TeM7

Series Moulded Case Circuit Breaker

TeM7 Series Moulded Case Circuit Breaker

1 Overview

TeM7 series moulded case circuit breaker (hereinafter referred to as circuit breaker) is the fourth generation of circuit breaker products developed and created by the outstanding designers in our company using the simulation design platform introduced and the series of advanced technologies such as international advanced rotary double break point technology, contact repulsion and locking technology, energy rapid tripping technology, and air blowing and magnetic blowing technology.

The product features with a high degree of modularity and its accessories are box-mounted. It has the characteristics of small size, high breaking capacity, high current limiting, zero flashover, full selectivity, and green environmental protection.

High breaking capacity: Each model of circuit breaker has multiple breaking capacities up to 150kA to meet various protection needs required by customers:

- Standard application: Standard type (L)
- Applications with high performance requirements: (High breaking type: M and H)
- Special application: Current limiting type (S)

The circuit breaker is used in the AC 50/60Hz circuit with the rated voltage up to 690V and the rated current up to 630A for making, breaking and carrying the rated current under the normal circuit conditions, and it can provide reliable protection for lines and electrical equipment in the event of overload, short circuit, and undervoltage situations, and can also be used as overload, short circuit and undervoltage protection for the motor with infrequent start.

1.1 Product Features

- The international advanced rotary double break point technology, contact repulsion and locking technology, energy rapid tripping technology, and air blowing and magnetic blowing technology are used, with high breaking capacity and high current limiting coefficient;
- The full series of products has zero flashover and the accessories are box mounted;
- The short circuit current and overload current settings are adjustable;
- With isolation function;
- With high environmental protection, the shell is made of recyclable material.

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1.2 Standards:
- IEC 60947-1
- IEC 60947-2

1.3 Working Environment
- Ambient air temperature: -40°C ~+70°C; the mean temperature within 24h does not exceed +50°C;

Note: When the circuit breaker works in ambient air temperatures above +70°C or below -40°C, please contact the manufacturer for this.
- Altitude: The altitude of the installation site does not exceed 2000m. If the altitude exceeds 2000m, please refer to the altitude and derating factor table;
- Atmospheric conditions: The relative humidity of the atmosphere air does not exceed 50% at the maximum ambient temperature of +55°C; a higher humidity is allowed at lower temperatures; when the monthly mean minimum temperature is +25°C in the wettest month, the monthly mean maximum relative humidity of that month is 90% by considering the condensation occasionally occurred on the product surface due to temperature changes. The circuit breaker should be installed in a place where there is no explosion hazard and no abnormal electric dust enough not cause corrosion to the metal corrosion and damage to the insulation;
- Pollution degree: Level 3; Level 2 if the accessories are installed in the moulded case circuit breaker;
- Installation category: The installation category of main circuit of the moulded case circuit breaker is Class III, and of the auxiliary circuit and control circuit is Class II.

1.4 Installation Method

The circuit breaker can be installed vertically (that is vertical mounted) and horizontally (that is horizontal mounted), and adopts the lower wire inlet.

2 Type Designation

Te	M	7	-	□	□	□	/	□	□	□	□	□	□	□	□	□	□
①	②	③		④	⑤	⑥		⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯

①	Enterprise code	
②	Product code	Moluded Case Circuit Breaker
③	Design code	
④	Frame grade code	Refer to the Basic Parameters Table
⑤	Breaking capacity level	L - Standard type; M - Middle breaking capacity; H - High breaking capacity; S - Super-high breaking capacity
⑥	Operation mode code	By default: Operation directly via handle; P: Operation via motor; Z: Operation via rotary handle

⑦	Number of poles	3 - three-pole; 4 - four-pole
⑧	Release model	2 - Electromagnetic type; 3 - Thermomagnetictype
⑨	Accessory code	Refer to the internal accessory code table
⑩	Usage code	By default: Power distribution; 2: Motor protection
⑪	N pole code	The code is available for 4 poles only rather than other poles; B type 4300B is not equipped with an overcurrent protection, and N pole is closed and open together with other three poles; C type 4300C is equipped with an overcurrent protection, and N pole is closed and open together with other three poles;
⑫	Rated current	Refer to the Basic Parameters Table 1
⑬	Accessory voltage	Refer to the accessory parameter table 15
⑭	Installation code	By default: Fixed type front-panel; B: Fixed type back-panel; F: Plug-in type front-panel; C: Plug-in type back-panel; D: Drawer type back-panel; Q: Drawer type frontpanel
⑮	Application code	By default: Conventional type; GY: Plateau; SR: Damp heat; HB: Environmental protection; YW: Salt spray; GW: High temperature; DW: Low temperature
⑯	Special requirements	As described by customer

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3 Technical Parameters

Table 1

Model			TeM7-125				TeM7-250			
Frame current Inm (A)			125				250			
Number of poles			3P, 4P				3P, 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 impulse withstand 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 level			L	M	H	S	L	M	H	S
Icu (kA)	AC380/400/415V		50	85	100	150	50	85	100	150
	AC500/550V		50	50	70	70	50	50	70	70
	AC660/690V		20	20	40	50	20	20	40	50
Ics (%Icu) (kA)	AC380/400/415V		100%				100%			
	AC500/550V		100%				100%			
	AC660/690V		100%				100%			
Isolation function			Yes				Yes			
Usage category			A				A			
Operation performance (times)	Mechanical life		20000				20000			
	Electrical life	AC380/400/415V	18000				10000			
		AC500/550V	/				/			
		AC660/690V	8000				4000			
Flashover distance (mm)			0				0			
Accessory information										
Operation directly via handle			■ Standard				■ Standard			
Extended rotary handle			□ Optional				□ Optional			
Motor mechanism			□ Optional				□ Optional			
Fixed type front-panel			■ Standard				■ Standard			
Plug-in type front-panel			□ Optional				□ Optional			
Plug-in type back-panel			□ Optional				□ Optional			
Drawer type			- No				- No			
Phase partition			■ Standard				■ Standard			

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Table 1, continued

Model			TeM7-400				TeM7-630			
Frame current Inm (A)			400				630			
Number of poles			3P, 4P				3P, 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 impulse withstand voltage Uimp (kV)			12				12			
Rated frequency Hz			50/60				50/60			
Rated current In (A)			250, 315, 320, 350, 400				400, 500, 630			
Breaking capacity level			L	M	H	S	L	M	H	S
Icu (kA)	AC380/400/415V		50	85	100	150	50	85	100	150
	AC500/550V		50	50	70	70	50	50	70	70
	AC660/690V		20	20	40	50	20	20	40	50
Ics (%Icu) (kA)	AC380/400/415V		100%				100%			
	AC500/550V		100%				100%			
	AC660/690V		100%				100%			
Isolation function			Yes				Yes			
Usage 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			
Extended rotary handle			□ Optional				□ Optional			
Motor mechanism			□ Optional				□ Optional			
Fixed type front-panel			■ Standard				■ Standard			
Plug-in type front-panel			□ Optional				□ Optional			
Plug-in type back-panel			□ Optional				□ Optional			
Drawer type			□ Optional				□ Optional			
Phase partition			■ Standard				■ Standard			

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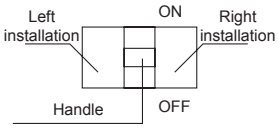
4 Release Mode and Accessory Code



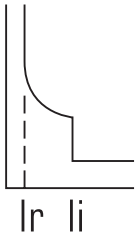
Alarm contact ●　　Aux. contact ○

Shunt release ■　　Undervoltage release ▲

Table 2

Accessory name	Accessory code	Accessory installation and wire leading mode	
		TeM7–125/250	TeM7–400/630
		3P，4P	3P，4P
No accessory	00		
Alarm contact	08		
Shunt release	10		
Undervoltage release	30		
Aux. contact	20		
Dual aux. contacts	21		
Three aux. contacts	22	——	
Four aux. contacts	23	——	
Alarm contact + Shunt release	18		
Alarm contact + Undervoltage release	38		
Alarm contact + Aux. contact	28		
Alarm contact + Dual aux. contacts	68		
Alarm contact + Three aux. contacts	67	——	
Alarm contact + Four aux. contacts	66	——	
Shunt release + Aux. contact	40		
Shunt release + Dual aux. contacts	41		
Shunt release + Three aux. contacts	42	——	
Shunt release + Four aux. contacts	43	——	
Undervoltage release + Aux. contact	70		
Undervoltage release + Dual aux. contacts	71		
Undervoltage release + Three aux. contacts	72	——	
Undervoltage release + Four aux. contacts	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 release + Three aux. contact	76	——	
Alarm contact + Undervoltage release + Four aux. contact	75	——	

4.1 Thermomagnetic Release TM



There are four frame circuit breakers for TeM7-125~630, and they can be all equipped with thermomagnetic release TM for AC power distribution protection, and the rated operating current is 16A~630A.
The overload protection function can be realized by the bimetal sheet heated to trigger the operating mechanism for protection;
The short circuit instantaneous protection function is realized through the magnetic trip unit.

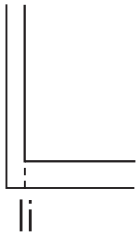
Power distribution protection

Table 3

Thermomagnetic release	TeM7-125	TeM7-250	TeM7-400	TeM7-630
Number of poles	3P, 4P	3P, 4P	3P, 4P	3P, 4P
Current spec.	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	125, 160, 180 200, 225, 250	250, 315, 350, 400	400, 500, 630
Overload protection				
Current set value (A)$I_r=I_nX$	0.8-0.9-1.0			
Short circuit instantaneous protection				
Current set value (A)$I_i=I_nX$	10	5-6-7-8-9-10		
Accuracy	±20%			
N-pole protection(1)				
Current set value (A) $I_{iN}=I_nX$	10	Same as phase pole		
Accuracy	±20%			

(1): only 4B, 4C

4.2 Thermomagnetic Release MA



There are 4 frame circuit breakers for TeM7-125~630, and they can be equipped with electromagnetic release MA, suitable for the solution of the motor feeder circuit of three elements. It can be combined with the AC contact and thermal relay to protect the normal operation of the motor, where:

- M type electromagnetic release of the moulded case circuit breaker is used for short circuit instantaneous protection
- AC contactor is used for the start-stop operation of the motor
- Thermal relays are used for overload, phase loss and phase imbalance protection

The short circuit instantaneous protection function is realized through the magnetic trip unit.

Motor protection

Table 4

Thermomagnetic release	TeM7-125	TeM7-250	TeM7-400	TeM7-630
Number of poles	3P, 4P	3P, 4P	3P, 4P	3P, 4P
Current spec.	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	125, 160, 180 200, 225, 250	250, 315, 350, 400	400, 500, 630
Short circuit instantaneous protection				
Current set value (A)$I_i=I_nX$	12	7-8-9-10-11-12		
Accuracy	±20%			
N-pole protection(1)				
Current set value (A) $I_{iN}=I_nX$	12	Same as phase pole		
Accuracy	±20%			

(1): only 4B, 4C

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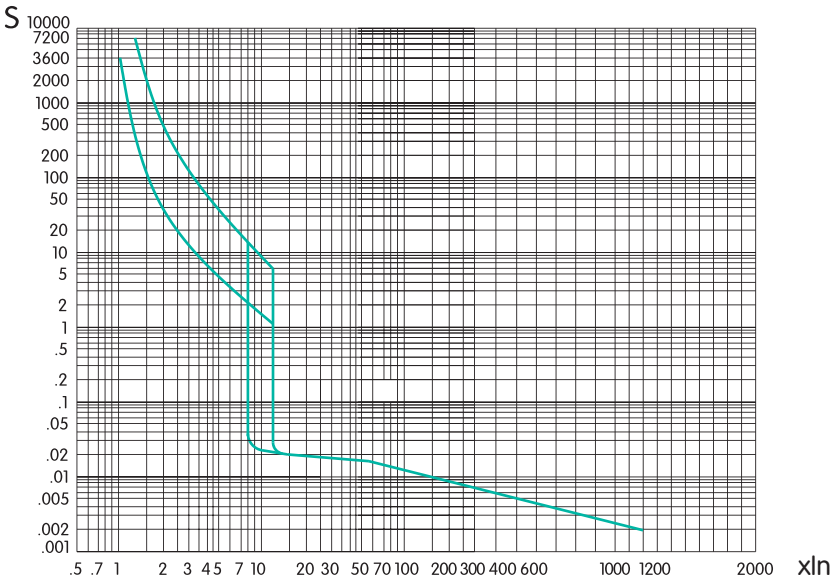
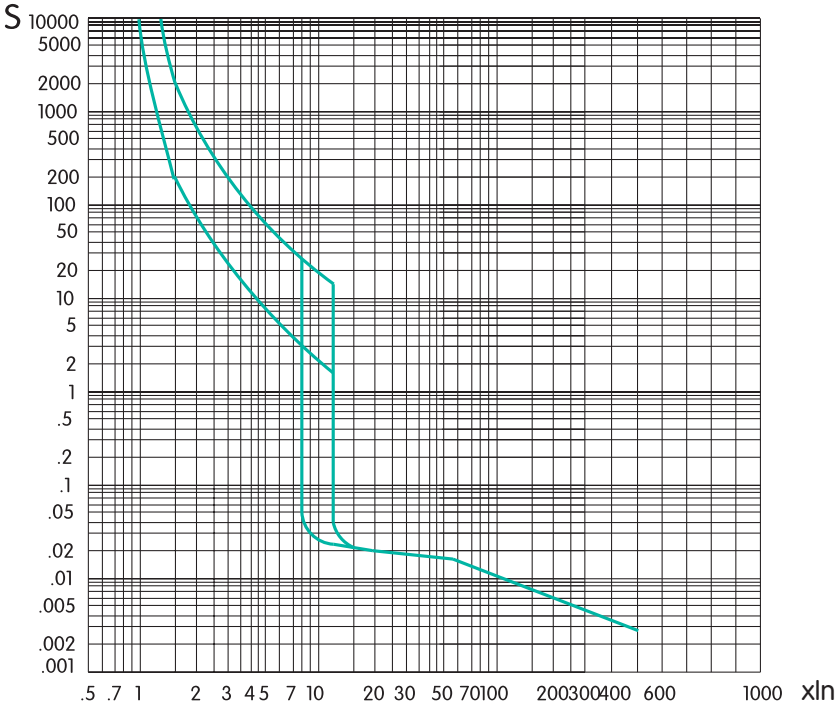
5 Trip Characteristic Curve

5.1 TeM7-125(16A-63A) TM Thermomagnetic Release (Ambient air temperature +40°C)



5.2 TeM7-125(80A-125A) TM Thermomagnetic Release (Ambient Air Temperature +40°C)



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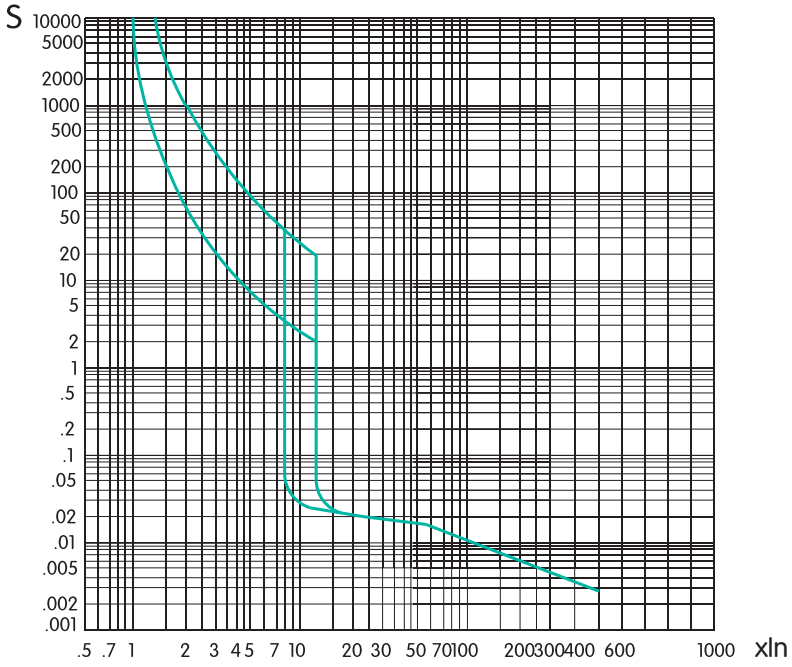
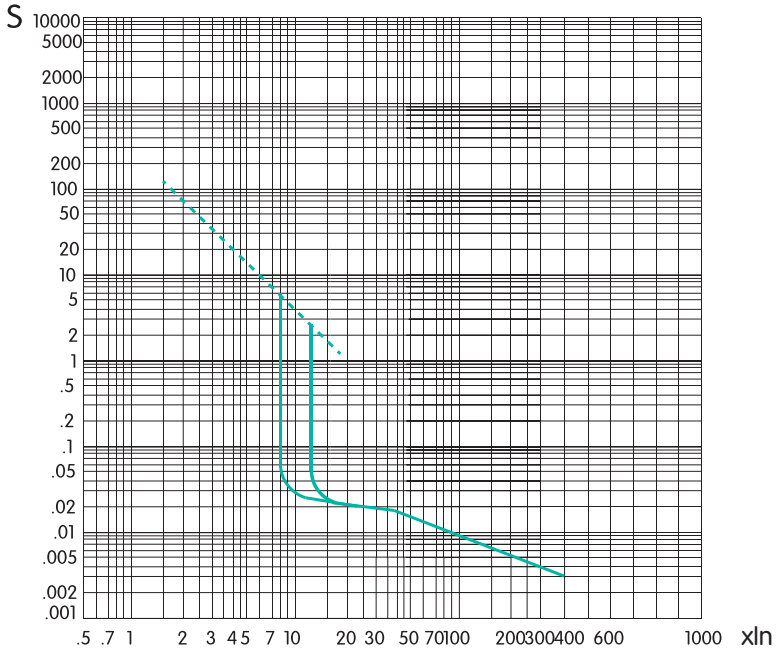
5.3 TeM7-250/400/630(125-630A) TM Thermomagnetic Release (Ambient Air Temperature +40°C)



5.4 TeM7-125(16A-125A) MA Magnetic Release (Ambient Air Temperature +40°C)



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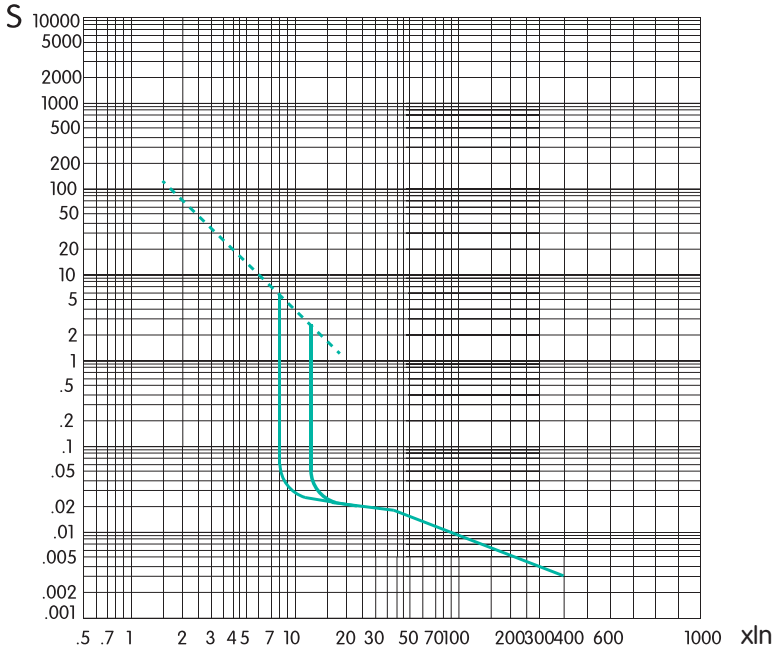
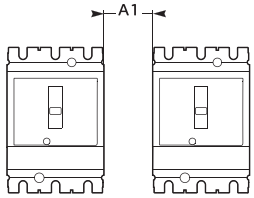
5.5 TeM7-250/400/630(125-630A) MA Magnetic Release (Ambient Air Temperature +40°C)



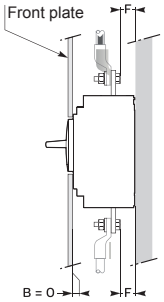
6 Installation Safety Spacing and Minimum Distance of Circuit Breaker

6.1 Safety Spacing

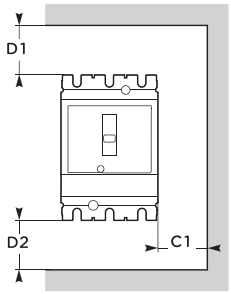
Minimum spacing between two adjacent circuit breakers



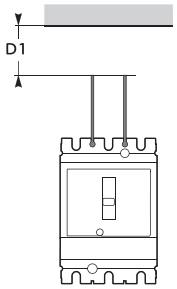
Minimum spacing between the circuit breaker and the front or rear plate



Minimum spacing between the circuit breaker and the top, base, or side plate



Circuit breaker without accessories



Circuit breaker with phase partition or terminal cover

Exposed or painted metal parts

Note: If F< 8mm: an insulating baffle must be required

Minimum safety distance of TeM7-125 ~ 630

Table 5

Operating voltage	Spacing (mm)						
	Between circuit breakers	Between the circuit breaker and the painted metal part			Exposed metal part		
	A1	C1	D1	D2	C1	D1	D2
U ≤ 440V, used for the circuit breaker equipping with the following accessories:							
No accessory	0	0	30	30	5	40	40
Phase partition	0	0	0	0	5	0	0
440V < U ≤ 690V, used for the circuit breaker equipping with the following accessories:							
Phase partition	0	0	0	0	20	10	10

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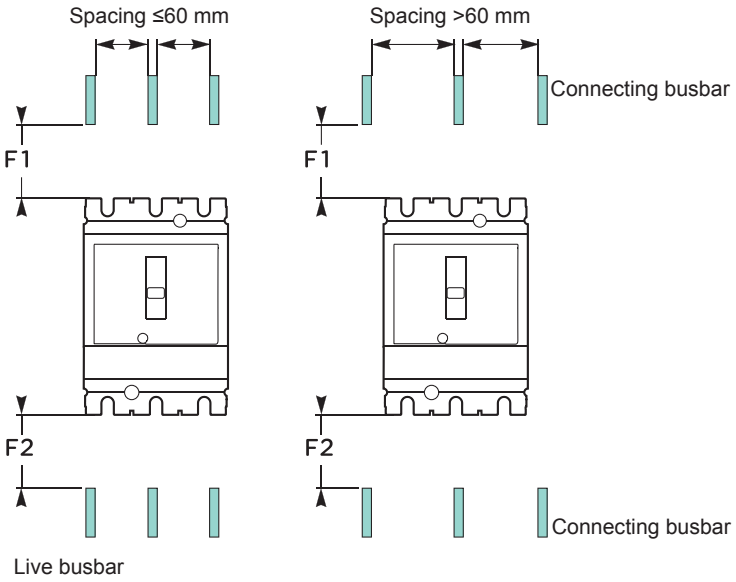
6.2 Relevant Spacing with Live Bare busbar

Minimum safety distance of TeM7-125 ~630

Table 6

Operating voltage	Relevant spacing of live bare busbar			
	Spacing ≤ 60 mm		Spacing >60 mm	
	F1	F2	F1	F2
U<440V	350	350	80	80
U≤440V≤600V	350	350	120	120
U>600 V	Prohibited: Insulating baffle between the circuit breaker and the busbar			

Only when the configuration scheme passes the test, the spacing of special installations can be reduced.



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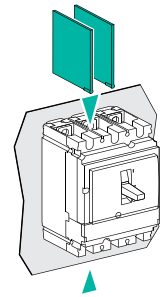
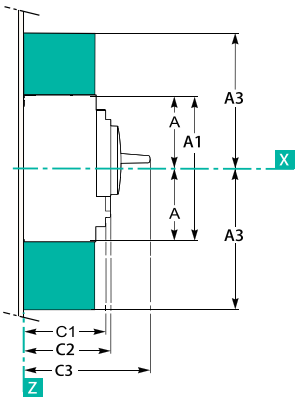
7 Outline and Installation Dimensions of Circuit Breaker

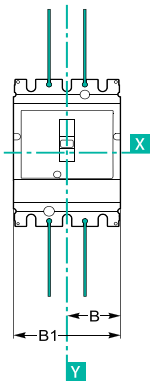
7.1 Outline and Installation Dimensions of Fixed Type Front-Panel

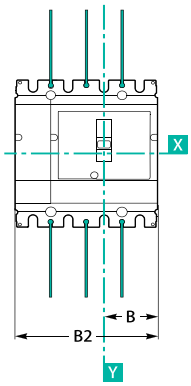
Dimensions	3P	4P

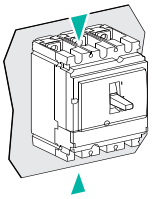


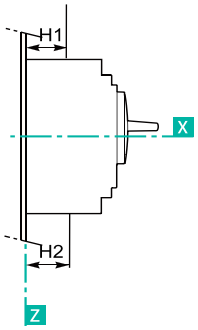
Phase partition

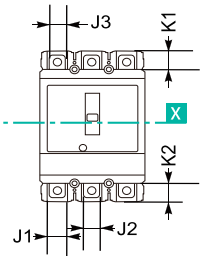




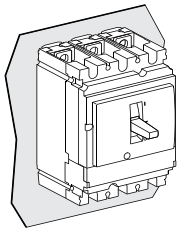




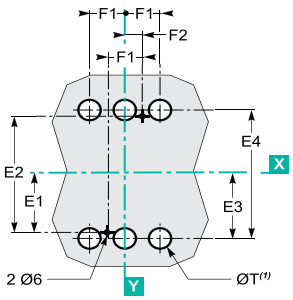


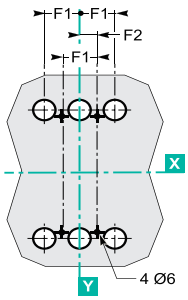


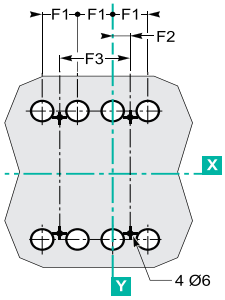
TeM7-125/250 3P	TeM7-400/630 3P	TeM7-125~630 4P



Install base plate







(1) ØT is used only for rear connection (for 3P2T circuit braker, the installation of the intermediate pole is not required)

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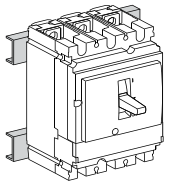
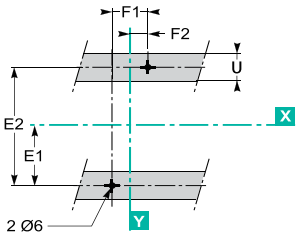
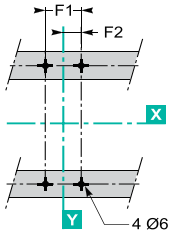
	TeM7-125/250 3P	TeM7-400/630 3P	TeM7-125~630 4P



Install rail





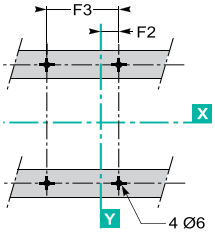


Table 7

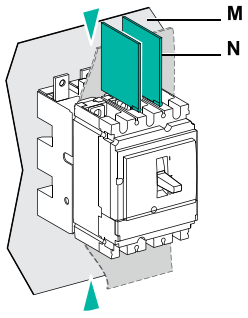
Model	A	A1	A3	B	B1	B2	C1	C2
TeM7-125/250	81	162	172.5	52.5	105	140	84.8	89.3
TeM7-400/630	127.5	255	237.5	70	140	185	112	116.5

Model	C3	E1	E2	E3	E4	F1	F2	F3
TeM7-125/250	126.7	62.5	125	70.7	141.4	35	17.5	70
TeM7-400/630	172.5	100	200	113.5	227	45	22.5	90

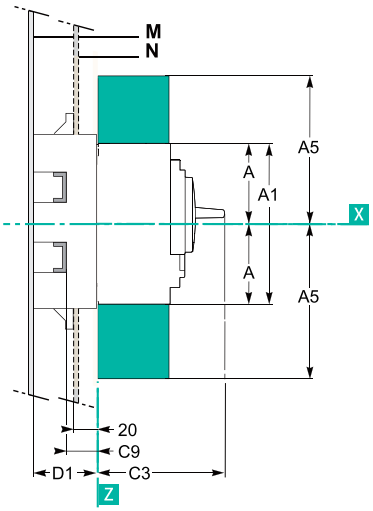
Model	φT	U	H1	H2	J1	J2	J3	K1	K2
TeM7-125/250	24	≤32	22.5	20.1	25	18	18	20	22
TeM7-400	24	≤32	25.3	23.9	33.8	24	30.5	30.5	28.4
TeM7-630	24	≤32	27.3	26.4	33.8	24	30.5	30.5	28.4

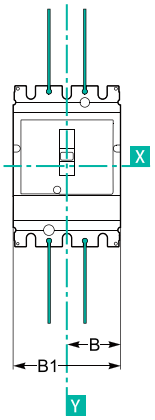
7.2 Outline and Installation Dimensions of TeM7 Plug-in Type

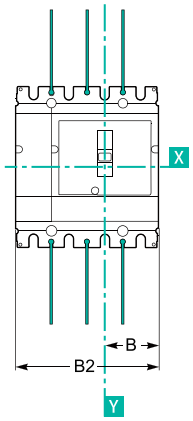
	Dimensions	3P	4P



Phase partition

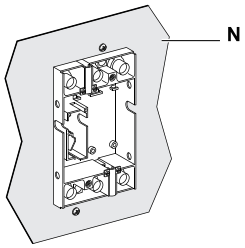




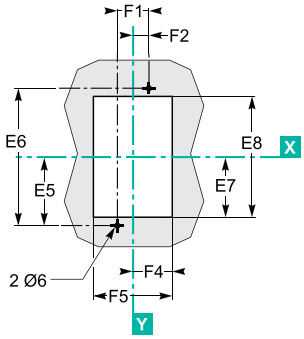


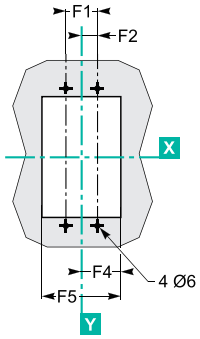
TeM7 Series Moulded Case Circuit Breaker

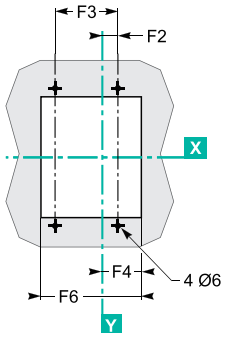
TeM7-125~250 3P	TeM7-400/630 3P	TeM7-125~630 4P



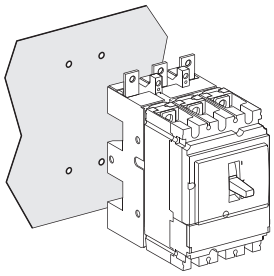
Install the through-plate



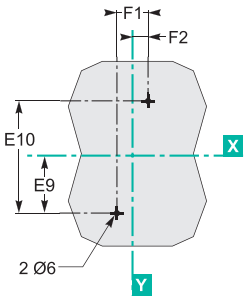


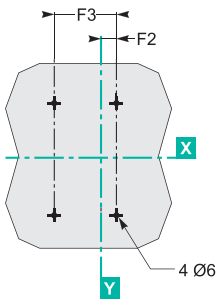


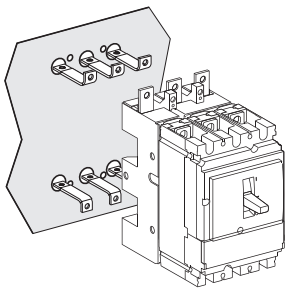
Installation dimensions of base plate	3P	4P



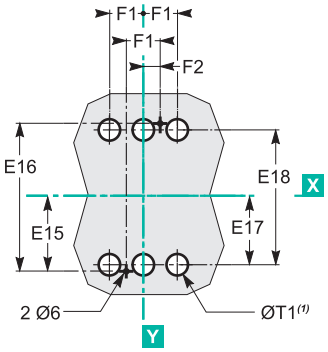
Front connection
(an insulating baffle is required between the mounting base and the circuit breaker base)

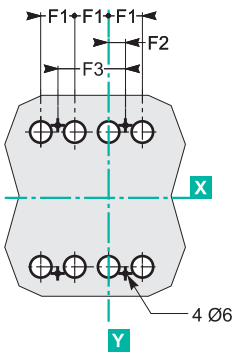






Rear connection

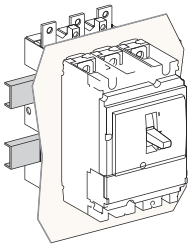




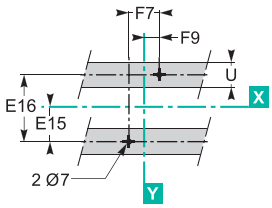
ØT1 is used only for rear connection (for 3P2T circuit braker, the installation of an intermediate pole is not required)

TeM7 Series Moulded Case Circuit Breaker

Dimensions	3P	4P



Install rail



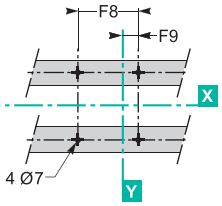


Table 8

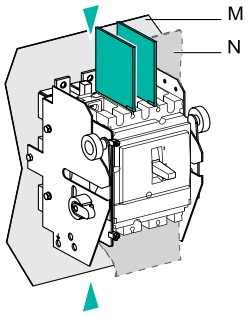
Model	A	A1	A5	B	B1	B2	C3	D1	E5	E6
TeM7-125/250	81	162	172.5	52.5	105	140	126.7	67	94.5	189
TeM7-400/630	127.5	255	237.5	70	140	185	172.5	111	149.5	299

Model	E7	E8	E9	E10	E15	E16	E17	E18	F1
TeM7-125/250	86	172	73.5	147	37	74	61.8	123.6	35
TeM7-400/630	137.5	275	125.5	251	71.5	143	100.5	201	45

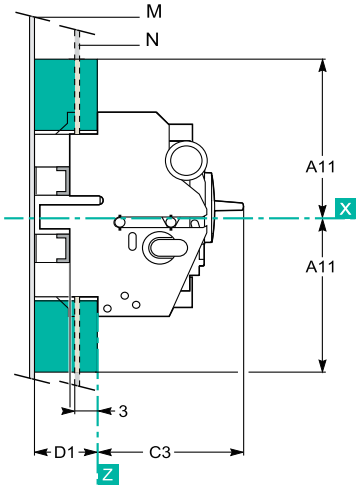
Model	F2	F3	F4	F5	F6	F7	F8	F9	φT1	U
TeM7-125/250	17.5	70	53	107	141	50	85	25	22	≤32
TeM7-400/630	22.5	90	68	136	181	90	135	45	33	≤35

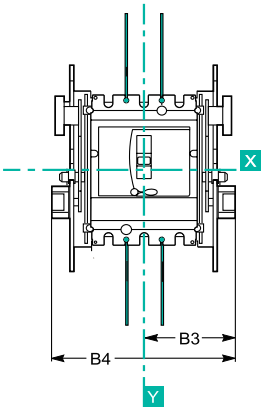
7.3 Outline and Installation Dimensions of TeM7 drawer type

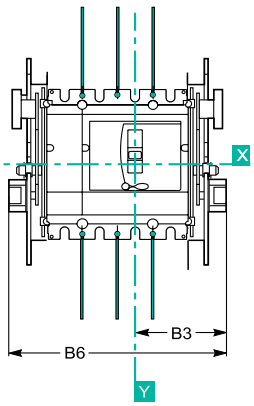
Dimensions	3P	4P



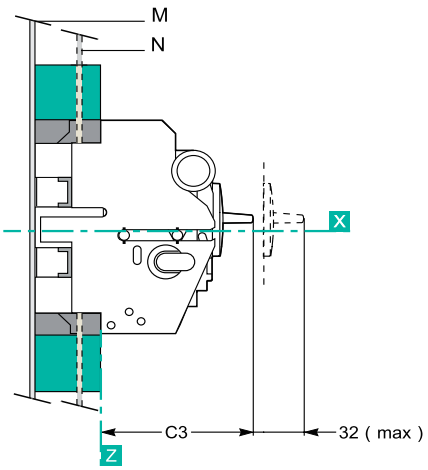
Phase partition

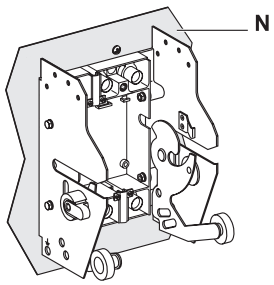






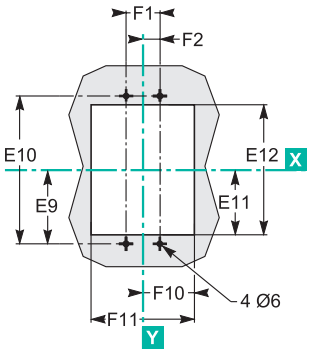
TeM7 Series Moulded Case Circuit Breaker

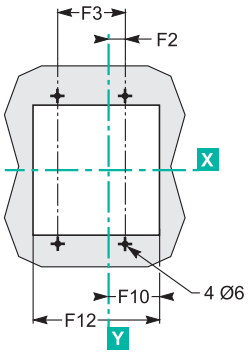




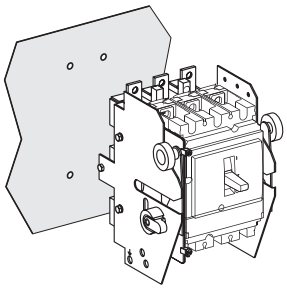
Install the through-plate for drawer type

Dimensions	TeM7-400/630 3P	TeM7-400/630 4P

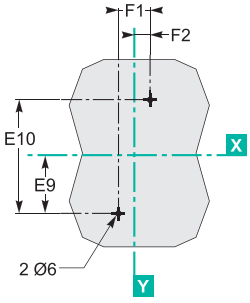


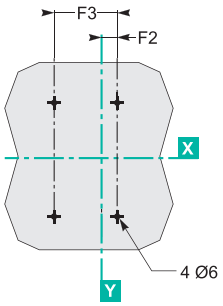


Installation dimensions of base plate	3P	4P

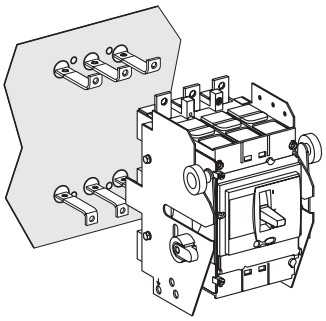


Front connection (the insulating baffle is required between the mounting base plate and the circuit breaker base)

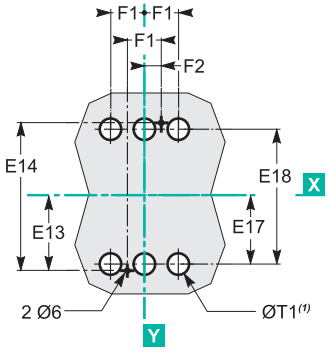


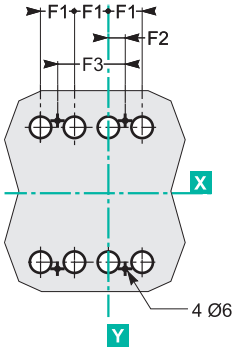


TeM7 Series Moulded Case Circuit Breaker



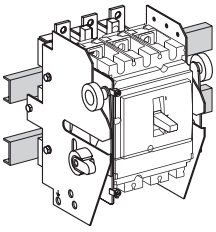
Rear connection



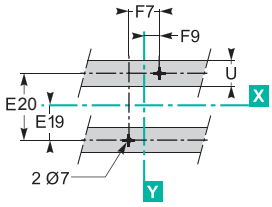


(1) ØT1 is used only for rear connection

Dimensions	3P	4P



Install rail



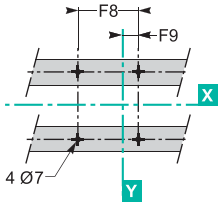


Table 9

Model	A11	B3	B4	B6	C3	D1	E9	E10	E11	E12
TeM7-400/630	237.5	110	220	265	168	68.5	149.5	299	138	276

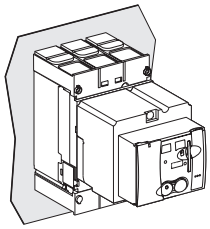
Model	E13	E14	E17	E18	E19	E20	F1	F2	F3	F7
TeM7-400/630	125.5	251	100.5	201	71.5	143	45	22.5	90	90

Model	F8	F9	F10	F11	F12	U	φT1
TeM7-400/630	135	45	68.5	137	182	≤35	33

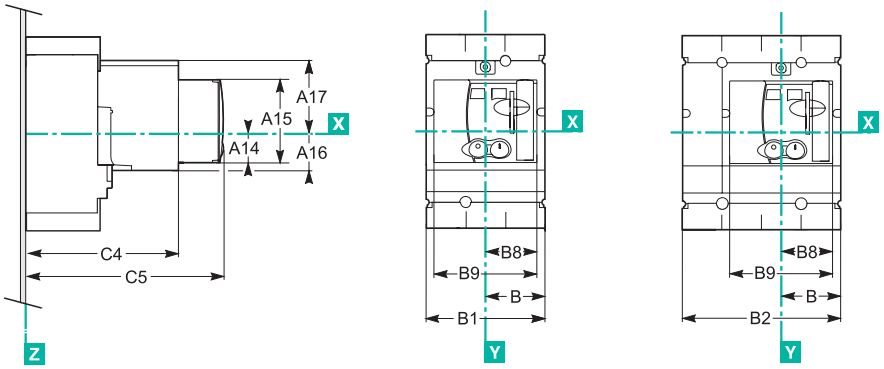
Note: No drawer type is available for 250 (inclusive) and below

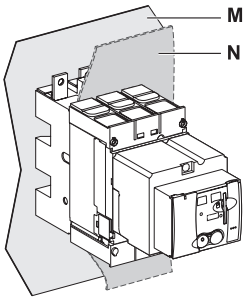
TeM7 Series Moulded Case Circuit Breaker

7.4 Outline and Installation Dimensions of TeM7 with motor mechanism

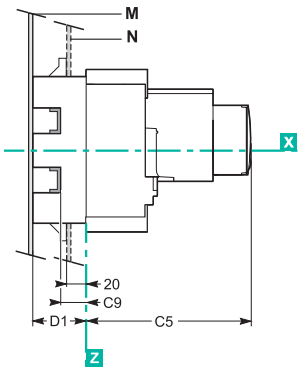


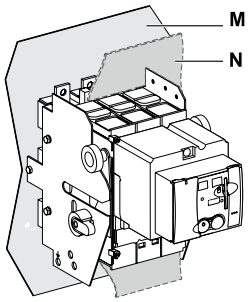
Fixed type





Plug-in type





Drawer type

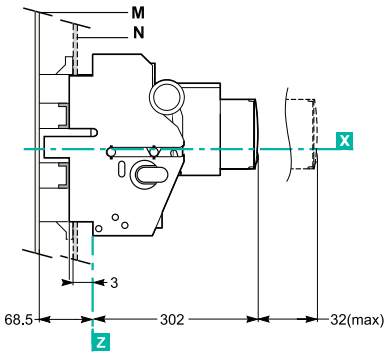


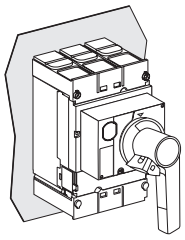
Table 10

Model	A14	A15	A16	A17	B	B1	B2	B8	B9	C4	C5	C9	D1
TeM7-125/250	18.3	70.5	32.8	55.2	52.5	105	140	45	90	192.6	203.8	38	67
TeM7-400/630	-	-	48.8	91.3	70	140	185	65	130	225	260	47	88

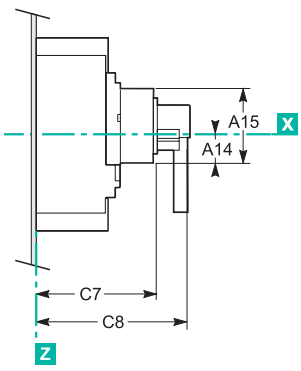
TeM7 Series Moulded Case Circuit Breaker

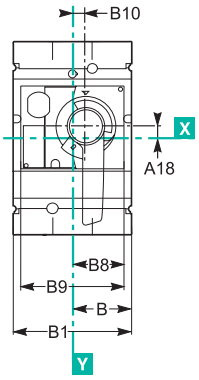
7.5 Outline and Dimensions of TeM7 with direct rotary handle

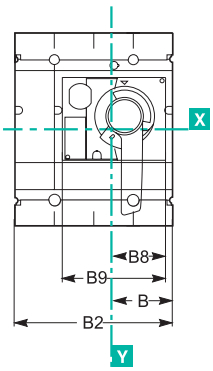
Dimensions	3P	4P

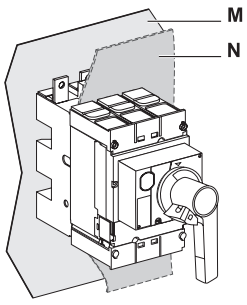


Fixed type

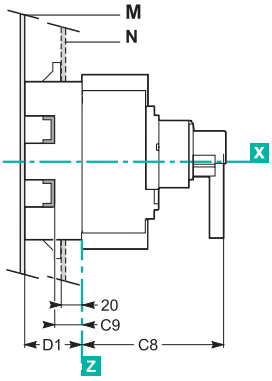


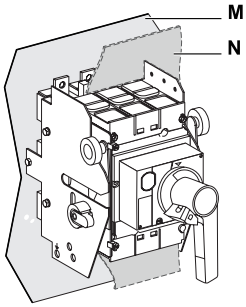






Plug-in type





Drawer type

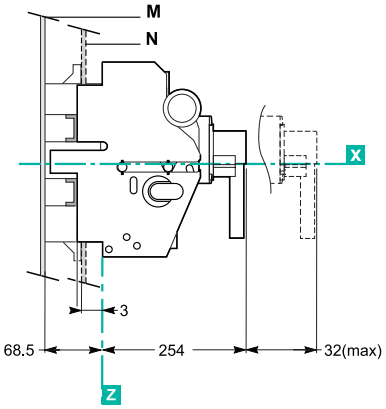
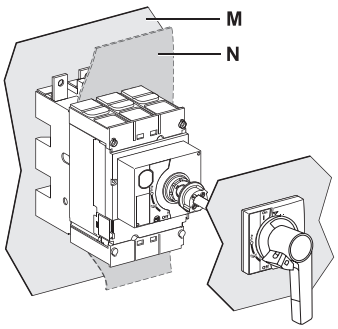


Table 11

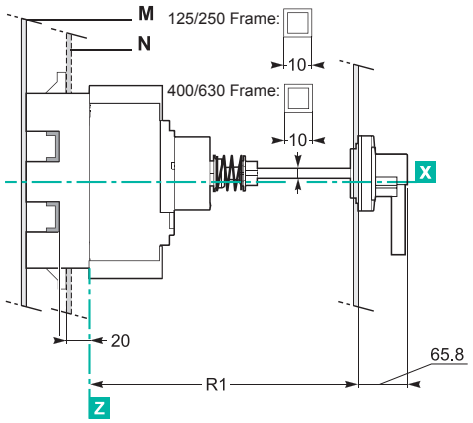
Model	A14	A15	A18	B	B1	B2	B8	B9	B10	C7	C8	C9	D1
TeM7-125/250	32	82.8	12	52.5	105	140	45	90	15.5	128.3	176.7	38	67
TeM7-400/630	42.4	131	19.2	70	140	185	60	120	18	162	208.7	47	88

TeM7 Series Moulded Case Circuit Breaker

7.6 TeM7 with Extended Rotary Handle and Its Outline Dimensions



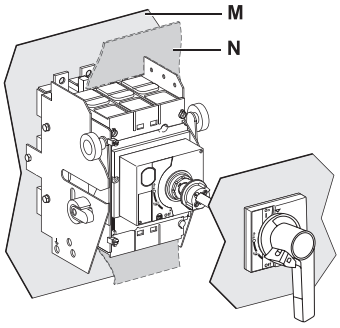
Fixed type or plug-in type circuit breaker



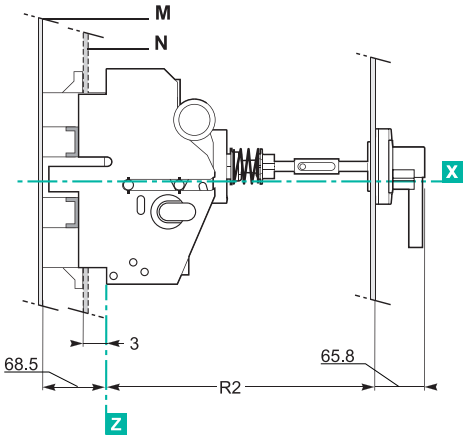
Rod length (mm): Standard 300
Customized by customer

Table 12

Model	R2
TeM7-125/250	280
TeM7-400/630	312



Drawer type circuit breaker

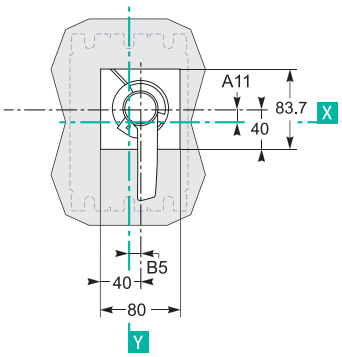


Rod length (mm): Standard 300
Customized by customer

Table 13

Model	R2
TeM7-400/630	353.5

Dimensions and hole on door



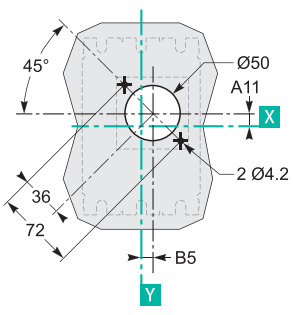


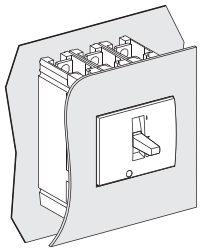
Table 14

Model	A11	B5
TeM7-125/250	11.8	15.3
TeM7-400/630	19.6	18.2

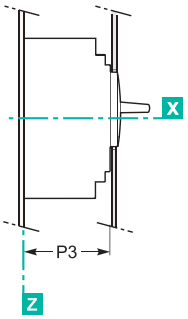
TeM7 Series Moulded Case Circuit Breaker

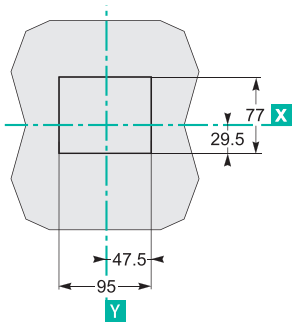
7.7 Size of Hole before Panel for TeM7 Fixed Type and Plug-in Type

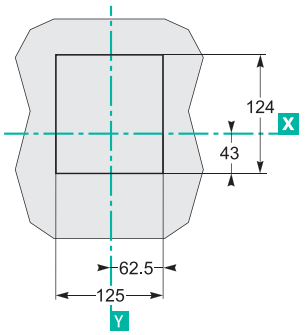
Size of hole on door	TeM7-125/250	TeM7-400/630

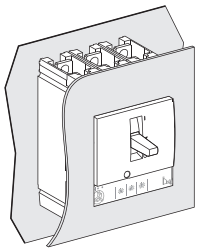


Toggle handle

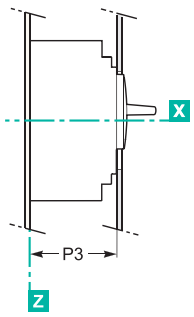


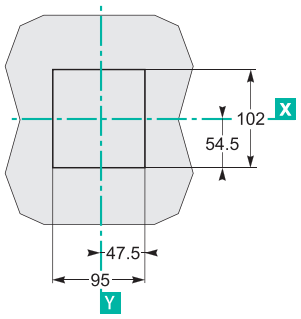






Toggle handle that can touch the trip unit





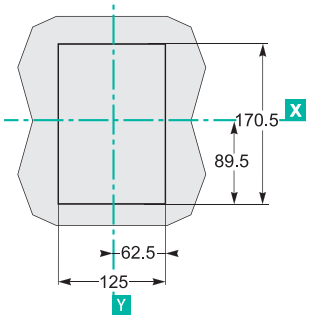


Table 15

Model	P3
TeM7-125/250	88
TeM7-400/630	117

8 Accessories

8.1 Internal Accessories

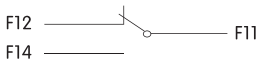
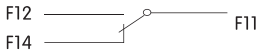
8.1.1 Aux. contact AX

[Function]

Accessories that remotely indicate the CLOSED (ON) or OPEN/FREE TRIP (OFF) state of the circuit breaker and are connected to the auxiliary circuit of the circuit breaker.

[Indicate the ON/OFF state of circuit breaker]

Table 16

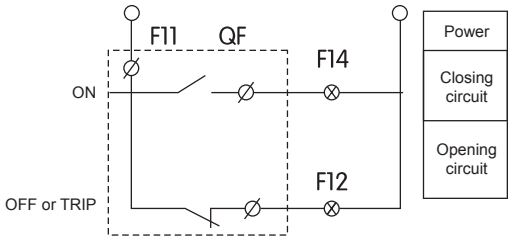
When the circuit breaker is in the "OFF" and "FREE TRIP" position	
When the circuit breaker is in the "ON" position	

[Electrical Characteristics]

Table 17

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

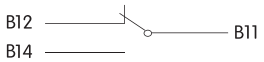
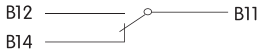
[Function]

It is mainly used to provide signals in the event of the overload, short circuit or undervoltage fault or free trip of the circuit breaker.

TeM7 Series Moulded Case Circuit Breaker

[Indicate the ON/OFF state of circuit breaker]

Table 18

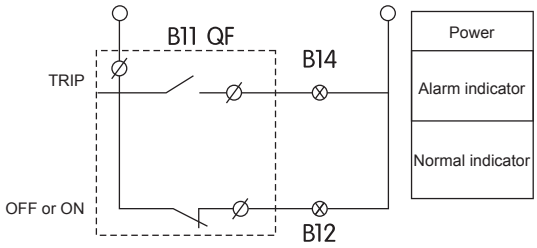
When the circuit breaker is in the "OFF" and "ON" position	
When the circuit breaker is in the "FREE TRIP (ALARM)" position	

[Electrical Characteristics]

Table 19

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 depending on the electrical signal to realize the remote control and automatic control of the circuit breaker. When the power voltage is equal to any voltage between 70%~110% of the rated control power voltage, the shunt release can make the circuit breaker works reliably.

[Electrical Characteristics]

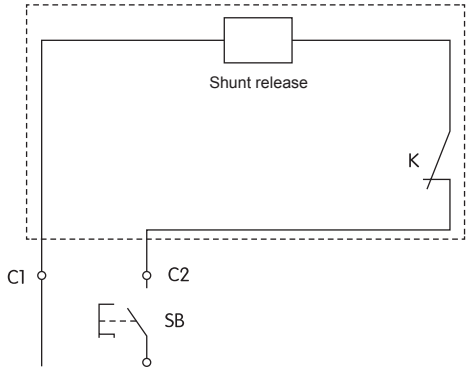
Table 20

Frame	Power Consumption (W)				
	AC220-240V	AC380-415V	DC24V	DC110V	DC220V
125/250/400/630A	2.2	2.5	2.2	2.5	2.5

[Operating Characteristics]

It is prohibited to energize the product for long time (≤5s); response time: pulse type ≥ 20ms, ≤ 60ms.

[Wiring diagram]



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

Table 21

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

8.1.4 Undervoltage release UVT

[Function]]

Realize the undervoltage protection function of circuit breaker to disconnect the circuit breaker when the power supply voltage is too low for the protection of the electrical equipment.

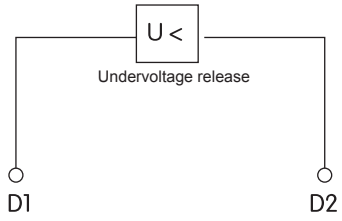
- When the supply voltage drops (or even slowly decreases) to the range of 70% to 35% of the rated control power voltage, the undervoltage release shall work to disconnect the circuit breaker reliably.
- When the power supply voltage is equal to or greater than 85% of the rated control power supply voltage of the undervoltage release, it is guaranteed that the circuit breaker is closed.
- When the supply voltage is less than 35% of the rated control power supply voltage of the undervoltage release, the undervoltage release shall work to prevent the circuit breaker from closing.

[Electrical Characteristics]

Table 22

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

[Wiring diagram]



TeM7 Series Moulded Case Circuit Breaker

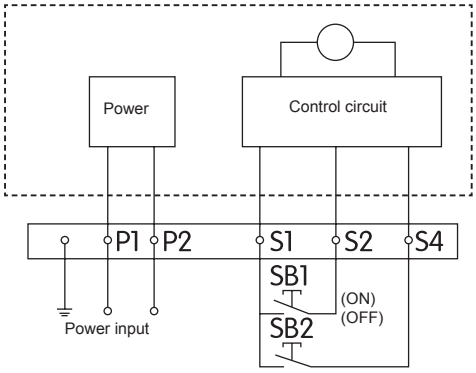
8.2 External Accessories

8.2.1 Motor mechanism CD2

[Function]

It is suitable for remote closing, opening and re-trip operations of the circuit breakers, as well as for automation applications.

[Electrical Characteristics & Wiring Diagram]



P1 and P2 are external power inputs
SB1 and SB2 are operating buttons (provided by the user)

8.2.2 Direct rotary handle (AH)

Protection grade: IP40

[Function]

With reliable insulation
Suitable for isolation functions
Realize the free trip of the circuit breaker
Three position indicators: ON/OFF/TRIP
Not affect the operation of the release and "Trip" test button by the user

[Lock]

Users can choose to hang padlock in the ON or OFF position (self-provided, diameter 5~8mm)
1~3 padlocks are allowed in each position
Or the handle lock accessory is used to lock it in the ON or OFF position

8.2.3 Extended rotary handle (RH)

Protection grade: IP56

With an extended rotary handle provided, the circuit breaker installed in the switch cabinet can be operated from the door of the switch cabinet, and the following functions can still be guaranteed:

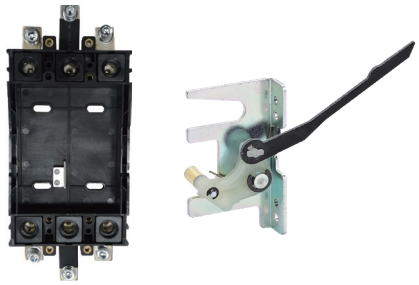
[Function]

With reliable insulation
Suitable for isolation function
Realize the free trip of the circuit breaker
Three position indicators: ON/OFF/TRIP
When the cabinet door opens, it does not affect the operation of the release and "Trip" test button by the user and it can ensure that the circuit breaker will not be closed.

[Lock]

Users can choose to hang padlock in ON or OFF positions (self-provided, diameter 5~8mm)
1~3 padlocks can be provided in each position
After hanging a padlock, it can prevent the cabinet door from opening
Or the handle lock accessory is used to lock it in the ON or OFF position

8.2.4 Plug-in type base (PIA)



[Function]

- Realize the quick replacement of the circuit breaker without changing the inlet and outlet lines and mounting base
- The plug-in type base can be pre-installed to ensure convenient installation of the circuit breaker by the customer in the future
- It can be used to isolate the power supply circuit during the installation of the circuit breaker through-plate or base
- With a plug-in type safety device, it can ensure that the circuit breaker can trip automatically when the circuit breaker is pulled out in the ON state

8.2.5 Drawer type base (DOB)

[Function]

- Realize the quick replacement of the circuit breaker without changing the inlet and outlet lines and mounting base
- The drawer type base can be pre-installed to ensure convenient installation of the circuit breaker by the customer in the future
- With a safety device provided, it can ensure that the circuit breaker can trip automatically when the circuit breaker is pulled out in the ON state

Circuit breaker with a combined drawer type base has the two following states:

- Connection state: The power circuit is turned on
- Removable state: The circuit breaker can be removed from the base

8.2.6 Phase partition

[Function]

It is used to ensure the safety of interphase insulation and prevent interphase short circuit.

TeM7 Series Moulded Case Circuit Breaker

9 Appendix

9.1 Circuit Breaker Inverse Time Limit Characteristic Table

Table 23

Name of test current	Setting current multiple	Appointed time		Start state	Usage category	Electromagnetic release operating current (A)
		In≤63A	In>63A			
Conventional no-trip current	1.05In	≥1h	≥2h	Cold state	For power distribution protection	10In±20%
Conventional trip current	1.30In	≥1h	<2h	Hot state		
Conventional no-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 has a little change and shall be corrected.
The correction factors with a thermomagnetic type release are listed in table below:

Table 24

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
Temp. correction factor	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	
Temp. correction factor	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

If the altitude exceeds 2000m in the applicable working environment, the electrical performance of the circuit breaker can be corrected with reference to the table below

Table 25

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

9.4 Install circuit breaker

◆ Connection with main circuit

Wiring connection must be carried out by professionally and technically qualified personnel.
The wiring connection can be performed 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 26

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 27

Rated current (A)	Cable		Copper busbar	
	Qty.	Sectional area (mm^2)	Qty.	Size mm x mm
500	2	150	2	30×5
630	2	185	2	40×5 (with a transition busbar required)

- For back-panel wiring connection, the insulating sleeve must be assembled onto the terminal block.
- Connect the crimped wire with the conductive electrode of the circuit breaker with bolt and tighten it.
- Install arc isolating sheet between the phases of the circuit breaker.
- Check
  Check the circuit breaker according to the installation requirements before use, and ensure that its fixed connection part shall be connected reliably; operate the circuit breaker repeatedly several times and check whether the operating mechanism works flexibly and reliably.

9.5 Use and Maintenance of Circuit Breaker

- When selecting the circuit breaker, ensure that the technical parameters indicated 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 they cannot be adjusted at will during operation.
- With periodic inspection, remove dust on the surface of the shell, and keep the circuit breaker clean and good insulation.
- Select the different rated currents according to the requirements of the protected object, otherwise the correct protection effect cannot be achieved.
- Maintenance and inspection must be carried out by professional and technical personnel.
- When the user chooses the internal and external accessories, their models provided by the company must be available to ensure the quality, and the company will not bear any consequences caused by purchase or modification without permission.
- Before performing maintenance operations, please make the circuit breaker open.
- Protect the circuit breaker to prevent rain attacks or drops during the operation, storage and transportation.

9.6 Application and Ordering Specifications

- The model and specification of the circuit breaker should be indicated. To order a 250 frame 3-pole product, current specification 250A, power distribution, breaking capacity of 50kA/AC415V, with shunt, circuit breaker product with a shunt voltage AC230V, the model is described as TeM7-250L/3310 250A 230V;
- The rated voltage should be indicated for shunt and undervoltage accessories, such as AC230V;
- The rated operating voltage of the motor mechanism should be indicated, such as AC230V.