TGM5

Series Moulded Case Circuit Breaker

TGM5 Series Moulded Case Circuit Breaker

1 Overview

TGM5 series moulded case circuit breaker (hereinafter referred to as circuit breaker) is one of the new circuit breakers developed by our company based on the international advanced double breakpoint platform, and has the characteristics of no derating for reverse incoming wire, zero arc, high breaking capacity, box accessories, small size and compact, and green environmental protection.

Circuit breakers are divided into C-type, L-type, M-type, H-type, and S-type according to their rated ultimate short-circuit breaking capacity (ICU), and it is an ideal product for power distribution and motor protection. With the rated insulation voltage up to 1250V, it is used in the AC 50/60Hz circuit with the rated operating voltage 690V and below and with the rated current from 125A to 500A for infrequent conversion of the line and infrequent start of the motor.

This series of circuit breakers has overload, short circuit, and undervoltage protection devices to protect the line and power equipment to prevent damage in the event of overcurrent or undervoltage. This series of circuit breakers can be installed vertically (that is, longitudinal installation) or horizontally (that is, lateral installation).

With isolation function, its corresponding symbol is as follows:  .

Circuit breakers comply with 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	5	-	250	L	P	/	4	3	20	2	C
①	②	③		④	⑤	⑥		⑦	⑧	⑨	⑩	⑪

①	Enterprise code	
②	Moulded case circuit breaker	
③	Design code	
④	Frame current	
⑤	Rated ultimate short-circuit breaking capability level code	Breaking grade code: the breaking grade is divided into C type, L type, M type, H type, and S type;
⑥	Operation mode code 2)	Operation mode code: No code: operation via handle; P: Electric operation, Z: Rotary handle
⑦	Number of poles code 3)	Pole number code: 3:3P (three-pole); 3N: 3P+N (three-pole four-wire); 4:4P (four-pole);
⑧	Release code 4)	2: Electromagnetic release; 3: Thermal magnetic release;
⑨	Accessory code 5)	Accessory code: (See Accessory Code)
⑩	Purpose code 6)	Purpose code: Power distribution protection: No; Motor protection: 2
⑪	N-pole code 7)	N-pole type (only for 4-pole circuit breaker), other poles: no code (see Table 1)

Table 1

Wiring method		
A type	N pole is not equipped with an overcurrent trip component, N pole is always on, and is not open and closed together with other three poles simultaneously	3N300A
B type	N pole is not equipped with an overcurrent trip component, N pole is open and closed together with other three poles simultaneously (N pole is first closed and then open)	4300B
C type	N pole is equipped with an overcurrent trip component, N pole is open and closed together with other three poles simultaneously (N pole is first closed and then open)	4300C
D type	N pole is equipped with an overcurrent trip component, N pole is always on, and is not open and closed together with other three poles simultaneously	3N300D

Note: A and D types have 125 frames only.

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3 Technical Parameters

Table 2

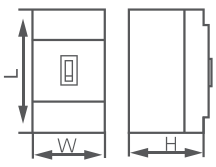
Model			TGM5-125					TGM5-250				
Frame current Inm (A)			125					250				
Number of poles			3P、3P+N、4P					3P、3P+N、4P				
Rated operating voltage Ue (V)			AC380/400/415、AC500/550、AC660/690					AC380/400/415、AC500/550、AC660/690				
Rated insulation voltage Ui (V)			1000					1250				
Rated withstand impulse voltage Uimp (kV)			8					8				
Rated frequency Hz			50/60					50/60				
Rated current In (A)			16、20、25、32、40、50、63、80、100、125					125、160、180、200、225、250				
Breaking capacity			C	L	M	H	S	C	L	M	H	S
Icu（kA）	AC380/400/415V		36	50	85	100	150	36	50	85	100	150
	AC500/550V		25	50	50	65	65	25	50	50	70	70
	AC660/690V		8	10	10	12	12	8	10	10	15	20
Ics（%Icu）（kA）	AC380/400/415V		100%					100%				
	AC500/550V		100%					100%				
	AC660/690V		100%					100%				
Isolation function			Available for 3P, 4P					Available for 3P, 4P				
Use category			A					A				
Operation performance (times)	Mechanical life		20000					20000				
	Electrical life	AC380/400/415V	10000					10000				
		AC660/690V	4000					4000				
Flashover distance (mm)			0					0				
Accessory information												
Operation directly via handle			■ Standard					■ Standard				
Manual operating mechanism			□ Optionial					□ Optionial				
Extended rotary handle			□ Optionial					□ Optionial				
Motor mechanism			■ Standard					■ Standard				
Fixed type front-panel			□ Optionial					□ Optionial				
Plug-in type front-panel			□ Optionial					□ Optionial				
Drawert type			□ Optionial					□ Optionial				
Transition busbar			■ Standard					■ Standard				
Phase partition			□ Optionial					□ Optionial				
Terminal cover			□ Optionial					□ Optionial				
Outline dimensions: L×W×Hmm												
		3P	140×90×62.5					162×105×90				
		4P	140×120×62.5					162×140×90				

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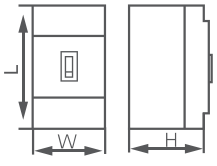
Table 2, continued

Model			TGM5-400					TGM5-630				
Frame current Inm (A)			400					630				
Number of poles			3P, 3P+N, 4P					3P, 3P+N, 4P				
Rated operating voltage Ue (V)			AC380/400/415, AC500/550, AC660/690					AC380/400/415, AC500/550, AC660/690				
Rated insulation voltage Ui (V)			1250					1250				
Rated withstand impulse voltage Uimp (kV)			12					12				
Rated frequency Hz			50/60					50/60				
Rated current In (A)			250、315、350、400					400、500				
Breaking capacity			C	L	M	H	S	C	L	M	H	S
Icu (kA)	AC380/400/415V		36	50	85	100	150	36	50	85	100	150
	AC500/550V		25	50	50	70	70	25	50	50	70	70
	AC660/690V		10	10	20	25	35	10	10	20	25	35
Ics (%Icu) (kA)	AC380/400/415V		100%					100%				
	AC500/550V		100%					100%				
	AC660/690V		100%					100%				
Isolation function			Available for 3P, 4P					Available for 3P, 4P				
Use category			A					A				
Operation performance (times)	Mechanical life		15000					15000				
	Electrical life	AC380/400/415V	7500					7500				
		AC500/550V	5000					3500				
		AC660/690V	3000					2000				
Flashover distance (mm)			0					0				
Accessory information												
Operation directly via handle			■ Standard					■ Standard				
Manual operating mechanism			□ Optionial					□ Optionial				
Extended rotary handle			□ Optionial					□ Optionial				
Motor mechanism			□ Optionial					□ Optionial				
Fixed type front-panel			■ Standard					■ Standard				
Plug-in type front-panel			□ Optionial					□ Optionial				
Plug-in type back-panel			□ Optionial					□ Optionial				
Drawer type			□ Optionial					□ Optionial				
Transition busbar			□ Optionial					□ Optionial				
Phase partition			■ Standard					■ Standard				
Outline dimensions: L×W×Hmm												
		3P	255×140×116					255×140×116				
		4P	255×185×116					255×185×116				

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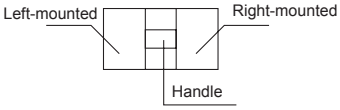
4 Release Type and Accessory Code



Alarm contact ●　　Aux. contact ○

Shunt release ■　　Undervoltage release ▲

Table 3

Accessory name	Accessory code	Accessory installation and wire lead-out method		
		TGM5-125	TGM5-250	TGM5-400/630
		3P, 4P	3P,4P	3P,4P
No accessory	00			
Alarm contact	08			
Shunt release	10			
Undervoltage release	30			
Aux. contact	20			
Dual aux. conacts	21			
Three aux. contacts	22	——	——	
Four aux. contacts	23	——	——	
Alarm contact + Shunt release	18			
Alarm contact + Undervoltage release	38			
Alarm contact + Aux. colntact	28			
Alarm contact + Dual aux. conacts	68			
Alarm contact + Three aux. contacts	67	——	——	
Alarm contact + Four aux. contacts	66	——	——	
Shunt release + Aux. contact	40			
Shunt release + Dual aux. conacts	41			
Shunt release + Three aux. contacts	42	——	——	
Shunt release + Four aux. contacts	43	——	——	
Undervoltage release + aux. contact	70			
Undervoltage release + dual aux. contact	71			
Undervoltage release + three aux. contact	72	——	——	
Undervoltage release + four aux. contact	73	——	——	
Alarm contact + shunt release + aux. contact	48			
Alarm contact + shunt release + dual aux. contact	47			
Alarm contact + shunt release + three aux. contact	46	——	——	
Alarm contact + shunt release + four aux. contact	45	——	——	
Alarm contact + undervoltage release + aux. contact	78			
Alarm contact + undervoltage release + dual aux. contact	77			
Alarm contact + undervoltage t release + three aux. contact	76	——	——	
Alarm contact + undervoltage release + four aux. contact	75	——	——	

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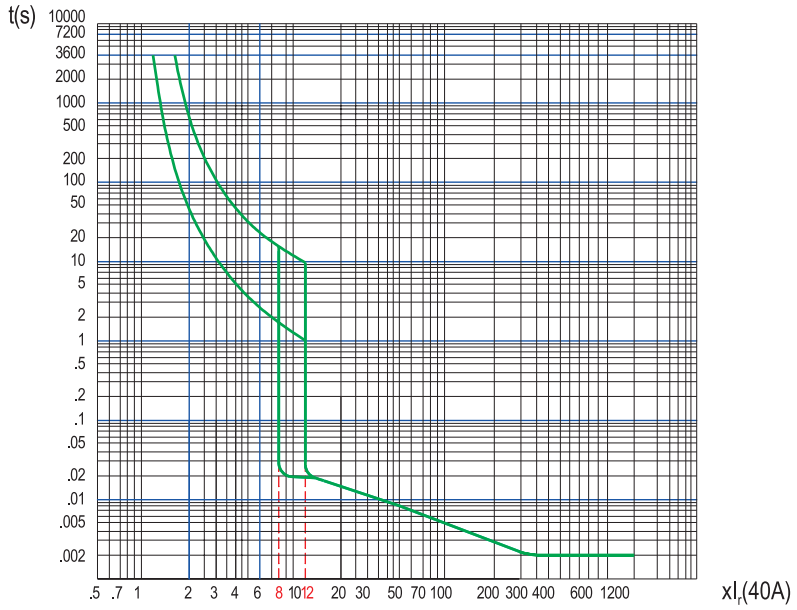
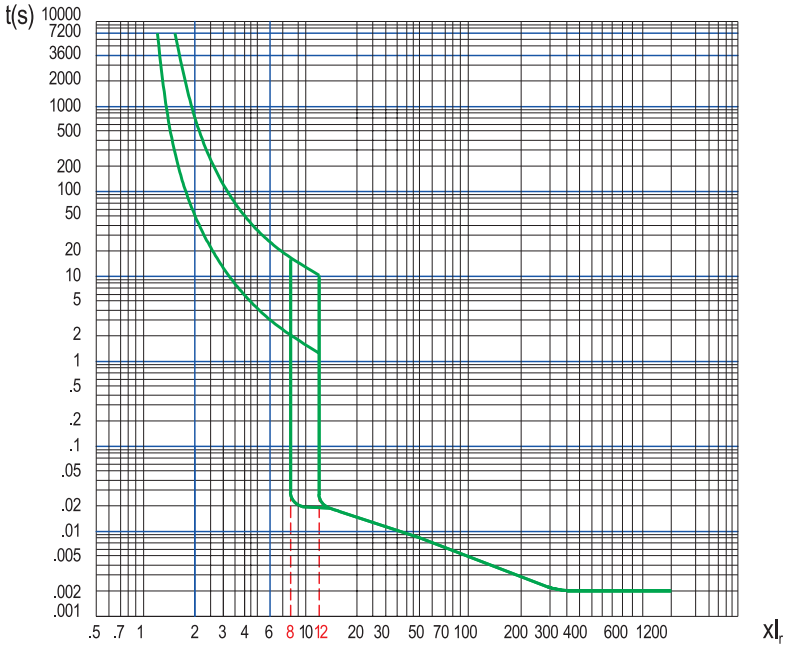
5 Trip Characteristic Curve

5.1 TGM5-125(16-32A) distribution protection thermal magnetic release (Ambient air temperature +40°C)



5.2 TGM5-125(40-125A) distribution protection thermal magnetic release (Ambient air temperature +40°C)



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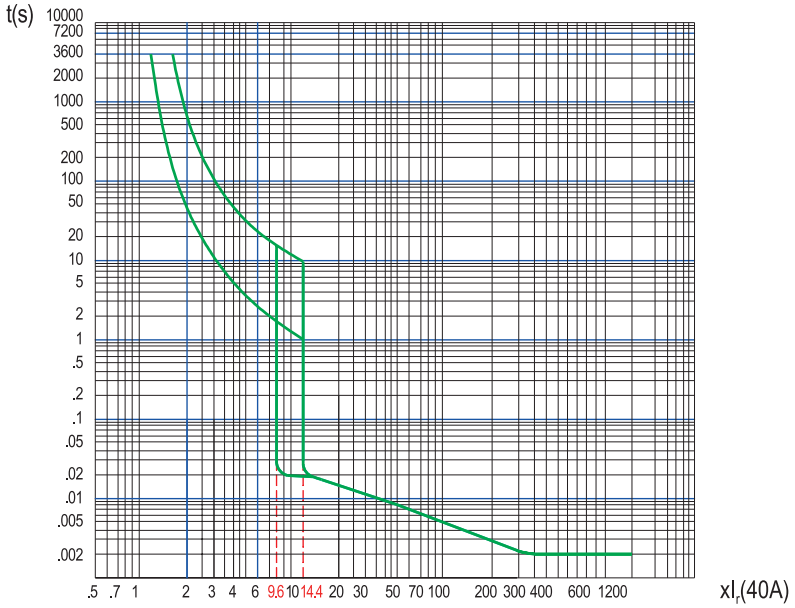
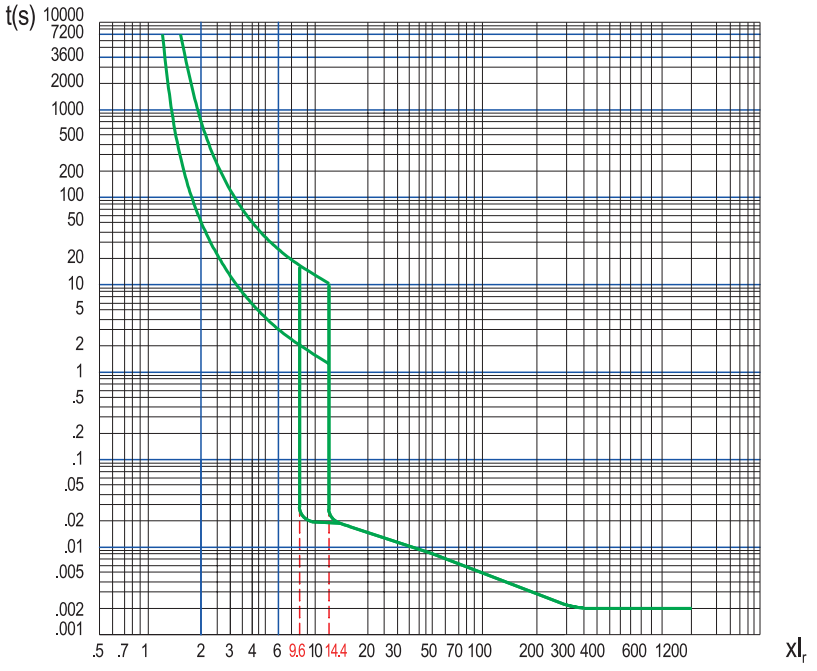
5.3 TGM5-125(16~32A) motor protection thermal magnetic release (Ambient air temperature +40°C)



5.4 TGM5-125(40-125A) motor protection thermal magnetic release (Ambient air temperature +40°C)



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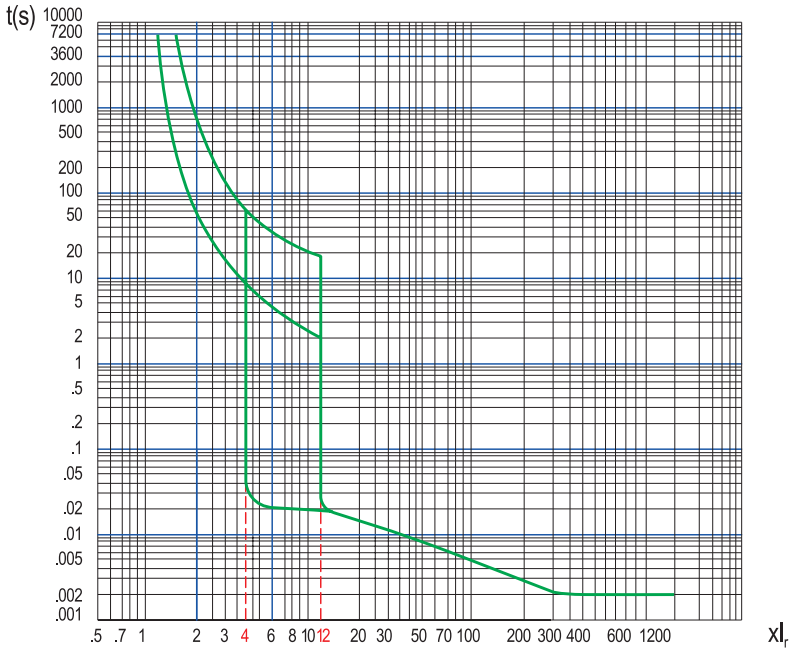
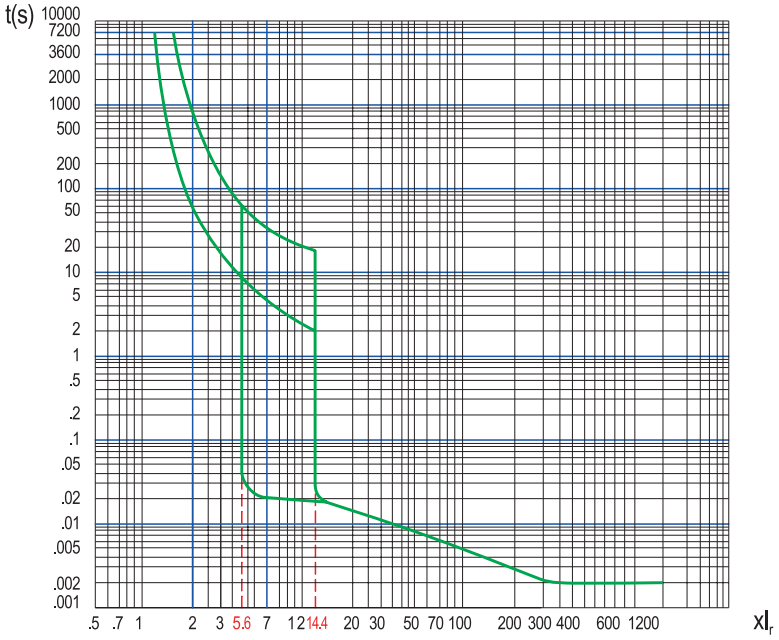
5.5 TGM5-250/400/630(250A-500A) TM distribution protection thermal magnetic release (Ambient air temperature +40°C)



5.6 TGM5-250/400/630(250A-500A) TM motor protection thermal magnetic release (Ambient air temperature +40°C)



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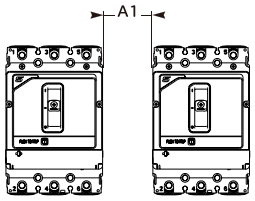
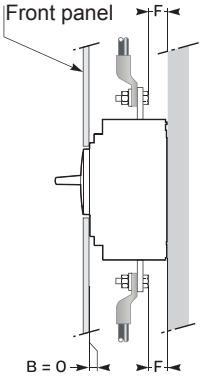
6 Circuit Breaker Installation Safety Distance and Minimum Distance

6.1 Safety Distance

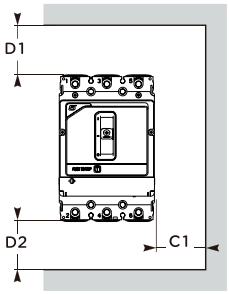
Minimum distance between two adjacent circuit breakers



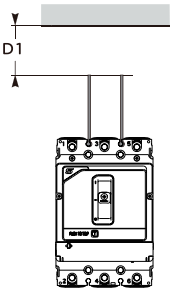
Minimum distance between the circuit breaker and the front panel or rear panel

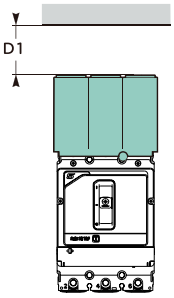


Minimum distance between the circuit breaker and the top, bottom or side plate



Circuit breaker without accessories





Circuit breaker with phase partition or terminal cover

Exposed or painted metal part

Note: If F<8mm: the insulating partition must be used

Minimum safety distance for TGM5-125 to 630

Table 4

Operating voltage	Distance (mm)						
	Between circuit breakers	Between circuit breaker and painted metal part			Exposed metal part		
	A1	C1	D1	D2	C1	D1	D2
U≤440 V U≤440V, suitable for circuit breakers equipping with the following accessories::							
No accessory	0	0	30	30	5	40	40
Short terminal cover	0	0	30	30	5	40	40
Phase partition	0	0	0	0	5	0	0
Long terminal cover	0	0	0	0	0	0	0
440V<U≤500V, suitable for circuit breakers equipping with the following accessories:							
Short terminal cover	0	0	30	30	10	40	40
Phase partition (1)	0	0	0	0	20	10	10
Long terminal cover (2)	0	0	0	0	10	10	10
U>500V, suitable for circuit breakers equipping with the following accessories:							
Short terminal cover	0	10	50	50	20	100	100
Long terminal cover	0	10	30	30	20	40	40

(1) Only suitable for TGM5-125~250
(2) Suitable for all situations

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7 Outline and Installation Dimensions of Circuit Breaker

7.1 Outline and installation dimensions of the fixed type front-panel

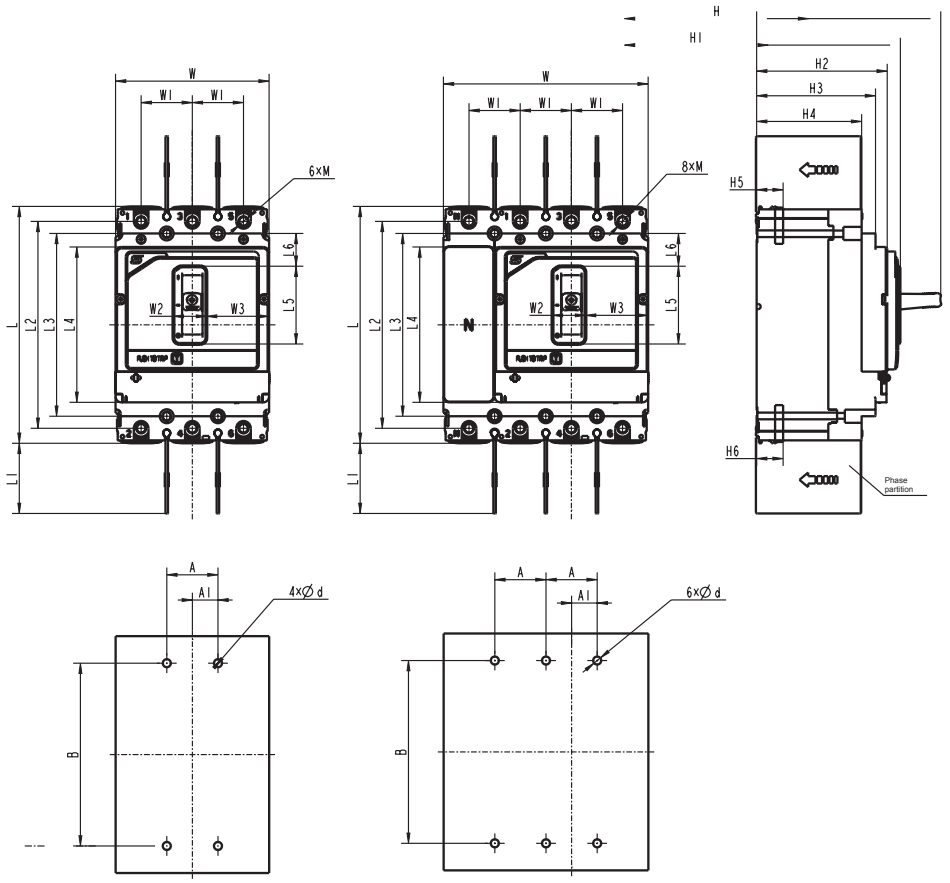

Table 5

Model	Number of poles	W	L	H	W1	W2	W3	L1	L2	L3	L4	L5	L6
TGM5-125	3P	90	140	109	30	14.5	35.2	56.5	125	112	98	45	17.6
	4P	120	140	109	30	14.5	35.2	56.5	125	112	98	45	17.6
TGM5-250	3P	105	162	126	35	22.7	42.8	103	141.5	125	106	53.5	22.4
	4P	140	162	126	35	22.7	42.8	103	141.5	125	106	53.5	22.4
TGM5-400	3P	140	255	173	45	42	51.8	110	227	200	176	82.7	36.7
	4P	185	255	173	45	42	51.8	110	227	200	176	82.7	36.7
TGM5-630	3P	140	255	173	45	42	51.8	110	227	200	176	82.7	36.7
	4P	185	255	173	45	42	51.8	110	227	200	176	82.7	36.7

Model	Number of poles	H1	H2	H3	H4	H5	H6	A	B	A1	M	∅ d
TGM5-125	3P	85	78.5	71.5	62.5	18.7	17.8	30	112	15	M6	5
	4P	85	78.5	71.5	62.5	18.7	17.8	30	112	15	M6	5
TGM5-250	3P	99	90	82	72.5	22.5	20.5	35	125	17.5	M8	6
	4P	99	90	82	72.5	22.5	20.5	35	125	17.5	M8	6
TGM5-400	3P	126.5	116	106.5	96	25	23.5	45	200	22.5	M10	6
	4P	126.5	116	106.5	96	25	23.5	45	200	22.5	M10	6
TGM5-630	3P	126.5	116	106.5	96	27	26	45	200	22.5	M10	6
	4P	126.5	116	106.5	96	27	26	45	200	22.5	M10	6

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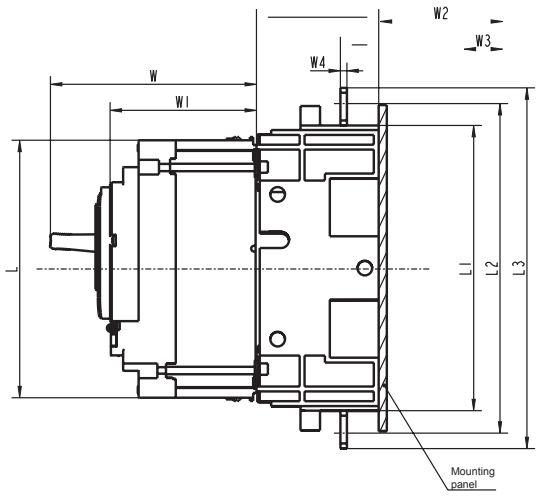
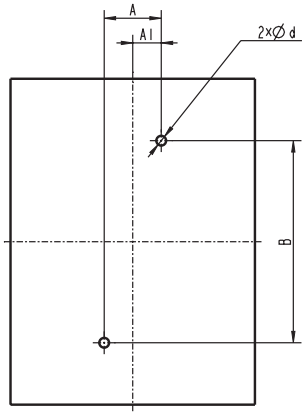
7.2 Outline and installation dimensions of the plug-in type front-panel





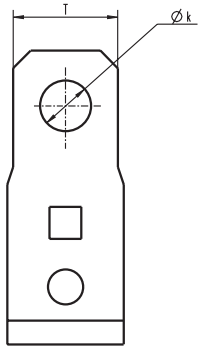


Table 6

Model	Number of poles	W	L	W1	W2	W3	W4	L1	L2	L3	A	B	A1	d	T	k
TGM5-125	3P	109	140	78.5	67	25	4	160	174	193.4	30	113	15	5	18	8.6
	4P															
TGM5-250	3P	126	162	90	75	23.5	4	175	202	221	35	124	17.5	6	18	8.7
	4P															
TGM5-400	3P	173	255	116	100.8	32	6	281	316.5	343.5	45	201.5	22.5	6	30	11
	4P															
TGM5-630	3P	173	255	116	100.8	32	6	281	316.5	343.5	45	201.5	22.5	6	30	11
	4P															

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7.3 Outline and installation dimensions of the plug-in type back-panel

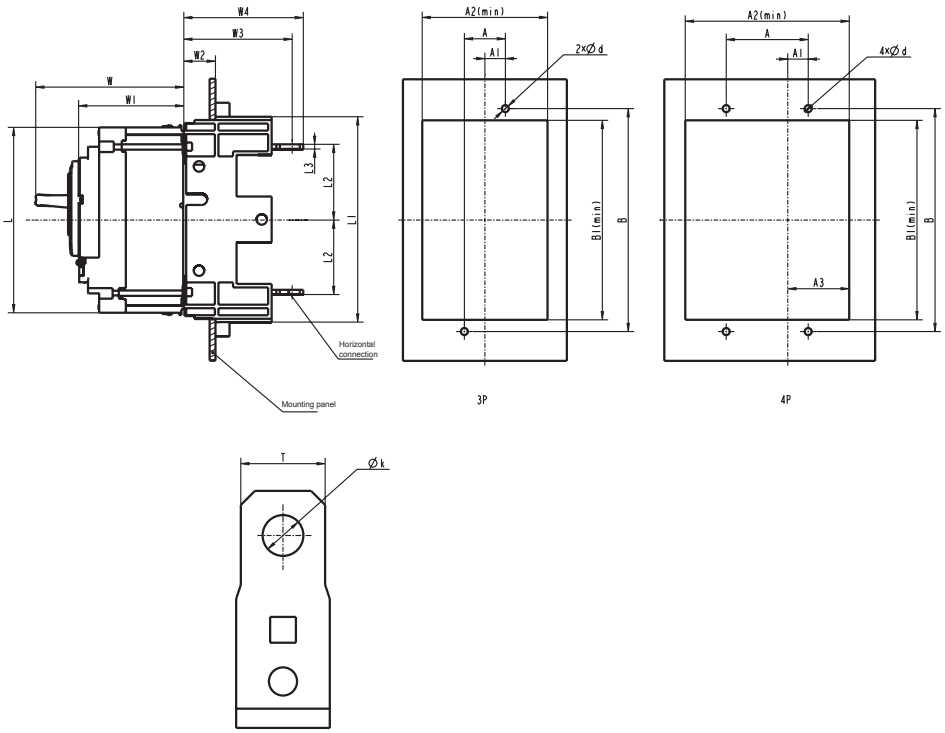

Table 7

Model	Number of poles	W	L	W1	W2	W3	W4	L1	L2	L3	A	B
TGM5-125	3P	109	140	78.5	67	20	96.4	160	55.4	4	30	113
	4P	109	140	78.5	67	20	96.4	160	55.4	4	30	113
TGM5-250	3P	126	162	90	27	92.5	102	175	64	4	35	190
	4P	126	162	90	27	92.5	102	175	64	4	70	190
TGM5-400	3P	173	255	116	26.8	129	143	281	104	6	45	302
	4P	173	255	116	26.8	129	143	281	104	6	90	302
TGM5-630	3P	173	255	116	26.8	129	143	281	104	6	45	302
	4P	173	255	116	26.8	129	143	281	104	6	90	302

Model	Number of poles	A1	A2	A3	B1	d	T	k
TGM5-125	3P	15	/	/	/	5	18	8.6
	4P	15	/	/	/	5	18	8.6
TGM5-250	3P	17.5	107	/	172	6	18	8.7
	4P	17.5	142	53.5	172	6	18	8.7
TGM5-400	3P	22.5	142	/	275	6	30	11
	4P	22.5	187	71	275	6	30	11
TGM5-630	3P	22.5	142	/	275	6	30	11
	4P	22.5	187	71	275	6	30	11

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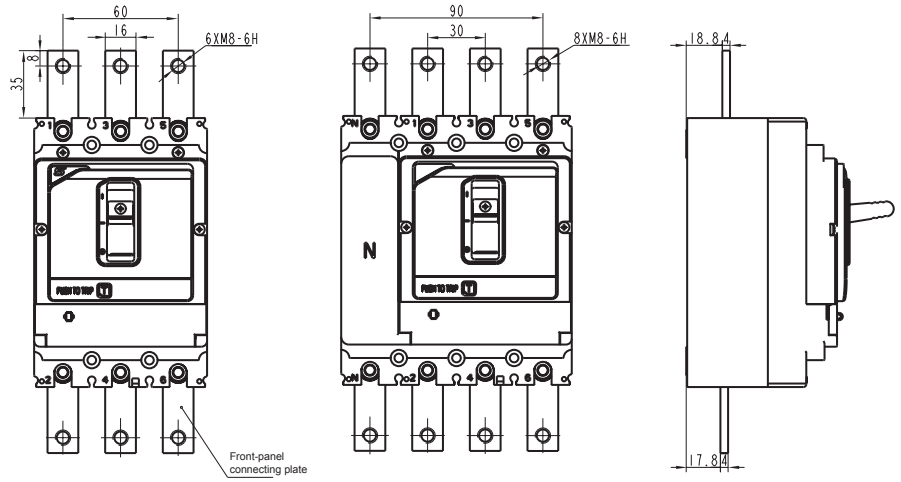
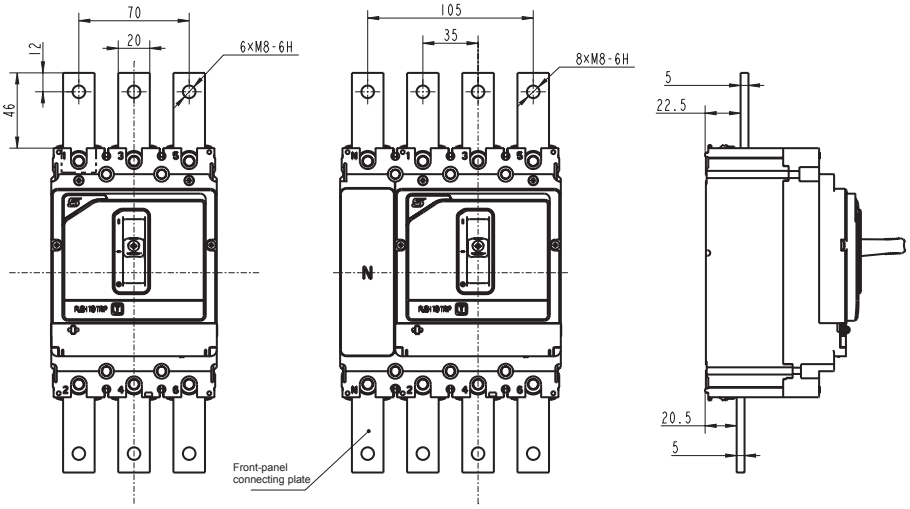
7.4 Installation dimensions of TGM5-125 external transition busbar



7.5 Installation dimensions of TGM5-250 external transition busbar



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7.6 Installation dimensions of TGM5-400/630 external transition busbar

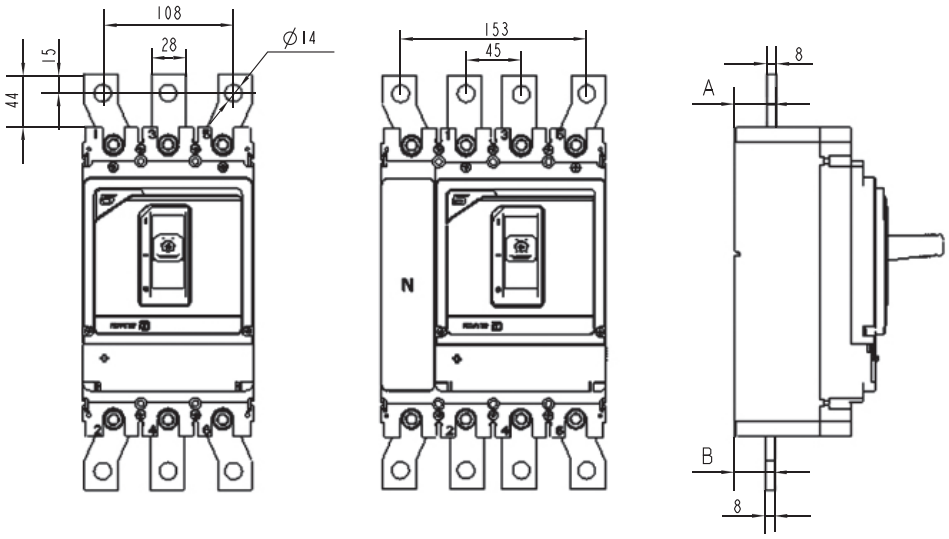

Table 8

Model	A	B
TGM5-400	25	23.5
TGM5-630	27	26

7.7 Dimensional drawings of short terminal cover

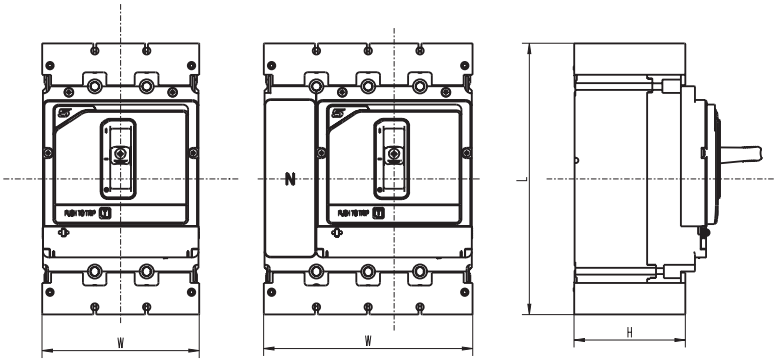

Table 9

Model	Number of poles	W	L	H
TGM5-125	3P	90	163	65.5
	4P	120	163	65.5
TGM5-250	3P	106	183	75
	4P	141	183	75
TGM5-400	3P	145	302.8	98.7
	4P	190	302.8	98.7
TGM5-630	3P	145	302.8	98.7
	4P	190	302.8	98.7

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7.8 Dimensional drawings of long terminal cover

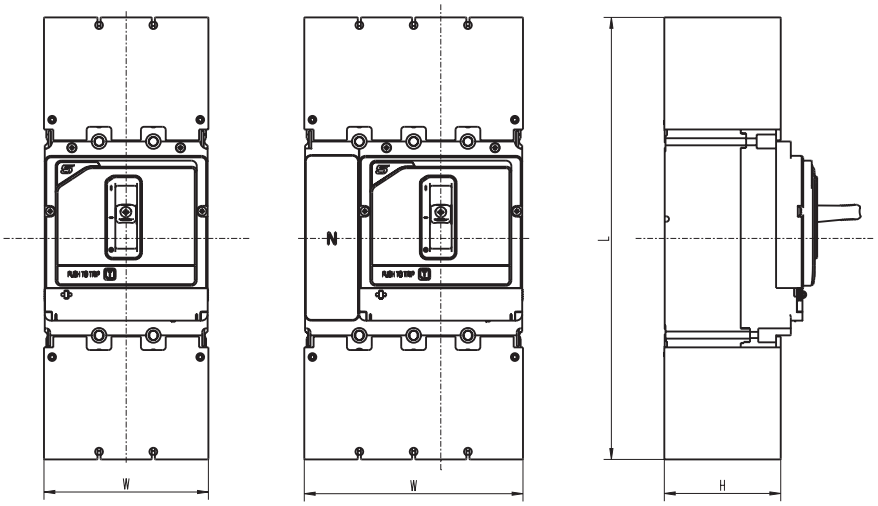


Table 10

Model	Number of poles	W	L	H
TGM5-125	3P	90	244	65.5
	4P	120	244	65.5
TGM5-250	3P	106	285	75
	4P	141	285	75
TGM5-400	3P	145	405	98.7
	4P	190	405	98.7
TGM5-630	3P	145	405	98.7
	4P	190	405	98.7

8 Accessories

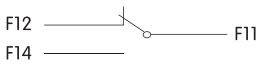
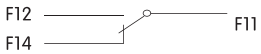
8.1 Internal Accessories

8.1.1 Aux. contact AX

[Function]
Refer to accessories used to remotely indicate the ON or OFF/Free Trip (OFF) state of the circuit breaker, connected to the aux. circuit of the circuit breaker.

[Indicate the OFF/ON state of circuit breaker]

Table 11

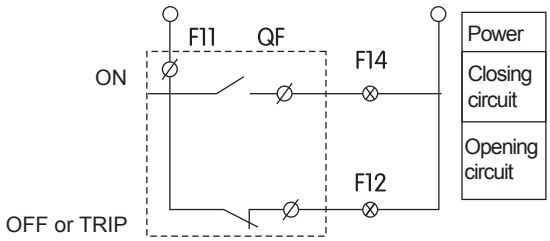
When the circuit breaker is in the "OFF" or "Free Trip" position	
When the circuit breaker is in "ON" position	

[Electrical characteristics]

Table 12

Rated operating voltage (V)	Rated operating current (A)	
	AC-15	DC-13
AC 110	4	-
AC 220/240	3	-
AC 415	2.5	-
DC 110	-	0.3
DC 220	-	0.25

[Wiring diagram]



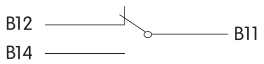
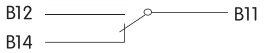
8.1.2 Alarm contact AL

[Function]
Mainly used to provide the signal in the event of fault such as overload, short circuit or undervoltage, and or free trip of the circuit breaker.

TGM5 Series Moulded Case Circuit Breaker

[Indicate the OFF/ON state of circuit breaker]

Table 13

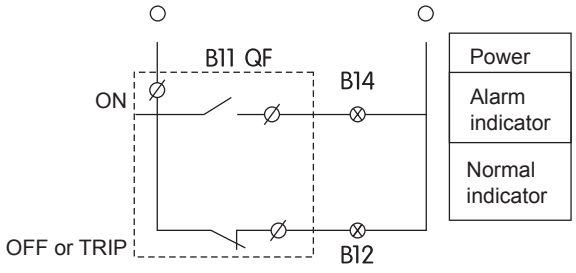
When the circuit breaker is in the "OFF" or "ON" osition	
When the circuit breaker is in Free Trip (Alarm) position	

[Electrical characteristics]

Table 14

Rated operating voltage (V)	Rated operating current (A)	
	AC-15	DC-13
AC 110	4	-
AC 220/240	3	-
AC 415	2.5	-
DC 110	-	0.3
DC 220	-	0.25

[Wiring diagram]



8.1.3 Shunt release SHT

[Function]

The shunt release works according to the electrical signal to realize the remote control and auto control of circuit breaker. When the power voltage is any voltage between the 70%~110% rated control power voltage, the shunt release shall make the circuit breaker work reliably.

[Electrical characteristics]

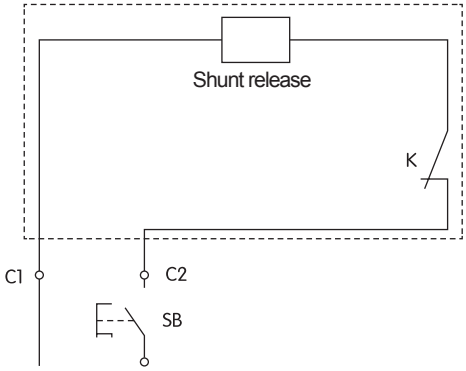
Table 15

Frame					
	AC220-240V	AC380-415V	DC24V	DC110V	DC220V
125A	2	2.5	2.5	2.2	2
250/400/630A	2.2	2.5	2.2	2.5	2.5

[Operating characteristics]

It is prohibited to energize for long time.

[Wiring diagram]

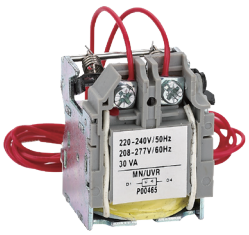


Note: When the shunt release with the rated control power voltage DC24V is used, the maximum length of the copper wire (the length of each of two wires) must meet the table below:

Table 16

Rated control power voltageU_s(DC24V) / Sectional area of wire	1.5mm^2	2.5mm^2
100%U_s	150m	250m
85%U_s	100m	160m

8.1.4 Undervoltage release UVT



[Function]

It is used to realize the undervoltage voltage protection function of the circuit breaker, and to disconnect the circuit breaker when the power voltage is too low to protect the electrical equipment.

● When the power voltage drops (or slowly drops) to the range 70% ~ 35% of the rated control power voltage, the undervoltage release shall work to disconnect the circuit breaker reliably.

●When the power voltage is equal to or greater than 85% rated control power voltage of the undervoltage release, it can ensure that the circuit breaker is closed.

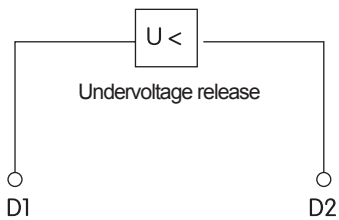
●When the power voltage is less than 35% rated control power voltage of the undervoltage release, the undervoltage release can prevent the circuit breaker from closing.

[Electrical characteristics]

Table 17

Frame	Power consumption (W)	
	AC220-240V	AC380-415V
125A	2	3
250/400/630A	2.2	3

[Wiring diagram]



TGM5 Series Moulded Case Circuit Breaker

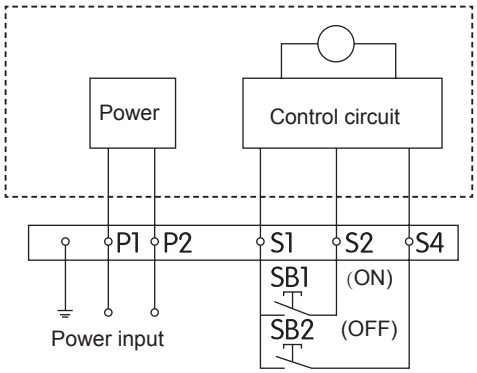
8.2 External Accessories

8.2.1 Motor mechanism CD2

[Function]

Suitable for remote ON, OFF, and Re-trip operations of circuit breaker, and for automatic applications.

[Electrical characteristics and wiring diagram]



P1 and P2 are external power input

SB1 and SB2 are operating buttons (provided by user)

*Note:

K – The micro switches connected to the coil in series in the shunt release are normally closed contacts. When the circuit breaker is closed, this contact will open automatically, and will be closed when power-on.

[Outline and installation dimensions]

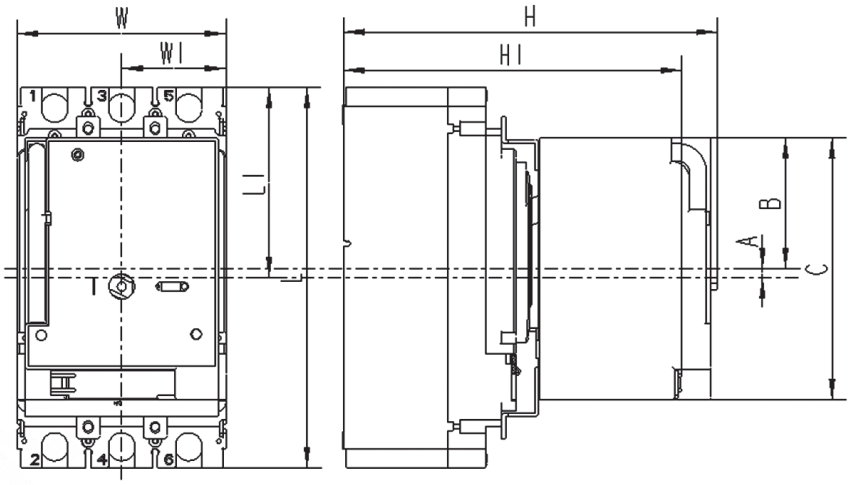


Table 18

Model	W	W1	L	L1	H	H1	A	B	C
TGM5-125	90	45	140	70	174	162	0.1	50.5	101
TGM5-250	105	52.5	162	81	181	172	0.5	59	118
TGM5-400	140	70	255	127.5	251	227	6	88	176
TGM5-630	140	70	255	127.5	251	227	6	88	176

8.2.2 Manual operating mechanism

[Function]

With the unique design and transmission structure used, it can realize the ON, OFF, and re-trip operations of the circuit breaker through the rotary handle.

- With isolation function indication;
- Three position indicators: O (open), I (closed) and free trip
- The circuit breaker can be equipped with 1~3 padlocks at the OFF position, and its diameter is 5~8mm; at this time, it can prevent the circuit breaker from closing and the switch cabinet from opening;
- In the ON position, the rotary handle cannot open the cabinet door (to open the cabinet door in the emergency situations, the emergency unlock device on the handle can be used to open the cabinet door).
- Default length of rod: 150mm.

[Outline and Installation Dimensions]

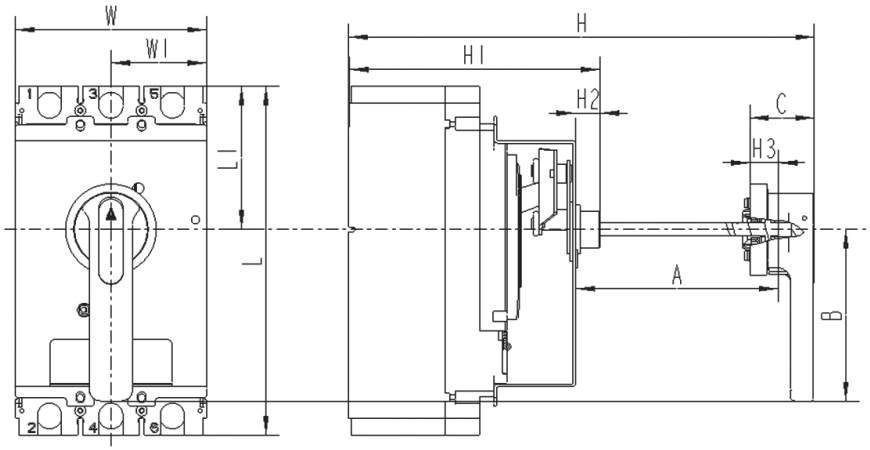


Table 19

Model	W	W1	L	L1	H	H1	H2	H3	A	B	C
TGM5-125	90	45	140	57	281.8	124.8	18	21	148	95	47
TGM5-250	105	52.5	162	72	294	137	18	21	148	95	47
TGM5-400	140	70	255	105	341	184	18	21	148	125	47
TGM5-630	140	70	255	105	341	184	18	21	148	125	47

8.3 Connecting Accessories

8.3.1 Front-panel wiring transition busbar

[Function]

It can make that the circuit breaker has the flexible wiring method. By adding this accessory, the electrode spacing can be increased to increase the electrical gap between the adjacent poles of each phase of the input terminal and output terminal of the circuit breaker, enhancing the safety of the line.

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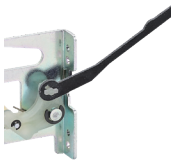
8.3.2 Plug-in base (front-panel and back-panel)

[Function]

- Replace the circuit breaker quickly without changing the incoming and outgoing wires and the mounting base;
- The plug-in base can be pre-installed to provide convenience for the consequent addition of circuit breaker for client;
- When installing the plate or base of the circuit breaker, the power circuit shall be isolated;
- If there is plug-pull safety device function (optional), the circuit breaker can trip automatically when the circuit breaker is pulled out in the ON state.

8.3.3 Plug-in type plug-pull safety device



[Function]

It is matched with the plug-in type base to ensure that the circuit breaker can trip automatically when the circuit breaker is pulled out in the ON state.

8.4 Insulating Accessories、

8.4.1 Terminal cover (long and short)

[Function]

- It is used to prevent touching with main circuit and to prevent short circuit between the phases. There is a knock-off hole in the front of terminal cover to adapt to the cables and front-panel wires of various terminal lugs.
- When the voltage is ≥ 500V, the terminal cover must be equipped.

8.4.2 Phase partition

[Function]

To ensure the safety of the insulation between the phase and to prevent short circuit between phases.

9 Appendix

9.1 Circuit Breaker Inverse Time Characteristic Table

Table 20

Test current name	Setting current multiple	Appointed time		Start state	Use category	Magnetic release operating current（A）
		In≤63A	In ＞ 63A			
Conventional non-trip current	1.05In	≥1h	≥2h	Cold state	For power distribution proteciton	10In±20%
Conventional trip current	1.30In	≥1h	＜ 2h	Hot state		
Conventional non-trip current	1.0In	≥2h		Cold state	For motor protection	12In±20%
Conventional trip current	1.2In	＜ 2h		Hot state		

9.2 Circuit Breaker Trip Characteristic Curve

When the ambient air temperature changes, the trip characteristic will be slightly changed, and that shall be corrected. The correction coefficients are listed below when with thermal magnetic release:

Table 21

Ambient air temp.	-40°C	-35°C	-30°C	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C
Temperature correction coefficient	1.4	1.375	1.35	1.325	1.3	1.275	1.25	1.225	1.2	1.175	1.15	1.125
Ambient air temp.	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C	
Temperature correction coefficient	1.1	1.075	1.05	1.025	1.0	0.925	0.85	0.775	0.7	0.625	0.55	

9.3 Circuit Breaker Derating

High altitude derating

When the altitude exceeds 2000m available in the appropriate working environment, the electrical performance of circuit breaker can be corrected according to the table below

Table 22

Altitude (m)	2000	3000	4000	5000
Power frequency withstand voltage (V)	3000	2500	2000	1800
Operating current correction coefficient	1	0.94	0.88	0.83
Short circuit breaking capacity correction coefficient	1	0.83	0.71	0.63

9.4 Circuit Breaker Installation

- Connect with the main circuit

  Wiring connection must be carried out by personnel with professional and technical qualifications.

  The wiring connection can be conducted only after confirming that the input power supply is completely disconnected.

- Select the connecting wire.

  The cross-sectional area of the connecting wire and the corresponding rated current are listed in the table below:

Table 23

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

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Table 24

Rated current (A)	Cable		Copper busbar	
	Qty.	Sectional area (mm^2)	Qty.	Size mm x mm
500	2	150	2	30×5

- When back-panel wiring, the insulating sleeve must be provided on the terminal.
- Connect the pressed lead wire with the conductive pole of circuit breaker through the bolt, and tighten it.
- Install a flash barrier between the phases of circuit breaker.
- Check

  Please check the circuit breaker according to the installation requirements before use, connect the fixed connection part flexibly, and operate the circuit breaker several times repeatedly and check whether its operating mechanism can work flexibly and reliably.

9.5 Use and Maintenance of Circuit Breaker

- When selecting a circuit breaker, ensure that the technical parameters marked on the circuit breaker should be consistent with the actual requirements.
- The various characteristics and accessories of the circuit breaker are set by the manufacturer, and cannot be adjusted arbitrarily during operation.
- Conduct periodic inspection, remove the dust on the surface of the shell, and keep the cleanliness and good insulation of circuit breaker.
- Select different rated current according to the requirements of the protection object, otherwise the correct protection effect cannot be realized.
- Maintenance and inspection must be conducted by professional technicians.
- To select internal and external accessories by users, the ordered model shall be provided by our company to ensure the quality, and our company will not bear any consequence caused by the selection, purchase or modification by the user arbitrarily.
- Please turn off the circuit breaker before maintenance or operation.
- The circuit breaker shall not be attacked by rain or fallen off during operation, storage, or transportation.

9.6 Application and Order Specification

- The model and specification of circuit breaker shall be specified. For example, to order a 250 frame 3-pole breaker product with current 250A, for power distribution, with breaking capacity 50kA/AC415V, with shunt, and with shunt voltage AC230V, the model is described as TGM5-250L/3310 250A 230V;
- The shunt undervoltage accessories shall be indicated with rated voltage, such as AC230V;
- The motor mechanism shall be indicated with rated operating voltage, such as AC230V.