



CHINT
CHINT ELECTRIC

Empower the World

NM8N Moulded Case Circuit Breaker

CHINT , Smart Energy Solution Provider

CHINT is a world renowned smart energy solution provider.

To comply with the trend of integrated development of modern energy, intelligent manufacturing and digital technology, CHINT has adopted One Cloud & Two Nets as the development strategy. As the carrier of intelligent technology and data application, CHINT Cloud fulfills corporate internal and external digital application and services. Relying on the Industrial Internet of Things (IIoT), CHINT builds its intelligent manufacturing system and practices intelligentized application of the electrical industry; relying on the Energy Internet of Things (EIoT), CHINT builds its smart energy system and explores the regional EIoT mode.

Focusing on energy supply, storage, transmission, allotment and consumption system, CHINT considers new energy, energy allotment, big data and energy value-added services as core businesses, with photovoltaic equipment, energy storage, power transmission and distribution, low-voltage apparatuses, intelligent terminals, software development and control automation as pillar businesses, to develop the platform enterprise and to build the regional smart energy comprehensive operation management ecosphere, ultimately, to provide the public institutions, industry & commerce and terminal users with a package of energy solutions.

Founded in 1984, CHINT has developed business network in over 140 countries and regions with more than 30,000 employees worldwide. CHINT has reached annual sales of 70 billion yuan in 2018, ranking among the top 50 Asian Listed Companies and the top 100 China Private Enterprises.

CHINT has actively explored overseas markets, has established 3 research and development (R&D) centers in Europe, North America and Asia Pacific, 6 global marketing areas and manufacturing bases in Thailand, Malaysia, Egypt, Singapore and Vietnam.

CHINT has stuck to the industrial development and innovation-driving concept, actively promoting the development of global R&D system. Till 2018, CHINT has won more than 4,000 patent licenses and 5,000 patent applications, on top of that, CHINT led the formulation of 185 industrial and national standards, and won 32 national and provincial science and technology awards.

CHINT has unwaveringly adhered to people-oriented and value-sharing culture with the mission of "making the electric power even safer, green, convenient and efficient". CHINT builds its image of green, energy-saving, sustainable innovation, reliability comprehensiveness, and win-win cooperation with "custom-

er-focused, innovation, humble learning, integrity, collaboration, responsibility" as core values, and "creating values for customers, seeking career development of employees and taking on responsibilities for the society" as operation concepts.

CHINT has positively taken on its social responsibilities. It has successively invested and set up "CHINT Moral Quality and Academic Excellent Scholarship for Chinese Middle School Students", "CHINT Education Fund for Impoverished Undergraduates of Zhejiang Province", and initiated the establishment of "China Red Ribbon Foundation". CHINT has invested 90million yuan to establish the "Commonweal Foundation of CHINT". So far CHINT has donated more than 300million yuan for social welfare undertakings such as education donation, earthquake resistance and disaster relief, social welfare entrepreneurship, ecological and environmental protection.

Through the technological innovation and remarkable contribution to the industry, CHINT has successively won honors and titles such as "China Grand Awards for Industry", "National Quality Management Award", "China Outstanding Private Scientific and Technological Enterprise", "Top 10 Enterprises with the most Core Competitiveness of China Machinery Industry" and "China Charity Award" and "China Charity Award", etc.



CHINT “One Cloud & Two Nets” Strategy

CHINT Cloud

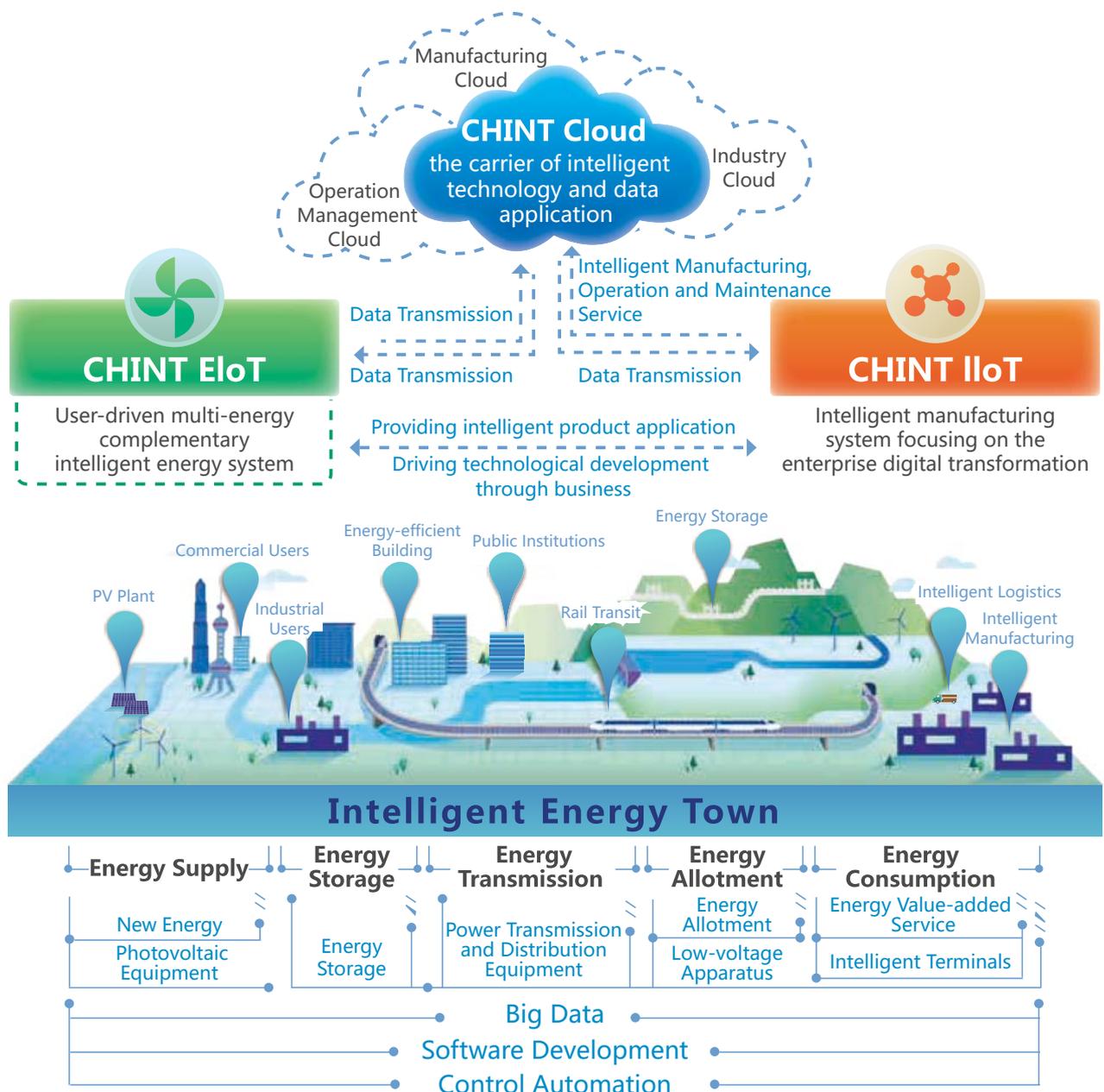
The carrier of intelligent technology and data application in connecting enterprise internal manufacturing and business management data and fulfilling corporate internal and external digital application and services.

CHINT EIoT

A user-driven multi-energy complementary intelligent energy system, providing the public institutions, industry & commerce and terminal users with a package of energy solutions.

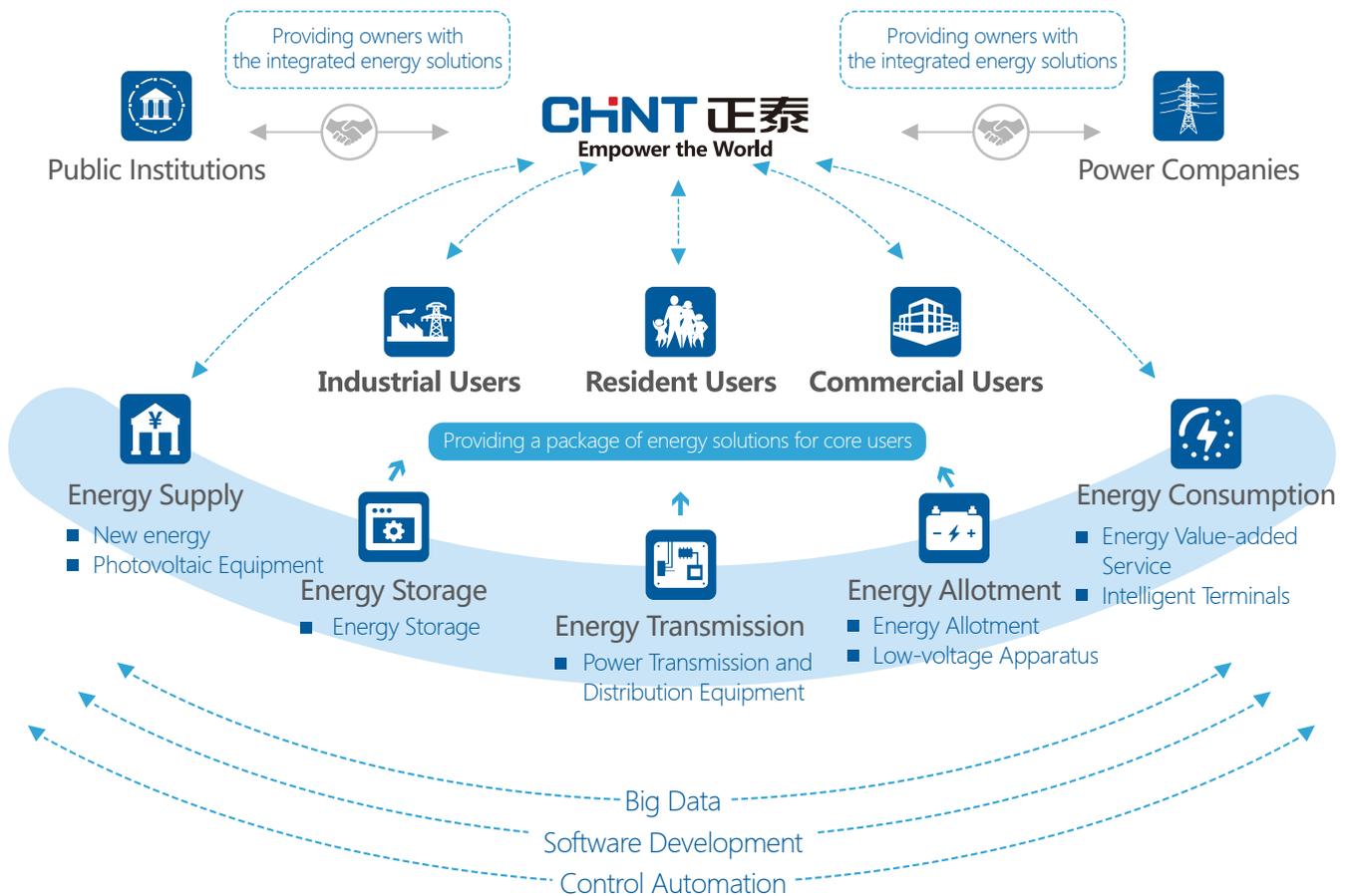
CHINT IIoT

An intelligent manufacturing system focusing on the enterprise digital transformation, building and developing a flexible, efficient and intelligent industrial system.



CHINT EIOT

A user-driven multi-energy complementary intelligent energy system, providing the public institutions, industry & commerce and terminal users with a package of energy solutions.



CHINT IIoT

Intelligent manufacturing system focusing on the enterprise digital transformation

- The first group of Sino-Germany Intelligent Manufacturing Cooperation Pilot Demonstration Projects made public by the Ministry of Industry and Information Technology
- "PV manufacturing+Internet" transparent factory opened up to the worldwide users
- One of 94 new intelligent manufacturing mode application projects made public in 2015
- Intelligent manufacturing integration system
- Big data full-process tracking
- Full-process automatic quality monitoring

The Thinking Factory

—in Hangzhou



The Transparent Internet Factory

— in Haining



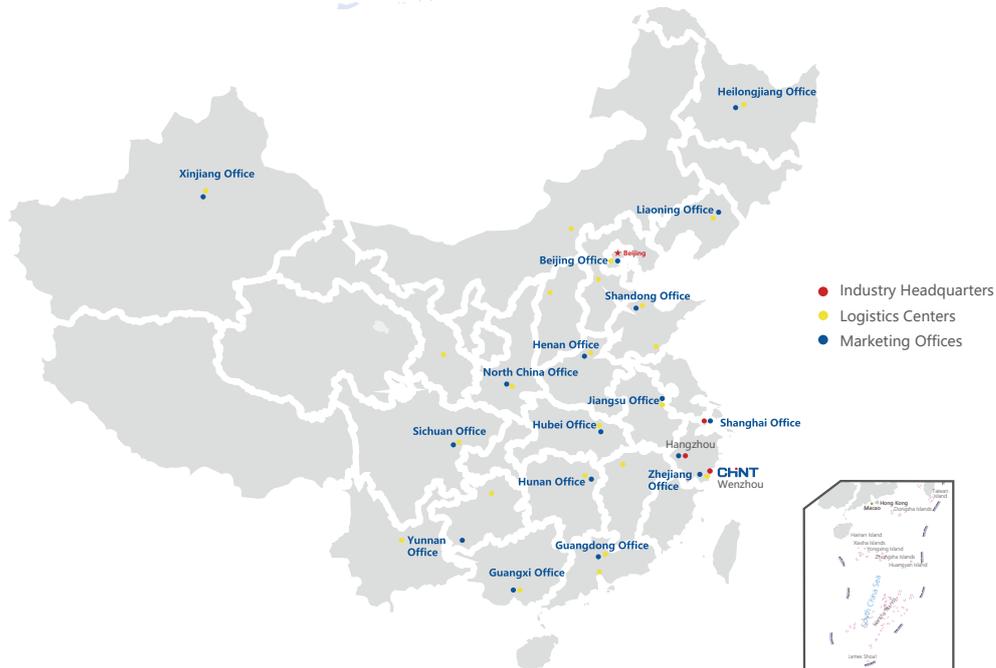
The Digital Electric Apparatus Plant

—in Wenzhou



Reliable quality, Best-selling Worldwide

- 3 global R&D centers : Europe, North America, Asia Pacific
- 6 worldwide marketing areas : Asia Pacific, Western Asia and Africa, Europe, Latin America, North America, China
- 13 manufacturing bases : China (Wenzhou, Shanghai, Hangzhou, Jiaying, Xianyang, Jiuquan, Jinan), Thailand, Egypt, Singapore, Vietnam, Malaysia, Algeria (production line)
- 20 overseas subsidiaries
- 16 marketing offices in China
- 32 international logistics centers
- 2300 sales companies



CHINT Honors

Comprehensive Strength

- 2015, top 100 enterprises in China machinery industry
- 2016, top 100 enterprises of Zhejiang Province
- 2017, ranking the 85th place among top 500 China private enterprises
- 2017, innovative leading enterprise of Zhejiang Province
- 2017, top 100 enterprises in innovation capacity among the national hi-tech enterprises of Zhejiang Province

Independent Innovation

- 2015, Science and Technology Award of China Electrotechnical Society
- 2016, Golden Patent Prize of Zhejiang Province and Patent Recognition Award of Zhejiang Province for two serial products
- 2016, national intellectual property demonstration enterprise
- 2016, group member of China Intellectual Property Society
- 2016, member of Global Energy Interconnection Development and Cooperation Organization

Quality Management

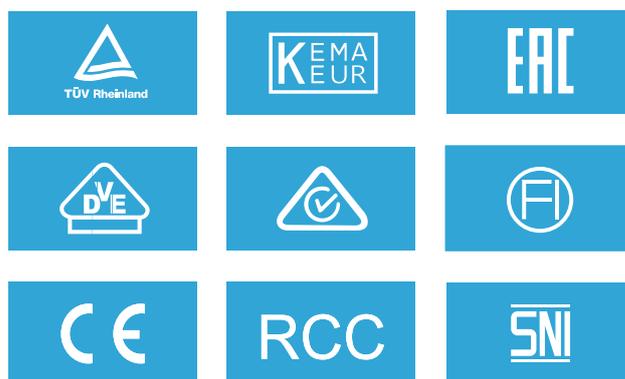
- 2016, advanced unit and user-satisfied enterprise in national user satisfaction project
- 2016, executive director unit of Asia Quality Function Development Association
- 2017, quality good faith enterprise of China machinery industry
- 2017, national product and service quality good faith demonstration enterprise

Social Responsibilities

- 2014, five-star enterprise of China industry sector in performing social responsibilities
- 2016, National Enterprise of Observing Contract and Valuing Credit
- 2017, credit management demonstration enterprise of Zhejiang Province
- 2018, the 10th "China Charity Award" of the Ministry of Civil Affairs

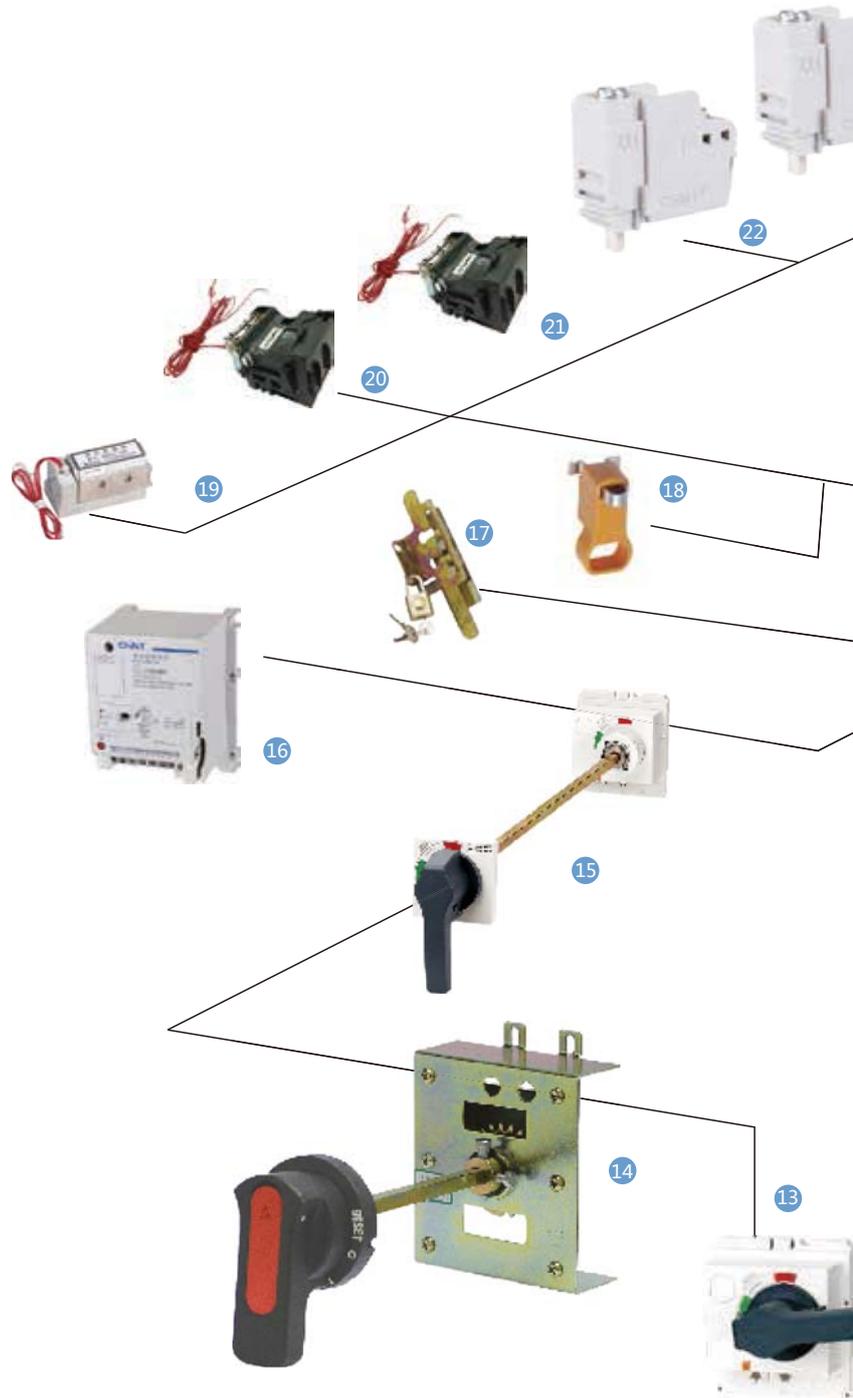
Qualification Certification

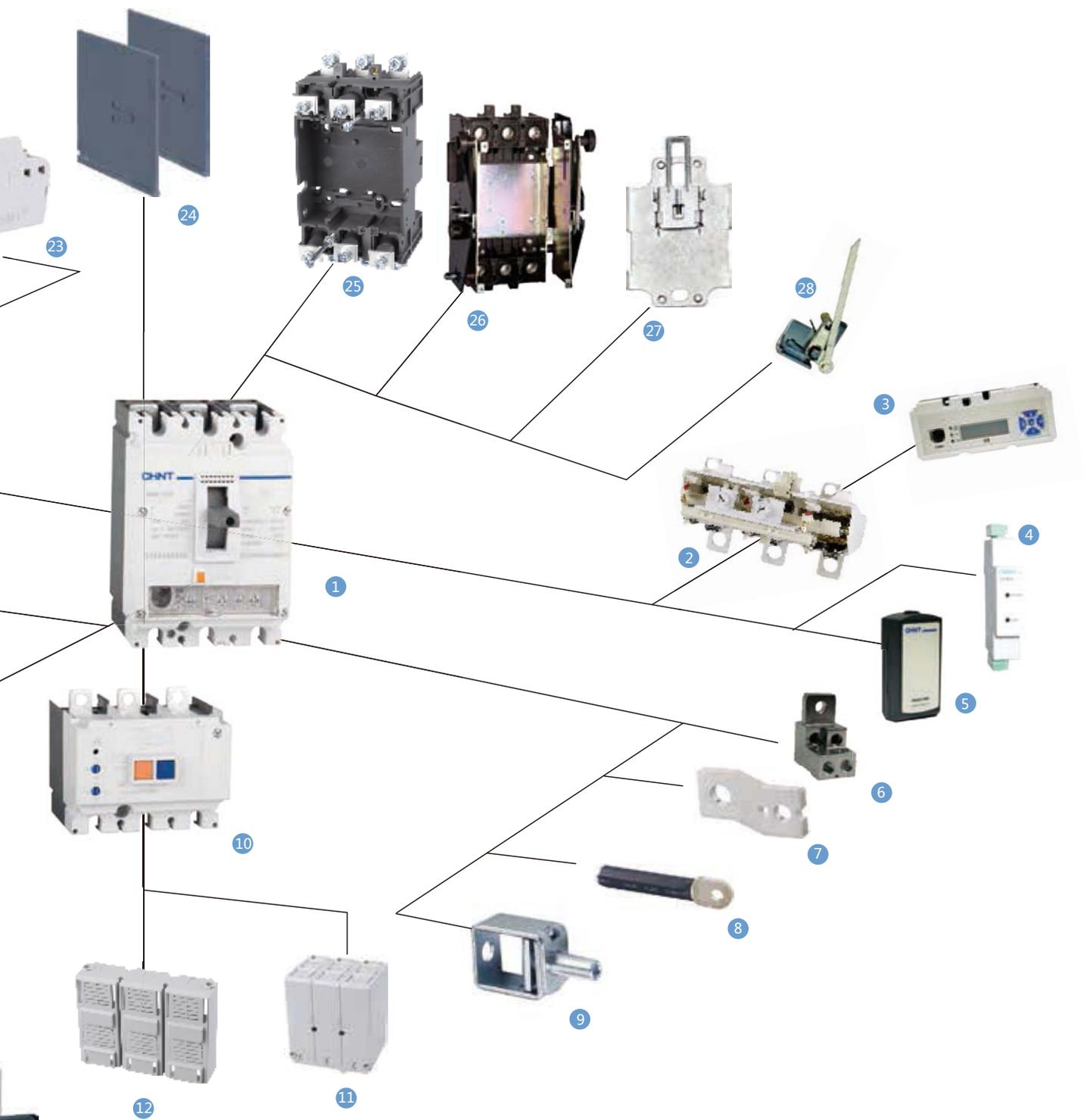
The products have been accredited through China Compulsory Certification (CCC) as well as UL of US, CE of EU, VDE and TÜV of Germany, EAC of Russia, KEMA of Netherlands, RCM of Australia, RCC of South Africa and other international product certifications.



NM8N Moulded Case Circuit Breaker

- 1 Body
- 2 Thermo magnetic release
- 3 Electronic release
- 4 Communication module
- 5 Cell box
- 6 Cable connector
- 7 Front connection plate
- 8 Rear connection plate
- 9 Cage clamp terminal
- 10 Residual current protection module
- 11 Long terminal cover
- 12 Short terminal cover
- 13 Direct rotary handle
- 14 Economic extended rotary handle
- 15 Extended rotary handle
- 16 Motor driven operating mechanism
- 17 Mechanical interlock
- 18 Locking system
- 19 Closing electromagnet
- 20 Under-voltage release
- 21 Shunt release
- 22 Alarm contact
- 23 Auxiliary contact
- 24 Interphase barrier
- 25 Plug-in base
- 26 Draw-out base
- 27 DIN rail adaptor
- 28 Plug and pull safety device





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1. General

NM8N series moulded case circuit breaker is suitable for the circuit of AC 50/60Hz, with rated voltage AC690V and below, DC system rated voltage DC1000V and below, and rated current of 16A and 1600A. It can protect circuits and electric equipment against overload, short circuit or undervoltage, and can also provide protection of overload, short circuit and under voltage for infrequent start of motor.

Products have functions of power distribution protection, motor protection, residual current protection and isolation.

The circuit breaker can be installed vertically, installed horizontally and can also enter the line from the bottom.

Standards compliant:

IEC 60947-1 general rules for low-voltage switchgear and control equipment;
 IEC 60947-2 low-voltage switchgear and control equipment circuit breakers;
 IEC 60947-3 low-voltage switchgear and control equipment switches, disconnectors and fuse combination appliances;
 IEC 60947-4-1 Electromechanical contactors and motor starters (including motor protectors) for low voltage switchgear and control equipment

2. Operating conditions

2.1 Temperature:

Operating and storage temperature is $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$; the average value within 24 hours does not exceed $+35^{\circ}\text{C}$; when the ambient temperature is $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$, users need to consider derating or temperature compensation whose details can be referred to in Page

2.2 Altitude: $\leq 2000\text{m}$;

2.3 Pollution grade: Grade 3;

2.4 IP grade: IP40

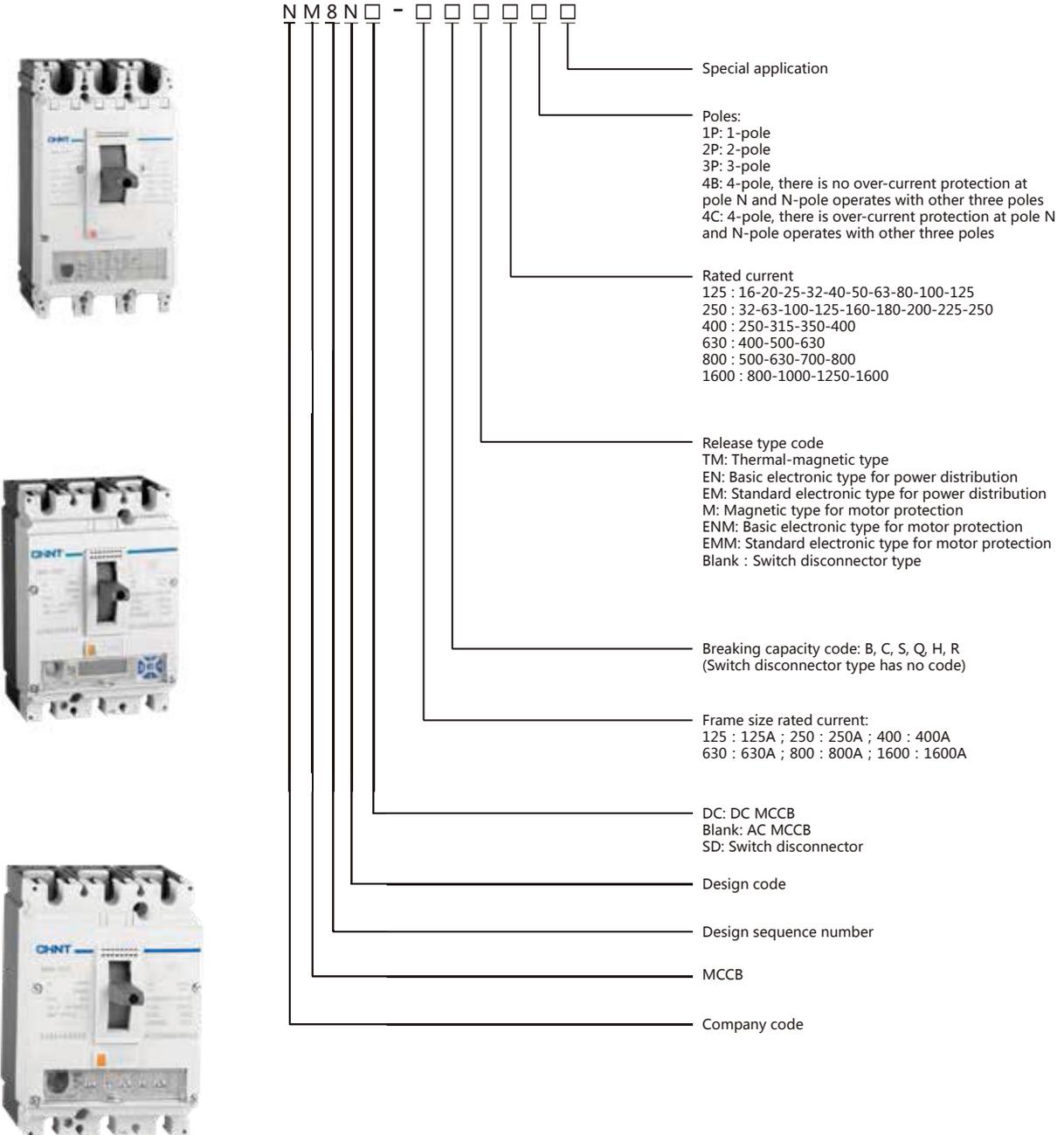
2.5 Air conditions:

At mounting site, relative humidity not exceed 50% at the max temperature of $+40^{\circ}\text{C}$, higher relative humidity is allowable under lower temperature. For example, RH could be 90% at $+20^{\circ}\text{C}$, special measures should be taken to occurrence of dews.



3. Type designation

3.1 NM8N Moulded Case Circuit Breaker and Switch Disconnecter



3.2 NM8NL Residual Current Circuit Breaker



N M 8 N L - □ □ □ □ □ □ □ □

- Rated residual current code:
 RCD1: 0.03-0.1-0.3-1A adjustable (Applicable to the frame size of 125-250-400-630)
 RCD2: 0.05-0.2-0.5-2A adjustable (Applicable to the frame size of 125-250)
 RCD3: 0.05-0.2-0.5-1A adjustable (Applicable to the frame size of 400-630)
 RCD4: 0.1-0.3-1-2A adjustable (Applicable to the frame size of 400-630)
- Rated residual current type:
 Default: AC type, A: A type
- Pole code:
 3P: 3-pole
 4B: 4-pole, there is no over-current protection at pole N and N-pole operates with other three poles
 4C: 4-pole, there is over-current protection at pole N and N-pole operates with other three poles
- Rated current :
 125 : 16-20-25-32-40-50-63-80-100-125
 250 : 32-63-100-125-160-180-200-225-250
 400 : 250-315-350-400
 630 : 400-500-630
- Release type code:
 TM: Thermal-magnetic type
 EN: Basic electronic type for power distribution
 EM: Standard electronic type for power distribution
 M: Magnetic type for motor protection
 ENM: Basic electronic type for motor protection
 EMM: Standard electronic type for motor protection
- Breaking capacity code : C/S/Q/H/R
- Frame size rated current:
 125 : 125A ; 250 : 250A ; 400 : 400A ; 630 : 630A
- Residual current code
- Design code
- Design sequence number
- MCCB
- Company code

4. Technical data

NM8N Moulded Case Circuit Breaker		125						250			
Rated operating current In (A), 40 °C	Magnetic type	16-20-25-32-40-50-63-80-100-125					125-160-180-200-225-250				
	Thermal-magnetic type	16-20-25-32-40-50-63-80-100-125					125-160-180-200-225-250				
	Electronic type	—					32-63-100-160-250				
Electric characteristics											
Rated insulation voltage Ui (V)		1000					1000				
Rated impulse withstand voltage (kV)		8					8				
Rated operational voltage Ue(V),AC 50/60Hz		380/400/415,440,500,660/690					380/400/415,440,500,660/690				
Breaking capacity code		C	S	Q	H	R	C	S	Q	H	R
Number of poles	1P	■	■	—	—	—	■	■	—	—	—
	2P	■	■	■	■	■	■	■	■	■	■
	3P	■	■	■	■	■	■	■	■	■	■
	4P	■	■	■	■	■	■	■	■	■	■
Rated ultimate short-circuit breaking capacity Icu(kA)	AC220/230/240V ¹⁾	36	50	—	—	—	36	50	—	—	—
	AC380/400/415V	36	50	70	100	150	36	50	70	100	150
	AC440V	36	50	70	100	100	36	50	70	100	100
	AC500V	25	40	40	50	50	25	40	40	50	50
	AC660/690V	6	8	8	10	10	6	8	8	10	10
Rated service breaking capacity Ics(kA)	AC220/230/240V ¹⁾	36	50	—	—	—	36	50	—	—	—
	AC380/400/415V	36	50	70	100	150	36	50	70	100	150
	AC440V	36	50	70	100	100	36	50	70	100	100
	AC500V	25	40	40	50	50	25	40	40	50	50
Rated short-time withstand current Icw (kA,1s)		—					1(32A,63A);2(100A,160A);3(250A)				
Standard		IEC/EN 60947-2									
Utilization category		A					A				
Ambient temperature		-40°C ~ +70°C ²⁾									
Safety of insulation		■					■				
Arcing distance		0					0				
Mechanical life (CO recycle)	Maintenance free	15000					15000				
	Electrical life (CO recycle)	8000					6000				
Electrical life (CO recycle)	AC415V,In	8000					6000				
	AC690V,In	2000					1500				
Release units											
Distribution protection	TM	■					■				
	EN	—					■				
	EM	—					■				
Motor protection	M	■					■				
	ENM	—					■				
	EMM	—					■				
Mounting and connection											
Fixed	Front connection	■					■				
	Rear connection	■					■				
Plug-in ³⁾	Front connection	■					■				
	Rear connection	■					■				
Draw-out ³⁾	Front connection	—					—				
	Rear connection	—					—				
DIN rail	Front connection	■					■				
Dimension											
Dimension (mm) W×H×D	Width (1P/2P/3P/4P)	35/62/90/120					40/70/105/140				
	Height	140					157				
	Depth	78.5					88.7				
Weight											
Weight(kg)/Fixed	1P	0.5					0.75				
	2P	0.83					1.3				
	3P	1.19					1.85(TM/M) ; 2.0(EN/EM)				
	4P	1.55					2.5(TM/M) ; 2.65(EN/EM)				

Note : ¹⁾ For 1 pole product only ;

²⁾ The operating temperature of basic (dial code) electronic type is -35° C~+70° C, and the operating temperature of standard (liquid crystal) electronic type is -25° C~+70° C;

³⁾ For 3/4 pole product only ;

⁴⁾ The data in "0" is for motor type.

NM8N DC Moulded Case Circuit Breaker		125						250					
Rated operating current In (A), 40 °C		16-20-25-32-40-50-63-80-100-125					125-160-180-200-225-250						
Electric characteristics													
Rated insulation voltage Ui (V)		1000					1000						
Rated impulse withstand voltage Uimp (kV)		8					8						
Rated operational voltage Ue(V),DC		250 , 500 , 750 , 1000					250 , 500 , 750 , 1000						
Breaking capacity code		B	C	S	Q	H	B	C	S	Q	H		
Number of poles	1P	■	■	■	—	—	■	■	■	—	—		
	2P	■	■	■	■	■	■	■	■	■	■		
	3P	■	■	■	■	■	■	■	■	■	■		
	4P	■	■	■	■	■	■	■	■	■	■		
Rated ultimate short-circuit breaking capacity Icu(kA)	DC250V 1P	25	36	50	—	—	25	36	50	—	—		
	DC500V 2P in series	25	36	50	70	100	25	36	50	70	100		
	DC750V 3P in series	25	36	50	70	100	25	36	50	70	100		
	DC1000V 4P in series	25	36	50	70	100	25	36	50	70	100		
Rated service breaking capacity Ics(kA)	DC250V 1P	25	36	50	—	—	25	36	50	—	—		
	DC500V 2P in series	25	36	50	70	100	25	36	50	70	100		
	DC750V 3P in series	25	36	50	70	100	25	36	50	70	100		
	DC1000V 4P in series	25	36	50	70	100	25	36	50	70	100		
Standard		IEC/EN 60947-2											
Utilization category		A					A						
Ambient temperature		-40°C ~+70°C											
Safety of insulation		■					■						
Arcing distance		0					0						
Mechanical life (CO recycle)	Maintenance free	15000					15000						
	Electrical life (CO recycle)	DC1000V,In		2000			1500						
Release units													
Distribution protection	TM	■					■						
Mounting and connection													
Fixed	Front connection	■					■						
	Rear connection	■					■						
Plug-in ¹⁾	Front connection	■					■						
	Rear connection	■					■						
Draw-out ¹⁾	Front connection	—					—						
	Rear connection	—					—						
DIN rail	Front connection	■					■						
Dimension													
Dimension (mm) W × H × D	Width (1P/2P/3P/4P)	35/62/90/120					40/70/105/140						
	Height	140					157						
	Depth	78.5					88.7						
Weight													
Weight(kg)/Fixed	1P	0.5					0.75						
	2P	0.83					1.3						
	3P	1.19					1.85						
	4P	1.55					2.5						

Note: ¹⁾ For 3/4 pole product only.

400						630					800					1600	
250-315-350-400						400-500					500-630-700-800					800-1000-1250-1600	
1000						1000					1250					1000	
12						12					12					8	
750 , 1000						750 , 1000					750 , 1000					750 , 1000	
B	C	S	Q	H		B	C	S	Q	H	B	C	S	Q	H	B	C
—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—
■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■
■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■
—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—
25	36	50	70	100	25	36	50	70	100	25	36	50	70	100	25	36	
25	36	50	70	100	25	36	50	70	100	25	36	50	70	100	25	36	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
25	36	50	70	100	25	36	50	70	100	25	36	50	70	100	25	36	
25	36	50	70	100	25	36	50	70	100	25	36	50	70	100	25	36	
IEC/EN 60947-2																	
A						A					A					A	
-40°C ~+70°C																	
■						■					■					■	
0						0					0					0	
15000						15000					10000					6000	
1500						1500					1000					1000	
■						■					■					■	
■						■					—					■	
■						■					■					—	
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■						■					■					—	
■						■					■					—	
—						—					—					—	
140/185						140/185					195/260					210/280	
255						255					300					286	
113						113					133					167	
—						—					—					—	
—						—					—					—	
5.2						5.5					10.3					13.5	
6.7						7					13.5					17.5	

NM8NL Residual Current protection module		125	250	400	630
Rated operating current In (A), 40 °C		125	250	400	630
Number of poles		3P、 4P	3P、 4P	3P、 4P	3P、 4P
Electric characteristics					
Rated insulation voltage Ui (V)		1000	1000	1000	1000
Rated impulse withstand voltage Uimp (kV)		8	8	12	12
Rated operational voltage Ue(V),AC 50/60Hz		380/400/415、 440	380/400/415、 440	380/400/415、 440	380/400/415、 440
Rated current (A) of circuit breaker	TM	16-20-25-32-40-50-63-80-100-125	125-160-180-200-225-250	250-315-350-400A	400-500A
	EN	—	32-63-100-160-250	250-400	400-630
	EM	—	32-63-100-160-250	250-400	400-630
	M	16-20-25-32-40-50-63-80-100-125	125-160-180-200-225-250	250-315-350-400A	400-500A
	ENM	—	32-63-100-160-250	250-400	400-630
	EMM	—	32-63-100-160-250	250-400	400-630
Rated residual operating current IΔn(A)	RCD1 (Four-step adjustable)	0.03-0.1-0.3-1	0.03-0.1-0.3-1	0.03-0.1-0.3-1	0.03-0.1-0.3-1
	RCD2 (Four-step adjustable)	0.05-0.2-0.5-2	0.05-0.2-0.5-2	—	—
	RCD3 (Four-step adjustable)	—	—	0.05-0.2-0.5-1	0.05-0.2-0.5-1
	RCD4 (Four-step adjustable)	—	—	0.1-0.3-1-2	0.1-0.3-1-2
Rated residual non-operating current IΔno(A)		0.5IΔn	0.5IΔn	0.5IΔn	0.5IΔn
Limit non-actuating time (ms) ¹⁾		Δt : 0-60-200-500			
Maximum breaking time (ms)	Total breaking time (adjustable)	100-300-500-1000	100-300-500-1000	100-300-500-1000	100-300-500-1000
Rated residual making and breaking capacity IΔm(kA)		0.25Icu	0.25Icu	0.25Icu	0.25Icu
Leakage alarm non-tripping function		□	□	□	□
Standard		IEC/EN 60947-2			
Residual current type		A/AC	A/AC	A/AC	A/AC
Safety of insulation		■	■	■	■
Ambient temperature		-25°C ~+70°C			
Arcing distance		0	0	0	0
Dimension					
Dimension with circuit breaker (mm) W×H×D	Width (3P/4P)	90/120	105/140	140/185	140/185
	Height	205	232	355	355
	Depth	78.5	88	113	113
Weight					
Weight of residual current protection module (kg)	3P	0.43	0.84	1.98	1.98
	4P	0.51	1.08	2.69	2.69

Note : ¹⁾ When the residual operating current is set to 0.03A, the limit non-actuating time must be set to 0.

NM8NSD Switch Disconnecter		125	250	400	800	1600
NM8NSD Switch Disconnecter I _{th} (A),40°C		125	250	400	800	1600
Number of poles		2P 3P 4P	2P 3P 4P	3P 4P	3P 4P	3P 4P
Rated operational current I _e (A)		125	250	400	800	800-1000-1250-1600
Rated operational voltage U _e (V)	AC (50/60Hz)	690	690	690	690	415/690
	DC	500 750 1000	500 750 1000	750 1000	750 1000	750 1500
Rated insulation voltage U _i (V)		1000	1000	1000	1250	AC : 1000 DC : 1500
Rated impulse withstand voltage U _{imp} (kV)		8	8	12	12	12
Rated short-circuit making capacity I _{cm} (kA)		3.2(AC)/2(DC)	5(AC)/3.2(DC)	8(AC)/5(DC)	14	40(AC)/19.2(DC)
Rated short-time withstand current I _{cw} (kA)	1s	2	3.2	5	8/10	20(AC)/19.2(DC)
	3s	2	3.2	5	8/10	20
Standard		IEC/EN 60947-3 , GB/T 14048.3				
Utilization category		AC-22A/AC-23A DC-22A/DC-23A	AC-22A/AC-23A DC-22A/DC-23A	AC-22A/AC-23A DC-22A/DC-23A	AC-22A/AC-23A DC-22A/DC-23A	AC-22A/AC-23A DC-22A/DC-22B
Safety of insulation		■	■	■	■	■
Ambient temperature		-40°C ~ +70°C				
Arcing distance		0	0	0	0	0
Mechanical life (CO recycle)	Maintenance free	15000	15000	15000	10000	6000
	AC415V,In	8000	6000	4000	2000	1000
Electrical life (CO recycle)	AC690V,In	2000	1500	1500	1000	1000
	DC1000V,In	2000	1500	1500	1000	1000
Mounting and connection						
Fixed	Front connection	■	■	■	—	■
	Rear connection	■	■	■	■	■
Plug-in ¹⁾	Front connection	■	■	■	—	—
	Rear connection	■	■	■	—	—
Draw-out ¹⁾	Front connection	—	—	■	■	—
	Rear connection	—	—	■	■	—
DIN rail	Front connection	■	■	—	—	—
Dimension						
Dimension(mm) W×H×D	Width(2P/3P/4P)	62/90/120	70/105/140	140/185	195/260	210/280
	Height	140	157	255	300	286
	Depth	78.5	88	113	133	167 (195) ²⁾
Weight						
Weight(kg)/Fixed	2P	0.81	1.1	—	—	—
	3P	1.05	1.75	5	9.5	13(15.5) ²⁾
	4P	1.5	2.4	5.5	12.5	17(19.5) ²⁾

Note: ¹⁾ For 3/4 pole product only ;

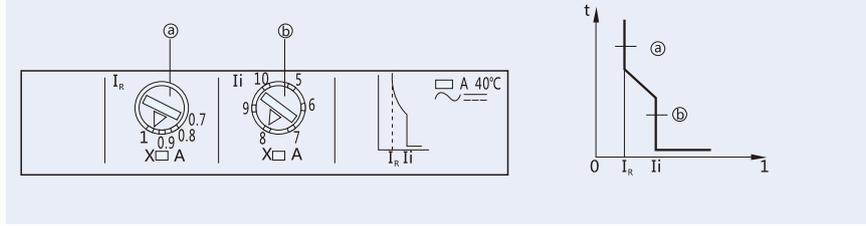
²⁾ The data in "()" is for motor type

5. Release

5.1 Protection for power distribution

5.1.1 Thermo-magnetic type release TM

Thermo-magnetic release of NM8N-125, 250, 400, 630, 800 and 1600 breakers can be set to meet protection requirements



Thermo-magnetic release TM	125		250		400	630	800	1600
Number of poles	1P	2P/3P/4P	1P	2P/3P/4P	3P/4P	3P/4P	3P/4P	3P/4P
Rated current	16/20/25 32/40/50 63/80/100/125		125/160 180/200 225/250	125 160/180 200/225 250	250/315 350/400	400/500	500/630 700/800	800/1000 1250/1600
Over-load protection								
Setting current (A) $I_r = I_n \times$	1.0 Non-adjustable	0.7-0.8-0.9-1.0	1.0 Non-adjustable	0.7-0.8-0.9-1.0				0.8-0.9-1.0
Short-circuit instantaneous protection								
Setting current (A) $I_i = I_n \times$	10		10	7-8-9-10-11-12	5-6-7-8-9-10			
Accuracy	±20%							
N-pole protection								
Setting current (A) $I_{IN} = I_n \times$	/	10	/	The same with the other three-phase poles.				
Accuracy	±20%							

5.1.2 Basic electronic type release for power distribution EN

EN electronic trip unit has three-stage protection of overload, short circuit short time-delay and short circuit instantaneous protection.



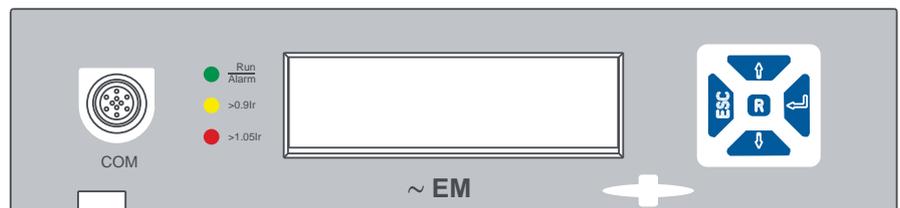
Electronic type EN	250	400	630	800	1600
Over-load long-time delay protection	Setting current $I_r = I_n \times$	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0			
	$6I_r$, Tripping time T_r (s)	3-6-12-18, Accuracy ±10%			
Short circuit short-time delay protection	Setting current $I_{sd} = I_r \times$	1.5-2-3-4-6-8-10, OFF, Accuracy ±15%			
	Tripping time T_{sd} (s)	0.1-0.2-0.3-0.4, Accuracy ±20% or ±40ms(higher value will be selected)			
Short circuit instantaneous protection	Setting current $I_i = I_n \times$	2-3-4-6-8-10-12, OFF, Accuracy ±15%			
	Max. tripping time (ms)	60			
Neutral line protection	Setting current	$I_{IN} = (0.5, 1) \times I_n$, OFF; $I_{sdIN} = (1.5-2-3-4-6-8-10) I_{IN}$			
	Tripping time (s)	$I_{IN} = (2-3-4-6-8-10-12) I_{IN}$			
		The same with the other three-phase poles.			

- Overload protection and tripping time setting
—The current value I_r can be adjusted according to the user's needs. The tripping time T_r is at the status of $6I_r$.
- Short circuit short-time delay protection and trip time setting
—The current value I_{sd} can be adjusted according to the user's needs. Tripping time T_{sd} is the short-circuit short time-delay tripping time, which can be adjusted according to user needs.
- Short circuit instantaneous protection characteristics setting
—The current value I_i can be adjusted according to the user's needs.
- Neutral line protection feature setting

The four-pole circuit breaker N-pole protection current value can be adjusted according to user needs. The N pole tripping time is the same with the other three-phase poles.

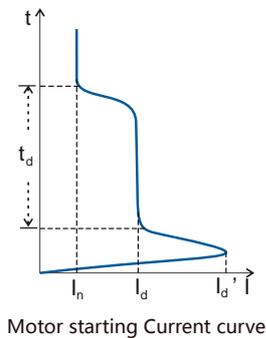
5.1.3 Standard electronic type release for power distribution EM

EM release has four-stage protection of overload, short circuit short-time delay, short circuit instantaneous protection and earth fault, with real-time current display, protection parameter information display, fault information display and parameter setting function



Electronic type EM		250	400	630	800	1600
Over-load long-time delay protection	Setting current $I_r=I_n \times$	0.4~1.0, Stepping1A				
	$6I_r$, Tripping time $T_r(s)$	3~18, 1s, Accuracy $\pm 10\%$				
Short circuit short-time delay protection	Setting current $I_{sd}=I_n \times$	1.5~10, Stepping1A, OFF, Accuracy $\pm 15\%$				
	Tripping time $T_{sd}(s)$	0.1-0.2-0.3-0.4, Accuracy $\pm 20\%$ or $\pm 40ms$ (higher value will be selected)				
Short circuit instantaneous protection	Setting current $I_i=I_n \times$	1.5~12, Stepping1A, OFF, Accuracy $\pm 15\%$				
	Max. tripping time (ms)	60				
Earth fault protection	Setting current $I_g=I_n \times$	0.4-0.5-0.6-0.7-0.8-0.9-1.0, OFF, Accuracy $\pm 15\%$				
	Tripping time (s)	0.1-0.2-0.3-0.4, Accuracy $\pm 15\%$				
Neutral line protection	Setting current	$I_{nN}=(0.5,1) \times I_n$; $I_{sdN}=(1.5 \sim 10) I_{nN}$; $I_{iN}=(1.5 \sim 12) I_{nN}$ 可 OFF				
	Tripping time (s)	The same with the other three-phase poles.				

- Overload protection and tripping time setting
 - Current setting value I_r , the user can adjust the range according to the \uparrow and \downarrow buttons on the panel, the range is $(0.4 \sim 1.0) I_n$, and the tripping time T_r is at the status of $6I_r$, which can be adjusted according to user needs.
- Short circuit short-time delay protection and tripping time setting
 - The current setting value I_{sd} can be adjusted according to the user's needs, and the "OFF" indicates function can be turned off. Tripping time T_{sd} is the short-circuit short-time delay tripping time, which can be adjusted according to user needs.
- Short circuit instantaneous protection characteristics setting
 - The current setting value I_i can be adjusted according to the user's needs, and the "OFF" indicates function can be turned off.
- Neutral line protection feature setting
 - Neutral line protection of the four-pole circuit breaker (current setting value I_{nN}), the setting range is $0.5I_n$, $1I_n$ or OFF, which can be adjusted according to the user's needs. The "OFF" position indicates that the N pole has no protection function.
- Earth fault protection
 - Earth fault I_g can be adjusted according to user needs, where the "OFF" means the function can be turned off.



5.2 Protection for motor

5.2.1 Motor starting characteristics

At present, most of the motors use three-phase asynchronous induction motors, and a large part of them use the direct start mode, namely, the electric energy does not take artificial restriction measures, and directly feeds to start the motor, which is also called full-pressure start. When the asynchronous motor is directly started, a high starting current of 4 to 7 times of the rated current occurs. The reason why the asynchronous motor has a large starting current is that the motor has certain inertia, and the rotor speed cannot be immediately changed to the rated speed after starting. At this time, the relative rotational speed of the rotating magnetic field of the stator (synchronous speed of the motor, slightly higher than the rated speed) is large. The rotor winding cuts the stator magnetic field at a large speed to generate a large current; at the same time, the magnetic field generated by the large current of the rotor in turn induces the stator winding, so that the current also rapidly increases.

Startup parameter

Rated current (I_n): current value of the motor under rated operation

Starting current (I_d): The current when the motor starts, its magnitude varies with different conditions, the average value is $7.2 \times I_n$

Start peak current (I_d'): Transient current during the first two half-waves after the motor is powered on, typically $14 \times I_n$

Start-up time (t_d): generally 0.5~20s, which refers to the time when the motor has starting current

Direct startup impact on the protection device

For circuit breakers with magnetic protection, if the conventional current of the magnetic trip unit is set incorrectly, the circuit breaker will mistake the start current of the motor for short-circuit current, causing the circuit breaker to malfunction. For the independent thermal relay, the heat generated by the large starting current during the motor starting phase will also cause the relay to trip. For the contactor, if the motor needs electric or regenerative braking, it needs to be able to be broken during the motor starting phase. It generally needs to derate, in order to avoid the malfunction of the protection device caused by the start current:

The inverse time characteristic curve of the independent thermal relay is required to be completely above the starting current.

The short-circuit current trip setting of the circuit breaker with magnetic protection should be greater than the peak starting current of the motor.

5.2.2 Protection solution

The NM8N Series offers start-up, control and protection solutions for two three-phase asynchronous motors:

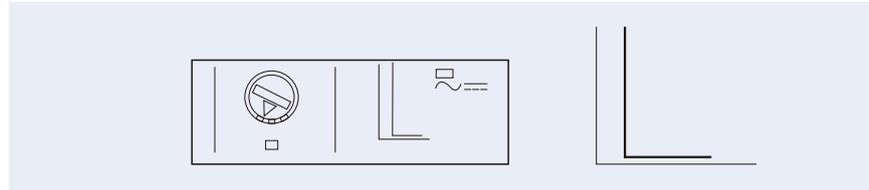
Three-component solution

Electromagnetic protection circuit breaker + contactor + thermal relay

Among them, the electromagnetic protection circuit breaker is used for short circuit protection, the contactor is used for motor operation, and the thermal relay is used for overload, phase loss and phase unbalance protection.

1) Magnetic release M

The electromagnetic protection circuit breaker has a current range of 125~800A, an adjustable range of 9~14In and an accuracy of 20%. It is especially suitable for use in the classic three-component protection solution.



Magnetic M	125	250	400	630	800
Pole	3P/4P	3P/4P	3P/4P	3P/4P	3P/4P
Short circuit instantaneous protection					
Setting current (A) $I_i=I_n \times$	12	9-10-11-12-13-14			
Accuracy	±20%				
N pole protection					
Setting current (A) $I_{iN}=I_n \times$	12	The same with the other three-phase poles. I_i			
Accuracy	±20%				

Two-component solution

Integrated protection electronic circuit breaker + contactor

In the two-component solution, there is no need to use the thermal relay, and the integrated protection electronic circuit breaker has the functions of overload, phase loss, phase unbalance protection and short circuit protection. The integrated protection electronic circuit breaker not only has high tripping precision, but also has reliable operation. The two-component solution consisting of contactors and the installation time can be saved without being affected by the ambient temperature.

2) Integrated protection: Basic electronic type release for motor protection ENM

The ENM electronic trip unit allows for tighter tolerance trip times, as detailed in the table below.

Electronic type ENM		250	400	630	800
Overload long-time delay protection	Setting current $I_i=I_n \times$	0.4-0.5-0.6-0.7-0.8-0.9-1.0, OFF			
	7.2I, Tripping time T_i (s)	4, 8, 16, Accuracy ±10%	48, 16, 24, Accuracy ±10%		
	Tripping level	5, 10, 20	5, 10, 20, 30		
Short circuit short-time delay protection	Setting current $I_{sd}=I_n \times$	5-6-8-9-10-11-12, OFF, Accuracy ±15%			
	Tripping time T_{sd} (ms)	100, Accuracy ±40			
Short circuit instantaneous protection	Setting current $I_i=I_n \times$	15 ¹⁾			
	Max. tripping time (ms)	60			
Phase unbalance/Phase failure I_{unbal}		30%-40%-50%-60%-70%-80%-90% (Phase failure)-OFF			
Max. trip time of phase imbalance (s)		4-6-8-10, Accuracy ±10%			
Tripping time of phase failure (s)		0.25, Accuracy ±20%			
Neutral line protection	Setting current	$I_{iN}=(0.5,1) \times I_{iN}$; $I_{sdN}=(5-6-8-9-10-11-12)I_{iN}$ $I_{iN}=15I_{iN}$, OFF			
	Tripping time	The same with the other three-phase poles			

Note: ¹⁾ Setting current $I_{sd} < I_i$ (within tolerance).

3) Integrated protection: Standard electronic type release for motor protection EMM

The EMM electronic release not only has the protection function of the ENM release, but also adds ground fault protection and stall protection. Moreover, it can also display real-time current, display protection parameter information, display fault information, and have parameter setting function.

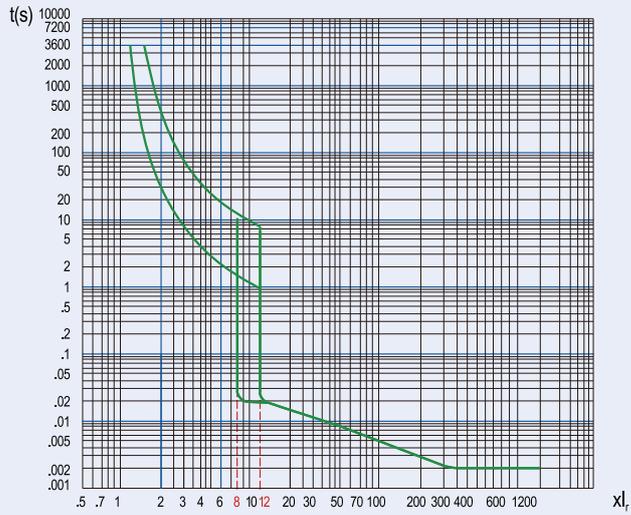
Electronic type EMM		250	400	630	800
Overload long-time delay protection	Protection current $I_i=I_n \times$	0.4~1.0 , Stepping1A, OFF			
	7.2I, Tripping time T_i (s)	4, 8, 16, Accuracy ±10%	4, 8, 16, 24, Accuracy ±10%		
	Tripping level	5, 10, 20	5, 10, 20, 30		
Short circuit short-time delay protection	Protection current $I_{sd}=I_n \times$	4~12, Stepping1A, OFF, Accuracy ±15%			
	Tripping time T_{sd} (ms)	100, Accuracy ±40			
Short circuit instantaneous protection	Protection current $I_i=I_n \times$	15 ¹⁾			
	Max. tripping time(ms)	60			
Earth fault protection	Protection current $I_g=I_n \times$	0.4-0.5-0.6-0.7-0.8-0.9-1.0 , OFF, Accuracy ±15%			
	Tripping time (s)	0.1-0.2-0.3-0.4, Accuracy ±20% or 40ms(higher value will be selected)			
Phase unbalance/Phase failure I_{unbal}		30%-40%-50%-60%-70%-80%-90%(Phase failure)-OFF			
Max. trip time of phase imbalance (s)		4-6-8-10, Accuracy ±10%			
Tripping time of phase failure (s)		0.25, Accuracy ±20%			
Locked-rotor current I_{jam}		(3~10)I _n , Stepping1A, OFF(Default), Accuracy ±15%			
Tripping time T_{jam} (s)		1~30, Step size1s, Defalut 5, Accuracy ±10%			
Neutral line protection	Setting current	$I_{iN}=(0.5,1) \times I_{iN}$, OFF; $I_{sdN}=(4~12)I_{iN}$; $I_{iN}=15I_{iN}$, OFF			
	Tripping time	The same with the other three-phase poles.			

Note: ¹⁾ Setting current $I_{sd} < I_i$ (within tolerance).

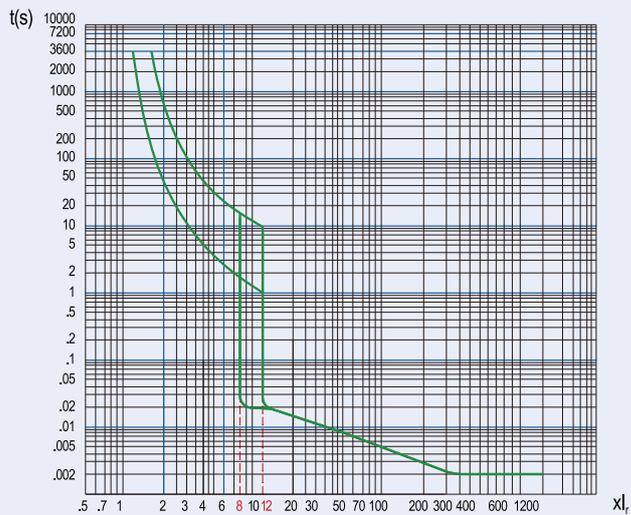
6. Tripping curve

6.1 Thermal-magnetic type for power distribution

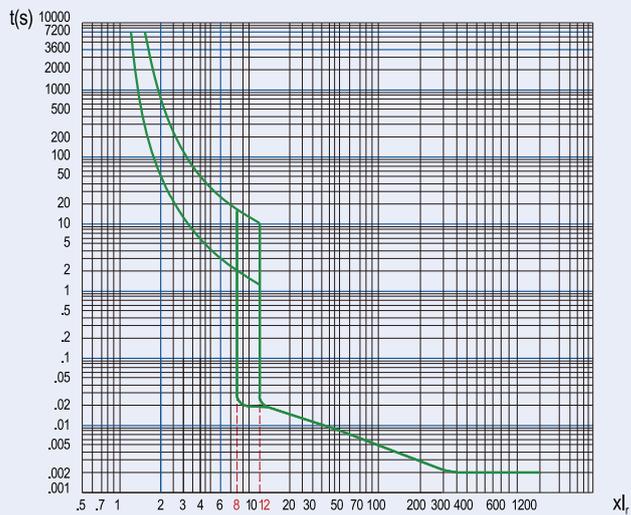
NM8N-125(16A,20A,25A,32A)



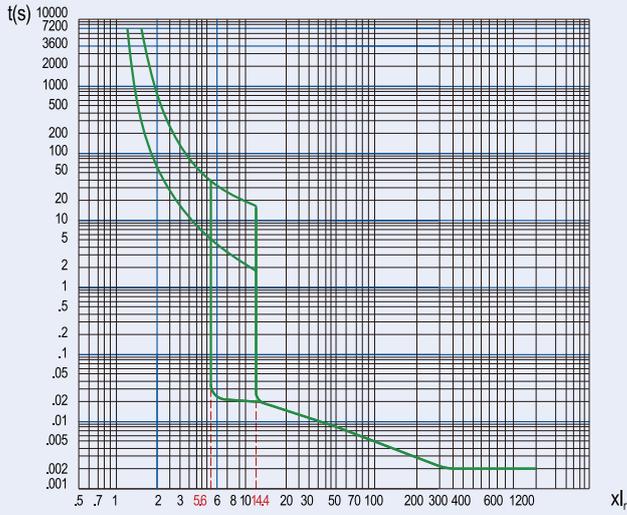
NM8N-125(40A,50A,63A)



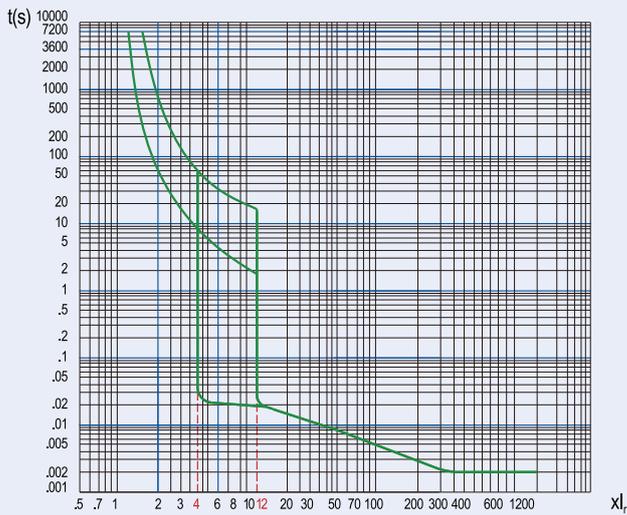
NM8N-125(80A,100A,125A)



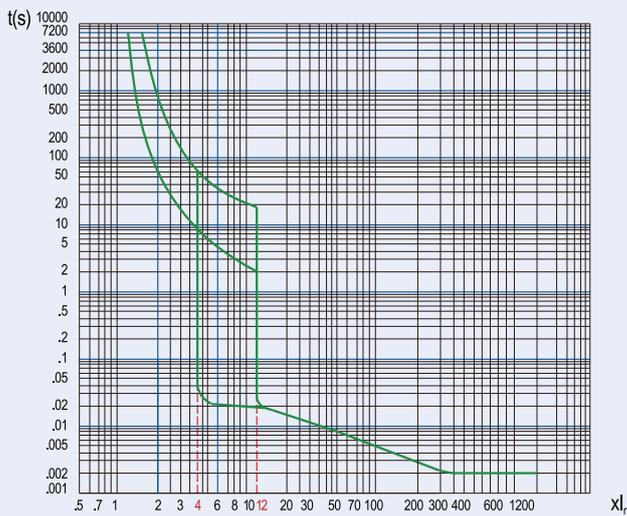
NM8N-250(125A)



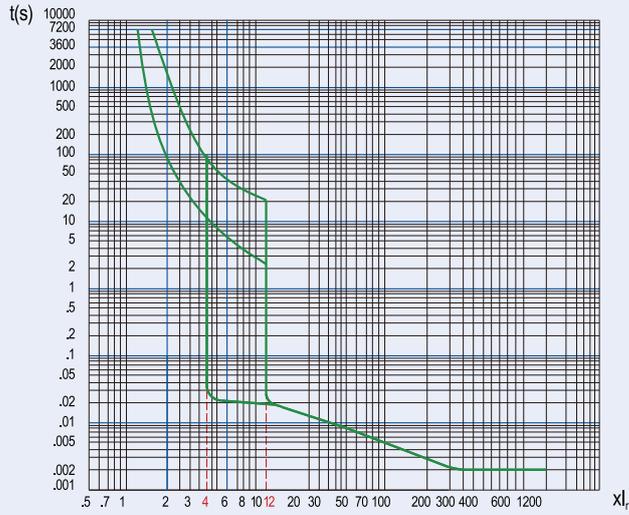
NM8N-250(160A,180A)



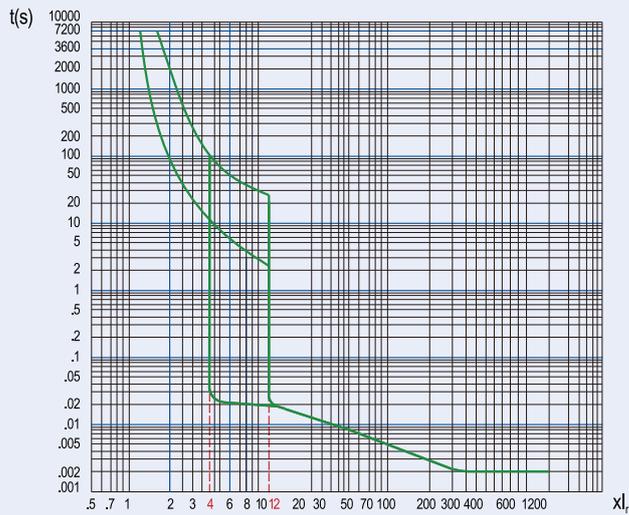
NM8N-250(200A,225A,250A)



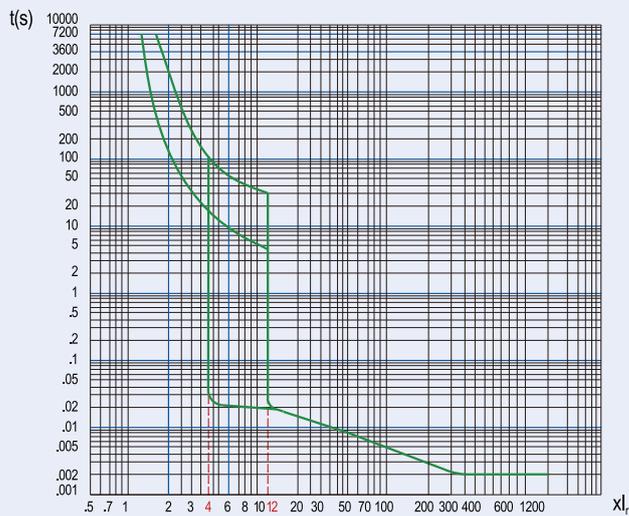
NM8N-400(250A~400A)



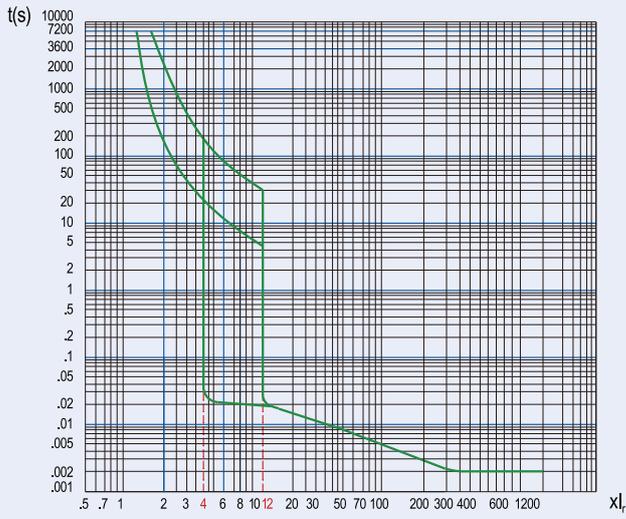
NM8N-630(400A~500A)



NM8N-800(500A~800A)

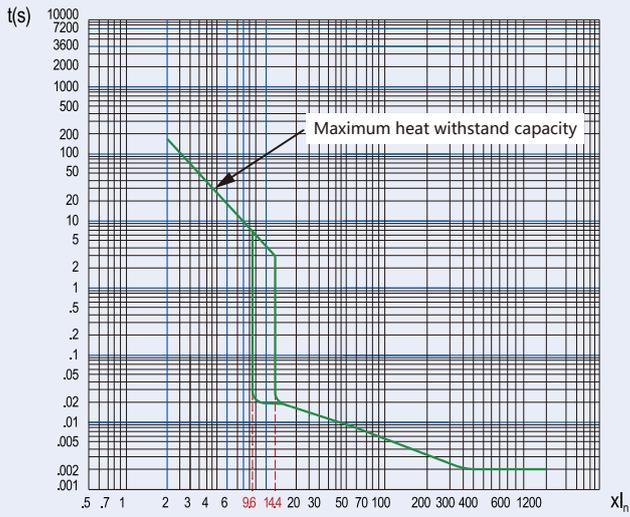


NM8N-1600(800A~1600A)

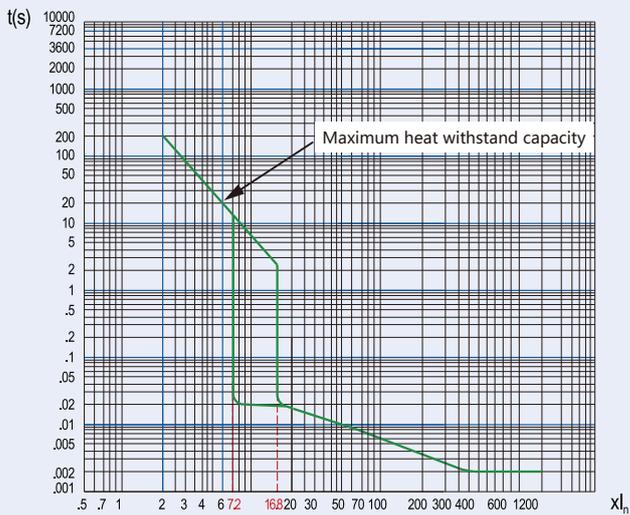


6.2 Magnetic type for motor protection

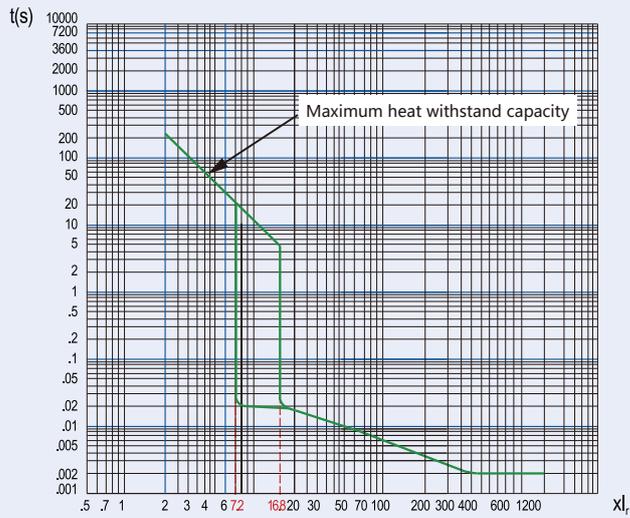
NM8N-125(16A~125A)



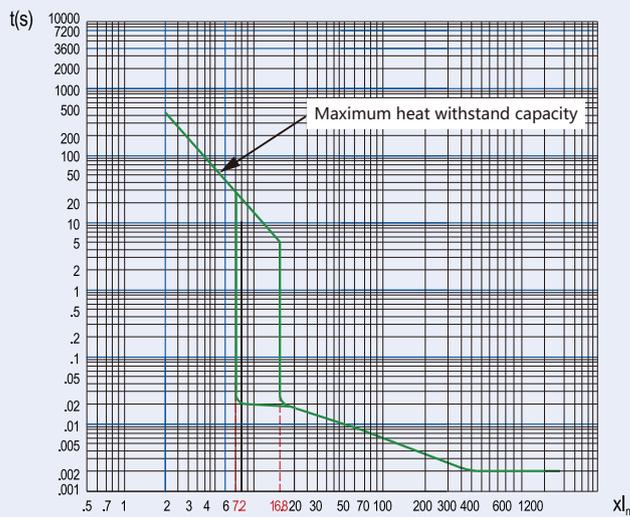
NM8N-250(125A~250A)



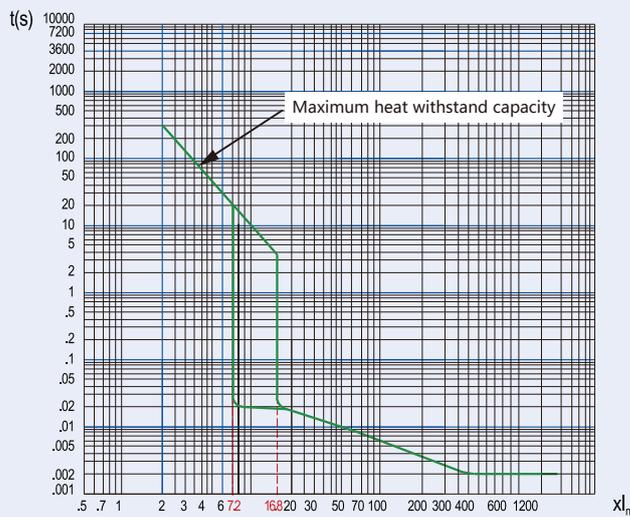
NM8N-400(250A~400A)



NM8N-630(400A~500A)

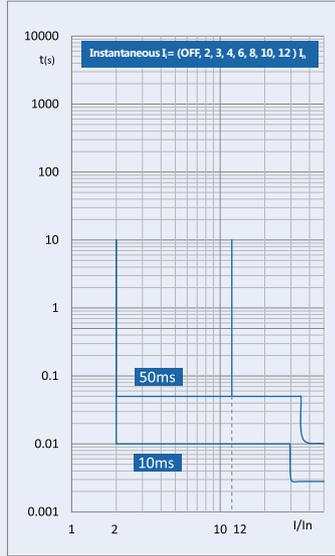
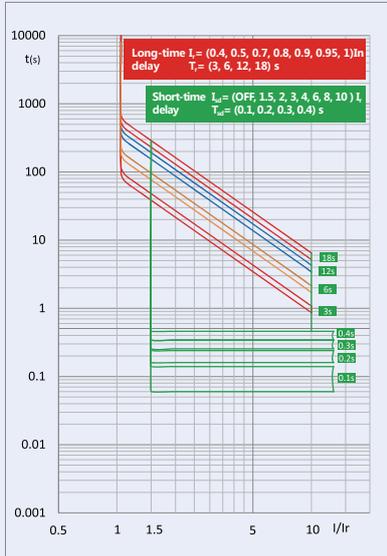


NM8N-800(500A~800A)

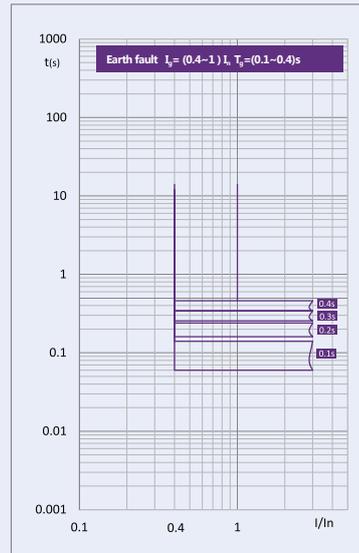
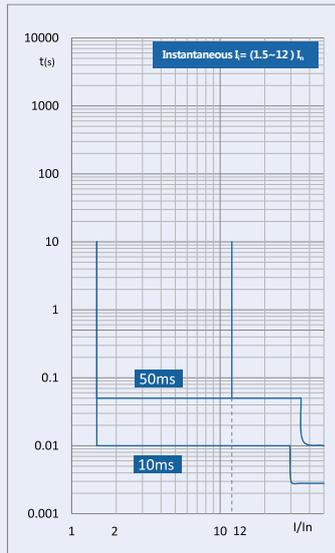


6.3 Electronic type for power distribution

EN Basic electronic type

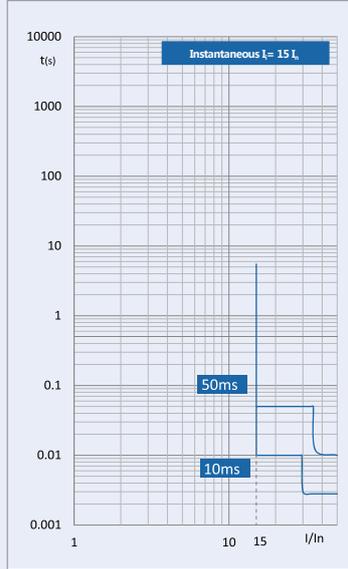
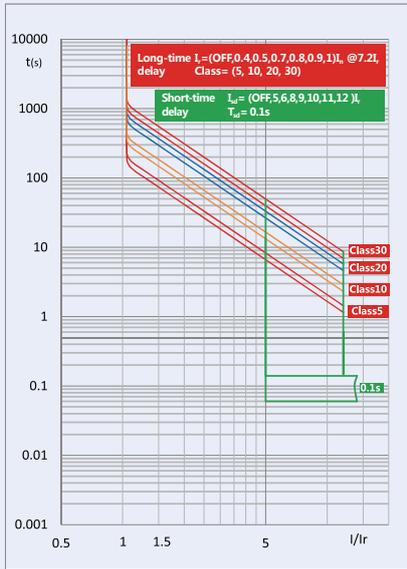


EM Standard electronic type

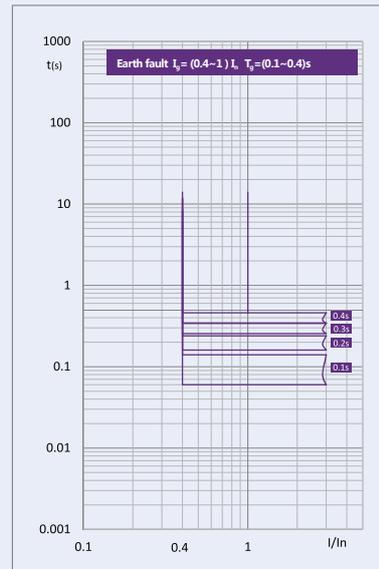
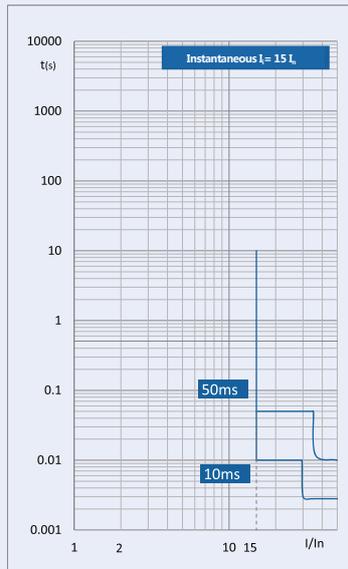
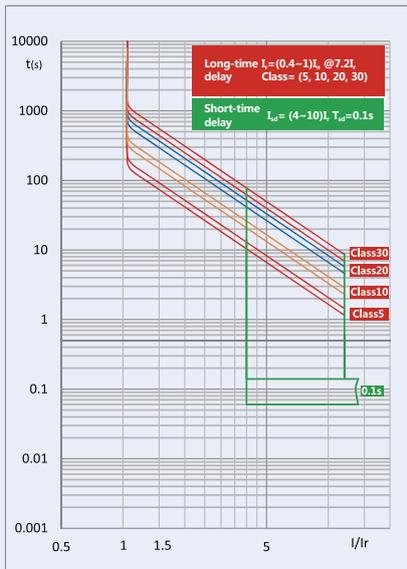


6.4 Electronic type for motor protection

ENM Basic electronic type

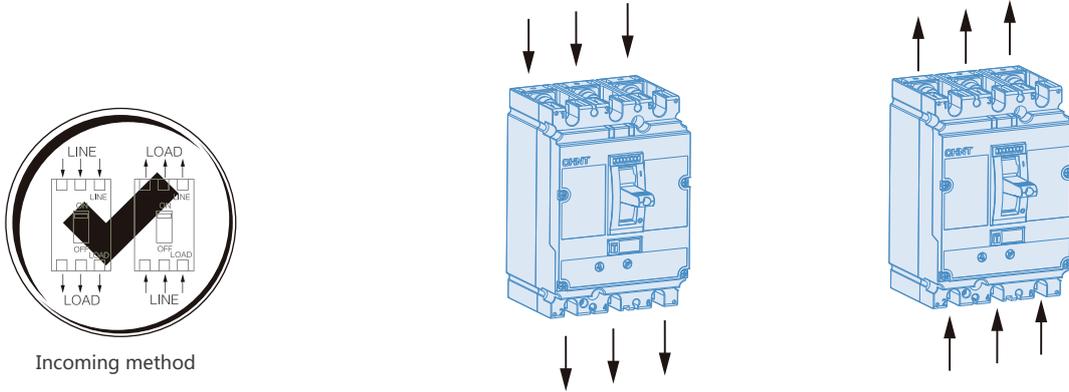


EMM Standard electronic type



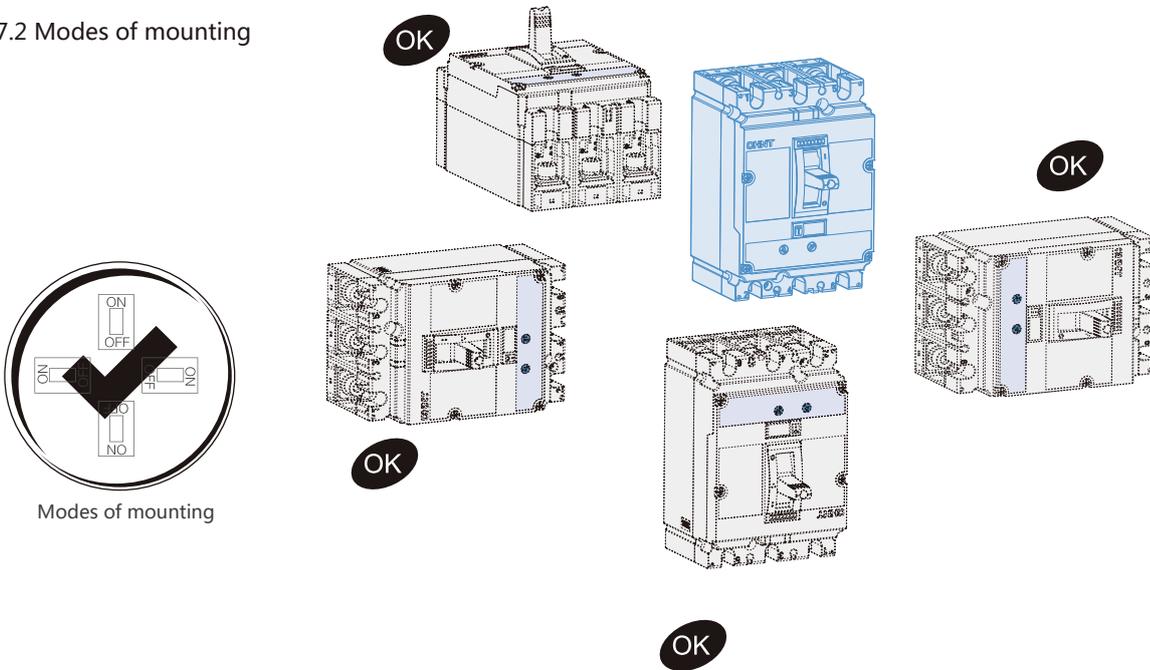
7. Mounting of circuit breaker

7.1 Modes of down-lead



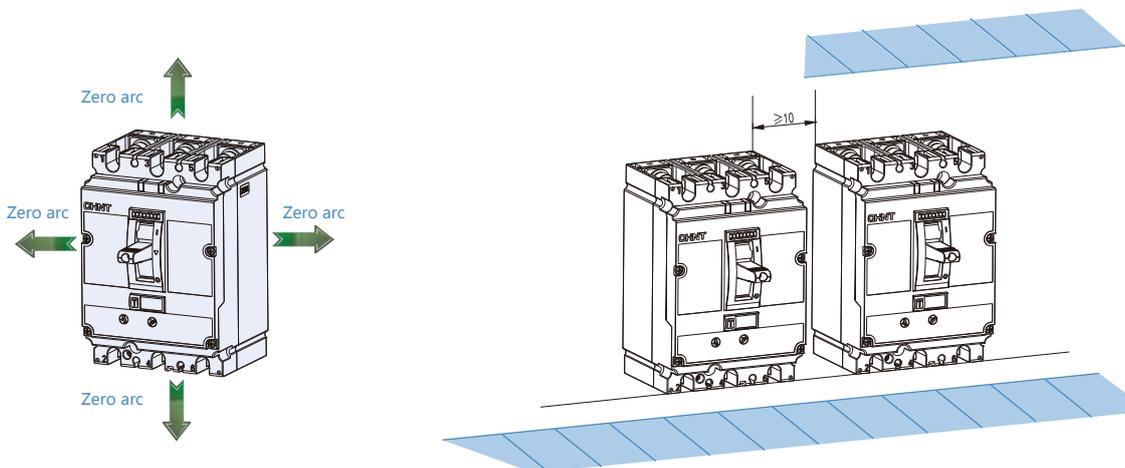
Incoming method

7.2 Modes of mounting

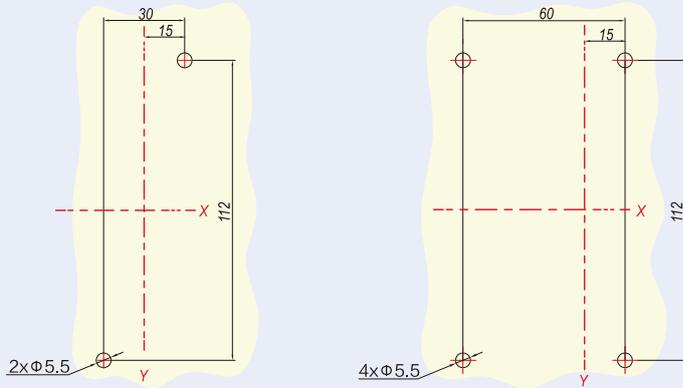
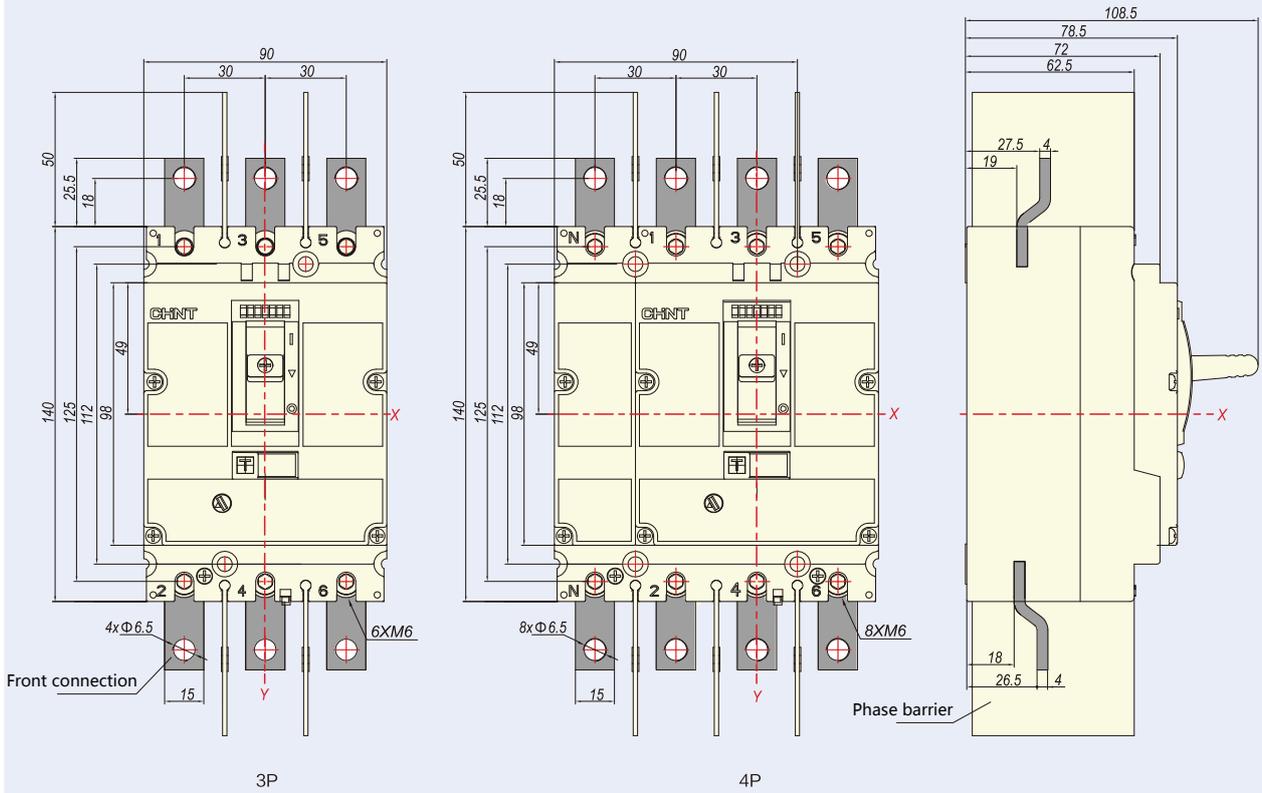


Modes of mounting

7.3 Safe distance

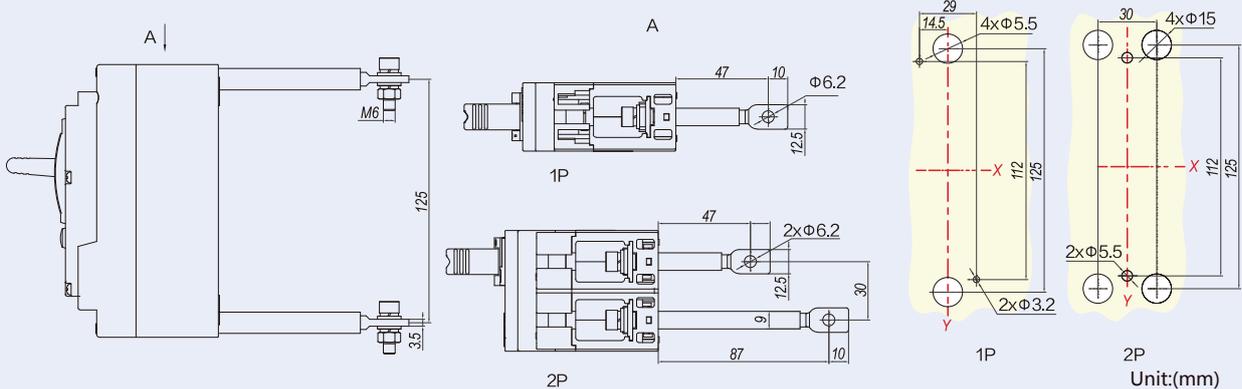


NM8N-125 Front connection (3P/4P)

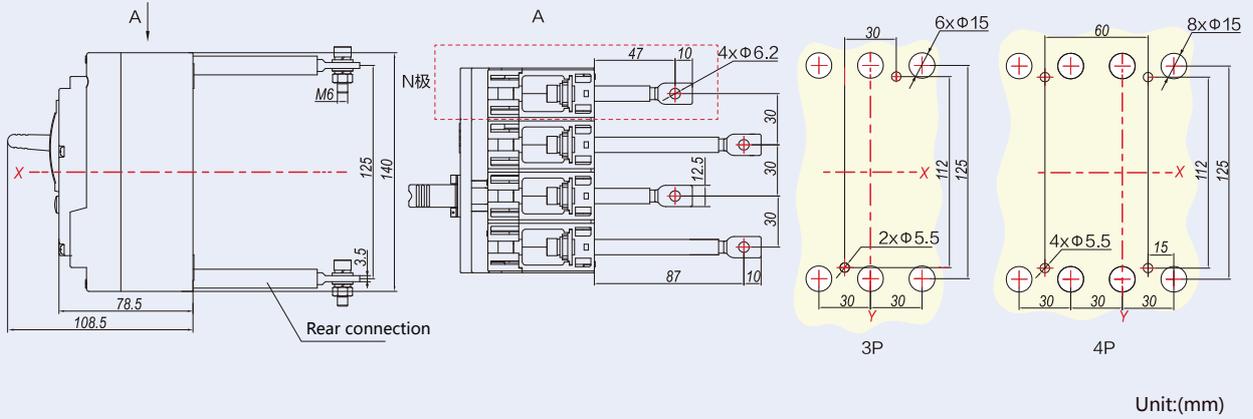


Unit:(mm)

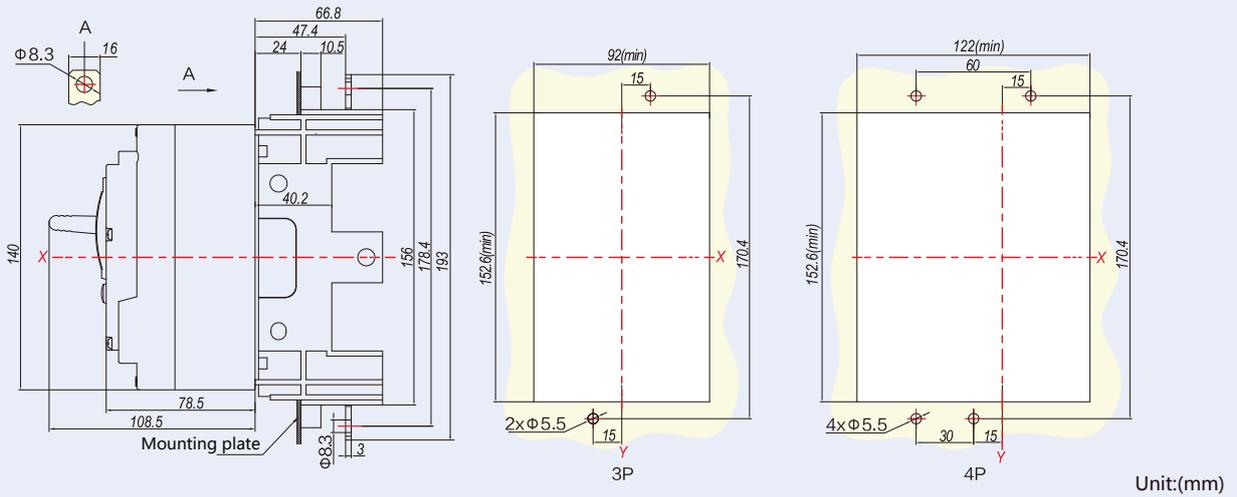
NM8N-125 Rear connection (1P/2P)



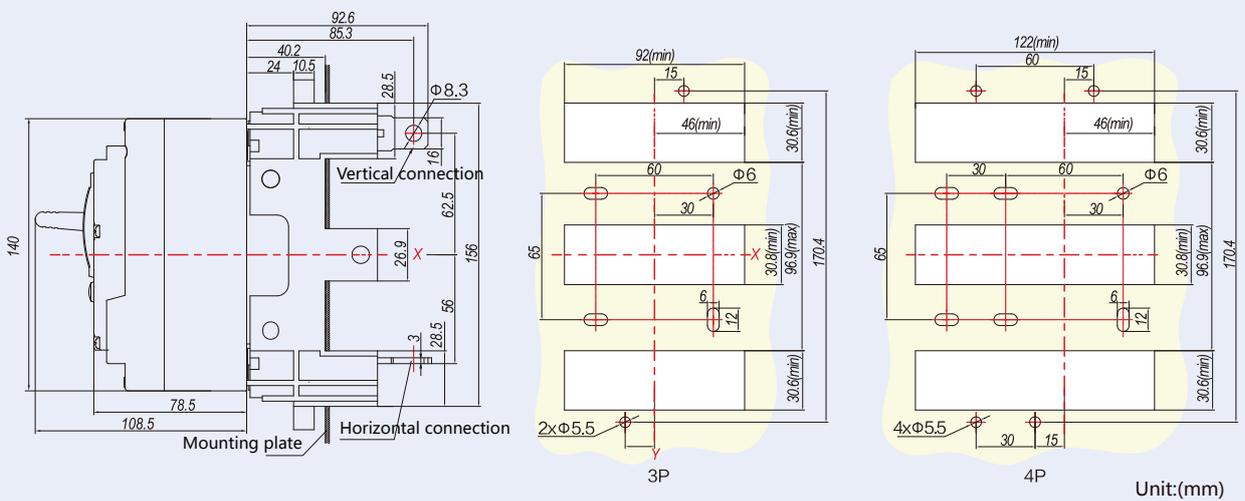
NM8N-125 Rear connection (3P/4P)



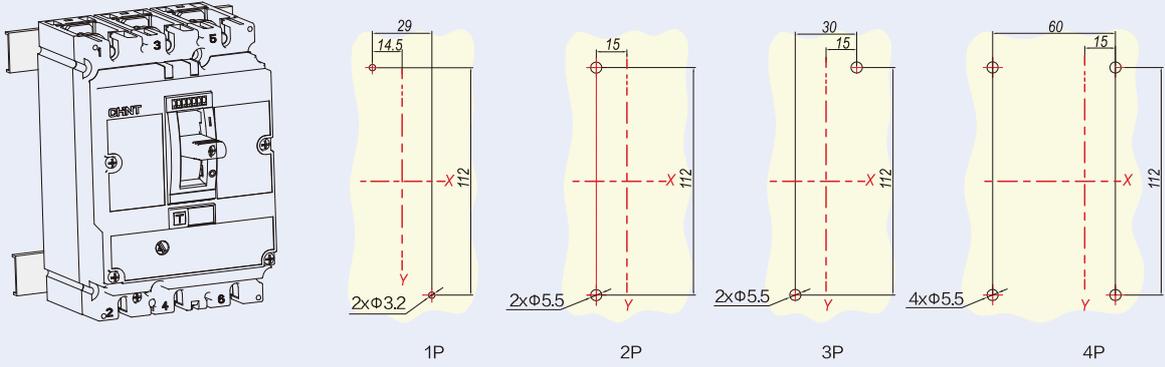
NM8N-125 Plug-in front connection



NM8N-125 Plug-in rear connection

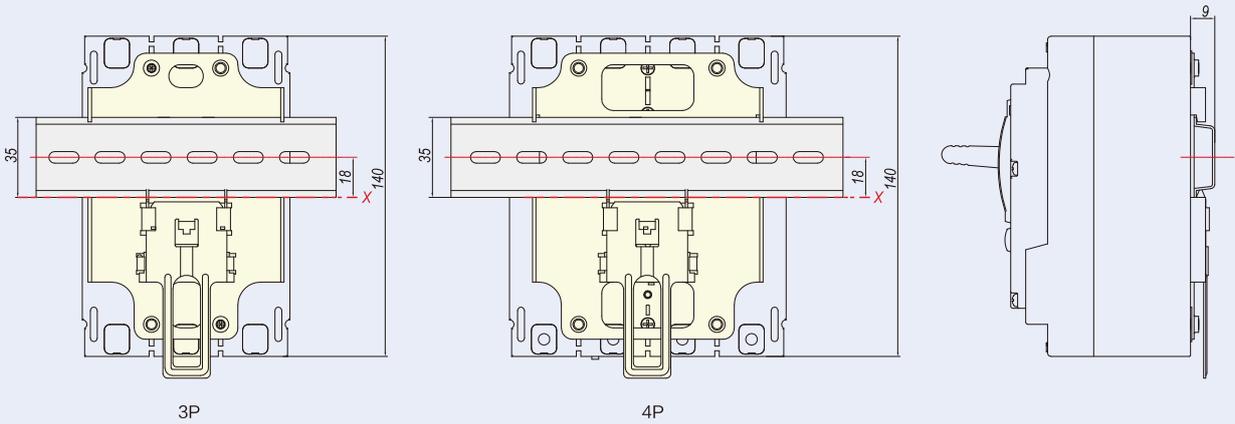


NM8N-125 DIN-rail mounting



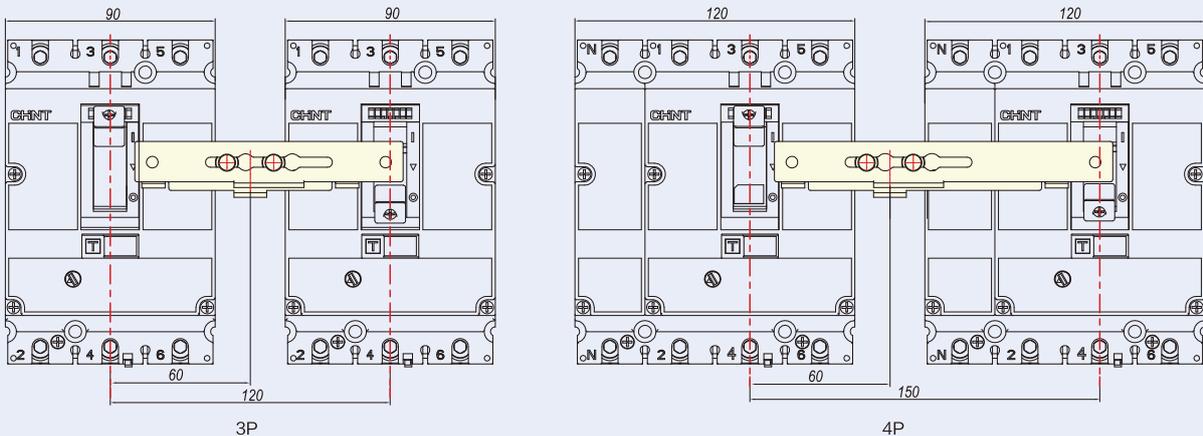
Unit:(mm)

NM8N-125 DIN-rail mounting (DIN-rail adapter is needed)



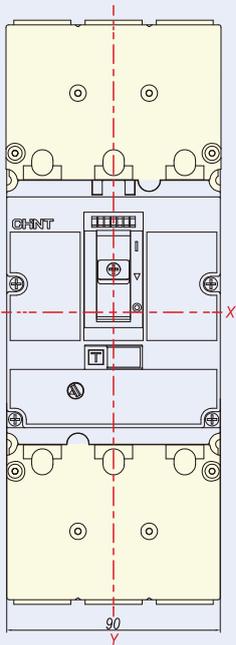
Unit:(mm)

NM8N-125 Mechanical interlock

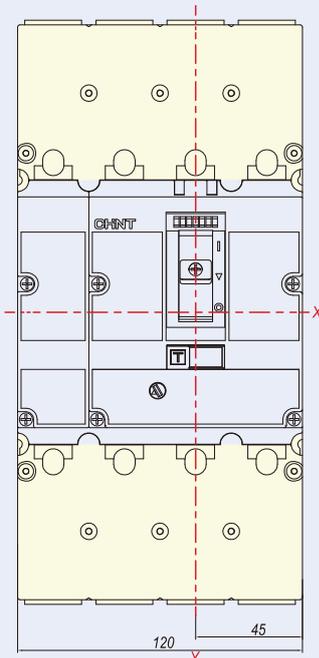


Unit:(mm)

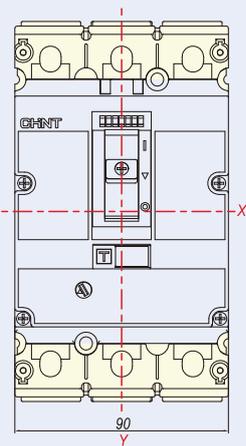
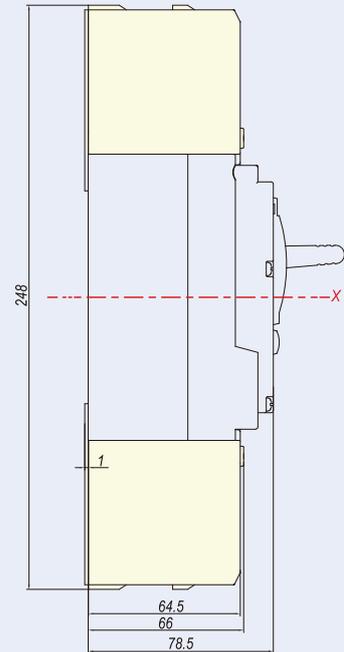
NM8N-125 Terminal cover



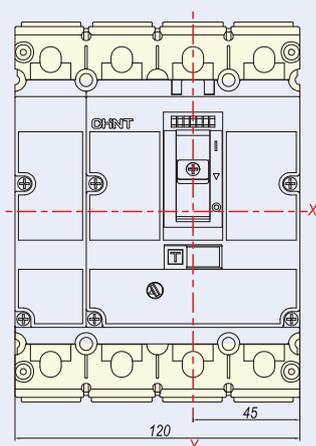
3P Long terminal cover



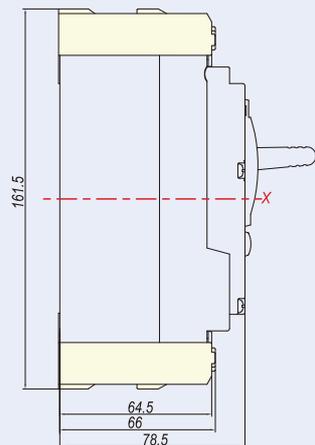
4P Long terminal cover



3P Short terminal cover



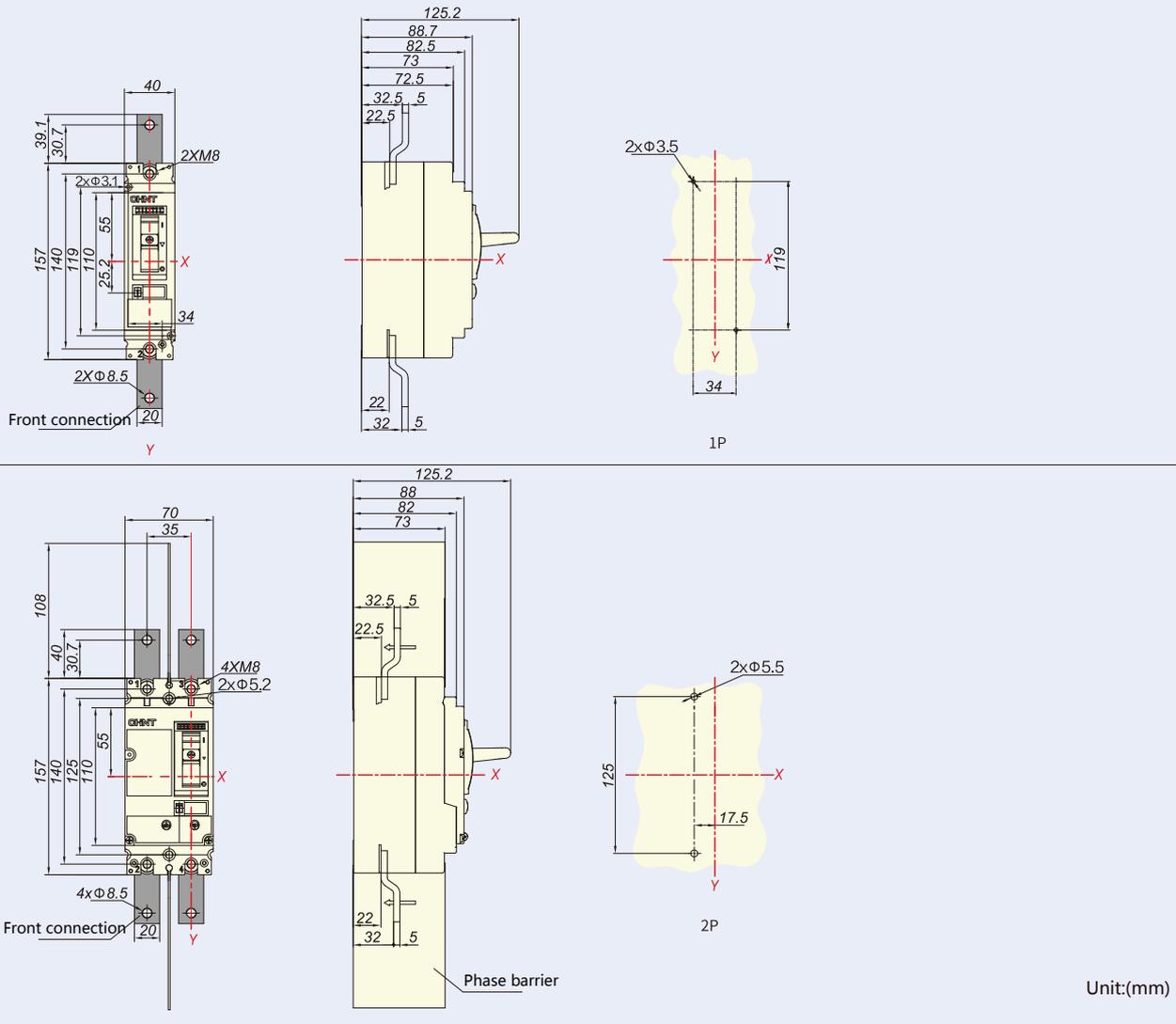
4P Short terminal cover



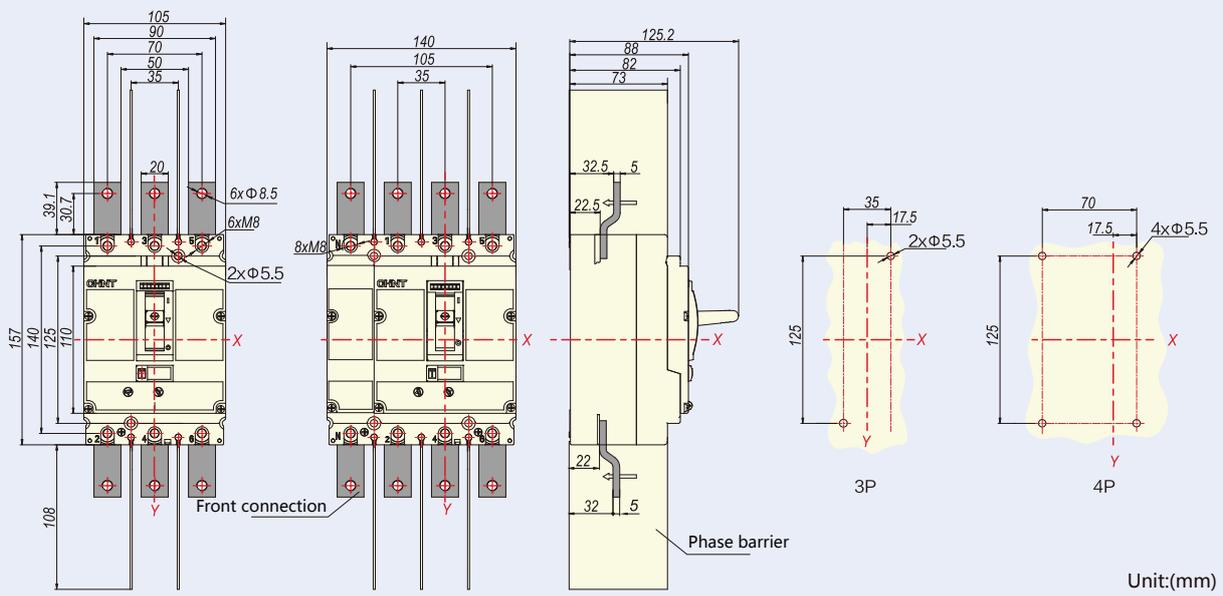
Unit:(mm)

8.2 NM8N-250

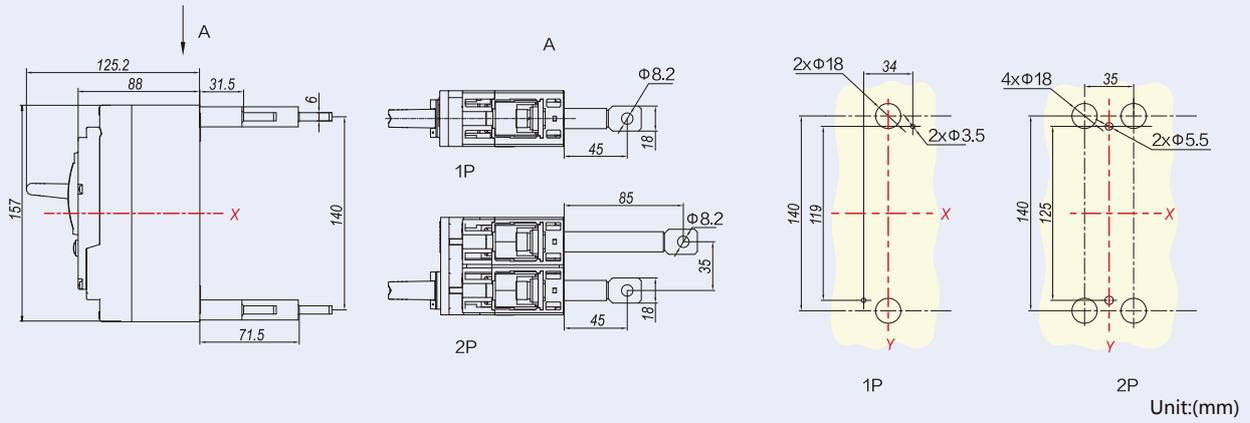
NM8N-250 Front connection (1P/2P)



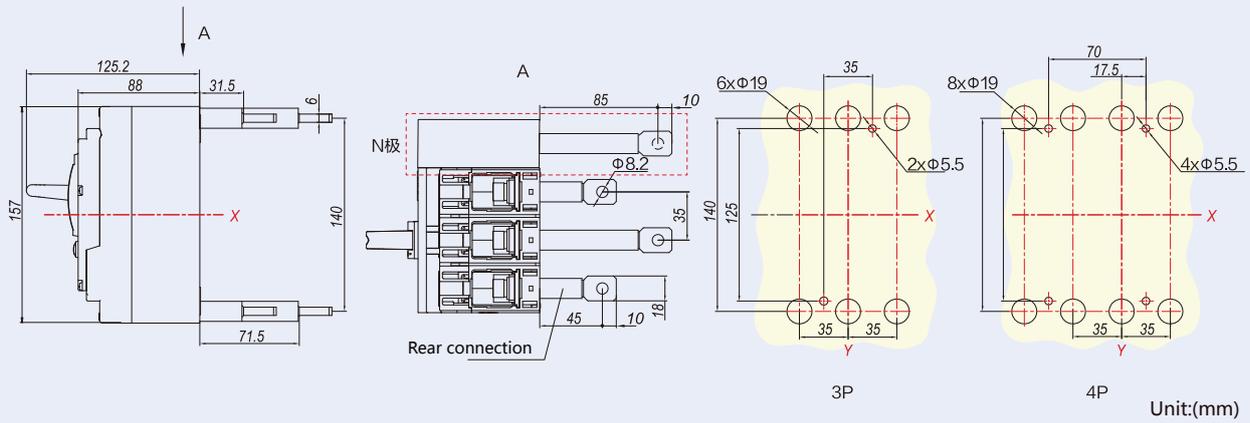
NM8N-250 Front connection (3P/4P)



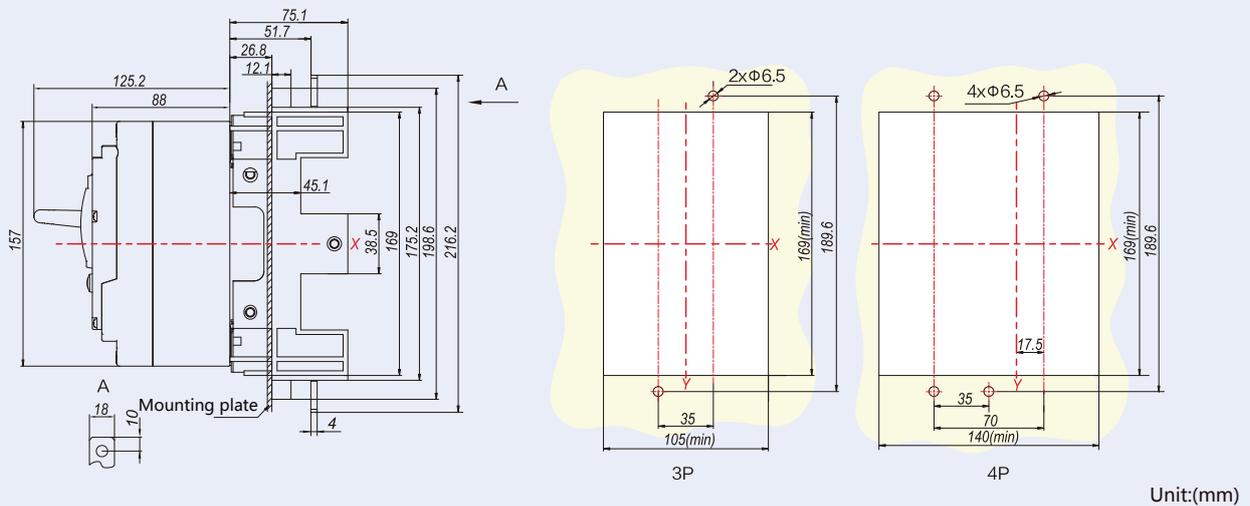
NM8N-250 Rear connection (1P/2P)



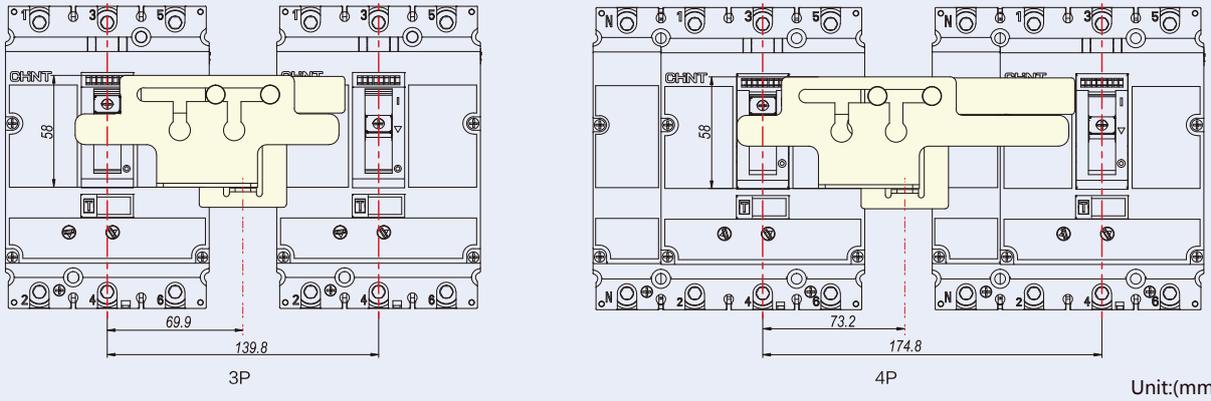
NM8N-250 Rear connection (3P/4P)



NM8N-250 Plug-in front connection

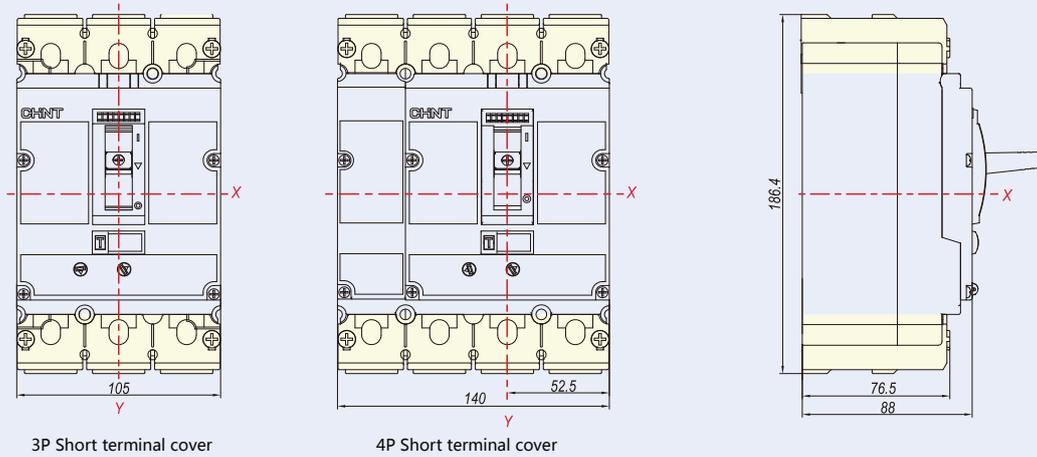


NM8N-250 Mechanical interlock



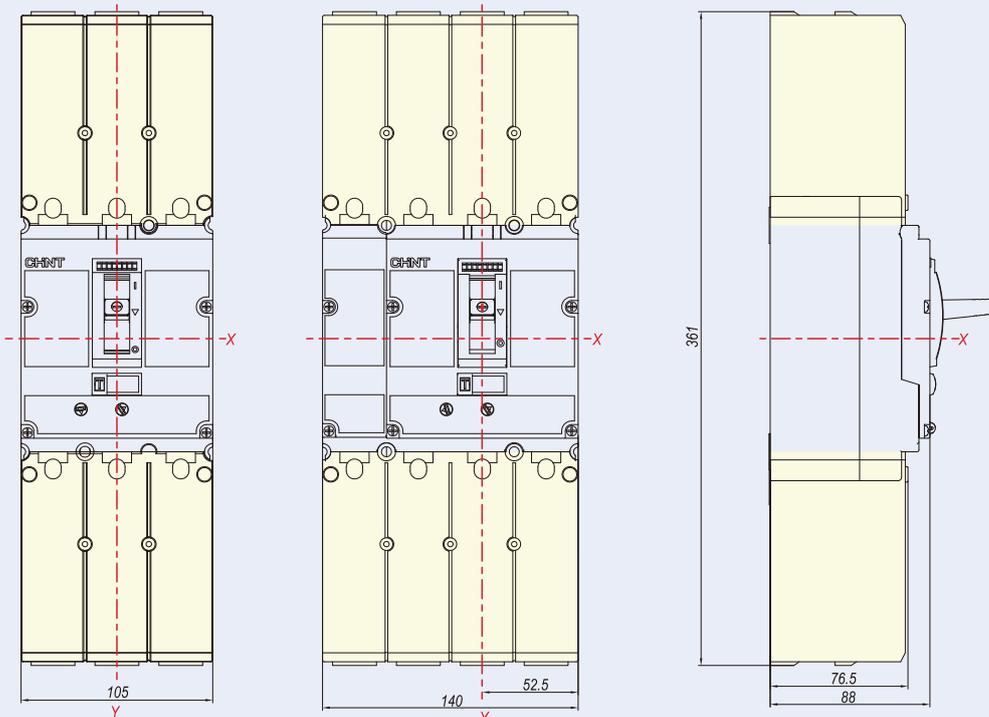
Unit:(mm)

NM8N-250 Terminal cover



3P Short terminal cover

4P Short terminal cover



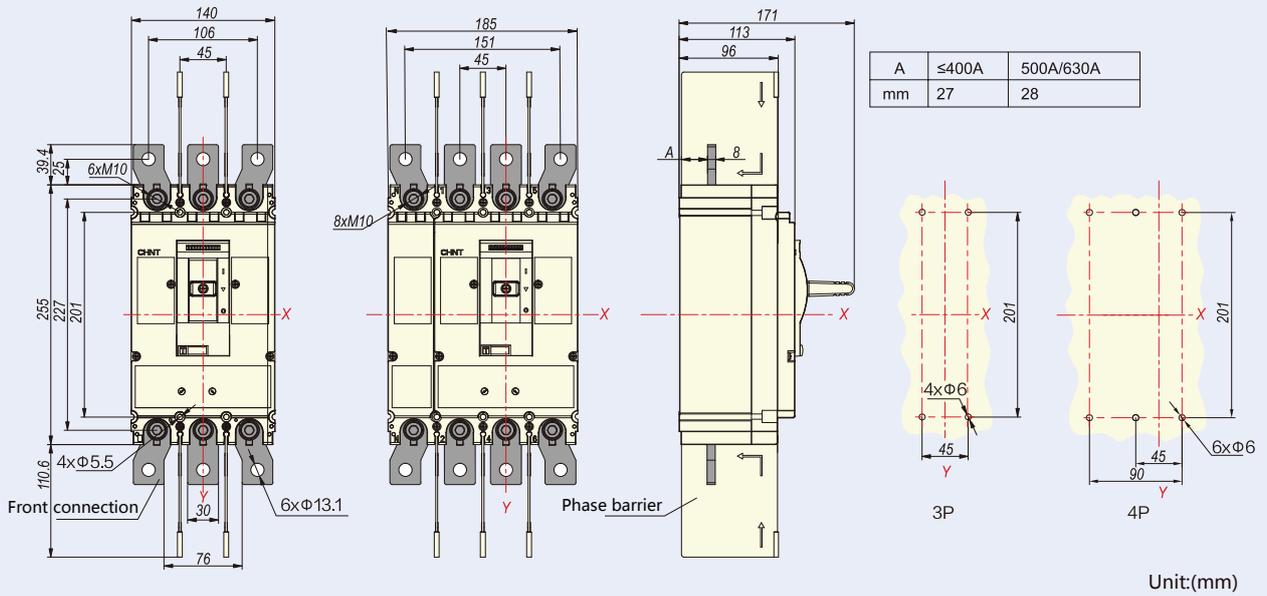
3P Long terminal cover

4P Long terminal cover

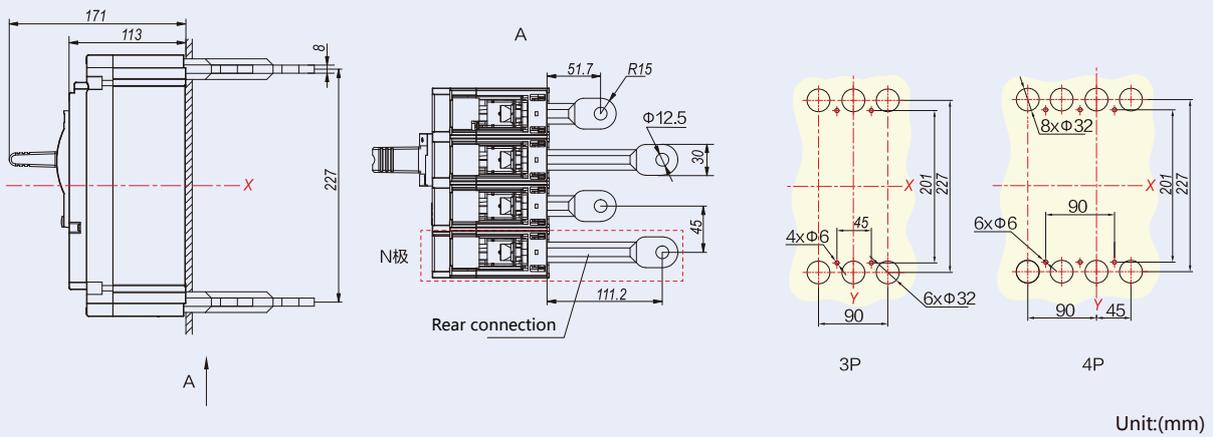
Unit:(mm)

8.3 NM8N-400/630

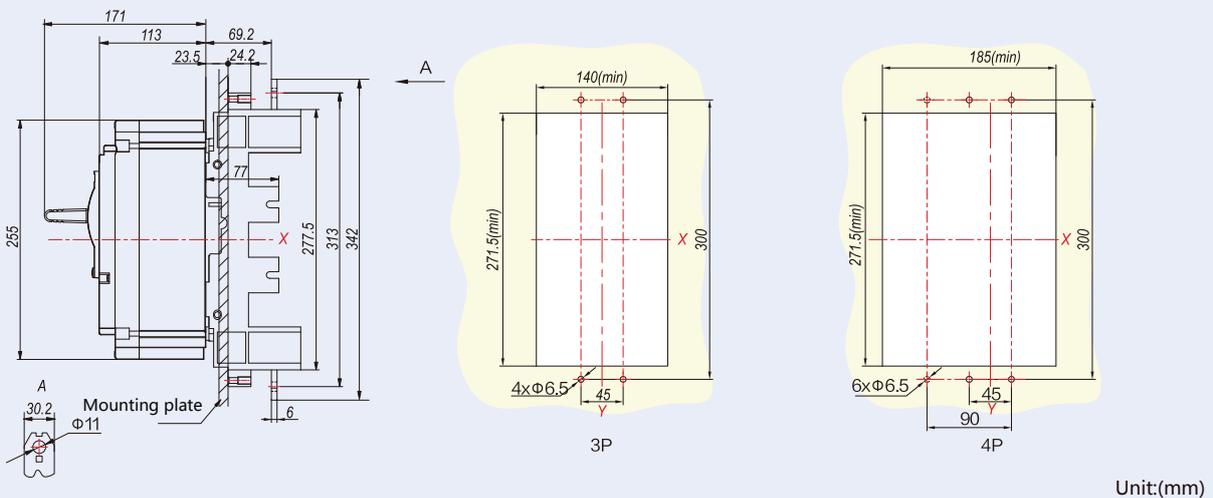
NM8N-400/630 Front connection



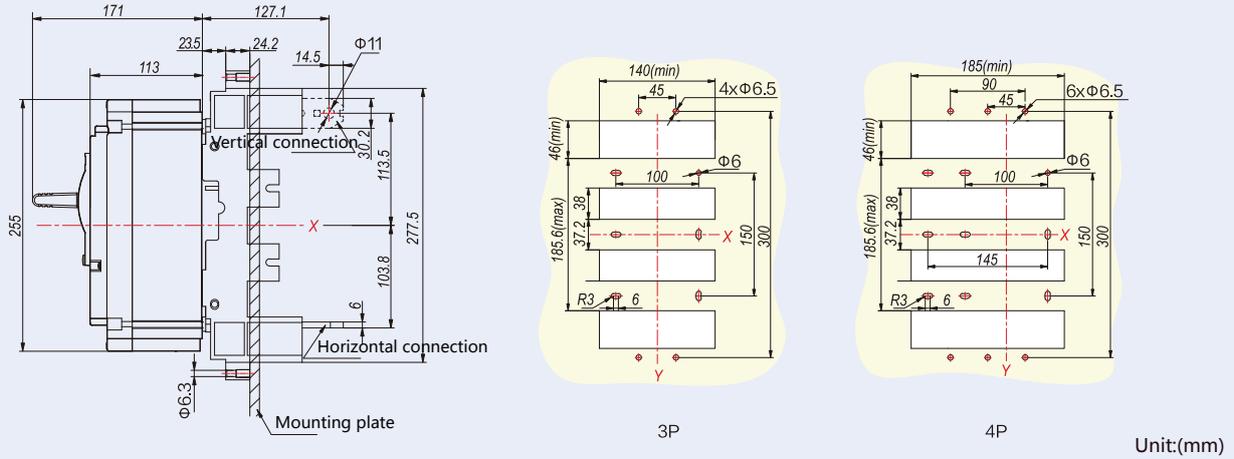
NM8N-400/630 Rear connection



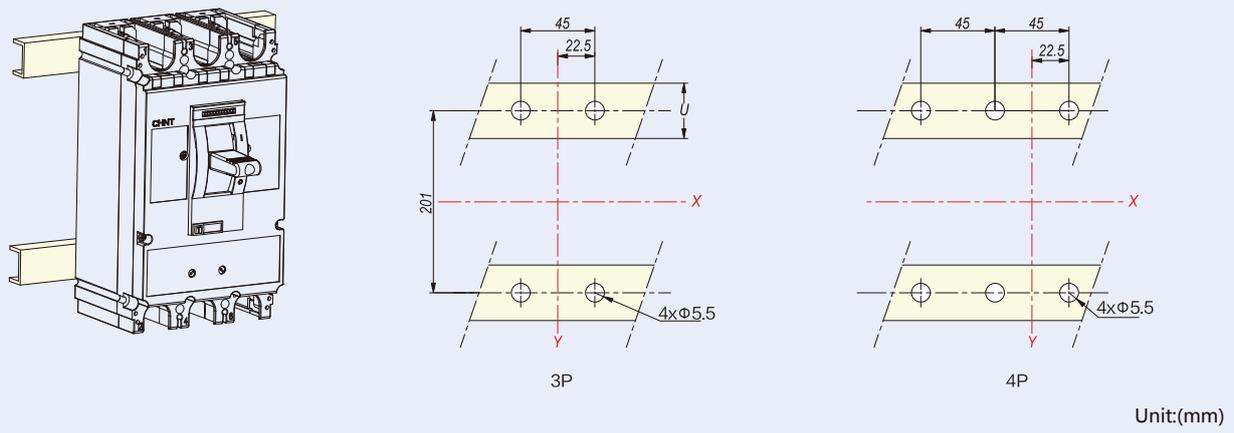
NM8N-400/630 Plug-in front connection



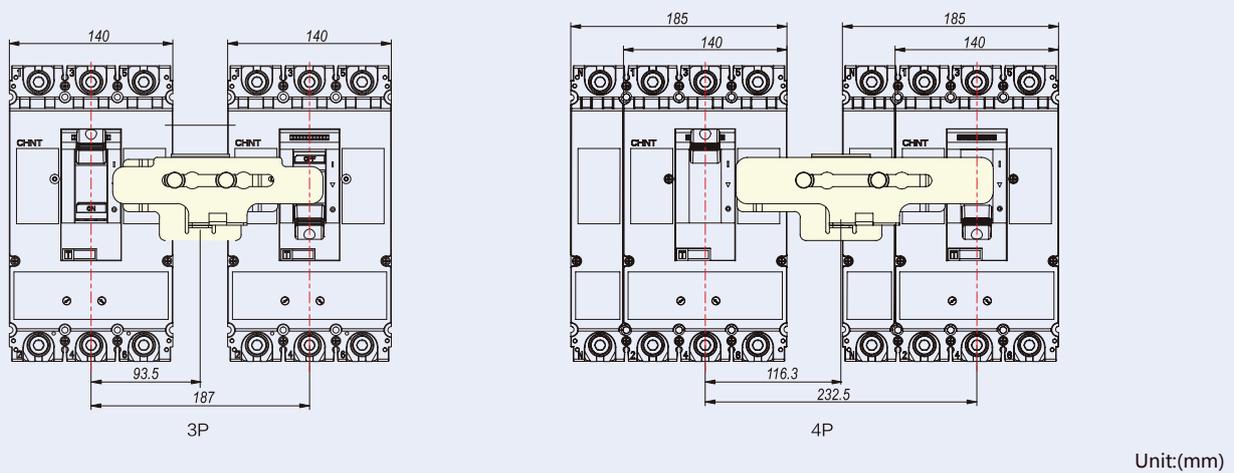
NM8N-400/630 Plug-in rear connection



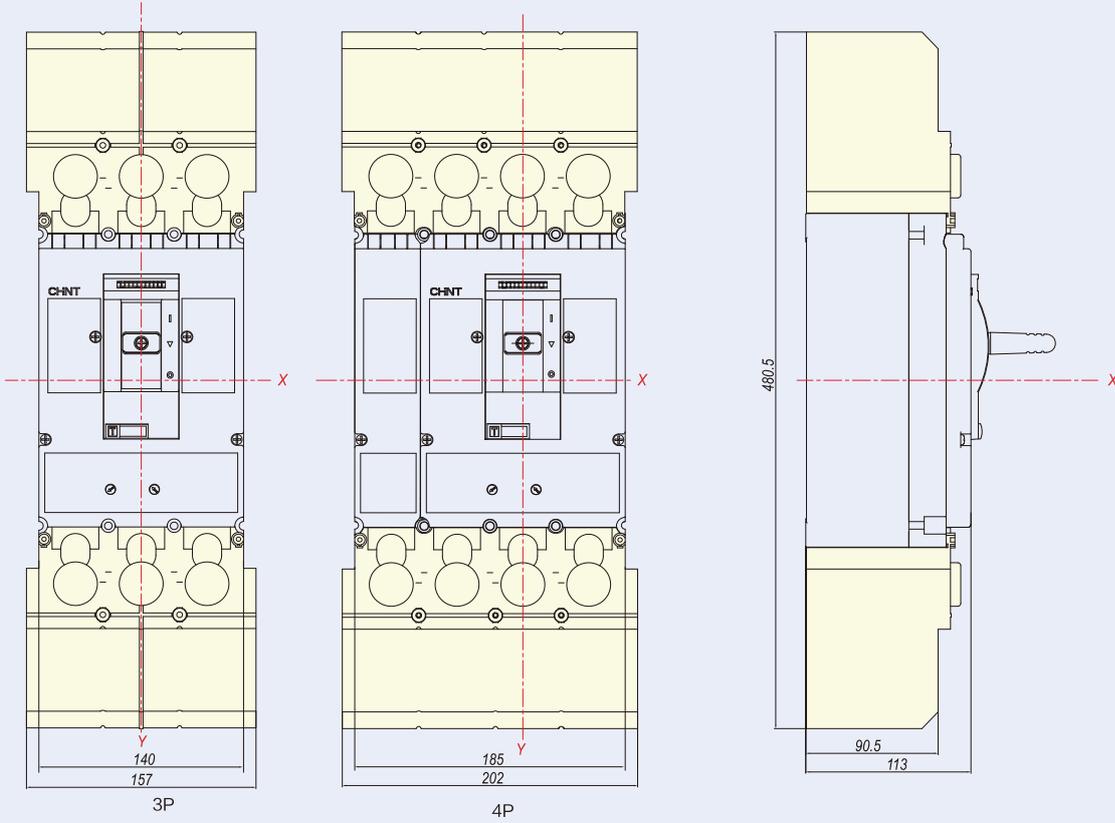
NM8N-400/630 DIN-rail mounting



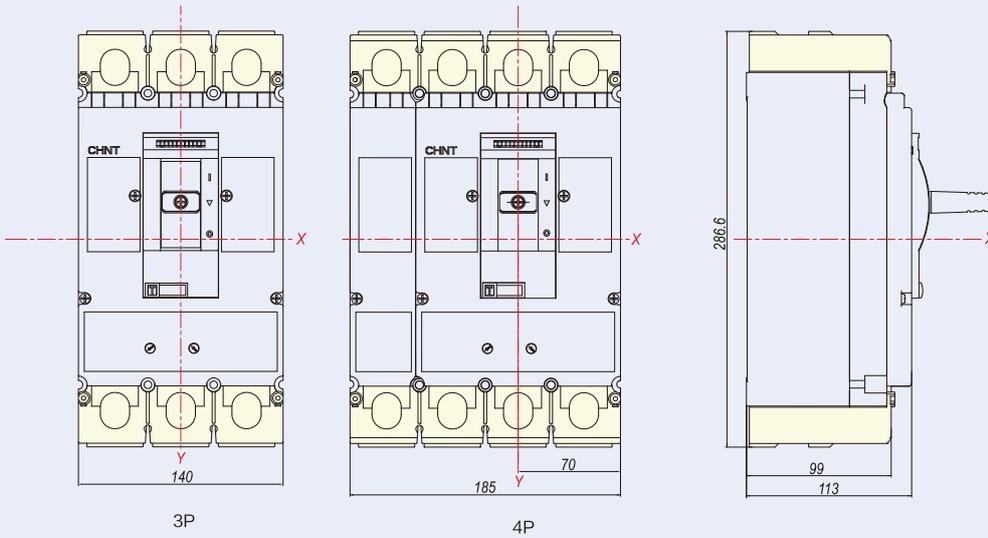
NM8N-400/630 Mechanical interlock



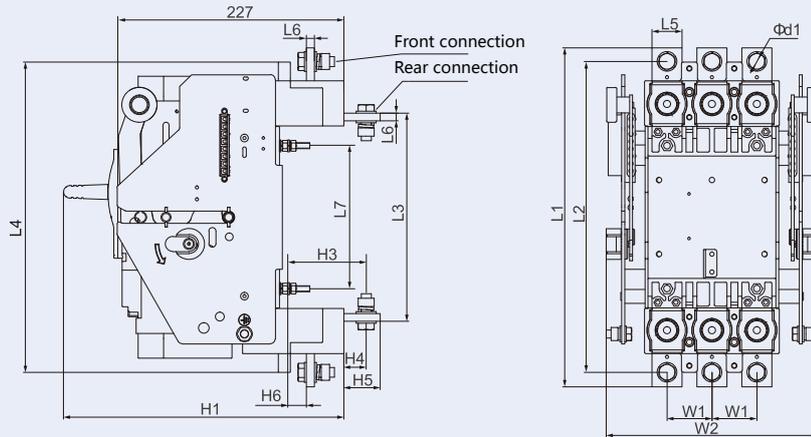
NM8N-400/630 Long terminal cover



NM8N-400/630 Short terminal cover



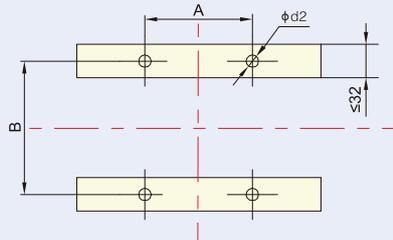
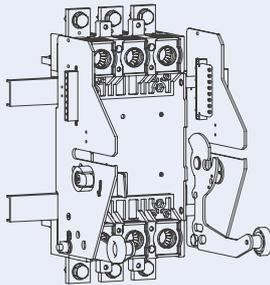
NM8N-400/630 Draw-out type



Unit:(mm)

Current	Pole	Dimension														
		L1	L2	L3	L4	L5	L6	L7	H1	H3	H4	H5	H6	W1	W2	Φd1
In≤400A	3P	342	313	207	312	30	6	143	280	77	21	35.5	17.5	45	214	11
	4P	342	313	207	312	30	6	143	280	77	21	35.5	17.5	45	259	11
In>400A	3P	342.5	314.5	210.5	313.5	30	8	143	280	77.5	21.5	35.5	17.5	45	214	11
	4P	342.5	314.5	210.5	313.5	30	8	143	280	77.5	21.5	35.5	17.5	45	259	11

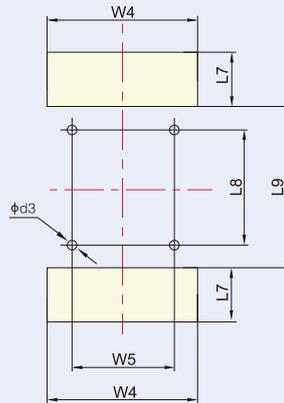
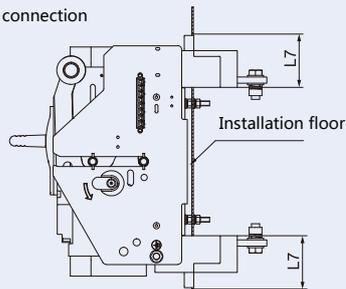
DIN-rail mounting



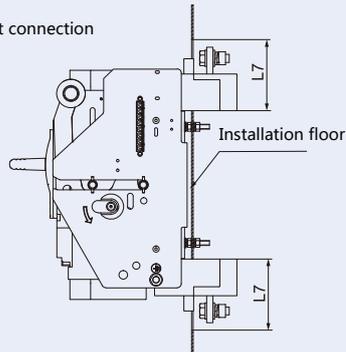
Pole	Installation dimension		
	A	B	Φd2
3P	90	143	6.5
4P	135	143	6.5

DIN-rail mounting

Rear connection



Front connection

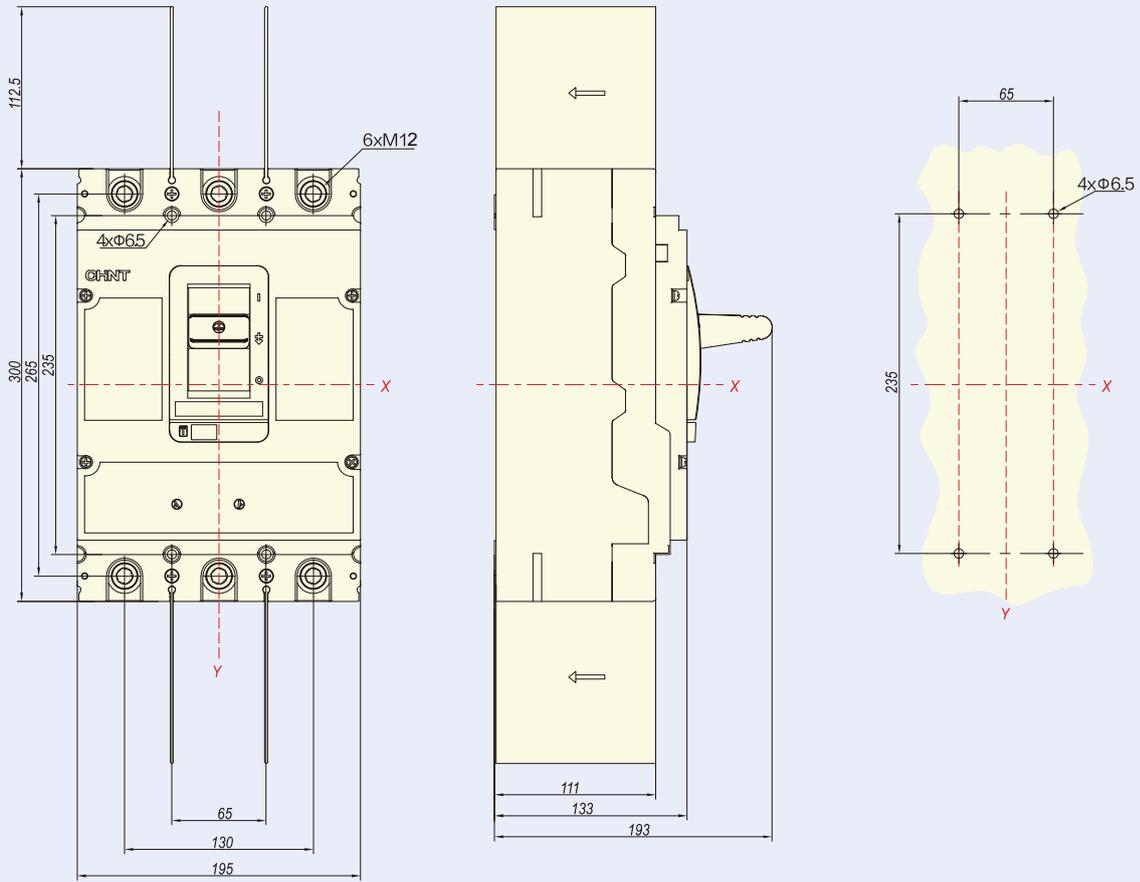


Current	Installation dimension of rear plate connection						
	L8	W5	L9	L7	W4	Φd3	Pole
In≤400A	143	90	181	70	138	7	3P
	143	135	181	70	182	7	4P
In>400A	144.5	90	182.5	70	138	7	3P
	144.5	135	182.5	70	182	7	4P

L7=90 when it is front connection, the rest of dimensions are the same with rear connection

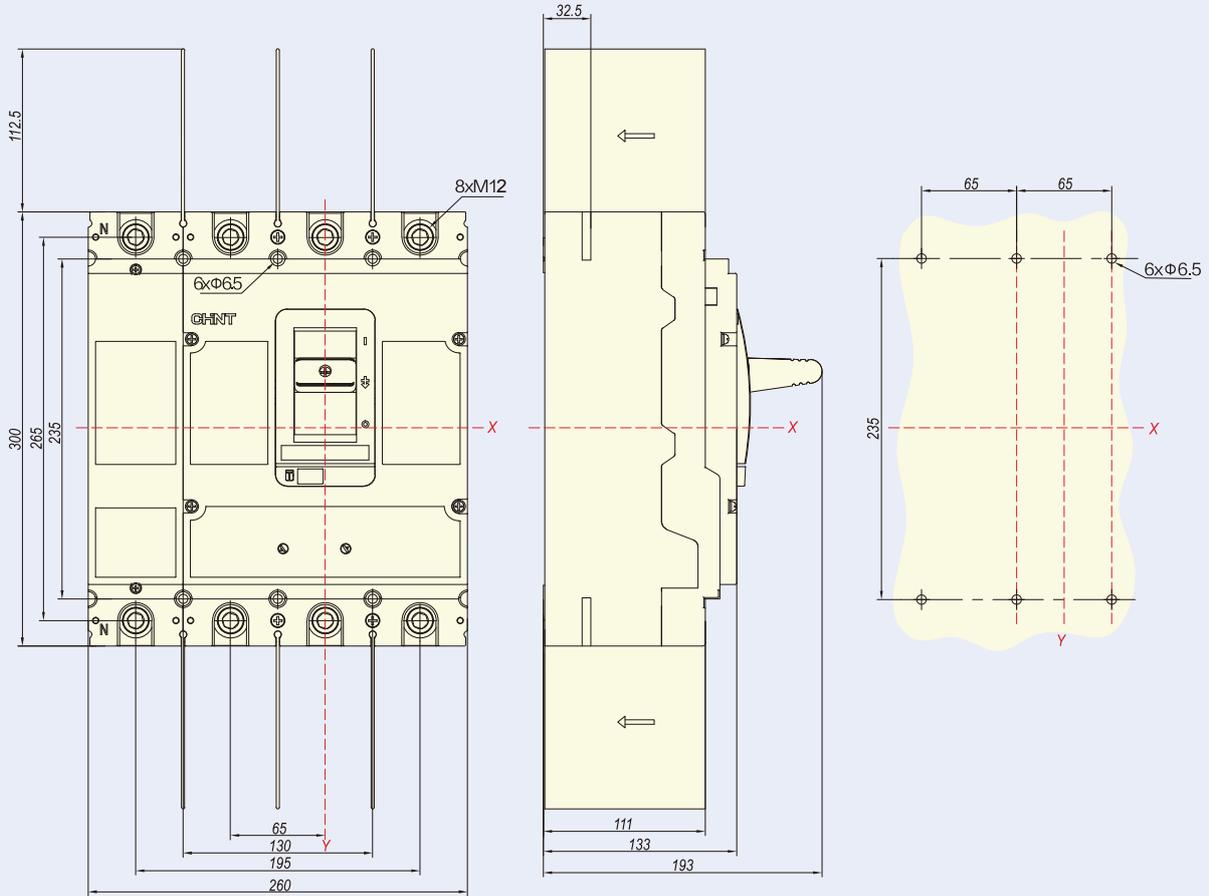
8.4 NM8N-800

NM8N-800 Front connection (3P)



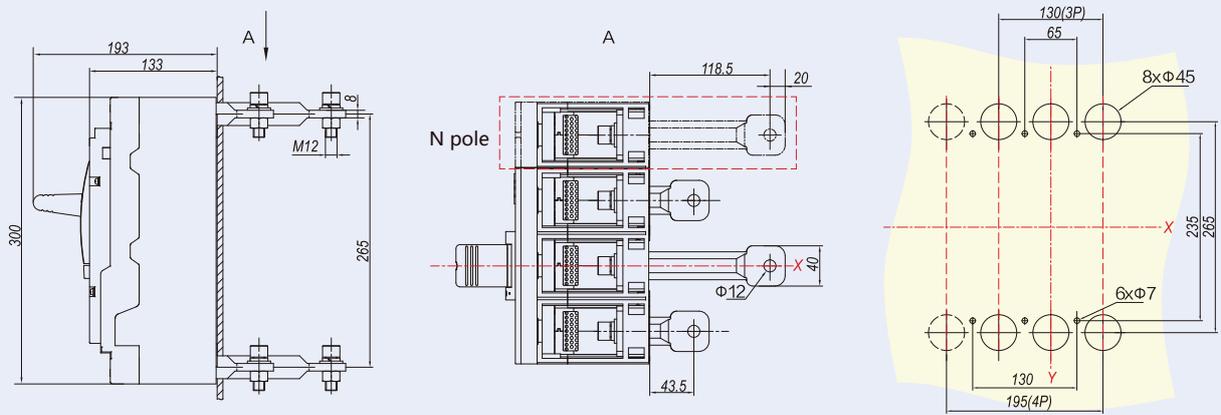
Unit:(mm)

NM8N-800 Front connection (4P)



Unit:(mm)

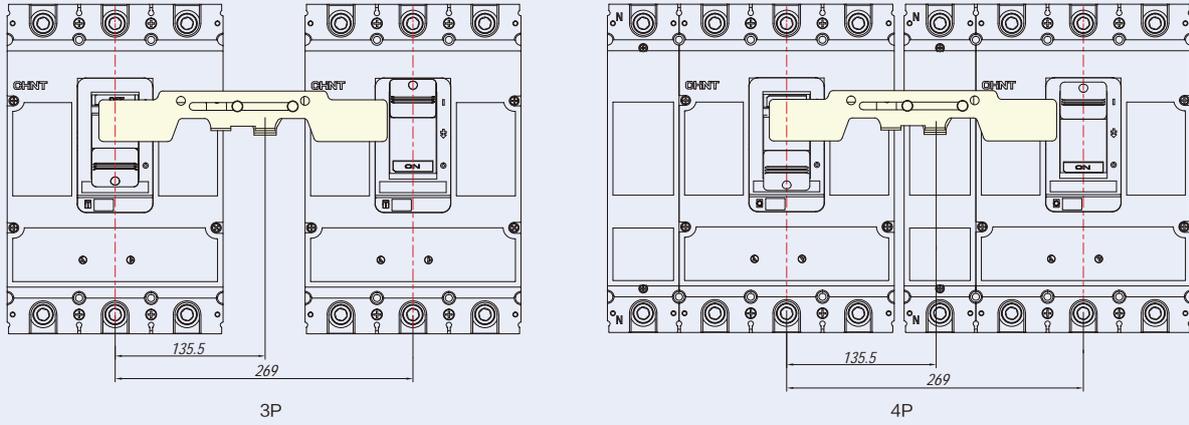
NM8N-800 Rear connection



3P/4P

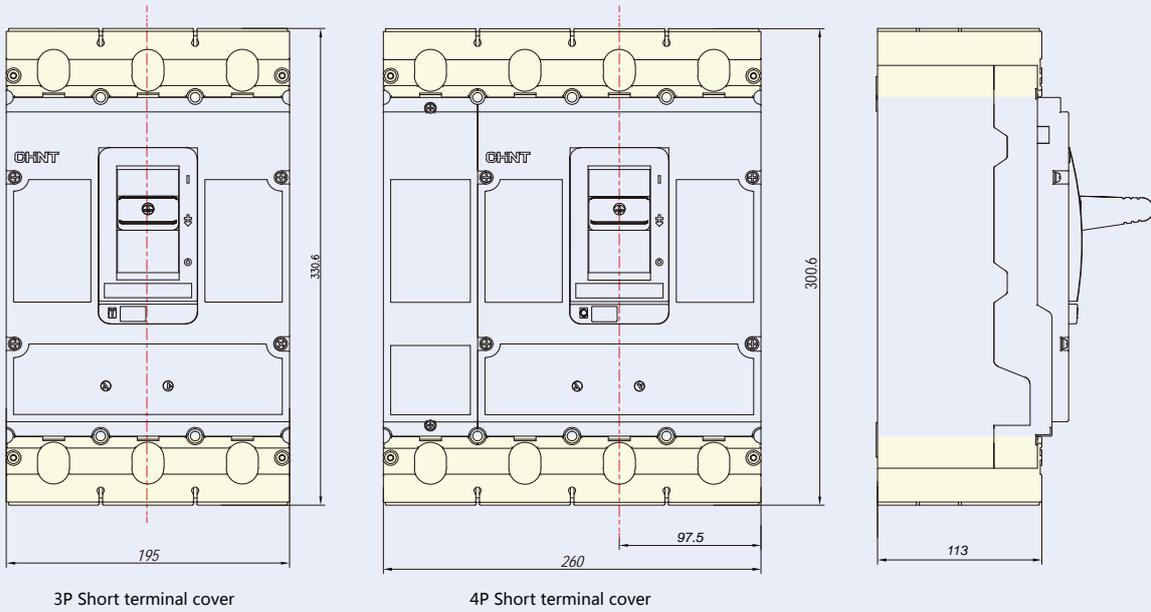
Unit:(mm)

NM8N-800 Mechanical interlock



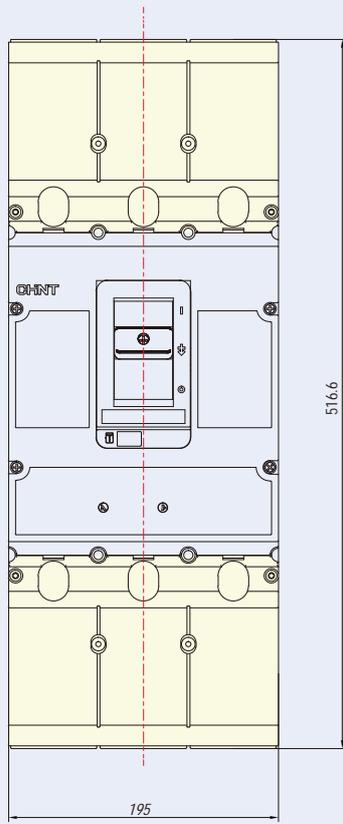
Unit:(mm)

NM8N-800 Short terminal cover

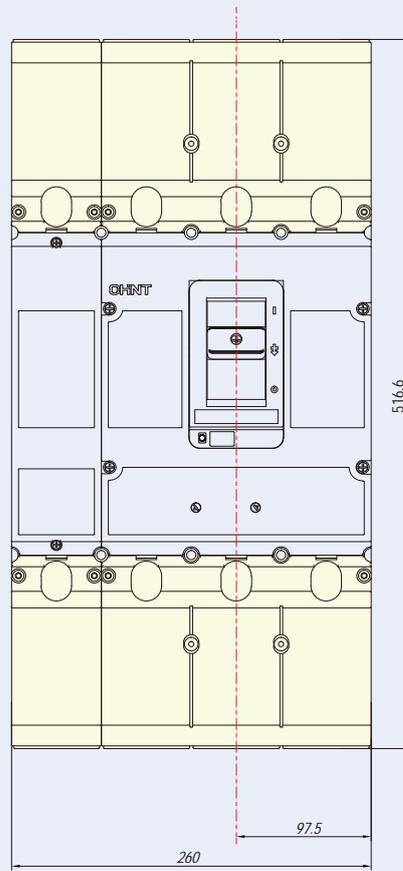


Unit:(mm)

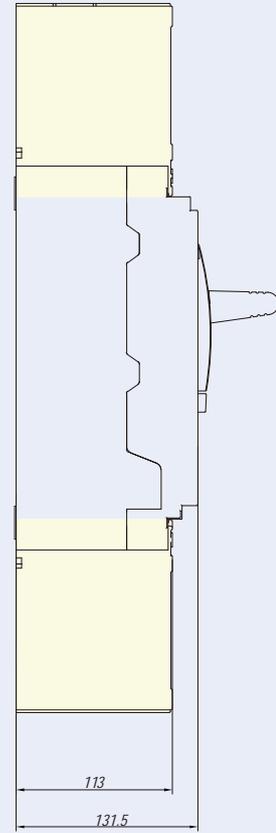
NM8N-800 Long terminal cover



3P Long terminal cover

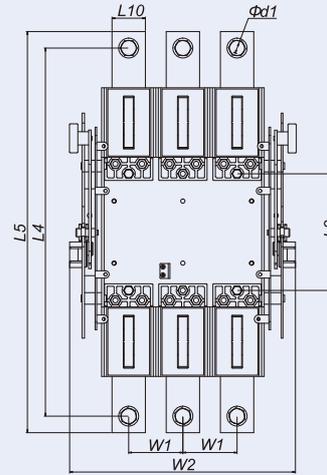
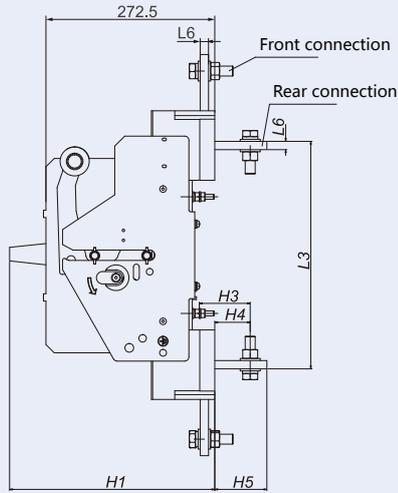


4P Long terminal cover



Unit:(mm)

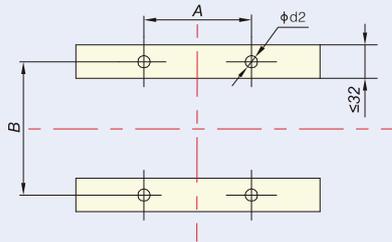
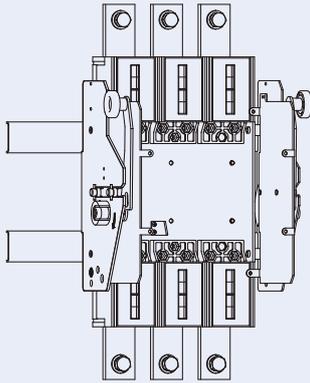
NM8N-800 Draw-out type



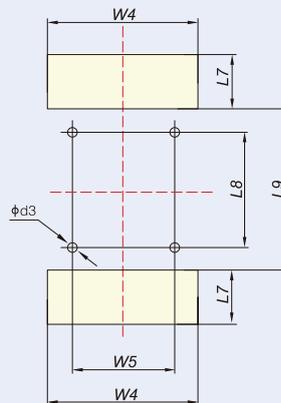
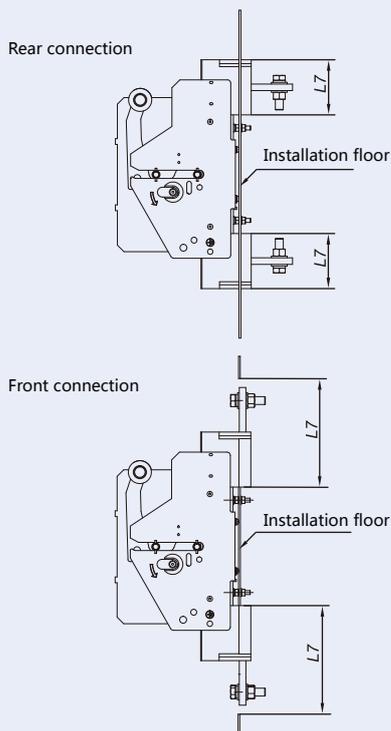
Unit:(mm)

Pole	Dimension													
	L3	L4	L5	L6	L8	L10	H1	H3	H4	H5	W1	W2	Φd1	
3P	275	445	485	10	141	40	270	61	42.5	62.5	65	281	13	
4P	275	445	485	10	141	40	270	61	42.5	62.5	65	346	13	

DIN-rail mounting



Pole	Installation dimension		
	A	B	Φd2
3P	130	141	7
4P	195	141	7

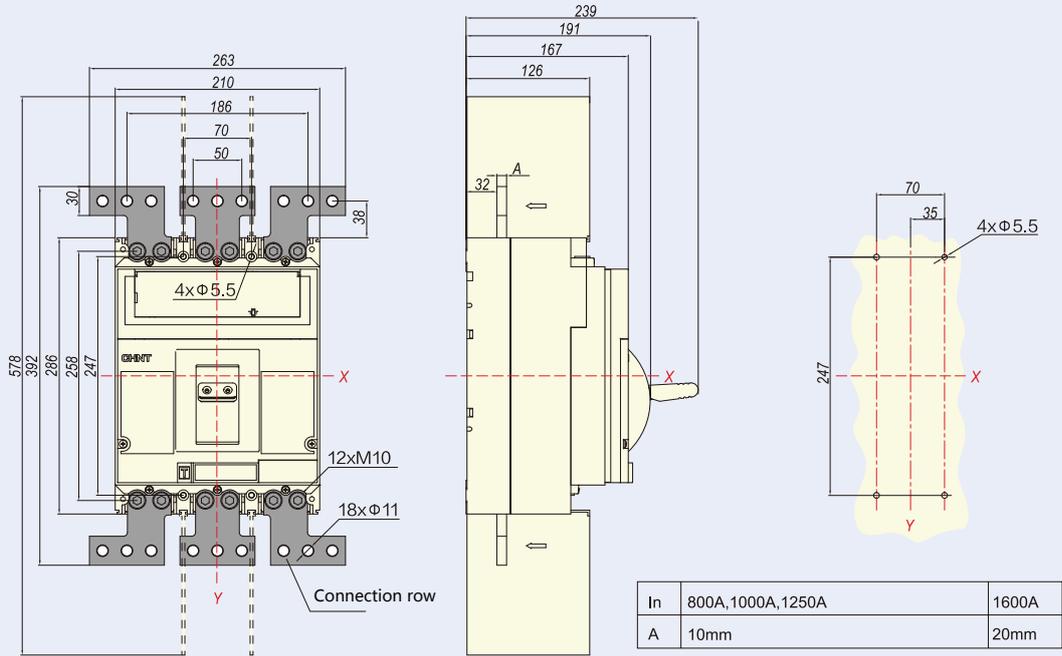


Pole	Installation dimension					
	L8	W5	L9	L7	W4	Φd3
3P	141	130	177	95	200	7
4P	141	195	177	95	265	7

L7=200 when it is front connection, the rest of dimensions are the same with rear connection

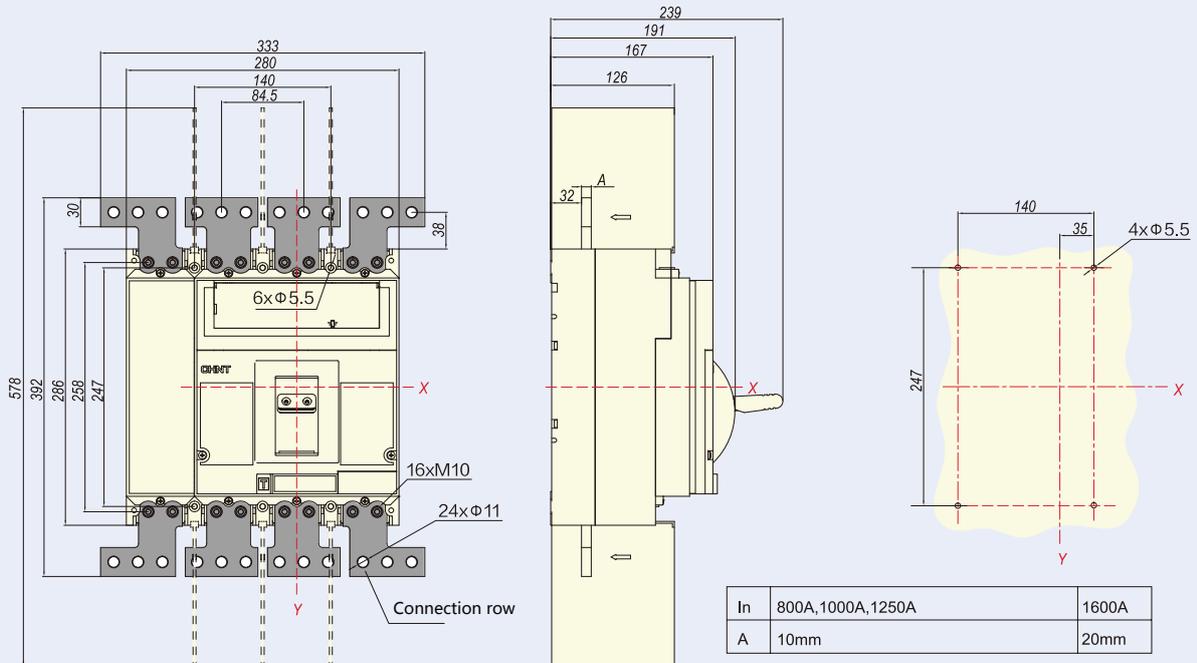
8.5 NM8N-1600

NM8N-1600 Front connection (Manual type 3P)



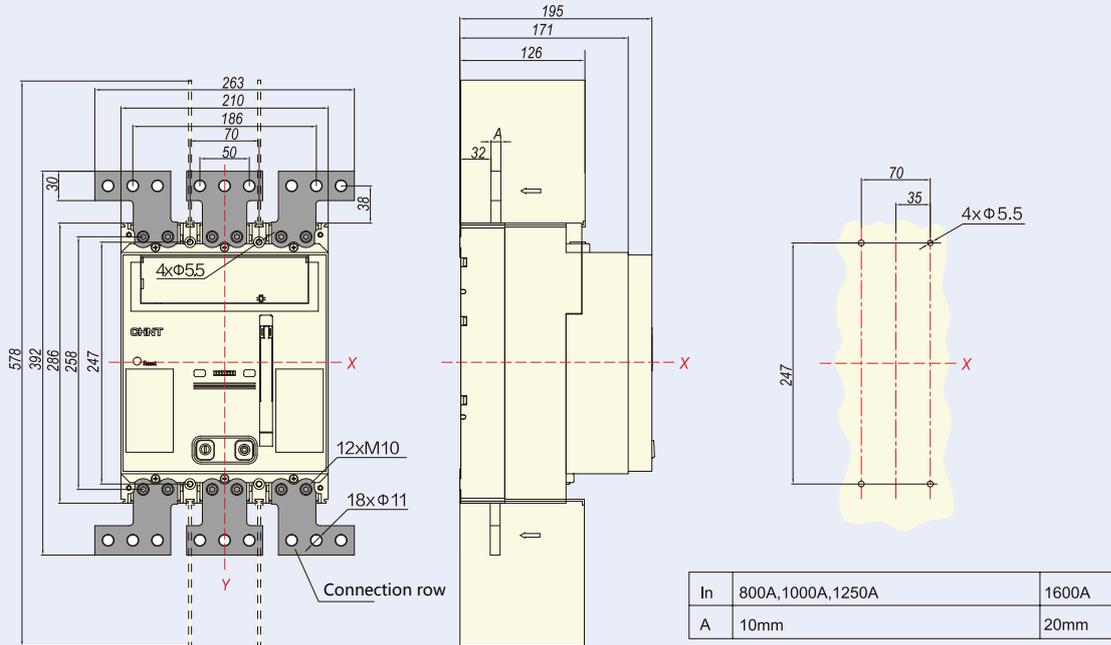
Unit:(mm)

NM8N-1600 Front connection (Manual type 4P)



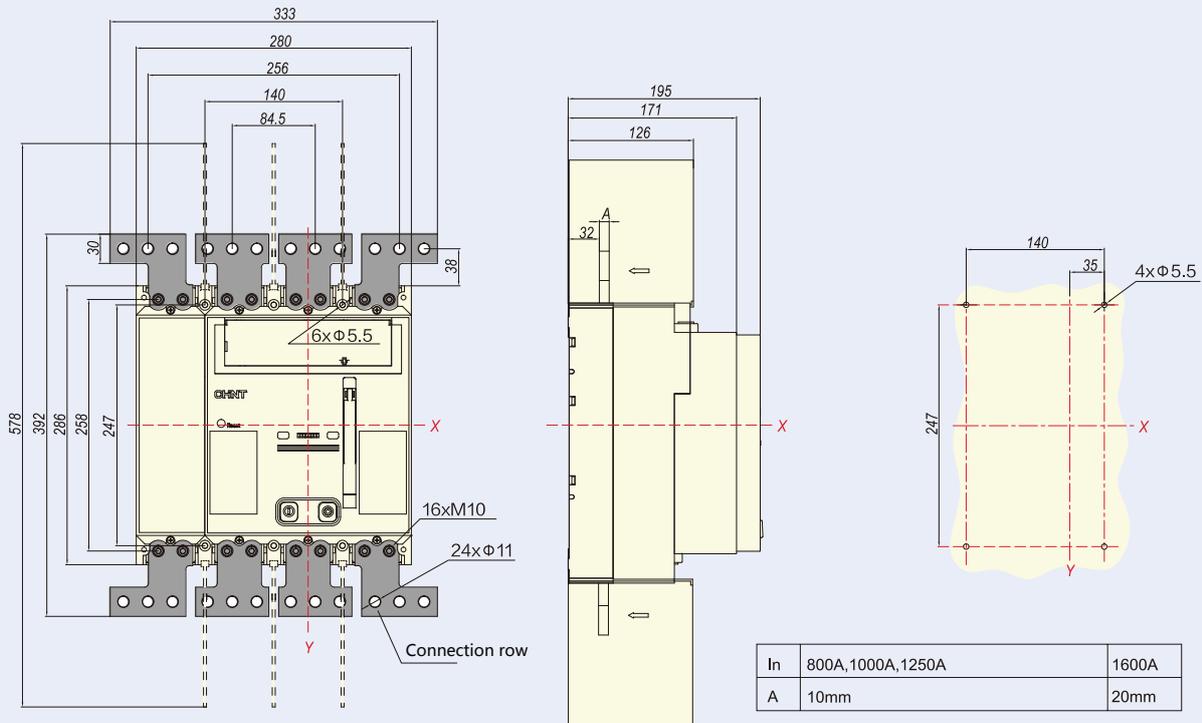
Unit:(mm)

NM8N-1600 Front connection (Motor type 3P)



Unit:(mm)

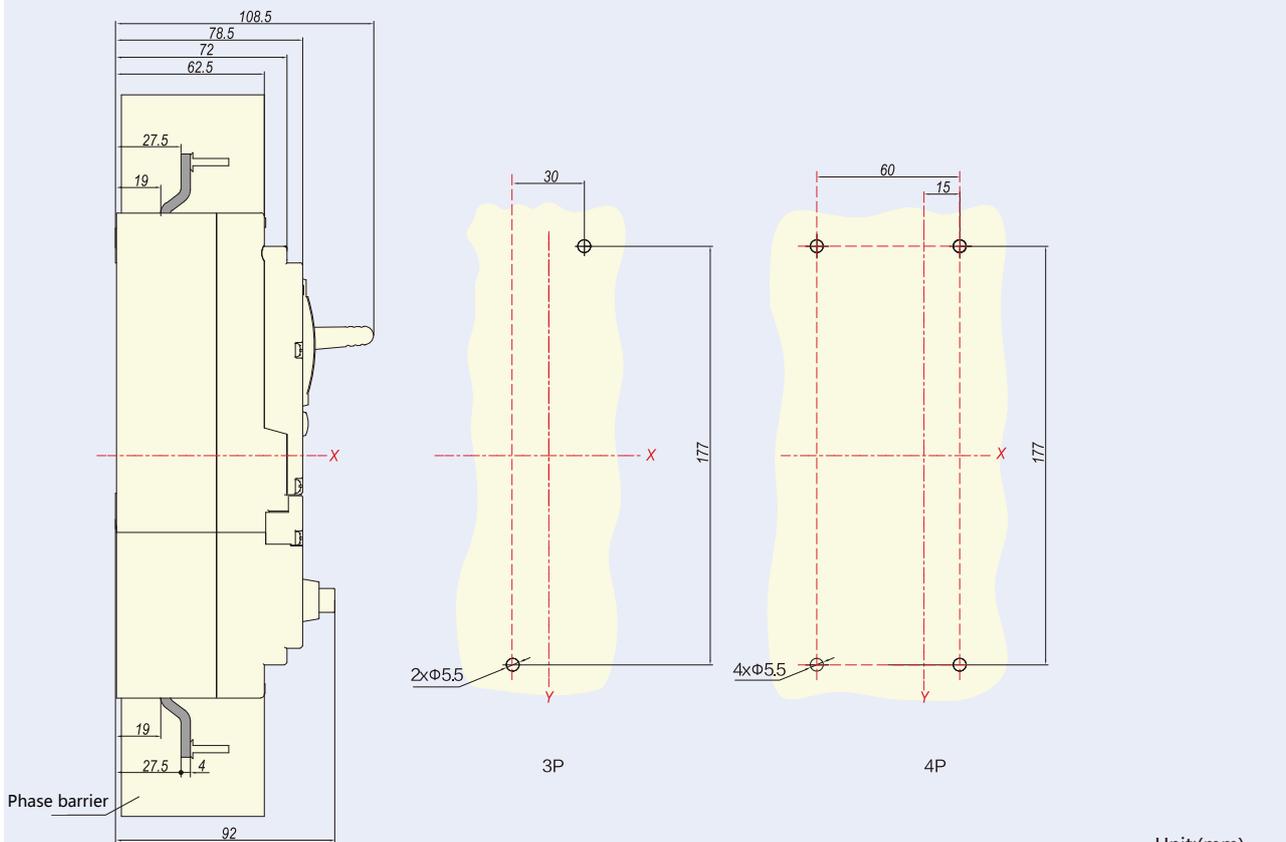
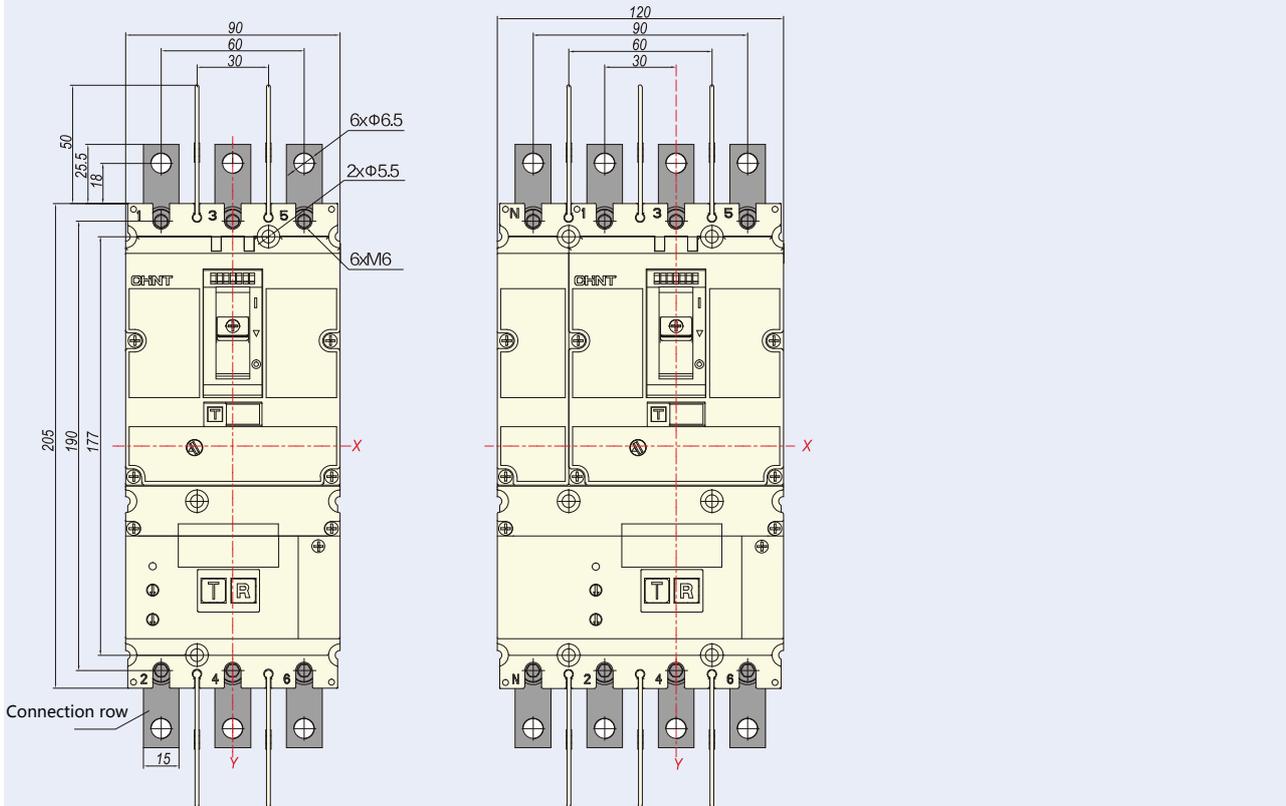
NM8N-1600 Front connection (Motor type 4P)



Unit:(mm)

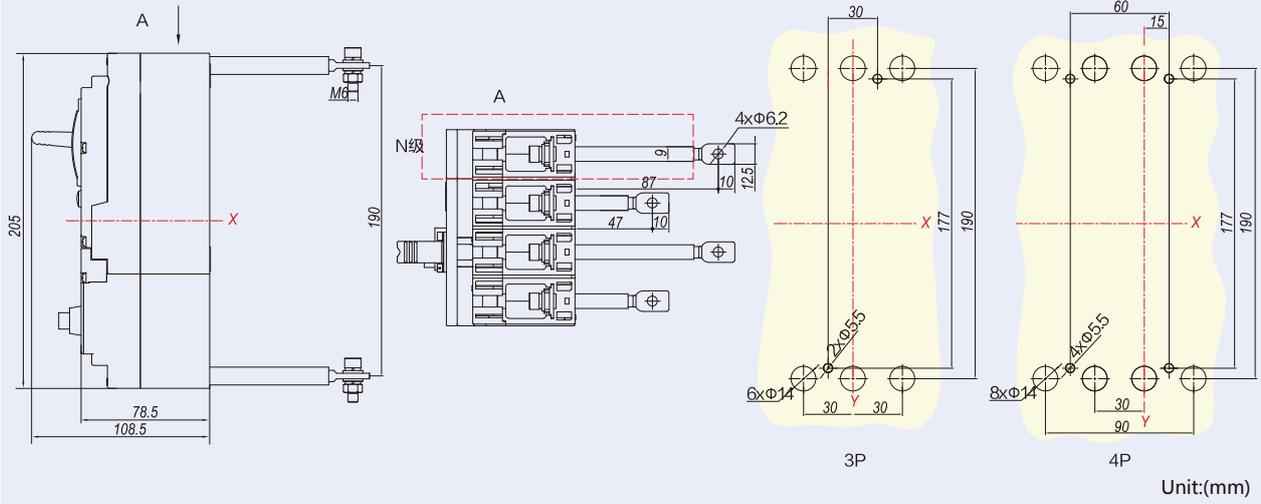
8.6 NM8NL

NM8NL-125 Front connection

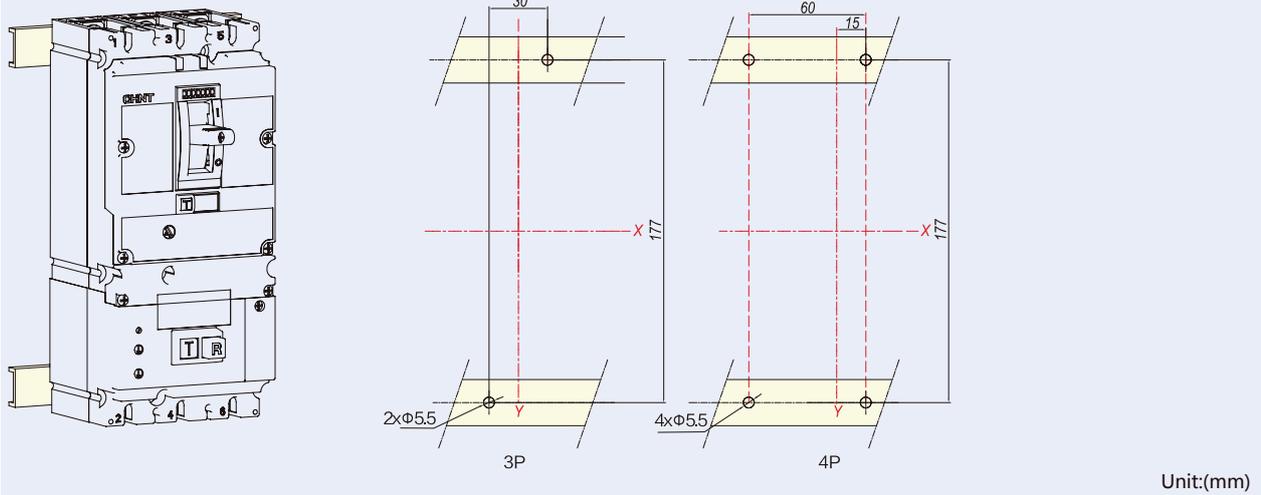


Unit:(mm)

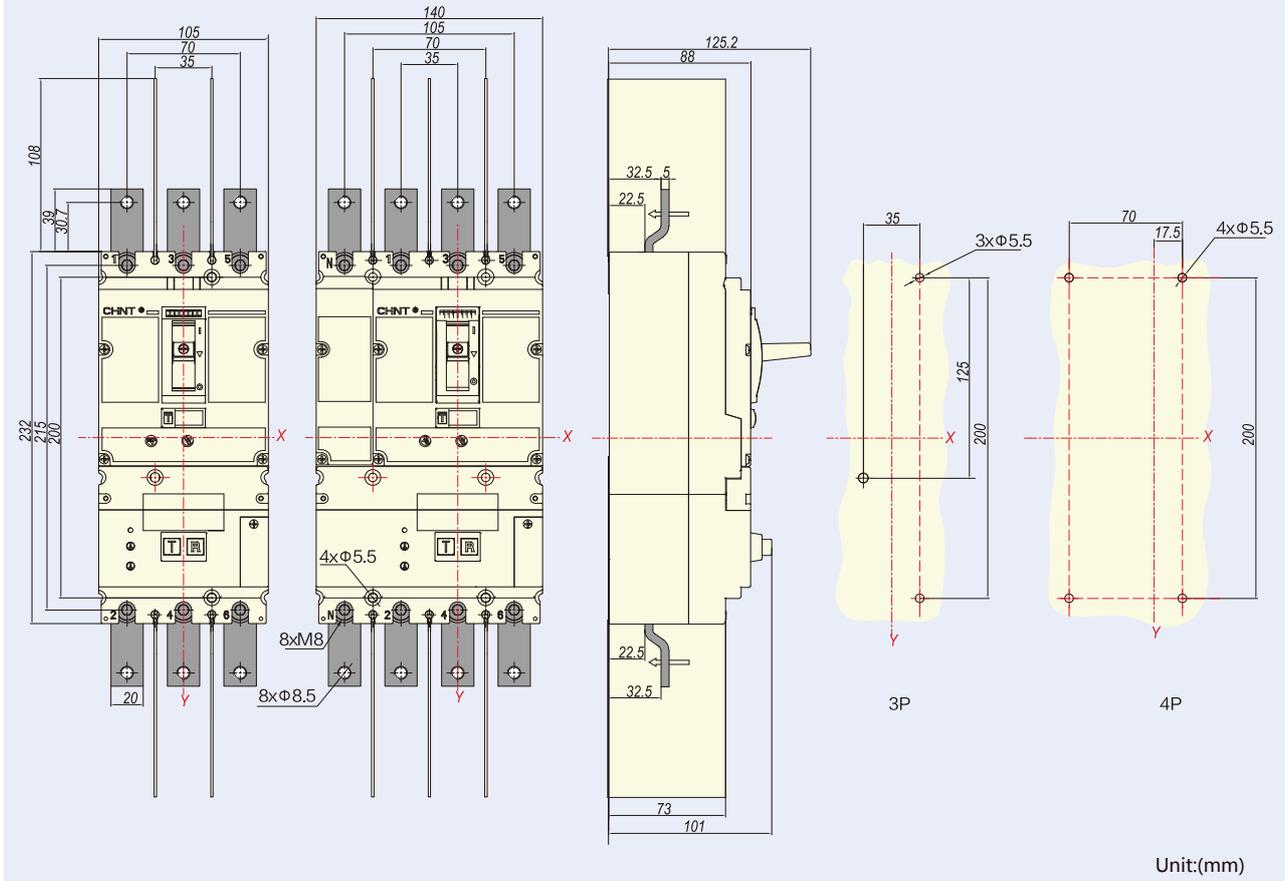
NM8NL-125 Rear connection



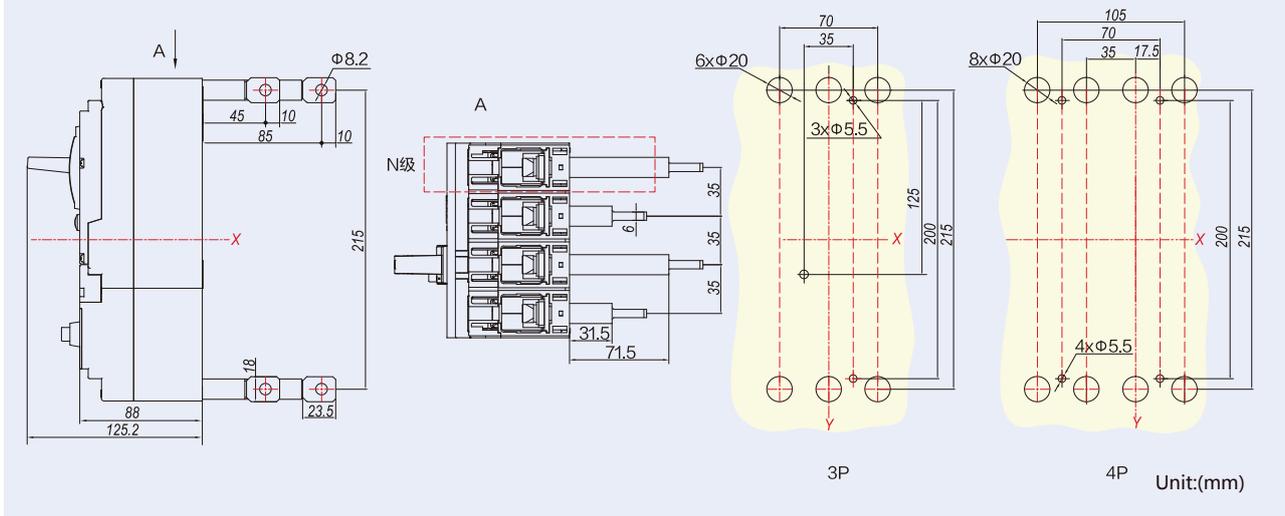
NM8NL-125 DIN-rail mounting



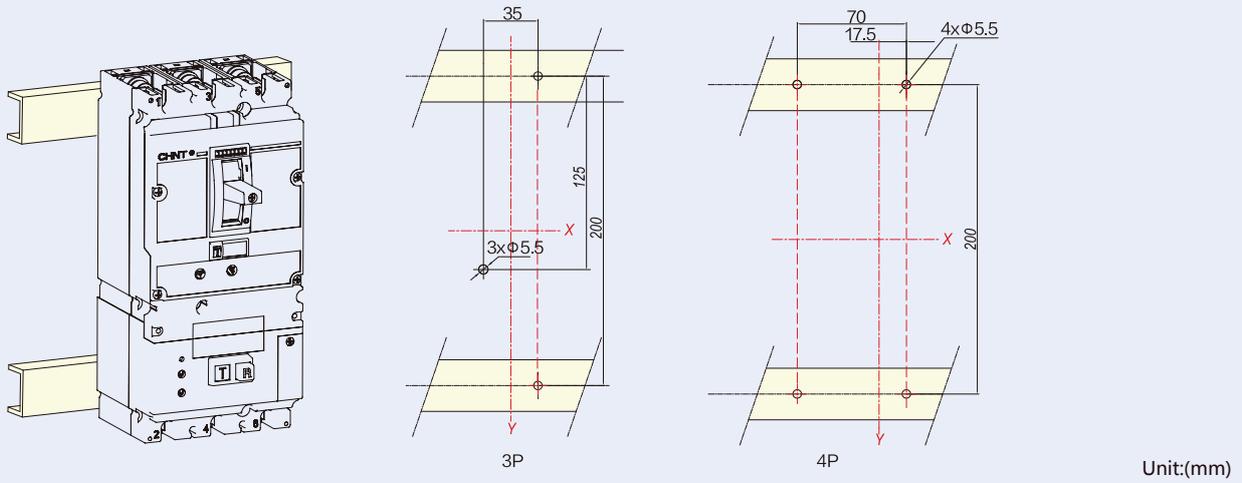
NM8NL-250 Front connection



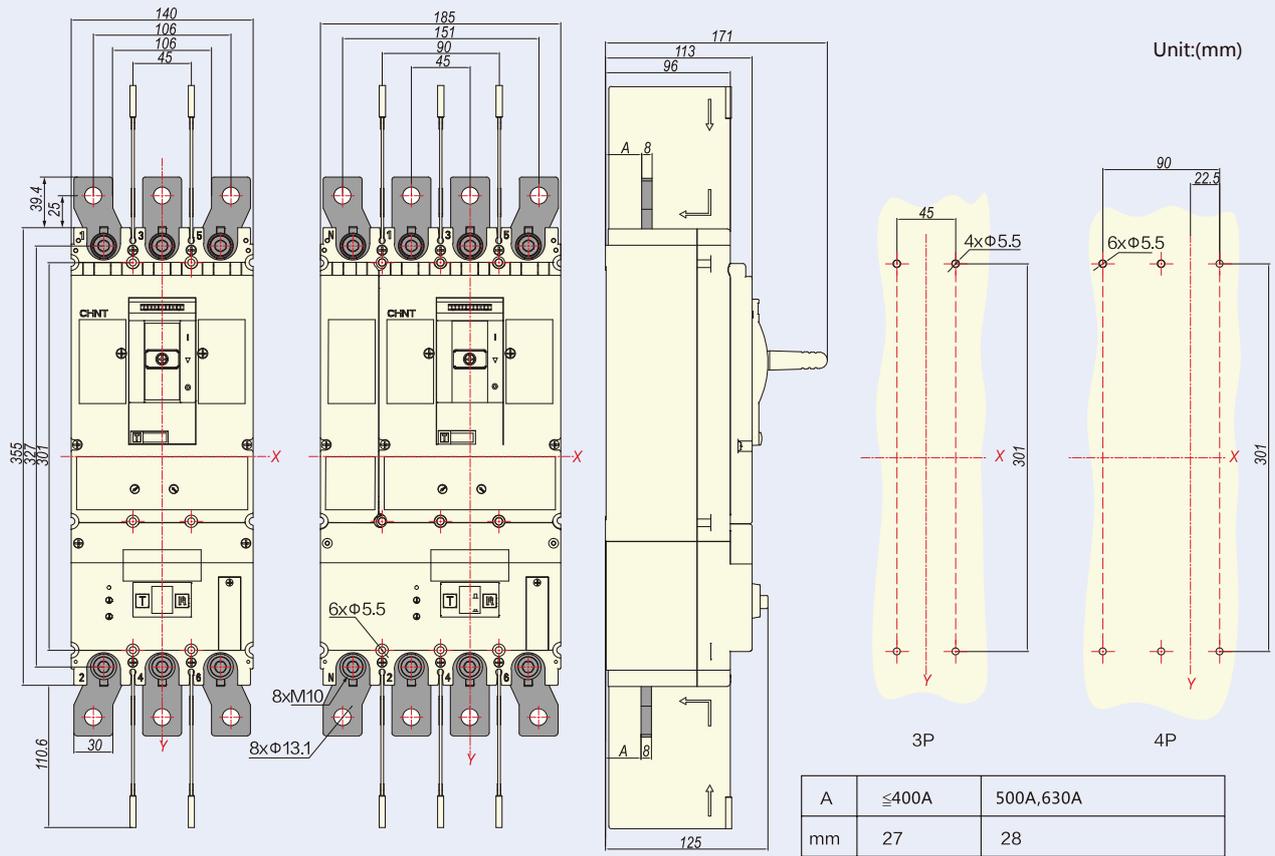
NM8NL-250 Rear connection

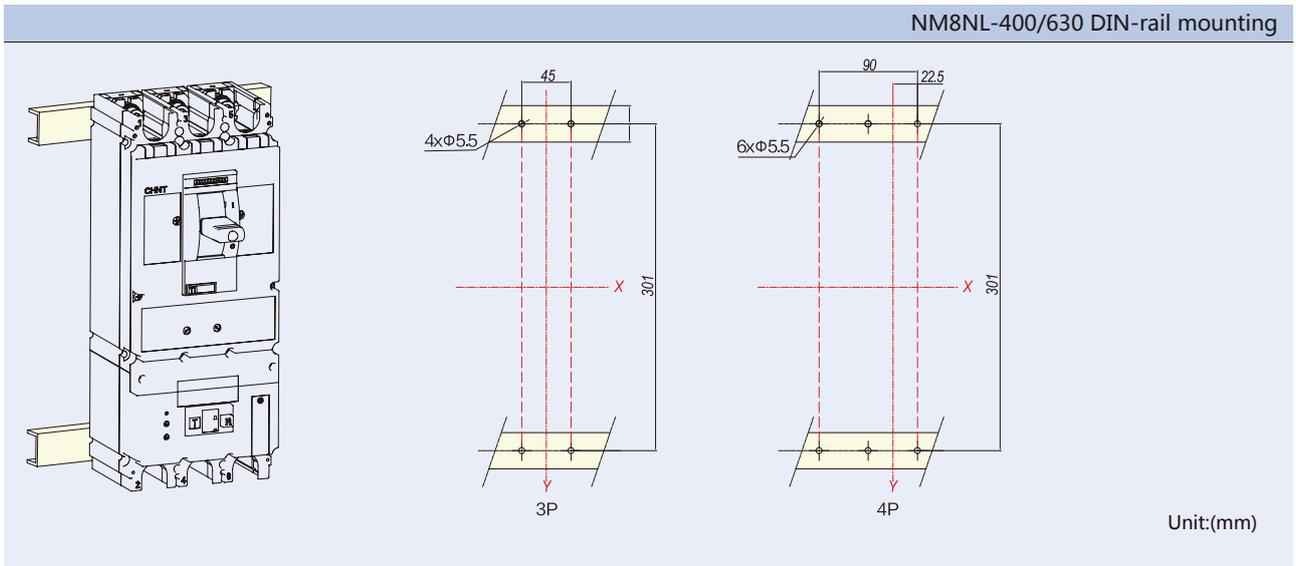
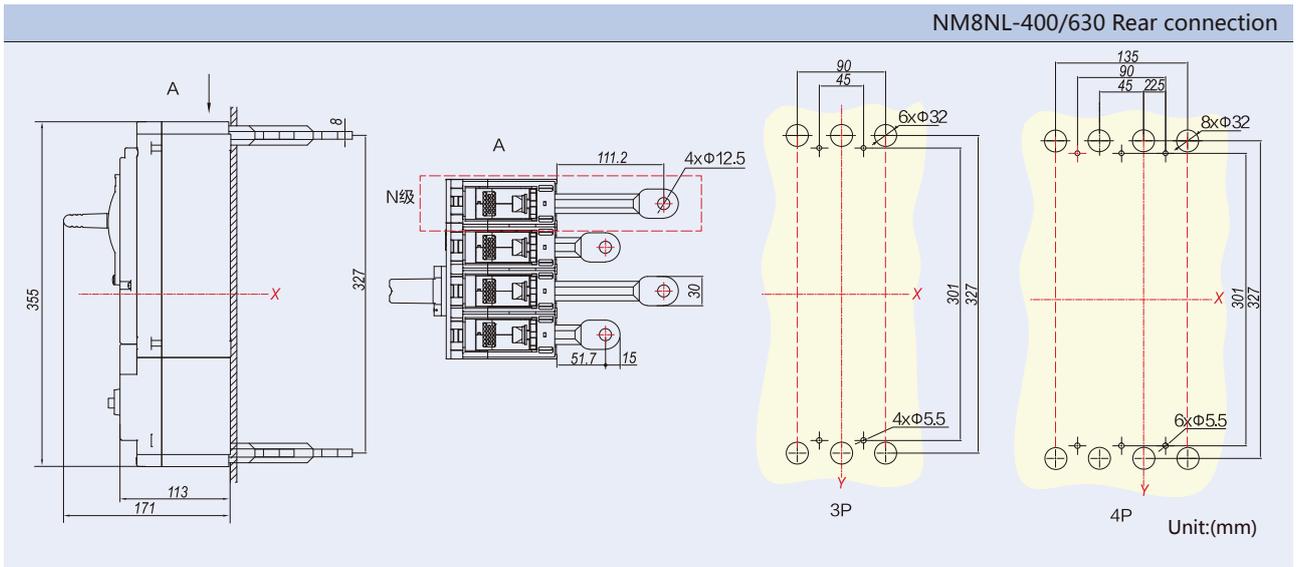


NM8NL-250 DIN-rail mounting

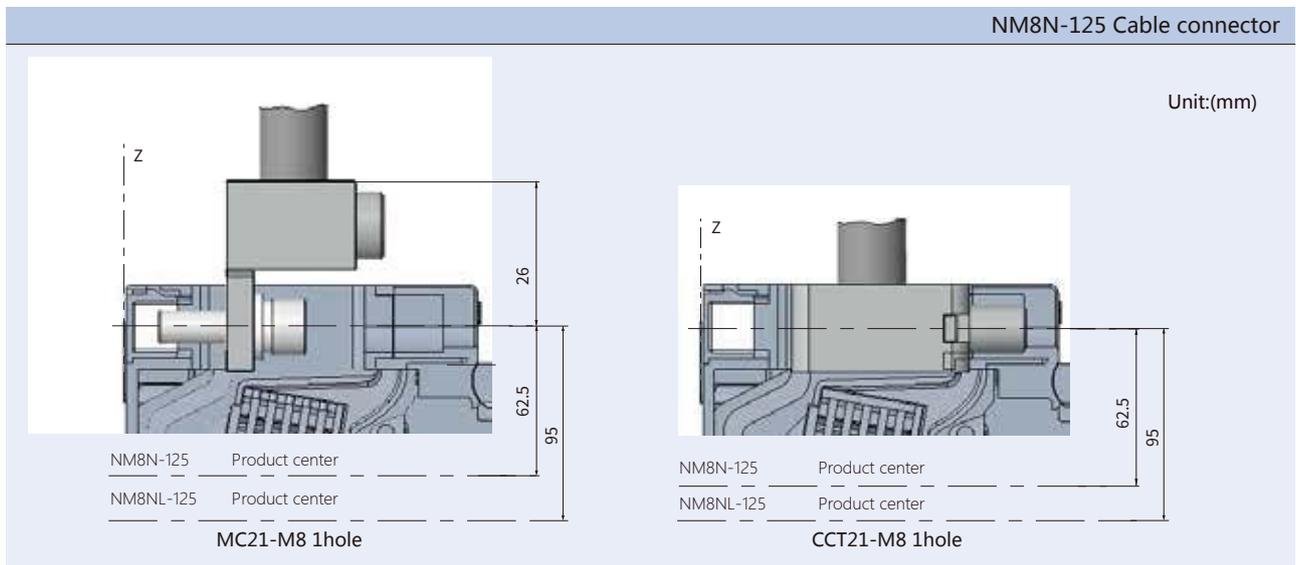


NM8NL-400/630 Front connection

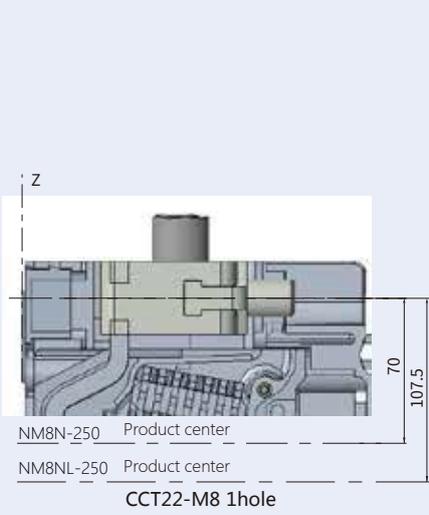




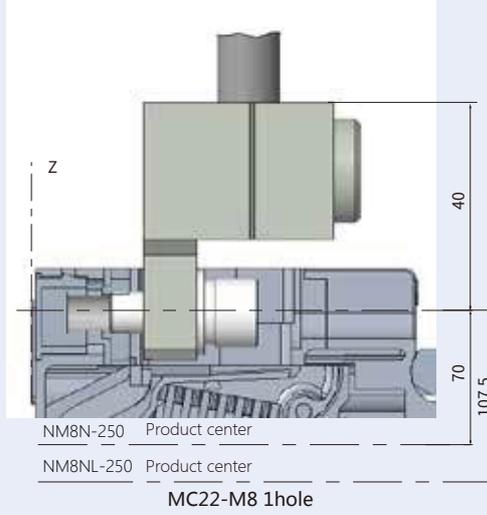
8.7 NM8N Wiring diagram



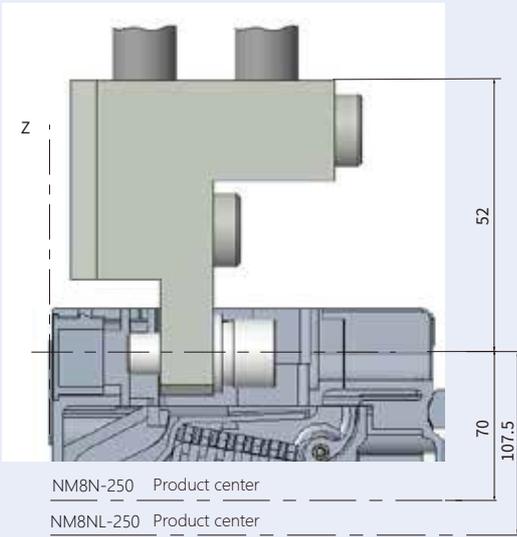
NM8N-250 Cable connector



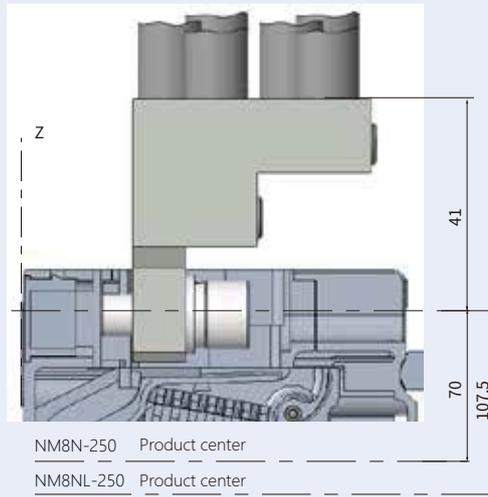
CCT22-M8 1hole



MC22-M8 1hole



MC22-M8 2 hole

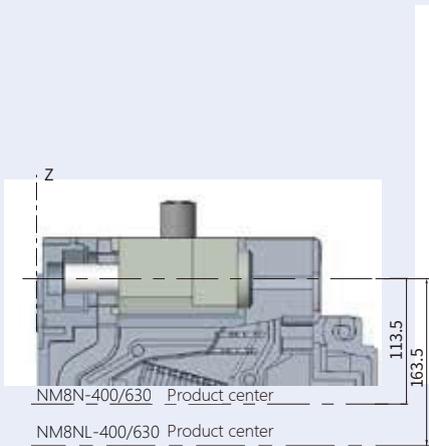


MC22-M8 6 hole

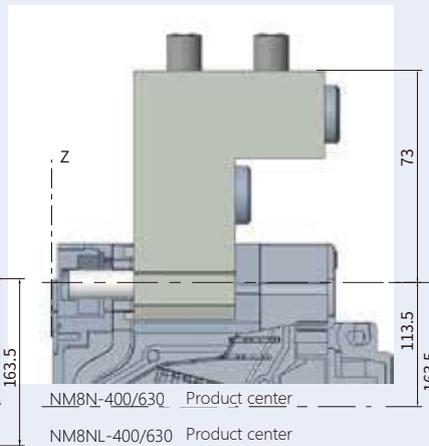
Unit:(mm)

NM8N-630 Cable connector

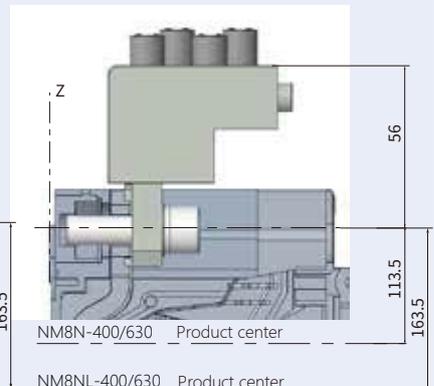
Unit:(mm)



CCT23-M8 1hole

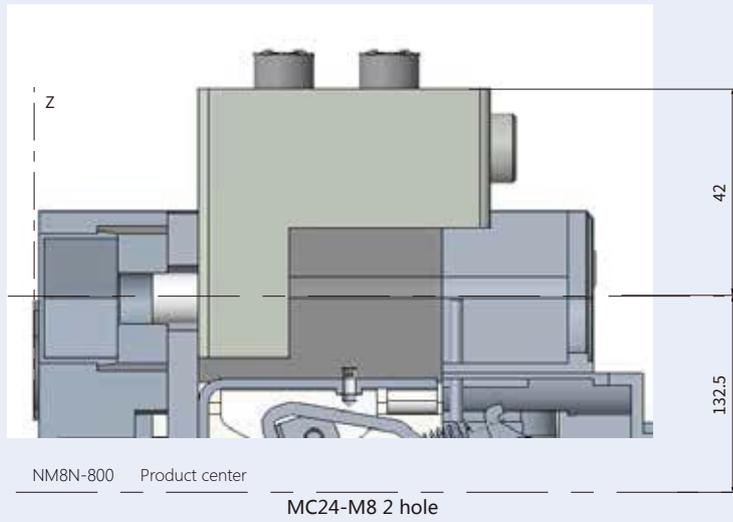


MC23-M8 2 hole



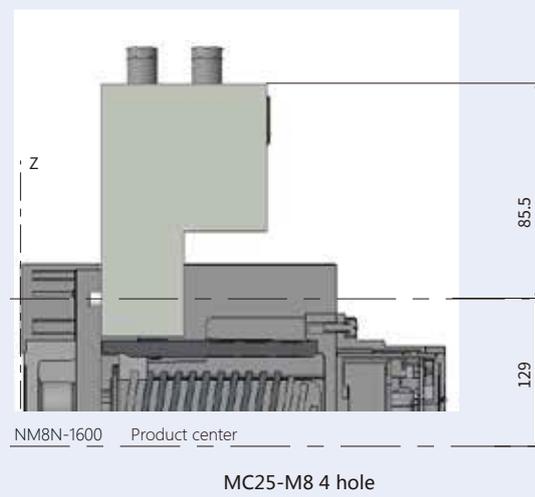
MC23-M8 4 hole

NM8N-800 Cable connector

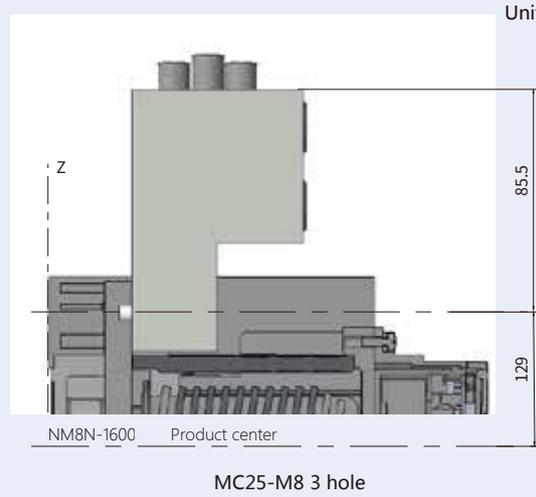


Unit:(mm)

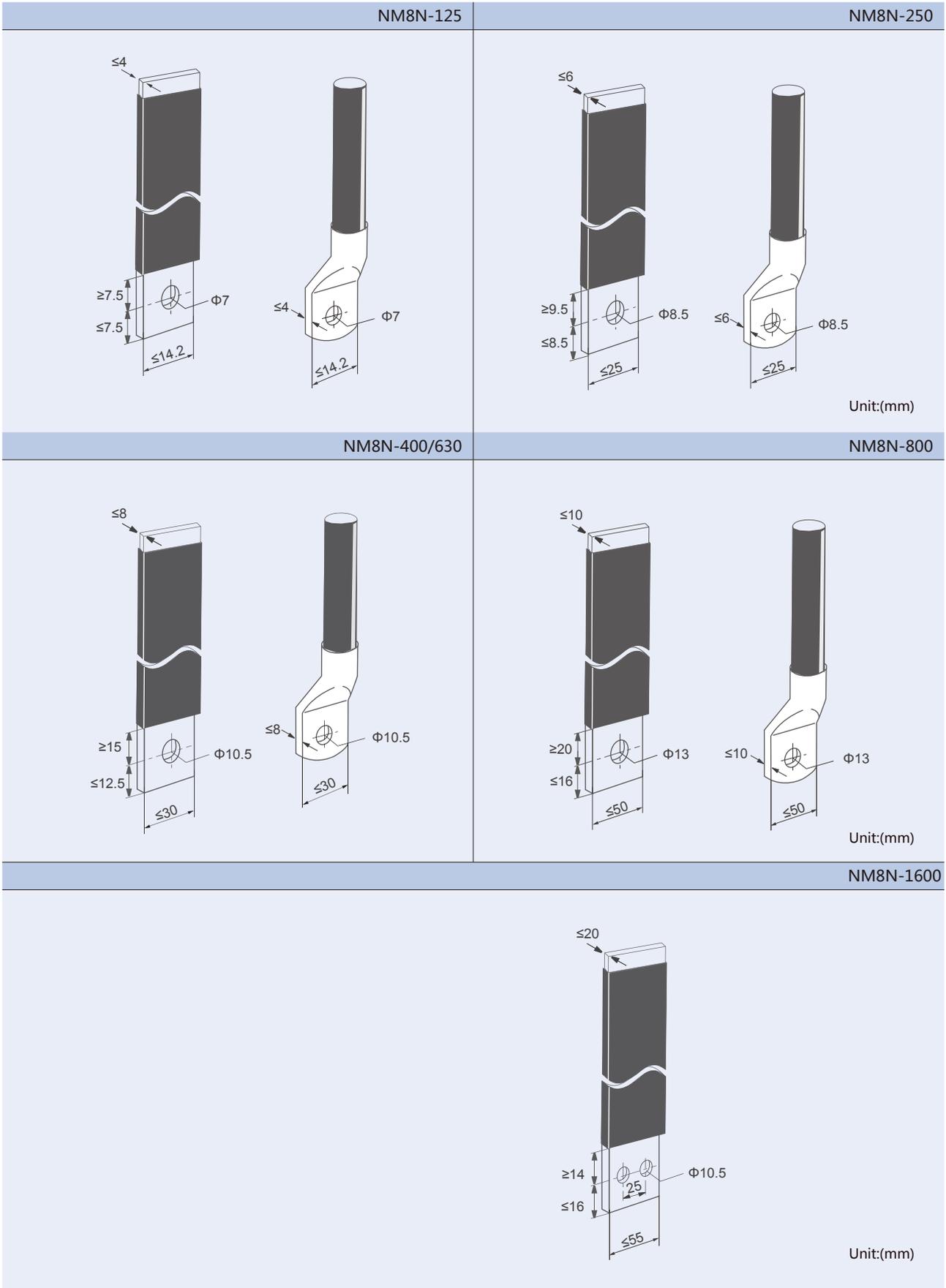
NM8N-1600 Cable connector



Unit:(mm)



8.8 Wiring



9. Accessories characteristics and installation

NM8N moulded case circuit breaker has various accessory modules, which can be found in P84 for more details



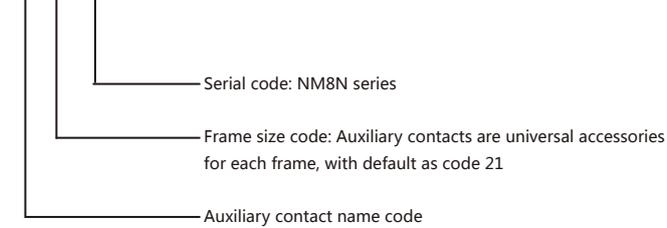
9.1 AX Auxiliary contact

9.1.1 Function

Remotely indicate the circuit breaker's making (on) or breaking / tripping (OFF) status, connected to the auxiliary circuit of the circuit breaker.

9.1.2 Model description

AX 21-M8



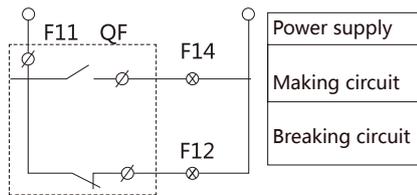
9.1.3 Indication of circuit breaker status

Circuit breaker is at breaking status	
Circuit breaker is at making status	

9.1.4 Electrical characteristics

Rated voltage (V)	Rated current (A)	
	AC-15	DC-13
AC 110	5	—
AC 240	4	—
AC 415	2	—
DC 110	—	0.25
DC 220	—	0.25

9.1.5 Wiring diagram



9.2 AL Alarm contact

9.2.1 Function

It is mainly used to provide a signal when the load of the circuit breaker is overloaded, short-circuited or undervoltage, or tripped.

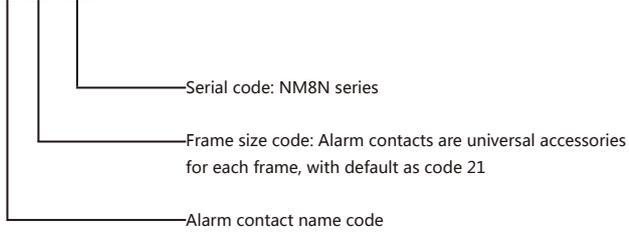
The reasons for the failure of the alarm signal are:



- Over-load or short-circuit
- Undervoltage trip
- Residual current action trip
- Manual free trip

9.2.2 Model description

AL 21-M8



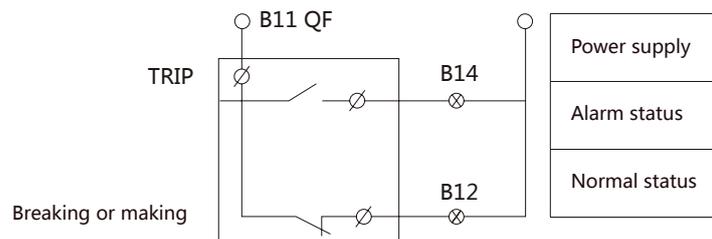
9.2.3 Indication of circuit breaker status

Circuit breaker is at breaking or making status	B12		B11
Circuit breaker is at free tripping status	B12		B11

9.2.4 Electrical characteristics

	AC-15	DC-13
AC 110	5	—
AC 240	4	—
AC 415	2	—
DC 110	—	0.25
DC 220	—	0.25

9.2.5 Wiring diagram



9.3 SHT Shunt release

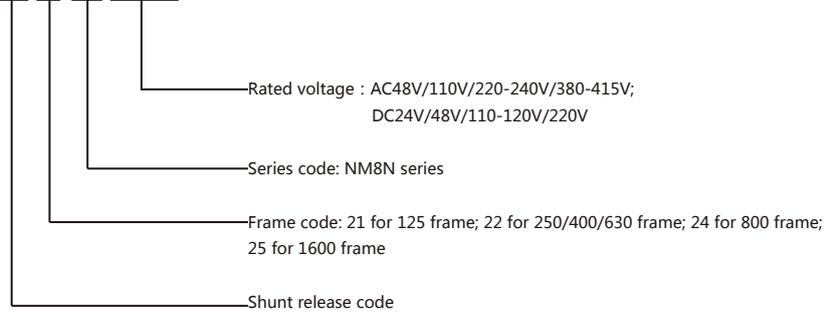
9.3.1 Function

Shunt releases operate according to electrical signals, enabling remote control and automatic control of circuit breakers. When the supply voltage is equal to any voltage between 70% and 110% of the rated control power supply voltage, the shunt release should enable the circuit breaker to operate reliably.



9.3.2 Model description

SHT 21-M8 AC48V



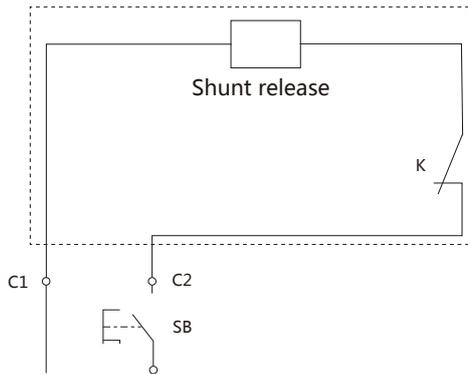
9.3.3 Electrical characteristics

Frame size	Power consumption (W)						
	AC48V	AC110V	AC220-240V	AC380-415V	DC24V	DC48V	DC220V
125A	2.2	2.2	2	2.5	2.5	2.2	2
250/400/630A	2.3	2.5	2.2	2.5	2.2	2.5	2.5
800A	2.3	2.5	2.2	2.5	2.2	2.5	2.5
1600A	110	195	480	560	230	110	160

9.3.4 Action characteristics

Can be powered for a long time. Response time: pulse type $\geq 20\text{ms}$, $\leq 60\text{ms}$

9.3.5 Wiring diagram



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

Rated control supply voltage U_s (DC24V)	Conductor cross-sectional area	
	1.5mm ²	2.5mm ²
100% U_s	150m	250m
85% U_s	100m	160m

9.4 UVT Under-voltage release

9.4.1 Function

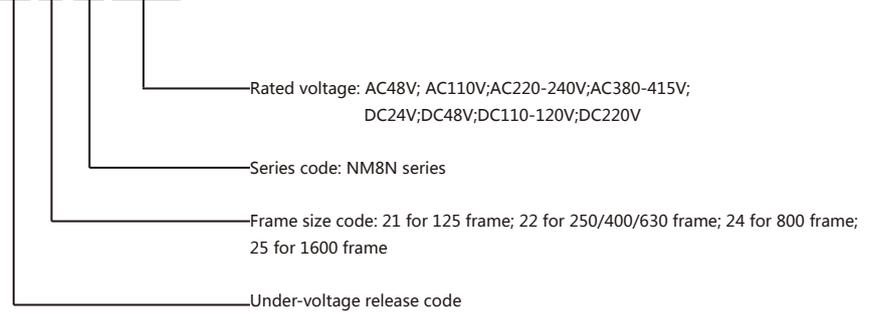
Realize the under-voltage protection function of the circuit breaker, open the circuit breaker when the power supply voltage is too low, and protect the electrical equipment.



- When the supply voltage drops (even slowly) to 70% to 35% of the rated control supply voltage, the undervoltage trips The breaker should open the circuit breaker reliably.
- When the supply voltage is equal to or greater than 85% of the rated control supply voltage of the undervoltage release, the circuit breaker should be guaranteed to close.
- When the supply voltage is less than 35% of the rated control supply voltage of the undervoltage release, the undervoltage release should prevent the circuit breaker.

9.4.2 Model description

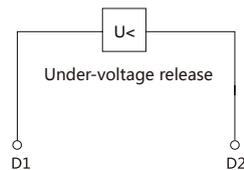
UVT 21-M8 AC48V



9.4.3 Electrical characteristics

Frame size	Power consumption (W)							
	AC48V	AC110V	AC220-240V	AC380-415V	DC24V	DC48V	DC110-120V	DC220V
125A	1.6	1.6	2	3	1.2	1.6	2	2.2
250/400/630A	1.5	1.5	2.2	3	0.8	1.5	2	2.5
800A	1.5	1.5	2.2	3	0.8	1.5	2	2.5
1600A	2.6	2.2	1.7	0.7	2.8	2.5	2.2	1.8

9.4.4 Wiring diagram



9.5 MOD Motor-driven mechanism

9.5.1 Function

It is suitable for closing, opening and re-opening of circuit breakers at long distances, as well as automation applications.



A: Protection level: IP40

- Reliable insulation;
- With isolation function indication;
- O (open), I (closed) and free trip 3 position indications;
- Free circuit breaker trip;
- Manually or automatically operated circuit breakers for closing and opening.

B: manual operation

Pull the "manual / auto" switch to the manual position and turn the operation handle to switch on and off the circuit breaker.

C: automatic operation

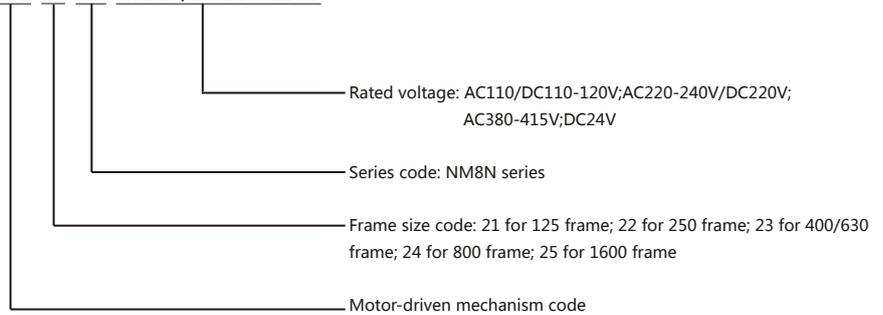
Pull the "manual / auto" switch to the automatic position, and remotely press the "close or open" button to switch on and off the circuit breaker.

D: Automatically switch on or off by pulse or self-holding signal control.

E: Only when the control voltage is $\geq 85\% U_n$ and $\leq 110\% U_n$ can the circuit breaker be reliably switched on and off.

9.5.2 Model description

MOD 21-M8 AC110/DC110-120V

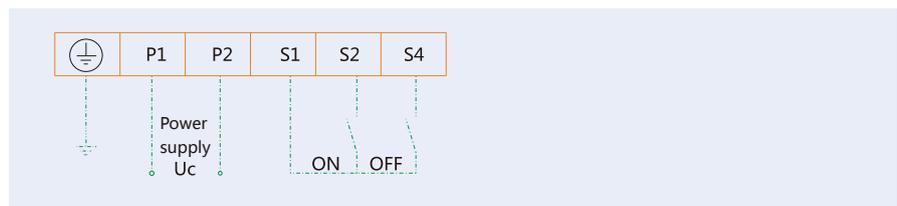


Note: The 1600 frame motor-driven mechanism is assembled in the factory and is suitable for electronic circuit breakers and disconnectors according to the inside of the circuit breaker.

9.5.3 Electrical characteristics

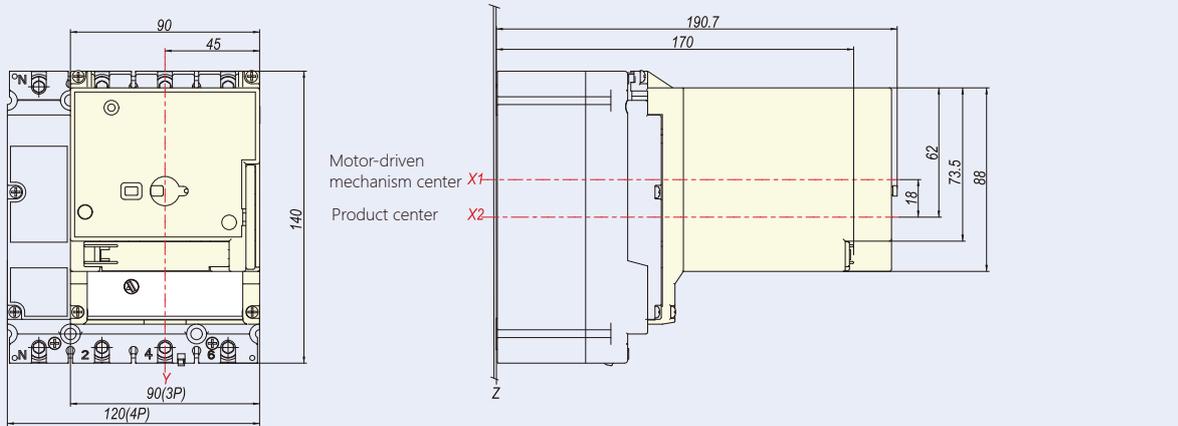
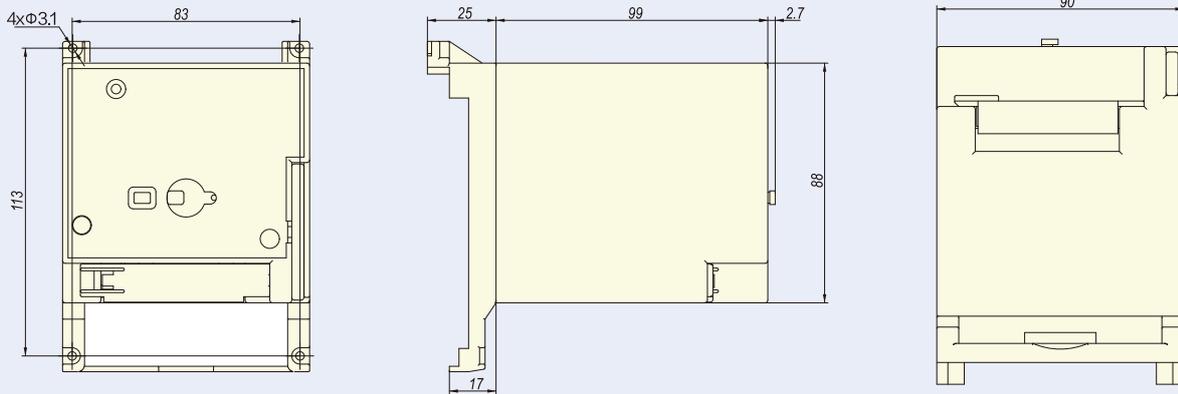
Frame size	Rated operational voltage	Life(CO recycle)	Power consumption	Action current	Making duration	Breaking duration	Minimum duration of ON (OFF) signal pulse
125A	AC110V/DC110-120V AC220-240V/DC220V AC380-415V DC24V	10000	150 VA	$\geq 3A$	$\leq 500ms$	$\leq 500ms$	300ms
250A		10000	150 VA	$\geq 3A$	$\leq 500ms$	$\leq 500ms$	300ms
400/630A		8000	300 VA	$\geq 3A$	$\leq 1000ms$	$\leq 1000ms$	300ms
800A		4000	300 VA	$\geq 3A$	$\leq 1000ms$	$\leq 1000ms$	300ms
1600A		7000	75VA	$\geq 3A$	$\leq 1000ms$	$\leq 1000ms$	300ms

9.5.4 Wiring diagram

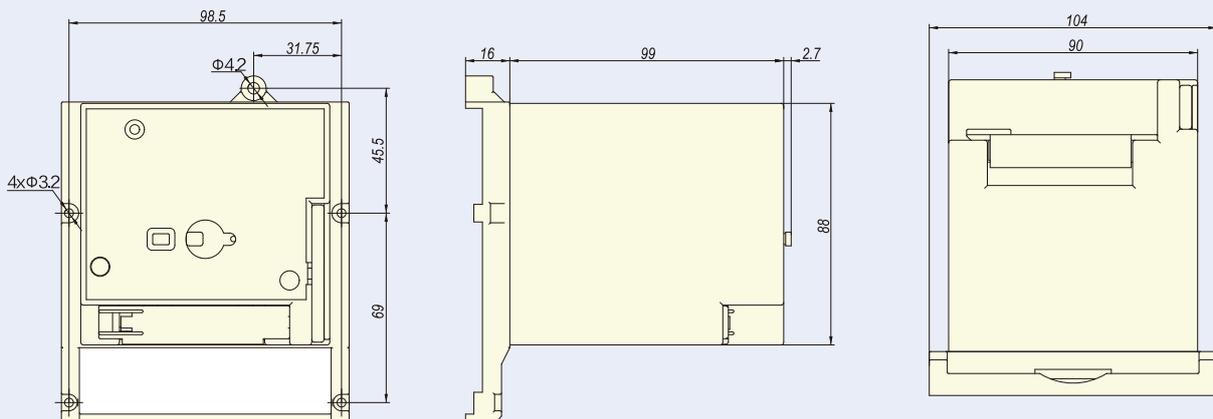


9.5.5 Installation dimension drawing

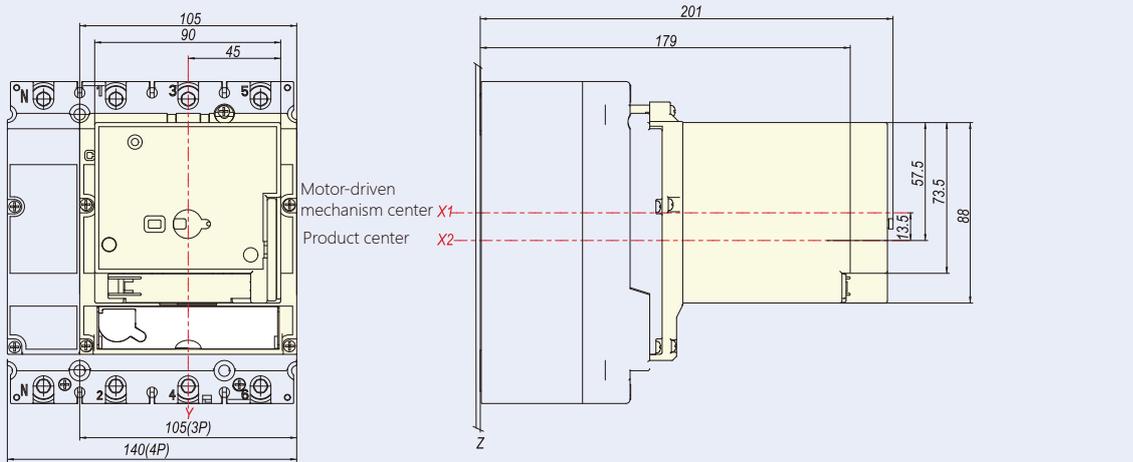
Overall and mounting dimension of MOD21-M8



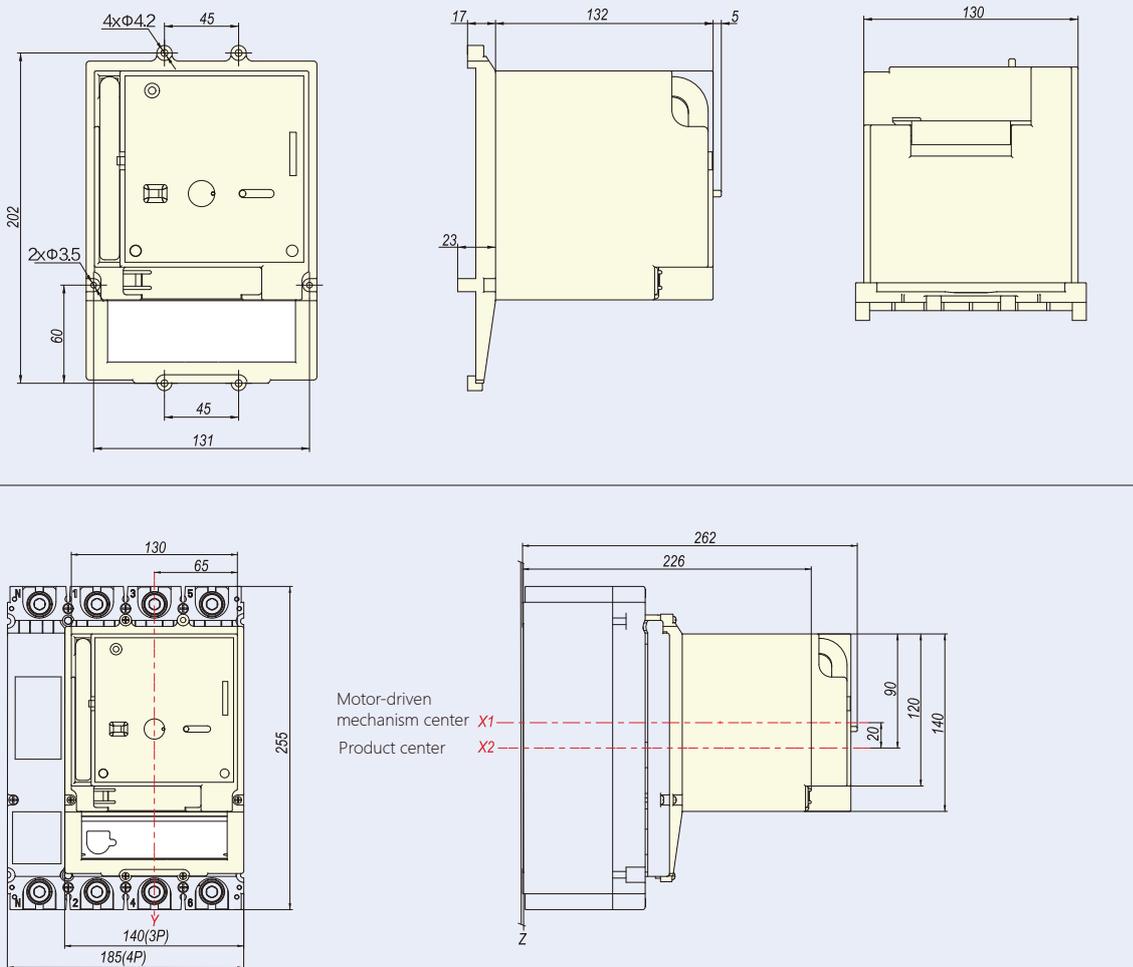
Overall dimension of MOD22-M8



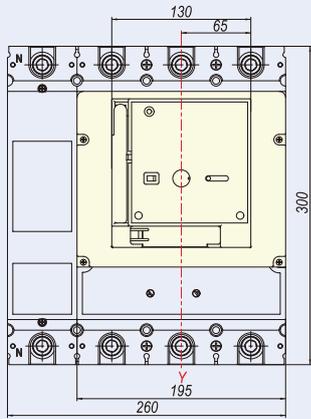
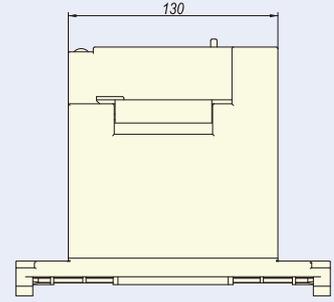
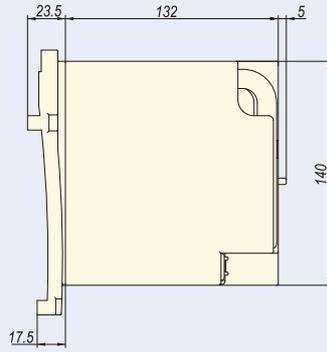
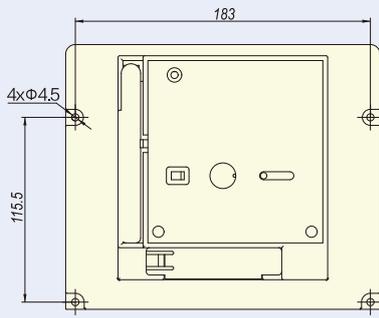
Mounting dimension of MOD22-M8



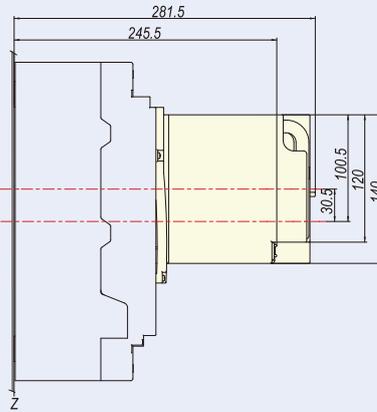
Overall and mounting dimension of MOD23-M8



Overall and mounting dimension of MOD24-M8



Motor-driven
mechanism center X1
Product center X2



9.6 SRH Economic extended rotary handle

9.6.1 Function

The unique design and transmission structure are adopted to realize the closing, opening and re-closing operation of the circuit breaker by rotating the handle. Protection degree: IP30

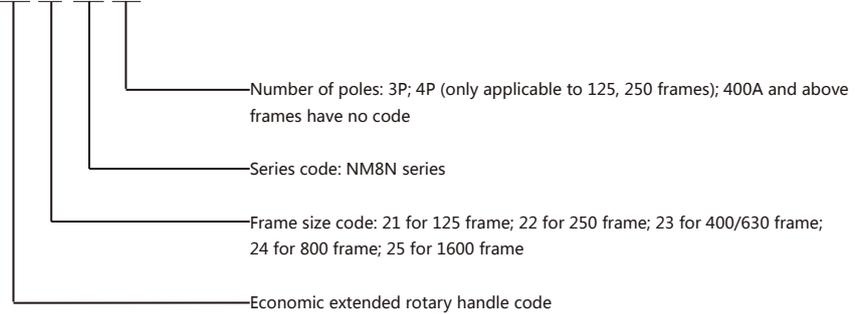
Protection degree: IP30

- With isolation function indication;
- O (open), I (closed) and free trip 3 position indications;
- The circuit breaker can be locked in the OFF position with 1 ~ 3 padlocks with a diameter of 5 ~ 8mm. At this time, it can prevent the circuit breaker from closing and the switch cabinet from opening;
- When the switch is in the ON position, the cabinet door cannot be opened under the action of the rotary handle (if the cabinet door is opened urgently, the cabinet door can be opened by the emergency unlocking device on the handle).



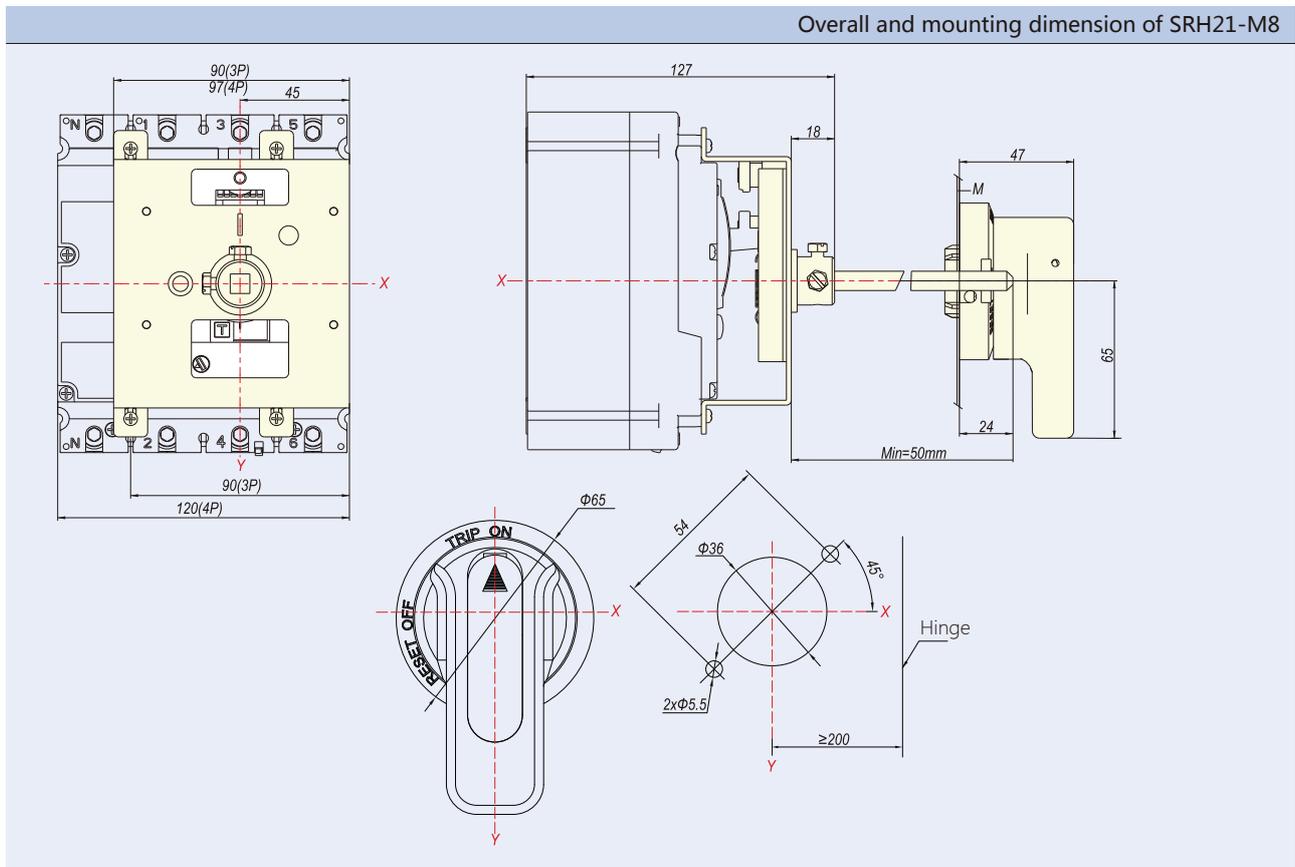
9.6.2 Model description

SRH 21-M8 3P

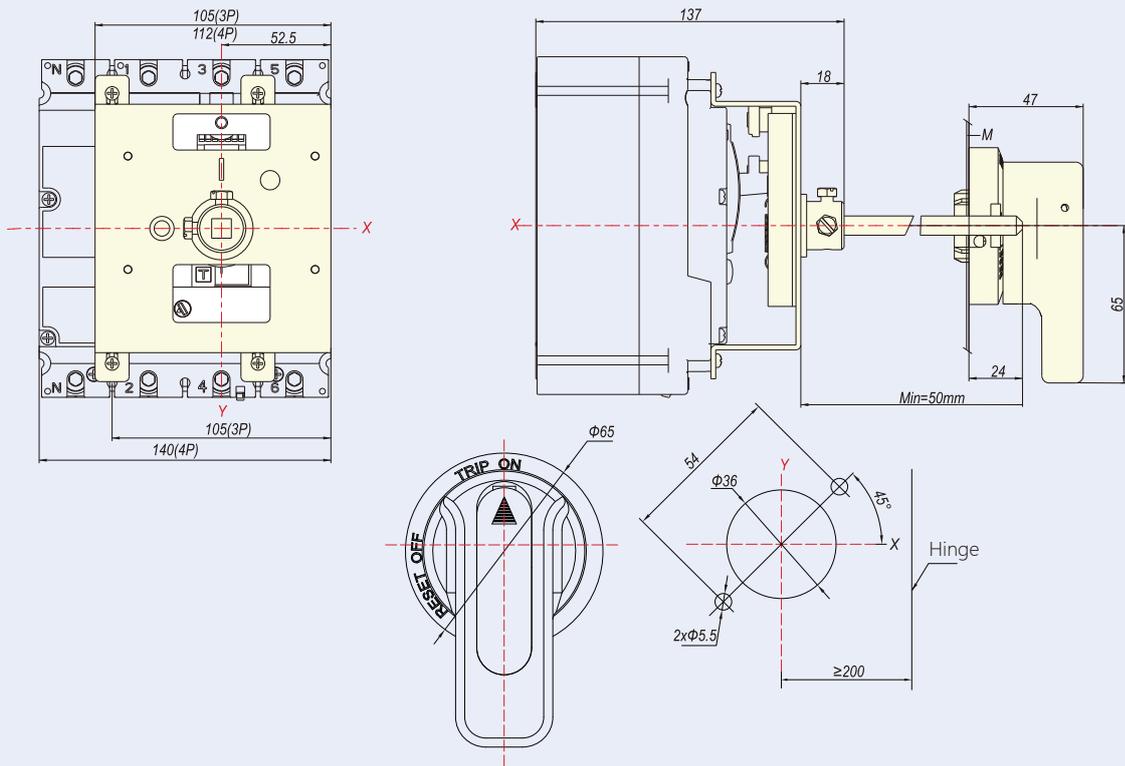


9.6.3 Installation dimension drawing

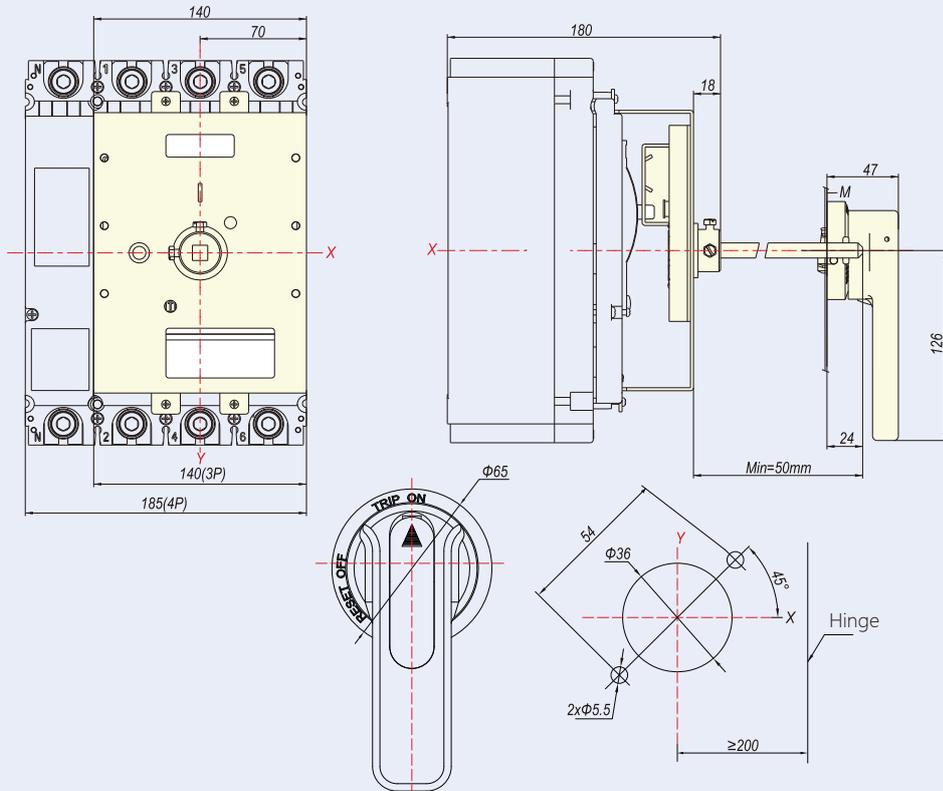
Overall and mounting dimension of SRH21-M8



Overall and mounting dimension of SRH22-M8



Overall and mounting dimension of SRH23-M8





9.7 DRH Direct rotary handle

9.7.1 Function

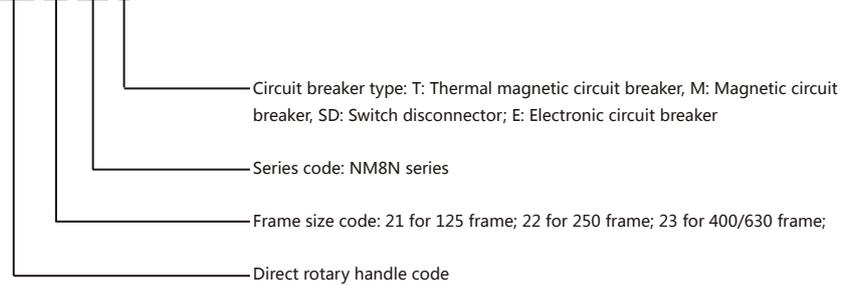
The unique design and transmission structure are adopted to realize the closing, opening and re-closing operation of the circuit breaker by rotating the handle.

Protection degree: IP40

- Reliable insulation;
- With isolation function indication;
- O (open), I (closed) and free trip 3 position indications;
- The circuit breaker can be locked in the OFF position through 1~3 padlocks with a diameter of 5 ~ 8mm.
- (Padlock user prepared)

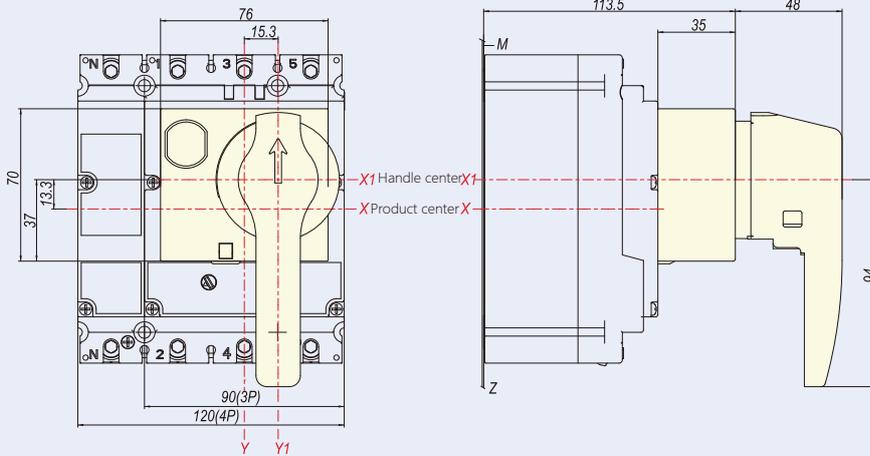
9.7.2 Model description

DRH 21-M8 T

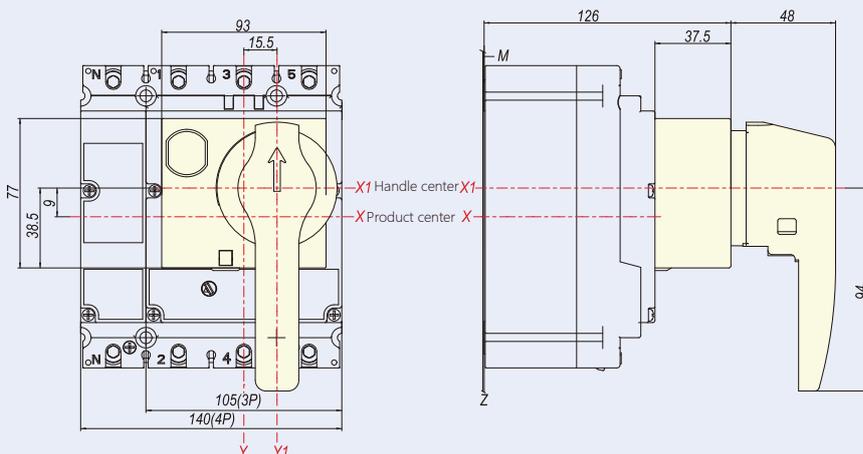


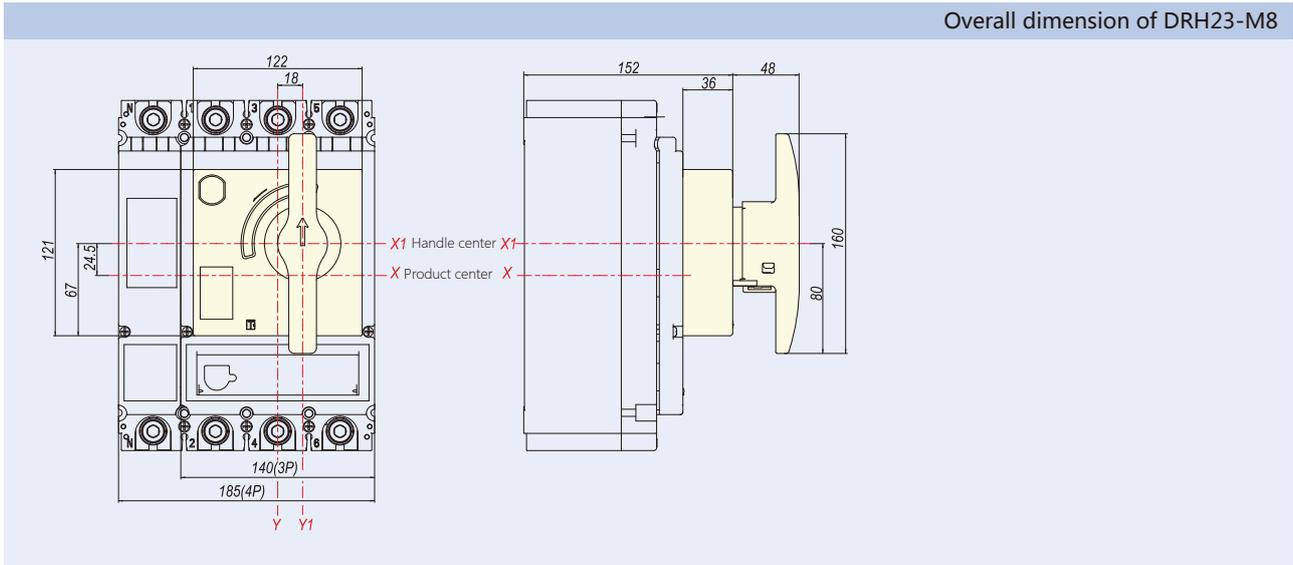
9.7.3 Installation dimension drawing

Overall dimension of DRH21-M8



Overall dimension of DRH22-M8





9.8 ERH Extended rotary handle

9.8.1 Function

The unique design and transmission structure are adopted to realize the closing, opening and re-closing operation of the circuit breaker by rotating the handle.

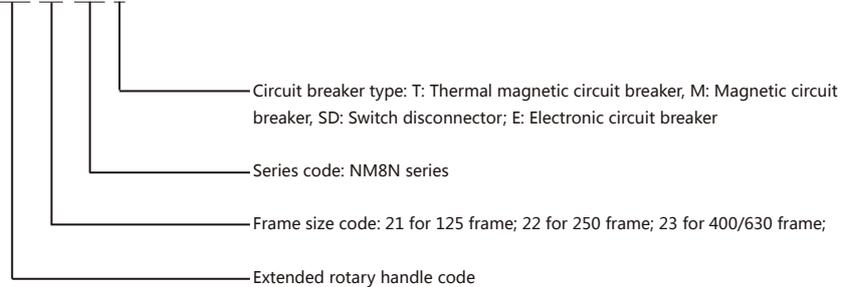
Protection degree: IP50



- Reliable insulation;
- With isolation function indication;
- O (open), I (closed) and free trip 3 position indications;
- When the switch cabinet door is open, the setting value of the circuit breaker release can be set;
- When the switch cabinet door is opened, it can prevent the circuit breaker from closing;
- The circuit breaker can be locked in the OFF position through (1 ~ 3) padlocks with a diameter of (5 ~ 8) mm;
- (Padlock user prepared) can prevent the switch cabinet door from opening at this time;
- When the switch is in the ON position, the cabinet door cannot be opened under the action of the rotary handle (if the cabinet door is opened urgently, the cabinet door can be opened by the emergency unlocking device on the handle).

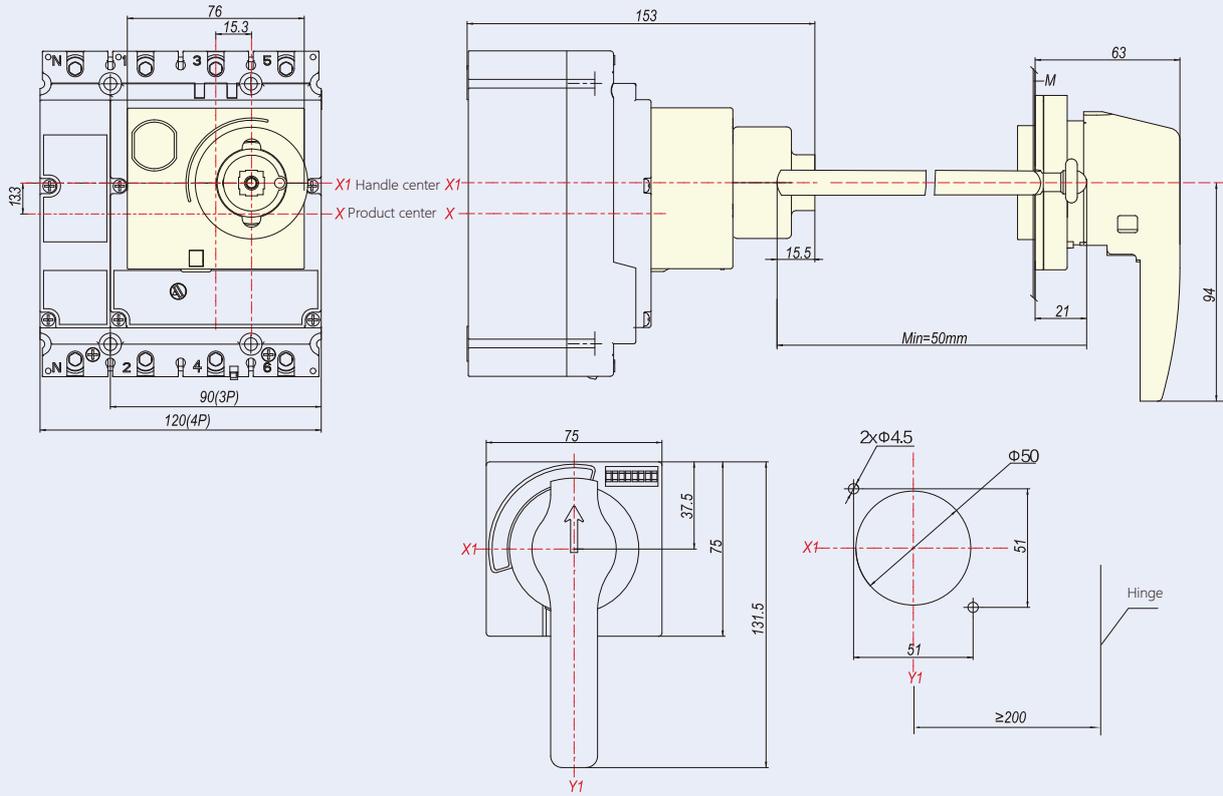
9.8.2 Model description

ERH 21-M8 T

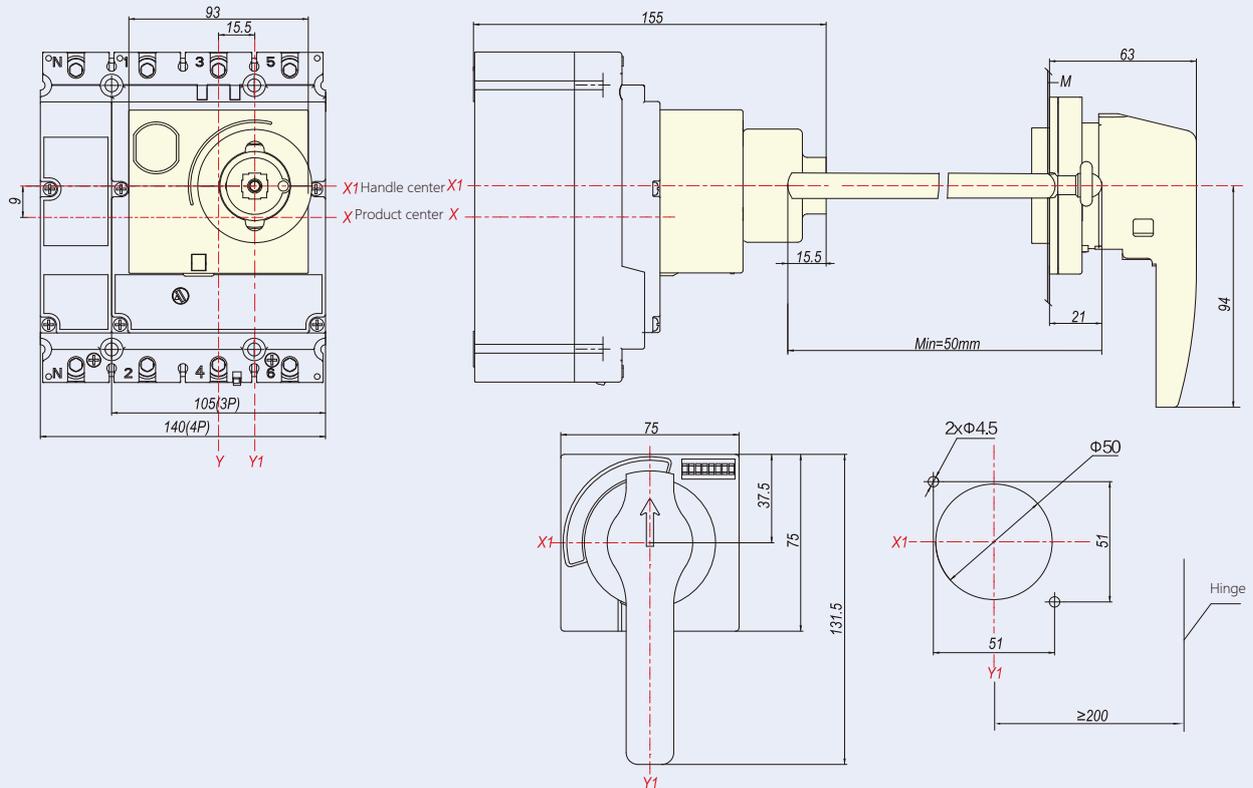


9.8.3 Installation dimension drawing

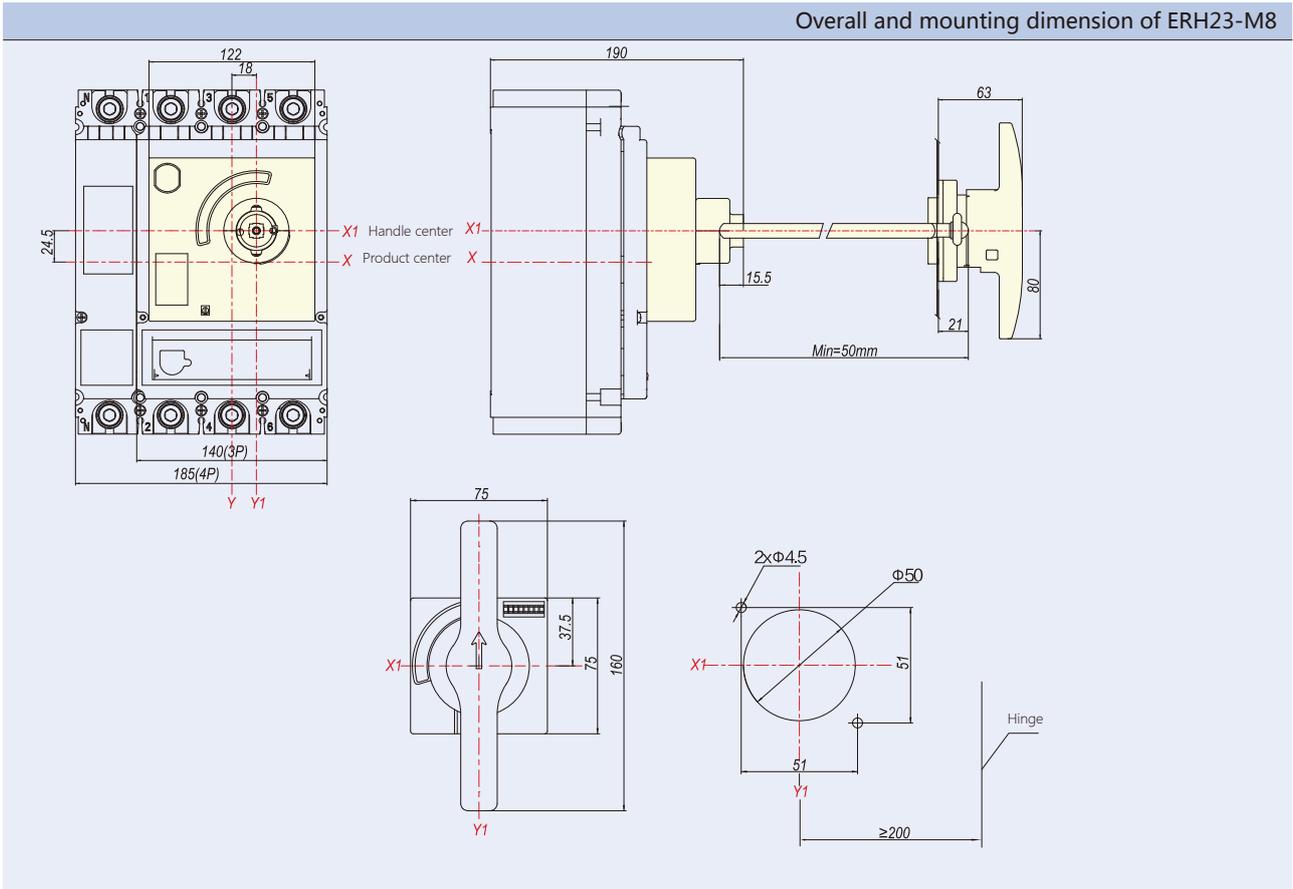
Overall and mounting dimension of ERH21-M8



Overall and mounting dimension of ERH22-M8



Overall and mounting dimension of ERH23-M8



9.9 LHD Extended handle

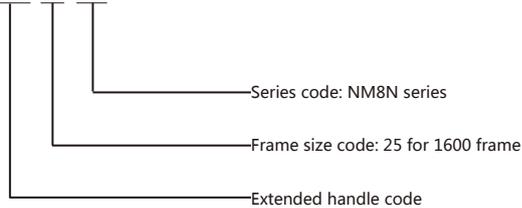
9.9.1 Function

With a unique design, the circuit breaker can be closed, opened and re-latched by rotating the handle. It is only applicable to 1600A.

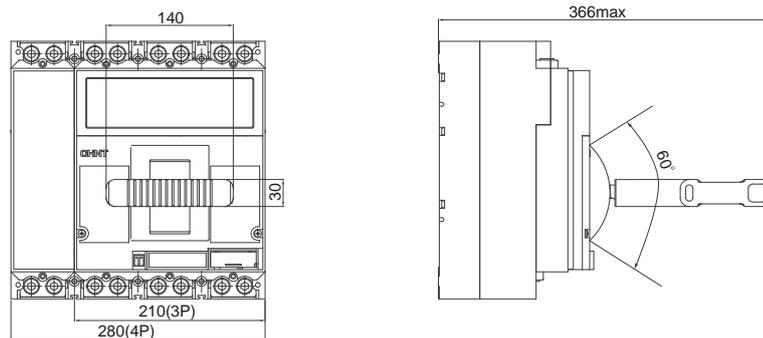


9.9.2 Model description

LHD 25-M8



9.9.3 Overall dimension



9.10 KLK Locking system

9.10.1 Function

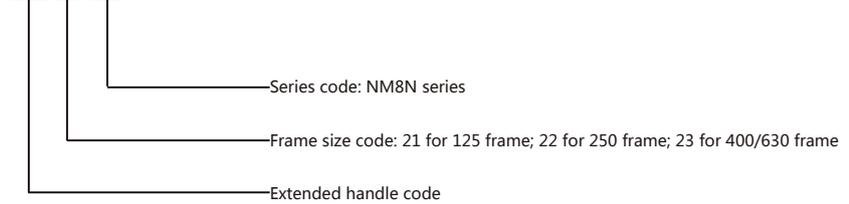
The locking system locks the open position of the circuit breaker.

- The locking system can be equipped with (1 ~ 3) padlocks with a diameter range (5 ~ 8) mm.
- (Padlock user prepared)

9.10.2 Model description



KLK 21-M8



9.11 MIT Mechanical interlock

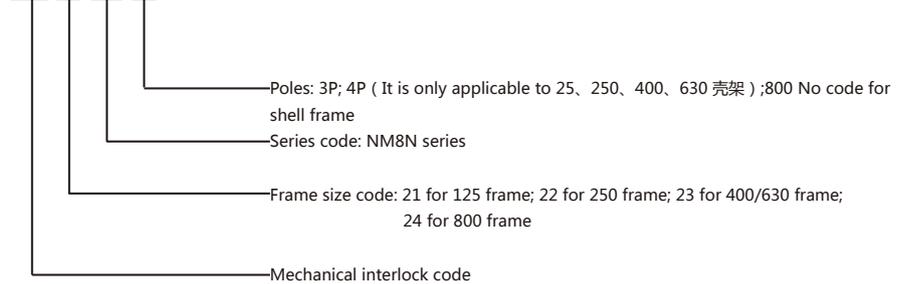
9.11.1 Function

When used together with two circuit breakers with the same housing, when one circuit breaker is closed, the other circuit breaker cannot be closed and is in the open state.

9.11.2 Model description



MIT 21-M8 3P



9.12 TCV Short terminal cover

9.12.1 Function

Prevents contact with the main circuit and can also be used to prevent short circuit between phases.

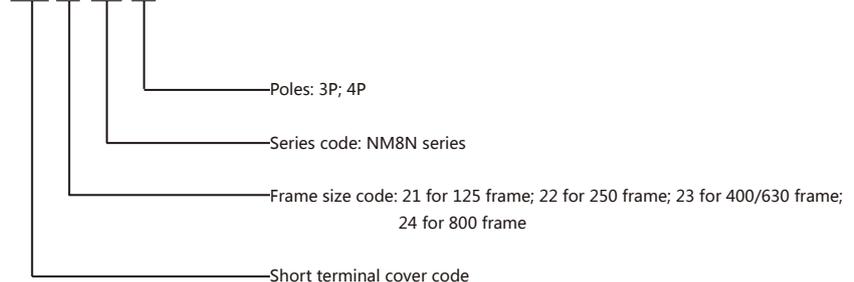
Protection degree: IP40

For voltages ≥ 500V, terminal covers must be fitted

9.11.2 Model description



TCV 21-M8 3P



9.13 TCE Long terminal cover



9.13.1 Function

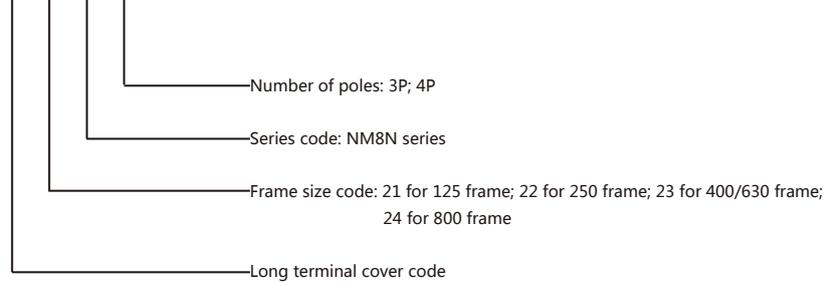
Prevents contact with the main circuit and can also be used to prevent short circuit between phases. There are knock-out holes in front of the terminal cover to accommodate various lug cables and front wiring.

Protection degree: IP40

For voltages $\geq 500V$, terminal covers must be fitted

9.13.2 Model description

TCE 21-M8 3P



9.14 FCP Front connection plate

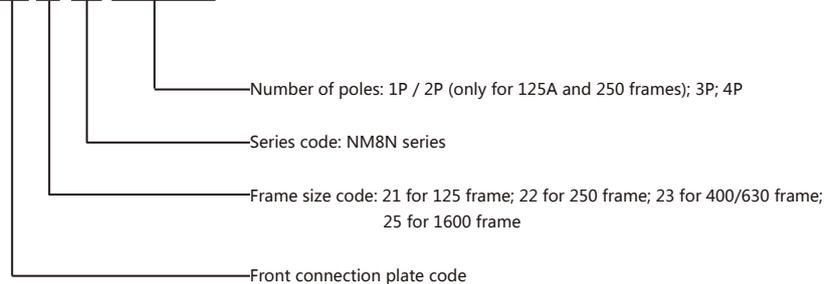


9.14.1 Function

Make the circuit breaker have a flexible wiring mode. By installing this accessory, the pole spacing can be increased to increase the electrical gap between adjacent poles at the inlet and outlet ends of the circuit breaker and enhance the safety between lines.

9.14.2 Model description

FCP 25-M8 3P(1600¹⁾)



Note¹⁾: Only applicable to 1600 frame, there are three specifications of 1000, 1250, 1600

9.15 RCP Rear connection plate

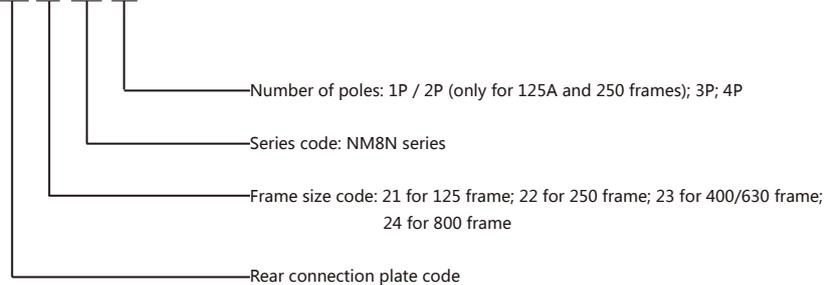


9.15.1 Function

Make the circuit breaker have flexible wiring mode, which can realize the wiring behind the board

9.15.2 Model description

RCP 21-M8 2P



9.16 CCT Cage clamp terminal

9.16.1 Function

Make the circuit breaker have a flexible wiring mode, which can directly connect the bare wires.

9.16.2 Model description

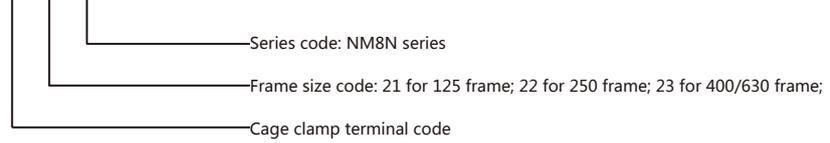


CCT21/22-M8



CCT23-M8

CCT 21-M8



9.16.3 Wiring capacity

Serial No.	Wiring capacity	Torque
CCT21-M8	(2.5~75)mm ²	8N·m
CCT22-M8	(10~120)mm ²	10N·m
CCT23-M8	(120~240)mm ²	35N·m

9.17 MC Cable connector

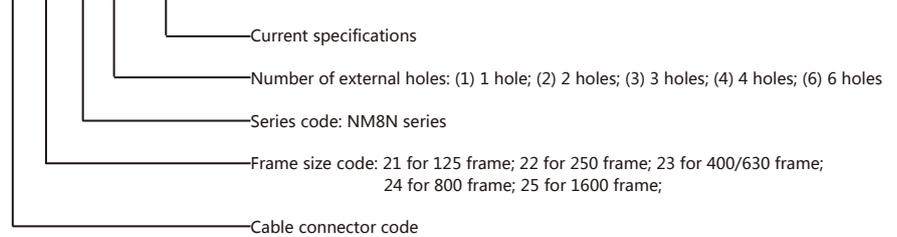
9.17.1 Function

Make the circuit breaker have a flexible wiring method, which can directly connect the bare wires and realize the connection of multiple wires.

9.17.2 Model description



MC 25-M8(3)(1250¹⁾)



Note¹⁾: Only applicable to 1600 housing, only 800-1250 specifications

9.17.3 Wiring capacity

Serial No.	Wiring capacity	Torque	Note
MC21-M8 (1)	(16~95)mm ²	10N·m	1hole
MC22-M8 (1)	(35~240)mm ²	30N·m	1hole
MC22-M8 (2)	2x(35~120)mm ²	30N·m	2holes
MC22-M8 (6)	6x(10~35)mm ²	10N·m	6holes
MC23-M8 (2)	2x(120~240)mm ²	35N·m	2holes
MC23-M8 (4)	4x95mm ²	15N·m	4holes
MC24-M8 (2)	2x240mm ²	35N·m	2holes
MC25-M8(800) (3)	3x(95~300)mm ²	35N·m	3holes
MC25-M8(1000/1250) (4)	4x(95~240)mm ²	35N·m	4holes

9.18 PIA Plug-in base

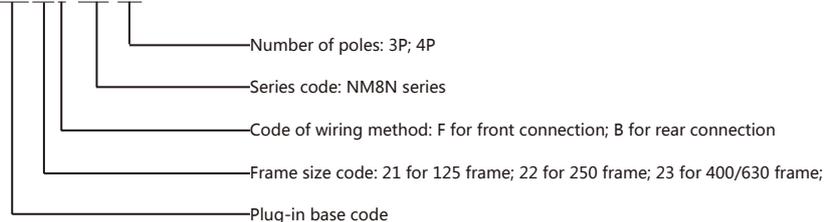
9.18.1 Function

- Quickly change the circuit breaker without changing the inlet and outlet wires and installing the base;
- Plug-in base can be pre-installed, which is convenient for customers to add circuit breakers in the future;
- When the circuit breaker is installed through the board or the base, the power circuit can be isolated;
- With plug-in safety device function (optional), it can ensure that the circuit breaker can trip automatically when it is pulled out when the circuit breaker is closed.



9.18.2 Model description

PIA 21F-M8 3P



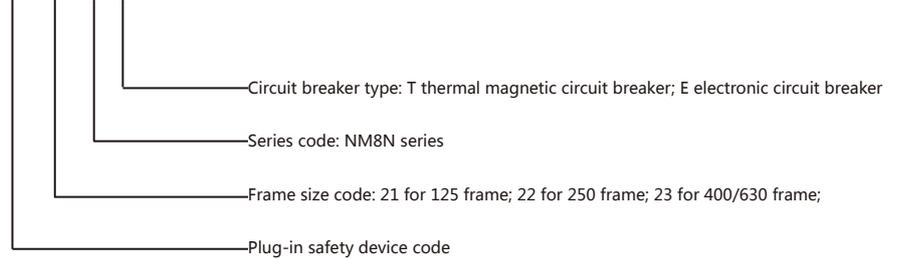
9.19 PISDPISD Plug-in safety device

9.19.1 Function

Used together with the plug-in base, it can ensure that the circuit breaker can automatically trip when it is pulled out when the circuit breaker is closed.

9.19.2 Model description

PISD 21-M8 T



9.20 DOB Draw-out base

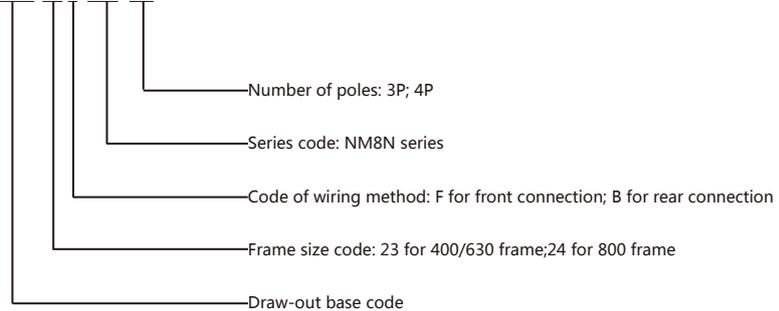
9.20.1 Function

- Quickly change the circuit breaker without changing the inlet and outlet wires and installing the base;
- Withdrawable base can be installed in advance to provide convenience for customers to add circuit breakers later;
- With plug-in safety device function (optional), it can ensure that the circuit breaker can automatically trip when it is pulled out when the circuit breaker is closed.



9.20.2 Model description

DOB 23F-M8 3P(400A)¹⁾



Note¹⁾: DOB23 is suitable for 400/630 housings. There are two specifications of 400 and 630.

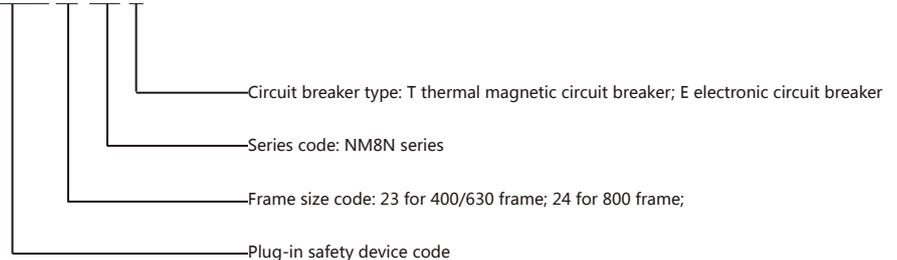
9.21 DOSD Draw-out safety device

9.21.1 Function

Used together with the plug-in base, it can ensure that the circuit breaker can automatically trip when it is pulled out when the circuit breaker is closed.

9.21.2 Model description

DOSD 23-M8 T





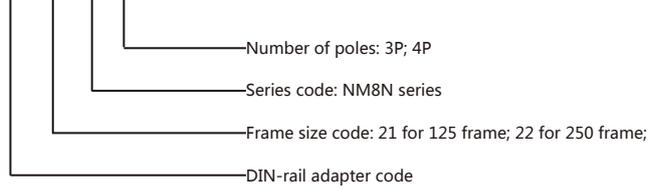
9.22 DRA DIN-rail adapter

9.22.1 Function

Adapt to the body and can be mounted on a 35mm standard DIN rail

9.22.2 Model description

DRA 21-M8 3P



9.23 COMA communication module

9.23.1 Function

The COMA communication module is an interface module for the communication between the electronic plastic case circuit breaker and the bus system, and performs communication and relay control output. Combined with the Modbus-RTU communication protocol, this communication module can easily establish a connection with a fieldbus master device to achieve three remote or four remote functions.

The technical parameters are as follows:

- Rated voltage: AC230V or DC24V (error range ± 15%)
- Communication type: RS485 (Modbus-RTU protocol)
- Contact capacity: AC250V / 3A; DC30V / 3A
- Transmission medium: shielded twisted pair
- Transmission distance: 1.2km (using category A shielded twisted pair)
- Working status indication: LED indication
- Number of stations: 1 station



9.23.2 Model description

COMA22-M8 DC24V



9.23.3 Communication solution

Solutions	Achievable function	Required products and accessories	Note
Solution 1	Remote measure	NM8N basic or standard electronic molded case circuit breaker; COMA22-M8 communication module.	1. Read phase current
Solution 2	Remote measure Remote signal	NM8N basic or standard electronic moulded case circuit breaker; COMA22-M8 communication module; AX auxiliary contact (optional, indicating opening and closing status); AL alarm contact (optional, indicating trip status).	1. Read phase current 2. Indicate circuit breaker position information (open, closed, trip status)
Solution 3	Remote measure Remote signal Remote control	NM8N basic or standard electronic moulded case circuit breaker; COMA22-M8 communication module; AX auxiliary contact (optional, indicating opening and closing status); AL alarm contact (optional, indicating trip status); MOD electric operation mechanism.	1. Read phase current 2. Indicate circuit breaker position information (open, closed, trip status) 3. Control circuit breaker opening and closing
Solution 4	Remote measure Remote signal Remote control Remote adjustment	NM8N standard electronic molded case circuit breaker; COMA22-M8 communication module; AX auxiliary contact (optional, indicating opening and closing status); AL alarm contact (optional, indicating trip status); MOD electric operation mechanism.	1. Read phase current 2. Indicate circuit breaker position information (open, closed, trip status) 3. Control circuit breaker opening and closing 4. Adjust the internal parameter settings of the controller (only for standard specifications. For details, please refer to the communication protocol).

9.24 PSU battery box

9.24.1 Function

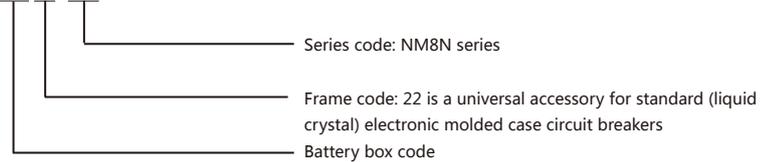
Provide DC 9V power for the standard (liquid crystal) controller for users to view, set and modify controller parameters. Ranch

Output voltage: DC 9V

Continuous power supply time: 7 hours

9.24.2 Model description

PSU22-M8



9.25 CEM Closing electromagnet

9.25.1 Function

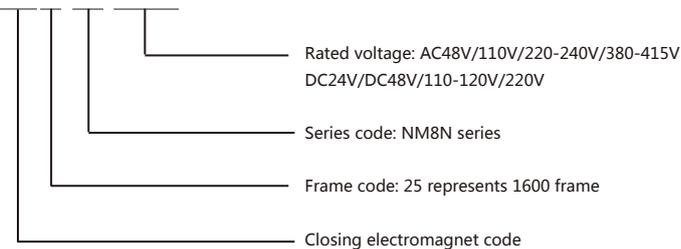
The closing electromagnet is used to close the circuit breaker by remote control.

When the circuit breaker is in the open and energy storage state at the same time, the breaker can be closed at any time. The closing electromagnet device has both AC and DC control. When the power supply voltage is equal to any voltage value between 85% and 110% of the rated control power voltage, closing electromagnet can reliably close the circuit breaker. The working mode of the closed electromagnet is a short-time work system. It cannot be allowed to be energized for a long time. The energization time is between 0.2s and 2s, otherwise there is a danger of being burned.



9.25.3 Model description

CEM25-M8 AC48V



Note : Applicable to 1600 frame motor type.

9.25.4 Electrical characteristics

Rated working voltageUe (V)	AC48V/110V /220-260V/380-415V DC24V/48V/110-120V/220V
Voltage range	85-110%
Pulse duration range (s)	0.2~2
Power consumption	AC 5VA DC 5W
Circuit breaker closing time (ms)	<70
Breaker opening time (ms)	50±10
Rated insulation voltage (kV)	2
Peak current	6XIn

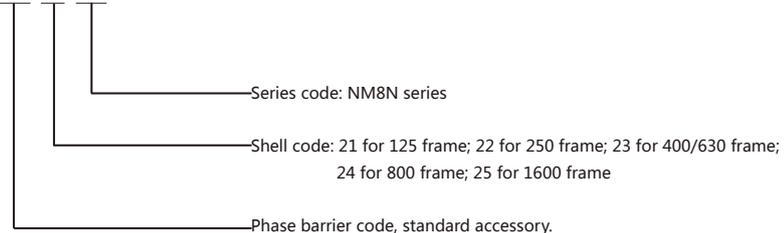
9.26 PHS Phase barrier

9.26.1 Function

Guarantees phase-to-phase insulation safety and prevents phase-to-phase short circuits

9.26.2 Model description

PHS 21-M8



9.26 Installation diagram of internal accessories

Accessory name	Mounting and wiring mode				
	NM8N-125, 250 NM8NL-125, 250	NM8N-400, 630 NM8NL-400, 630	NM8N-800	NM8N-1600	NM8N-1600 MOD
	3P, 4P	3P, 4P	3P, 4P	3P, 4P	3P, 4P
No accessory					
Alarm contact					
Auxiliary contact					
Shunt release					
Under-voltage release					
Shunt release Auxiliary contact					
Auxiliary contact Under-voltage release					
Shunt release Alarm contact					
Auxiliary contact Alarm contact					
Under-voltage release Alarm contact					
Shunt release Auxiliary contact, alarm					
Auxiliary contact alarm contact Under-voltage release					

■-Shunt release ▲-Under-voltage release ○-Auxiliary contact ●-Alarm contact

- Note:
- a. NM8N-125, 250, 400, 630, 800 cannot be equipped with undervoltage release and shunt release at the same time;
 - b. NM8N-125, 250 3P / 4P can be equipped with a maximum of 2 sets of auxiliary contacts; 1P has no internal accessories; 2P can be equipped with a maximum of one auxiliary / alarm contact at the same time;
 - c. NM8N-400, 630 can install up to 3 sets of auxiliary contacts;
 - d. NM8N-800 can be equipped with up to 4 auxiliary contacts;
 - e. NM8N-1600 MOD can be equipped with a maximum of 3 sets of auxiliary contacts, and can simultaneously install undervoltage release and shunt release;
 - f. NM8N series can only be equipped with one alarm contact.

10. Technical Supplement

10.1 DC application wiring method

Solutions	Unipolar grounding system	Ungrounded system												
Circuit diagram														
Impact of fault	<table border="1"> <tr> <td>Fault A</td> <td>maximum short-circuit current I_{sc}</td> </tr> <tr> <td>Fault B</td> <td>maximum short-circuit current I_{sc}</td> </tr> <tr> <td>Fault C</td> <td>has no effect</td> </tr> </table>	Fault A	maximum short-circuit current I_{sc}	Fault B	maximum short-circuit current I_{sc}	Fault C	has no effect	<table border="1"> <tr> <td>Fault A</td> <td>has no effect</td> </tr> <tr> <td>Fault B</td> <td>maximum short-circuit current I_{sc}</td> </tr> <tr> <td>Fault C</td> <td>has no effect</td> </tr> </table>	Fault A	has no effect	Fault B	maximum short-circuit current I_{sc}	Fault C	has no effect
Fault A	maximum short-circuit current I_{sc}													
Fault B	maximum short-circuit current I_{sc}													
Fault C	has no effect													
Fault A	has no effect													
Fault B	maximum short-circuit current I_{sc}													
Fault C	has no effect													
≤DC500V	<p>Note: 1. The upper and lower lines can be used, here the following lines are taken as an example.</p>	<p>Note: 1. Both the upper and lower lines can be used, here the following lines are taken as an example; 2. Make sure that the installation method does not cause a secondary ground fault.</p>												
DC500~750V	<p>Note: 1. The upper and lower lines can be used, here the following lines are taken as an example.</p>	<p>Note: 1. Both the upper and lower lines can be used, here the following lines are taken as an example; 2. Make sure that the installation method does not cause a secondary ground fault.</p>												
DC750~1000V	<p>Note: 1. The upper and lower lines can be used, here the following lines are taken as an example.</p>													

10.2 NM8N power loss table

Release type	Model	Rated current (A)	Fixed circuit breaker resistance loss per pole mΩ	Power loss per pole (W)
Thermal magnetic	NM8N-125	16	8.8	2.3
		20	8.8	3.5
		25	5.2	3.3
		32	4.5	4.6
		40	2.6	4.2
		50	1.8	4.5
		63	1.7	6.7
		80	1.3	8.3
		100	0.88	8.8
	125	0.8	12.5	
	NM8N-250	125	0.7	10.9
		160	0.55	14.1
		180	0.55	17.8
		200	0.55	22.0
		225	0.4	20.3
	250	0.4	25.0	
	NM8N-400	250	0.35	21.9
		315	0.25	24.8
		350	0.25	30.6
		400	0.15	24.0
	NM8N-630	400	0.15	24.0
		500	0.12	30.0
	NM8N-800	500	0.08	20.0
		630	0.08	31.8
		700	0.08	39.2
		800	0.08	51.2
	NM8N-1600	800	0.08	51.2
		1000	0.08	80.0
1250		0.04	62.5	
1600		0.04	102.4	
Electronic	NM8N-250	32	0.8	0.8
		63	0.4	1.6
		100	0.4	4.0
		160	0.4	10.2
		250	0.4	25.0
	NM8N-400	250	0.15	9.4
		400	0.15	24.0
	NM8N-630	400	0.15	24.0
		630	0.12	47.6
	NM8N-800	800	0.08	51.2
	NM8N-1600	800	0.08	51.2
		1000	0.08	80.0
		1250	0.04	62.5
1600		0.04	102.4	
Switch disconnecter	NM8NSD-125	63	0.8	3.2
		100	0.8	8.0
		125	0.8	12.5
	NM8NSD-250	125	0.4	6.3
		160	0.4	10.2
		200	0.4	16.0
		250	0.4	25.0
	NM8NSD-400	250	0.15	9.4
		400	0.15	24.0
	NM8NSD-630	630	0.12	47.6
	NM8NSD-800	800	0.08	51.2

10.3 NM8N thermal magnetic circuit breaker rated operational current and temperature compensation coefficient table

Rated current		Ambient temperature	-40°C	-35°C	-25°C	-15°C	-5°C	0°C	+10°C	+20°C	+30°C	+40°C	+50°C	+60°C	+70°C	
NM8N-125	16A	22.5	22	20.5	20	19.5	19	18.5	17.5	17	16	15	14.5	14		
	20A	28	27.5	26.5	25.5	24.5	24	23	22	21	20	19.5	18.5	18		
	25A	35	34	33	32	30.5	30	28	27	26	25	24	22.5	22		
	32A	45	44	42	41	39	38	37	35	33	32	30.5	29	28		
	40A	56	55	53	51	49	48	46	44	42	40	37	33.5	29		
	50A	70	68.5	66	64	61	60	57.5	55	52.5	50	47.5	45	40		
	63A	88	86.5	83	80	77	75	72	69	66	63	63	58.5	53	46	
	80A	112	110	106	102	98	96	92	88	84	80	80	74.5	67	56	
	100A	140	137	132	127	122	120	115	110	105	100	93	84	80		
	125A	175	172	165	159	153	150	144	137	131	125	116	105	91		
NM8N-250	125A	175	172	165	159	153	150	144	137	131	125	118	106	96		
	160A	224	220	212	204	196	192	184	176	168	160	152	136	120		
	180A	252	247	238	229	220	216	207	198	189	180	171	157	144		
	200A	280	275	265	255	245	240	230	220	210	200	190	175	166		
	225A	315	309	300	288	276	270	259	247	236	225	213	196	180		
	250A	350	343	332	319	306	300	287	275	262	250	237	218	207		
NM8N-400	250A	350	343	332	319	306	300	287	275	262	250	237	225	212		
	315A	441	433	418	402	386	378	362	346	331	315	300	286	271		
	350A	490	481	465	447	429	420	402	385	367	350	332	295	276		
	400A	560	550	530	510	490	480	460	440	420	400	380	360	320		
NM8N-630	250A	350	343	332	319	306	300	287	275	262	250	237	225	212		
	315A	441	433	418	402	386	378	362	346	331	315	300	286	271		
	350A	490	481	465	447	429	420	402	385	367	350	332	295	276		
	400A	560	550	530	510	490	480	460	440	420	400	380	360	320		
	500A	700	687	662	637	612	600	575	550	525	500	450	406	360		
NM8N-800	500A	700	687	662	637	612	600	575	550	525	500	490	460	400		
	630A	882	866	836	804	772	756	724	693	661	630	580	530	490		
	700A	980	962	927	892	857	840	805	770	735	700	670	645	575		
	800A	1120	1100	1060	1020	980	960	920	880	840	800	735	670	625		
NM8N-1600	800A	1120	1100	1060	1020	980	960	920	880	840	800	760	696	640		
	1000A	1400	1375	1325	1275	1225	1200	1150	1100	1050	1000	950	870	800		
	1250A	1750	1718	1656	1594	1531	1500	1437	1375	1312	1250	1187	1088	1000		
	1600A	2240	2200	2120	2040	1960	1920	1840	1760	1680	1600	1520	1390	1280		

Note¹⁾ : For a multi-pole DC circuit breaker, if a 2m long standard wire is used in series, the derating factor above applies.

2) : When the copper short-circuit bar is connected in series, it needs to be further reduced based on the above table (except NM8NDC-1600). The specific derating factor should be determined by users according to their different wiring methods. Derating by a factor of 0.8).

10.4 NM8N electronic circuit breaker rated operational current and temperature compensation coefficient table

Rated current		Ambient temperature	-25°C	-15°C	-5°C	0°C	+10°C	+20°C	+30°C	+40°C	+50°C	+60°C	+70°C
NM8N-250	32A	32	32	32	32	32	32	32	32	32	32	32	32
	63A	63	63	63	63	63	63	63	63	63	63	63	63
	100A	100	100	100	100	100	100	100	100	100	100	100	100
	160A	160	160	160	160	160	160	160	160	160	160	160	160
	250A	250	250	250	250	250	250	250	250	250	240	225	213
NM8N-400	250A	250	250	250	250	250	250	250	250	250	250	250	250
	400A	400	400	400	400	400	400	400	400	400	380	360	340
NM8N-630	250A	250	250	250	250	250	250	250	250	250	250	250	250
	400A	400	400	400	400	400	400	400	400	400	380	360	340
	630A	630	630	630	630	630	630	630	630	630	600	570	540
NM8N-800	630A	630	630	630	630	630	630	630	630	630	630	630	630
	800A	800	800	800	800	800	800	800	800	800	760	720	680
NM8N-1600	800A	800	800	800	800	800	800	800	800	800	800	800	800
	1000A	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	1250A	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
	1600A	1600	1600	1600	1600	1600	1600	1600	1600	1600	1520	1440	1360

Note : Individual specifications of products need to be derated at a temperature of 50 ° C and above (parameters refer to the table), and Ir needs to be adjusted to the corresponding gear.

For example : NM8N-250 EN 250 3P products are used at 70 ° C. The product needs to be derated to 213A, and the Ir position is adjusted to 0.8In position. The NM8N-250 EM 250 3P product is used at 70 ° C. The product should be derated to 213A, and the Ir position should be adjusted to 213A.

10.5 Derating factor table for circuit breaker with residual current protection module

Model	Derating factor	
NM8N-125+NM8NL-125	16A~63A	1
	80A~100A	0.9
	125A	0.8
NM8N-250+NM8NL-250	125A~180A	1
	200A~250A	0.9
NM8N-250+NM8NL-250 electronic type	32A、63A、100A、160A	1
	250A	0.95
NM8N-400+NM8NL-400	250A	1
	315A、350	0.96
	400A	0.93
NM8N-400+NM8NL-400 electronic type	250A	1
	400A	0.95
NM8N-630+NM8NL-630	400A	0.93
	500A	0.87
NM8N-630+NM8NL-630 electronic type	400A~500A	1
	630A	0.90

10.6 Derating factor table for circuit breakers with plug-in or draw-out accessories

Model		Derating factor	
		+Plug-in type	+Economic draw-out type
NM8N-125	16A-100A	1	/
	125A	0.95	/
NM8N-250	125A-180A	1	/
	200A-250A	0.95	/
NM8N-250 electronic type	32A, 63A, 100A, 160A	1	/
	250A	0.95	/
NM8N-400	250A-400A	1	1
NM8N-400 electronic type	250A-400A	1	1
NM8N-630	400A	1	1
	500A	0.95	1
NM8N-630 electronic type	400A-500A	1	1
	630A	0.9	0.9
NM8N-800	500-700A	/	0.95
	800A	/	0.9
NM8N-800 electronic type	630A	/	1
	800A	/	0.9

10.7 NM8N Derating factor table for circuit breakers altitude

Altitude (m)		2000m	3000m	4000m	5000m	
Rated operational current I_n		$1 \times I_n$	$0.96 \times I_n$	$0.93 \times I_n$	$0.9 \times I_n$	
Rated operational voltage U_e (V)	AC	690	550	480	420	
	DC (4pole string)	1000	900	850	800	
Rated insulation voltage U_i (V)		1000	930	870	800	
Dielectric properties (V)	AC	$U_{imp} = 8kV$	2200	2050	1900	1770
		$U_{imp} = 12kV$	2550	2370	2200	2050
	DC	$U_{imp} = 8kV$	3110	2892	2705	2488
		$U_{imp} = 12kV$	3600	3350	3110	2985
Rated insulation impulse voltage U_{imp} (kV)	NM8N-125 NM8N-250 NM8N-1600	8	8	8	8	
	NM8N-400 NM8N-630 NM8N-800	12	10	8	8	

10.10 Selective protection

Downstream	Upstream In (A)	NM8N-125										NM8N-250					NM8N-250 Electronic						
		16	20	25	32	40	50	63	80	100	125	125	160	180	200	225	250	32	63	100	160	250	
NB1 Tripping curve: B/C	≤ 10	190	190	300	400	500	500	500	630	800	1000	T	T	T	T	T	T	400	500	1000	T	T	
	16			300	400	500	500	500	630	800	1000	T	T	T	T	T	T	400	500	1000	T	T	
	20					500	500	500	630	800	1000	T	T	T	T	T	T		500	1000	T	T	
	25						500	500	630	800	1000	T	T	T	T	T	T		500	1000	T	T	
	32							500	630	800	1000	2000	5000	T	T	T	T		500	1000	T	T	
	40								630	800	1000	2000	5000	T	T	T	T			1000	T	T	
	50									800	1000	2000	5000	T	T	T	T			1000	T	T	
	63										1000	2000	5000	T	T	T	T			1000	T	T	
NM8N-125	16					400	500	500	630	800	1000	1000	2500	2500	2500	2500	2800		500	1000	2500	2800	
	20						500	500	630	800	1000	1000	2500	2500	2500	2500	2800		500	1000	2500	2800	
	25							500	630	800	1000	1000	2500	2500	2500	2500	2800		500	1000	2500	2800	
	32								630	800	1000	1000	2500	2500	2500	2500	2800			1000	2500	2800	
	40									800	1000	1000	2000	2000	2500	2500	2800			1000	2000	2800	
	50										1000	1000	2000	2000	2500	2500	2800			1000	2000	2800	
	63											1000	2000	2000	2500	2500	2800				2000	2800	
	80													2000	2000	2500	2500	2800				2000	2800
100															2500	2500	2800					2800	
125																2500	2800						2800
NM8N-250	125																						
	160																						
	180																						
	200																						
	225																						
250																							
NM8N-250 Electronic	32																			1000	2000	2800	
	63																				2000	2800	
	100																					2800	
	160																						2800
NM8N-400	250																						
	315																						
	350																						
	400																						
NM8N-400 Electronic	250																						
	400																						
NM8N-630	250																						
	315																						
	350																						
	400																						
NM8N-630 Electronic	250																						
	400																						
	630																						

- Note : ¹⁾ No content, meaning no selectivity.
²⁾ 1000, which indicates local selectivity, and the number indicates the maximum fault current to achieve selectivity. For example, selectivity below 1000A can be achieved here, and upper and lower circuit breakers above 1000A may operate simultaneously.
³⁾ T, which means that full selectivity is satisfied within the breaking capacity of the lower circuit breaker.

11 .Ordering notice

11.1 Quick selection of circuit breaker

11.1.1 Quick selection of power distribution and motor protection circuit breakers¹⁾

NM8N	-	250	S	TM	125	4C	OTHER	
↓	↓	↓	↓	↓	↓	↓	↓	
Circuit breaker	Frame current(A)	Breaking code	Release type	Rated current(A)		Poles	Special requirement	
NM8N moulded case circuit breaker	125 250 400 630 800	C : 36kA S : 50kA Q : 70kA H : 100kA R : 150kA	M: Magnetic for motor protection TM : Thermal Magnetic for Distribution Protection EN: Electronic Basic for Distribution Protection EM: Electronic Standard for Distribution Protection ENM: Electronic Basic for Motor Protection EMM: Electronic Standard for Motor Protection	TM/M	EN/EM/ENM/EMM	1P : One pole 2P : Two-pole 3P : Three-pole 4B : Four-pole ²⁾ 4C : Four-pole ²⁾		
				125 : 16,20,25 32,40,50,63,80 100,125	—			
				250 : 125,160,180 200,225,250	250 : 32,63,100 160,250			
				400 : 250,315 350,400	400 : 250,400			
				630 : 400,500	630 : 400,630			
				800 : 500,630 700,800	800 : 630,800			
	1600	S : 50kA Q : 70kA H : 100kA	TM: Thermal Magnetic for Distribution Protection EN: Electronic Basic for Distribution Protection EM: Electronic Standard for Distribution Protection	TM/EN/EM		1600 : 800,1000,1250,1600	3P : Three-pole 4B : Four-pole ²⁾ 4C : Four-pole ²⁾	MOD DC110 ³⁾ MOD DC220 ³⁾ MOD AC230 ³⁾ MOD AC400 ³⁾

Note : ¹⁾ For customer needs beyond the technical requirements of the sample, you can contact the company's sales department or technical department as a special order processing; The body and accessories should be written separately when ordering. If the user requires the factory to assemble the body and accessories, it must be specified when ordering, otherwise the factory will ship separately; Motor protection is only applicable to 3P / 4P;

²⁾ 4B : Neutral poles without protection, can be operated with other three poles; 4C: Neutral poles with protection, can be operated with other three poles.

³⁾ Only NM8N-1600 has motor type

11.1.2 Quick selection of DC circuit breaker

NM8N	DC	-	250	S	TM	125	2P	OTHER
Current type	Frame current(A)	Breaking code	Release type	Rated current(A)	Poles	Special requirement		
DC : Direct current	125	B : 25kA	TM : Thermal Magnetic for Distribution Protection	125 : 16,20,25 32,40,50,63,80 100,125	1P : One pole ¹⁾ 2P : Two-pole ¹⁾ 3P : Three-pole 4P : Four-pole			
	250	C : 36kA		250 : 125,160 180,200,225 250				
	400	S : 50kA		400 : 250,315 350,400				
	630	Q : 70kA		630 : 400,500				
	800	H : 100kA		800 : 500,630 700,800				
	1600	B : 25kA C : 36kA	TM : Thermal Magnetic for Distribution Protection	1600 : 800,100 1250,1600	3P : Three-pole 4P : Four-pole			

Note : ¹⁾ 1P / 2P is limited to 125 and 250 frame products.

11.1.3 Quick selection of Residual current circuit breaker/Residual current protection module¹⁾

NM8N	L	-	250	S	TM	125	4C	A	RCD1	ALT
Residual current protection code	Residual current protection code	Frame current(A)	Breaking code ³⁾	Release type ³⁾	Poles	Residual current type code	Rated residual current code	Special requirement		
Residual current protection	125 250 400 630	C : 36kA S : 50kA Q : 70kA H : 100kA R : 150kA	TM: Thermal Magnetic for Distribution Protection EN: Electronic Basic for Distribution Protection EM: Electronic Standard for Distribution Protection M: Magnetic for Motor Protection ENM: Electronic Basic for Motor Protection EMM: Electronic Standard for Motor Protection	TM/M	3P : Three poles 4B : Four poles ²⁾ 4C : Four poles ²⁾ Residual current protection module has no neutral pole code	Default: AC type A: A type	RCD1: 0.03-0.1-0.3-1A adjustable (for 125,250,400,630A) RCD2: 0.05-0.2-0.5-2A adjustable (for 125,250A) RCD3: 0.05-0.2-0.5-2A adjustable (suitable for 400,630A) RCD4: 0.1-0.3-1-2A adjustable (suitable for 400,630A)	Default: No special requirements ALT: Leakage alarm with trip ALNT: Leakage alarm without trip		
				125 : 16,20 25,32,40,50 63,80,100 125					EN/EM/ ENM/ EMM	
				250 : 125 160,180 200,225,250	250 : 32,63,100 160,250					
				400 : 250 315,350,400	400 : 250,400					
				630 : 400,500	630 : 400,630					
				Residual current protection module has noneutral polecode						

- Note : ¹⁾ For customer needs beyond the technical requirements of the sample, you can contact the company's sales department or technical department as a special order processing; The body and accessories should be written separately when ordering. If the user requires the factory to assemble the body and accessories, it must be specified when ordering, otherwise the factory will ship separately; Motor protection is only applicable to 3P / 4P;
- ²⁾ 4B : Neutral poles without protection, can be operated with the other three phases; 4C: Neutral poles with protection, can be operated with the other three phases;
- ³⁾ Residual current protection module selection does not have this code, for example: NM8NL-250 4C A RCD1 ALT means 250A frame, 4 poles, A type residual current protection, residual operating current 0.03-0.1-0.3-1A, with Residual current protection module with leakage alarm trip function.

11.1.4 Quick selection of switch disconnecter

NM8N

SD

-

250

AC

125

2P

OTHER

Switch disconnecter	Frame current (A)	Release type	Frame current (A)	Poles	Special requirement
SD : Switch disconnecter	125 250 400 800 1600	AC: Alternating current DC: Direct current	125 : Default 250 : Default 400 : Default 800 : Default 1600 : 800,1000 1250,1600	2P : Two-pole ¹⁾ 3P : Three-pole 4P : Four-pole	

Note : ¹⁾ 2P is only for 125 and 250 frame products.

11.2 NM8N accessory models selection table

Accessory type	Code	Specification	NM8N-125	NM8N-250
Auxiliary contact	AX	Universal Neutral	AX21-M8 AX21-M8 N	
Alarm contact	AL	Universal Neutral	AL21-M8 AL21-M8 N	
Shunt release	SHT	AC48V	SHT21-M8 AC48V	SHT22-M8 AC48V
		AC110V	SHT21-M8 AC110V	SHT22-M8 AC110V
		AC220-240V	SHT21-M8 AC220-240V	SHT22-M8 AC220-240V
		AC380-415V	SHT21-M8 AC380-415V	SHT22-M8 AC380-415V
		DC24V	SHT21-M8 DC24V	SHT22-M8 DC24V
		DC48V	SHT21-M8 DC48V	SHT22-M8 DC48V
		DC220V	SHT21-M8 DC220V	SHT22-M8 DC220V
Under-voltage release	UVT	AC48V	UVT21-M8 AC48V	UVT22-M8 AC48V
		AC110V	UVT21-M8 AC110V	UVT22-M8 AC110V
		AC220-240V	UVT21-M8 AC220-240V	UVT22-M8 AC220-240V
		AC380-415V	UVT21-M8 AC380-415V	UVT22-M8 AC380-415V
		DC24V	UVT21-M8 DC24V	UVT22-M8 DC24V
		DC48V	UVT21-M8 DC48V	UVT22-M8 DC48V
		DC110-120V DC220V	UVT21-M8 DC110-120V UVT21-M8 DC220V	UVT22-M8 DC110-120V UVT22-M8 DC220V
Closing electromagnet	CEM	AC48V	/	/
		AC110V	/	/
		AC220-240V	/	/
		AC380-415V	/	/
		DC24V	/	/
		DC48V	/	/
		DC110-120V DC220V	/	/
Motor-driven mechanism	MOD	AC110/DC110-120V	MOD21-M8 AC110/DC110-120V	MOD22-M8 AC110/DC110-120V
		AC220-240/DC220V	MOD21-M8 AC220-240V/DC220V	MOD22-M8 AC220-240V/DC220V
		AC380-415V	MOD21-M8 AC380-415V	MOD22-M8 AC380-415V
		DC24V	MOD21-M8 DC24V	MOD22-M8 DC24V
Economic extended rotary handle	SRH	3P	SRH21-M8 3P	SRH22-M8 3P
		4P	SRH21-M8 4P	SRH22-M8 4P
Direct rotary handle	DRH	Thermal magnetic (T)	DRH21-M8 T	DRH22-M8 T
		Magnetic (M)	DRH21-M8 M	DRH22-M8 M
		Electronic (E)	/	DRH22-M8 E
		Switch disconnecter (SD)	DRH21-M8 M	DRH22-M8 SD
Extended rotary handle	ERH	Thermal magnetic (T)	ERH21-M8 T	ERH22-M8 T
		Magnetic (M)	ERH21-M8 M	ERH22-M8 M
		Electronic (E)	/	ERH22-M8 E
		Switch disconnecter (SD)	ERH21-M8 M	ERH22-M8 SD
Extended rotary handle	LHD	3P/4P	/	/
Locking system	KLK		KLK21-M8	KLK22-M8
Mechanical interlock	MIT	3P	MIT21-M8 3P	MIT22-M8 3P
		4P	MIT21-M8 4P	MIT22-M8 4P
Short terminal cover	TCV	3P	TCV21-M8 3P	TCV22-M8 3P
		4P	TCV21-M8 4P	TCV22-M8 4P
Long terminal cover	TCE	3P	TCE21-M8 3P	TCE22-M8 3P
		4P	TCE21-M8 4P	TCE22-M8 4P
Front connection plate	FCP	1P	FCP21-M8 1P	FCP22-M8 1P
		2P	FCP21-M8 2P	FCP22-M8 2P
		3P	FCP21-M8 3P	FCP22-M8 3P
		4P	FCP21-M8 4P	FCP22-M8 4P
Rear connection plate	RCP	1P	RCP21-M8 1P	RCP22-M8 1P
		2P	RCP21-M8 2P	RCP22-M8 2P
		3P	RCP21-M8 3P	RCP22-M8 3P
		4P	RCP21-M8 4P	RCP22-M8 4P
Cage clamp terminal	CCT	1hole	CCT21-M8	CCT22-M8
Cable connector	MC	1hole	MC21-M8(1)	MC22-M8(1)
		2hole	/	MC22-M8(2)
		3hole	/	/
		4hole	/	/
		6hole	/	MC22-M8(6)
Plug-in base	PIA	3P Front connection	PIA21F-M8 3P	PIA22F-M8 3P
		4P Front connection	PIA21F-M8 4P	PIA22F-M8 4P
		3P Rear connection	PIA21B-M8 3P	PIA22B-M8 3P
		4P Rear connection	PIA21B-M8 4P	PIA22B-M8 4P
Plug-in safety device	PISD	Thermal magnetic (T)	PISD21-M8 T	PISD22-M8 T
		Electronic (E)	/	PISD22-M8 E
Draw-out base	DOB	3P Front connection	/	/
		4P Front connection	/	/
		3P Rear connection	/	/
		4P Rear connection	/	/
DIN-rail adapter	DOSD	Thermal magnetic (T)	/	/
		Electronic (E)	/	/
DIN-rail adapter	DRA	3P	DRA21-M8 3P	DRA22-M8 3P
		4P	DRA21-M8 4P	DRA22-M8 4P
Communication module	COMA	DC24V	/	COMA22-M8 DC24V 0.5m
			/	COMA22-M8 DC24V 1.5m
			/	COMA22-M8 DC24V 3m
		AC230V	/	COMA22-M8 AC230V 0.5m
			/	COMA22-M8 AC230V 1.5m
			/	COMA22-M8 AC230V 3m
Battery box	PSU		/	PSU22-M8
Phase barrier	PHS		PHS21-M8	PHS22-M8

NM8N-400	NM8N-630	NM8N-800	NM8N-1600
AX21-M8			
AX21-M8 N			
AL21-M8			
AL21-M8 N			
SHT22-M8 AC48V		SHT24-M8 AC48V	SHT25-M8 AC48V
SHT22-M8 AC110V		SHT24-M8 AC110V	SHT25-M8 AC110V
SHT22-M8 AC220-240V		SHT24-M8 AC220-240V	SHT25-M8 AC220-240V
SHT22-M8 AC380-415V		SHT24-M8 AC380-415V	SHT25-M8 AC380-415V
SHT22-M8 DC24V		SHT24-M8 DC24V	SHT25-M8 DC24V
SHT22-M8 DC48V		SHT24-M8 DC48V	SHT25-M8 DC48V
SHT22-M8 DC220V		SHT24-M8 DC220V	SHT25-M8 DC220V
UVT22-M8 AC48V		UVT24-M8 AC48V	UVT25-M8 AC48V
UVT22-M8 AC110V		UVT24-M8 AC110V	UVT25-M8 AC110V
UVT22-M8 AC220-240V		UVT24-M8 AC220-240V	UVT25-M8 AC220-240V
UVT22-M8 AC380-415V		UVT24-M8 AC380-415V	UVT25-M8 AC380-415V
UVT22-M8 DC24V		UVT24-M8 DC24V	UVT25-M8 DC24V
UVT22-M8 DC48V		UVT24-M8 DC48V	UVT25-M8 DC48V
UVT22-M8 DC110-120V		UVT24-M8 DC110-120V	UVT25-M8 DC110-120V
UVT22-M8 DC220V		UVT24-M8 DC220V	UVT25-M8 DC220V
/		/	CEM25-M8 AC48V
/		/	CEM25-M8 AC110V
/		/	CEM25-M8 AC220-240V
/		/	CEM25-M8 AC380-415V
/		/	CEM25-M8 DC24V
/		/	CEM25-M8 DC48V
/		/	CEM25-M8 DC110-120V
/		/	CEM25-M8 DC220V
MOD23-M8 AC110/DC110-120V		MOD24-M8 AC110/DC110-120V	MOD25-M8 AC110/DC110-120V
MOD23-M8 AC220-240V/DC220V		MOD24-M8 AC220-240V/DC220V	MOD25-M8 AC220-240V/DC220V
MOD23-M8 AC380-415V		MOD24-M8 AC380-415V	MOD25-M8 AC380-415V
MOD23-M8 DC24V		MOD24-M8 DC24V	MOD25-M8 DC24V
SRH23-M8		SRH24-M8	SRH25-M8
DRH23-M8 T		/	/
DRH23-M8 M		/	/
DRH23-M8 E		/	/
DRH23-M8 SD		/	/
ERH23-M8 T		/	/
ERH23-M8 M		/	/
ERH23-M8 E		/	/
ERH23-M8 SD		/	/
/		/	LHD25-M8
KLK23-M8		/	/
MIT23-M8 3P		MIT24-M8	/
MIT23-M8 4P		/	/
TCV23-M8 3P		TCV24-M8 3P	/
TCV23-M8 4P		TCV24-M8 4P	/
TCE23-M8 3P		TCE24-M8 3P	/
TCE23-M8 4P		TCE24-M8 4P	/
/		/	/
/		/	/
FCP23-M8 3P		/	FCP25-M8 3P
FCP23-M8 4P		/	FCP25-M8 4P
/		/	/
/		/	/
RCP23-M8 3P		RCP24-M8 3P	/
RCP23-M8 4P		RCP24-M8 4P	/
CCT23-M8		/	/
/		/	/
MC23-M8(2)		MC24-M8(2)	/
/		/	MC25-M8(3)(800)
MC23-M8(4)		/	MC25-M8(4)(1000/1250)
/		/	/
PIA23F-M8 3P		/	/
PIA23F-M8 4P		/	/
PIA23B-M8 3P		/	/
PIA23B-M8 4P		/	/
PISD23-M8 T		PISD24-M8 T	/
PISD23-M8 E		PISD24-M8 E	/
DOB23F-M8 3P(400A)	DOB23F-M8 3P(630A)	DOB24F-M8 3P	/
DOB23F-M8 4P(400A)	DOB23F-M8 4P(630A)	DOB24F-M8 4P	/
DOB23B-M8 3P(400A)	DOB23B-M8 3P(630A)	DOB24B-M8 3P	/
DOB23B-M8 4P(400A)	DOB23B-M8 4P(630A)	DOB24B-M8 4P	/
DOSD23-M8 T		DOSD24-M8 T	/
DOSD23-M8 E		DOSD24-M8 E	/
/		/	/
/		/	/
COMA22-M8 DC24V 0.5m			
COMA22-M8 DC24V 1.5m			
COMA22-M8 DC24V 3m			
COMA22-M8 AC230V 0.5m			
COMA22-M8 AC230V 1.5m			
COMA22-M8 AC230V 3m			
PSU22-M8			
PHS23-M8		PHS24-M8	PHS25-M8