

GACIA

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Low voltage

GACIA

PN Series

Moulded Case Circuit Breaker

www.gacia.com.cn



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Company Profile

Gacia Electrical Appliance Co., Ltd is an export-oriented high-tech enterprise specializing in R&D, production and sales of various low-voltage circuit breakers. The company was established in August 2002 and is headquartered in Wenzhou. After 20 years of development, it has formed a three-in-one strategic layout of Zhejiang, Jiangxi, and Shanghai. The plant area is 160,000 square meters, the company has 1,200 employees and has an annual output of 100,000,000 poles of MCB, 4,000,000 pcs of RCCB/RCBO, and 300,000 pcs of MCCB.

Gacia adhere to business principle referring to "customer-centric, Altruism and Win-win". Besides, Gacia devoted to utilize innovation to drive production improvement, take advantage of lean production to upgrade products quality and committed to become the pacemaker of the global circuit breaker industrial. The products are sold best in more than 60 countries and regions in all of the world. Long-term cooperative relations have been established with three enterprises of the world's top 500. The annual R & D investment on new products is not less than 5% of the annual sales, and has won more than 130 national patents, including 12 invention patents, and participated in the formulation of a number of industry standards that applied for the registration of international trademarks in 123 countries and regions. Overseas independent brand agents were set up in 38 countries and more than 80 international product certifications were obtained. The "GACIA" trademark was recognized as the "recommended brand of China's export products by the Ministry of Commerce".

GACIA

Smart Factory

Make manufacturing more transparent

Make delivery faster

Make decisions smarter





Moulded Case Circuit Breaker

PN Series



PN250SM-3P/100



PN630SE-3P/400



PN1600SE-3P/1250

Application

PN Series Moulded Case Circuit Breaker is the company's comprehensive use of international advanced technology design and development and obtained a number of patents of new products, with small compact, modular, high breaking, double breakpoints, capacity zero of flying arc, green environmental protection and other characteristics. Suitable for AC 50Hz, 60Hz, rated operating voltage 690V and below, rated current 12.5A to 1600A distribution network, used to distribute electrical energy and protection lines and power supply equipment from overload, short circuit and undervoltage failure hazards. It can also be used as a non-frequent conversion of the line under normal conditions and in the infrequent start of the motor.

PN Series MCCB complies to IEC60947-2 standards, with CE, KEMA certificate approved.

Normal Work and Installation Conditions

1. The altitude of the installation site does not exceed 2000m;
2. The PN thermomagnetic type with temperature of the surrounding medium is $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$, and the average temperature of 24 h is not more than $+35^{\circ}\text{C}$. The relative humidity of the air at the installation site does not exceed 50% at a maximum temperature of $+40^{\circ}\text{C}$; at lower temperatures, there may be a higher relative humidity; the average minimum temperature of the wettest month does not exceed $+25^{\circ}\text{C}$ for the average of the month. The maximum relative humidity is not more than 90%, and the condensation on the surface of the product due to temperature changes is considered.
3. The product is used in non-explosive hazardous media, and the media does not have enough to corrode metals and destroy insulating gases and conductive dust.
4. In places where there is rain protection and no water vapor.
5. The installation category is Class II.
6. The pollution level is level 3.
7. The basic installation of the circuit breaker is vertical (ie vertical) or horizontal (ie horizontal).
8. The incoming line is either the up line or the down line.
9. Circuit breakers can be divided into fixed and plug-in types.

Type Key

PN	250	S	M	3P	100
Series Code	Shell Frame	Breaking Capacity Code	Type of Trip Unit	Poles	Rated current
PN	250, 630, 1600	S- Standard, H- High	M- Thermal Magnetic, E- Electronic Type	3P, 4P	100-1600A

Certification Marks



Circuit breaker protection settings are shown in table 1

Table 1

Type	Overload long delay setting current (IR)	Short-circuit shorter delay tuning current (ISD)	Short-circuit transient tuning current (Ii)	Type of Trip Unit
PN250-100	(0.8 ~ 1)In	-	-	Thermal magnetic (adjustabel)
PN250-160	(0.4 ~ 1)In	(1.5 ~ 10)Ir	12In	Electronic
PN250-250				
PN630-400	(0.8 ~ 1)In	-	-	Thermal magnetic (adjustabel)
PN630-630	(0.4 ~ 1)In	(1.5 ~ 10)Ir	12In	Electronic
PN1600-1250	(0.4 ~ 1)In	(1.5 ~ 10)Ir	12In	Electronic
PN1600-1600				

Technical data and performance

1.The basic parameters of the circuit breaker are shown in Table 2.

2.The overload delay and short-circuit transient protection action characteristics of the circuit breaker are shown in Table 3 and Table 4.

3.The current setting range of the circuit breaker is shown in Table 5.

Table 2

Type		PN250-100	PN250-160	PN250-250
Number of poles		3P、4P	3P、4P	3P、4P
Shell frame maximum rated current Inm(A)		100	160	250
Rated current In(A)		12.5/16/20 25/32/40 50/63/80/100	16/20/25/32 40/50/63/80 100/125/160	100/160/180 200/225/250
Rated insulation voltage Ui(V)		800	800	800
Rated impulse withstand voltage Uimp(kV)		8	8	8
Rated voltage Ue(V)		AC415/500/690	AC415/500/690	AC415/500/690
Flying arc Distance (mm)		0	0	0
Short circuit breaking capacity level		S H	S H	S H
Rated limit Short circuit Breaking capacity Icu(kA)	AC415V	50	50	50
	AC500V	50	50	50
	AC690V	6	6	6
Rated running short circuit Breaking capacity Ics(kA)	AC415V	50	50	50
	AC500V	50	50	50
	AC690V	6	6	6
Working with categories		A	A	A
Rated short time resistant current ICW(kA)(1s)		/ 3	/ 3	/ 3
Type of trip unit		Thermal Magnetic type Electronic type	Thermal Magnetic type Electronic type	Thermal Magnetic type Electronic type
Electrical Life Test	AC415V	10000	10000	10000
	AC690V	1500	1500	1500
Mechanical life Test		20000	20000	20000
Dimensions	Wide(3P/4P)	105/140	105/140	105/140
	Long	161	161	161
	High	86	86	86
Mode of operation	Manual Direct operation	Yes	Yes	Yes
	Rotate handle operation	Yes	Yes	Yes
	Electric operating mechanism	Yes	Yes	Yes
Mounting method	Fixed type (front of plate)	Yes	Yes	Yes
	Fixed type (rear of plate)	Yes	Yes	Yes
	Plug-in (front of plate)	Yes	Yes	Yes
	Plug-in (rear of board)	Yes	Yes	Yes

Moulded Case Circuit Breaker

PN Series

Technical data and performance

Renew Table 2

Type		PN630-400		PN630-630		PN1600-1600	
Number of poles		3P、4P		3P、4P		3P、4P	
Shell frame maximum rated current $I_{nm}(A)$		400		630		1600	
Rated current $I_n(A)$		250/315/350/400		400/500/600/630		800/1000/1250/1600	
Rated insulation voltage $U_i(V)$		1000		1000		1000	
Rated impulse withstand voltage $U_{imp}(kV)$		8		8		8	
Rated voltage $U_e(V)$ 50Hz/60hz		AC415/500/690		AC415/500/690		AC415/500/690	
Flying arc Distance (mm)		0		0		0	
Short circuit breaking capability level		S	H	S	H	S	H
Rated limit Short circuit Breaking capacity $I_{cu}(kA)$	AC415V	50	85	50	85	50	65
	AC500V	50		50		50	
	AC690V	10	15	10	15	10	15
Rated running short circuit Breaking capacity $I_{cs}(kA)$	AC415V	50	85	50	85	50	65
	AC500V	50		50		50	
	AC690V	10	15	10	15	10	15
Working with categories		A	B	A	B	B	
Rated short time resistant current ICW (kA) (1s)		/	5	/	8	/	20
Type of trip unit		Thermal Magnetic type Electronic type		Thermal Magnetic type Electronic type		Electronic type	
Electrical Life Test	AC415V	6000	6000	5000	5000	1500	
	AC690V	1000	1000	1000	1000	1000	1000
Mechanical life Test		10000	10000	10000	10000	10000	10000
Dimensions	Wide (3P , 4P)	140/185		140/185		210/280	
	Long	255		255		327	
	High	110		110		147	
Mode of operation	Manual Direct operation	Yes		Yes		Yes	
	Rotate handle operation	Yes		Yes		Yes	
	Electric operating mechanism	Yes		Yes		Yes	
Mounting method	Fixed type (front of plate)	Yes		Yes		Yes	
	Fixed type (rear of plate)	Yes		Yes		Yes	
	Plug-in (front of plate)	Yes		Yes		Yes	
	Plug-in (rear of board)	Yes		Yes		Yes	

Table 3

Type	Distribution breaker			Circumstance temperature
	Test current (times)	Tripping time	Status	
1	1.05In	1h non-tripping (In ≤ 63A) 2h non-tripping (In > 63A)	Initial	+40°C ±2°C
2	1.3In	1h tripping (In ≤ 63A) 2h tripping (In > 63A)	Following serial 1	
3	10In ± 20%	8In	> 0.2s Tripping	Any suitable temperature
4		12In	≤ 0.2s Tripping	

Serial number	Motor protection breaker				Circumstance temperature	
	Testing current(times)		Tripping time			State
1	1.05In		2h non-tripping		Initial	+40℃ ±2℃
2	1.2In		2h tripping		Following serial 1	
3	1.5In		4min tripping		The order 1 current reaches the thermal equilibrium and begins	
4	7.2In		2 ~ 10s	tripping	Initial	
5	12In±20%	9.6In	>0.2s	tripping	Initial	Any suitable temperature
6		14.4In	≤ 0.2s	tripping		

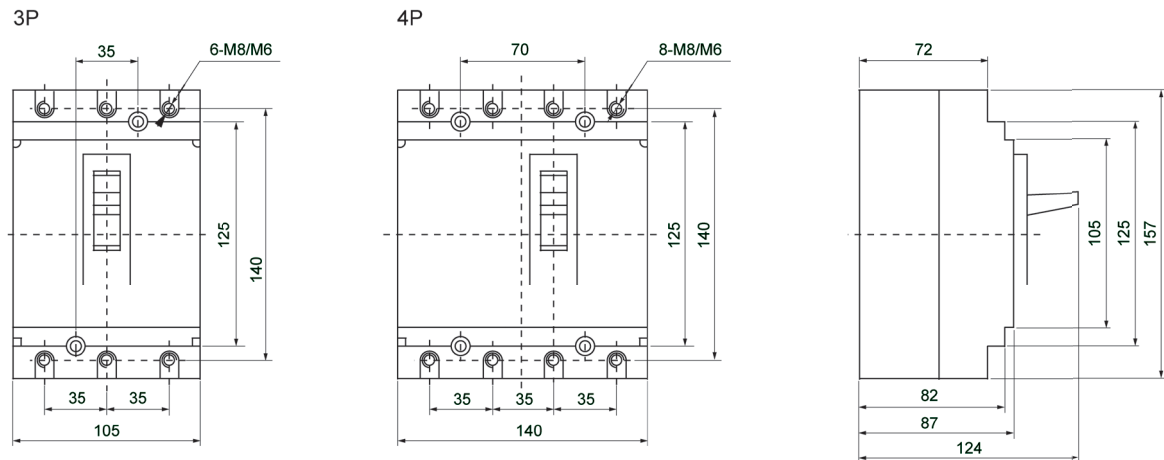
Type	Overload long delay release current value adjustable range Ir(A)	Short-circuit short-delay trip unit current value adjustable range Isd(A)	Short-circuit instantaneous trip unit current value adjustable range Ii(A)	Remarks
PN250-100	0.8 ~ 1In	-	10In	Thermal magnetic (adjustabel)
PN250-160	0.8 ~ 1In	-	10In	
PN250-250	0.8 ~ 1In	-	10In	
PN250-100	0.4 ~ 1In	(1.5 ~ 10)Ir	12In	Electronic
PN250-160	0.4 ~ 1In	(1.5 ~ 10)Ir	12In	
PN250-250	0.4 ~ 1In	(1.5 ~ 10)Ir	12In	
PN630-400	0.8 ~ 1In	-	10In	Thermal magnetic (adjustabel)
PN630-600	0.8 ~ 1In	-	10In	
PN630-400	0.4 ~ 1In	(1.5 ~ 10)Ir	12In	Electronic
PN630-630	0.4 ~ 1In	(1.5 ~ 10)Ir	12In	
PN1600-1250	0.4 ~ 1In	(1.5 ~ 10)Ir	12In	Electronic
PN1600-1600	0.4 ~ 1In	(1.5 ~ 10)Ir	12In	

Note: Regular products only provide two-segment protection, if the customer needs three protection when the order is indicated in table 5.

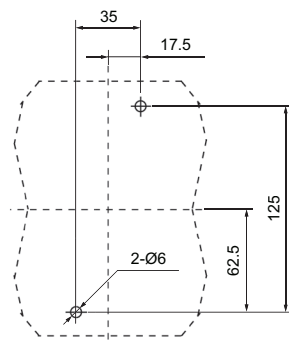
Moulded Case Circuit Breaker PN Series

Shape and installation dimensions

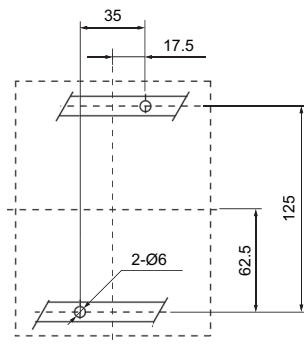
PN250-100,160,250



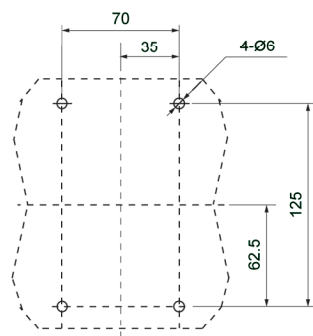
Attention1:when in $> 100A$, Fixing screw size should be M8, When $I_n \leq 100A$, fixing screw size should be M6.



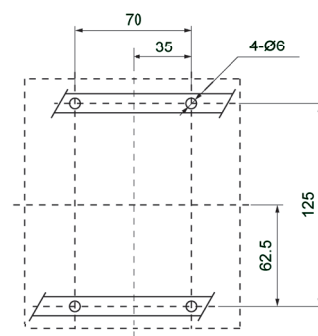
3P : Installed on the panel



3P : Installed on leading rails



4P : Installed on the panel



4P : Installed on leading rails

Moulded Case Circuit Breaker PN Series

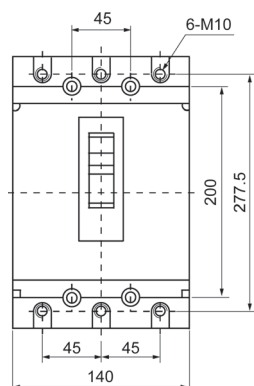
GACIA PN Moulded Case
Circuit Breaker



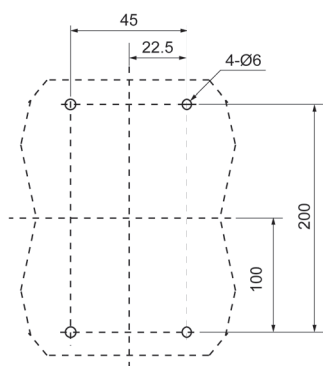
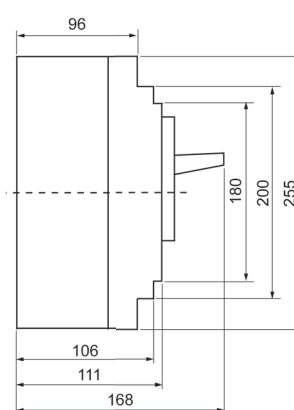
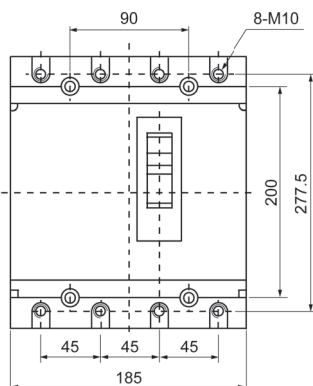
Shape and installation dimensions

PN630-400, 630

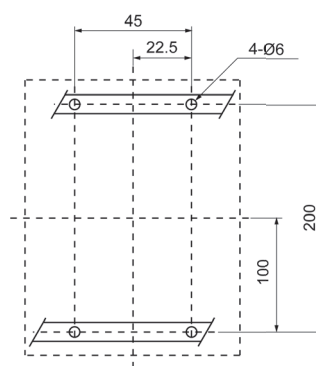
3P



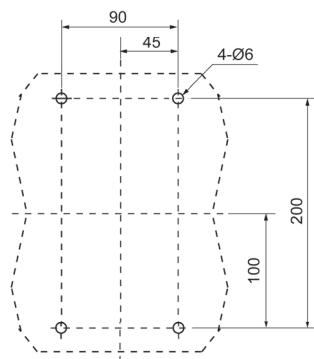
4P



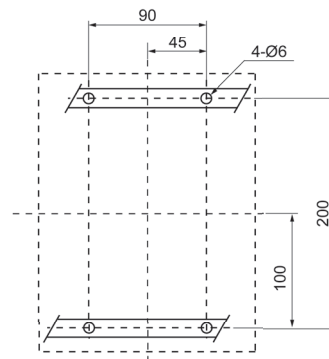
3P : Installed on the panel



3P : Installed on leading rails



4P : Installed on the panel



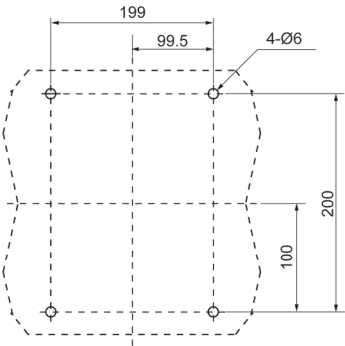
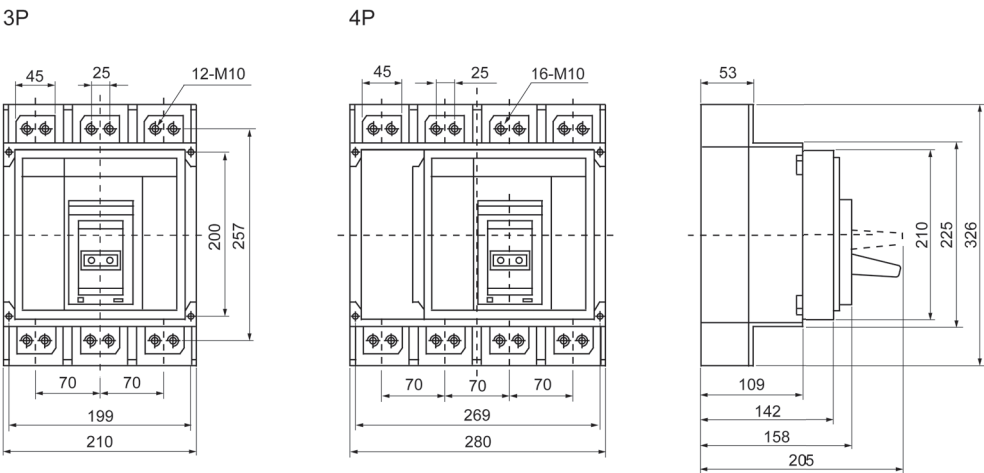
4P : Installed on leading rails

Moulded Case Circuit Breaker

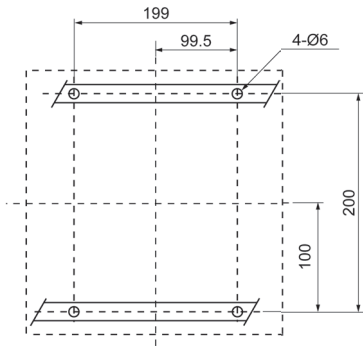
PN Series

Shape and installation dimensions

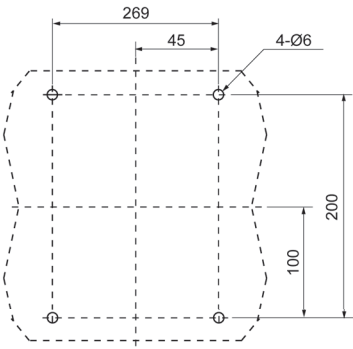
PN1600-1250, 1600



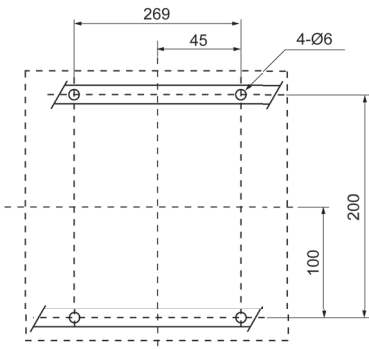
3P : Installed on the panel



3P : Installed on leading rails



4P : Installed on the panel



4P : Installed on leading rails

Circuit breaker accessories

The internal accessories of the circuit breaker are installed in the inner cavity of the cover plate, and the shunt release, undervoltage release, auxiliary contact and alarm contact are all made into separate modules. Therefore, the installation is simple, convenient, safe and reliable, and the user can install the corresponding position of the circuit breaker by himself. The attached picture is as follows:

Accessory name	Rated operating voltage	Applicable shell frame
MX  Shunt release 	AC220/230V AC380/400V DC220V DC110V	PN250-100 PN250-160 PN250-250 PN630-400 PN630-630
	AC220/230V AC380/400V DC220V DC110V	PN1600-1250, 1600
MU  Undervoltage release 	AC220/230V AC380/400V	PN250-100 PN250-160 PN250-250 PN630-400 PN630-630
	AC220/230V AC380/400V	PN1600-1250, 1600
AX Auxiliary contact 	AC220/230V AC380/400V DC220V DC110V	All shells
AL Alarm contact 	AC220/230V AC380/400V DC220V DC110V	All shells

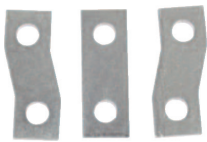
Accessory name	Rated operating voltage	Applicable shell frame
Electric operating mechanism  P	AC220/230V AC380/400V DC220V DC110V	PN250-100 PN250-160 PN250-250
Electric operating mechanism  P	AC220/230V AC380/400V DC220V DC110V	PN630-400 PN630-630

Moulded Case Circuit Breaker

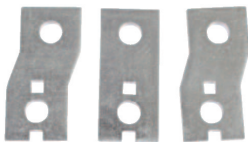
PN Series

Accessory name	Applicable shell frame	Accessory name	Applicable shell frame
 Economical extended rotating handle	PN250-100 PN250-160 PN250-250 PN630-400 PN630-630	 Rotate the handle directly	PN250-100 PN250-160 PN250-250 PN630-400 PN630-630
 Extended rotating handle	PN250-100 PN250-160 PN250-250 PN630-400 PN630-630	 Rotate the handle directly	PN1600-1250, 1600

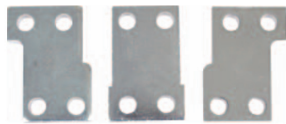
Circuit breaker accessories



1.PN250-100,160,250
Outer connecting plate



2. PN630-400, 630
Outer connecting plate

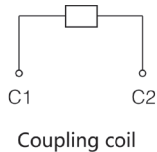


3. PN1600-1250, 1600
Outer connecting plate

Note: Thermomagnetic and electronic dimensions, mounting dimensions and accessories are identical.

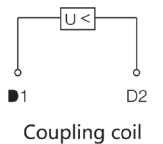
Shunt release

For remote control of the circuit breaker opening, the shunt release can reliably open the circuit breaker between 70% and 110% US. The shunt release should be prohibited from being energized for a long time (≤ 5s).



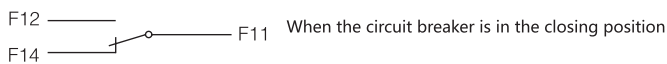
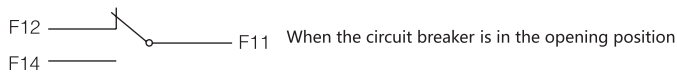
Undervoltage release

When the control voltage drops to 35% to 70%, the undervoltage release should trip and the circuit breaker should be reliably disconnected. When the control voltage is greater than or equal to 85%, the circuit breaker should be reliably closed. When the control voltage is less than 35%, it should be able to prevent the circuit breaker from closing.



Contact contact

Function: Indicates the opening and closing state of the circuit breaker.



Alarm contact

Function: Indicates the possible cause of tripping of the circuit breaker

a: overload ; b: short circuit ; c: ground fault ; d: undervoltage trip operation ; e: free trip.

When the circuit breaker is normally closed or opened, the alarm contact does not move, and only after the free trip or fault trip occurs. The position of the contact changes, that is, the normally open becomes normally closed, and the normally closed becomes normally open.

When the circuit breaker is buckled again, the alarm contact returns to its original position.

