CM9N Moulded Case Circuit Breaker


CM9N-125S


CM9N-250S


CM9N-400S


CM9N-630S

General

CM9N series MCCBs are developed to meet international market demands. With a rated insulation voltage up to 1000V, they are suitable for AC 50/60Hz distribution networks with rated operating voltage up to 690V and current from 10A to 630A.
They provide reliable protection against overload, short circuit, and under-voltage,while also serving power distribution purposes.
CM9N breakers feature high breaking capacity, short arcing, and support both vertical and horizontal installation.

Standard: IEC60947-2.

Parameters

- Rated current In: 10A~630A
- Rated operation voltage Ue: AC220V~690V
- Rated insulation voltage: AC1000V
- Number of poles: 3P

Operation and Installation Conditions

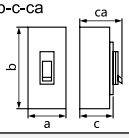
Type	Operating and Installation Conditions
Altitude	≤2000 m
Ambient Temperature	–5°C to +40°C (+45°C for marine prod ucts)
Ambient Conditions	Resistant to damp air, mold, and radiation
Mounting Inclination	≤22.5°
Mechanical Vibration	Operates reliably under normal ship vibration
Seismic Tolerance	Operates reliably under earthquake (4g)
Weather Protection	No direct exposure to rain or snow
Atmosphere Requirements	No explosive atmosphere or corrosive/conductive substances present in the ambient air.

Selection

CM9N	-	125	S	P	3P
Model		Frame size	Breaking capacity Icu/Ics(kA)	Operation way	Poles
MCCB		125 250 400 630	125: 15/10 250: 25/18 400: 35/25 630: 35/25	Default—handle direct operation; P—electric operation Z—rotating handle operation	3P

300	1	125A
Tripping mode and inner accessory	Application	Rated current(A)
The first number indicate release mode 2: only with the instantaneous release device 3: complex release Note: the last two numbers are attachment code (see attachment table)	1: for distribution 2: for protecting the motor	Frame125: 10,16,20,32,40,50,63,80,100,125 Frame250: 100,125,140,160,180,200,225,250 Frame400: 250,300,315,350,400 Frame630: 400,500,630

Technical Parameters

Frame Current(A)		125	250	400	630
Type		CM9N-125S	CM9N-250S	CM9N-400S	CM9N-630S
Number of poles		3	3	3	3
Products					
Rated current In(A)		10,16,20,25,32,40,50, 63,80,100,125	100,125,140,160,180, 200,225,250	250,315,350,400	400,500,630
Rated voltage Ue(V)		AC220/230V,400V,690V	AC220/230V,400V,690V	AC220/230V,400V,690V	AC220/230V,400V,690V
Rated insulation voltage Ui(V)		AC1000V	AC1000V	AC1000V	AC1000V
Short Circuit Breaking Capacity (kA)Icu/Ics	AC220V	18-12	35/25	50/35	50/35
	AC400V	15-10	25/18	35/25	35/25
	AC690V	4-3	6-4	8-6	8-6
Operating Circle Times	ON	600	3000	2000	2000
	OFF	900	7000	4000	4000
Dimension(mm) a-b-c-ca 	3P	75-130-66-84	106-165-78-101	150-257-112-150	150-257-112-150
Electric operating device(MD)		•	•	•	•
External drive handle		•	•	•	•
Automatic release		Thermal electromagnetic type	Thermal electromagnetic type	Thermal electromagnetic type	Thermal electromagnetic type

Tripping Characteristics (for distribution use)

Rated Tripping Current(A)	Thermal-magnetic trip unit (ambient temperature +40°C)		Operating current of the magnetic trip unit(A)
	1.05In(cold state) Non-operating time	1.30In(hot state) operating time (h)	
10≤In≤63	1h	1h	6In±20%, 8In±20% 10In±20%, 7In±20%
63<In≤630	2h	2h	

Note: The non-operating time of the motor protection circuit breaker is 2h at 1.0In; the operating current is 1.20In (hot state), and the operating time is 2h. The operating current of the electromagnetic release is 12In±20%.

Altitude Derating

When altitude is below 2000 m, performance is unaffected. Above 2000m, insulation and cooling derating applies. Correction factors are as follows:

Altitude(m)	2000	2500	3000	3500	4000	4500	5000
Insulation Voltage Ui(V)	800	728	728	664	664	616	616
Impulse Withstand Voltage Uimp(kV)	8	7	7	6.5	6.5	6	6
Maximum Working Voltage Ue (V)	690	690	690	660	660	600	550
Thermal Rating In(A) at 40℃Ambient Temperature	1.0In	0.98In	0.94In	0.92In	0.88In	0.86In	0.85In

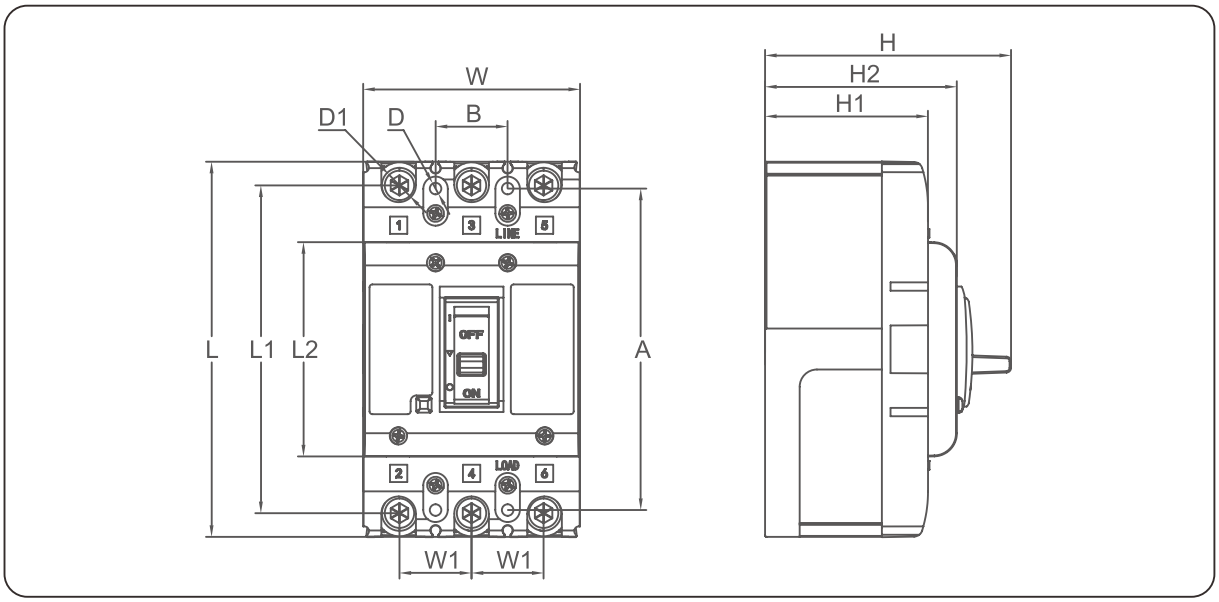
Note: At high altitudes, the breaking capacity should be reduced to 50%–75% of the rated voltage, depending on elevation. For details, please consult the technical department.

Influence of High Temperature on Release Performance

When ambient temperature exceeds 40 °C, overload protection may change slightly. The Ir setting should be corrected using the following I/Ir coefficients.

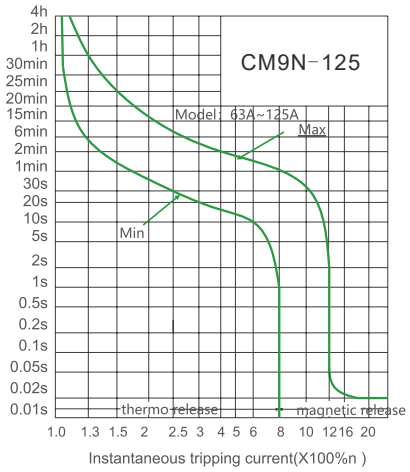
Model	Ambient Temperature(℃)				
	40	45	50	55	60
CM9N-125	1	0.96	0.89	0.83	0.75
CM9N-250	1	0.92	0.85	0.79	0.71
CM9N-400/630	1	0.94	0.87	0.81	0.73

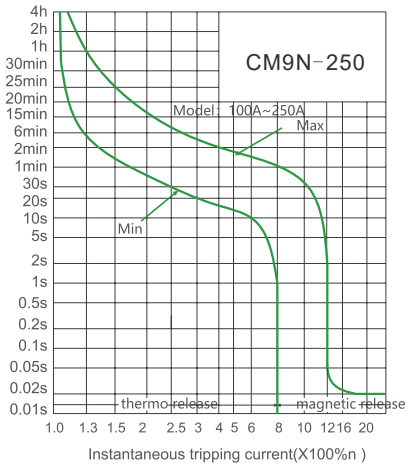
Dimensions and Installation Sizes(mm)

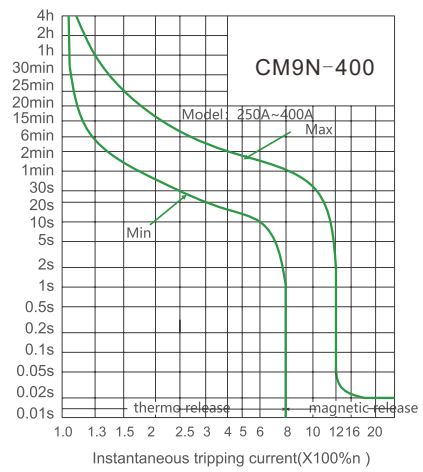


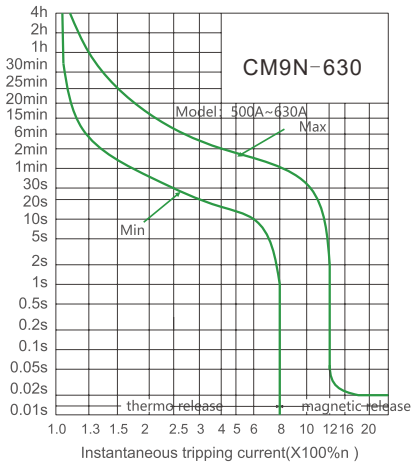
Type	Overall size(mm)											
	W	L	H	A	B	W1	L1	L2	H1	H2	D	D1
CM9N-125	75	130	84	112	25	26	117	75	56	66	Φ4	M6
CM9N-250	106	165	101	126	35	35	147	97	69	78	Φ5	M8
CM9N-400/630	150	257	150	194	44	48	224	156	102	112	Φ14	M10

Curve







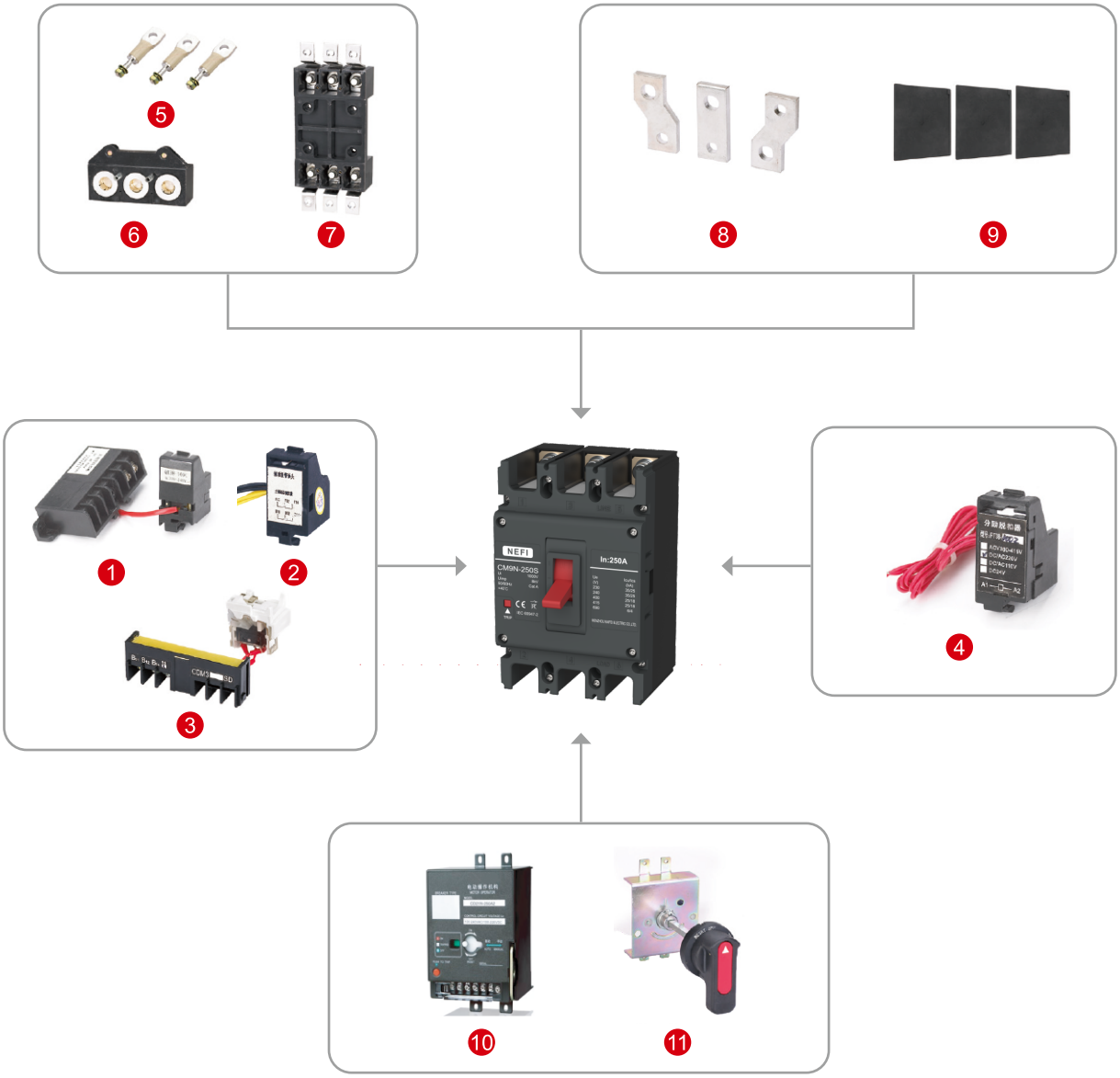


Product Accessories

Accessory Product List

- Electrical Accessories: Shunt Trip, Undervoltage Release, Auxiliary Contact, Alarm Cotact, Integrated Auxiliary & Alarm Contact
- Mechanical Accessories: Phase Spacer, Extension Terminal, Manual Operating Mechnism, Electrical Operating Mechanism
- Installation Accessories: Fixed Plate Rear Accessory, Plug-in Accessory

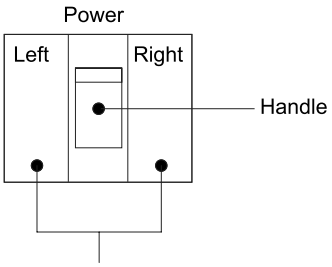
Product overview



1	Undervoltage Release	2	Auxiliary Contact
3	Alarm Contact	4	Shunt Trip
5	Fixed Plate Rear Wiring	6	Plug-in Rear Wiring
7	Plug-in Front (Horizontal Wiring)	8	Extension Terminal
9	Phase Spacer	10	Electrical Operating Mechanism
11	Manual Operation		

Inner Accessories

●Alarm Contact ○Auxiliary contact □Shunt release ■ Under-voltage release



Note:
● "200" indicates the circuit breaker body with only electromagnetic release; "300" indicates the circuit breaker body with thermal release + electromagnetic release.

Model		CM9N-125	CM9N-250	CM9N-400/630
Code	Accessory name			
208,308	Alarm contact(SD)			
210,310	Shunt release(MX)			
220,320	Auxiliary contact(OF)			
230,330	Under-voltage release(MN)			
240,340	Shunt auxiliary contact(MX+MN)			
250,350	Shunt Trip+Undervoltage Release			
260,360	Two groups auxiliary contacts(2OF)			
270,370	Auxiliary contact UVT(OF+MN)			
218,318	Shunt alarm contact(MX+SD)			
228,328	Auxiliary alarm contact(OF+SD)			
238,338	UVT alarm contact(MN+SD)			
248,348	Shunt auxiliary alarm contact(MX+OF+SD)			
268,368	Two groups aux alarm contact(2OF+SD)			
278,378	Aux contact UVT alarm contact(OF+MN+SD)			

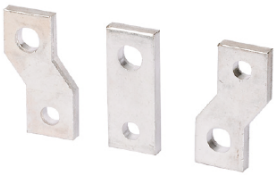
Accessories of CM9N, CM9LE, CM9T/A, CM9RT, CM9E are the same

Mechanical Accessories

Phase Spacers

- Phase spacers can enhance the insulation performance between phase conductors and can be installed from the front slot even after the switch is installed.
- Phase spacers are standard equipment, with 4 pieces for a 3P circuit breaker.

Extension Terminals



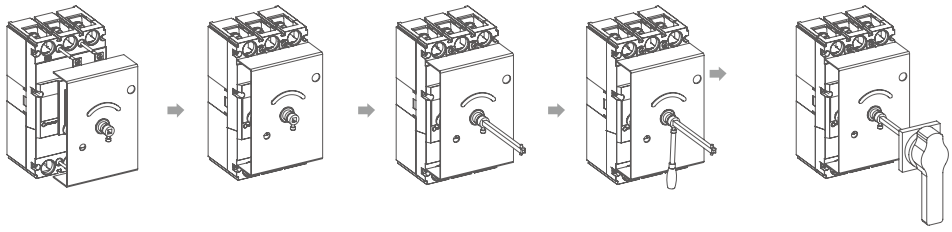
Extension terminals are connected to the standard terminals of the circuit breaker to provide various wiring solutions in a small space:

- Straight extension terminals
- Pole pitch extension terminals

Busbars and extension terminals can be connected to the inlet or outlet end of the circuit breaker.

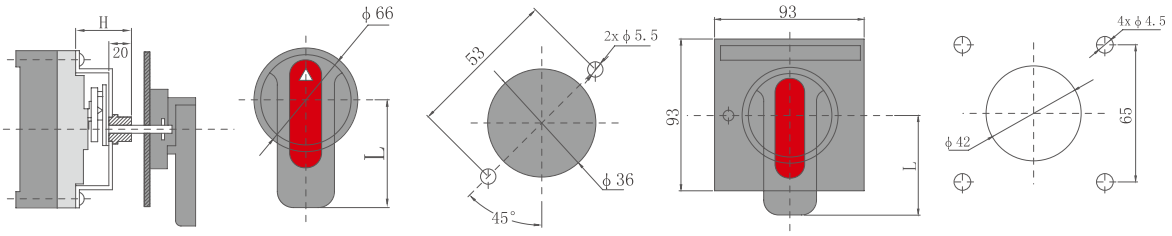
Handle Operating Mechanism

- Circuit breaker operated by ergonomic rotary handle for flexible control.
- Two handle types:•
  Direct rotating handle (round/square)
  Extended rotating handle (round/square)
- User visual information/settings:
  Three position indications: OFF, ON, TRIP
  The circuit breaker cannot be closed when the door is open.
  The door cannot be opened when closed.
  The shaft length of the extended handle can be customized according to the distance from the back of the circuit breaker to the door.
- Hand operation installation diagram, accessory installation diagram.



1. Align the installation direction of the hand operation.
2. Tighten the installation screws.
3. Install the extension screw.
4. Fix the screw.
5. Install the extension handle.

Hand operation external dimensions

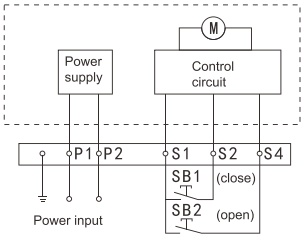


Model Specification	CM9N-125	CM9N-250	CM9N-400/630
Installation Size(H)	58	57	87
Handle Length (L)	65	95	125

Note: The default length of the hand operation extension bar is 150mm.
For customization, please contact the manufacturer.

CD2 Electric Operator

Electrical Operating Mechanism



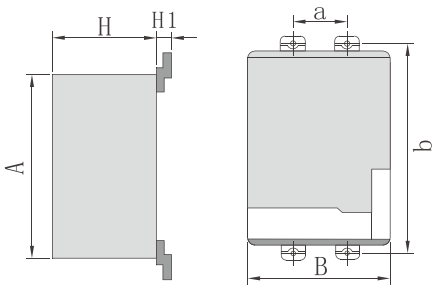
Electrical Characteristics and Wiring Diagram

Note: The micro switch connected in series with the coil inside the K-shunt trip is a normally closed contact, which will disconnect automatically after the circuit breaker is tripped and close when closed.

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

Hand operation external dimensions

Model	A	B	H	H1	a	b
CM9N-125	101	73	79	15	25	112
CM9N-250	118	92	79	17.5	35	142.4
CM9N-400/630	176	130	117	35.5	44	194

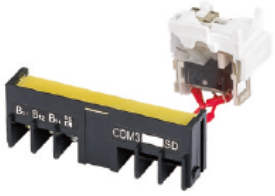


Electrical Accessories

Auxiliary Contact

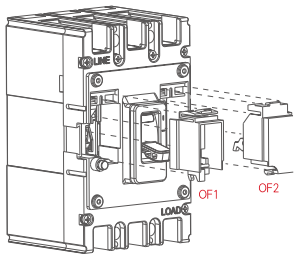
- An accessory connected to the auxiliary circuit of the switching device to indicate the ON or OFF (or Trip) state of the circuit breaker.

Alarm Contact



An accessory used to indicate whether the circuit breaker is in a non-tripped (ON or OFF) or tripped (Trip) state. When the alarm contact indicates that the circuit breaker is in the Trip state, there are the following five possibilities:

- Overload or short circuit fault
- Residual current fault
- Manual test button trip
- Shunt trip action
- Line fault, undervoltage release action

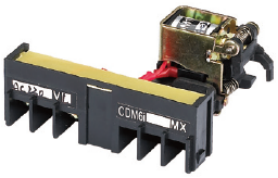


Electrical parameters of auxiliary alarm contact			
Conventional heating current (A)		3A	
Usage category		AC15	DC13
Working voltage 50/60Hz	AC400V	0.3A	-
	DC220V	-	0.15A

Shunt Trip

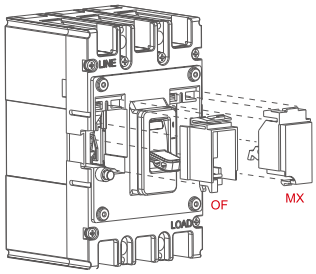
- The shunt trip should reliably trip the circuit breaker when the rated control power voltage U is between 70% and 110%.
- After the circuit breaker is tripped by the shunt trip, it needs to be reset on-site.

Model	Shunt coil power consumption (W)		
	AC400V	AC230V	DC24V
CM9N-125	91.6	76.1	912
CM9N-250	112	68.6	85.3
CM9N-400/630	67	62.3	100

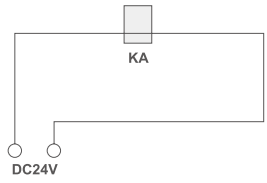


When the rated control voltage of the shunt trip is DC24V, the maximum length of the copper wire should meet the following requirements:

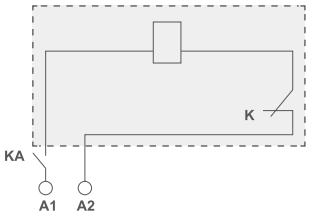
Rated Control Power Voltage Uc (DC24V) \ Wire Area	1.5mm²	2.5mm²
100%Uc	150m	250m
85%Uc	100m	160m



If the above requirements are not met, it is recommended to design the shunt trip control circuit as follows:



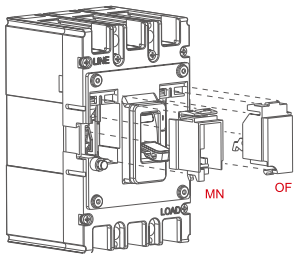
KA: DC24V intermediate relay, contact current capa



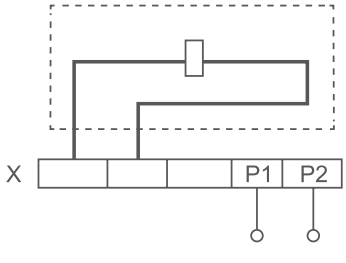
Power input

Undervoltage Release

- The undervoltage release should reliably trip the circuit breaker when the rated working voltage is between 35% and 70%.
- The undervoltage release should ensure that the circuit breaker can be closed when the rated working voltage is between 85% and 110%.
- The undervoltage release should prevent the circuit breaker from closing when the rated working voltage is lower than 35%.



Model	Undervoltage coil power consumption (W)	
	AC400V	AC230V
CM9N-125	4	3.1
CM9N-250	4.3	3.3
CM9N-400/630	3.6	2.5



Power input

Electrical Wiring Diagram

Description: X - Wiring terminal block.
Note: The dashed frame indicates the wiring diagram of internal accessories of the circuit breaker.