TGM3

Series Moulded Case Circuit Breaker

TGM3 Series Moulded Case Circuit Breaker

1 Overview

TGM3 series moulded case circuit breaker (hereinafter referred to as circuit breaker) is one of the new circuit breakers researched and developed by our company using international advanced technology, the product has the characteristics of high breaking capacity, card type accessories, good environmental adaptability and green environmental protection, and is an ideal product for power distribution and motor protection.

The circuit breaker has the rated insulation voltage of 1000V and is used in the AC 5OHz/60Hz circuits with the rated working voltage of 415V and below, and the rated current from 16A to 1600A for the infrequent switching of the line and the infrequent startup of the electric motor. This series of circuit breakers has overload and short circuit protection devices to protect the line and line and power supply equipment to prevent over-current and short circuit r damages. This series of circuit breakers can be installed vertically (that is, longitudinal installation) and horizontally (that is, lateral installation), and supports upper and lower free incoming lines and has isolation functions (not available for 3N type).

Circuit breakers meet the following standards:

IEC 60947-1 and GB/T 14048.1 Low-voltage switchgear and controlgear – Part 1: General rules.

IEC 60947-2 and GB/T 14048.2 Low-voltage switchgear and controlgear – Part 2: Circuit breakers.

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2 Type Designation

TG	M	3	-	□	□	□	/	□	□	□	□	□	□	□	□
①	②	③		④	⑤	⑥		⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭

①	Enterprise code	TG
②	Moulded case circuit	M
③	Design No	3
④	Frame rated current (A)	125, 250, 400, 630, 800, 1600
⑤	Short-circuit breaking capability level	C type – Basic type, E type – Economical type, N type – Basic type, L type – Standard type, S type – Small breaking type, M type – Middle breaking type, H type – High breaking type, R type – Current limit type
⑥	Operation method code	Default: Direct operation via handle; Z: Rotary handle; P: Motor operation
⑦	Pole number code	3: Three poles; 3N:3P+N; 4: Four poles
⑧	Trip mode code	2: Electromagnetic type 3: Thermomagnetic type
⑨	Accessory code	Refer to Table 1
⑩	Purpose code	Default: Power distribution type 2: Motor protection type
⑪	N pole code for 3N and 4P	A: 3NA type; B: 4PB type; C: 4PC type; D: 3ND type
⑫	Rated current	Refer to Table 2
⑬	Accessory voltage	DC24V, DC110V, DC220V/230V/240V, AC220V/230V/240V, AC380V/400V/415V
⑭	Installation method code	Default: Fixed type front-panel; B: Fixed type back-panel; C: Plug-in type D – Drawer type

Notes: 3NA type: N pole is not equipped with an overcurrent trip element, and the N pole is always on;
4PB type: N pole is not equipped with an overcurrent trip element, and the N pole is ON/OFF together with other three poles (Npole is ON and then OFF);
4PC type: N pole is equipped with an overcurrent trip element, and the N pole is ON/OFF together with other three poles (N pole is ON and then OFF);
3ND type: N pole is equipped with an overcurrent trip element, and the N pole is always on;

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Accessory Code

Table 1

Code	Model description
00	No accessory
08	Alarm contact
10	Shunt release
20	Aux. contact
21	Two sets of aux. contacts
23	Four sets of aux. contacts
30	Undervoltage release
40	Shunt release + Aux. contact
41	Shunt release + Two sets of aux. contacts
43	Shunt release + Four sets of aux. contacts
50	Shunt release + Undervoltage release
51	Shunt release + Undervoltage release + Aux. contact
52	Shunt release + Undervoltage release + Two sets of aux. contacts
54	Shunt release + Undervoltage release + Four sets of aux. contacts
70	Undervoltage release + Aux. contact
71	Undervoltage release + Two sets of aux. contacts
18	Shunt release + Alarm contact
28	Aux. contact + Alarm contact
38	Undervoltage release + Alarm contact
48	Shunt release + Aux. contact + Alarm contact
47	Shunt release + Two sets of aux. contacts + Alarm contact
45	Shunt release + Four sets of aux. contacts + Alarm contact
68	Two sets of aux. contacts + Alarm contact
66	Four sets of aux. contacts + Alarm contact
77	Undervoltage release + Two sets of aux. contacts + Alarm contact
78	Undervoltage release + Aux. contact + Alarm contact
75	Undervoltage release + Four sets of aux. contacts + Alarm contact
55	Undervoltage release + Shunt release + Aux. contact + Alarm contact
56	Undervoltage release + Shunt release + Two sets of aux. contacts + Alarm contact
58	Undervoltage release + Shunt release + Alarm contact
59	Undervoltage release + Shunt release + Four sets of aux. contacts + Alarm contact

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3 Technical Parameters

3.1 Main Technical Parameters

Table 2

Model		TGM3					
Frame current		125A	250A	400A	630A	800A	1600A
Rated current (A)(+40°C)		16, 20, 25, 32, 40, 50, 63, 80, 100, 125	100, 125, 140, 160, 180, 200, 225, 250	225, 250, 315, 350, 400	400, 500, 600, 630	400, 500, 600, 630, 700, 800	800, 1000, 1250, 1440, 1500, 1600
Rated operating voltage Ue (V)		AC380/400/415					
Rated insulation voltage Ui (V)		1000					
Rated impulse withstand voltage Uimp (kV)		8		12			
Rated limit short circuit breaking capacity Icu / Rated operation short circuit breaking capacity Ics (kA) (AC380/400/415V)	C	36/36	36/36	36/36	36/36	-	-
	E	40/40	40/40	40/40	40/40	-	-
	N	50/40	50/40	-	-	-	-
	L	50/50	50/50	50/50	50/50	50/50	50/50
	S	70/50	70/50	-	-	-	-
	M	70/70	70/70	70/70	70/70	70/70	70/70
	H	100/70	100/70	100/75	100/75	100/75	100/75
	R	100/100	100/100	100/100	100/100	100/100	100/100
Flashover distance (mm)		≤50		≤100			
Inlet method		Upper and lower free inlet					
Isolation function		Yes (No for 3N type)					
Use category		A					
Mechanical life (Times)		20000	20000	10000	10000	5000	5000
Mechanical life (Times)		10000	10000	8000	8000	2500	2500
Note: When the lower inlet is used, C type is broken without derating, E and N are derated to the C type breaking indicator, L type is broken without derating, and S, M, H, and R are derated to the L type breaking indicator.							

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3.2 Trip Characteristics

The thermal release of the circuit breaker has the inverse time limit operation characteristics, and the operation characteristics of the power distribution protection type thermal release see Table 3.

Operation characteristics of thermal release

Table 3

Rated current of release (A)	Thermal release (Reference Temperature +40°C)		Electromagnetic release operating current (A)
	Non-operation time at 1.05In (cold state) (h)	Operation time at 1.30In (hot state) (h)	
16≤In≤63	1	1	6In±20% 8In±20% 10In±20%
63<In≤1000	2	2	
1000<In≤1600	2	2	8In±20%

Notes: The non-operation time of the circuit breaker for motor protection at 1.0In is 2h; the operating current is 1.20In (hot state), and the operation time is 2h.
The operating current of the electromagnetic release of the circuit breaker for motor protection is 12In ± 20%.
Electromagnetic release single-pole operating current: it shall work at the 120% of the above short circuit protection operating current.

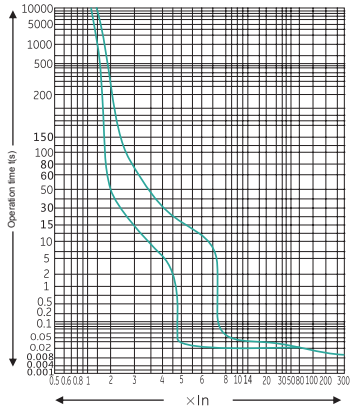
3.3 Protection characteristic curve of circuit breaker

3.3.1 TGM3-125 protection characteristic curve

3.3.1.1 TGM3-125 power distribution protection curve

TGM3-125 (In ≤32A) time/current characteristic curve

Ii=6In



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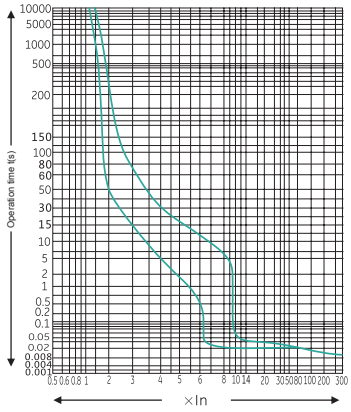

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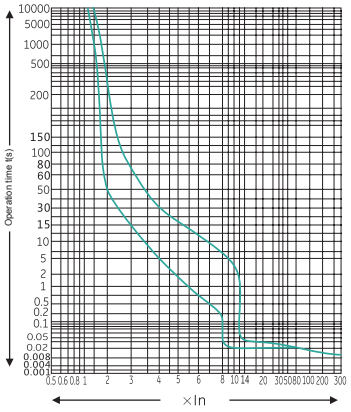
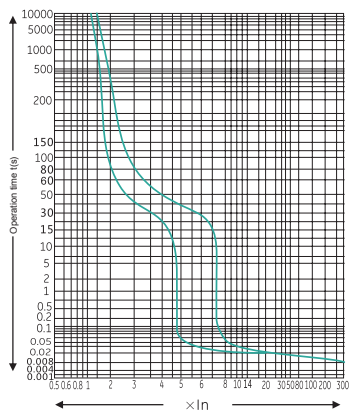


TGM3-125 (In > 32A) time/current characteristic curve

Ii=6In



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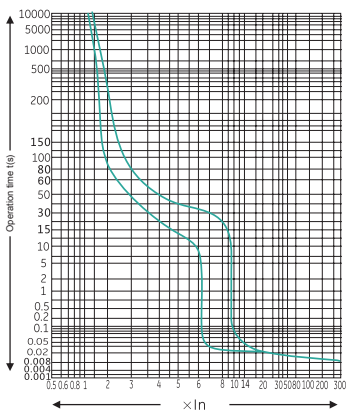

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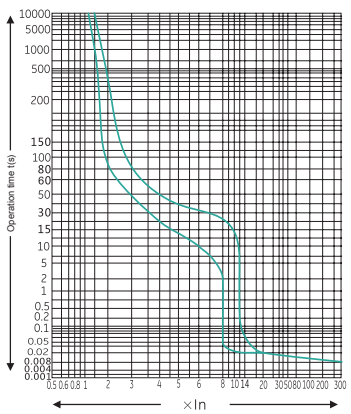
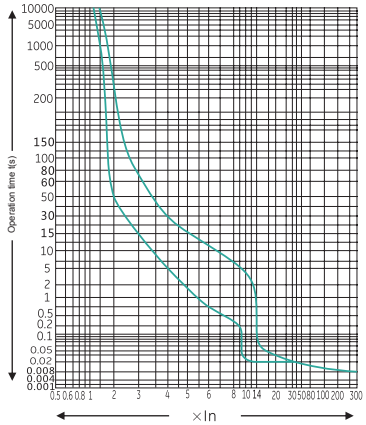


3.3.1.2 TGM3-125 motor protection curve

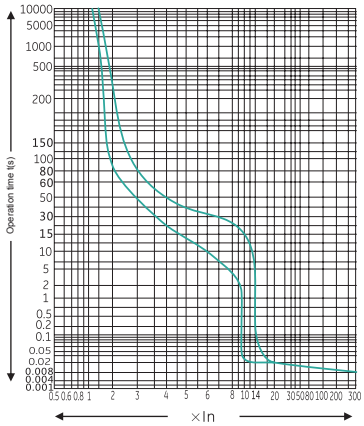
TGM3-125 (In ≤ 32A) time/current characteristic curve

Ii=12In



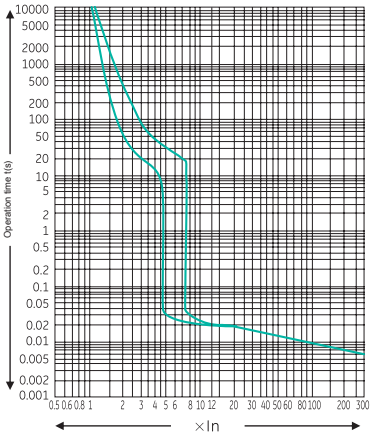
TGM3-125 (In > 32A) time/current characteristic curve

Ii=12In

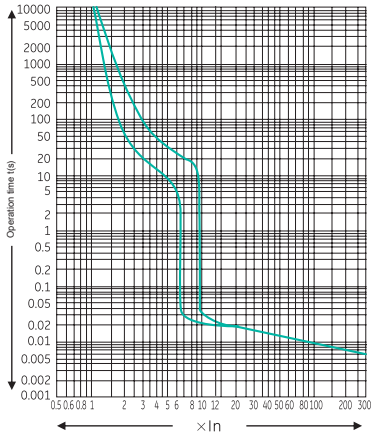


3.3.2 TGM3-250 protection characteristic curve

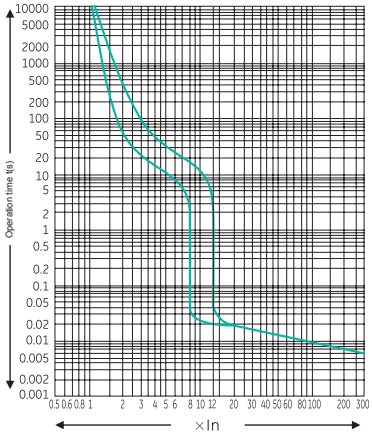
Power distribution protection curve Ii=6In



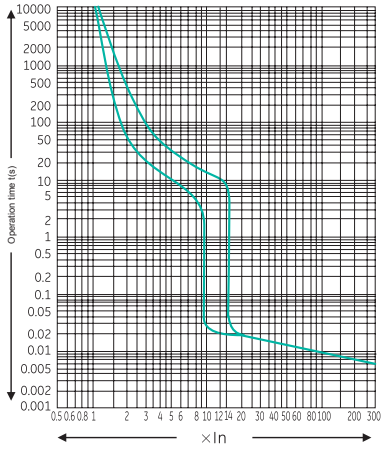
Power distribution protection curve Ii=8In



Power distribution protection curve Ii=10In



Motor protection curve Ii=12In



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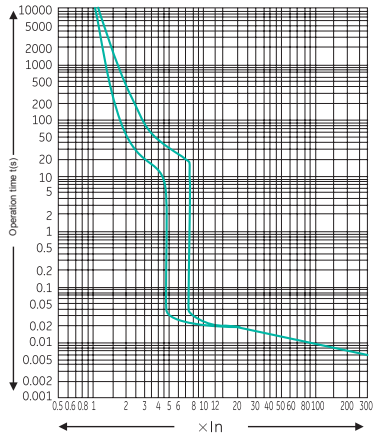
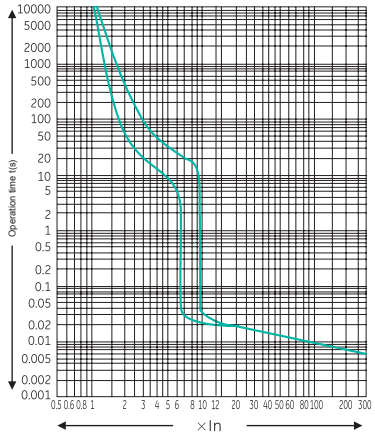
3.3.3 TGM3-400 protection characteristic curve

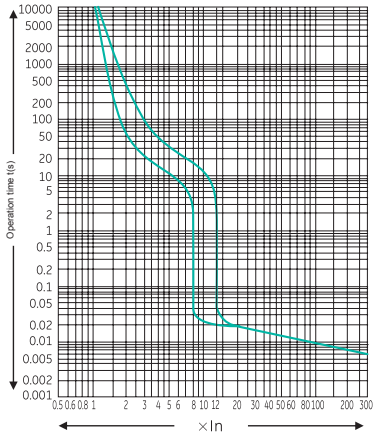
Power distribution protection curve Ii=6In



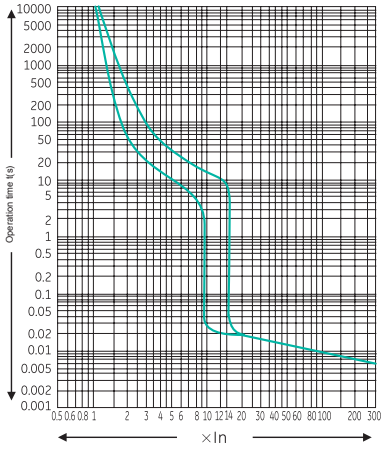
Power distribution protection curve Ii=8In



Power distribution protection curve Ii=10In

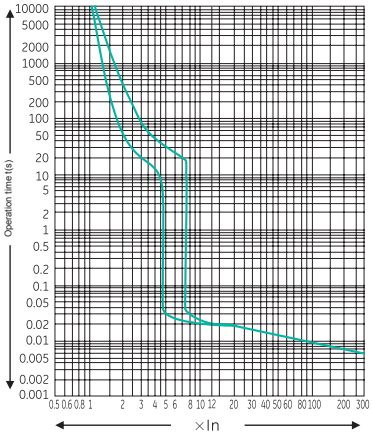


Motor protection curve Ii=12In

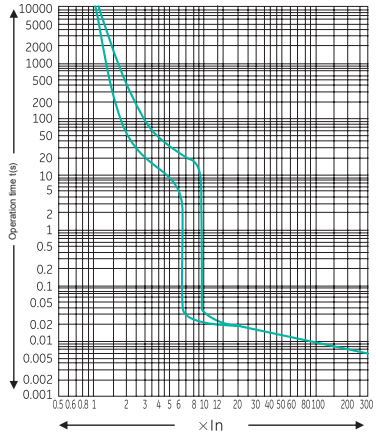


3.3.4 TGM3-630 protection characteristic curve

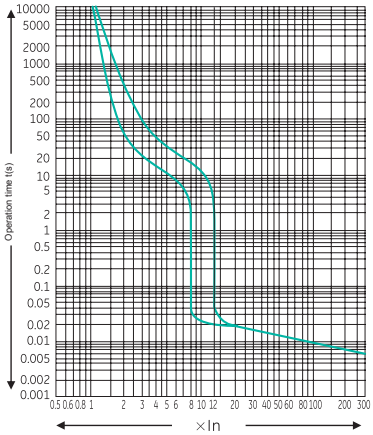
Power distribution protection curve Ii=6In



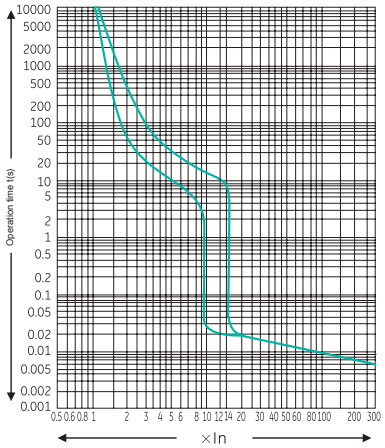
Power distribution protection curve Ii=8In



Power distribution protection curve Ii=10In

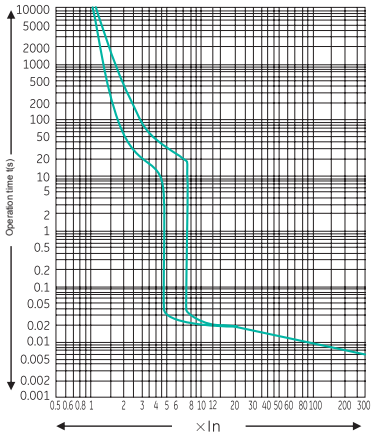


Motor protection curve Ii=12In

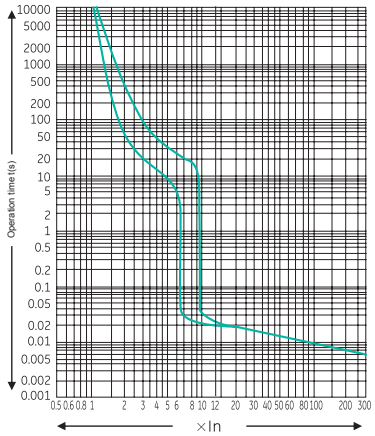


3.3.5 TGM3-800 protection characteristic curve

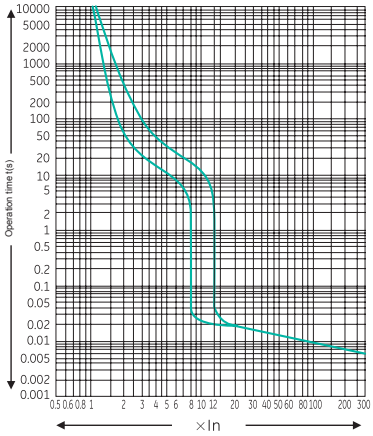
Power distribution protection curve Ii=6In



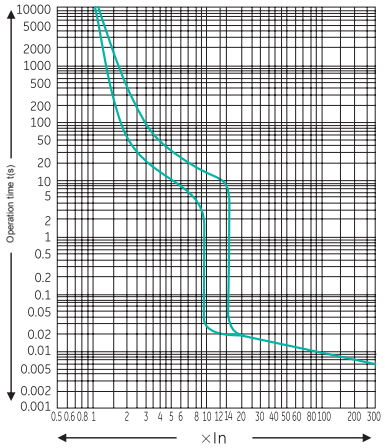
Power distribution protection curve Ii=8In



Power distribution protection curve Ii=10In



Motor protection curve Ii=12In



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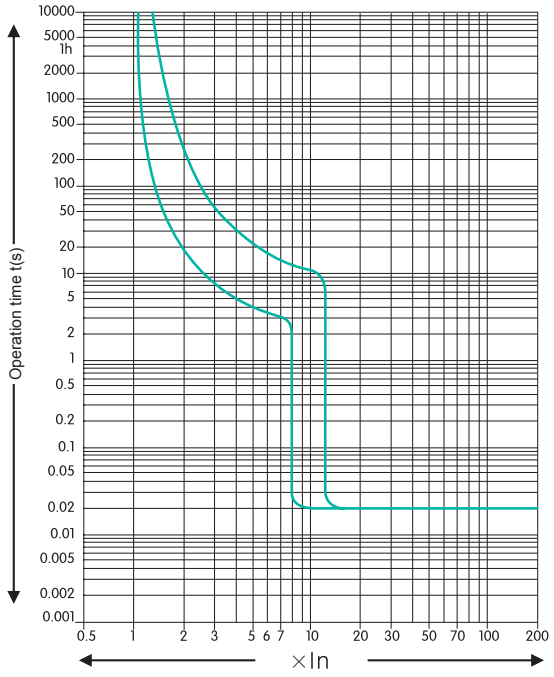
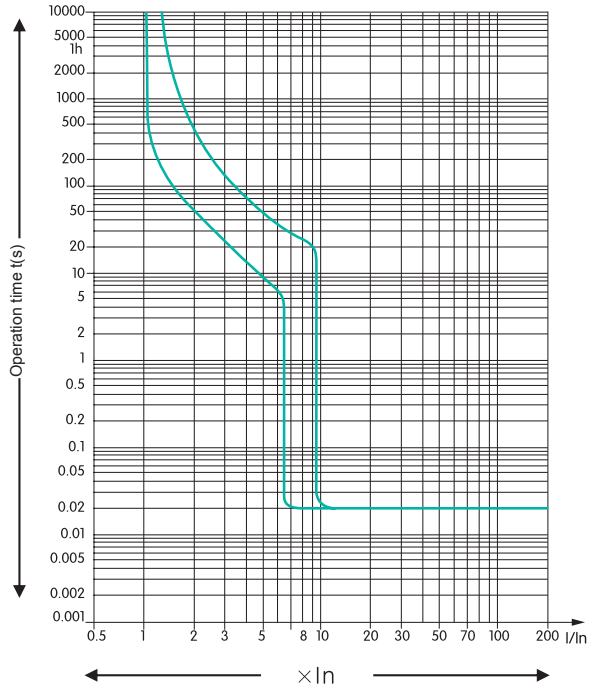
3.3.6 TGM3-1600 time / current characteristic curve

Power distribution protection curve Ii=10In
800A-1000A



Power distribution protection curve Ii=8In
1250A-1600A



3.4 Cross-Sectional Area Requirements for Wire

Table 4

Rated current (A)	16 20	25	32	40 50	63	80	100	125 140	160	180 200 225	250	315 350	400
Sectional area of wire (mm^2)	2.5	4	6	10	16	25	35	50	70	95	120	185	240

Table 4, continued

Rated current (A)	Cable		Copper busbar	
	Qty.	Sectional area (mm^2)	Qty.	Sectional area (mm^2)
500	2	150	2	30×5
600, 630	2	185	2	40×5
700, 800	2	240	2	50×5
1000	—	—	2	50×6
1250	—	—	2	50×8
1440, 1500, 1600	—	—	2	50×10

3.5 Tightening torque of screw

Table 5

Model	TGM3-125	TGM3-250	TGM3-400	TGM3-630	TGM3-800	TGM3-1600
Nominal dia. of thread (mm)	M8	M8	M10	M12	M12	M10
Tightening torque (N.m)	8	10	18	22	22	18

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4 Normal Operation

4.1 The ambient air temperature is -35°C~+70°C, and the mean temperature within 24h does not exceed +35°C. When the ambient temperature is higher than +40°C, the derating is required. The derating coefficient is listed in Table 6 Temperature change and derating coefficient table;

4.2 The altitude of the installation site shall not exceed 2000m; when exceeding 2000m, the derating is required. The derating coefficient is listed in Table 7 Altitude and derating coefficient table;

4.3 The relative humidity of the air at the installation site does not exceed 50% at +40°C, and a higher relative humidity can be allowed at lower temperatures, such as up to 90% at +20°C. Protective measures shall be taken for condensations occurred occasionally due to temperature changes;

4.4 The pollution degree is Level 3;

4.5 The installation category of the circuit breaker is Class III;

4.6 The circuit breaker should be installed in a place where there is no explosion hazard and no conductive dust enough to cause metal corrosion and insulation damage;

4.7 The circuit breaker should be installed in a place where there is no rain or snow attack;

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

5 Correction Factor of Circuit Breaker in Special Environment

5.1 The derating coefficient of ambient temperature change is listed in Table 6

Temperature changes and derating coefficient table

Table 6

Temp. / Model	+40°C	+45°C	+50°C	+55°C	+60°C	+65°C	+70°C
TGM3-125	1In	0.97In	0.95In	0.93In	0.90In	0.88In	0.86In
TGM3-250	1In	0.98In	0.96In	0.94In	0.92In	0.90In	0.88In
TGM3-400	1In	0.98In	0.96In	0.94In	0.92In	0.90In	0.88In
TGM3-630	1In	0.98In	0.96In	0.94In	0.91In	0.89In	0.87In
TGM3-800	1In	0.98In	0.96In	0.94In	0.92In	0.90In	0.88In
TGM3-1600	1In	0.96In	0.92In	0.87In	0.82In	0.76In	0.70In

5.2 The influence of the altitude changes on the features of circuit breaker sees Table 7

Altitude and derating coefficient table

Table 7

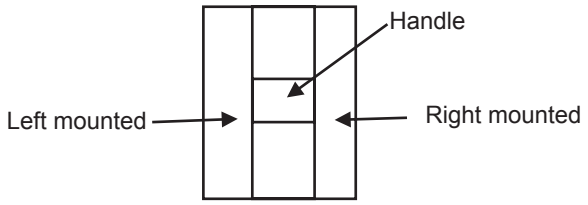
Altitude (m)	2000	2500	3000	3500	4000	4500	5000
Power frequency withstand voltage (V)	3500	3500	3150	3000	2800	2650	2500
Insulation voltage (V)	1000	1000	900	850	810	770	730
Operating current correction factor	1In	1In	0.98In	0.97In	0.95In	0.94In	0.93In

6 Accessories

6.1 Product Accessories

The complete internal accessories and external accessories are provided for this moulded case circuit breaker to meet the demands of the customer. (Direct operation via handle, fixed type front-panel, and phase partition are standard configuration in all accessories, and others are optional)

Accessory code comparison table



Legends:
- Alarm contact ●
- Aux. contact ○
- Shunt release ■
- Undervoltage release □

Accessory name and installation location

Table 8

Accessory name	Accessory code	TGM3-125/250 three-pole, four-pole		TGM3-400/630/800 three-pole, four-pole		TGM3-1600 three-pole, four-pole
		Factory default	Optional	Factory default	Optional	Factory default
No accessory	00					
Alarm contact	08					
Shunt release	10					
Aux. contact	20					
Two sets of aux. contacts	21		/			
Four sets of aux. contacts	23	/	/			
Undervoltage release	30					

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Table 8, continued

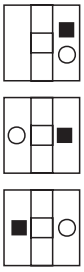
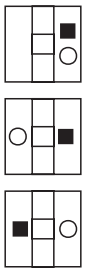
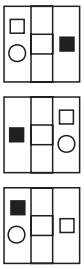
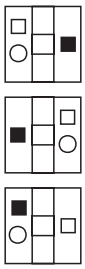
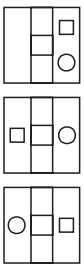
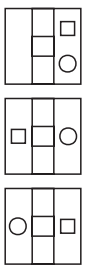
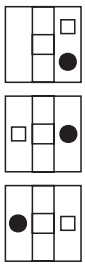
Accessory name	Accessory code	TGM3-125/250 three-pole, four-pole		TGM3-400/630/800 three-pole, four-pole		TGM3-1600 three-pole, four-pole
		Factory default	Optional	Factory default	Optional	Factory default
Shunt release + Aux. contact	40					
Shunt release + Two sets of aux. contacts	41					
Shunt release + Four sets of aux. contacts	43	/	/			
Shunt release + Undervoltage release	50					
Shunt release + Undervoltage release + Aux. contact	51					
Shunt release + Undervoltage release + Two sets of aux. contacts	52					
Shunt release + Undervoltage release + Four sets of aux. contacts	54	/	/			
Undervoltage release + Aux. contact	70					
Undervoltage release + Two sets of aux. contacts	71					

Table 8, continued

Accessory name	Accessory code	TGM3-125/250 three-pole, four-pole		TGM3-400/630/800 three-pole, four-pole		TGM3-1600 three-pole, four-pole
		Factory default	Optional	Factory default	Optional	Factory default
Shunt release + Alamr contact	18					
Aux. contact + Alarm contact	28					
Undervoltage release + Alarm contact	38					
Shunt release + Aux. contact + Alarm contact	48					
Shunt release + Two sets of aux. contacts + Alarm contact	47	 Note: Except for 3P	/			
Shunt release + Four sets of aux. contacts + Alarm contact	45	/	/			

TGM3 Series Moulded Case Circuit Breaker

Table 8, continued

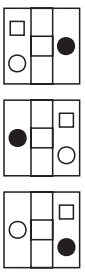
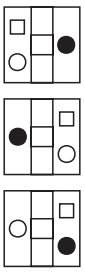
Accessory name	Accessory code	TGM3-125/250 three-pole, four-pole		TGM3-400/630/800 three-pole, four-pole		TGM3-1600 three-pole, four-pole
		Factory default	Optional	Factory default	Optional	Factory default
Two sets of aux. contacts + Alarm contact	68	 Note: Except for 3P	 Note: Except for 3P			
Four sets of aux. contacts + Alarm contact	66	/	/			
Undervoltage release + Two sets of aux. contacts + Alarm contact	77	 Note: Except for 3P	 Note: Except for 3P  Note: Except for 3P  Note: Except for 3P			
Undervoltage release + Aux. contact + Alarm contact	78					
Undervoltage release + Four sets of aux. contacts + Alarm contact	75	/	/			

Table 8, continued

Accessory name	Accessory code	TGM3-125/250 three-pole, four-pole		TGM3-400/630/800 three-pole, four-pole		TGM3-1600 three-pole, four-pole
		Factory default	Optional	Factory default	Optional	Factory default
Undervoltage release + Shunt release + Aux. contact + Alarm contact	55					
Undervoltage release + Shunt release + Two sets of aux. contacts + Alarm contact	56	 Note: Except for 3P	 Note: Except for 3P  Note: Except for 3P  Note: Except for 3P			
Undervoltage release + Shunt release + Alarm contact	58					
Undervoltage release + Shunt release + Four sets of aux. contacts + Alarm contact	59	/	/			

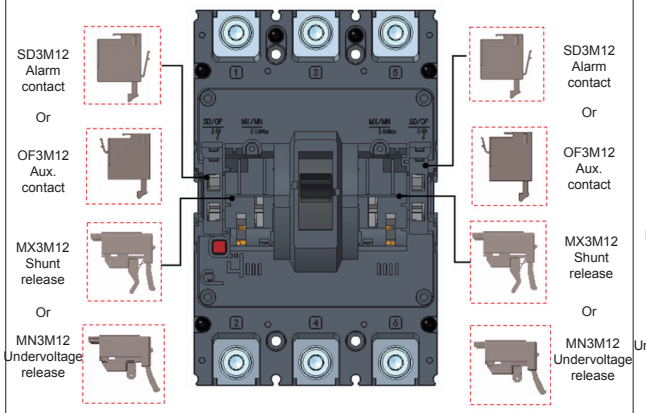
Note: 630/800 four sets of aux. contacts can be all left mounted or right mounted.

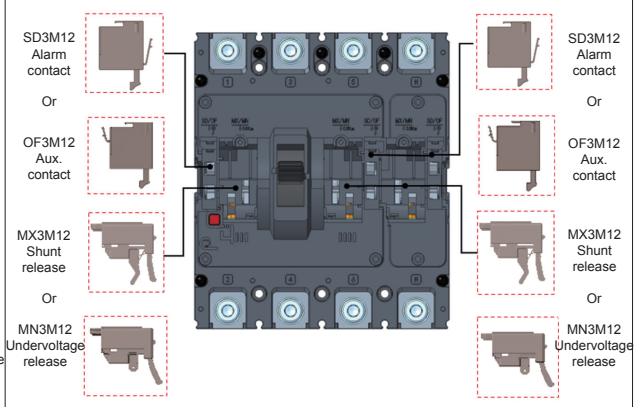
TGM3 Series Moulded Case Circuit Breaker

Accessory installation position diagram

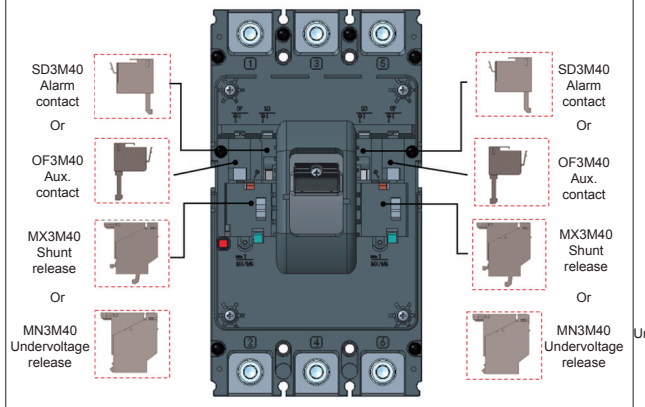
Table 9

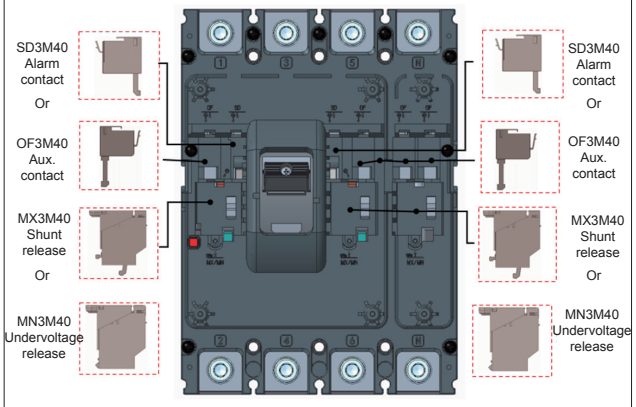
TGM3-125/250



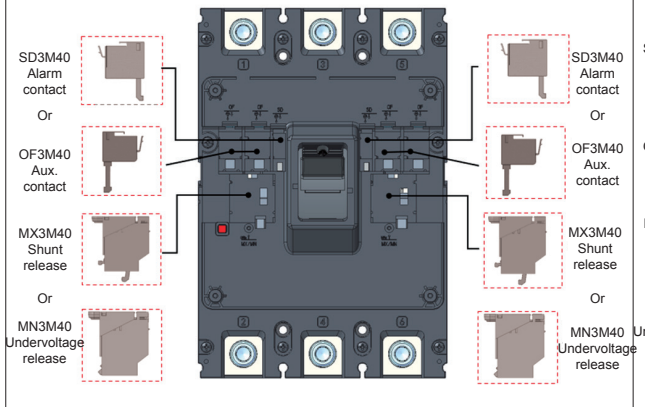


TGM3-400





TGM3-630/800



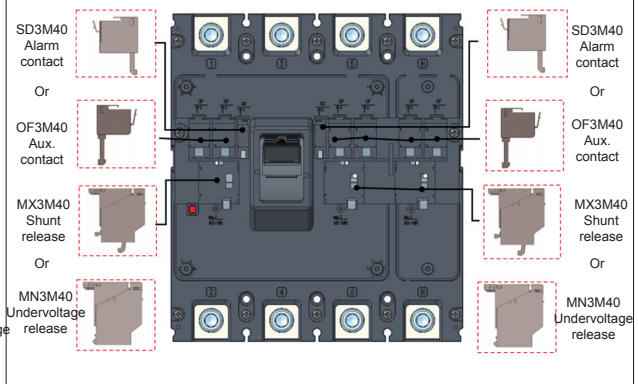
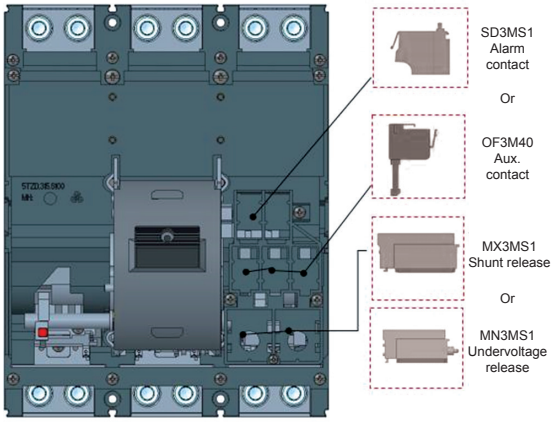


Table 9, continued

TGM3-1600


Notes: 1) Auxiliary contacts and alarm contacts of 3NA and 3ND types cannot be installed on the N phase (an alarm is not required for the N phase for 400 frame and above);
2) The N phase of the 3NA type, 3ND type, and 4PB type of the shunt release can not be equipped with those accessories;
3) The N phase of the 3NA type and 4PB type of the undervoltage release can not be equipped with those accessories;
4) Only C phase of the 3-pole / 4-pole of the 1600 frame type can be equipped with accessories;
5) Any special requirements of the accessory installation location can be specified when ordering, and the factory fault will prevail if there is no any requirement.

6.2 Internal Accessories

Introduction to Internal Accessories

Table 10

Accessory code	Matched circuit breaker code	Frame current code	-	Installation location	Wiring lead-out mode	Voltage grade
OF: Aux. contact	3M: TGM3	12: 125 25: 250 40: 400 63: 630 80: 800 S1: 1600		Default: Left and right L: Left R: Right	Default: Direct wire lead-out D: Terminal box	/
SD: Alarm contact						/
MN: Undervoltage release						A1: AC220/230/240V A2: AC380/400/415V
MX: Shunt release						A1: AC220/230/240V A2: AC380/400/415V D1: DC24V D2: DC110V D3: DC220V

TGM3 Series Moulded Case Circuit Breaker

6.2.1 Aux. contact OF

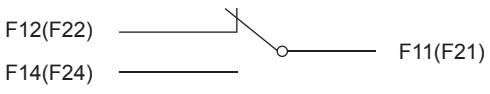
It is an accessory connected to the aux. circuit of the circuit breaker, indicating the ON or OFF / Free Trip state of the circuit breaker remotely.
Notes:
1) The default direct lead-out length of the wire is 50cm, and 1m, 2m, and 3m specifications can be provided. Longer length can be indicated when ordering;
2) The terminal box can be provided, and it shall be indicated when ordering.

OF	3M	□	-	□
①	②	③		④

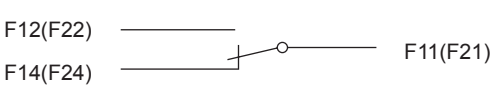
①	Accessory code	OF: Aux. contact
②	Design No.	
③	Code of matched product frame	12:125~250 frame; 40:400~1600
④	Wire lead-out mode	Default: Direct wire lead-out D: Terminal box

Example: Code of TGM3 series 125 frame aux. with a terminal box:
Note: The default number of the 125/250 contact sets is 1NO + 1NC, and of the 400/630, 800 contact sets is 2NO + 2NC.

● Wiring Diagram



Circuit breaker in the “OFF” state



Circuit breaker in the “ON” state

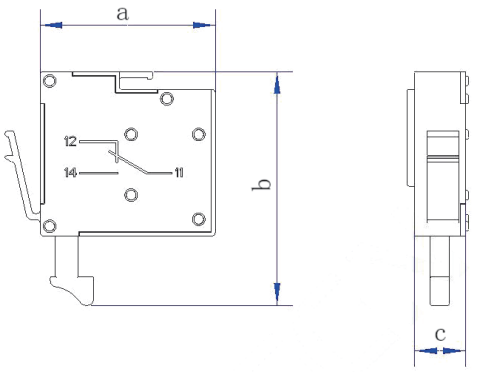
● Electrical Characteristics

Main parameters of aux. contact

Table 11

Accessory model	Available circuit breaker	Rated insulation voltage Ui(V)	Contact capacity	Conventional thermal current Ith	Installation location
OF3M12	TGM3-125 TGM3-250	690	AC-15(380V/400V/415):0.3A; DC-13(110V/220V/250):0.15A; Small load: 1mA/DC5V	5A	Left, right
OF3M40	TGM3-400 TGM3-630 TGM3-800				
	TGM3-1600				Right

● Outline dimensions of aux. contact



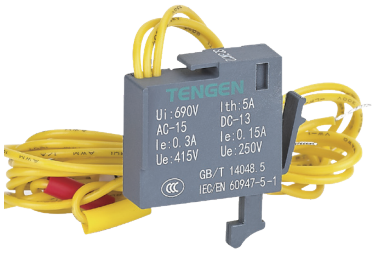
Outline dimension table of aux. contact

Table 12

Accessory model	Outline dimensions		
	a	b	c
OF3M12	27.5	36.7	8
OF3M40	27.5	54.3	14.4

Note: Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

6.2.2 Alarm contact SD



It is an accessory connected to the auxiliary circuit of the circuit breaker, indicating the non-trip (ON or OFF) or trip (TRIP) state of the circuit breaker.

When the alarm contact issues a Trip instruction, there are three possibilities:

◇ Overload or short circuit fault

◇ Test button trip

◇ Shunt / /undervoltage release works

Notes:

1) The default direct lead-out length of the wire is 50cm, and 1m, 2m, and 3m specifications can be provided. Longer length can be indicated when ordering;

2) The terminal box can be provided, and it shall be indicated when ordering.

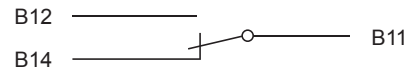
TGM3 Series Moulded Case Circuit Breaker

SD	3M	□	-	□
①	②	③		④

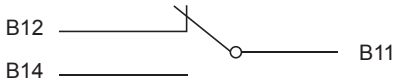
①	Accessory code	SD: Alarm contact
②	Design No.	
③	Code of matched product frame	12:125~250 frame; 40:400~800 frame; S1:1600 frame;
④	Wire lead-out mode	Default: Direct wire lead-out D: Terminal box

Example: Code of TGM3 series 250 frame alarm (led out via direct lead): SD3M12.

● Wiring Diagram



Circuit breaker in the Free Trip (Alarm) state



Circuit breaker in the “OFF/ON” state

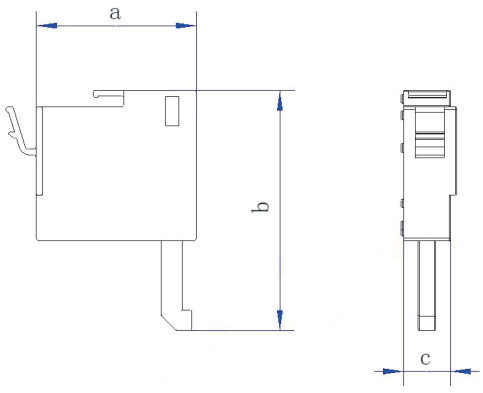
● Electrical Characteristics

Electrical Characteristics of Alarm Contact

Table 13

Accessory model	Available circuit breaker	Rated insulation voltage Ui(V)	Contact capacity	Conventional thermal current I_{th}	Installation location
SD3M12	TGM3-125 TGM3-250	690	AC-15(380V/400V/415): 0.3A; DC-13(110V/220V/250): 0.15A; Small load: 1mA/DC5V	5A	Left, right
SD3M40	TGM3-400 TGM3-630 TGM3-800				
SD3MS1	TGM3-1600				Right

● Outline dimension table of alarm Contact



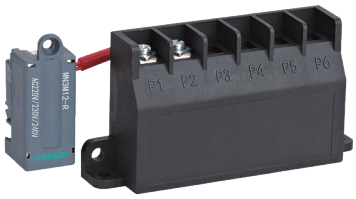
Outline dimension table of alarm contact

Table 14

Accessory model	Outline dimensions		
	a	b	c
SD3M12	27.5	36.7	8
SD3M40	27.5	41.2	8
SD3MS1	31.4	30.1	13

Note: Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

6.2.3 Undervoltage release MN



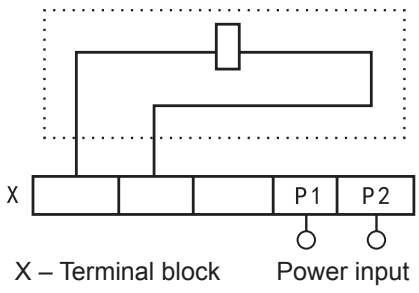
The undervoltage release can realize the undervoltage protection function of the circuit breaker, and it can make the circuit breaker open when the power voltage is too low for the protection of the electrical equipment.
a. When the rated operating voltage is 35%-70%, the undervoltage release should reliably make the circuit breaker trip;
b. When the rated operating voltage is 85% - 110%, the undervoltage release should ensure that the circuit breaker can be closed;
c. When the rated operating voltage is below 35%, the undervoltage release should prevent the circuit breaker from closing.
Note: The undervoltage release must be energized and then the circuit breaker can retrip and is closed, otherwise this may cause damage to the circuit breaker.

MN	3M	□	-	□	□
①	②	③		④	⑤

①	Accessory code	MN: Undervoltage release
②	Design No.	
③	Code of matched product frame	12:125~250 frame; 40:400~800 frame; S1: 1600 frame
④	Installation location code	Default: Left and righ; L: Left; R: Right
⑤	Voltage code	A1: AC220/230/240V, A2: AC380/400/415V

Example: The code of the TGM3 series 250 frame left undervoltage AC220V is MN3M12-LA1
Note: 125~800 frame wiring connection is made through the terminal box, and the direct wire leading-out is available for 1600 model.

● Wiring Diagram



Note: The internal wiring diagram of the circuit breaker is shown in the dashed box.

TGM3 Series Moulded Case Circuit Breaker

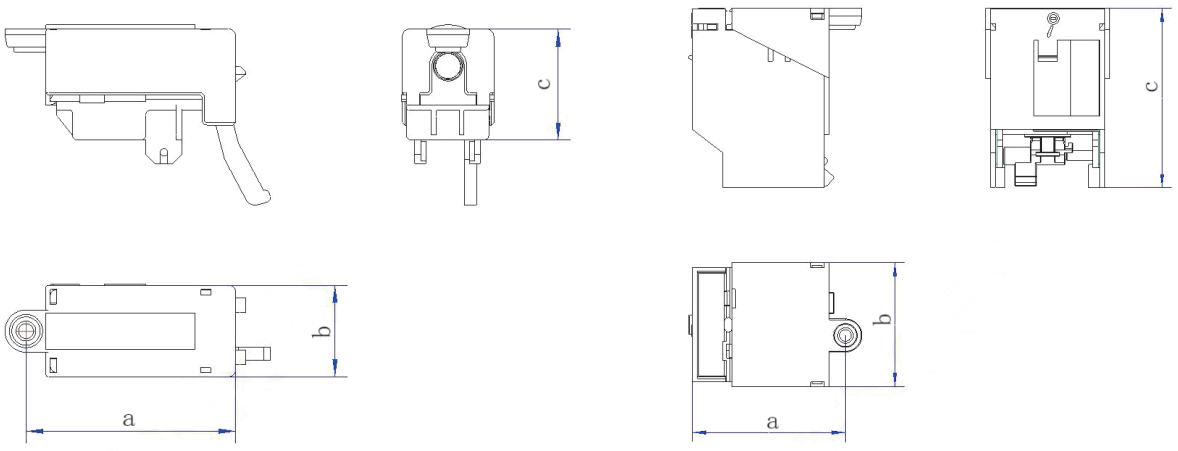
● Electrical Characteristics

Electrical Characteristics of Undervoltage Release

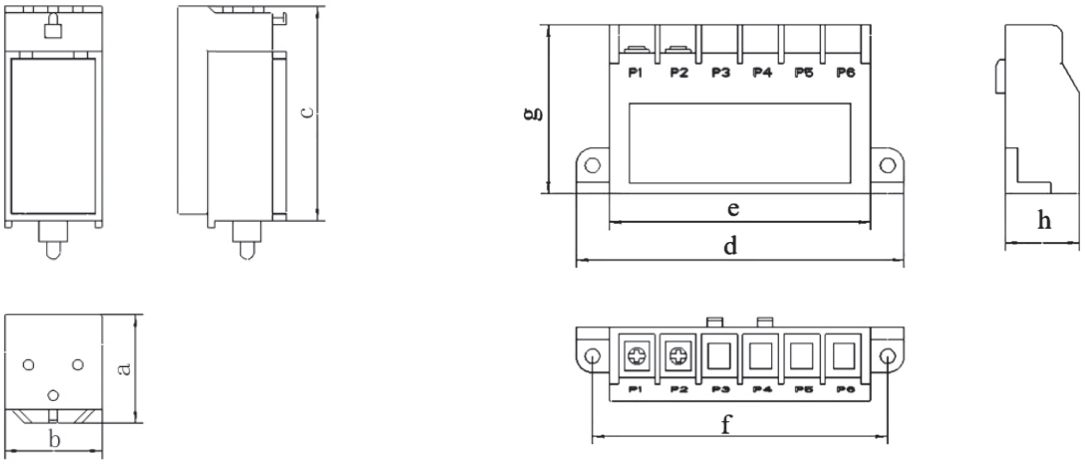
Table 15

Accessory model	Available circuit breaker	Rated insulation voltage Ui(V)	Breaking time	Undervoltage release power (VA)		Installation location
				AC220/230/240V	AC380/400/415V	
MN3M12	TGM3-125 TGM3-250	800	≤80ms	<5	<5	Left, right
MN3M40	TGM3-400 TGM3-630 TGM3-800					
MN3MS1	TGM3-1600	800	≤80ms	<8	<10	Right

● Outline dimensions of undervoltage release



MN3M12 MN3M40



MN3MS1 MN3M junction box

Outline dimension table of undervoltage release

Table 16

Accessory model	Outline dimensions							
	a	b	c	d	e	f	g	h
MN3M12	42.2	18.4	22.3	98.3	78.3	88.5	50.5	22.1
MN3M40	39.4	31.9	46.1					
MN3MS1	31.5	29.8	63.1	/	/	/	/	/

Notes: 1) Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

6.2.3 Shunt release MX

A shunt release is an accessory that can be remotely operated to make the circuit breaker trip to remotely disconnect the circuit breaker. When the rated control power voltage Us is ranged 70% to 110%, the shunt release can make the circuit breaker trip reliably.

Note: The default direct lead-out length of the wire of the shunt release is 0.5m.

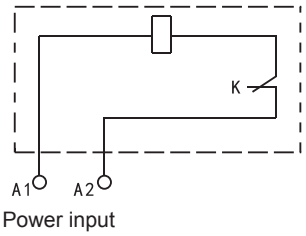
MX	3M	□	-	□	□	□
①	②	③		④	⑤	⑥

①	Accessory code	MX: Shunt release
②	Design No.	
③	Code of matched product frame	12:125~250 frame; 40:400~800 frame; S1: 1600 frame
④	Installation location code	Default: Left and righ; L: Lef;t R: Right
⑤	Wire lead-out mode	Default: Direct wire lead-out; D: Terminal box
⑥	Voltage code	A1: AC220/230/240V, A2: AC380/400/415V, D1: DC24V, D2: DC110V, D3: DC220V

Example: The code of the TGM3 series 250 frame left shunt DC220V (direct lead-out) is MX3M12-LD3.

TGM3 Series Moulded Case Circuit Breaker

● Wiring Diagram



Notes:
K - The micro switch connected to the coil in series in the shunt release is a normally closed contact; when the circuit breaker is open, this contact will open automatically, and will be closed when power-on.

● Electrical Characteristics

Electrical characteristics of shunt release

Table 17

Accessory model	Available circuit breaker	Rated insulation voltage Ui (V)	Breaking time	Shunt release power				Installation location
				DC (W)		AC 50/60Hz (VA)		
				DC24V	DC110/220V	AC220/230/240V	AC380/400/415V	
MX3M12	TGM3-125 TGM3-250	690	≤80ms	<150	<150	<150	<2 00	Left, right
MX3M40	TGM3-400 TGM3-630 TGM3-800			<150	<150	<200	<600	
MX3MS1	TGM3-1600	690	≤80ms	<500	<400	<500	<620	Right

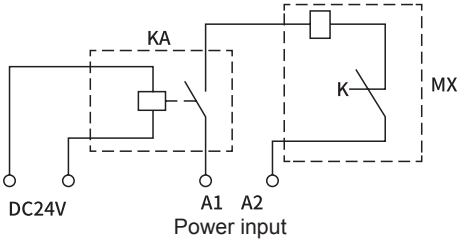
● When the rated control power voltage is DC24V, there are two solutions:
Solution 1: If the DC24V shunt release is used, the following conditions shall be met: The maximum length (the length of each one of two wires) of the copper wire shall meet the conditions specified in the table below, and the power at the terminal of the release must meet the minimum 50W requirements.

Max. length (the length of each one of two wires) of copper wire

Table 18

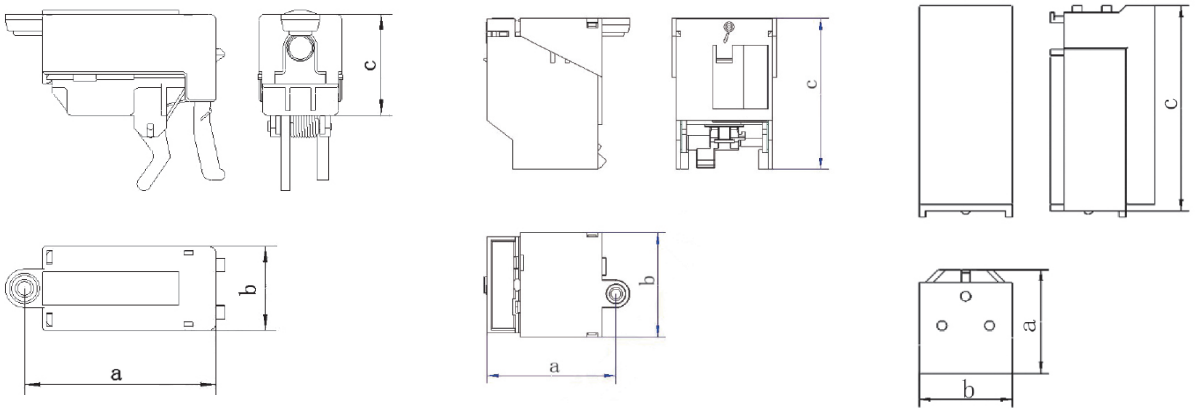
Sectional area of wire / Voltage applied	1.5mm^2	2.5mm^2
100% power voltage	150m	250m
80% power voltage	100m	160m

Scheme 2: The DC24V intermediate relay is used to control AC220V or AC380V shunt releases, the contact capacity of the intermediate relay shall not be less than 1A.
Wiring diagram is shown below:



Notes:
KA is a DC24V intermediate relay, and the contact current capacity is not less than 1A;
MX: AC220V/380V shunt release;
The rated voltage of MX is the power input voltage of A1 and A2.

● Outline dimensions of shunt release



MX3M12 MX3M40 MX3MS1

Outline dimension table of shunt release

Table 19

Accessory model	Outline dimensions		
	a	b	c
MX3M12	42.2	18.4	22.3
MX3M40	39.4	31.9	46.1
MX3MS1	31.5	29.8	63.1

Note: Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

6.3 External Accessories

6.3.1 Manual operating mechanism JJC

The circuit breaker is operated by rotating the handle, and the ergonomically designed rotary handle can make more flexible operation of the circuit breaker.

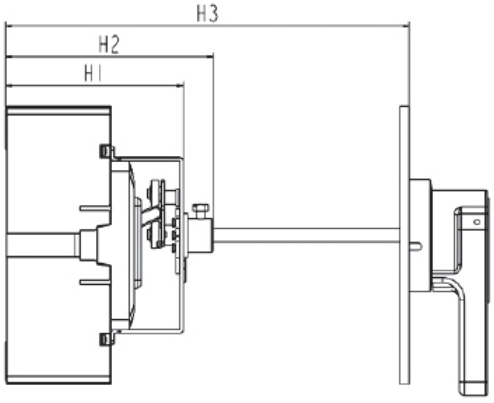
JJC 3M □ - □

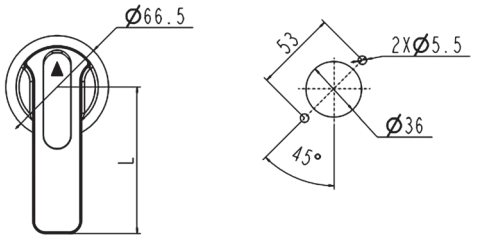
① ② ③ ④

①	Accessory code	JJC: Extended rotary handle operating mechanism
②	Design No.	
③	Code of matched product frame	12:125 frame; 25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame; S1: 1600 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles

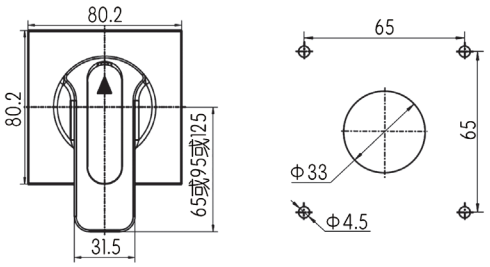
TGM3 Series Moulded Case Circuit Breaker

● Outline dimensions of manual operating mechanism





Round handle



Square handle

Outline dimensions of manual operating mechanism (mm)

Table 20

Product model		Installation dimensions (mm)			
		H1	H2	H3	L
TGM3-125	C/E/N	107.5	125.5	241.5	65
	L/S/M/H/R	121.5	139.5	255.5	
TGM3-250	C/E/N	105.5	123.5	229.5	95
	L/S/M/H/R	124	142	248	
TGM3-400		166.5	184.5	299	125
TGM3-630		170	188	304	125
TGM3-800		172	190	306	125
TGM3-1600		210	230	360	125

Notes: 1) Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.
2) The default length of the extended length of the manual operating mechanism is 150mm, and the maximum length is 500mm (with a 50mm increment). For any special length, please contact our company.

TGM3 Series Moulded Case Circuit Breaker

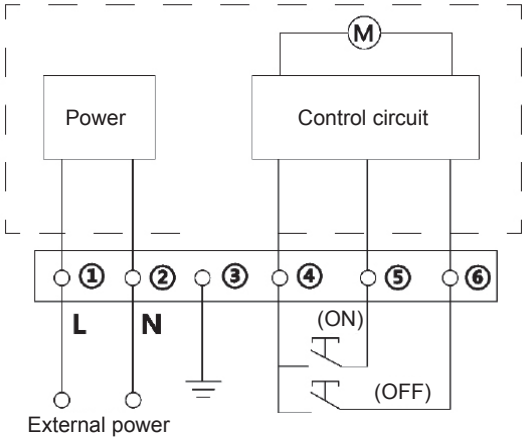
6.3.2 Motor mechanism CD

The motor mechanism is a device used to electrically open and close circuit breakers.
The motor mechanism has the function of indicating the status of the circuit breaker.
Local manual or electric operation, centralized operation, automatic control and conversion of normal/standby power supply
The wiring capacity of the terminal block is 2.5mm^2.

CD	3M	□	-	□	□	□
①	②	③		④	⑤	⑥

①	Accessory code	CD: Motor mechanism
②	Design No.	
③	Code of matched product frame	12:125 frame; 25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame; S1: 1600 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles
⑤	Voltage code	A1: AC/DC 110/220/230/240V, A2: AC380/400/415V
⑥	Energy storage code	C: Energy storage type; Default: General type

● Wiring Diagram



Notes:
L and N are external power inputs
(ON) and (OFF) are operating buttons (provided by users)

TGM3 Series Moulded Case Circuit Breaker

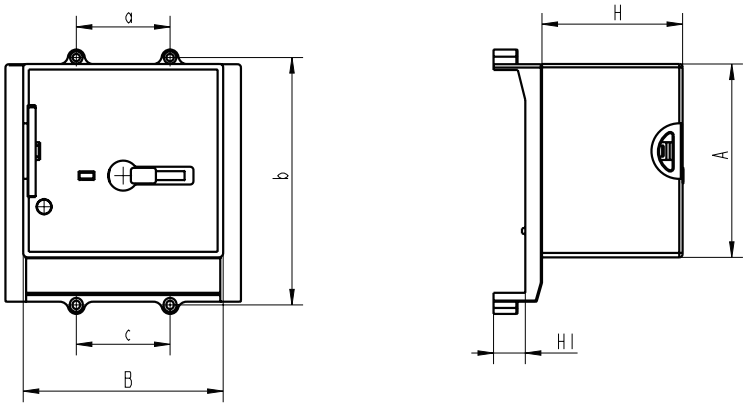
● Electrical Characteristics

Electrical characteristics of motor mechanism

Table 21

Model of motor mechanism	Available circuit breaker	Breaking time (s)	Power	
			DC110V/220V(W)	AC110/220/230V AC380/400/415V(VA)
CD3M12	TGM3-125	≤ 0.7	< 150	< 200
CD3M25	TGM3-250			
CD3M40	TGM3-400	≤ 1	< 200	< 300
CD3M63	TGM3-630			
CD3M80	TGM3-800			
CD3MS1	TGM3-1600	≤ 1	< 200	< 300

● Outline and installation dimensions of motor mechanism



Outline dimensions and installation dimensions diagram of motor mechanism

Outline dimensions of manual operating mechanism (mm)

Table 22

Product model	Installation dimensions (mm)						
	A	B	H	H1	a	b	c
CD3M12	87	90	63.5	11.4	84	118.5	84
CD3M25	87	90	63.5	14.3	42.2	111.4	42.2
CD3M40	138	132	72	14.8	44	209	131
CD3M63	138	132	72	14.3	58	225	170
CD3M80	138	132	72	16	70	223.5	200.5
CD3MS1	147	173.4	62.8	57.9	198.6	207.5	198.6

Note: Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

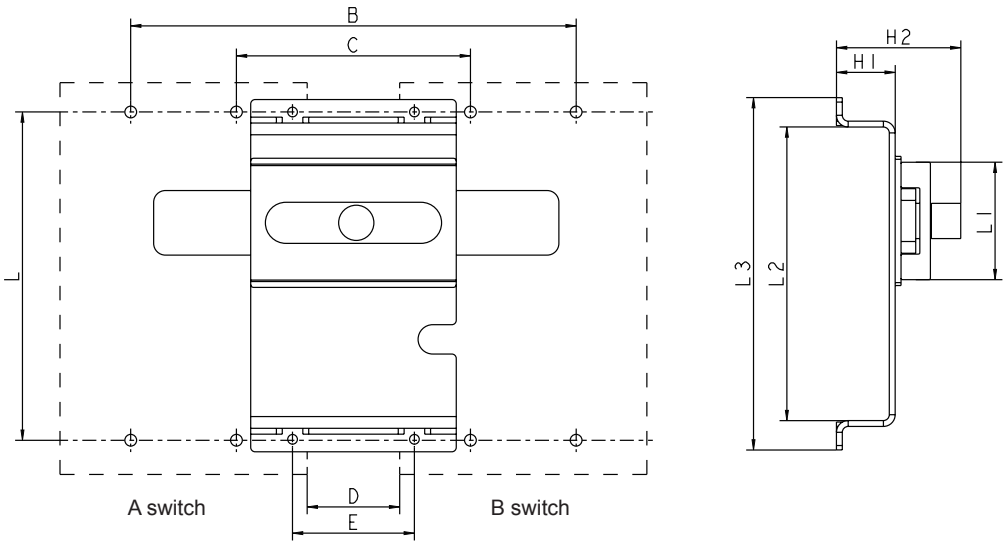
6.3.3 Mechanical interlock LS

It can make two circuit breakers interlocked together and prevents simultaneous closing.

LS	3M	□	-	□
①	②	③		④

①	Accessory code	LS: Mechanical interlock
②	Design No.	
③	Code of matched product frame	12:125 frame; 25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles

● Outline and installation dimensions of mechanical interlock



TGM3 Series Moulded Case Circuit Breaker

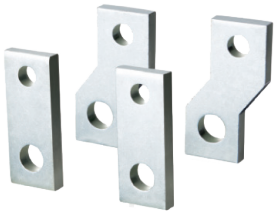
Outline and installation dimensions of mechanical interlock

Table 23

Product model	Outline and installation dimensions (mm)									
	B	C	D	E	L	L1	L2	L3	H1	H2
TGM3-125	152	92	30	38	104.5	40	95	125	18	40.5
TGM3-250	176	106	35	41.5	111.5	40	100	120	20	42.5
TGM3-400	227	139	44	52	194.5	61	175	208	24	47.5
TGM3-630	286	170	46	58	225	61	175	239	25	48.5
TGM3-800	332	192	52	61.5	230	61	177	245	27	50.5

Note: Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

6.3.4 Front-panel wiring transition busbar GP



This accessory can make the circuit breaker wiring more flexible, and it can increase the phase spacing and improve the safety between the lines.

GP 3M □ - □

① ② ③ ④

①	Accessory code	GP: Front-panel wiring transition busbar
②	Design No.	
③	Code of matched product frame	12:125 frame; 25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame; S1:1600 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles

6.3.5 Phase partition GB

It can enhance the insulation performance of the conductors between the phases, and can be installed from the front slot even after the switch is installed.

GB	3M	□	-	□	□
①	②	③		④	⑤

①	Accessory code	GB: Phase partition
②	Design No.	
③	Code of matched product frame	12:125 frame; 25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame; S1:1600 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles
⑤	Breaking specification	A: Suitable for 125 ~ 250 frame C/E/N products; B: Suitable for 125 ~ 250 frame L/S/M/H/R products; Default: Suitable for 400 frame ~ 1600 frame.

6.3.6 Back-panel wiring BH

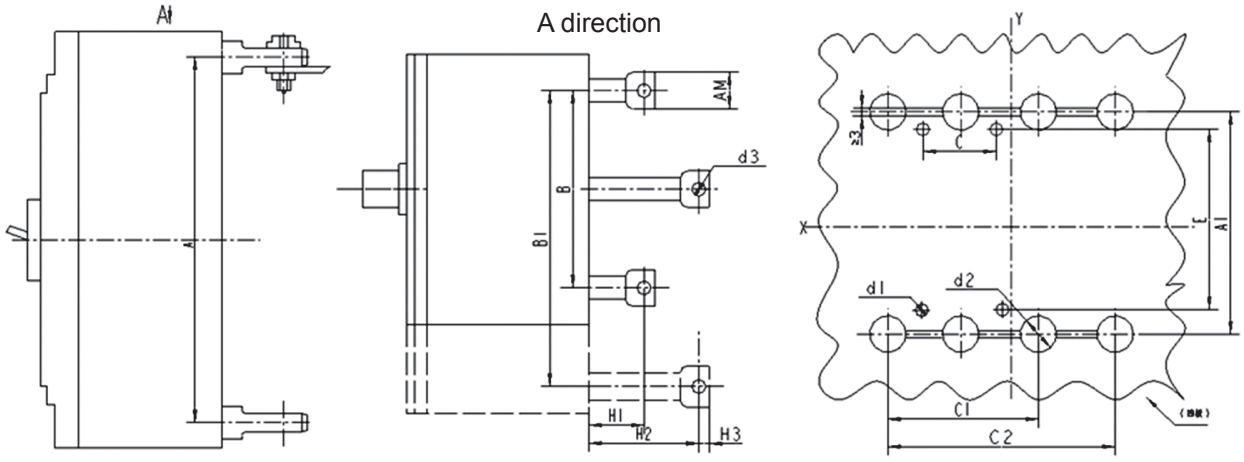
It can make the wiring method of the circuit breaker more flexible, and can realize the back-panel wiring connection.

BH	3M	□	-	□
①	②	③		④

TGM3 Series Moulded Case Circuit Breaker

①	Accessory code	BH: Back-panel wiring
②	Design No.	
③	Code of matched product frame	12:125 frame; 25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles

● Outline and installation dimension diagram of back-panel wiring connection



Outline and installation dimensions of back-panel wiring connection

Table 24

Model & Spec.	Outline dimensions (mm)								Installation dimensions (mm)						
	A	B	B1	H1	H2	H3	AM	d3	A1	C	C1	C2	E	d1	d2
TGM3-125	132.5	60	90	42.7	75.6	14.3	19.1	φ8.6	132.5	30	60	90	129.2	Φ4.5	Φ21
TGM3-250	145	70	105	45	78	14.3	19.1	φ8.6	145	35	70	105	126.2	Φ4.5	Φ21
TGM3-400	225.3	88	135	47.2	84.7	17.7	29.8	φ12.5	225.3	44	88	135	194	Φ6.5	Φ32
TGM3-630	234	116	174	45.8	86.1	24	34	φ16.2	234	58	116	174	200	Φ6.5	Φ36
TGM3-800	243	140	210	49	89.3	24	34	φ16.2	243	70	140	210	243.5	Φ6.5	Φ36

Note: Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

TGM3 Series Moulded Case Circuit Breaker

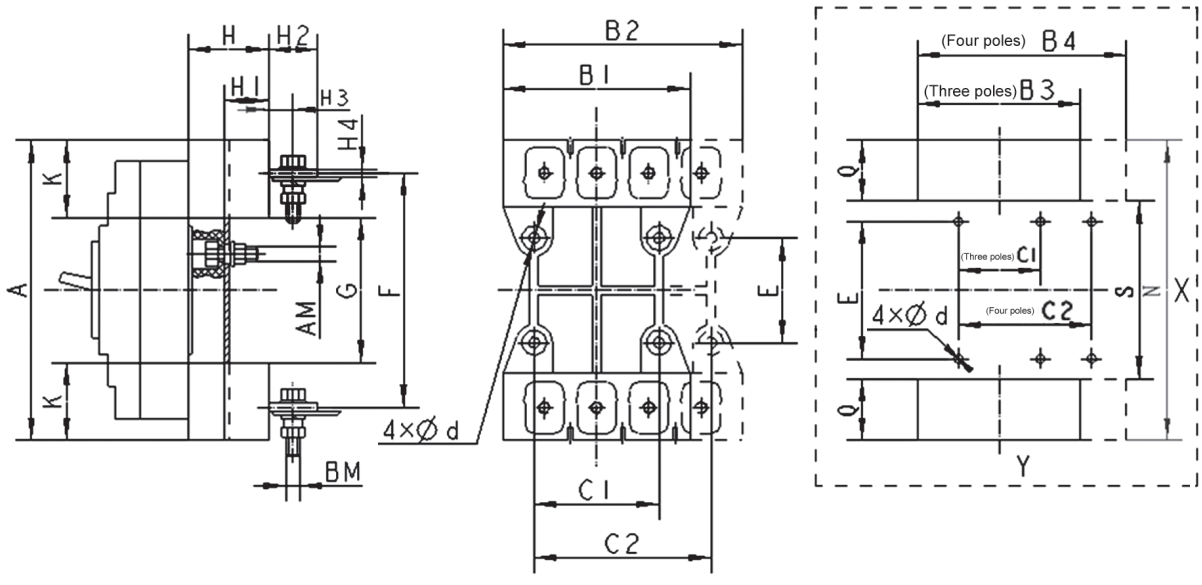
6.3.7 Plug-in Type Wiring Device CR

It can make the wiring connection of the circuit breaker more flexible, and can realize the plug-in wiring connection.

CR	3M	□	-	□	□
①	②	③		④	⑤

①	Accessory code	CR: Plug-in Type Wiring Device
②	Design No.	
③	Code of matched product frame	12:125 frame; 25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles
⑤	Model code	BQ: Front-panel wiring; BH: Back-panel wiring

● Outline and installation dimension diagram of plug-in back-panel wiring connection



Outline and installation dimension diagram of plug-in back-panel wiring connection

TGM3 Series Moulded Case Circuit Breaker

Table 25

Model	Outline and installation dimensions (mm)																				
	A	B1	B2	C1	C2	E	F	G	K	H	H1	H2	N	S	Q	B3	B4	AM	BM	d	H3	H4
TGM3-125	169	91	125	60	90	3P:58.3 4P:56.7	132	93	38	50	30	33	179	83	48	101	135	M6	M8	Φ6.5	17	4
TGM3-250	3P:183 4P:185	107	145	70	105	55	142	3P:33.5 4P:95	45	50	30	35	195	85	56	117	155	M6	M8	Φ6.5	17.5	5.5
TGM3-400	281	144	188	88	132	144.5	225	181	50	60	36	42	291	171	60	154	198	M8	M12	Φ8.5	23.5	8
TGM3-630	297	180	242	100	158	123	234	168.5	64.5	60	37	48	307	160	75	190	252	M8	M12	Φ8.5	28	11
TGM3-800	305	210	280	90	160	146	242	180	62	87	57	52	316	170	72	220	290	M10	M12	Φ11	38	14.5

Note: Unless otherwise specified, the tolerance sizes refer to GB/T 1804-c.

6.3.8 Drawer type wiring device CJ

It can make the wiring connection of the circuit breaker more flexible, and can realize the drawer type wiring connection.

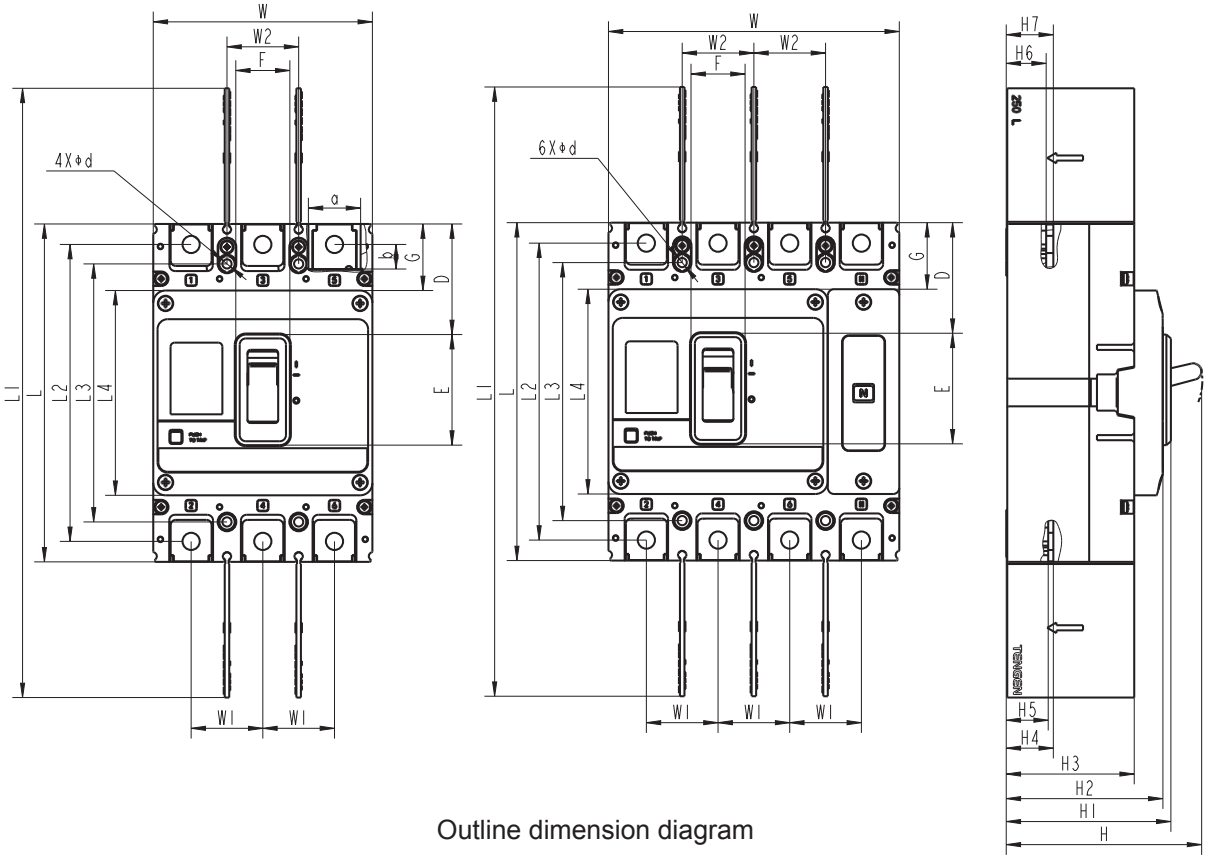
CJ	3M	□	-	□	□
①	②	③		④	⑤

①	Accessory code	CJ: Drawer type wiring device
②	Design No.	
③	Code of matched product frame	25:250 frame; 40:400 frame; 63:630 frame; 80:800 frame
④	Pole number code	Default: General 3P: Three poles 4P: Four poles
⑤	Model code	BQ: Front-panel wiring; BH: Back-panel wiring

TGM3 Series Moulded Case Circuit Breaker

7 Outline and Installation Dimensions

7.1 Product Outline and Installation Dimensions



Outline dimension diagram

Outline dimensions

Table 26

Model	Breaking capacity	Number of poles	Outline dimensions (mm)																			
			W	L	H	W1	L1	L2	L4	H1	H2	H3	H4	H5	H6	H7	E	F	D	G	a	b
TGM3-125	C/E/N	3P	92	150	98.5	30	264	132	95	78.5	73.6	62.5	24	21.5	21.5	24	50	28.4	47.5	27.5	19	9
	L/S/M/H/R				112.5					92.5	87.6	76.5										
	C/E/N	4P	122		98.5					78.5	73.6	62.5										
	L/S/M/H/R				112.5					92.5	87.6	76.5										
TGM3-250	C/E/N	3P	107	165	97	35	279.5	145	100	80.4	76.5	62.5	23	20.5	19.5	23	54	26.4	54	32.5	25.5	12
	L/S/M/H/R				115.5					98.9	95	81										
	C/E/N	4P	142		97					80.4	76.5	62.5										
	L/S/M/H/R				115.5					98.9	95	81										
TGM3-400	C/E/L/ M/H/ R	3P	140	257	159.5	44	471	225	175.5	120	111.5	97	38	35.5	34	38	88	58	77	41	34	16
		4P	184																			

TGM3 Series Moulded Case Circuit Breaker

Table 26, continued

Model	Breaking capacity	Number of poles	Outline dimensions (mm)																		
			W	L	H	W1	L1	L2	L4	H1	H2	H3	H4	H5	H6	H7	E	F	D	G	a	b
TGM3-630	C/E/L/ M/H/ R	3P	182	270	162	58	482	235	175	121.6	115	101	42.5	39.5	37.5	42.5	88	58	84	47.5	45.2	17.5
		4P	240																			
TGM3-800	L/ M/H/R	3P	210	280	165	70	497	243	175	125.5	117	101	41	39	38	41	88	60	89	52.5	51.5	15.5
		4P	280																			
TGM3-1600	L/M/H/R	3P	210	268	228	70	480	237.6	198	163	157.5	109	24	22	22	24	121	76	108.5	40	56	16
		4P	280																			

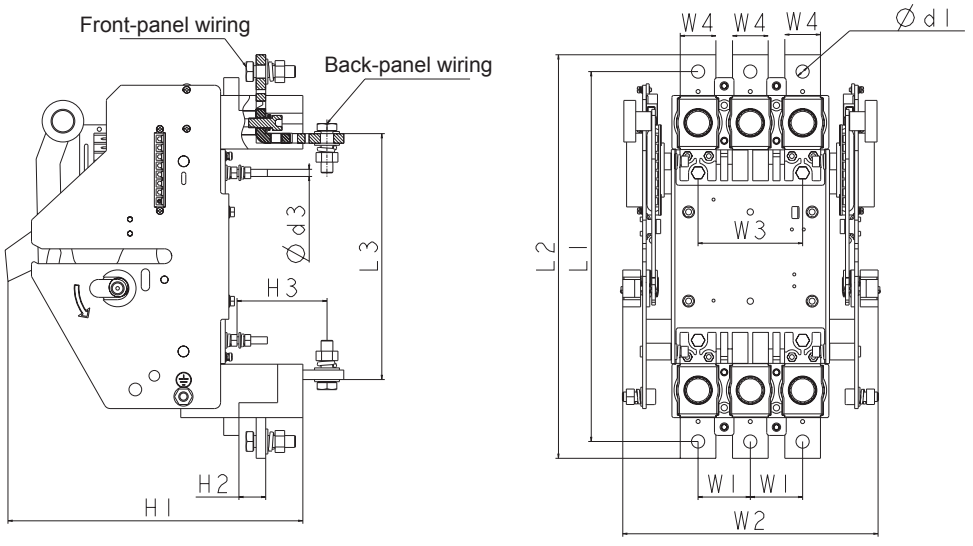
Note: Unless otherwise specified, the dimensional tolerance shall refer to GB/T 1804-c.

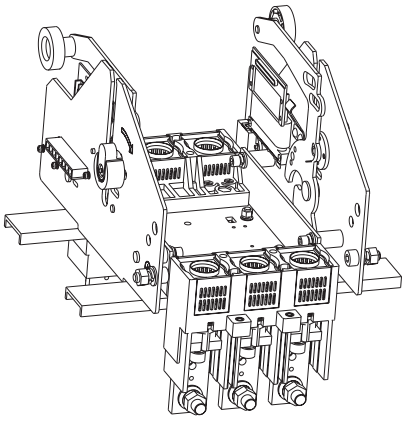
Table 27

Model	Installation dimensions (mm)			
	W2	L3	d	Mounting screw spec.
TGM3-125	30	129	5	M4
TGM3-250	35	126	4.5	M4
TGM3-400	44	194	6.5	M6
TGM3-630	58	200	6	M5
TGM3-800	70	243	7	M6
TGM3-1600	70	245	5.5	M5

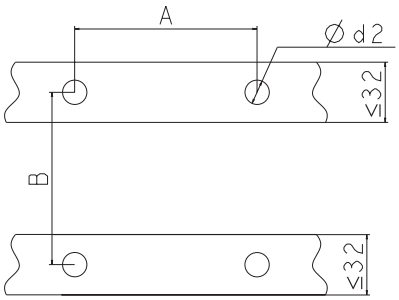
Note: Unless otherwise specified, the dimensional tolerance shall refer to GB/T 1804-c.

7.2 Outline and Installation Dimensions of Drawer Type





Rail mounted



Rail installation dimensions diagram

Drawer type outline and installation diagram

Drawer type outline and installation dimensions

Table 28

Available circuit breaker	Number of poles	Outline dimensions (mm)												Installation dimensions		
		L1	L2	L3	H1	H2	H3	W1	W2	W3	W4	Φ d1	Φ d3	A	B	Φ d2
TGM3-250	3-pole	222	242	160	185	2	19	35	181	70	20	8.5	M5	69	64	6
TGM3-400	3-pole	312	340	200	248	24	78	48	223	96	30	11	M6	96	140	7
TGM3-630	3-pole	343	381	210	277	37	102	58	258	116	40	13	M6	116	140	7
TGM3-800	3-pole	348	386	218	238	36	101	70	293	140	40	13	M6	140	131	7

Note: Drawer type is unavailable for frame 125A and 1600A products. If 250A~800A four-pole product requires this type, please contact the manufacturer.

8. Ordering Notice

The following items must be indicated when ordering: product model, specification, number of poles, trip mode and accessory name, protection characteristics, rated current, and order quantity.
For example: To order TGM3-125, four-pole, distribution protection circuit breaker with N-pole code C-type, L-type breaking capacity, thermomagnetic releaser, rated current 100A, 200 sets.
It should be written: TGM3-125L/4300C 100A 200 sets. If there are special requirements for circuit breakers, please contact the manufacturer.