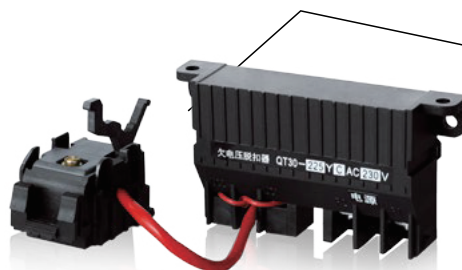


TGM1N Series Moulded Case Circuit Breaker

- 1 Body
- 2 Mechanical interlock mechanism (optional to customers)
- 3 Phase partition (standard)
- 4 Plug-in type (optional to customers)
- 5 Undervoltage release (optional to customers)
- 6 Shunt release (optional to customers)
- 7 Alarm contact (optional to customers)
- 8 Auxiliary contact (optional to customers)
- 9 Rotating handle operation (optional to customers)
- 10 Electric motor operating mechanism (optional to customers)
- 11 Front-panel connection transition plate (optional to customers)
- 12 Rear-panel connection (optional to customers)



5



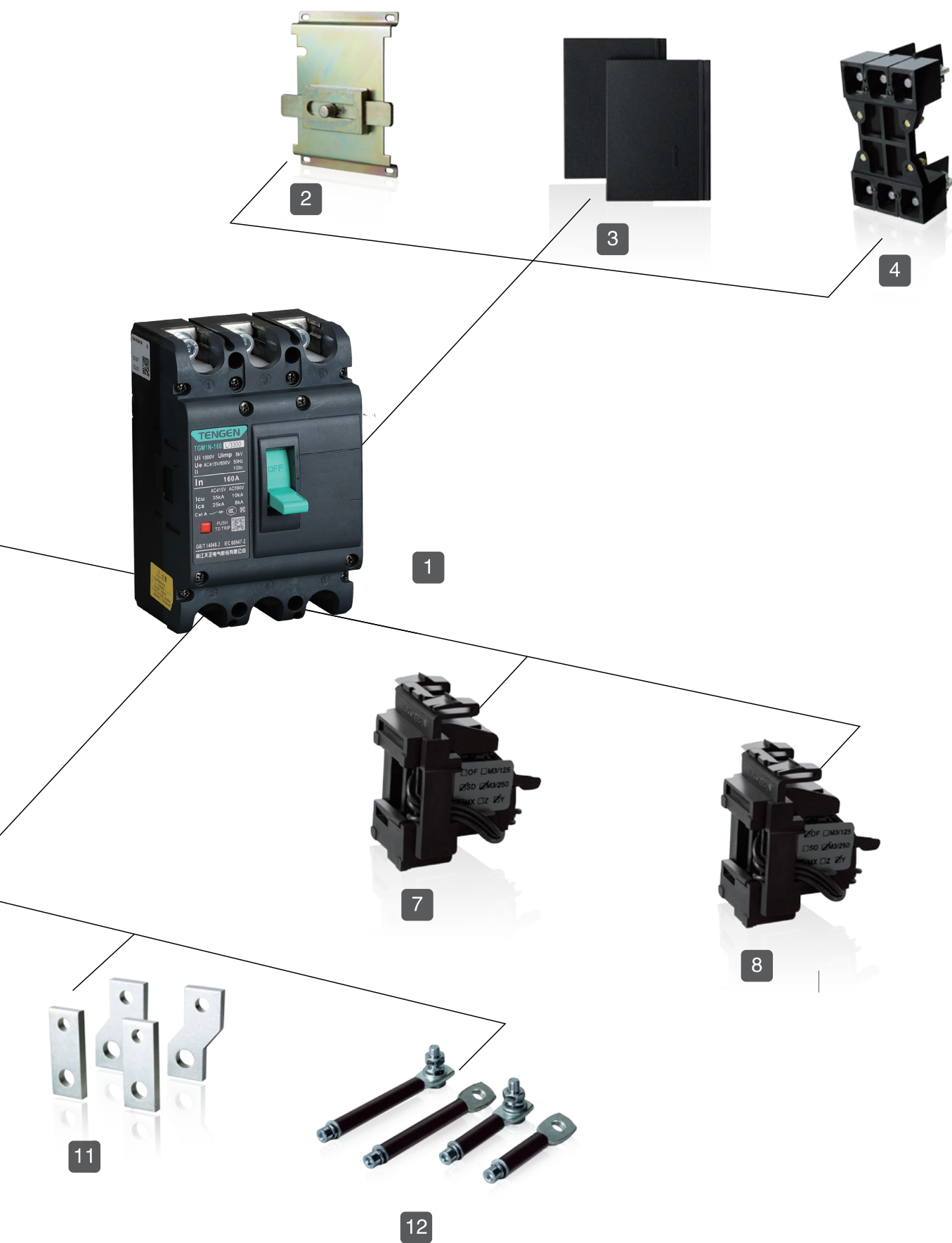
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10



TGM1N Series Moulded Case Circuit Breaker



1 Overview

TGM1N series moulded case circuit breaker is a new type of circuit breaker developed with international advanced technology platform. It is suitable for power distribution protection in AC 50/60Hz, circuits with the rated working voltage $\leq 690V$, and can also be used for occasional circuit switch and startup of motor. This product has the advantages of exquisite appearance, compact volume, convenient With maintenance, excellent performance, etc.. It can fully replace the M1 series products in the market due to its excellent performance and high cost performance.

This series circuit breaker is equipped with overload and short circuit protection devices. This series circuit breaker may be installed vertically (i.e., vertical installation) or horizontally (i.e., horizontal installation).

It has disconnecting function, with the corresponding symbol of: 

The circuit breaker shall meet the standard IEC 60947-1 and IEC 60947-2

Certificate: CB, CE

2 Type Designation

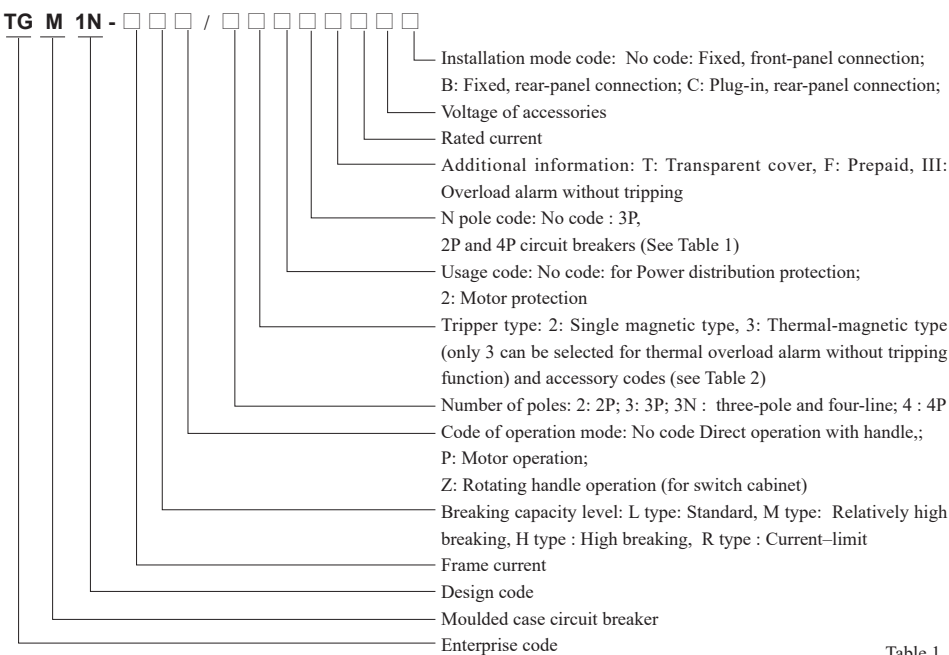


Table 1

Wiring mode		
Type A	N pole is not equipped with over-current tripping element, has been connected with all along, and does not act with other three poles	3N300A
B	N pole is not equipped with over-current tripping element, and acts with other three poles (N-pole turn on prior to turn off)	4300B
Type C	N pole is equipped with over-current tripping element, and acts with other three poles (N-pole turn on prior to turn off)	4300C
Type D	N pole is equipped with over-current tripping element, has been connected with all along, and does not act with other three poles	3N300D

Note: No code for 3-pole products. Type A and Type D are corresponding to 1N and 3N, respectively. 2-pole product and 4-pole product are corresponding to Type B and Type C.

Currently, there is no transparent cover product for 630 large size/800/1250/1600 frame.

Currently, there is no transparent cover 2P product.

2.1 View of codes of 4-pole product



Without over-current tripper

Type A: N pole is not equipped with over-current tripping element, has been connected with all along, and does not act with other three poles.



Without over-current tripper

Type B: N pole is not equipped with over-current tripping element, and acts with other three poles (N-pole turn on prior to turn off).

TGM1N Series Moulded Case Circuit Breaker



Type C: N pole is equipped with over-current tripping element, and acts with other three poles (N-pole turn on prior to turn off).

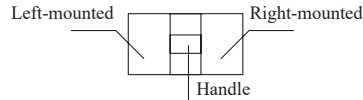


Type D: N pole is equipped with over-current tripping element, has been connected with all along, and does not act with other three poles.

With over-current tripper

With over-current tripper

2.2 Table of codes for internal accessories



Alarm contact ● Auxiliary contact ○
Shunt release ■ Undervoltage release ▲

Table 2

Accessory Name	Accessory code	TGM1N-63 TGM1N-125	TGM1N-160	TGM1N-250 TGM1N-320	TGM1N-400 TGM1N-630 TGM1N-800	TGM1N-1250	TGM1N-1250 Small volume	TGM1N-1600
		Standard setting	Standard setting	Standard setting	Standard setting	Standard setting	Standard setting	Standard setting
No accessories	00							
Alarm contact	08							
Shunt release	10							
Auxiliary contact	20							
Undervoltage release	30							
Shunt release Auxiliary contact	40							
Shunt release Undervoltage release	50							
Two sets Auxiliary contact	60							
Auxiliary contact Undervoltage release	70							
Shunt release Alarm contact	18							
Auxiliary contact Alarm contact	28							
Undervoltage release Alarm contact	38							
Shunt release Auxiliary contact Alarm contact	48							
Two groups of auxiliary contacts Alarm contact	68							
Undervoltage release Auxiliary contact Alarm contact	78							

- ★ Note:1. The internal accessories can be installed on the left and right. Please indicate the installation direction when ordering accessories (such as right shunt), and the default configuration will be available unless otherwise specified.
2. The prepaid shunt is suitable for 160-800 frames.
3. The transparent cover type circuit breakers are not equipped with accessories.
4. For below 400 type, 1250 type (small size) and 1600 type aux. contacts, one normally open and one normally closed will be available by default; for 400 type – 1250 type (except for 1250 small-size type) aux. contacts, two normally open and two normally closed will be available by default (except for aux. alarm contacts 28/48/68/78).
5. TGM1N-160 4P does not support right undervoltage.

2.3 Applicable frame current of overload alarm without tripping

Frame current	160	250/320	400	630	800
Rated current	16、20、25、32、40、50、60、63、70、75、80、100、125	100、125、140、150、160、170、180、200、225、250	250、280、300、315、320、350、380、400	400、450、500、550、600、630	630、700、800

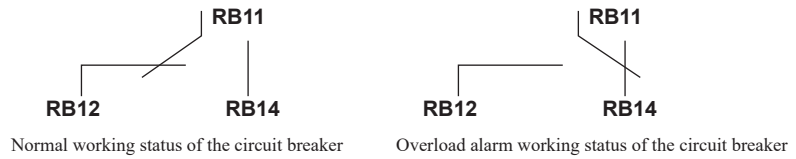
Remarks: 3P, 3P+N A type and 4P B type can be equipped with overload alarm without tripping accessories (only applicable to L and M types)

TGM1N Series Moulded Case Circuit Breaker

2.4 Feature of overload alarm without tripping

Overload alarm without tripping refers to that the circuit breaker B11-B14 is connected to send alarm signal, but the circuit breaker does not trip when the actual current exceeds the overload tripping current and the circuit breaker reaches the tripping time.

- Working schematic diagram



3 Technical Parameters

3.1 Basic parameters

Table 3

Basic parameters																					
Frame current		63				125				160				250				320			
Rated working voltage Ue(V)		AC230/240、 AC380/400/415、 AC660/690				AC230/240、 AC380/400/415、 AC660/690				AC230/240、 AC380/400/415、 AC660/690				AC230/240、 AC380/400/415、 AC660/690				AC230/240、 AC380/400/415、 AC660/690			
Rated insulation voltage Ui(V)		800				800				1000				1000				1000			
Rated impulse withstand voltage Uimp(kV)		8				8				8				12				8			
Rated frequency Hz		AC（50/60Hz）																			
Rated current In(A)		10 (L/M type only)、16、20、 25、32、40、50、63				10 (L/M type only)、16、20、 25、32、40、50、63、80、 100、125				16、20、25、32、40、50、 60、63、70、75、80、100、 125、140、150、160				100、125、140、150、160、 170、180、200、225、250				100、125、140、150、160、 170、180、200、225、250、 270、280、300、315、320			
Short-circuit protection setting value li		6In、8In、10In、12In																			
Breaking capacity		L	M	H	R	L	M	H	R	L	M	H	R	L	M	H	R	L	M	H	R
Icu	2P _i (AC230/240V) (kA)	35	50	/	/	35	50	/	/	50	70	/	/	50	70	/	/	50	70	/	/
	3P/4P _i (AC380/400/415V) (kA)	25	35	50	70	25	35	50	70	35	50	70	85	35	50	70	85	35	50	70	85
	3P/4R _i (AC660/690V) (kA)	5	5	8	10	5	5	8	10	10	10	10	20	10	10	10	20	10	10	10	20
Ics	2P _i (AC230/240V) (kA)	25	35	/	/	25	35	/	/	35	50	/	/	35	50	/	/	35	50	/	/
	3P/4P _i (AC380/400/415V) (kA)	18	25	35	50	18	25	35	50	25	35	50	65	25	35	50	65	25	35	50	65
	3P/4R _i (AC660/690V) (kA)	5	5	8	10	5	5	8	10	8	8	10	10	8	8	10	10	8	8	10	10
Applicable working ambient temperature		-5℃~+40℃																			
Usage category		A																			
Flashover distance (mm)		≤50				≤50				≤50				≤50				≤50			
Isolating function		With (without for 1P+N, 3P+N)																			
Mechanical life (times)	Without maintenance	20,000				2,000				20,000				20,000				20,000			
	With With maintenance	40,000				40,000				40,000				40,000				40,000			
Electrical life (times)		10,000				10,000				10,000				10,000				10,000			
Protection type		Power distribution protection				Power distribution protection				Power distribution protection				Power distribution protection				Power distribution protection			
		Motor protection				Motor protection				Motor protection				Motor protection				Motor protection			
Tripping mode		Thermal magnetic				Thermal magnetic				Thermal magnetic				Thermal magnetic				Thermal magnetic			
		Single-magnetic				Single-magnetic				Single-magnetic				Single-magnetic				Single-magnetic			
Overload alarm without tripping	2P、4P/C type 4P/D type	-				-				-				-				-			
	3P、4P/A type 4P/B type	-				-				■				■				■			
Prepayment function		-				-				■				■				■			

TGM1N Series Moulded Case Circuit Breaker

Continued table 3

Basic parameters																			
Frame current		400			630			630 large volume			800			1250		1250 small volume		1600	
Rated working voltage U _e (V)		AC380/400/415、AC660/690			AC380/400/415、AC660/690			AC400/415 AC660/690			AC380/400/415 AC660/690			AC400		AC400		AC400/415V AC690V	
Rated insulation voltage U _i (V)		1000			1000			800			1000			800		1000		1000	
Rated impulse withstand voltage U _{imp} (kV)		12			12			8			12			8		8		8	
Rated frequency Hz		AC (50/60Hz)						AC (50Hz)			AC (50Hz)			AC (50Hz)		AC (50Hz)		AC (50/60Hz)	
Rated current I _n (A)		250、280、300、315、320、350、380、400			400、450、500、550、600、630			400、500、630			630、700、800			1000、1250		630、700、800、1000、1250		1000、1250、1500、1600	
Short-circuit protection setting value I _i		6I _n 、8I _n 、10I _n 、12I _n											≤800A: 10I _n ≥1000A: 7I _n				10I _n		
Breaking capacity		L	M	H	L	M	H	L	M	L	M	H	L	M	H	M	H		
I _{cu}	2P; (AC230/240V) (kA)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
	3P/4P (AC380/400/415V) (kA)	50	70	100	50	70	100	50	65	50	70	100	80 (3P only)	65	80	50	100		
	3P/4P; (AC660/690V) (kA)	10	15	20	10	15	20	10	10	15	20	20	/	/	/	20	20		
I _{cs}	2P; (AC230/240V) (kA)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
	3P/4P; (AC380/400/415V) (kA)	35	50	75	35	50	75	35	42	35	50	75	40 (3P only)	50	65	50	85		
	3P/4P; (AC660/690V) (kA)	10	10	10	10	10	10	5	5	15	15	15	/	/	/	20	20		
Applicable working ambient temperature		-5℃ ~ +40℃																	
Usage category		A																	
Flashover distance (mm)		≤100			≤100			≤100			≤100			≤120		≤100		≤100	
Isolating function		With (without for 1P+N, 3P+N)																	
Mechanical life (times)	Without maintenance	10,000			10,000			10,000			8,000			5,000		5,000		2,500	
	With maintenance	20,000			20,000			20,000			10,000			10,000		5,000		5,000	
Electrical life (times)		8,000			8,000			8,000			5,000			2,500		5,000		500	
Protection type		Power distribution protection			Power distribution protection			Power distribution protection			Power distribution protection			Power distribution protection		5.Power distribution protection		Power distribution protection	
		Motor protection			Motor protection			Motor protection			Motor protection			/		/		/	
Tripping mode		Thermal magnetic			Thermal magnetic			Thermal magnetic			Thermal magnetic			Thermal magnetic		Thermal magnetic		Thermal magnetic	
		Single-magnetic			Single-magnetic			Single-magnetic			Single-magnetic			Single-magnetic		Single-magnetic		Single-magnetic	
Overload alarm	2P,4P/C type 4P/D type	-			-			-			-			-		-		-	
without tripping	3P,4P/A type 4P/B type	■			■			-			■			-		-		-	
Prepayment function		■			■			■			■			-		-		-	

Note: The minimum current of TGM1N-63/125H/R is 16A

3.2 Wiring mode

Table 4

Wiring mode												
Frame current	63	125	160	250	320	400	630	630 large volume	800	1250	1250 small volume	1600
Fixed, front-panel connection	■	■	■	■	■	■	■	■	■	■	■	■
Fixed, rear-panel connection	□	□	□	□	□	□	□	□	□	-	-	-
Plug-in rear-panel connection	□	□	□	□	□	□	□	□	□	-	-	-
Plug-in front-panel connection	□	□	□	□	□	□	□	□	□	-	-	-

TGM1N Series Moulded Case Circuit Breaker

3.3 Accessories optional

Table 5

Accessories information												
Frame current	63	125	160	250	320	400	630	630 Large volume	800	1250	1250 small volume	1600
Undervoltage release	□	□	□	□	□	□	□	□	□	-	□	□
Shunt release	□	□	□	□	□	□	□	□	□	□	□	□
Alarm contact	□	□	□	□	□	□	□	□	□	-	□	□
Auxiliary contact	□	□	□	□	□	□	□	□	□	□	□	□
Mechanical interlock	□	□	□	□	□	□	□	-	□	-	-	-
Terminals of transition bar	□	□	□	□	□	□	□	□	□	-	□	□
Electric motor operating mechanism	□	□	□	□	□	□	□	□	□	□	□	□
Circular extended rotating handle	□	□	□	□	□	□	□	□	□	-	-	-
Phase partition	■	■	■	■	■	■	■	■	■	■	■	■
Special for prepayment ammeter	□	□	□	□	□	□	□	□	□	-	-	-

□ represents optional represents

■ represents standard represents

3.4 Tripping characteristics of the product

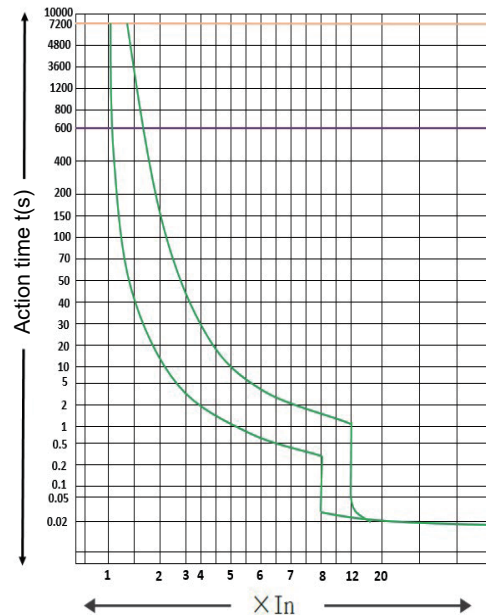
Table 6

Tripper Rated Current (A)	Thermal tripper (reference temperature +30℃)		Action current for the electromagnetic tripper (A)	Remarks
	1.05In (Cold state) No-action time (h)	1.3In (thermal state) Action time (h)		
10≤In≤63	≥1	< 1	6In±20%、 8In±20%、 10In±20%	Power distribution type
63≤In≤1600	≥2	< 2		
10≤In≤1600	1.0In (cold state) no- action time (h)	1.2In (thermal state) action time (h)	12In±20%	Motor protection type
	≥2	< 2		

*Note: The hot state refers to the state after the conventional non-trip current is sustained to the specified agreed time;
TGM1 TGM1N-63/125 L/M/H: The instantaneous operation characteristics below 40A are set at 40A.
TGM1N-63/125 R, TGM1N-160: The instantaneous operation characteristics below 50A are set at 50A.

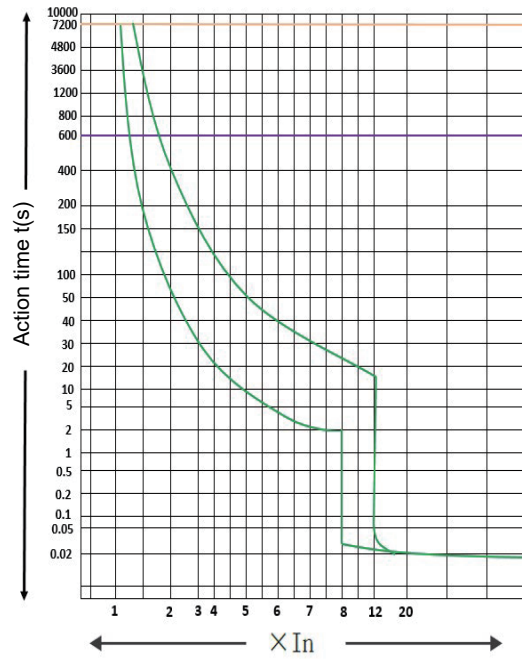
3.5 TGM1N series time/current characteristic curve

3.5.1 TGM1N-63/125 time/current characteristic curve

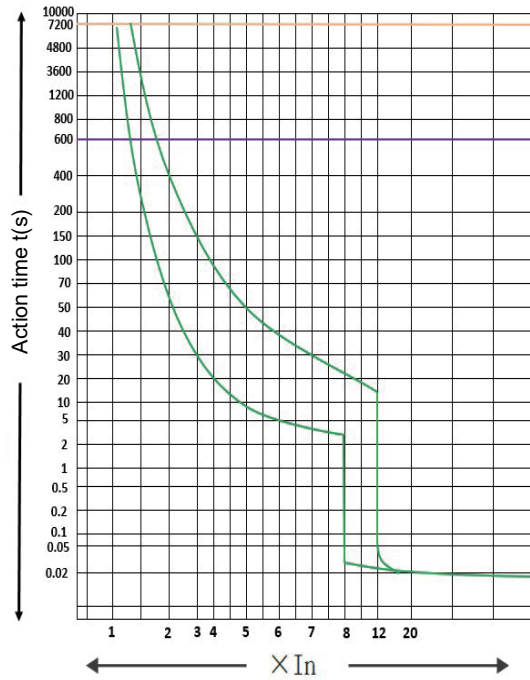


TGM1N Series Moulded Case Circuit Breaker

3.5.2 TGM1N-160 time/current characteristic curve

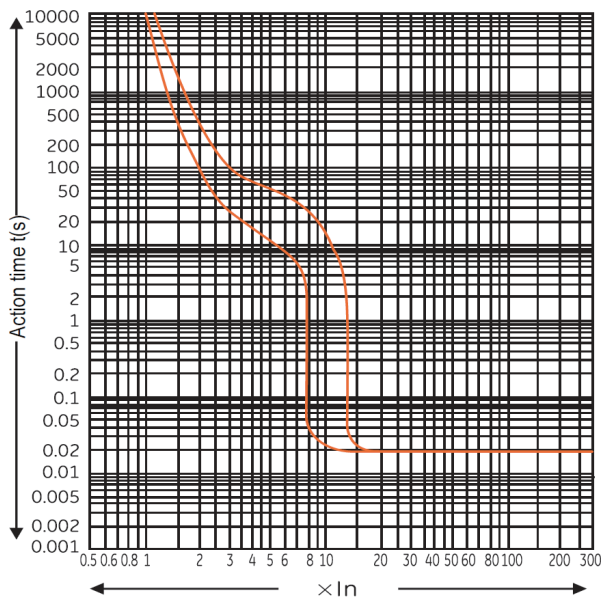


3.5.3 TGM1N-250/320 time/current characteristic curve

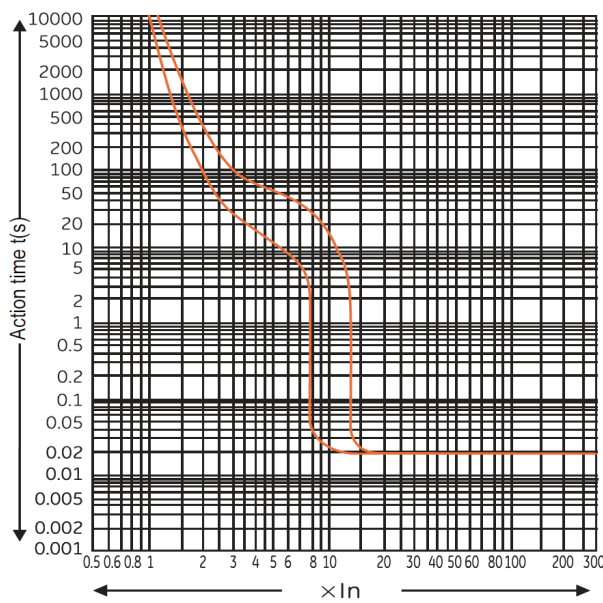


TGM1N Series Moulded Case Circuit Breaker

3.5.4 TGM1N-400 time/current characteristic curve

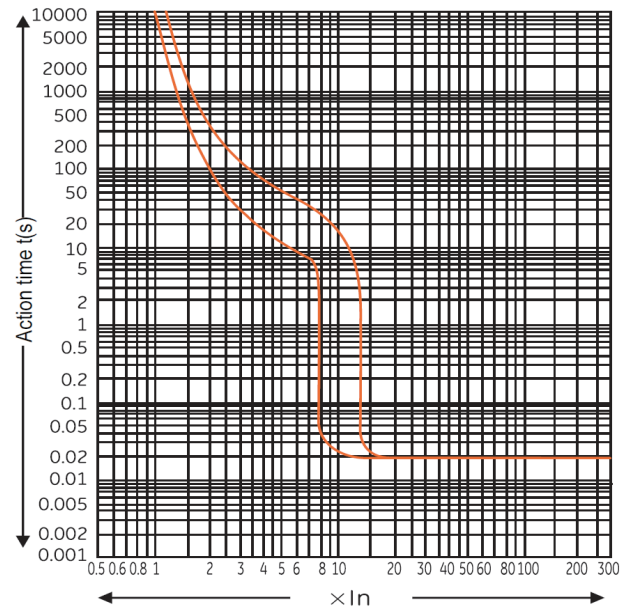


3.5.5 TGM1N-630 time/current characteristic curve

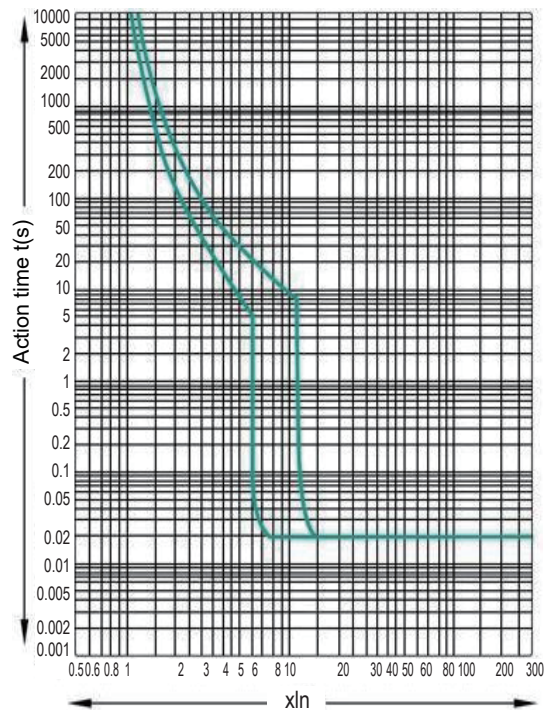


TGM1N Series Moulded Case Circuit Breaker

3.5.6 TGM1N-800 time/current characteristic curve

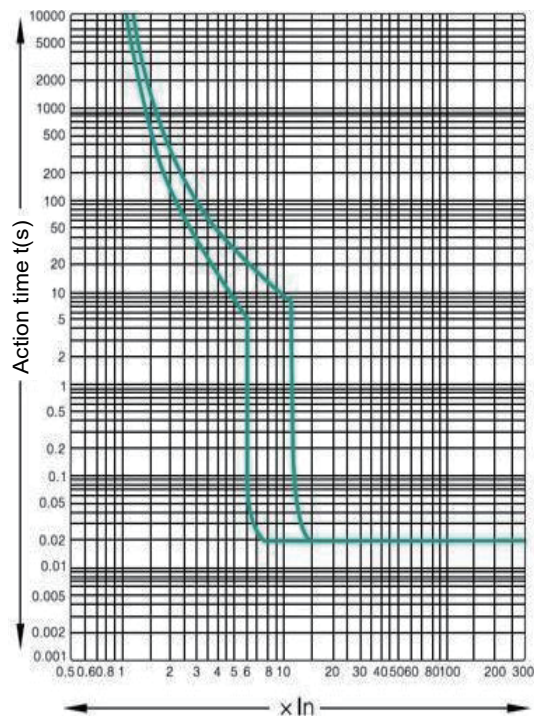


3.5.7 TGM1N-1250 time/current characteristic curve



TGM1N Series Moulded Case Circuit Breaker

3.5.8 TGM1N-1600 time/current characteristic curve



3.6 Breaker Power Loss Reference Table

Table 7

Model	Current	Single-pole resistance (mΩ)	Total power loss (W) of 3/4 poles		
			Front panel connection	Rear-panel connection	Plug-in rear-panel connection
TGM1N-63	63	0.75	24	27	28
TGM1N-125	125	0.72	28	31	32
TGM1N-160	160	0.4	60	87	89
TGM1N-250	250	0.2	63	90	90
TGM1N-320	320	0.19	65	95	98
TGM1N-400	400	0.15	68	72	100
TGM1N-630	630	0.14	180	190	200
TGM1N-800	800	0.11	200	230	290
TGM1N-1250	1250	0.04	260	/	/
TGM1N-1600	1600	0.04	260	/	/

TGM1N Series Moulded Case Circuit Breaker

3.7 Cross-section area of the copper lead connected to the product

Table 8

Rated current (A)	10	16 20	25	32	40 50	63	80	100	125	160	180 225	250	315 350	400
Cross-sectional area of DA lead (mm ²)	1.5	2.5	4	6	10	16	25	35	50	70	95	120	185	240

Rated current (A)	Cable		Copper bar	
	Quantity	Cross-section area (mm ²)	Quantity	Cross-section area (mm ²)
500	2	150	2	30x5
630	2	185	2	40x5
800	2	240	2	50x5
1250	—	—	2	80x5
1600	—	—	2	100x5

3.8 Product wiring tightening torque

Table 9

Model	TGM1N-63/125	TGM1N-160	TGM1N-250/320	TGM1N-400/630	TGM1N-630Large volume/800	TGM1N-1250	TGM1N-1250 Small volume	TGM1N-1600
Nominal diameter of thread (mm)	M8	M8	M8	M10	M12	M12	M10	M10
Tightening torque (N.m)	8	10	12	22	28	30	22	22

3.9 Correction factors used in high attitude area

3.9.1 When the altitude is < 2,000 meters, it has no significant effect on the product performance.

3.9.2 When the altitude is >2,000 meters, air cooling effect and decrease of rated impulse withstand voltage shall be considered. Therefore, the manufacturer shall negotiate with users for design or use.

3.9.3 The following table is the table of electrical performance correction factor of the circuit breaker at the altitude >2,000 meters.

Table 10

Altitude (m)	2000	3000	4000	5000
Working current correction factor	1In	0.94In	0.88In	0.85In
Insulation voltage (V)	1Ue	0.8Ue	0.7Ue	0.6Ue
Power frequency withstand voltage (V)	0.3Uimp	0.25Uimp	0.2Uimp	0.18Uimp

TGM1N Series Moulded Case Circuit Breaker

3.10 Ambient temperature correction factor

3.10.1 When it is used at the normal working ambient temperature(-5°C - $+30^{\circ}\text{C}$), it has no effect on product performance.

3.10.2 When working ambient temperature is $>30^{\circ}\text{C}$ - or $< -5^{\circ}\text{C}$ -, the tripping characteristics and temperature rise of the product will be affected by ambient temperature. Therefore, the manufacturer shall negotiate with users for design or use.

3.10.3 The table below gives the correction coefficient table of circuit breaker under different ambient temperatures.

Table 11

Model	Ambient temp.						
	40°C	45°C	50°C	55°C	60°C	65°C	70°C
TGM1N-63	0.95In	0.91In	0.9In	0.89In	0.85In	0.83In	0.75In
TGM1N-125	0.94In	0.93In	0.92In	0.91In	0.89In	0.86In	0.79In
TGM1N-160	0.94In	0.93In	0.92In	0.91In	0.89In	0.87In	0.84In
TGM1N-250	0.9In	0.89In	0.85In	0.81In	0.78In	0.76In	0.74In
TGM1N-320	0.9In	0.89In	0.85In	0.81In	0.78In	0.76In	0.74In
TGM1N-400	0.9In	0.89In	0.85In	0.81In	0.78In	0.76In	0.73In
TGM1N-630	0.94In	0.92In	0.9In	0.87In	0.86In	0.81In	0.73In
TGM1N-630Large volume	1In	0.95In	0.94In	0.92In	0.9In	0.88In	0.86In
TGM1N-800	0.93In	0.85In	0.82In	0.8In	0.78In	0.76In	0.74In
TGM1N-1250	0.9In	0.88In	0.87In	0.86In	0.85In	0.78In	0.74In
TGM1N-1600	0.9In	0.88In	0.87In	0.86In	0.85In	0.78In	0.74In

4 Operating Conditions

4.1 Ambient temperature

4.1.1 Normal working temperature is -5°C - $+40^{\circ}\text{C}$, working temperature limit is -40°C - $+70^{\circ}\text{C}$.

4.1.2 Derate according to the sample requirements when the temperature is $<-5^{\circ}\text{C}$ or $> +40^{\circ}\text{C}$ (see Table 11 for details).

4.2 Installation category

4.2.1 It is category-III for the main circuit and category- II for remaining auxiliary circuits.

4.3 Pollution degree: 3

4.4 Altitude: 2,000 meters, derating according to the sample requirements when above 2,000 meters (see Table 10 for details).

4.5 Atmospheric conditions

4.5.1 The relative humidity is not more than 50% when the ambient temperature is $+40^{\circ}\text{C}$;

4.5.2 A higher relative humidity is allowed at the lower temperature.

For example, the relative humidity may be 90% at $+20^{\circ}\text{C}$. Special measures shall be taken for condensation due to temperature changes.

4.6 Shock and vibration

4.6.1 Withstand mechanical vibration with the frequency of 2Hz-13.2Hz, displacement of $\pm 1\text{mm}$ and mechanical vibration with the frequency of 13.2Hz-100Hz and accelerated velocity of $\pm 0.7\text{g}$.

TGM1N Series Moulded Case Circuit Breaker

5 Accessories

Moulded case circuit breakers are provided with complete internal and external accessories to meet the demands of different customers.

5.1 Code of internal accessories

Table 12

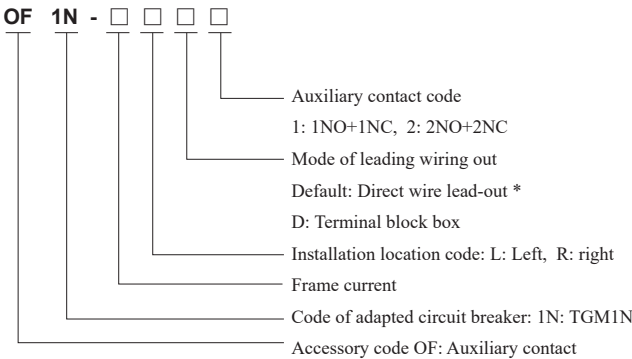
OF	1N	-	125	L	D	A2
Accessory Code	Code of adapted circuit breaker		Code of frame current	Installation position	Mode of leading wiring out	Voltage grade
OF: auxiliary contact	1N:TGM1N		63、125、160、250、320、400、630、630 large volume、800、1250、1250 small volume、1600	L: Left side R: Right side	Default: Direct wire lead-out D: Terminal block box	Default: None A1: AC220/230/240V A2: AC380/400/415V D1: DC24V D2: DC110V D3: DC220V
SD: alarm contact						
MN: undervoltage release						
MX: shunt release						

* Note: Internal accessories of TGM1N-63/125H/R type is same as that of TGM1N-160

5.1.1 Auxiliary contact OF

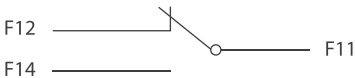


- It is connected to the auxiliary circuit of the circuit breaker, and is used to remotely indicate the ON/OFF/free tripping status of the circuit breaker.

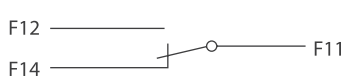


* Note: The length of direct wire lead-out is 50cm by default. For other lengths, please specify when ordering.
For example, Code of the TGM1N-250 right auxiliary contact (with terminal box): OF1N-250RD2.

• Wiring diagram



Status of the circuit breaker at “free tripping” and “opening” positions.



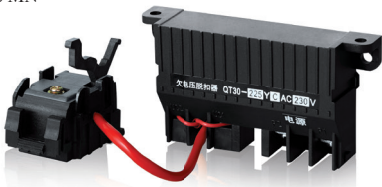
Status of the circuit breaker at “Closing” position.

• Electrical characteristics

Frame current	Inm≤320A		400≤Inm≤800A		Inm > 800A	
Conventional heating current Ith	3A		6A		3A	
Usage category	AC-15	DC-13	AC-15	DC-13	AC-15	DC-13
Rated working current	0.3A	0.15A	1A	0.15A	1.5A	0.15A

TGM1N Series Moulded Case Circuit Breaker

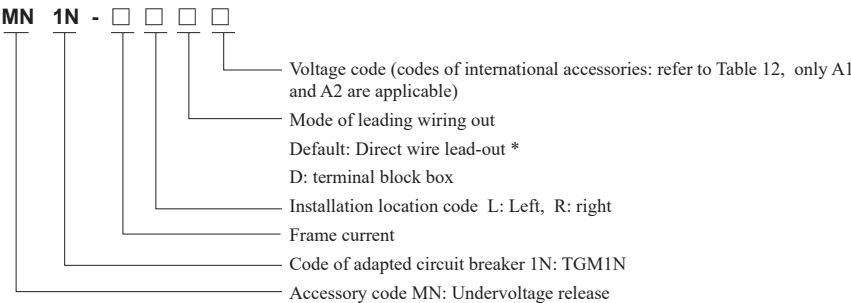
5.1.2 Undervoltage release MN



Achieve the undervoltage protection of the circuit breaker. It disconnects the circuit breaker when the power supply voltage is too low, to protect the electrical equipment.

- a When the voltage is 35%-70% of the rated working voltage, the undervoltage release shall make the circuit breaker trip reliably.
- b When the voltage is 85%-110% of the rated working voltage, the undervoltage release shall ensure the circuit breaker closed reliably.
- c When the voltage is below 35% of the undervoltage tripper, the undervoltage release shall prevent the circuit breaker from closing.

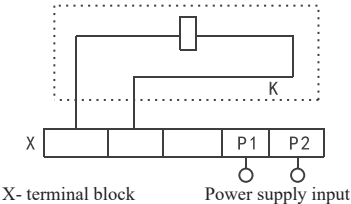
* Note: The under-voltage release must be energized first in order to re-buckle and close the circuit breaker, otherwise it will damage the circuit breaker.



* Note: The length of direct wire lead-out is 50cm by default. For other lengths, please specify when ordering.

For example, Code of left undervoltage release AC220 (direct wire lead-out) of TGM1N-250: MN1N-250LA1.

• Wiring diagram



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

• Electrical characteristics

Model	Starting current value (mA)		Power consumption (W)	
	AC400V	AC230V	AC400V	AC230V
TGM1N-63/125 L/M	9.88	15.25	4.22	3.65
TGM1N-63/125 H/R TGM1N-160	9.95	15.55	4.55	3.82
TGM1N-250/320	10.88	15.83	4.85	3.92
TGM1N-400/630	9.5	11.2	3.8	2.83
TGM1N-800	5.4	7.75	2.7	1.85
TGM1N-1250	5.4	7.75	2.7	1.85
TGM1N-1600	5.4	7.75	2.7	1.85

TGM1N Series Moulded Case Circuit Breaker

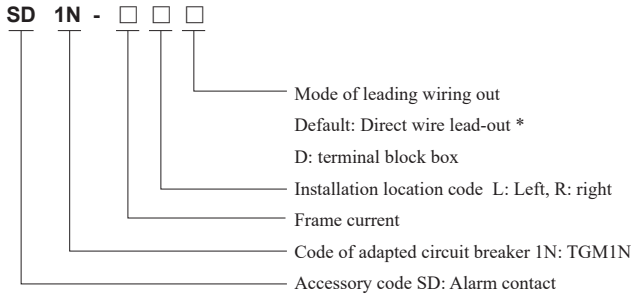
5.1.3 Alarm contact SD



- It is connected to the auxiliary circuit of the circuit breaker, and is used to indicate that the circuit breaker is at the ON/OFF or trip status.

Under the following four circumstances, the alarm contact will send a trip instruction:

- Overload or short-circuit failure
- Trip of test button
- Residual current failure
- Action of the shunt/undervoltage trip



* Note: The length of direct wire lead-out is 50cm by default. For other lengths, please specify when ordering.
For example, Code of left alarm (direct wire lead-out) of TGM1N - 250: SD1N-250L.

• Wiring diagram



The circuit breaker is at free trip (alarm) status.

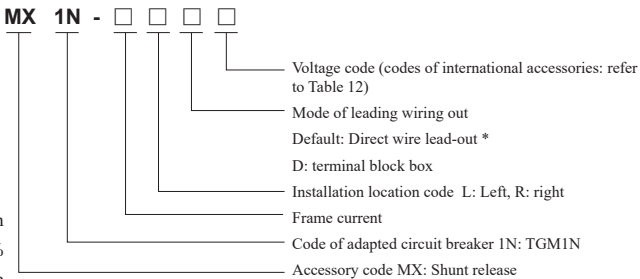
Status of the circuit breaker at “Opening” and
“Closing” position.

• Electrical characteristics

Frame current	Inm≤320A		Inm≥400A		Inm≥800A	
Conventional heating current Ith	3A		6A		3A	
Usage category	AC-15	DC-13	AC-15	DC-13	AC-15	DC-13
Rated working current	0.3A	0.15A	1A	0.15A	1.5A	0.15A

TGM1N Series Moulded Case Circuit Breaker

5.1.4 Shunt release MX

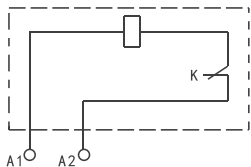


- It is used to achieve remote tripping. When the voltage of the circuit breaker is 70%-110% of the rated control supply voltage U_s , the shunt tripper shall make the circuit breaker trip reliably.

* Note: The length of direct wire lead-out is 50cm by default. For other lengths, please specify when ordering (the maximum length of the lead is 100mm).

For example, Code of left shunt DC220 (direct wire lead-out) of TGM1N-250: MX1N-250LD3.

Wiring diagram



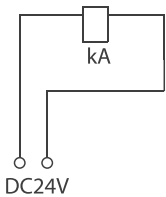
Power supply input

- * Note:
- K-The micro switch which cascade the shunt release and the coil. The switch is a NC contact; after opening of circuit breaker, the contact is automatically disconnected; the contact is closed when the circuit breaker switching on.

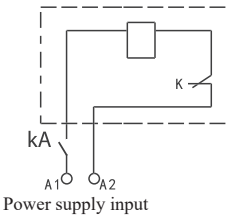
When the control voltage is DC24V, the maximum length of the copper lead shall meet the following requirements and the rated current at the wiring end of the tripper shall reach $5A \pm 0.5A$:

Rated control Power supply voltage U_c (DC24V)	Wire area	1.5mm ²	2.5mm ²
100% power supply voltage		150m	250m
85% power supply voltage		100m	160m

If the requirements in the above table are not met, the following figure is recommended for the design of the shunt tripper controller loop:



DC24V



Power supply input

* Note: KA is DC24V intermediate relay, and the contact current capacity is 1A.

Electrical characteristics

Model	Starting current value (mA)				Power consumption (W)			
	AC400V	AC230V	DC220V	DC24V	AC400V	AC230V	DC220V	DC24V
TGM1N-63/125 L/M	0.32	0.42	0.34	4.22	93.8	70	85.5	86.2
TGM1N-63/125 H/R TGM1N-160	0.35	0.45	0.37	4.52	95.8	73	90.7	91.2
TGM1N-250/320	0.42	0.48	0.39	4.51	112	68.8	90.7	85.3
TGM1N-400/630	0.48	0.51	0.41	4.51	132	78.3	94.4	110
TGM1N-800	0.54	0.85	1.21	5.51	163	153	158	120
TGM1N-1250	0.85	1.31	1.72	5.82	185	173	166	130

TGM1N Series Moulded Case Circuit Breaker

5.2 External accessory code

Table 13

CD2	IN	-	125	A2	
Accessory Code	Code of adapted circuit breaker		Code of frame current	Voltage grade	Code of Number of poles
AH: Circular hand-operated mechanism	1N:TGM1N		63、125、160、250、320、400、630、630 large volume、800、1250、1250 small volume、1600	A1: AC220/230/240V A2: AC380/400/415V D1: DC24V D2: DC110V DC3:DC220V	2 poles: 2P 3 poles: 3P 4 poles: 4P
RH: Square hand-operated mechanism					
CD2: AD/DC general electric motor operating mechanism					
GP: Front-panel connection transition plate					
GB: Phase partition					
BH: Rear-panel connection					
LS: Mechanical interlock					

* Note: Internal accessories of TGM1N-63/125H/R type is same as that of TGM1N-160

5.2 External accessories

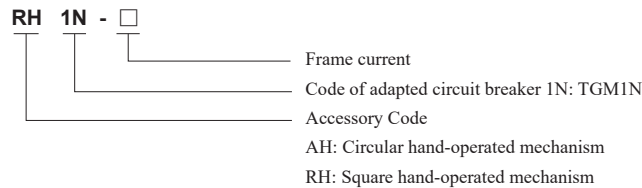
5.2.1 Manual operated mechanism RN/AH



- The circuit breaker is operated by rotating the handle. The rotating handle that meets the ergonomics design makes the operation of circuit breaker more flexibly.

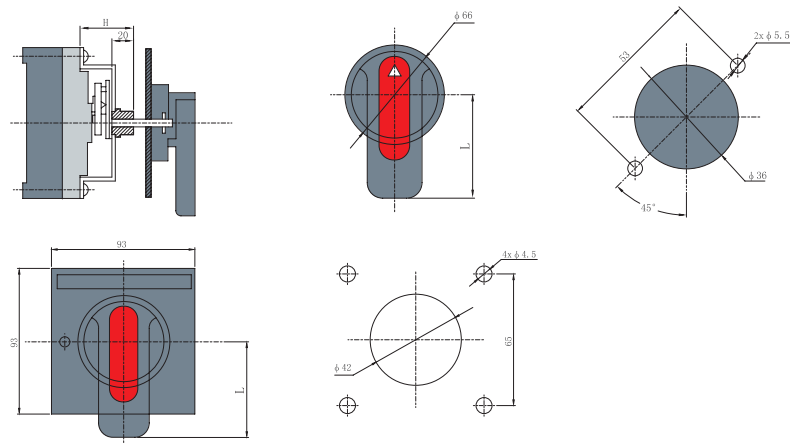
The manual operated mechanisms of TGM1N series circuit breakers can be divided into two types:

Extended rotating handle (circular and square extended hand-operated mechanism)



For example, Code of hand-operated mechanisms of TGM1N -250: AH1N-250.

- Outline dimension of hand-operated mechanism



Model and specification	TGM1N-63/125 L/M	TGM1N-160 TGM1N-63/125 H/R	TGM1N-250/320	TGM1N-400/630	TGM1N-630 large volume	TGM1N-800	TGM1N-1250 small volume
Installation dimension (H)	58	61	57	87	88	87	87
Handle length (L)	65	65	95	125	125	125	125

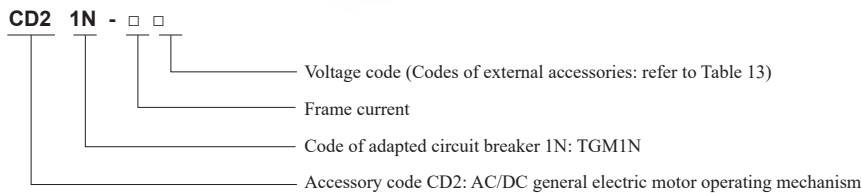
* Note: The length of the extended bar is 150mm by default and 500mm at maximum (Each 50mm is a specification)

TGM1N Series Moulded Case Circuit Breaker

5.2.2 Electric motor operating mechanism CD2

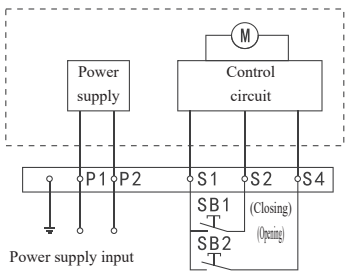


- Suitable for remote electric closing, opening and re-trip of the circuit breaker as well as automatic control situation.



* For example: The code of the electric motor operating mechanism AC380V of TGM1N- 250 is: CD21N-250A2.

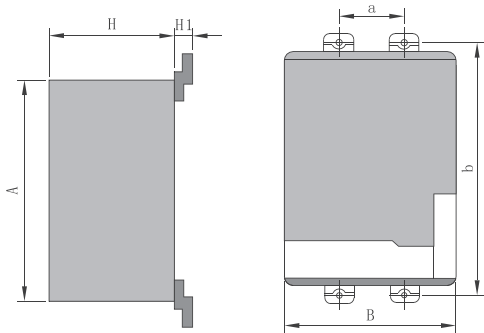
- Electrical characteristics and wiring diagram



* Note:
K-The micro switch which cascade the shunt release and the coil. The switch is a NC contact; after opening of circuit breaker, the contact is automatically disconnected; the contact is closed when the circuit breaker switching on.

P1 and P2 are external power supply input
SB1 and SB2 are operating buttons (prepared by users)

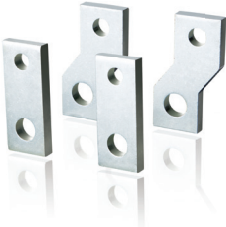
- Outline and installation dimension



Model	A	B	H	H1	a	b
TGM1N-63/125 L/M	101	73	79	15	25	112
TGM1N-63/125 H/R TGM1N-160	118	92	79	21	30	129
TGM1N-250/320	118	92	79	17.5	35	142.4
TGM1N-400/630	176	130	117	35.5	44	194
TGM1N-630 large volume	176	130	117	36	58	200
TGM1N-800	176	130	117	33.5	70	243
TGM1N-1250	176	130	117	35.5	70	300
TGM1N-1600	265	210	75	21	70	303

TGM1N Series Moulded Case Circuit Breaker

5.2.3 Front-panel wiring transition plate GP



GP 1N - ☐

Code of Number of poles
2P: 2 poles
3P: 3 poles
4P: 4 poles

Code of adapted circuit breaker 1N: TGM1N

Accessory code GP: Front-panel connection transition plate

- It makes the wiring of the circuit breaker more flexible. The phase spacing and safety between circuits can be increased by installing this part.

Note: The code of extension terminal only covers the transition bar of the inlet line or the outlet line (for example, 3P circuit breaker only has 3 terminal boards). If the transition bar is required for inlet line and outlet line, 2 sets shall be ordered.

For example, Code of 3P transition plate of TGM1N-250: GP1N-2503P.

5.2.4 Phase partition GB



GB 1N - ☐

Code of Number of poles
2P: 2 poles
3P: 3 poles
4P: 4 poles

Code of adapted circuit breaker 1N: TGM1N

Accessory code GB: Phase partition

- The phase partition can enhance the insulation performance of conductors between phases and can be installed from the front slot even after the switch is installed.

* Note: Phase partition is the standard configuration for delivery. The number of phase partition is 2, 4, and 6 for a 2-pole, 3-pole and 4-pole circuit breaker, respectively. For example, Code of 3P phase partition of TGM1N-250: GB1N-2503P.

5.2.5 Rear-panel connection BH



BH 1N - ☐ ☐

Code of Number of poles
2P: 2 poles
3P: 3 poles
4P: 4 poles

Frame current

Code of adapted circuit breaker 1N: TGM1N

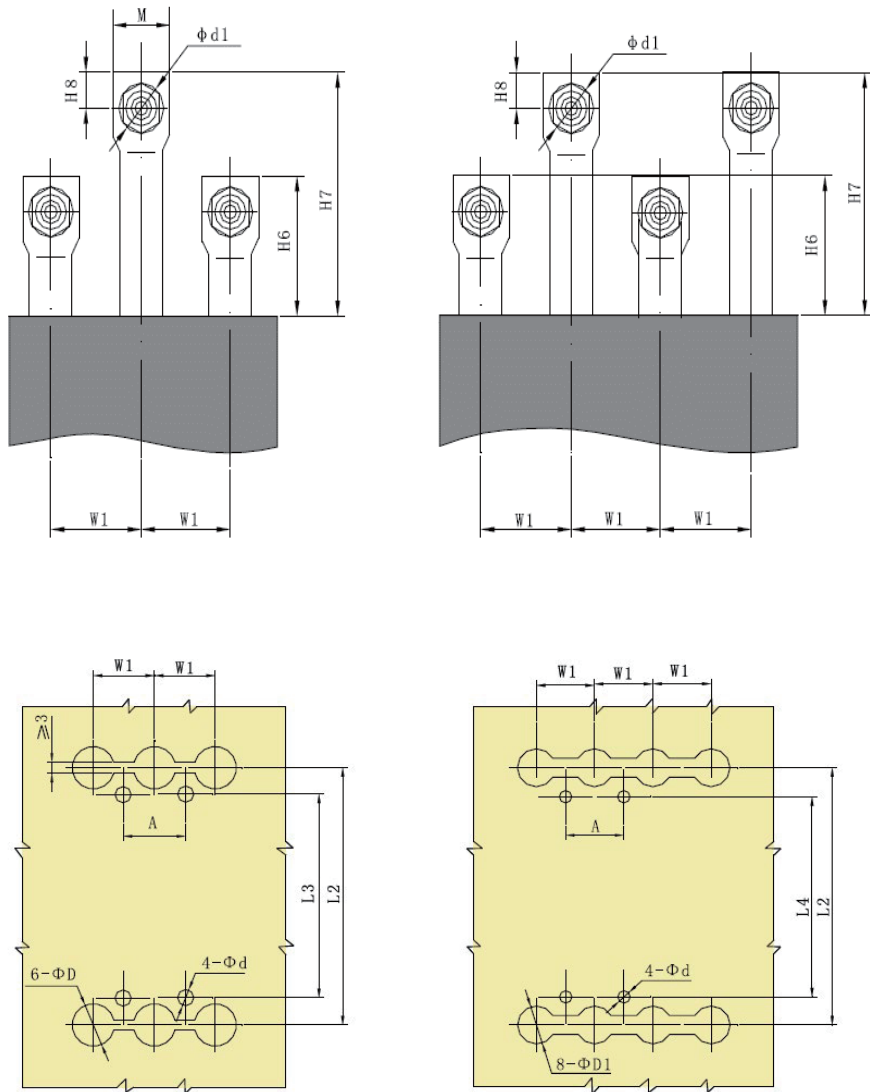
Accessory code BH: Rear-panel connection

- It makes the wiring of the circuit breaker more flexible. The rear-board wiring can be achieved with it.

For example, Code of 3P rear-board of TGM1N-250: BH1N-2503P.

TGM1N Series Moulded Case Circuit Breaker

- Outline and installation dimensions

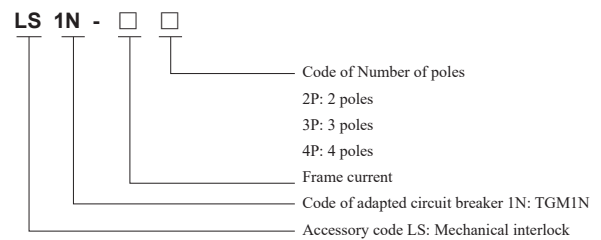


Outline and installation dimensions of the back-panel wiring

Model	Outline dimensions												
	H6	H7	H8	L2	L3	L4	W1	A	D	D1	d	d1	M
TGM1N-63/125 L/M/H	43	64	/	115	112	112	25	25	9.5	9.5	4	/	Φ8.6 (Cylindrical)
TGM1N-63/125R TGM1N-160M	49	83.5	13	132.5	129	129	30	30	12	12	4.5	9	19.5
TGM1N-250/320	56.5	90	14	147	125.4	125.4	35	35	24	24	4.5	8.5	19
TGM1N-400/630	51	86	20.5	223	194	-	48	44	18.5	18.5	7	12.5	31
TGM1N-630 (large volume)	65	98	21	234	200	-	58	58	36	36	7	16	35
TGM1N-800	70	113	24	243	242	242	70	70	37	37	7	16	35

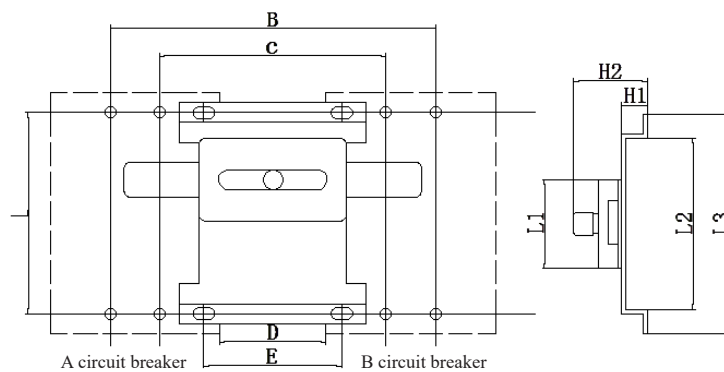
TGM1N Series Moulded Case Circuit Breaker

5.2.6 Mechanical interlock LS



- Interlock two circuit breakers and prevent synchronous closing

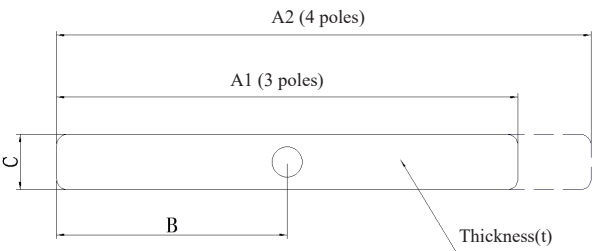
For example, Code of 3P mechanical interlock of TGM1N-250: LS1N-2503P。



Outline and installation dimension diagram of TGM1N series 3P mechanical interlock

Model and specification	Outline and installation dimension (mm)								
	B	C	D	E	L1	L2	L3	H1	H2
TGM1N-63/125 L/M	130	80	30	80	40	82	106.5	20.5	45
TGM1N-63/125 H/R TGM1N-160	151	91	28.5	36	40	101	122	25	48
TGM1N-250/320	170	100	28	100	40	128	155	25	48
TGM1N-400/630	221.5	133.5	27.5	41	60	179	207	30.5	55
TGM1N-800	320	180	40	52	60	229	254	30.5	55

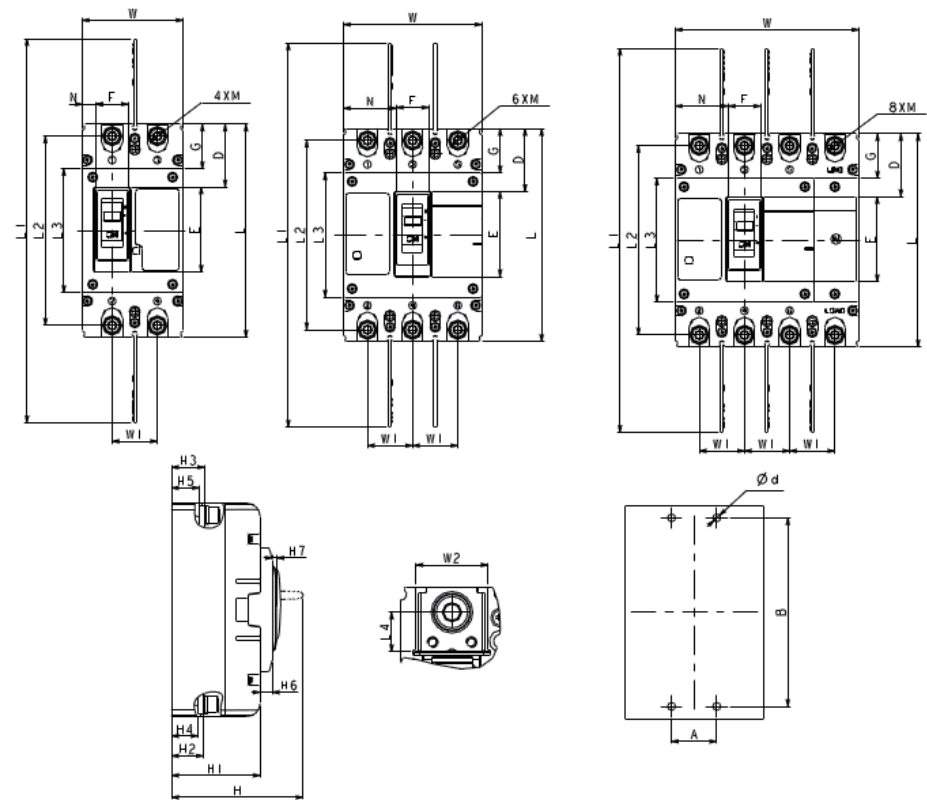
TGM1N Series Moulded Case Circuit Breaker



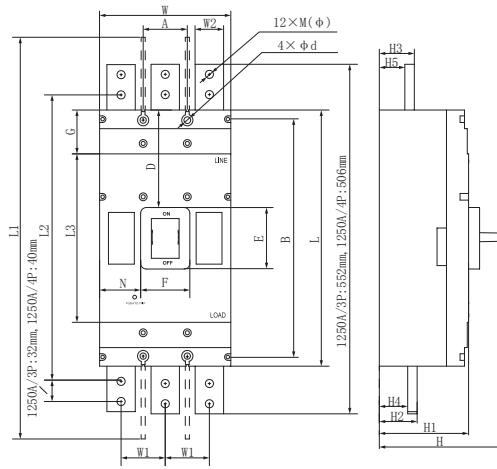
Model and specification	Outline dimension of slip strip (mm)				
	A1	A2	B	C	t
TGM1N-63/125 L/M	120	140	60	22	5
TGM1N-63/125 H/R TGM1N-160	120	152	60	22	5
TGM1N-250/320	130	166	65	22	5
TGM1N-400/630	190	235	96	28	6
TGM1N-800	250	323	125	28	6

6 Outline and Installation Dimensions

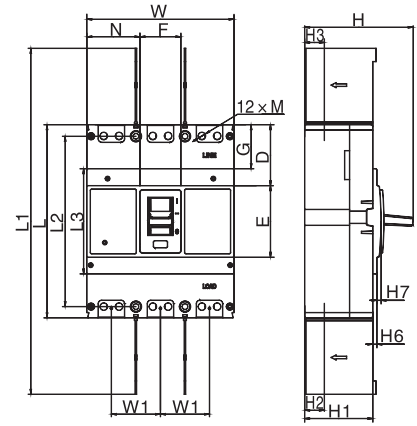
6.1 Outline and installation dimension of front-panel connection



TGM1N Series Moulded Case Circuit Breaker



Outline and installation diagram of
TGM1N-1250



Outline and installation diagram of
TGM1N-1250 (small volume)

Table 14

Model	Breaking capacity	Number of poles	Outline dimension (mm)											
			W	L	H	W1	W2	L1	L2	L3	L4	H1	H2	H3
TGM1N-63/125	L/M	2P	50	130	86	25	16	230	115	75	7	58	27	27
	L/M/H	3P	75	130	85	25	16	230	115	75	7	56	25	25
	R		93	151	118	30	17.5	265	132.5	97	7.5	82	28.5	28.5
	L/M/H	4P	100	130	85	25	16	230	115	75	7	56	25	25
	R		123	151	118	30	17.5	265	132.5	97	7.5	82	28.5	28.5
TGM1N-160	L	2P	62	151	100	30	17.5	265	132.5	97	7.5	64	25	25
	M				118							82	28.5	28.5
	L	3P	93		100	64	25	25						
	M/H/R				118	82	28.5	28.5						
	L	4P	123	100	64	25	25							
	M/H/R			118	82	28.5	28.5							
TGM1N-250/320	L	2P	78	165	103	35	25.5	300	147	96.5	14	69	23	25.5
	M				118							85	22	22
	L	3P	107		103	69	23	25.5						
	M/H/R				118	85	22	22						
	L	4P	142	103	69	23	25.5							
	M/H/R			118	85	22	22							
TGM1N-400	L/M/H	3P	150	257	154	48	32	468	223	156	13.5	102.5	38	38.5
	L/M/H	4P	198											
TGM1N-630	L/M/H	3P	150	257	154	48	32	468	223	156	13.5	102.5	39.5	40.5
	L/M/H	4P	198											
TGM1N-630 large volume	L/M/H	3P	182	270	158	58	40	478	234	155	15	105.5	41	43
	L/M/H	4P	240											
TGM1N-800	L/M/H	3P	210	280	161	70	44	496	243	177	14	110	42	40
	L/M/H	4P	280											
TGM1N-1250	/	3P	210	406	200	70	45	620	453	267	/	142	56	54
TGM1N-1250 (small volume)	M/H	3P	210	275.5	155	70	45	470	243	150	16	97.5	37	28
		4P	280											
TGM1N-1600	M/H	3P	210	340	244	70	50	544	310	210	/	141	57	41.5
		4P	280											

TGM1N Series Moulded Case Circuit Breaker

Continued Table 14

Model	Breaking capacity	Number of poles	Outline dimension (mm)											Installation dimension (mm)		
			H4	H5	H6	H7	E	F	D	G	N	M	A	B	Φd	
TGM1N-63/125	L/M	2P	24.5	24.5	10	4.5	44	18	43	27	3	M8	/	112	4	
	L/M/H	3P	22.5	22.5	10	4.5	44	18	43		28	M8	25	112	4	
	R		25.5	25.5	12	5	69	21	41.5		35.5	M8	30	129	4.5	
	L/M/H	4P	22.5	22.5	10	4.5	44	18	43		28	M8	25	112	4	
	R		25.5	25.5	12	5	69	21	41.5		35.5	M8	30	129	4.5	
TGM1N-160	L	2P	22	22	12	5	69	21	41.5	27	5	M8	/	129	4.5	
	M		25.5	25.5												
	L	3P	22	22							35.5		30			
	M/H/R		25.5	25.5												
	L	4P	22	22							35.5		30			
	M/H/R		25.5	25.5												
TGM1N-250/320	L	2P	20.5	21.5	9.5	4	66	24	49	34	11	M8	/	125.4	4.5	
	M		18	18												
	L	3P	20.5	21.5							41		35			
	M/H/R		18	18												
	L	4P	20.5	21.5							41		35			
	M/H/R		18	18												
TGM1N-400	L/M/H	3P	35.5	34.5	10.5	6.5	111	53	70	50	48	M10	44	194	7	
	L/M/H	4P											94			
TGM1N-630	L/M/H	3P	35.5	34.5	10.5	6.5	111	53	70	50	48	M10	44	194	7	
	L/M/H	4P											94			
TGM1N-630 large volume	L/M/H	3P	38.5	37	10	7	110	52	80	57	64	M12	58	200	7	
	L/M/H	4P														
TGM1N-800	L/M/H	3P	37	36	9	6	105	49	83	51	80	M12	70	243	7	
	L/M/H	4P														
TGM1N-1250	/	3P	41	39	/	/	98	78	155	70	65	φ13	70	375	10	
TGM1N-1250 (small volume)	M/H	3P	/	/	5.8	6	102.5	58.5	86.5	62.5	75.8	M10	70	243	8	
		4P														
TGM1N-1600	M/H	3P	/	/	10	5	105	78	115	74	66	φ11	70	303	15	
		4P														

Note: TGM1N-63H, 125H adopt standard dimensions.

The thickness of the copper plate is 10mm for TGM1N-1250/800A, and is 15mm for 1000A/1250A.
H2 size of the TGM1N-250L overload alarm without tripping type is 24.5mm.

TGM1N Series Moulded Case Circuit Breaker

6.2 Installation dimensions of terminal board

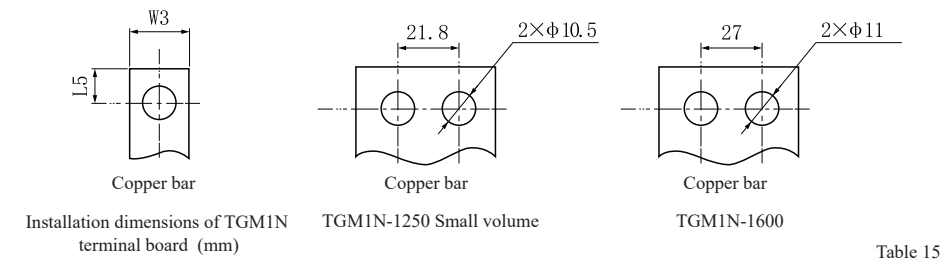
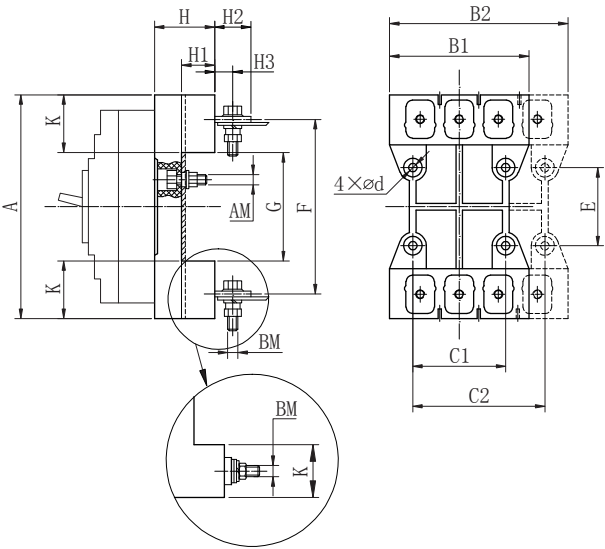


Table 15

Model	TGM1N-63/125		TGM1N-160	TGM1N-250/320	TGM1N-400	TGM1N-630	TGM1N-630 Large volume	TGM1N-800	TGM1N-1250 Small volume	TGM1N-1600
Breaking capacity	L/M	H/R	L/M/H/R	L/M/H/R	L/M/H	L/M/H	L/M	L/M/H	M/H	M/H
Installation dimension	L4	7	7.5	7.5	10	12	12	15	13	12
	W2	16	16	16	20	30	30	40	40	40
										50

7 Outline and Installation Dimension of Plug-in Type

7.1 Outline and installation dimensions of plug-in rear-panel connection



TGM1N Series Moulded Case Circuit Breaker

7.2 Hole size of the mounting plate (unit: mm)

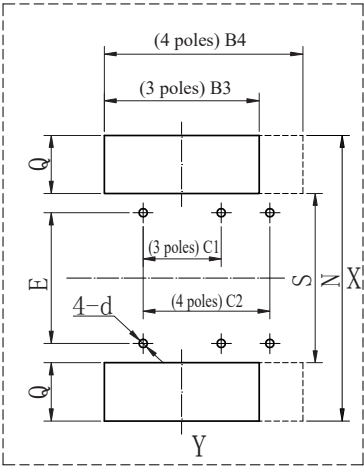
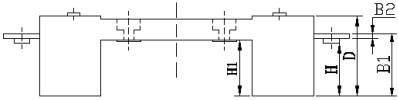
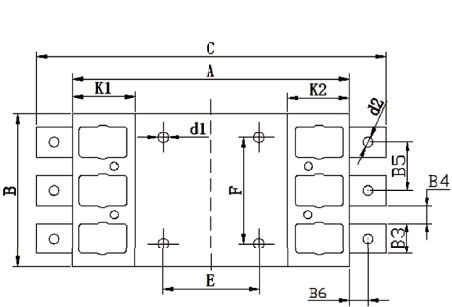


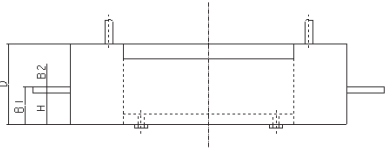
Table 16

Model	Outline and installation dimension (mm)																			
	A	B1	B2	C1	C2	E	F	G	K	H	H1	H2	H3	N	S	Q	B3	B4	AM	BM
TGM1N-63/125 L/M	133	75	100	50	/	59	114	97	175	28	15	16	9	143	87	28	85	110	M5	M5
TGM1N-63/125 H/R TGM1N-160	168	91	125	60	90	57	132	92	38	50	33	28	19	178	82	48	101	135	M6	M8
TGM1N-250	186	107	145	70	105	54	145	94	46	50	33	37	20	196	84	56	117	155	M6	M8
TGM1N-400 TGM1N-630	280	149	200	60	108	129	224	170	55	60	38	46	24	290	160	65	159	210	M8	M12
TGM1N-630 large volume	300	182	242	100	158	123	234	170	65	60	39	50	/	310	160	75	192	252	M8	M12
TGM1N-800	305	210	280	90	162	146	243	181	62	87	60	22	/	315	171	72	220	290	M10	M14(T)

7.3 Outline and installation dimension of plug-in front-panel connection



TGM1N-63/125/250/320/630 large volume/800
Outline diagram of plug-in front-panel connection



Outline diagram of plug-in front-panel connection of TGM1N-400/630

TGM1N Series Moulded Case Circuit Breaker

Table 17

Model	Outline and installation dimension (mm)																	
	A	B	C	D	E	F	H	H1	K1	K2	d1	d2	B1	B2	B3	B4	B5	B6
TGM1N-63/125 L/M	136.5	75.5	188	48	55	50	23	30	22.5	22.5	ø4.5	ø6	25	2	12	13	25	17
TGM1N-63/125 H/R TGM1N-160	172	95.5	214	50	61	66	12.5	35	38	38	ø7	M8	18	3	19	10.5	30.5	10.5
TGM1N-250/320	183	110	259	52	64	70	42	35	44	44	ø7	M10	48	3	22	13	35	22.5
TGM1N-400/630	276	150	351	80	135	115	31	/	/	/	ø7	ø11	37	6	25	22.5	48	22
TGM1N-630 large volume	297	179	397	85	123	100	21	65	64	64	ø8.5	ø13	29	8	35	23	58	34
TGM1N-800	305	210	409	87	144	90	13	61	62	62	ø11	ø13	21	8	35	35	70	35

8 Ordering Notice

8.1 Please fill in relevant information in accordance with the product selection table when ordering.

For example, For ordering 200 sets of TGM1N circuit breakers, with frame current of 250A, breaking capacity of 50kA, 4 poles and B type, shunt AC200V and rated current of 200A, TGM1N-250M/4310B200AAC220V200 sets shall be filled in.

8.2 Product accessories can also be ordered separately and can be selected according to the selection table of internal/external accessories.

For example, For ordering 250 frames, with the accessory voltage of AC380V, and 100 sets of left undervoltage release, please fill in MN1N-250LA2100 sets.

TGM1N Series Moulded Case Circuit Breaker

9 Model Description

9.1 Model Description

TGM1N	250	M	Z	/	4	3	28	2	B	F	250A	AC220V	B	With terminal block box
Model	Frame current	Breaking capacity code	Operation mode code	Code of pole number	Tripping mode	Accessory Code	Usage code	N pole code	Additional information	Rated current	Voltage of accessories	Installation mode	Special requirements	
TGM1N series moulded case circuit breaker	63/63A 125/125A	63A/125A : L:25kA M:35kA H:50kA R:70kA	No code: Direct operation by hand	2: 2 poles	2: Single-magnetic type	00: no accessory 08: alarm contact 10: shunt release 20: auxiliary contact	Default: Power distribution protection	A: N pole is always on; N pole is not equipped with over-current tripping element.	Tt: Transparent cover	10~1250A Refer to the comparison table of frame and rated current	AC220/230/240V AC380/400/415V	Default: Fixed, front-panel connection	Default: None	
	160/160A 250/250A 320/320A	160A/250A 320A-L :35kA M:50kA H:70kA R:85kA	Z: operation of rotating handle	3: 3 poles	3: Thermal magnetic type	30: undervoltage release 40: shunt release+ auxiliary contact 50: shunt release+ undervoltage release 60: two sets of auxiliary contacts	2: Motor protection	B: N pole is always on and is not equipped with over-current tripping element.	F: Prepayment		DC24V DC110V DC220V	B: Rear-panel connection		
	400/400A 630/630A 800/800A	400A/630A 800A: L:50kA M:70kA H:100kA	P: Electric motor operating mechanism	3N: 3-wire 4-pole		70: auxiliary contact+ undervoltage release 18: shunt release+ alarm contact 28: auxiliary contact+ alarm contact 38: undervoltage release+ alarm contact		C: N pole is always on, and is equipped with over-current tripping element.	III: Overload alarm without tripping			C: Plug-in rear-panel connection		
	1250/1250A	1250A: L:80kA		4: 4 poles		68: two sets of auxiliary contact+ alarm contact 78: undervoltage release+ auxiliary contact+ alarm contact		D: N pole is always on, and is equipped with over-current tripping element.						
	1250A Small volume: 1250A	1250A Small volume: L:65kA M:80kA				00-no accessory shall be selected for transparent cover circuit breaker								
	1600/1600A	M:50kA H:100kA												

TGM1N Series Moulded Case Circuit Breaker

9.2 Selection table of product internal accessories

OF	1N	125	L	D	A2
Accessory Code	Code of adapted circuit breaker	Code of frame current	Installation position	Mode of leading wiring out	Voltage grade
OF: Auxiliary contact	1N: TGM1N	63, 125, 160 250, 320	L: Left side	Default: Direct wire lead-out	Default: None A1:AC220/230/240V A2:AC380/400/415V
SD: Alarm contact		400, 630 630 large volume	R: Right side	D: Terminal block box	D1:DC24V D2:DC110V D3:DC220V
MN: Undervoltage release		800, 1250 1250 small volume			
MX: Shunt release		1600			

9.3 Selection table of product external accessories

CD2	1N	125	A2	Code of pole number
Accessory Code	Code of adapted circuit breaker	Code of frame current	Voltage grade	Code of pole number
AH: Circular hand-operated mechanism	1N: TGM1N	63, 125, 160 250, 320	A1:AC220/230/240V A2:AC380/400/415V	2 poles: 2P
RH: Square hand-operated mechanism		400, 630 800, 1250	D1:DC24V D2:DC110V D3:DC220V	3 poles: 3P
CD2: AC/DC general Electric motor operating mechanism		400, 630 630 large volume		4 poles: 4P
GP: Front-panel connection transition plate		800, 1250 1250 small volume		
GB: Phase partition		1600		
BH: Rear-panel connection				
LS: Mechanical interlock				