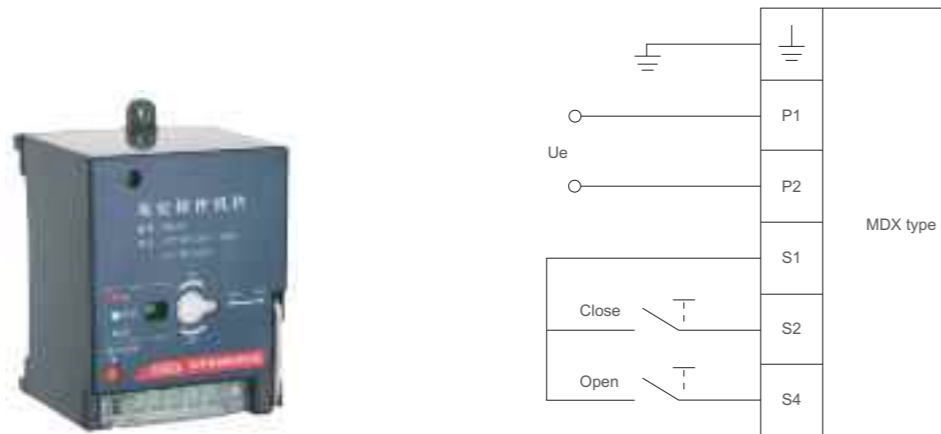


Figure 5. Wiring diagram of the MDX type motor operator

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

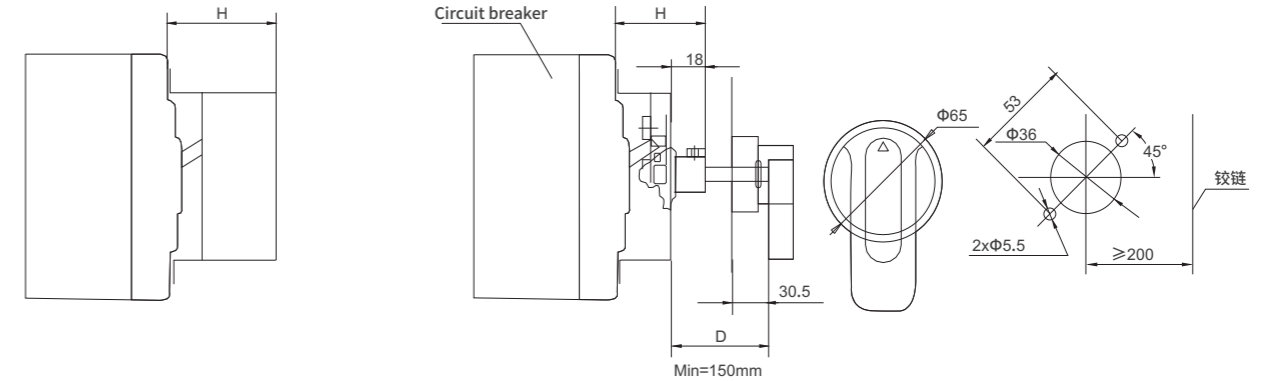


Figure 6. Mounting dimensions of the motor operator

Figure 7. Mounting dimensions of the manual operator

Table 4. Mounting dimensions of the motor operator

Model	EXM3-63, HYM3-125	EXM3-160, EXM3L-125 EXM3L-160, EXM3E-125 EXM3E-160	EXM3-250, EXM3-320 EXM3L-250, EXM3L-320 EXM3E-250, EXM3E-320	EXM3-400, HYM3-630 EXM3L-400, HYM3L-630 EXM3E-400, HYM3E-630
Mounting dimensions H (mm)	96	90	92	154

Table 5. Mounting dimensions of the manual operator

Model	EXM3-63, HYM3-125	EXM3-160, HYM3L-125 EXM3L-160, HYM3E-125 EXM3E-160	EXM3-250, EXM3-320 EXM3L-250, EXM3L-320 EXM3E-250, EXM3E-320	EXM3-400, EXM3-630 EXM3L-400, EXM3L-630 EXM3E-400, EXM3E-630
Mounting dimensions H (mm)	59	57	60	98