PN Molded Case Circuit Breaker

IEC60947 / GBT14048 Icn=50kA

The design of PN series molded case circuit breaker (hereinafter circuit breaker)indicates the newest current-limiting principle and manufacturing technology with the characteristics of compact structure, modulization, hign breaking capacity, no flashover. It is used for infrequent exchange and startup of motor in the circuit AC 50HZ of which rated insulation voltage is 750V, rated working voltage 690V or less, rated working current up to 630A. Cirucit Breaker has the overload, short-circuit, and undervoltage protection device, which can protect the circuit and power-supply device from damages.

This circuit breaker can be installed vertically (Erect), and horizontally installed(Level). The line of this circuit breaker can not be connected reversely, that is, 1,3,5 line connected to power line, 2,4,6 connected to the load line.

Use and Range of Application

This circuit breaker has isolation function, using the mark to refer to.

This circuit breaker conforms to the standard below:

- IEC 60947-1 and GBT14048.1 General Principle
- IEC 60947-1 and GBT14048.2 Low Voltage Circuit Breaker
- IEC 60947-4 and GBT14048.4 Contactor and Motor Starter
- IEC60947-5-1 and GBT14048.5 Electromechanical
- Controlling Circuit Appliance

Use and Application Range

- Height above Sea Level: No more than 2000m
- Ambient Medium Temperature: not higher than +40℃, not lower than -5℃
- Can endure the effect of humid air and the effect of salt mist, oil mist and fog bacteria.
- In the place within the midium without danger of explosion and without corrosion of metal box, damage of insulation gases and conductive dust:
- No damage of rain and snow
- Pollution degree: 3

Function and Attached Device

			PN-250	PN-630
Poles			3,4	3,4
Control	Manual operation	Push the handle	■	■
		Direct rotary handle and outspread rotary handle	■	■
	Motor operation		■	■
Connection	Fixed	Front wiring	■	■
		Back wiring	■	■
	Plug-in wiring	Front wiring	■	■
		Back wiring	■	■

Technical parameters

Pn250

Model number			PN250N-TM (EL)
Rated current of frame size Inm(A)			250
Rated current In(A)			16,20,25,32,40,50,63,80,100,125,160,200,250
Rated insulation voltage Ui			750V
Rated operational voltage Ue			400V/415V
Number of poles			3/4
AC400V/50Hz O-CO(Icu)Rated ultimate short-circuit breaking capacity (kA)			50
AC400V/50Hz O-CO-CO(Ics)Rated service short-circuit breaking capacity (kA)			50
(Uimp)Rated impulse withstand voltage(V)			8000
Dielectric property (V)			3000
Endurance(times)	Total cycles		8000
	Electrical endurance		1000
	Mechanical endurance		7000
Flashover distance (mm)			⩽100
Utilization category	Main circuit		A
	Auxiliary circuit		AC-15
Outiline dimensions	W(mm)	3P/4P	105/140
	L(mm)	3P/4P	161/161
	H(mm)	3P/4P	125/125

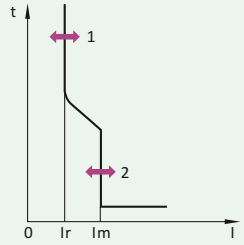
PN630

Model number			PN630N-EL
Rated current of frame size Inm(A)			630
Rated current In(A)			400,630
Rated insulation voltage Ui			750V
Rated operational voltage Ue			400V/415V
Number of poles			3/4
AC400V/50Hz O-CO(Icu)Rated ultimate short-circuit breaking capacity (kA)			50
AC400V/50Hz O-CO-CO(Ics)Rated service short-circuit breaking capacity (kA)			50
(Uimp)Rated impulse withstand voltage(V)			8000
Dielectric property (V)			3000
Endurance(times)	Total cycles		5000
	Electrical endurance		1000
	Mechanical endurance		4000
Flashover distance (mm)			⩽100
Utilization category	Main circuit		A/B
	Auxiliary circuit		AC-15
Outiline dimensions	W(mm)	3P/4P	140/185
	L(mm)	3P/4P	256/256
	H(mm)	3P/4P	168/168

Low Voltage Power Distribution Protection PN250-630

Pn250 circuit breaker is attached with electro-magnetic or electronic tripping machine. With a mechanical structure, it can prevent the mismatching between tripper and circuit breaker from happening.

1. Protection protection function can be realized through adjusting the knob.
2. Overload protection thermal protection can be adjusted.
3. Short-circuit protection: It can be divided into fixed and adjustable types according to current specification magnetic protection.
4. Switching Neutral line without protection: 4P 3d +N type (neutral line without protection)



- Overload Thermal Protection Adjustable Value(1)
- Protection Setting Value Adjustable or Fixed Short-circuit Fault

PN-100-250 Tripping Mechanism		TMD16~250							
Rated Value(A)	In40℃	16	25	32	40	50	63	80	100
Circuit Breaker	PN250	■	■	■	■	■	■	■	■

Overload Protection(Thermal Protection)									
Tripping Current Value(A)		Adjustable range 0.7~1×In							
Short-circuit Current Protection(Electro-magnetic Tripper)									
	Im	Fixed							
Short-circuit Current Value(A)	PN160/250	190	300	400	500	500	500	1000	1250

Switching Neutral Line Protection		
Neutral Line Protection	4P 3d+N	No protection

PN250 Tripping Mechanism		TMD16~250			
Rated Value(A)	In40℃	125	160	200	250
Circuit Breaker	PN250	■	■	■	■

Overload Protection(Thermal Protection)								
Tripping Current Value(A)		Adjustable range 0.7~1×In						
Short-circuit Current Protection(Electro-magnetic Tripper)								
	Im	Fixed		Adjustable	Fixed			
Short-circuit Current Value(A)	PN250	1250	1250	5~10xIn	63	80	80	125

Switching Neutral Line Protection			
Neutral Line Protection	4P 3d + N	No protection	No protection

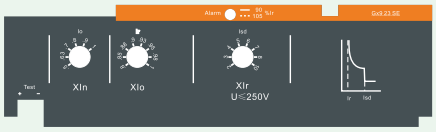
Technical Parameter

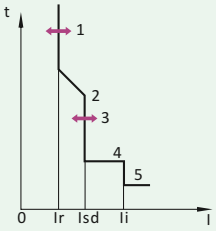
Electrical Trip Unit

- Protection
  LT (Long Time Delay) Overload protection Adjustable Ir Setting Value
  ST (Short Time Delay) short-circuit Current Protection:
  1. Im Operating Value Adjustable
  2. Have Fixed Time Delay(4)
  INST(Instantaneous) Short-circuit Current Protection, operating value(5) fixed 4 pole Circuit Breaker without neutral line protection.

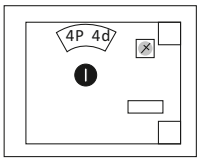
- Indication
  1. Load(LED) Indicator light(6) on the front side
  2. The indicator light will be turned on brightly when setting value is bigger than 90%Ir.
  3. Indicator Light twinkles when setting value is bigger than 105% Ir.

- Test
  There is a test hole on the front side from which small testing appliance or calibration testing box can be connected, and working state of circuit breaker can be checked.





1. Long Time Delay Protection Setting Value
2. Long Time Delay Protection Delaying Time
3. Short-circuit Protection Setting Value
4. Short-circuit Protection Delaying Time
5. Instantaneous Short-circuit Protection
6. Warning Indicator Light
7. Testing Hole



Neutral Line protection

PN Electrical Trip Unit		PN250				PN630	
Rated Current (A)	In20~70℃(*)	40	100	160	250*	400	630
Circuit Breaker	PN-250	■	■	■	■	–	–
	PN-630	–	–	–	–	■	■
Tripping Current Setting Value(A)(Ir)	Ir=In x...	0. 4. . . 1 Adjustable(48 Points)				0. 4. . . 1 Adjustable(48 Points)	
Tripping Time (s)(min...max)	at 1.5×Ir	90...180				90...180	
	at 1.6×Ir	5...7.5				5...7.5	
	at 7.2×Ir	3.2...5.0				3.2...5.0	
Tripping current setting value	Isd=Irx...	2...10				2...10	
Accurate Assurance±15%		Adjustable(8 Points)				Adjustable(8 Points)	
Delaying Time (ms)		Fixed					
	High overcurrent trip time	≤40				≤40	
	Total Breaking Time	≤60				≤60	
Tripping Current Value (A)	Ii	Fixed≥11×In				Fixed≥11×In	

Neutral line protection			
No neutral line protection	4P 3d+N	No protection	No protection

External Auxiliary Device

- The rotary handle of PN series products has two types: direct and indirect.
  Through rotary handle used for PN series circuit breakers, operation requirements of complete equipments (drawer chest, distribution box, and power control box) on the panel should be implemented in order to assure that door sheet of cabinet body cannot be opened, that is, interlocked with door, when the circuit breaker is at the "ON"state. Only when the operation handle is at the OFF or RESET state, can the door of switch plate be opened. When it is so urgent that the door of switch plate needs to be opened at the "ON" state of circuit breaker, you can press the red release button beside the handle holder.

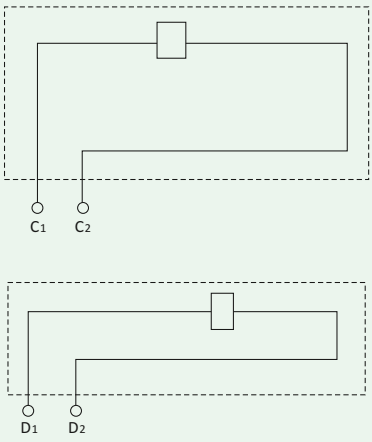
- Motor operation mechanism
  Motor operation mechanism is used with circuit breaker auxiliary device for remote automatic opening or closing the circuit breaker and has two types: CD and CD2.
  CD2 type motor operation mechanism means to be driven by miniature permanent magnet DC motor, which is of compact structure, small volume, convenient installation and reliable operation and can be used for DC and AC, and can be operated manually by handle. . It has the same mechanical life and electrical life as the circuit breaker.

The characteristics and installation of attached devices

Shunt release trip unit wiring diagram (it is the internal attached device of switch in the inner box.)

a: When the controlling voltage reaches 70%-100%, the circuit breaker can break reliably.
b: long time power is forbidden(≤5s)
Response time: impulse mode≥20ms, ≤60ms

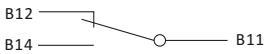
a. When the controlling voltage is lowered to 35% -70%, undervoltage tripping unit should trip and circuit breaker should break reliably.
b. When the controlling voltage reaches more than or equal to 85%, the switching on of circuit breaker should be assured.
c. When the controlling voltage reaches less than 35%, switching on of circuit breaker should be prevented.
Attention: As for cicruit breaker attached with undervoltage trip unit, the circuit breaker can be switched on or off normally when its controlling voltage reaches more than or equal to 85%.



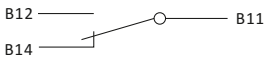
- Note: The attached undervoltage module is PN (125, 160): Other type without undervoltage module can be connected with lead wire; when it reaches the 70%-35% of the rated working voltage, undervoltage trip unit should let circuit breaker trip reliably.
- Warning: Undervoltage trip unit should be power on first. Then the circuit breaker can be reset and switched on, or the switch will be damaged.
- User Warning: After the internal attached device of circuit breaker is installed, it can be adjusted and tested in order to assure the quality when products are transported out of the factory. If user purchases the internal attached device from the outside by his own, user should bear the bad results.

Alarm Contact

Contact Position of circuit breaker at the state of "on" or "off"



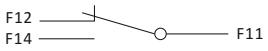
Contact Position of circuit breaker at the state of tripping (Alarm)



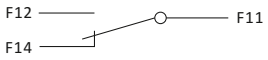
- When circuit breaker normally switches on or off, alarm contact doesn't trip. Only when free tripping (or fault tripping) happens, it will alarm.
- Contact position changes from "on" to "off" , or "off" to "on". When circuit breaker has already been reset, alarm contact returns to original state.

Auxiliary Contact

Contact Position of Circuit Breaker at the "off" state



Contact Position of Circuit Breaker at the "on" state



Auxiliary Contact Rated Current

Frame Level Rated Current (A)	Agreed Thermal Current Ith(A)	Rated Working Current at AC400V Ie(A)
＜250	3	0.3
＞400	6	0.4

PN Series MCCB	Order Code	
MCCB PN-250 (TM adjustable 0,7 - 1)	**3p**	**4p**
MCCB adjustable 11,2 ~ 16A (50kA)	PN250/16TM3	PN250/16TM4
MCCB adjustable 14 ~ 20A (50kA)	PN250/20TM3	PN250/20TM4
MCCB adjustable 17,5 ~ 25A (50kA)	PN250/25TM3	PN250/25TM4
MCCB adjustable 22,4 ~ 32A (50kA)	PN250/32TM3	PN250/32TM4
MCCB adjustable 28 ~ 40A (50kA)	PN250/40TM3	PN250/40TM4
MCCB adjustable 35 ~ 50A (50kA)	PN250/50TM3	PN250/50TM4
MCCB adjustable 44,1 ~ 63A (50kA)	PN250/63TM3	PN250/63TM4
MCCB adjustable 56 ~ 80A (50kA)	PN250/80TM3	PN250/80TM4
MCCB adjustable 70 ~ 100A (50kA)	PN250/100TM3	PN250/100TM4
MCCB adjustable 87,5 ~ 125A (50kA)	PN250/125TM3	PN250/125TM4
MCCB adjustable 112 ~ 160A (50kA)	PN250/160TM3	PN250/160TM4
MCCB adjustable 175 ~ 250A (50kA)	PN250/250TM3	PN250/250TM4
MCCB PN-250 | PN-630 (EL adjustable 0,4 - 1)		
MCCB adjustable 100 ~ 250A (50kA)	PN250/250EL3	PN250/250EL4
MCCB adjustable 160 ~ 400A (50kA)	PN630/400EL3	PN630/400EL4
MCCB adjustable 252 ~ 630A (50kA)	PN630/630EL3	PN630/630EL4

PN Series MCCB	Order Code	
Auxiliary contacts	**Single auxiliary**	
Auxiliary contact for PN-250	PN250-AUX1	
Auxiliary contact for PN-630	PN630-AUX1	
Alarm contacts		
Alarm contact for PN-250	PN250-ALT	
Alarm contact for PN-630	PN630-ALT	
Handle operation		
Direct operation handle for PN-250	PN250-RD	
Direct operation handle for PN-630	PN630-RD	
Indirect operation handle for PN-250	PN250-RI	
Indirect operation handle for PN-630	PN630-RI	
Shunt release	**230VAC**	**400VAC**
Shunt release for PN-250	PN250-SHT230	PN250-SHT380
Shunt release for PN-630	PN630-SHT230	PN630-SHT380
Under voltage release	**230VAC**	**400VAC**
Under voltage release for PN-250	PN250-UVT230	PN250-UVT380
Under voltage release for PN-630	PN630-UVT230	PN630-UVT380
Electic operating mechanism	**230VAC**	**400VAC**
Motor drive for PN-250	PN250-MOT230	PN250-MOT380
Motor drive for PN-630	PN630-MOT230	PN630-MOT380
	* other types special order	
Cover low	**3p**	**4p**
Terminal cover low for PN-250	PN250-CPL3	PN250-CPL4
Terminal cover low for PN-630	PN630-CPL3	PN630-CPL4
Plug-in unit	**3p**	**4p**
Plug-in unit for PN-250	PN250-PL3	PN250-PL4
Plug-in unit for PN-630	PN630-PL3	PN630-PL4