



NM8, NM8S Moulded Case Circuit Breaker

1. General

- 1.1 Certificates: CE, DNV, KEMA, UKrSEPRO, EAC, RCC;
- 1.2 Electric ratings: AC50/60Hz, AC220V~690V
16A~1600A;
- 1.3 Standard: IEC/EN 60947-2.

2. Operating conditions

- 2.1 Temperature: -5°C~+40°C; the average value within 24h shall not exceed +35°C; for the circuit breaker with thermo-magnetic release, +40°C is set to be the standard temperature for ratings. Special utilization, please refer to coefficients indicated on page 21 for temperature compensation correction;
- 2.2 Altitude: ≤2000m;
- 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°C, higher relative humidity is allowable under lower temperature.
 - For example, RH could be 90% at +20°C, special measures should be taken to occurrence of dews.

3. Type designation

NM 8

Application code

Blank: for power distribution;

M: for motor protection

Number of poles: 1: 1-pole 2: 2-pole

3: 3-pole 4: 4-pole

With current release components,

N-pole makes and breaks with other

three poles, N-pole first makes then

breaks, N-pole operating value is 1.0In

of other three poles

Rated current :

125: 16, 20, 25, 32, 40, 50, 63, 80, 100, 125

250: 100, 125, 160,180, 200, 225, 250

400: 250, 315, 350, 400

630: 250, 315, 350, 400, 500, 630 (for

thermo-magnetic breaker; the rated operational

current be up to 500A)

800: 630, 700, 800

1250:630, 700, 800, 1000, 1250

1600: 1000,1250,1600 (Only electronic products)

Breaking capacity code:

S: Standard type; (current limiting technology utilised)

H: Higher type; (current limiting technology utilised)

R: Current limiting type (current limiting technology

utilised)

Frame size rated current: 125, 250, 400,

630, 800, 1250, 1600

Release type code:

Blank: thermal-magnetic release;

S: Electronic release;

Design sequence number

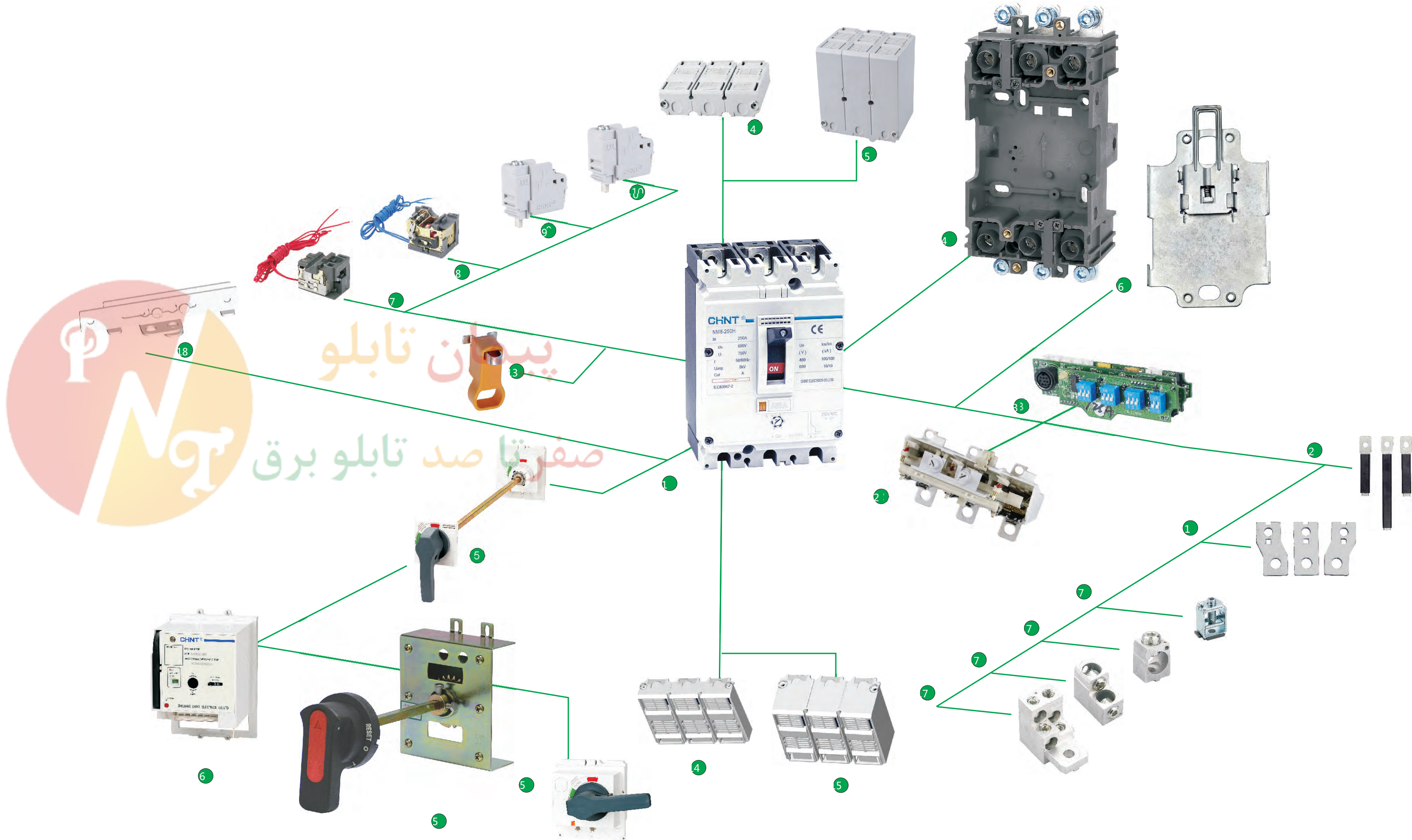
MCCB

Company code

4. Product overview

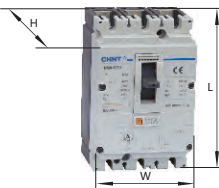
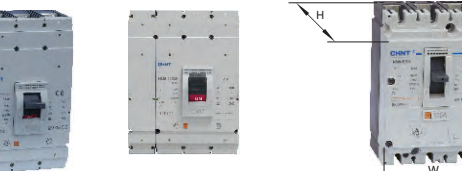
NM8 Moulded Case Circuit Breaker

- 1 Body
- 2 Thermo magnetic release
- 3 Electronic release
- 4 Plug-in base
- 5 Rotary manual operating handle
- 6 Motor driven operating mechanism
- 7 Under-voltage release
- 8 Shunt release
- 9 Alarm contact
- 10 Auxiliary contact
- 11 Front connection plate
- 12 Rear connection plate
- 13 Locking system(padlock)
- 14 Short terminal cover
- 15 Extended terminal cover
- 16 DIN rail adaptor
- 17 Cage clamp terminal
- 18 Mechanical interlock



5. Technical data

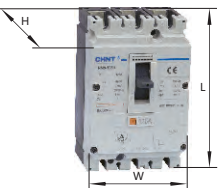
5.1 Parameters

NM8 circuit breaker Thermal-magnetic type		NM8-125									NM8-250									NM8-400									NM8-630									NM8-800									NM8-1250																								
4 Frames		Frame 1									Frame 2									Frame 3																		Frame 4																																	
Electric characteristics as per IEC 60947-2 and EN60947-2																																																																							
Rated current(A) In		16, 20, 25, 32, 40, 50, 63, 80, 100, 125									100, 125, 160, 180, 200, 225, 250									250, 315, 350, 400									250, 315, 350, 400, 500									630, 700, 800									630, 700, 800, 1000, 1250																								
Rated insulation voltage (V) Ui		800									800									800									800									800									800																								
Rated impulse withstand voltage (kV) Uimp		8									8									8									8									8									8																								
Rated operational voltage (V) Ue		AC 50/60Hz									690									690									690									690									690																								
		DC									-									-									-									-									-																								
Number of poles		1 ^①	2	3	4					2	3	4					3	4					3	4					3	4					3	4																																			
																																																																							
Breaking capacity code		-	H	C	S	H	R	C	S	H	H	C	S	H	R	C	S	H	S	H	R	S	H	S	H	R	S	H	S	H	R	S	H																																						
Rated ultimate short-circuit breaking capacity (kA RMS) Icu		-	100	35	50	100	150	35	50	100	100	35	50	100	150	35	50	100	70	100	150	70	100	70	100	150	70	100	50	70	-	50	70																																						
AC 660V/690V		-	8	6	8	8	8	6	8	8	10	6	10	10	10	6	10	10	15	15	15	15	15	15	15	15	15	15	10	20	-	10	20																																						
Rated service breaking capacity Ics= (%Icu)		100									100							100 ^②						100 ^②				50				50																																							
Suitability for isolation		■									■							■						■				■				■																																							
Utilization category		A									A							A						A				A				A																																							
Safety of insulation		■									■							■						■				■				■																																							
Life(CO recycle)		Mechanical	20,000									20,000									15,000									15,000									10,000									10,000																							
Electrical		10,000									10,000									6,000									6,000									6,000									6,000																								
Protection		Thermo-magnetic									Thermo-magnetic									Thermo-magnetic									Thermo-magnetic									Thermo-magnetic									Thermo-magnetic																								
Release units		■									■									■									■									■									■																								
Over-load protection		■									■									■									■									■									■																								
Short-circuit protection		■									■									■									■									■									■																								
Residual current protection		Added on residual current protection module		-							-		-							-		-							-		-							-		-																															
Mounting and connection																																																																							
Fixed		Front connection		■							■		■							■		■							■		■							■		■																															
Rear connection		■									■									■									■									■									■																								
DIN rail		Front connection		■							■		■							■		■							■		■							■		■																															
Plug-in		Front connection		■							■		■							■		■							■		■							■		■																															
Rear connection		■									■									■									■									■									■																								
Manual		Handle		■							■		■							■		■							■		■							■		■																															
Direct or extended rotary handle		■									■									■									■									■									■																								
Motor-driven mechanism		■									■									■									■									■									■																								
Manual, remote operated automatic source changeover systems		■									■									■									■									■									■																								
Shunt and under-voltage release		■									■									■									■									■									■																								
Auxiliary and alarm contact		■									■									■									■									■									■																								
Pad locking system		■									■									■									■									■									■																								
Mounting and connection accessories																																																																							
Connection terminal		■									■									■									■									■									■																								
Front connection plate		■									■									■									■									■									■																								
Rear connection plate		■									■									■									■									■									■																								
DIN rail adaptor		■									■									-									-									-									-																								
Plug-in type connection accessories		■									■									■									■									■									■																								
Terminal covers		■									■									■									■									■									■																								
Interphase barrier		■									■									■									■									■									■																								
Dimension and weight																																																																							
Dimension(mm)W×H×L		Fixed type-front connection		62×140×79							90×140×79		120×140×79							70×157×88		105×157×88							140×157×88							140×255×113		185×255×113							140×255×113		185×255×113							210×370×196		280×370×196							210×370×196		280×370×196						
Weight(kg)		Fixed type-front connection		0.85							1.2		1.6							1.5		2.1							2.8							7.5		10							7.5		10							17.5		23							17.5		23						

Note:

① For 1 pole product, Ics=100%Icu=45kA @AC220V/ 240V

② When Ue is ≥660V, Ics=50% Icu.

NM8S circuit breaker Electronic type			NM8S-125				NM8S-250				NM8S-400				NM8S-630 ^①				NM8S-800				NM8S-1250				NM8S-1600			
3 Frames			Frame 1				Frame 2				Frame 3				Frame 3				Frame 3				Frame 3				Frame 3			
Electric characteristics as per IEC 60947-2 and EN60947-2																														
Rated current(A) In			40, 50, 63, 80, 100, 125		100, 125, 160, 180, 200, 225, 250		250, 315, 350, 400		250, 315, 350, 400, 500, 630		630, 700, 800		630, 700, 800, 1000, 1250		1000, 1250, 1600															
Rated insulation voltage (V) Ui			800		800		800		800		800		800		800															
Rated impulse withstand voltage (kV) Uimp			8		8		8		8		8		8		8															
Rated operational voltage (V) Ue			AC 50/60Hz		690		690		690		690		690		415															
			DC		-		-		-		-		-		-															
Number of poles			3		4		3		4		3		4		3		4		3		4		3		4					
																														
Breaking capacity code			S		H		S		H		S		H		S		H		S		H		S		H		S		H	
Rated ultimate short-circuit breaking capacity (kA RMS) Icu			AC 380V/400V/415V		70		100		70		100		70		100		70		100		70		100		70		100		70	
			AC 660V/690V		10		10		10		10		10		10		10		10		10		10		10		10		10	
Rated service breaking capacity Ics= (%Icu)			100		100		100 ^②		100 ^②		100 ^②		100 ^②		100 ^②		100 ^②		100 ^②		100 ^②		100 ^②		100 ^②		100 ^②			
Suitability for isolation			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Utilization category			A		A		A		A		A		A		A		A		A		A		A		A		A		A	
Safety of insulation			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Life(CO recycle)			Mechanical		20,000		15,000		15,000		10,000		10,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000	
			Electrical		20,000		6,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000	
Protection			Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic		Electronic	
Release units			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Over-load protection			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Short-circuit protection			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Residual current protection			Added on residual current protection module		-		-		-		-		-		-		-		-		-		-		-		-		-	
Mounting and connection																														
Fixed			Front connection		■		■		■		■		■		■		■		■		■		■		■		■		■	
			Rear connection		■		■		■		■		■		■		■		■		■		■		■		■		■	
DIN rail			Front connection		■		■		■		■		■		■		■		■		■		■		■		■		■	
Plug-in			Front connection		■		■		■		■		■		■		■		■		■		■		■		■		■	
			Rear connection		■		■		■		■		■		■		■		■		■		■		■		■		■	
Manual			Handle		■		■		■		■		■		■		■		■		■		■		■		■		■	
			Direct or extended rotary handle		■		■		■		■		■		■		■		■		■		■		■		■		■	
Motor-driven mechanism			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Manual, remote operated automatic source changeover systems			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Shunt and under-voltage release			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Auxiliary and alarm contact			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Pad locking system			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Mounting and connection accessories																														
Connection terminal			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Front connection plate			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Rear connection plate			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
DIN rail adaptor			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Plug-in type connection accessories			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Terminal covers			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Interphase barrier			■		■		■		■		■		■		■		■		■		■		■		■		■		■	
Dimension and weight																														
Dimension(mm)W×L×H			Fixed type-front connection		105×157×88		140×157×88		140×255×113		185×255×113		140×255×113		185×255×113		210×370×196		280×370×196		210×370×196		280×370×196		210×370×201		280×370×201			
Weight(kg)			Fixed type-front connection		2.1		2.8		8		11		8		11		17.5		23		17.5		23		23		30			



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5.2 The following table shows which connection diagram to use according to the number of poles to be connected in series to obtain the required breaking capacity, in relation to the type of distribution network:

Rated voltage V	protection function	Isolation	Earth-insulated network	Network with one polarity ⁽¹⁾ earthed	Network with a middle point earthed
≤250	■	■	A	A	A
	■	-	-	-	-
≤500	■	■	A	B	A
	■	-	-	C	-

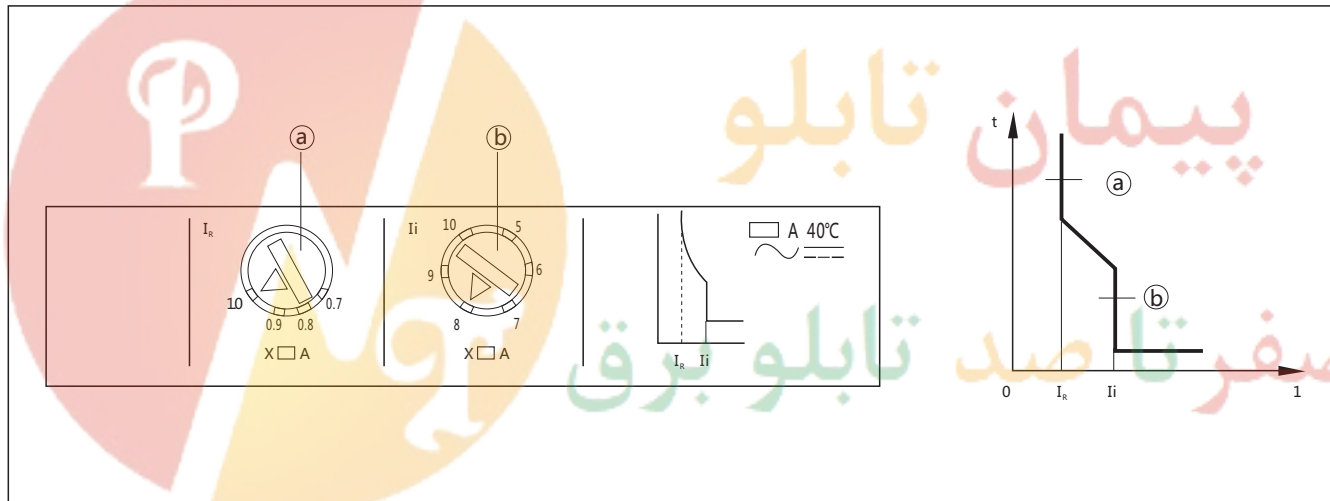
Note:

- a. The risk of double earth fault is nil, therefore the fault current only involves a part of the interruption poles.
- b. For connection with four poles in series, circuit-breakers with neutral at 100% of the phase settings must be used.

6. Release

6.1 Thermo-magnetic release

6.1.1 Thermo-magnetic release of NM8-250, 400, 630, 800 and 1250 breakers can be set to meet protection requirements



Adjustable setting of over-load protection (a)

Adjustable setting of short-circuit protection or fixed (b)

Thermo-magnetic release	NM8-125	NM8-250	NM8-400	NM8-630	NM8-800	NM8-1250
Rated value (A) In 40°C	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	100, 125, 160, 180, 200, 225, 250	250, 315, 350, 400	250, 315, 350, 400, 500	630, 700, 800	630, 700, 800, 1000, 1250
Over-load protection	Thermo protection					
Tripping current IR (A)	Adjustable range (0.8~1)XIn	Adjustable range (0.7~1)XIn	Adjustable range (0.7~1)XIn	Adjustable range (0.7~1)XIn	Adjustable range (0.8~1)XIn	Adjustable range (0.8~1)XIn
N-pole protection (A) 4A, 4B 4C, 4D	Without protection 1.0XIn	Without protection 1.0XIn	Without protection 1.0XIn	Without protection 1.0XIn	Without protection 1.0XIn	Without protection 1.0XIn
Short-circuit protection	Magnetic protection					
Tripping current Ii (A)	10In (for power distribution protection)	Adjustable range (5~10) XIn (8~12)In(for motor protection)	Adjustable range (5~10) XIn (8~12)In(for motor protection)	Adjustable range (5~10) XIn (8~12)In(for motor protection)	Adjustable range (5~10) XIn (8~12)In(for motor protection)	Adjustable range (5~10)XIn

NM8-250, (100~180)A: adjustable magnetic protection value=(6~10)In, (200~250)A: adjustable magnetic protection value=(5~10)In

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6.1.2 Characteristic of thermo protection operation of thermo-magnetic release for power distribution

Serial No.	Test current	I/In	Conventional time	Initial status
1	Conventional non-tripping current	1.05	> 1h (In ≤ 63A) > 2h (In > 63A)	Cold status
2	Conventional tripping current	1.3	≤ 1h (In ≤ 63A) ≤ 2h (In > 63A)	Right after test 1

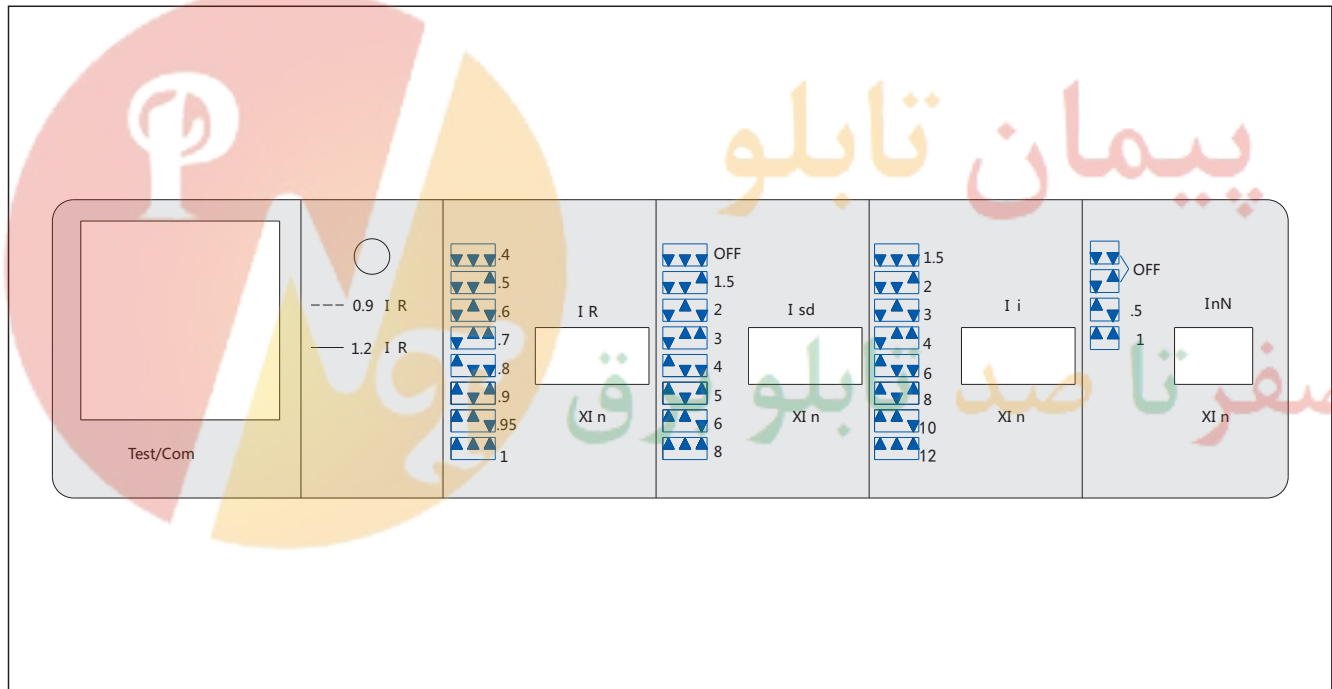
6.1.3 Characteristic of thermo protection operation of thermo-magnetic release for motor protection

Serial No.	Test current	I/In	Conventional time	Initial status
1	Conventional non-tripping current	1.0	> 2h	Cold status
2	Conventional tripping current	1.2 1.5 7.2	≤ 2h ≤ 4min 4s ≤ T ≤ 10s	Right after test 1

6.2 Electronic Release

6.2.1 NM8S-125, 250 electronic release is an universal module.

It is of 11 current specifications: 40A, 50A, 63A, 80A, 100A, 125A, 160A, 180A, 200A, 225A and 250A to adjust setting values and to meet protection requirements.



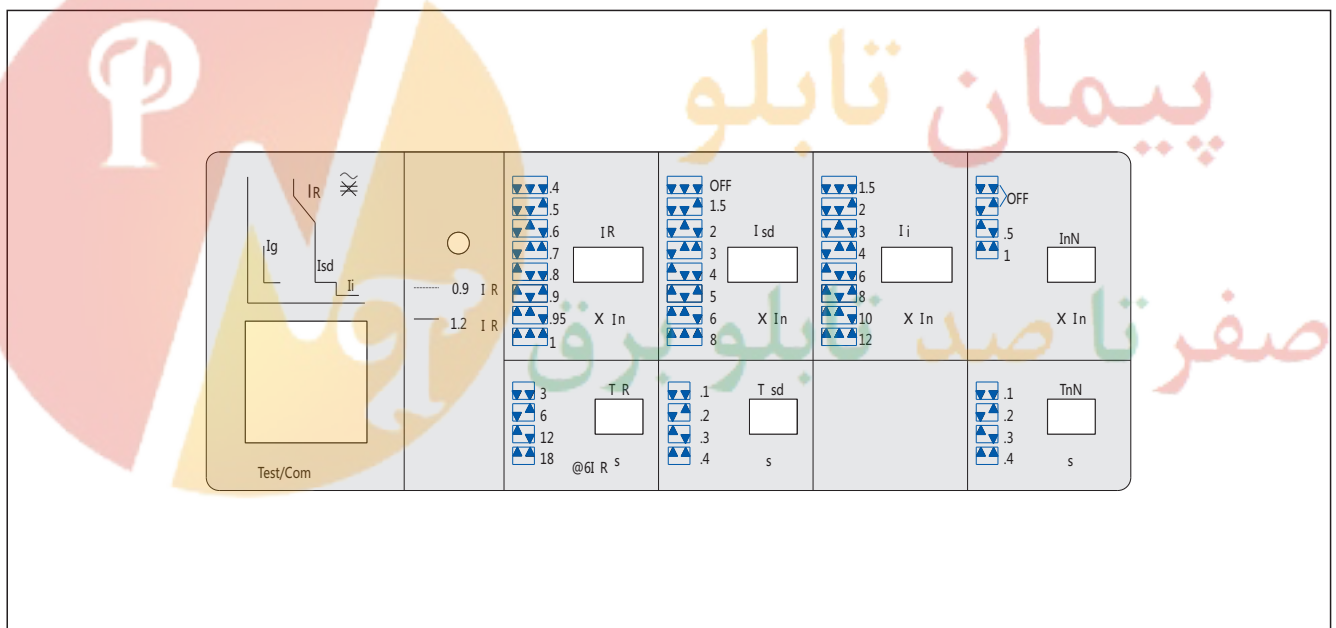
The indicator light flashes, when single-phase operational current is $\leq 90\%$ IR.

The indicator light is always lit, when single-phase operational current is $\geq 115\%$ IR.

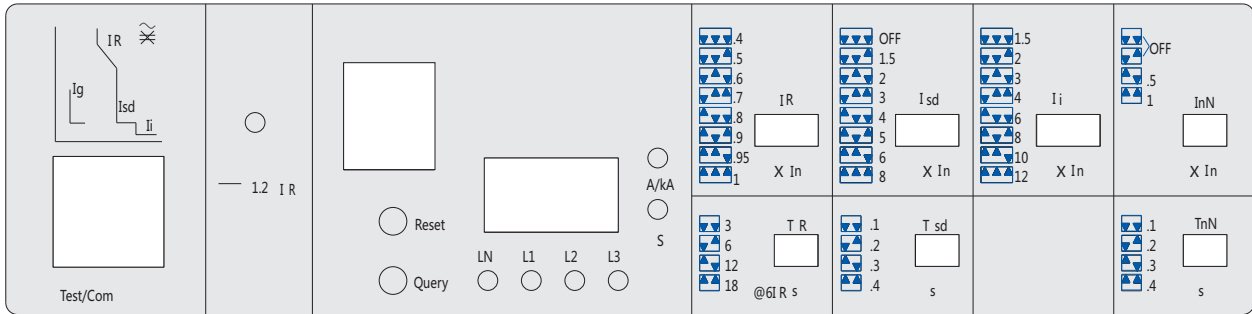
Electronic release	NM8S-125	NM8S-250
Rated value I_n (A) 20~70°C	40, 50, 63, 80, 100, 125	100, 125, 160, 180, 200, 225, 250
Over-load protection	Thermal protection	
Tripping current I_R	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn
Tripping time 1.05 I_R 1.3 I_R 1.5 I_R 6 I_R	>2h non tripping $\leq 1h$ 96s 6s	>2h non tripping $\leq 1h$ 96s 6s
N-line protection tripping current I_{nN}	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn
Tripping current I_i	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn
Short time-delay short current protection tripping current I_{sd}	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8XIn

6.2.2 NM8S-400, 630 electronic release is an universal module.

It is of 6 current specifications: 250A, 315A, 350A, 400A, 500A, and 630A to adjust setting values and to meet protection requirements.



6.2.3 NM8S-800, 1250, 1600 electronic release is an universal module. It is of 6 current specifications: 630A, 700A, 800A, 1000A, 1250A and 1600A to adjust setting values and to meet protection requirements. The release is of wide setting range and multi-functional modules can be selected.



Tripping current I_{Rr} , I_{sd} , I_i should be set with three-digit switch or rotary knob as per current.

▪ I_{Rr} setting of over-load protection

I_{Rr} could be adjusted as per customers' requirements, and TR, tripping time at the status of 6IR can be set as per customers' requirements.

Model	1.05 I_{Rr}	1.3 I_{Rr}	1.5 I_{Rr} (s)	2.0 I_{Rr} (s)	6 I_{Rr} (s)
NM8S-400, 630	> 2h non-tripping	< 1h tripping	48, 96, 192, 288	27, 54, 108, 162	3, 6, 12, 18
NM8S-800, 1250, 1600	> 2h non-tripping	< 1h tripping	48, 96, 192, 288	27, 54, 108, 162	3, 6, 12, 18

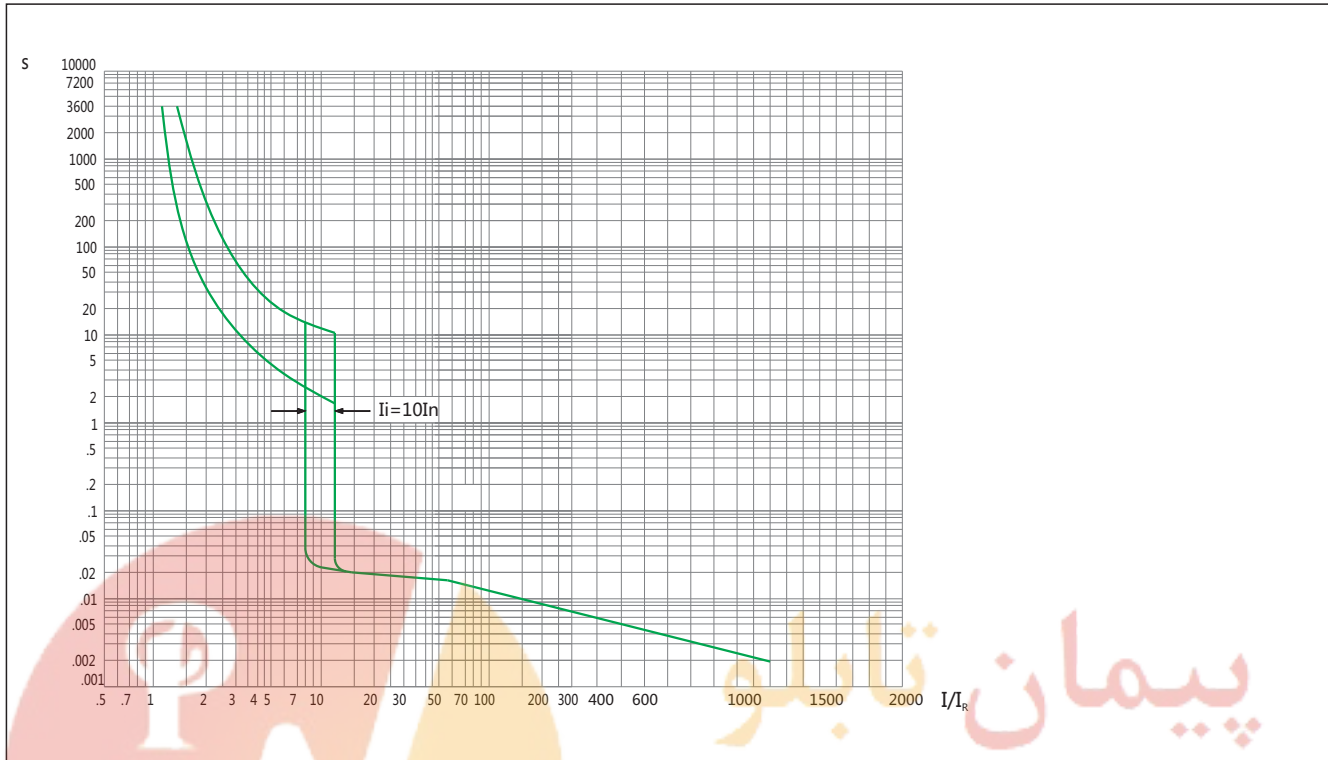
- I_c indicator light for over-load status indication
The indicator light flashes, when single-phase operational current is $< 90\% I_R$
The indicator light is always lit, when single-phase operational current is $\geq 115\% I_R$
- I_{sd} setting of short-circuit protection and tripping time
Setting value of current I_{sd} could be adjusted as per customers' requirements and OFF stands for status without ST protection;
 T_{sd} the tripping time could be adjusted as per customers' requirements.
- I_i setting of short-circuit protection
Value of setting current could be adjusted as per customers' requirements
- I_{nn} setting of protection operations
As a 4P circuit breaker with N-line protection, setting value of current I_g could be adjusted as per customers' requirements and OFF stands for status without protection of N-pole; T_{nn} the operating time of N-pole could be adjusted as per customers' requirements.

Electronic release	NM8S-400	NM8S-630	NM8S-800	NM8S-1250	NM8S-1600
Rated value A In 20~70°C	250, 315, 350, 400	250, 315, 350, 400, 500, 630	630, 700, 800	630, 700, 800, 1000, 1250	1000, 1250, 1600
long time-delay over-load protection (thermal protection)					
Tripping current I_k (A)	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn
Tripping time $6I_k$ (s)	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18
short time-delay short-circuit protection					
Tripping current I_{sd} (A)	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8XIn
Tripping time T_{sd} (s)	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4
(Instantaneous) short-circuit protection					
Tripping current I_l (A)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12XIn 12In(for motor protection)
(N-line) protection					
Tripping current I_{nn} (A)	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn	Adjustable range OFF, 0.5, 1XIn
Tripping time T_{nn} (s)	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4

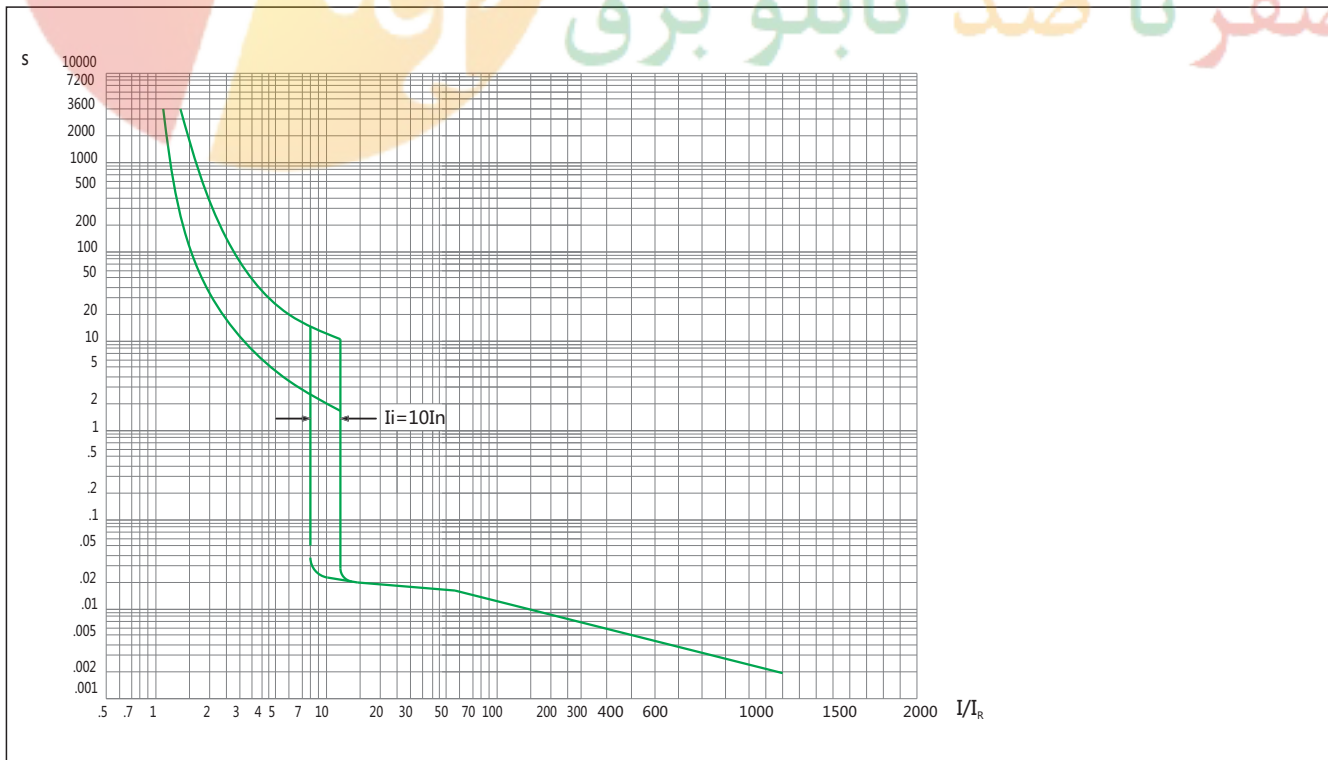
7. Curves

7.1 Tripping curve (ambient temperature +40°C)

NM8-125(16A, 20A)

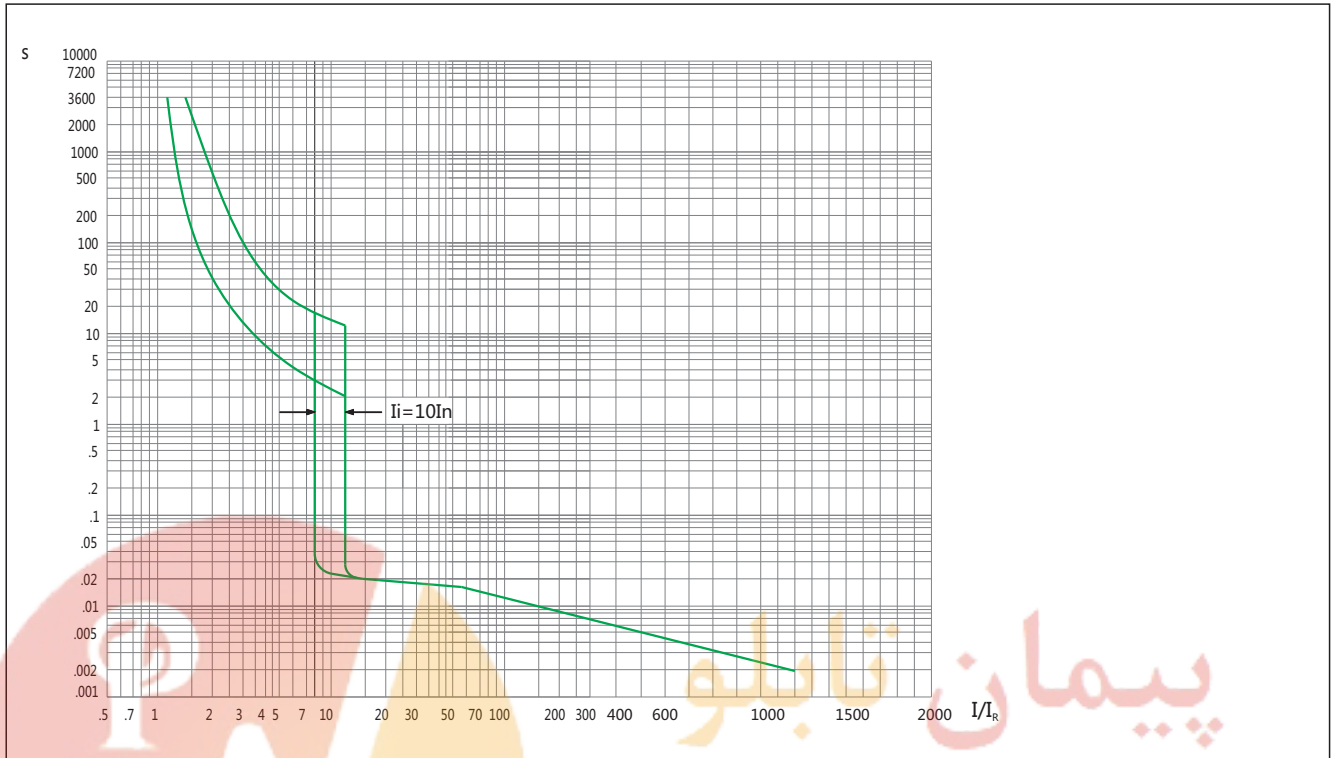


NM8-125(25A, 32A)

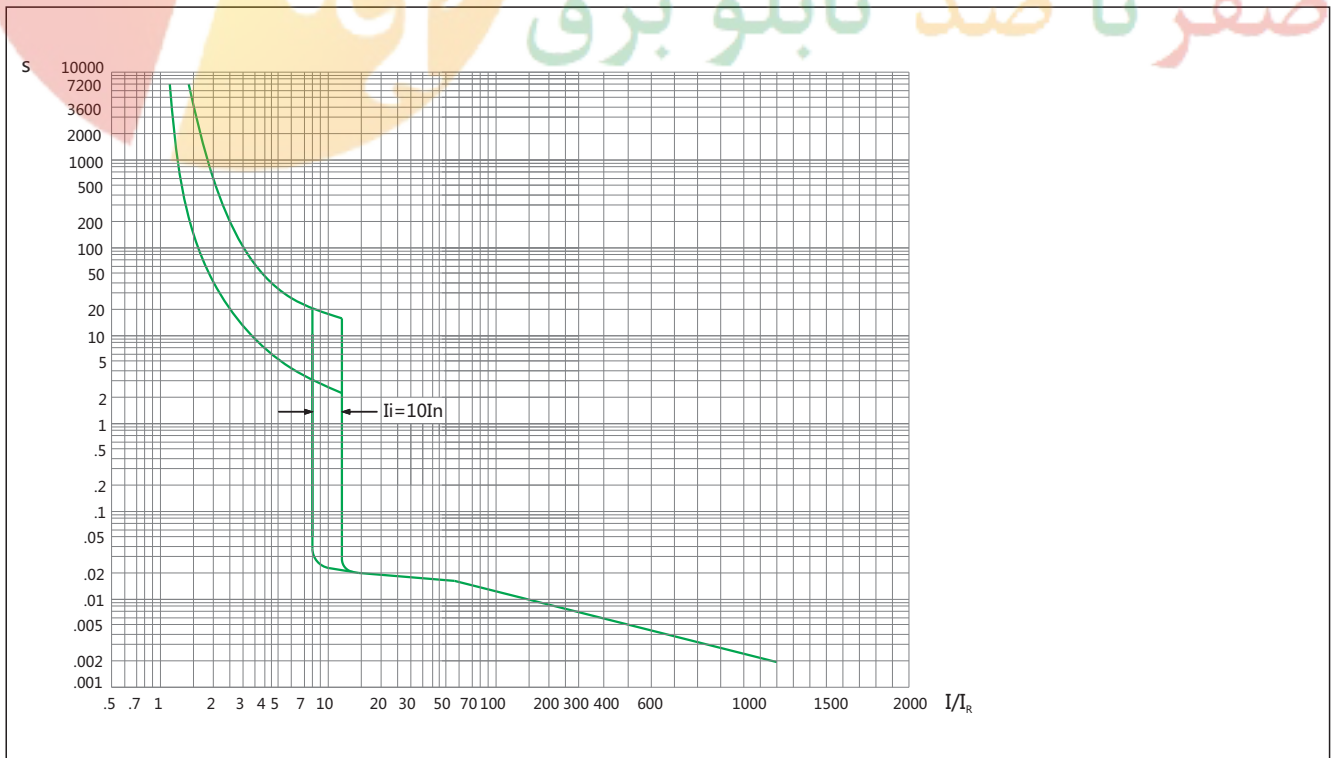


NM8-125(40A, 50A)

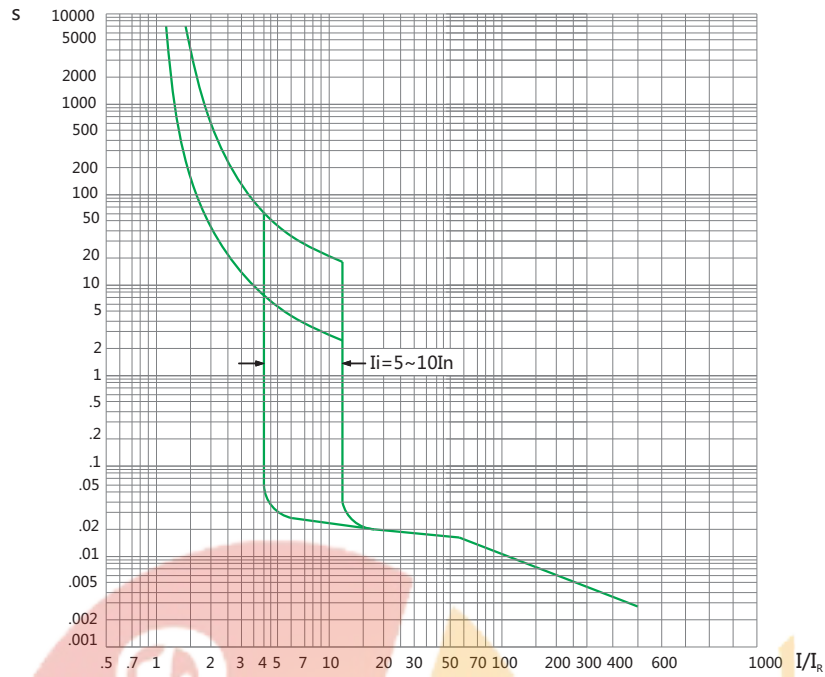
B



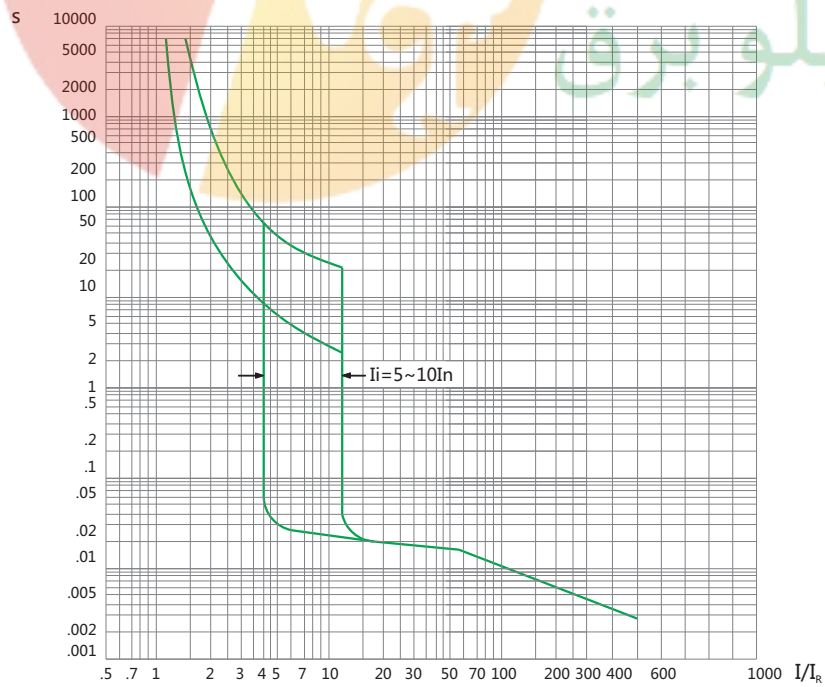
NM8-125(63A, 80A, 100A, 125A)



NM8-250(100A, 125A)

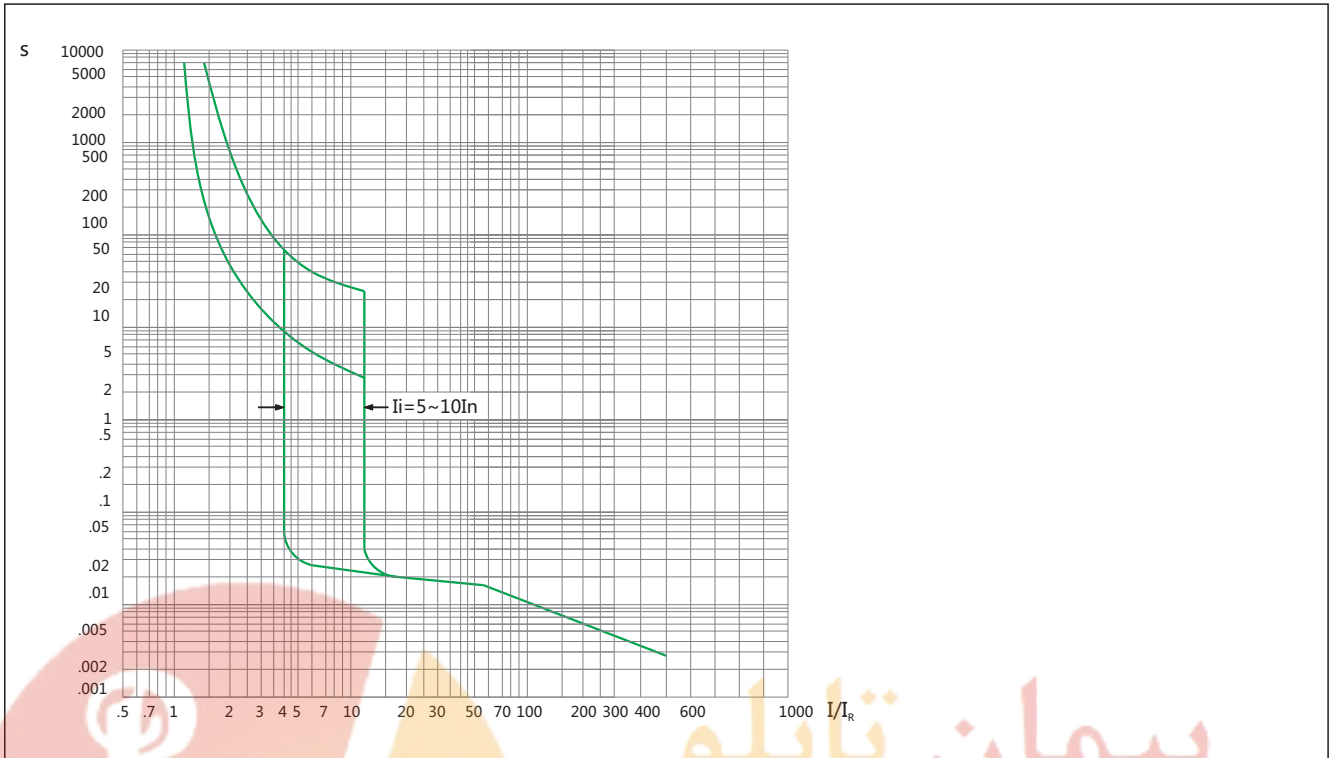


NM8-250(160A, 180A)

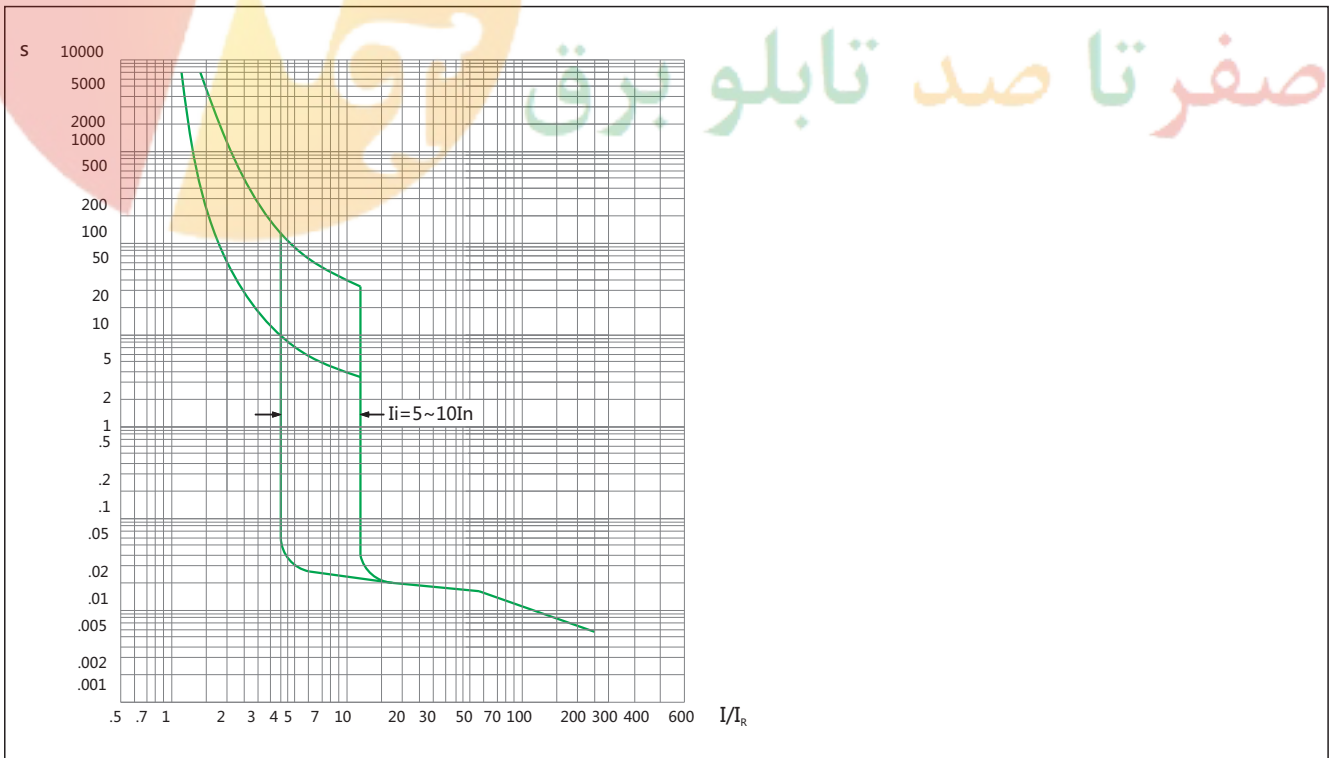


NM8-250(200A, 225A, 250A)

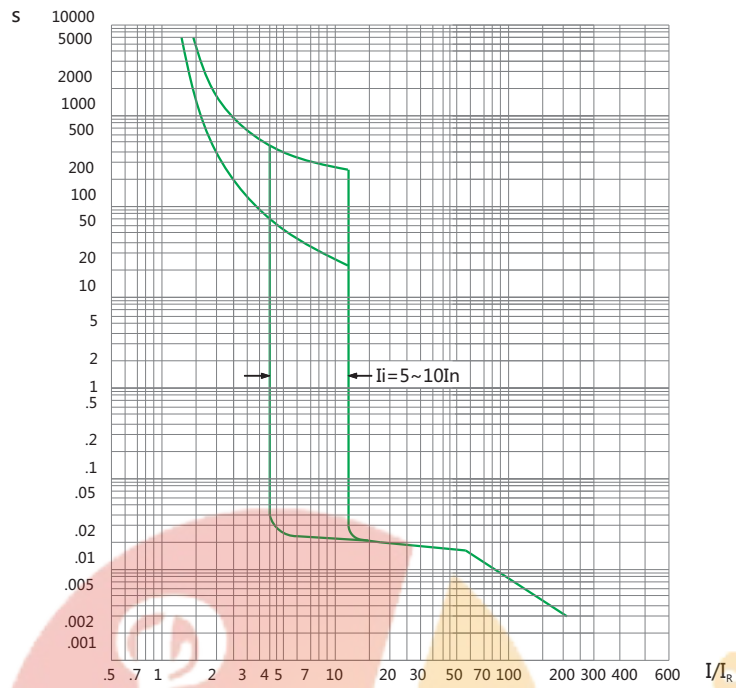
B



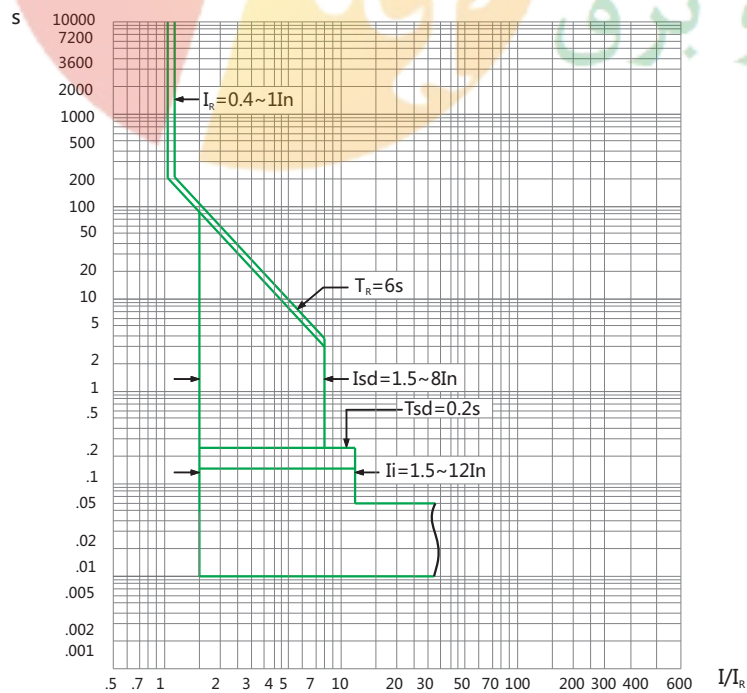
NM8-400, 630(250A~500A)



NM8-800(630~800A)
NM8-1250(630A~1250A)

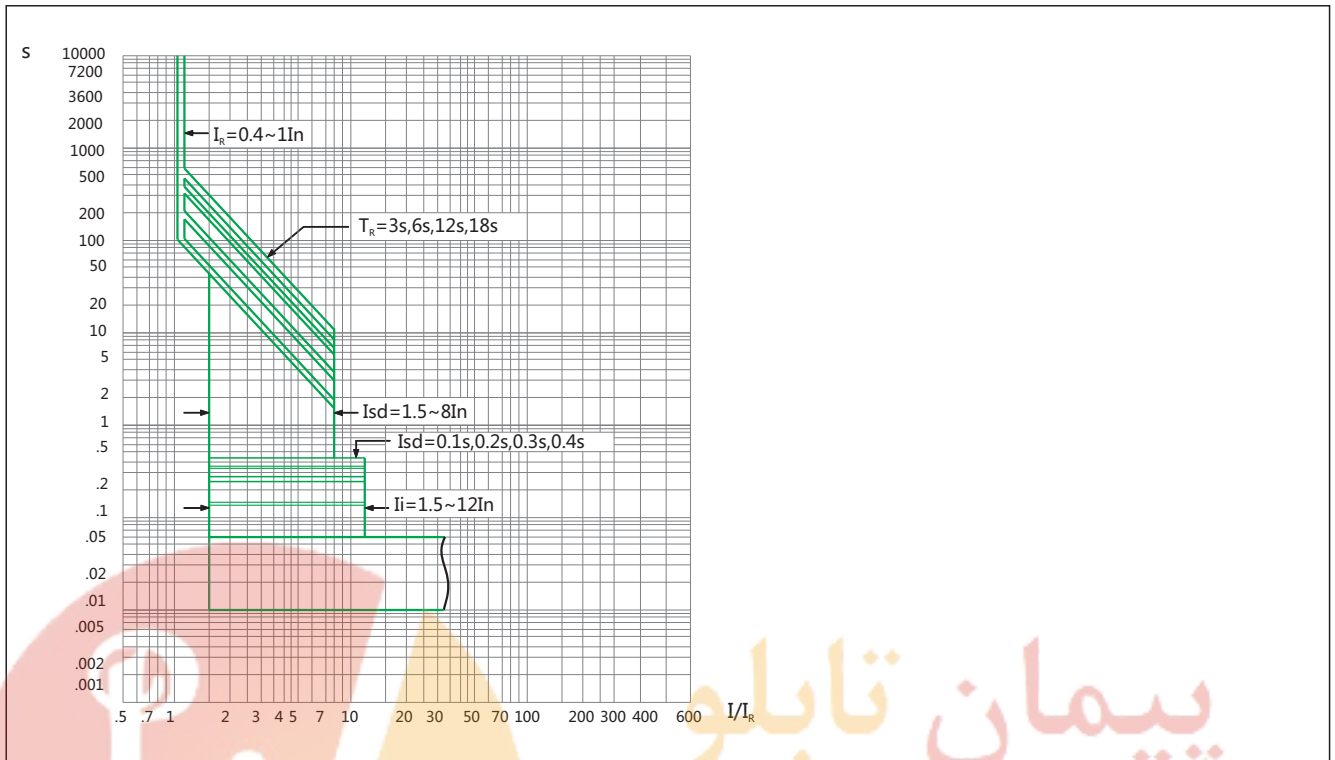


NM8S-125, 250(40A~250A)

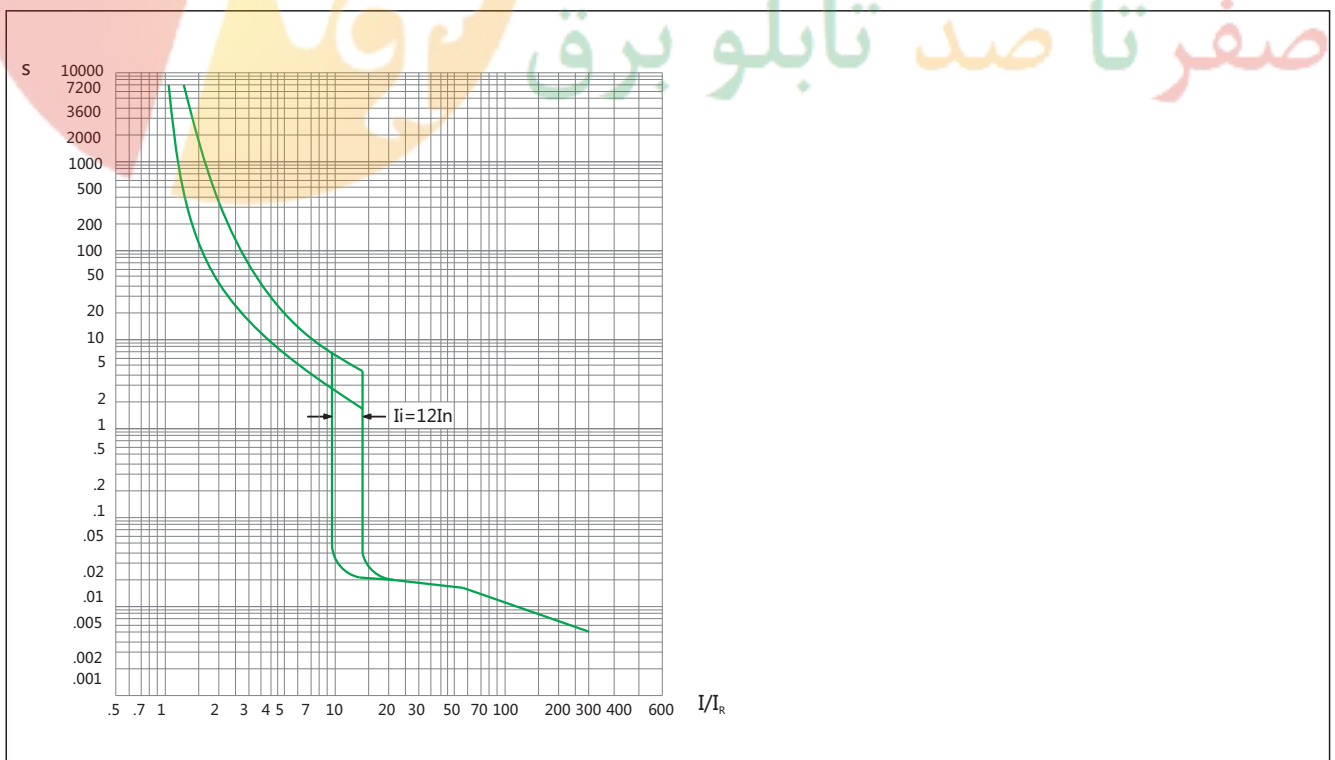


NM8S-400,630(250A~630A)
 NM8S-800,1250(630A~1250A)
 NM8S-1600(1000A~1600A)

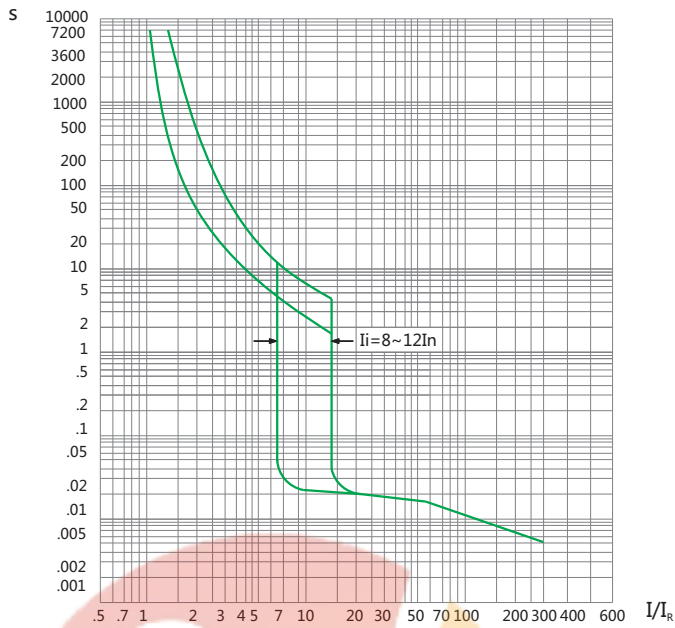
B



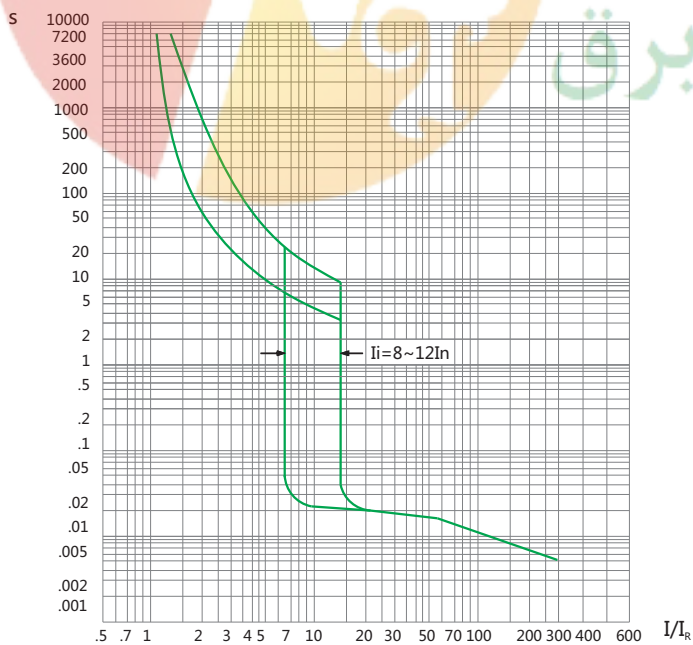
Motor protection release
 NM8-125(16A~125A)



NM8-250(100A ~ 250A)



NM8-400,630(250A ~ 500A)



7.2 Temperature compensation

When the ambient temperature slightly changes, tripping characteristics will change as well, please refer to the table below for temperature compensation correction.

7.2.1 Temperature compensation coefficient of breaker with thermo-magnetic release as follows.

Ambient temperature	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
Temperature compensation coefficient	1.2	1.175	1.15	1.125	1.1	1.075	1.05	1.025	1.0	0.975	0.95	0.925	0.90	0.875	0.85

Note: For reference only

7.2.2 Temperature compensation coefficient of breaker with electronic release as follows

Frame Level rated current	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
NM8S-125S/H(40~125)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NM8S-250S/H(125~160)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NM8S-250S/H(200~250)	1	1	1	1	1	1	1	1	1	1	1	0.95	0.95	0.90	0.90
NM8S-630S/H/R(250~400)	1	1	1	1	1	1	1	1	1	1	1	0.98	0.95	0.93	0.90
NM8S-630S/H/R(500~630)	1	1	1	1	1	1	1	1	1	0.98	0.95	0.93	0.90	0.88	0.85
NM8S-1250S/H/R(630~800)	1	1	1	1	1	1	1	1	1	0.975	0.975	0.95	0.95	0.925	0.925
NM8S-1250S/H/R(1000~1250)	1	1	1	1	1	1	1	1	1	0.95	0.9	0.875	0.80	0.80	0.80
NM8S-1600S/H/R(1000~1600)	1	1	1	1	1	1	1	1	1	0.95	0.9	0.875	0.80	0.80	0.80

8. Mounting of circuit breaker

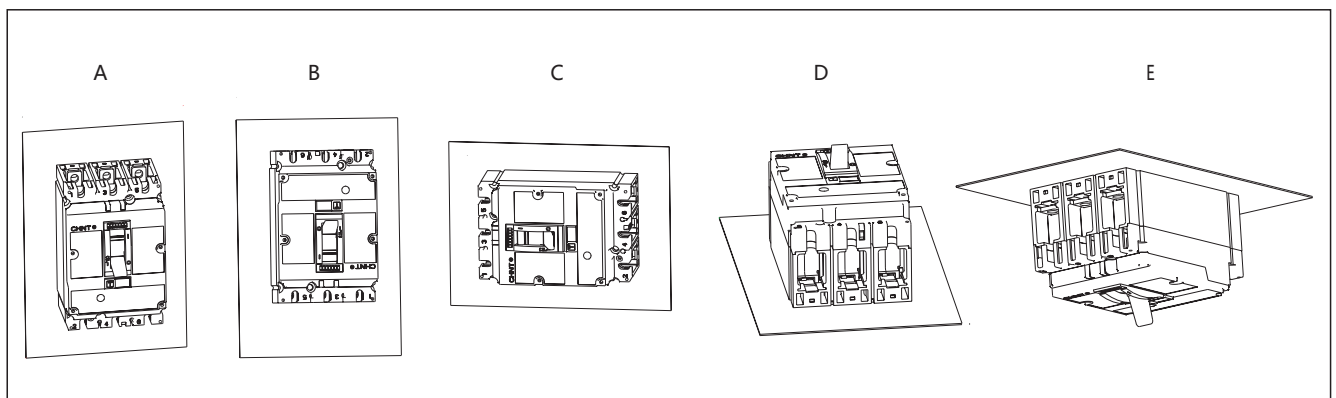
8.1 Modes of down-lead

Two modes of upper and lower down-lead are available; adoption of different down-lead modes will not affect normal operation of breaker, in addition, it is no need for derating.



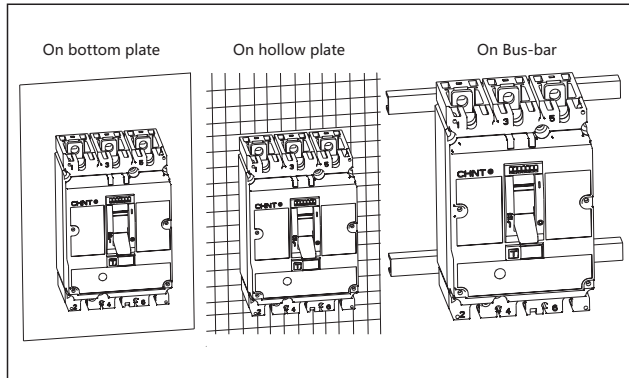
8.2 Modes of mounting

Mounting modes following are available for fixed and plug-in type breakers.

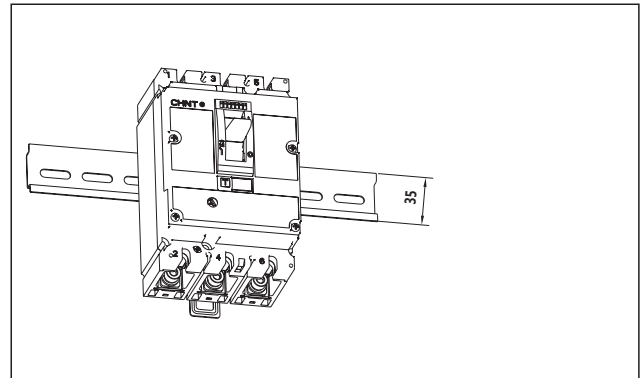


8.3 Modes of fixing

8.3.1 Fixing modes following are available for fixed and plug-in type breakers.

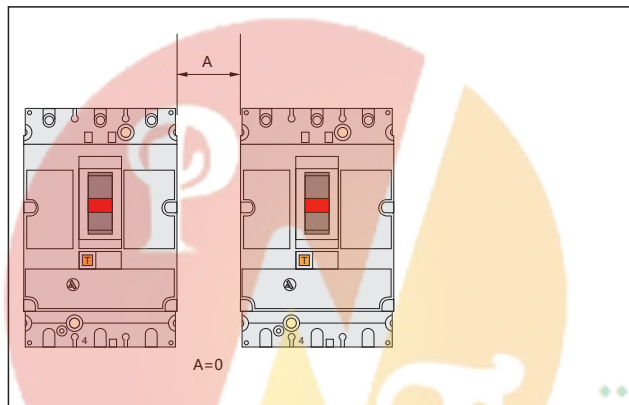


8.3.2 Fixing mode following is available for NM8(S)-125, 250 for fixed type breakers, which adopts DIN rail adaptor of front connection.

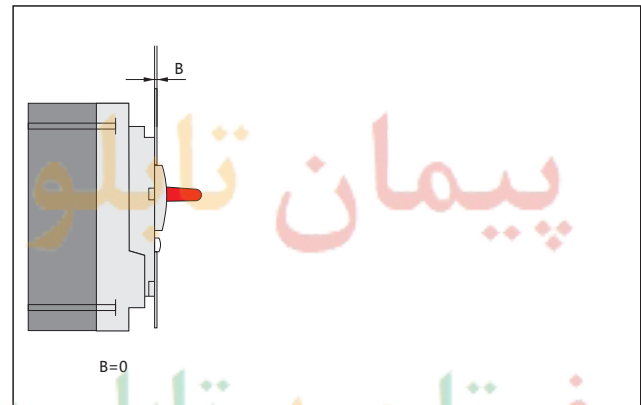


8.4 Secured distance

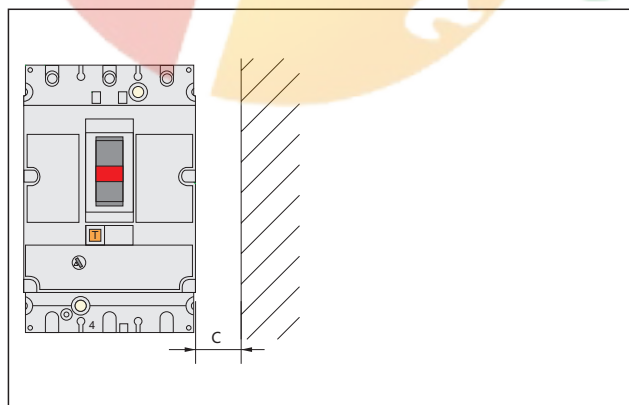
8.4.1 Min. Distance between breakers



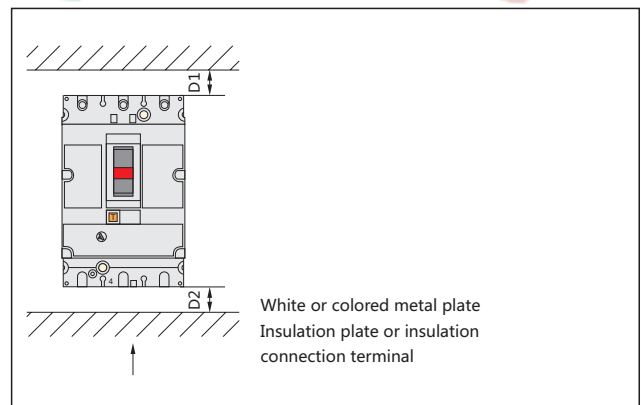
8.4.2 Min. distance between breaker and surface of switchgear where the operation handle is exposed.



8.4.3 Min. distance between breaker and side of switchgear



8.4.4 Min. distance between top and bottom of breaker



NM8 Breaker	Ue	C	Insulation plate or insulation connection terminal(mm)		White or colored metal plate(mm)	
			D1	D2	D1	D2
NM8-125 NM8S-125	Ue≤440V	10	30	30	35	35
	Ue<600V	20	30	30	35	35
	Ue≥600V	30	30	30	35	35
NM8-250 NM8S-250	Ue≤440V	10	30	30	35	35
	Ue<600V	20	30	30	35	35
	Ue≥600V	30	30	30	35	35
NM8-400, 630, NM8S-400, 630	Ue≤440V	10	30	30	60	60
	Ue<600V	20	30	30	60	60
	Ue≥600V	30	30	30	100	100
NM8-800, 1250, NM8S-800, 1250, 1600	Ue≤690V	50	130	100	70	70

Note: when voltage is ≥500V, extended terminal cover should be mounted

8.5 Modes of connection

8.5.1 Cable connection plug and Copper busbar

a. Screw is used to connect with copper (aluminum) cable connection plug or copper busbar

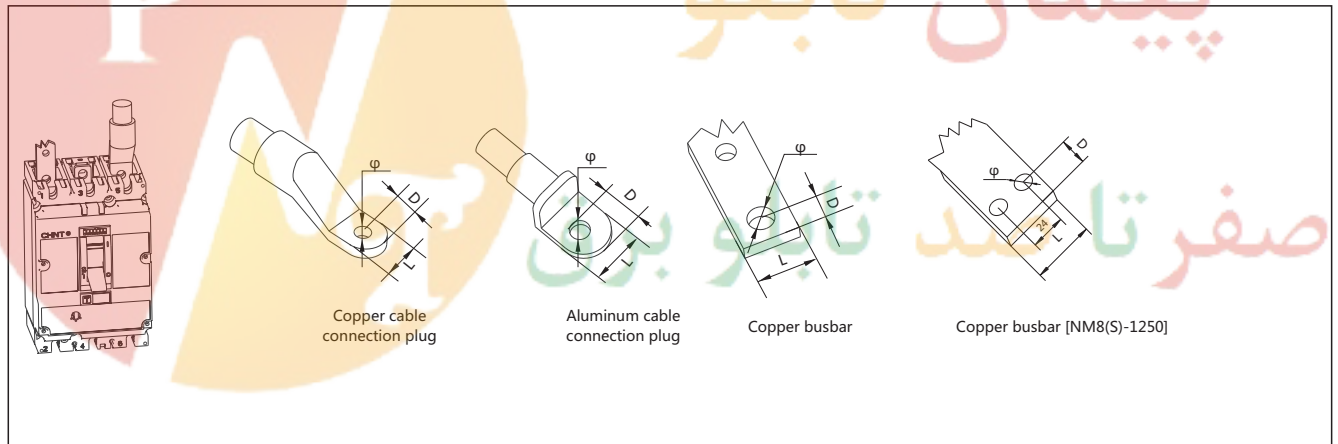
Size of connection screw

NM8-125: M6

NM8S-125, NM8-250, NM8S-250: M8

NM8-400, 630, NM8S-400, 630: M10

NM8-800, 1250, NM8S-800, 1250: M10



Dimension	NM8-125	NM8S-125 NM8-250 NM8S-250	NM8-400, 630 NM8S-400, 630	NM8-800, 1250 NM8S-800, 1250, 1600
Distance between different poles(mm)	30	35	45	70
L(mm)	≤15	≤25	≤32	≤ 50
D(mm)	≤7	≤10	≤16	≤ 16
Φ(mm)	> 6	> 8	> 10	> 11

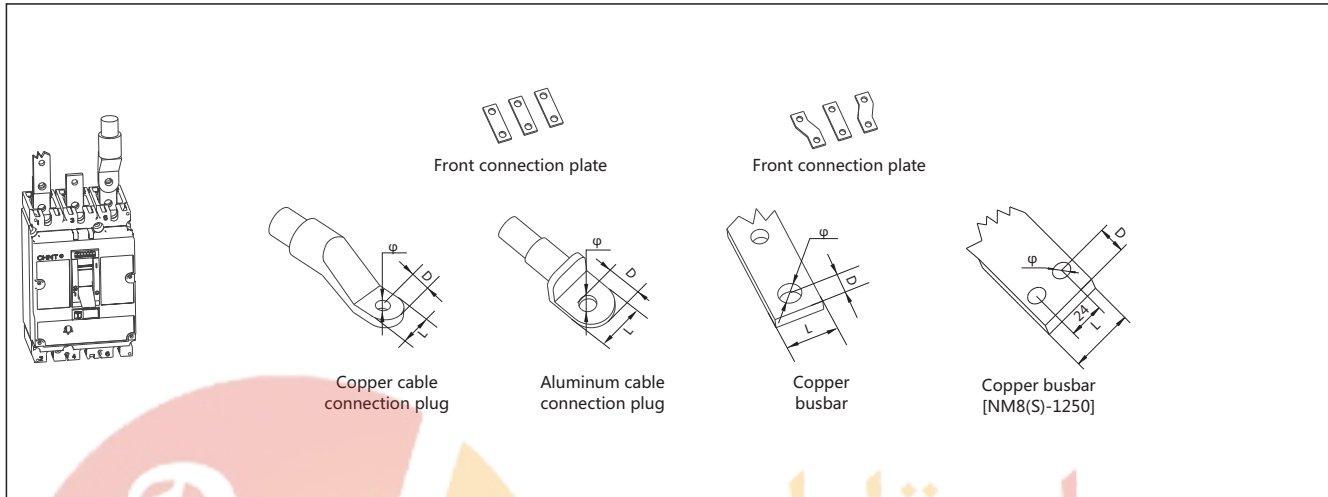
- b. With front connection and use screw to connect
with copper (aluminum) cable connection plate or copper busbar
Size of connection screw

NM8-125: M6

NM8S-125, NM8-250, NM8S-250: M8

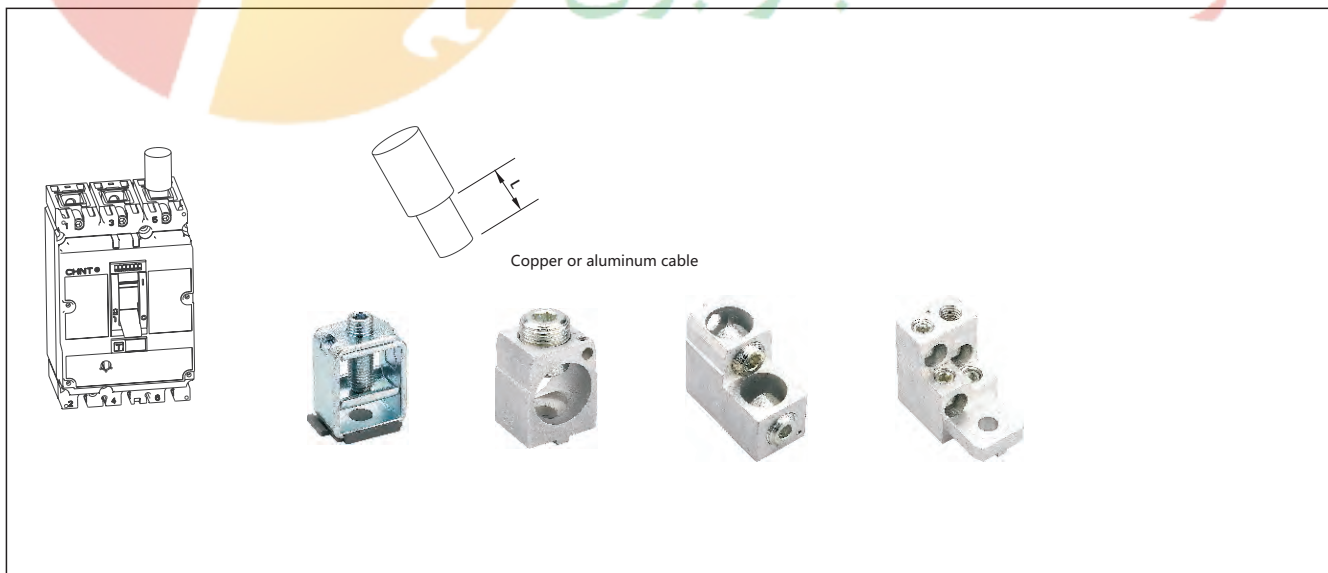
NM8-400, 630, NM8S-400, 630: M12

NM8-800, 1250, NM8S-800,1250,1600: M10



Dimension	NM8-125	NM8S-125 NM8-250 NM8S-250	NM8-400, 630 NM8S-400, 630		NM8-800, 1250 NM8S-800, 1250, 1600
Distance between different poles(mm)	30	35	52.5	70	70
L(mm)	≤ 15	≤ 25	≤ 40	≤ 60	≤ 50
D(mm)	≤ 7	≤ 10	≤ 20	≤ 20	≤ 16
Φ(mm)	> 6	> 8	> 12	> 12	> 11

8.5.2 Connection of bare cable

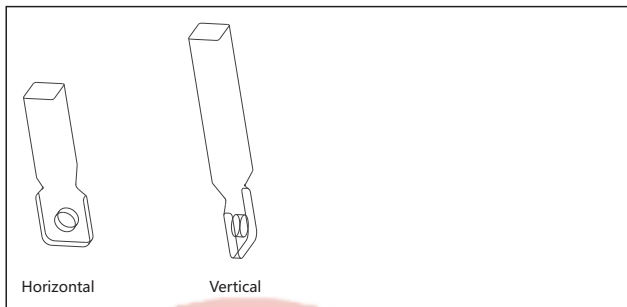


Dimension	NM8-125	NM8S-125 NM8-250 NM8S-250
L(mm)	16	20
CSA(mm ²)	2.5~50	2.5~185

8.5.3 Rear connection

For rear connection, cable connection plug should be used for connection with copper busbar.

Rear connection

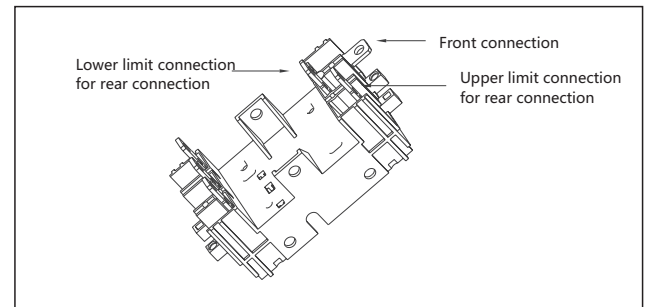


Dimension	NM8-400, 630 NM8S-400, 630		
Number of cable	1	2	4
L(mm)	26	30, 60	30
CSA(mm ²)	35~370	35~185	35~125

8.5.4 Plug-in type connection

Two modes of front and rear connection are available; for rear connection, upper limit or lower limit connection is used.

Plug-in type



8.5.5 Standard CSA of copper cable or busbar used for connection

Rated current(A)	16	20	25	32	40	50	63	80	100	125	160	200	250	315	350	400	500	630	700	800	1000	1250	1600
Cross section area (mm ²)	Copper cable	2.5	2.5	4.0	6.0	10	10	16	25	35	50	70	95	120	185	185	240	2×150	2×185	2×240	2×240	-	-
Copper busbar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2×30×5	2×40×5	2×50×5	2×50×5	2×60×5	2×80×5	2×80×5

8.5.6 Usual cross sections for conductors according intensity

In(A)	Copper conductors	Copper bar
	Cross Section Area (mm ²)	Dimensions Area (mm ²)
10	1.5	—
16	2.5	—
20	2.5	—
25	4	—
32	6	—
40	10	—
63	16	—
80	25	—
100	35	—
125	50	—
160	70	—
200	95	—
250	120	—
315	185	—
400	240	—
500	2×150	2×30×5
630	2×185	2×40×5
800	2×240	2×50×5
1000	—	2×60×5
1250	—	2×80×5
1600	—	2×80×5

8.6 Overall and Mounting Dimensions

8.6.1 Overall and mounting dimensions of fixed type for front connection

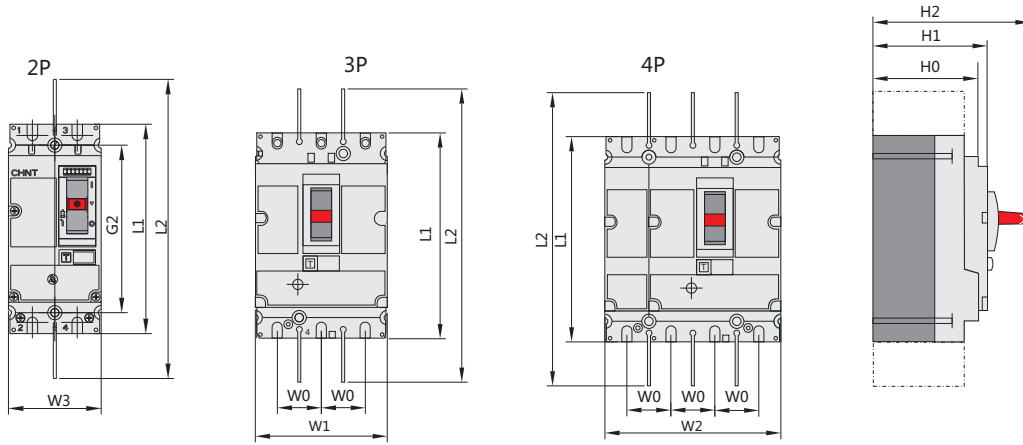
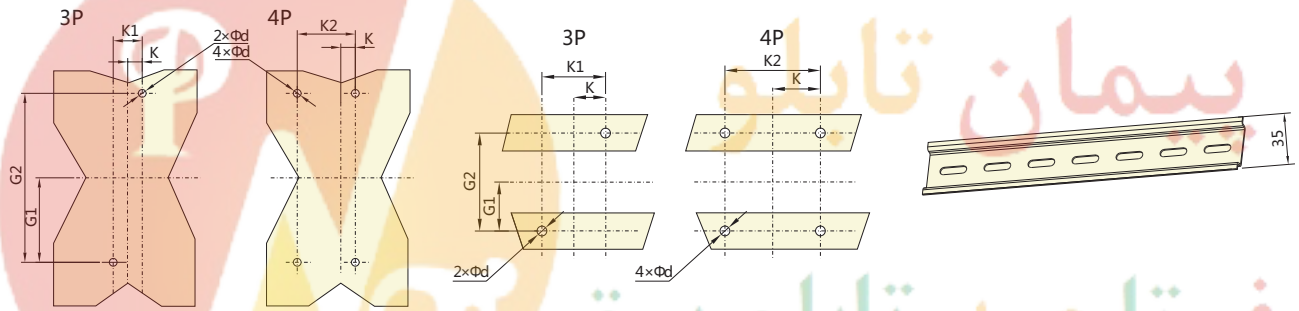


Plate mount

Bar mount

DIN rail mount[NM8(S)-125,250]

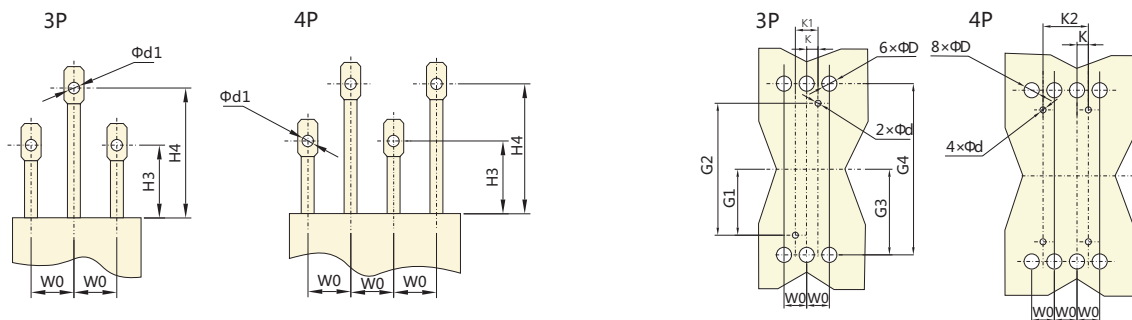


(mm)

Model	L1	L2	H0	H1	H2	K	K1	K2	G1	G2	W0	W1	W2	W3	d
NM8-125	140	243	72	79	108	15	30	60	56	112	30	90	120	62	5.5
NM8S-125/NM8-250/NM8S-250	157	273	82	88	126	17.5	35	70	62.5	125	35	105	140	70	5.5
NM8-400, 630/NM8S-400, 630	255	482	109	113	168	22.5	45	90	100	201.5	45	140	185	-	5.5
NM8-800, 1250/NM8S-800, 1250	370	565	141	145	206	35	70	140	120	240	70	210	280	-	7
NM8S-1600	370	565	137	151	211	35	70	140	120	240	70	210	280	-	7

8.6.2 Overall and mounting dimensions of fixed type for rear connection

Plate mount



(mm)

Model	H3	H4	W0	K	K1	K2	G1	G2	G3	G4	d	d1	D
NM8-125	47	87	30	15	30	60	56	112	63	126	5.5	6.5	15
NM8S-125/NM8-250/NM8S-250	47	87	35	17.5	35	70	62.5	125	70	140	5.5	8	20
NM8-400,630/NM8S-400,630	50	100	45	22.5	45	90	100	200	113.5	227	6	13	32

8.6.3 Overall and mounting dimension of plug-in type

Plate mount

B

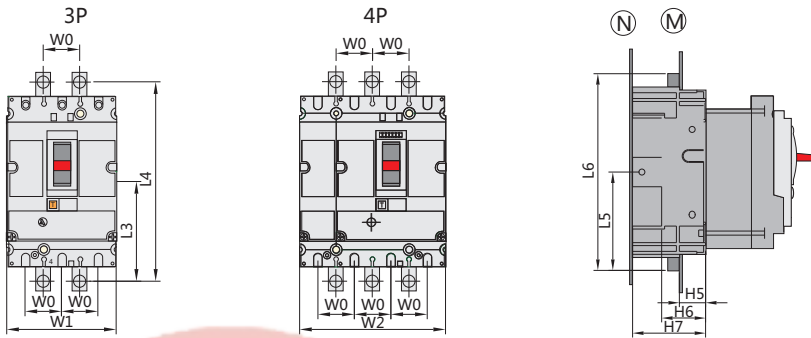


Plate mount

Bar mount

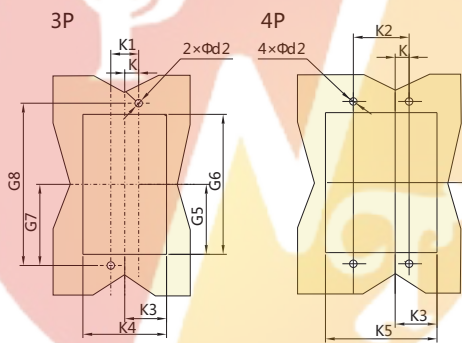
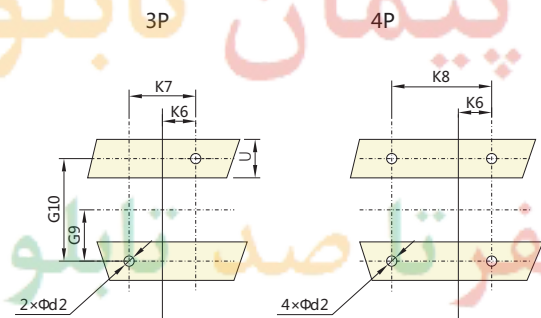
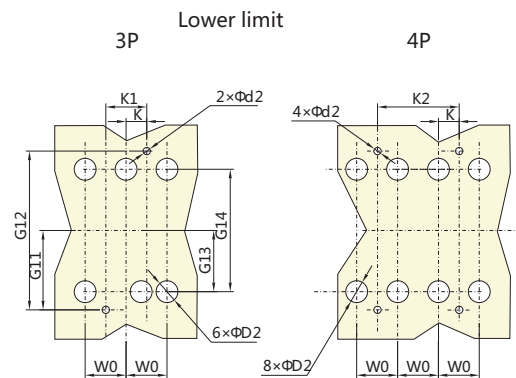
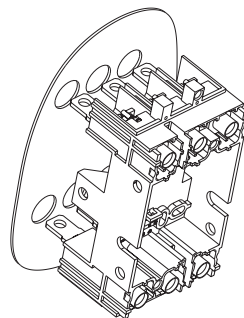
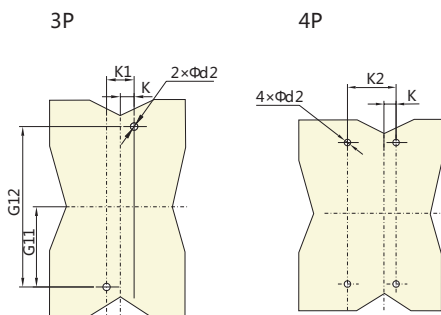


Plate mount (N) front connection
Insulation barrier must be mounted
between mounting plate and breaker base

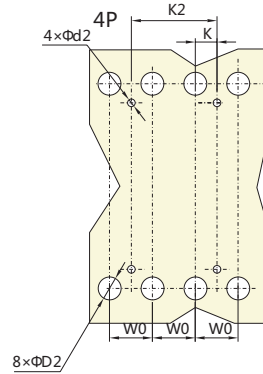
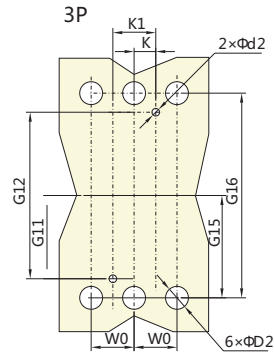
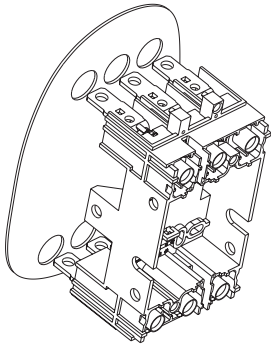


(standard configuration)
Plate mount (N) rear connection
Mounting plate and breaker base must be used with insulation material



Note: Plug-in type rear connection, use insulated mounting base plate

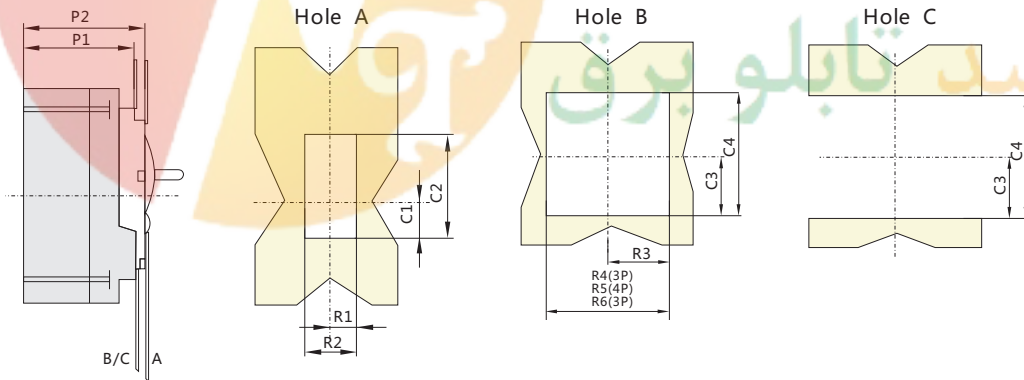
Upper limit



Model	W0	W1	W2	L4	L5	L6	H5	H6	H7	K	K1	K2	K3	K4	K5	K6	K7
NM8-125	30	90	120	170.5	90	180	24	40	67	15	30	60	47	94	124	30	60
NM8S-125/NM8-250/NM8S-250	35	105	140	190	102.5	205	27	45	75	17.5	35	70	54.5	109	144	35	70
NM8-400, 630/NM8S-400, 630	45	140	185	300	157.5	315	27	45	100	22.5	45	90	71.5	143	188	45	90

Model	K8	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	d2	D2	U
NM8-125	90	77	154	85.2	170.4	32.5	65	68	136	54.5	109	70.5	141	6	20	≤32
NM8S-125/NM8-250/NM8S-250	105	87	174	95	190	37.5	75	77.5	155	61	122	79	158	6	25	≤32
NM8-400, 630/NM8S-400, 630	140	137	274	150	300	75	150	125	250	101	202	126	252	6	35	≤32

8.6.4 Flush type (for fixed or plug-in type)



Model	P1	P2	R1	R2	R3	R4	R5	R6	C1	C2	C3	C4
NM8-125	73	80	13	26	46.5	93	123	65	26	68	50.5	101
NM8S-125/NM8-250/NM8S-250	83	90	14.5	29	54	108	143	73	33	78	56.5	113
NM8-400, 630/NM8S-400, 630	109	114	26.5	53	71.5	143	188	-	41.5	116	108	205
NM8-1250/NM8S-1250	103	145	41	82	107	214	284	-	90	131	125	250

9. Accessories

9.1 Inner accessories

9.1.1 Shunt release

$U_s = 70 \sim 110\% U_s$, circuit breaker reliably operates

Long-time electrification is prohibited

Time of response: pulsive type $\geq 20\text{ms}$, $\leq 60\text{ms}$

9.1.2 Under-voltage release

$U_s = 35 \sim 70\% U_e$, circuit breaker reliably breaks

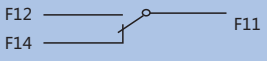
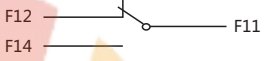
$U_s \geq 85\% U_e$, circuit breaker reliably closes

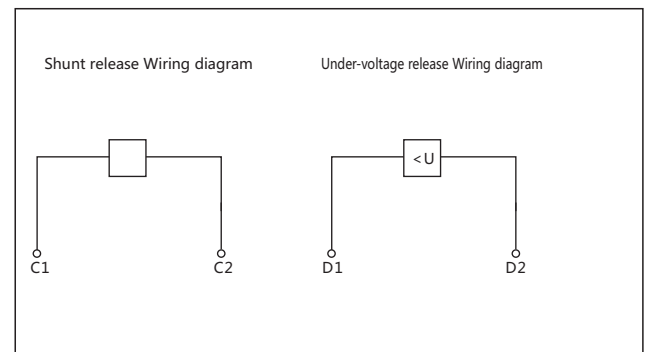
$U_s < 35\% U_e$, prevent circuit breaker from making

Note: With under-voltage release, $U_s \geq 85\% U_e$, circuit breaker normally makes and breaks

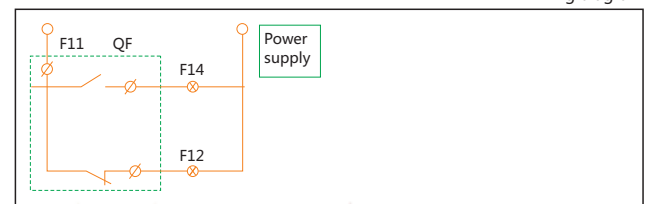
9.1.3 Auxiliary contact

Function: Indication of contacting status

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



Wiring diagram



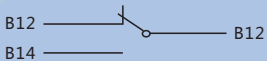
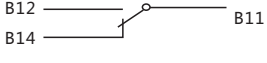
9.1.4 Alarm contact

Function: indication of reason for circuit breaker releasing;

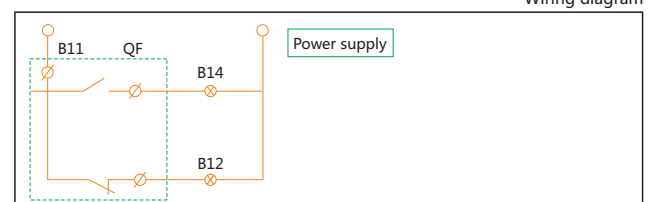
- * Over-load
- * Short-circuit
- * Grounding fault
- * Operation of under-voltage releasing or free tripping

When circuit breaker normally makes and breaks, alarm contact not operates.

After free tripping (or tripping due to failure), alarm contact operates and after the circuit breaker again normally operates, alarm contact recovers original status.

Circuit breaker is at breaking or making status	
Circuit breaker is at free release (or alarming) status	

Wiring diagram



Accessory	Code	Mounting and wiring mode		
		Left ON Right Handle OFF		
		NM8-125, 250 NM8S-125, 250	NM8-400, 630 NM8S-400, 630	NM8-800, 1250 NM8S-800, 1250,1600
		3P, 4P	3P, 4P	3P, 4P
No accessory				
Alarm contact	AL			
Shunt release	SM: AC220V, SQ: AC380V SB: DC24V			
Auxiliary contact	AX			
Under-voltage release	UM: AC220V UQ: AC380V			
Shunt release Auxiliary contact	SM: AC220V, SQ: AC380V, SB: DC24V AX			
Two groups of auxiliary contact	AX, AX			
Auxiliary contact Under-voltage release	AX UM: AC220V, UQ: AC380V			
Shunt release Alarm contact	SM: AC220V, SQ: AC380V, SB: DC24V AL			
Auxiliary contact Alarm contact	AX AL			
Under-voltage release Alarm contact	AL			
Shunt release Auxiliary contact, alarm	SM: AC220V, SQ: AC380V, SB: DC24V AX, AL			
Two groups of auxiliary contact	AX, AX AL			
Alarm contact Auxiliary contact, alarm contact Under-voltage release	AX, AL (UM: AC220V, UQ: AC380V)			

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

Note: 1: For NM8-125, 250, 400, 630, NM8S-125, 250, 400, 630, under-voltage and shunt release couldn't be simultaneously equipped on one breaker.

2: For NM8-800, 1250, NM8S-800, 1250, 1600, at most three auxiliary contacts could be equipped, under-voltage and shunt release could be simultaneously equipped on one breaker, in addition, their positions could be exchanged.

9.2 External accessories

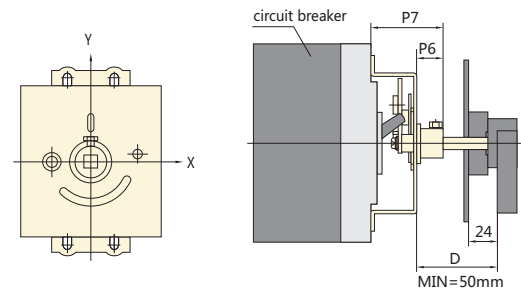
9.2.1 Economic extended rotary handle

Protection degree: IP30

Functions: Isolation function indication;

0(breaking), 1(making)and free tripping indication;

At "OFF" status, the breaker can be fitted with 1-3 padlocks with a diameter of 5-8mm(by customer), This prevents the door of switchgear being opened unwantedly.



(mm)

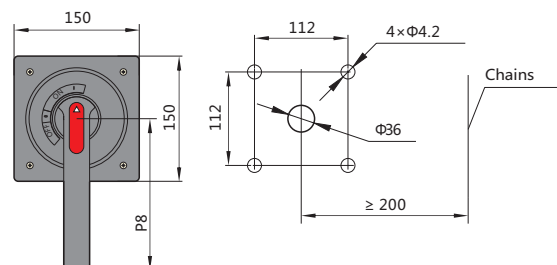
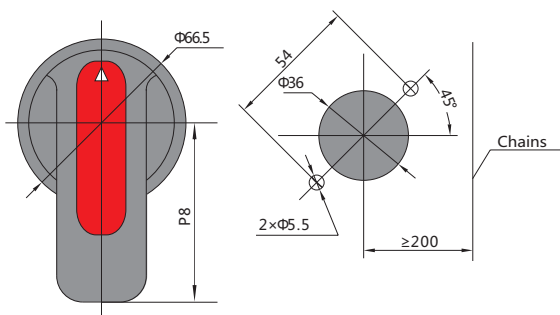
Dimension	NM8-125	NM8S-125, NM8-250, NM8S-250	NM8-400, NM8S-400	NM8-630, NM8S-630	NM8(S)-800	NM8(S)-1250,1600
P6	18	18	18	18	18	18
P7	55	55	72	72	95.5	95.5
P8	65	65	126	126	170	170



Handle mounting (mm)

NM8(S)-125,250,400,630

NM8(S)-800,1250,1600



9.2.2 Direct rotary handle

Protection degree : IP40

Functions:

Reliable insulation;

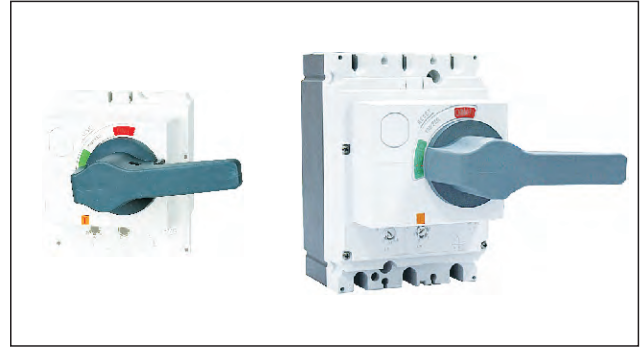
Isolation function indication;

0(breaking), 1(making) and free tripping indication;

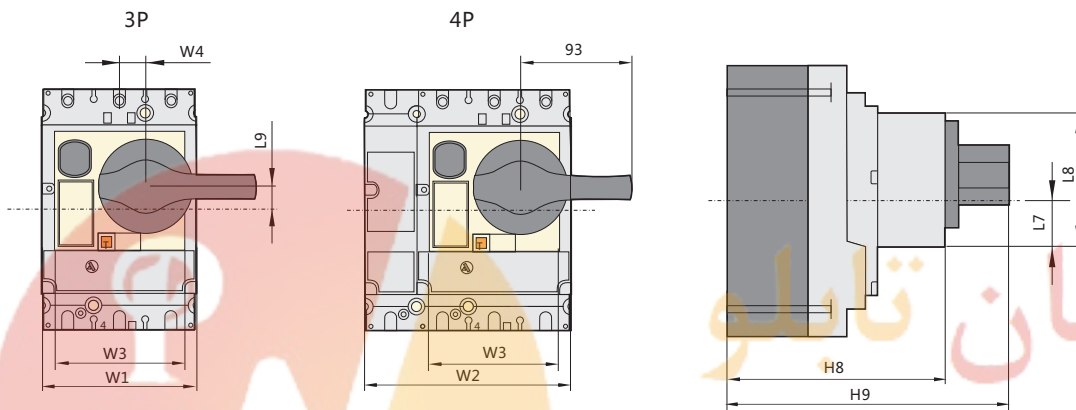
Realize free tripping of circuit breaker;

At "OFF" status, the breaker can be fitted with 1-3 padlocks with a diameter of

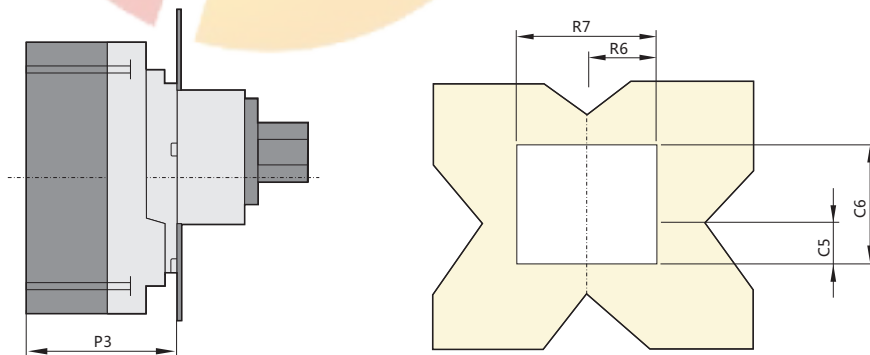
5~8mm (by customer).



Direct rotary handle



Front boring(fixed or plug-in circuit breaker)(mm)



9.2.3 Extended rotary handle

Protection degree: IP55

Functions:

Reliable insulation;

Isolation function indication;

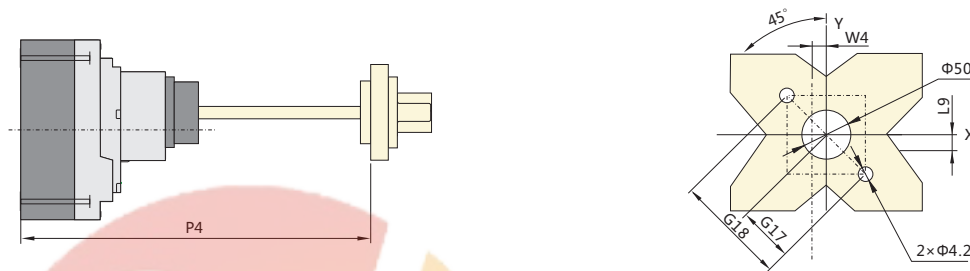
0(breaking), 1(making) and free tripping indication;

When the door is open, the release can be set and the breaker will not make;

At "OFF" status, the breaker can be fitted with 1~3 padlocks with a diameter of 5~8mm (by customer). Then door of the switchgear can be opened.



Front boring(fixed or plug-in circuit breaker)(mm)



	W1	W2	W3	W4	L7	L8	L9	H8	H9	P3	P4	R6	R7	C5	C6	G17	G18
NM8-125	90	120	76	15.25	37	70	13.3	115	163	80	≥175 ≤600	38	76	38	70	37	74
NM8S-125 NM8-250 NM8S-250	105	140	93.5	15.5	39	77.5	9	126	174	90	≥175 ≤600	46.5	93	40.5	76.5	37	74
NM8-400,630/ NM8S-400,630	140	185	122	18	69	121.5	24.5	152	200	115	≥175 ≤600	61	122	70.5	121	37	74

9.2.4 Motor-driven mechanism

Protection degree: IP40

Functions:

Reliable insulation;

Isolation function indication;

0(breaking), 1(making) and free tripping indication;

Free releasing of circuit breaker;

Making and breaking the breaker manually or automatically

Manual operation

Turn "manual/auto" switch to "auto" position and then turn the handle to make and break the breaker.

Automatic operation:

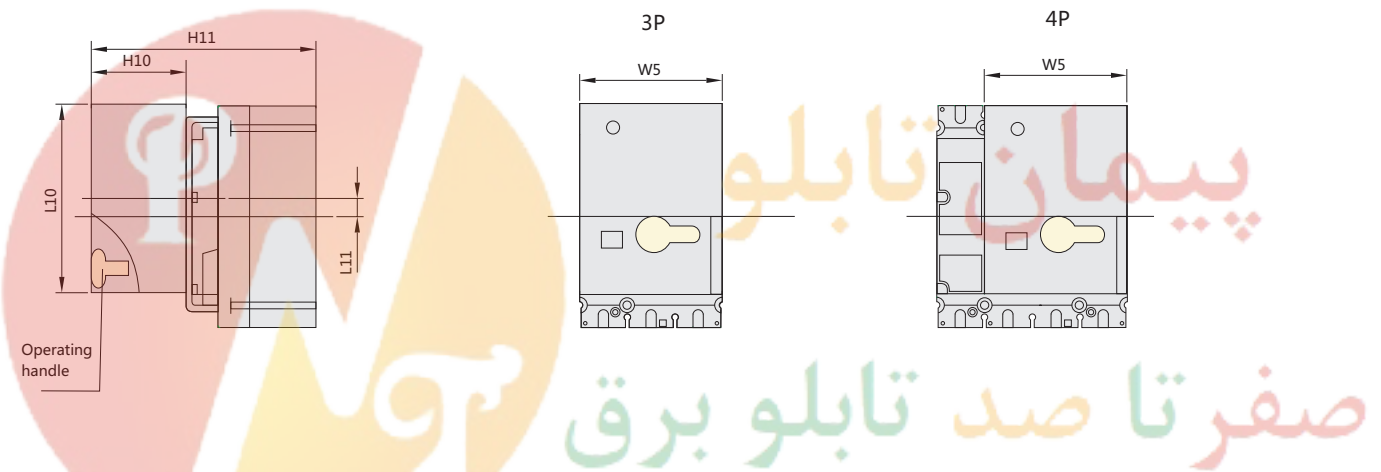
Turn "manual/auto" switch to "manual" position and then push the button to make and break the breaker remotely.

The make/break operation is carried out via pulse or self-retaining type signal control.

Operational range: 85%Un~110%Un.

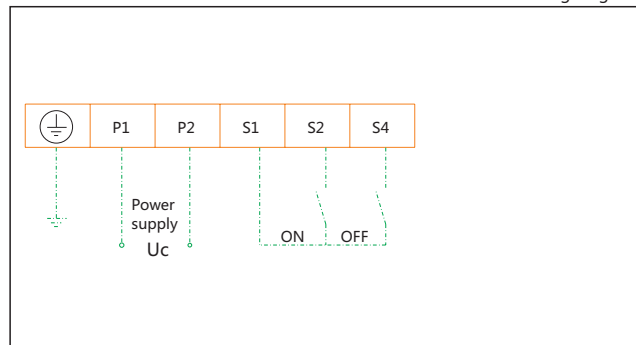
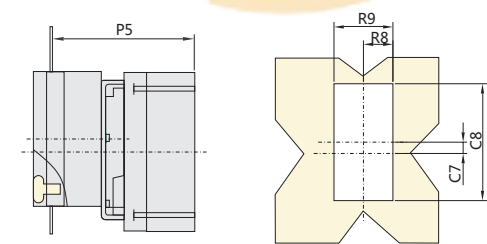


NM8 circuit breaker	Rated control voltage	Electrical life	Operational current	Power consumption
NM8-125	AC/DC 110V AC230/DC 220V AC 380V	10,000 operations	≤0.5 A	14VA 14W 14W
NM8S-125 NM8-250 NM8S-250	AC230/DC 220V AC 380V	10,000 operations	≤0.5 A	14VA 14W 14W
NM8-400 NM8S-400 NM8-630 NM8S-630	AC/DC 110V AC230/DC 220V AC 380V	5,000 operations	≤2 A	35VA 35VA 35W 35W 35W
NM8-800 NM8S-800 NM8-1250 NM8S-1250	AC/DC 110V AC230/DC 220V AC 380V	3,000 operations	≤7.5 A	200W



Front boring(fixed or plug-in circuit breaker)

Wiring diagram



(mm)

Model	W5	H10	H11	L10	L11	R8	R9	P5	C7	C8
NM8-125	90	77	164	117	17.3	46.5	93	144	17.3	120
NM8S-125, NM8-250, NM8S-250	90	77	175	117	14.5	46.5	93	155	14.5	120
NM8(S)-400, 630	130	115	250	175	19	65	130	225	19	180
NM8(S)-800, 1250	130	115	295	175	47.5	65	130	270	47.5	180

11. Complementary technical information

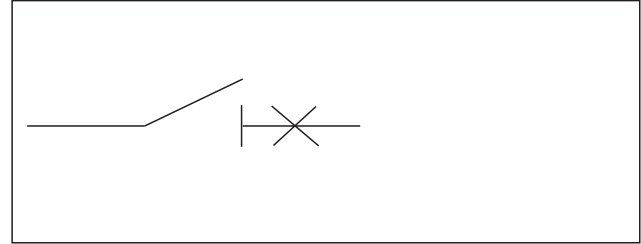
11.1 Isolation function

Isolation functions of all the circuit breakers as per IEC60947/EN60947-2; Isolating position of contactors is at 0 (OFF) status. The operating handle will correctly indicate the status of 0(OFF), only if the contactor breaks.

Padlocks could be mounted after the contacts breaks;

Operation of isolation functions will realize following points:

- Contacts operation correctly indicates:
 - operating reliability of interior mechanism;
- No residual current;
- Higher impulse withstands voltage for terminals at the power supply side and on-load side.



11.2 Current-limiting

11.2.1 Current-limiting capacity

The current-limiting capacity of a circuit breaker is its aptitude to limit short-circuits current. By occurring of short-circuit, the breaker is able to limit I^2t in time so as to protect circuits and switchgear at downstream. The exceptional limiting capacity of NM8 series is due to the rotating double-break technique, which is characterized by very rapid natural repulsion of contacts and the appearance of two arc voltages in series with a very steep wave front.

11.2.2 Current-limiting curves

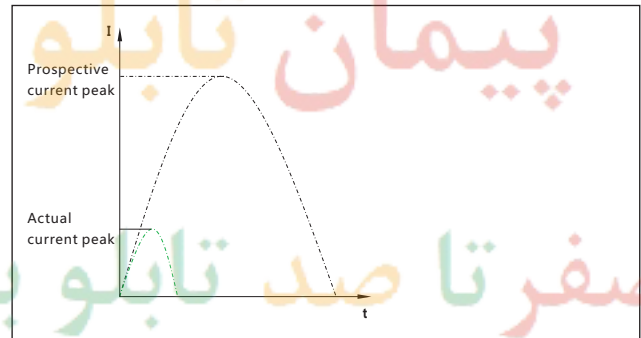
The current-limiting capacity of a circuit breaker is expressed by two curves which are the prospective current and the actual short-circuit current.

Thermal stress (A^2S), i.e. the energy dissipated by the short-circuit current in a conductor with a resistance of 1Ω .

The table below indicates the maximum permissible thermal stresses for cables depending on their insulation, conductor (Cu or Al) and cross section area (CSA).

CSA values are given in mm^2 and thermal stresses in A^2S .

- a. Exceptional current-limiting capacity is able to greatly reduce power caused by fault current so as to enhance breaking capacity of breaker to $I_{cs}=100\%I_{cu}$;
- b. The capacity has greatly released damages, which short-circuit current lay to apparatus;
- c. The capacity has greatly lowered temperature-rise so as to lengthen service life of the cable;
- d. The capacity has greatly reduced power so as to lessen distortion of contacts and bus bar;
- e. The capacity has greatly decreased interruptions to apparatus nearby.



CSA(mm ²)		1.5	2.5	4	6	10	16	25	35
PVC	Cu K=115	2.97×10^4	8.26×10^4	2.12×10^5	4.76×10^5	1.32×10^6	3.40×10^6	8.26×10^6	1.62×10^7
	Al K=76	1.30×10^4	3.61×10^4	9.26×10^4	2.08×10^5	5.78×10^5	1.48×10^6	3.16×10^6	7.08×10^6
Butyl	Cu K=131	3.86×10^4	1.07×10^5	2.75×10^5	6.18×10^5	1.72×10^6	4.39×10^6	1.07×10^7	2.10×10^7
	Al K=87	1.70×10^4	4.73×10^4	1.21×10^5	2.72×10^5	7.57×10^5	1.94×10^6	4.73×10^6	9.27×10^6
EPR	Cu K=143	4.60×10^4	1.28×10^5	3.27×10^5	7.36×10^5	2.04×10^6	5.23×10^6	1.28×10^7	2.51×10^7
	Al K=94	1.99×10^4	5.52×10^4	1.41×10^5	3.18×10^5	8.84×10^5	2.26×10^6	5.52×10^6	1.08×10^7

CSA(mm ²)		50	70	95	120	150	185	240
PVC	Cu K=115	3.31×10^4	6.48×10^4	1.19×10^5	1.90×10^5	2.98×10^6	4.53×10^6	7.62×10^6
	Al K=76	1.44×10^4	2.83×10^4	5.21×10^4	8.32×10^4	1.30×10^6	1.98×10^6	3.33×10^6
Butyl	Cu K=131	4.29×10^4	8.41×10^4	1.55×10^5	2.47×10^5	3.86×10^6	5.87×10^6	9.88×10^6
	Al K=87	1.89×10^4	3.71×10^4	6.83×10^4	1.09×10^5	1.70×10^6	2.59×10^6	4.36×10^6
EPR	Cu K=143	5.11×10^4	1.00×10^5	1.85×10^5	2.94×10^5	4.60×10^6	7.00×10^6	1.18×10^7
	Al K=94	2.21×10^4	4.33×10^4	7.97×10^4	1.27×10^5	1.99×10^6	3.02×10^6	5.09×10^6

K is quoted from GB-50054 code for design of low voltage electrical installations.

Example:

a. What is the actual current when a prospective short-circuit current of 125kA rms (peak value=275kA) comes through the current-limiting operation circuit breaker at upstream of NM8-125S

Answer: the peak value=23kA; (for details, refer to current-limiting curves)

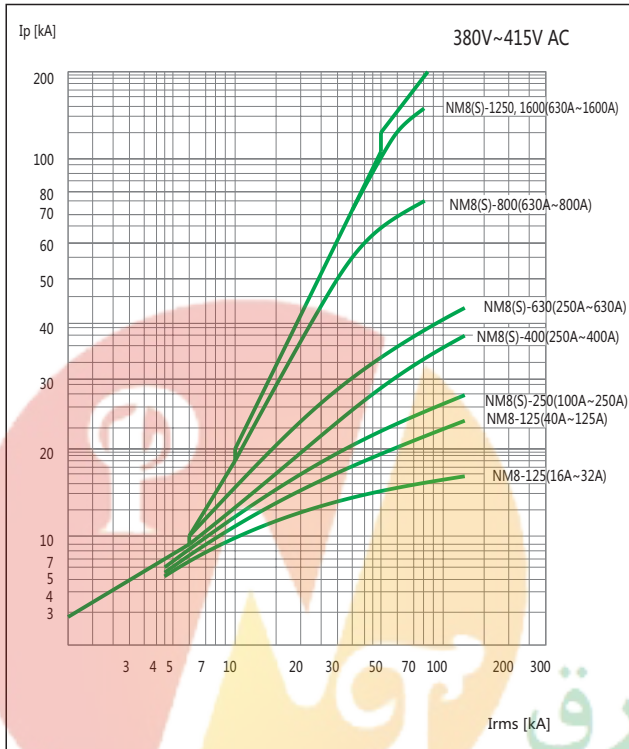
b. Is a Cu/PVC cable with a CSA of 10mm² adequately protected by a NM8-125S circuit breaker

Answer: the table above indicates that the permissible thermal stress is $1.32 \times 10^6 \text{ A}^2\text{S}$

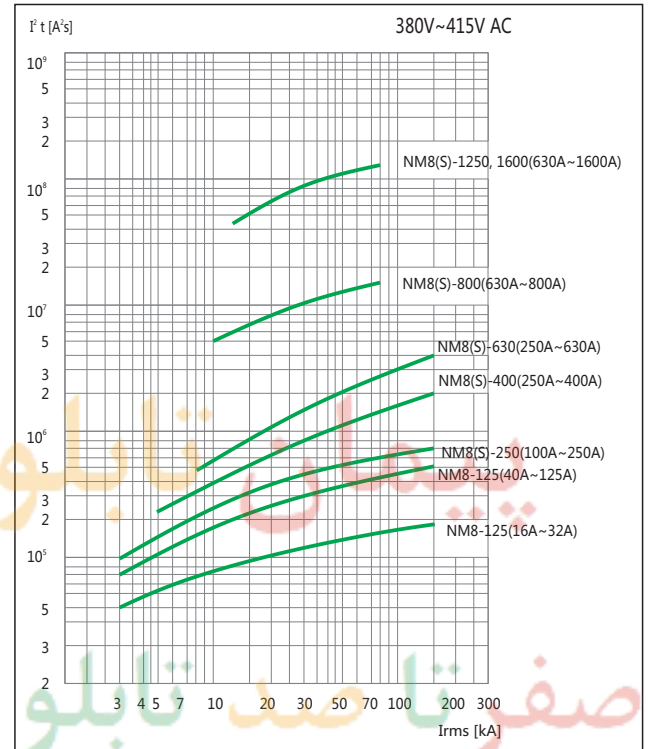
at the point where a NM8-125S ($I_{cu}=50\text{kA}$) is installed,

and the short-circuit current is limited within the range of $1.32 \times 10^6 \text{ A}^2\text{S}$, therefore the cable could be protected.

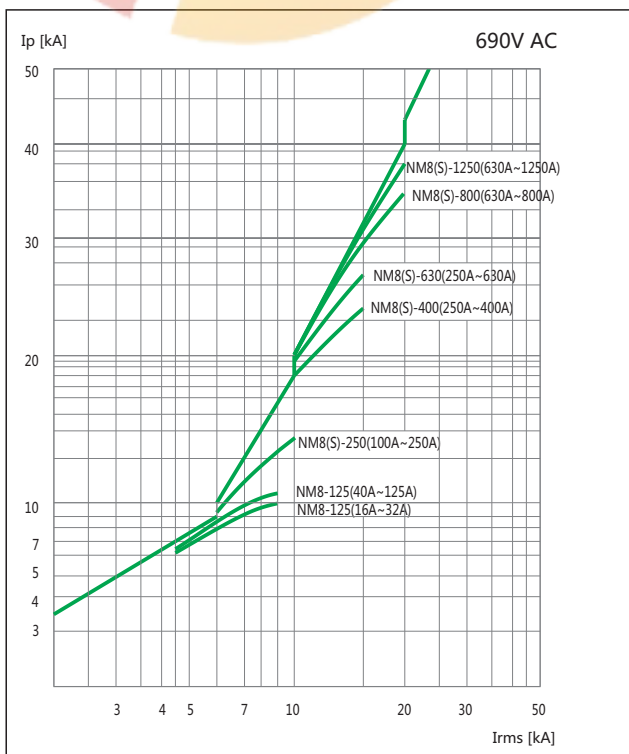
$I^2 t$ Curve



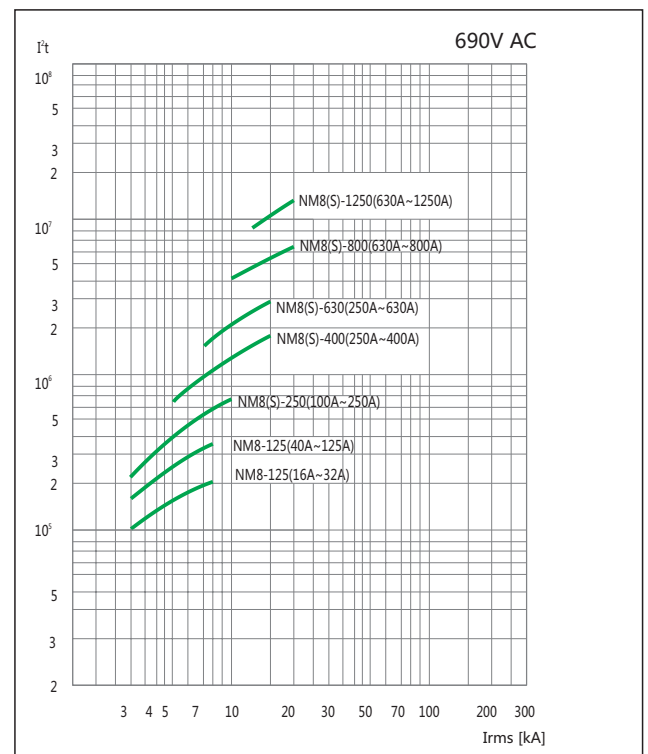
A^2s curve



$I^2 t$ Curve



A^2s curve



11.3 Power loss per pole

Resistance/ power loss mΩ/W	NM8-125	NM8S-125	NM8-250	NM8S-250	NM8-400	NM8S-400
16	7.1/1.8					
20	6.2/2.5					
25	4.8/3					
32	3.7/3.8					
40	2.6/4.2	0.85/1.4				
50	2.7/6.8	0.7/1.8				
63	1.7/6.7	0.7/2.8				
80	1.3/8.3	0.7/4.5				
100	0.85/8.5	0.5/5	1.0/10	0.5/5		
125	0.71/11.1	0.5/7.8	1.0/15.6	0.5/7.8		
160			0.55/14	0.36/9.2		
180			0.55/17.8	0.36/11.7		
200			0.55/22	0.36/14.4		
225			0.55/27.8	0.28/14.2		
250			0.55/34.4	0.28/17.5	0.3/18.8	0.15/9.4
315					0.28/27.8	0.15/14.9
350					0.28/34.3	0.15/18.4
400					0.24/38.4	0.15/24
500						
630						
700						
800						
1000						
1250, 1600						

11.4 Influences which altitude lay to tripping characteristics

To tripping characteristics of circuit breaker, it is no obvious influence, when the altitude does not exceed 2000m. Once the altitude exceeds the level of 2000m, factors of dielectric stress lowering and cooled air should be taken into consideration.

Altitude (m)	2000	3000	4000	5000
Dielectric stress (V)	3000	2500	2100	1800
Max. operational voltage (V)	690	550	480	420
Ratings at 40°C (A)	1In	0.96In	0.93In	0.9In

0.28/34.3	0.13/15.9
0.24/38.4	0.13/20.8
0.2/50	0.13/32.5
	0.13/51.6

Definition of Cascading

In addition, cascading operation is not restricted to operation of two switches in serial, but is applicable in various electric networks, as well.

Through the application of cascading, connected apparatuses could be installed in different switchgears to realize normal operation. Therefore, cascading, in common, refers to various combination of circuit breakers installed at the given point of which the breaking capacity is lower than prospective short-circuit current. And breaking capacity of upstream circuit breakers should be equal to or higher than prospective short-circuit current at the installed point to protect apparatus at downstream. Cascading application is in conformity with IEC60947-2 standards.

Through the application of cascading, connected apparatuses could be installed in different switchgears to realize normal operation. Therefore, cascading, in common, refers to various combination of circuit breakers installed at the given point of which the breaking capacity is lower than prospective short-circuit current. And breaking capacity of upstream circuit breakers should be equal to or higher than prospective short-circuit current at the installed point to protect apparatus at downstream. Cascading application is in conformity with IEC60947-2 standards.

Cascading (220/230/240V)

Upstream: NM8-125~1250

Downstream: DZ47, eB, UB, DZ158, DZ267, NB1, NBH8, NM8 (S)-125~1250

Upstream Breaking capacity (kA rms) →	NM8-125S 85	NM8-125H 100	NM8-125R 150	NM8-250S 85	NM8-250H 100	NM8-250R 150	NM8-400S 85
Downstream ↓	Breaking capacity (kA rms)						
DZ267	30	80	80	30	40	40	
DZ47, eB, UB	30	80	80	30	40	40	
NBH8	30	80	80	30	40	40	
NB1(Icn=6000A)	40	100	100	40	50	50	
NB1-63(Icn=10000A)	50	100	100	50	65	65	
DZ158-100	50	100	100	50	65	65	50
NM8-125S		100	150		100	150	
NM8-125H			150			150	
NM8-250S					100	150	
NM8-250H						150	
NM8-400S							
NM8-400H							
NM8-630S							
NM8-630H							
NM8-800S							
NM8-800H							
NM8-1250S							
NM8-1250H							
NM8S-125S		100	150		100	150	
NM8S-125H			150			150	
NM8S-250S					100	150	
NM8S-250H						150	
NM8S-400S							
NM8S-400H							
NM8S-630S							
NM8S-630H							
NM8S-800S							
NM8S-800H							
NM8S-1250S							
NM8S-1250H							

Upstream: NM8S-125~1600

Downstream: DZ267, DZ47, eB, UB, NBH8, NB1, DZ158, NM8(S)-125~1600

Upstream Breaking capacity (kA rms) →	NM8S-125S 85	NM8S-125H 100	NM8S-250S 85	NM8S-250H 100	NM8S-400S 85	NM8S-400H 100	NM8S-400R 150
Downstream ↓	Breaking capacity (kA rms)						
DZ267	30	80	30	40			
DZ47, eB, UB	30	80	30	40			
NBH8	30	80	30	40			
NB1(I _{cn} =6000A)	40	100	40	50			
NB1(I _{cn} =10000A)	50	100	50	65			
DZ158-100	50	100	50	65	50	65	65
NM8-125S		100		100		100	150
NM8-125H							150
NM8-250S				100		100	150
NM8-250H							150
NM8-400S						100	150
NM8-400H							150
NM8-630S							
NM8-630H							
NM8-800S							
NM8-800H							
NM8-1250S							
NM8-1250H							
NM8S-125S		100		100		100	150
NM8S-125H							150
NM8S-250S				100		100	150
NM8S-250H							150
NM8S-400S						100	150
NM8S-400H							150
NM8S-630S							
NM8S-630H							
NM8S-800S							
NM8S-800H							
NM8S-1250S							
NM8S-1250H							
NM8S-1600H							

[illegible]

B

Cascading (380/400/415V)

Upstream: NM8-125~1250;

Downstream: DZ47,eB, UB, DZ158, DZ267, NB1, NBH8, NM8(S)-125~1250

Upstream Breaking capacity (kA rms) →	NM8-125S 50	NM8-125H 100	NM8-125R 150	NM8-250S 50	NM8-250H 100	NM8-250R 150	NM8-400S 70
Downstream ↓	Breaking capacity (kA rms)						
DZ47, eB, UB	15	20	20	15	20	20	
NB1(Icn=6000A)	25	30	30	25	30	30	
NB1-63(Icn=10000A)	25	40	40	25	40	40	
DZ158-100	25	40	40	25	40	40	25
NM8-125S		100	150		100	150	70
NM8-125H			150			150	
NM8-250S					100	150	70
NM8-250H						150	
NM8-400S							
NM8-400H							
NM8-630S							
NM8-630H							
NM8-800S							
NM8-800H							
NM8-1250S							
NM8-1250H							
NM8S-125S		100	150		100	150	70
NM8S-125H			150			150	
NM8S-250S					100	150	70
NM8S-250H						150	
NM8S-400S							
NM8S-400H							
NM8S-630S							
NM8S-630H							
NM8S-800S							
NM8S-800H							
NM8S-1250S							
NM8S-1250H							



Upstream : NM8S-125~1250

Downstream : DZ267, DZ47, eB, UB, NBH8, NB1, DZ158, NM8 (S) -125~1250

Upstream Breaking capacity (kA rms) →	NM8S-125S 50	NM8S-125H 100	NM8S-250S 50	NM8S-250H 100	NM8S-400S 70	NM8S-400H 100	NM8S-400R 150
Downstream ↓	Breaking capacity (kA rms)						
DZ47, eB, UB	15	20	15	20			
NB1(Icn=6000A)	25	30	25	30			
NB1-63(Icn=10000A)	25	40	25	40			
DZ158	25	40	25	40	25	40	40
NM8-125S		100		100		100	150
NM8-125H				100		100	150
NM8-250S				100		100	150
NM8-250H						100	150
NM8-400S						100	150
NM8-400H							150
NM8-630S							
NM8-630H							
NM8-800S							
NM8-800H							
NM8-1250S							
NM8-1250H							
NM8S-125S		100		100		100	150
NM8S-125H				100		100	150
NM8S-250S				100		100	150
NM8S-250H						100	150
NM8S-400S						100	150
NM8S-400H							150
NM8S-630S							
NM8S-630H							
NM8S-800S							
NM8S-800H							
NM8S-1250S							
NM8S-1250H							
NM8S-1600H							

NM8S-630S 70	NM8S-630H 100	NM8S-630R 150	NM8S-800S 50	NM8S-800H 70	NM8S-1250S 50	NM8S-1250H 70	NM8S-1600H 70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
		150		70		70	70
				70		70	70
				70		70	70
				70		70	70
				70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
	100	150		70		70	70
		150		70		70	70
				70		70	70
				70		70	70
				70		70	70
				70		70	70

B

11.6 Protection discrimination(selectivity)

Protection discrimination is a must factor in low-voltage power distribution design so as to ensure reliability and continuity for users' electricity utilization.

Whenever there is fault occurring in the electric network, the upstream breaker where the fault is occurring breaks.

Protection discrimination could be clarified into 3 kinds: Total protection discrimination, partial protection discrimination and no protection discrimination(refer to fig aside):

Total protection discrimination: For all kinds of current where the faults occurred, including the overload current and nonresistance current, breaker D2 breaks and breaker D1 keeps making status.

Partial protection discrimination: For a much lower current compared with where the fault occurred (the limit value of protection discrimination), breaker D2 breaks and breaker D1 keeps making status (total protection discrimination).

When the fault current is lower than limit value of protection discrimination, the upstream and downstream breakers are applicable to protection discrimination; when the fault current exceeds limit value of protection discrimination, the upstream and downstream breakers are not applicable to protection discrimination (no protection discrimination). And both of the breakers of D1 and D2 break.

Upstream: NM8-125~1250

Downstream: DZ267, DZ47, eB, UB, NBH8, NB1, DZ158

[illegible]

[illegible]

Upstream: NM8S-125~1250

Downstream: DZ267, DZ47, eB, UB, NBH8, NB1, DZ158

Upstream Downstream In (A) I_n (kA)		NM8S-125 S/H			NM8S-250 S/H				NM8S-400 S/H/R			
		40	100	125	100	160	200	250	250	315	350	400
DZ267 C Curves	≤10	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	16	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	20	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	25		0.8	1.0	T	T	T	T	T	T	T	T
	32		0.8	1.0	T	T	T	T	T	T	T	T
DZ47, eB, UB C Curves	≤10	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	16	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	20	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	25		0.8	1.0	T	T	T	T	T	T	T	T
	32		0.8	1.0	T	T	T	T	T	T	T	T
	40		0.8	1.0	T	T	T	T	T	T	T	T
	50		0.8	1.0	T	T	T	T	T	T	T	T
	60			1.0	T	T	T	T	T	T	T	T
NBH8 B C Curves	≤10	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	16	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	20	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	25		0.8	1.0	T	T	T	T	T	T	T	T
	32		0.8	1.0	T	T	T	T	T	T	T	T
	40		0.8	1.0	T	T	T	T	T	T	T	T
NB1 B C D Curves	≤10	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	16	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	20	0.5	0.8	1.0	T	T	T	T	T	T	T	T
	25		0.8	1.0	T	T	T	T	T	T	T	T
	32		0.8	1.0	T	T	T	T	T	T	T	T
	40		0.8	1.0	T	T	T	T	T	T	T	T
	50		0.8	1.0	T	T	T	T	T	T	T	T
	63		0.8	1.0	T	T	T	T	T	T	T	T
	63		0.8	1.0	T	T	T	T	T	T	T	T
	80			1.0	T	T	T	T	T	T	T	T
	100					T	T	T	T	T	T	T
DZ158	63		0.8	1.0	T	T	T	T	T	T	T	T
	80			1.0	T	T	T	T	T	T	T	T
	100					T	T	T	T	T	T	T
	125					T	T	T	T	T	T	T



Upstream: NM8-125~1250

Downstream: NM8(S)-125~1250

[illegible]

B

Upstream Downstream In (A) Ii (kA)		NM8-125 S/H/R										NM8-250 S/H/R			
		16	20	25	32	40	50	63	80	100	125	100	160	200	250
NM8S-630 S/H/R	250														
	315														
	350														
	400														
	500														
	630														
NM8-800 S/H	630														
	700														
	800														
NM8S-800 S/H	630														
	700														
	800														
NM8-1250 S/H	630														
	700														
	800														
	1000														
	1250														
NM8S-1250 S/H	630														
	700														
	800														
	1000														
	1250														
NM8S-1600 S/H	1000														
	1250														
	1600														

Upstream: NM8S-125~1250

Downstream: NM8(S)-125~1250

Upstream Downstream In (A) Ii (kA)		NM8S-125 S/H			NM8S-250 S/H				NM8S-400 S/H/R			
		40	100	125	100	160	200	250	250	315	350	400
NM8-125 S	16		1.2	1.2	1.2	T	T	T	T	T	T	T
	20		1.2	1.2	1.2	T	T	T	T	T	T	T
	25		1.2	1.2	1.2	T	T	T	T	T	T	T
	32		1.2	1.2	1.2	T	T	T	T	T	T	T
	40		1.2	1.2	1.2	T	T	T	T	T	T	T
	50		1.2	1.2	1.2	T	T	T	T	T	T	T
	63			1.2	1.2	T	T	T	T	T	T	T
	80					T	T	T	T	T	T	T
	100						T	T	T	T	T	T
	125							T	T	T	T	T
NM8-125 H/R	16		1.2	1.2	1.2	T	T	T	T	T	T	T
	20		1.2	1.2	1.2	T	T	T	T	T	T	T
	25		1.2	1.2	1.2	T	T	T	T	T	T	T
	32		1.2	1.2	1.2	T	T	T	T	T	T	T
	40		1.2	1.2	1.2	T	T	T	T	T	T	T
	50		1.2	1.2	1.2	2	36	36	T	T	T	T
	63			1.2	1.2	2	36	36	T	T	T	T
	80					2	36	36	T	T	T	T
	100							36	T	T	T	T
	125							36	T	T	T	T
NM8S-125 S/H	40		1.2	1.2	2	2	T	T	T	T	T	T
	100					2	T	T	T	T	T	T
	125							T	T	T	T	T

B[illegible]

↓ → Upstream Downstream In (A) Ii (kA)	NM8S-125 S/H			NM8S-250 S/H				NM8S-400 S/H/R			
	40	100	125	100	160	200	250	250	315	350	400
	40	1.2	1.2	2	2	T	T	T	T	T	T
	100				2	T	T	T	T	T	T
	125						T	T	T	T	T
NM8-250 S	100						3	5	5	5	5
	160									5	5
	200										
	250										
NM8-250 H/R	100						3	5	5	5	5
	160									5	5
	200										
	250										
NM8S-250 S/H	100						5	5	5	5	5
	160						5	5	5	5	5
	200									5	5
	250										5
NM8-400 S/H/R	250										
	315										
	350										
	400										
NM8S-400 S/H/R	250										
	315										
	350										
	400										
NM8-630 S/H/R	250										
	315										
	350										
	400										
NM8S-630 S/H/R	250										
	315										
	350										
	400										
NM8-800 S/H	250										
	315										
	350										
	400										
NM8S-800 S/H	250										
	315										
	350										
	400										
NM8-1250 S/H	630										
	700										
	800										
	1000										
NM8S-1250 S/H	630										
	700										
	800										
	1000										
NM8S-1600 S/H	1000										
	1250										
	1600										

Note:

- The area with T indication clarifies total protection discrimination between upstream and downstream circuit breakers;
- The area with numbers clarifies partial protection discrimination between upstream and downstream circuit breakers;
- For partial protection discrimination, the Max. fault current values to ensure time discrimination performance are given in the table; when fault current exceeds this value, upstream and downstream circuit breakers may operate at the same time.

B

11.7 Selection table of components for motor control or protection
400V, 50kA, type2, MCCB normal load start-up

Motor parameters		Circuit breaker parameters		Contactor parameters		Thermal relay parameters	
Rated power (kW)	Rated current (A)	Model	Setting of magnetic protection (A)	Model	Rated heating current (A)	Model	Rated current (A)
5.5	10.9	NM8-125S/16M	192	NC1-12	20	NR2-25	9~13
7.5	14.4	NM8-125S/20M	240	NC1-18	32	NR2-25	12~18
11	20.9	NM8-125S/25M	300	NC1-25	40	NR2-25	17~25
15	28	NM8-125S/32M	384	NC1-32	50	NR2-36	23~32
18.5	34.1	NM8-125S/40M	480	NC1-40	60	NR2-36	28~36
22	39.4	NM8-125S/50M	600	NC1-50	80	NR2-93	30~40
30	53.4	NM8-125S/63M	756	NC1-65	80	NR2-93	48~65
37	67.9	NM8-125S/80M	960	NC1-80	110	NR2-93	55~70
45	80.5	NM8-125S/100M	1200	NC1-95	110	NR2-93	80~93
55	98.5	NM8-125S/125M	1500	NC2-115	200	NR2-200	80~125
75	133	NM8-250S/160M	1920	NC2-150	200	NR2-200	100~160
90	158.7	NM8-250S/200M	2400	NC2-185	275	NR2-200	100~160
110	192	NM8-250S/250M	3000	NC2-225	275	NR2-200	125~200
132	229	NM8-400S/315M	3780	NC2-265	315	NR2-630	160~250
160	275	NM8-400S/350M	4200	NC2-330	380	NR2-630	200~315
200	343	NM8-400S/400M	4800	NC2-400	450	NR2-630	250~400
250	445	NM8-630S/500M	6000	NC2-500	630	NR2-630	315~500
290	520	NM8S-630S/630M	7560	NC2-630	800	NR2-630	400~630
315	560	NM8S-630S/630M	7560	NC2-630	800	NR2-630	400~630

Note:

1. NM8 and NM8S breakers can replace each other with the same capacity in the table above .
2. NRE8 electronic relays and NR2 thermal relays can replace each other with the same capacity in the table above.

400V, 50kA, type2, MCCB heavy-load start-up

Motor parameters		Circuit breaker parameters		Contactor parameters		Thermal relay parameters	
Rated power (kW)	Rated current (A)	Model	Setting of magnetic protection (A)	Model	Rated heating current (A)	Model	Rated current (A)
5.5	10.9	NM8-125S/16M	192	NC1-18	32	NR2-25	9~13
7.5	14.4	NM8-125S/20M	240	NC1-25	40	NR2-25	12~18
11	20.9	NM8-125S/25M	300	NC1-32	50	NR2-25	17~25
15	28	NM8-125S/32M	384	NC1-40	60	NR2-36	23~32
18.5	34.1	NM8-125S/40M	480	NC1-50	80	NR2-36	28~36
22	39.4	NM8-125S/50M	600	NC1-65	80	NR2-93	30~40
30	53.4	NM8-125S/63M	756	NC1-80	110	NR2-93	48~65
37	67.9	NM8-125S/80M	960	NC1-95	110	NR2-93	55~70
45	80.5	NM8-125S/100M	1200	NC2-115	200	NR2-93	80~93
55	98.5	NM8-125S/125M	1500	NC2-150	200	NR2-200	80~125
75	133	NM8-250S/160M	1920	NC2-185	275	NR2-200	100~160
90	158.7	NM8-250S/200M	2400	NC2-225	275	NR2-200	100~160
110	192	NM8-250S/250M	3000	NC2-265	315	NR2-200	125~200
132	229	NM8-400S/315M	3780	NC2-330	380	NR2-630	160~250
160	275	NM8-400S/350M	4200	NC2-400	450	NR2-630	200~315
200	343	NM8-400S/400M	4800	NC2-500	630	NR2-630	250~400
250	445	NM8-630S/500M	6000	NC2-630	800	NR2-630	315~500
290	520	NM8S-630S/630M	7560	NC2-630	800	NR2-630	400~630

Note:

1. NM8 and NM8S breakers can replace each other with the same capacity in the table above .
2. NRE8 electronic relays and NR2 thermal relays can replace each other with the same capacity in the table above.

400V, 50kA, type2, MCCB star-delta start-up

Motor parameters		Circuit breaker parameters		Contactor parameters			Thermal relay parameters	
Rated power (kW)	Rated current (A)	Model	Setting of magnetic protection (A)	Feedback contactor	Delta contactor	Star contactor	Model	Rated current (A)
5.5	10.9	NM8-125S/16M	192	NC1-09	NC1-09	NC1-09	NR2-11.5	5.5~8
7.5	14.4	NM8-125S/20M	240	NC1-12	NC1-12	NC1-09	NR2-11.5	7~10
11	20.9	NM8-125S/25M	300	NC1-18	NC1-18	NC1-09	NR2-25	9~13
15	28	NM8-125S/32M	384	NC1-25	NC1-25	NC1-12	NR2-25	12~18
18.5	34.1	NM8-125S/40M	480	NC1-25	NC1-25	NC1-18	NR2-25	17~25
22	39.4	NM8-125S/50M	600	NC1-32	NC1-32	NC1-18	NR2-36	23~32
30	53.4	NM8-125S/63M	756	NC1-40	NC1-40	NC1-25	NR2-36	28~36
37	67.9	NM8-125S/80M	960	NC1-50	NC1-50	NC1-32	NR2-93	30~40
45	80.5	NM8-125S/100M	1200	NC1-65	NC1-65	NC1-32	NR2-93	37~50
55	98.5	NM8-125S/125M	1500	NC1-80	NC1-80	NC1-40	NR2-93	48~65
75	133	NM8-250S/160M	1920	NC1-95	NC1-95	NC1-50	NR2-93	63~80
90	158.7	NM8-250S/200M	2400	NC2-115	NC2-115	NC2-65	NR2-93	80~93
110	192	NM8-250S/250M	3000	NC2-150	NC2-150	NC2-80	NR2-200	80~125
132	229	NM8-400S/315M	3780	NC2-150	NC2-150	NC2-95	NR2-200	80~125
160	275	NM8-400S/350M	4200	NC2-185	NC2-185	NC2-115	NR2-200	100~160
200	343	NM8-400S/400M	4800	NC2-225	NC2-225	NC2-150	NR2-200	125~200
250	445	NM8-630S/500M	6000	NC2-330	NC2-330	NC2-185	NR2-630	200~315
290	520	NM8S-630S/630M	7560	NC2-400	NC2-400	NC2-185	NR2-630	200~315
315	560	NM8S-630S/630M	7560	NC2-400	NC2-400	NC2-225	NR2-630	250~400

Note:

- NM8 and NM8S breakers can replace each other with the same capacity in the table above.
- NRE8 electronic relays and NR2 thermal relays can replace each other with the same capacity in the table above.
- Breaker is at the power supply side
- In the delta connection circuit of thermal relay, the setting value is 0.58Ie;
- The max. start-up time is 20s;
- When Star type connection is changed into delta connection, the following connection modes of motor are recommended: L1, U1 to V2; L2, V1 to W2; L3, W1 to U2 to lower the impulse current;
- The interval of star type connection changing into delta connection is 0.1s.

12. NM8 series accessories description form

Name of accessory		Code	Frame	Pole	Remark			
Auxiliary contact		AX-8/M8	NM8(S)-125,250,400,630 NM8(S)-800,1250	2P/3P/4P				
Alarm contact		AL-8/M8	NM8(S)-125,250,400,630	2P/3P/4P				
Alarm contact		AL-8/M8-1250	NM8(S)-800,1250	3P/4P				
Shunt release		SM6:AC220V	NM8-125	2P/3P/4P				
		SQ6:AC380V						
		SH6:AC110V						
		SB1:DC24V						
		SB4:DC110V						
		SM5:AC220V						
		SQ5:AC380V	NM8S-125 NM8(S)-250,400,630	2P/3P/4P				
		SH5:AC110V						
		SB0:DC24V						
		SB5:DC110V						
		SM7:AC220V	NM8(S)-800,1250	3P/4P				
		SQ7:AC380V						
		SH7:AC110V						
		SB3:DC24V						
		SB7:DC110V						
		SB2:DC220V						
Under voltage release		UM6:AC220V	NM8-125	2P/3P/4P				
		UQ6:AC380V						
		UM5:AC220V	NM8S-125 NM8(S)-250,400,630	2P/3P/4P				
		UQ5:AC380V						
		UB0:DC24V						
		UB5:DC110V						
		UM7:AC220V	NM8(S)-800,1250	3P/4P				
		UQ7:AC380V						
		UB3:DC24V						
Motor driven operating mechanism		MO10:AC/DC110V	NM8-125	3P/4P				
		MO12:AC230/DC220						
		MO13:AC380						
		MO22:AC230/DC220	NM8S-125 NM8(S)-250		3P/4P			
		MO23:AC380						
		MO30:AC/DC110V						
		MO32:AC230/DC220	NM8(S)-400,630			3P/4P		
		MO33:AC380						
		MO40:AC/DC110V						
		MO41:AC230/DC220	NM8(S)-800,1250				3P/4P	
		MO42:AC380						
		Plug-in base						PL13
PL14	4P							
PL23	NM8S-125 NM8(S)-250			3P				
PL24				4P				
PL33	NM8(S)-400,630			3P				
PL34				4P				
Economical extended rotary manual operating handle		RH11	NM8-125	3P				
		RH14		4P				
		RH21	NM8S-125 NM8(S)-250	3P				
		RH24		4P				
		RH31	NM8(S)-400,630	3P/4P				
		RH41	NM8(S)-800,1250	3P/4P				
Normal direct rotary manual operating handle		RH12	NM8-125	3P/4P				
		RH22	NM8-250	3P/4P				
		RH25	NM8S-125/250	3P/4P				
		RH32	NM8-400,630	3P/4P				
		RH35	NM8S-400,630	3P/4P				

Continued form 1

Name of accessory	Code	Frame	Pole	Remark
Normal extended rotary manual operating handle 	RH13	NM8-125	3P/4P	
	RH23	NM8-250	3P/4P	
	RH26	NM8S-125/250	3P/4P	
	RH33	NM8-400,630	3P/4P	
	RH36	NM8S-400,630	3P/4P	
Locking system 	PD1	NM8-125	3P/4P	
	PD2	NM8S-125,NM8(S)-250	3P/4P	
	PD3	NM8(S)-400,630	3P/4P	
	PD4	NM8(S)-800,1250	3P/4P	
	COMA-2/AC230V	NM8(S)-125		
Mechanical Interlock 	COMA-2/AC400V	NM8(S)-250		
	COMA-2/DC24V	NM8(S)-400,630		
	COMA-2/DC24V	NM8(S)-800,1250		
	MI13	NM8-125	3P	
	MI14	NM8-125	4P	
DIN rail adaptor 	MI23	NM8S-125	3P	
	MI24	NM8(S)-250	4P	
	MI33	NM8(S)-400,630	3P	
	MI34	NM8(S)-400,630	4P	
	DIN13	NM8-125	3P	
Rear connection plate 	DIN14	NM8-125	4P	
	DIN23	NM8S-125	3P	
	DIN24	NM8(S)-250	4P	
	BM12	NM8-125	2P	
	BM13	NM8-125	3P	
Short terminal cover 	BM14	NM8-125	4P	
	BM22	NM8S-125	2P	
	BM23	NM8(S)-250	3P	
	BM24	NM8(S)-250	4P	
	BM33	NM8(S)-400,630	3P	
Extended terminal cover 	BM34	NM8(S)-400,630	4P	
	ST13	NM8-125	3P	
	ST14	NM8-125	4P	
	ST23	NM8S-125	3P	
	ST24	NM8(S)-250	4P	
Front connection plate 	ST33	NM8(S)-400,630	3P	
	ST34	NM8(S)-400,630	4P	
	ST43	NM8(S)-800,1250	3P	
	ST44	NM8(S)-800,1250	4P	
	LT13	NM8-125	3P	
	LT14	NM8-125	4P	
	LT23	NM8S-125	3P	
	LT24	NM8(S)-250	4P	
	LT33	NM8(S)-400,630	3P	
	LT34	NM8(S)-400,630	4P	
	LT43	NM8(S)-800,1250	3P	
	LT44	NM8(S)-800,1250	4P	
	FM12		2P	
	FM13	NM8-125	3P	
	FM14	NM8-125	4P	
	FM22	NM8S-125	2P	
	FM23	NM8(S)-250	3P	
	FM24	NM8(S)-250	4P	
	FM33	NM8(S)-400,630	3P	
	FM34	NM8(S)-400,630	4P	
	FM43	NM8(S)-800,1250	3P	
	FM44	NM8(S)-800,1250	4P	

Continued form 1

Name of accessory	Code	Frame	Pole	Remark
Cage clamp terminal	CT12	NM8-125	2P	
	CT13		3P	
	CT14		4P	
	CT22	NM8S-125 NM8(S)-250	2P	
	CT23		3P	
	CT24		4P	
	CT33	NM8(S)-400,630	3P	
	CT34		4P	
Exterior clamp terminal	ET12 C1	NM8-125	2P	1×95
	ET13 C1		3P	1×95
	ET14 C1		4P	1×95
	ET22 C1	NM8S-125 NM8(S)-250	2P	1×240
	ET23 C1		3P	1×240
	ET24 C1		4P	1×240
	ET22 C2		2P	2×120
	ET23 C2		3P	2×120
	ET24 C2		4P	2×120
	ET22 C6	NM8(S)-400,630	2P	6×35
	ET23 C6		3P	6×35
	ET24 C6		4P	6×35
	ET33 C2		3P	2×240
	ET34 C2		4P	2×240
	ET33 C4	NM8(S)-800,1250	3P	4×95
	ET34 C4		4P	4×95
	ET43 C3		3P	3×240
	ET44 C3		4P	3×240
	ET43 C4		3P	4×240
	ET44 C4		4P	4×240

13. Model definition and description for NM8 series product

Product code	Frame current	Breaking capacity code	Rated current	Poles	Usage code
NM8S - 250 H / 160 / 4C M					
NM8: Thermal magnetic MCCB NM8S: Electronic MCCB	125 250 400 630 800 1250 1600	S H R	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160, 180, 200, 225, 250, 315, 350, 400, 500, 630, 700, 800, 1000, 1250 1600	2:2 poles 3:3 poles 4:4 poles 4A: there is no over current release installed at pole N and N pole will always connect, which will not operate with the other three poles. 4B: there is no over current release installed at pole N and N pole will operate with the other three poles. 4C: there is over current release installed at pole N and N pole will operate with the other three poles. 4D: there is over current release installed at pole N and N pole will always connect.	M: motor protection No code: distribution protection

14. Model definition and description for NM8 accessories

BM23	/	RH12	/	UM5	/	AX-8/M8	
Connection Accessories		Control mechanism Accessories			Internal Accessories		
FM12,FM13,FM14: Front connection plate (NM8-125) FM22,FM23,FM24: Front connection plate (NM8S-125 NM8(S)-250) FM33,FM34: Front connection plate (NM8(S)-400,630) FM43,FM44: Front connection plate (NM8(S)-800,1250) BM12,BM13,BM14: Rear connection plate (NM8-125) BM22,BM23,BM24: Rear connection plate (NM8S-125 NM8(S)-250) BM33,BM34: Rear connection plate (NM8(S)-400,630) PL13,PL14: Plug-in base (NM8-125) PL23,PL24: Plug-in base (NM8S-125 NM8(S)-250) PL33,PL34: Plug-in base (NM8(S)-400,630) DIN13,DIN14: DIN rail adaptor (NM8-125) DIN23,DIN24: DIN rail adaptor (NM8S-125 NM8(S)-250) CT12, CT13, CT14: Cage clamp terminal (NM8-125) CT22, CT23, CT24: Cage clamp terminal (NM8S-125 NM8(S)-250) CT33, CT34: Cage clamp terminal (NM8(S)-400,630) LT13,LT14: Extended terminal cover (NM8-125) LT23,LT24: Extended terminal cover (NM8S-125 NM8(S)-250) LT33,LT34: Extended terminal cover (NM8(S)-400,630) LT43,LT44: Extended terminal cover (NM8(S)-800,1250) ST13,ST14: Short terminal cover (NM8-125) ST23,ST24: Short terminal cover (NM8S-125 NM8(S)-250) ST33,ST34: Short terminal cover (NM8(S)-400,630) ST43,ST44: Short terminal cover (NM8(S)-800,1250)		RH11,RH14: Economical extended rotary manual operating handle (NM8-125) RH21,RH24: Economical extended rotary manual operating handle (NM8S-125 NM8(S)-250) RH31: Economical extended rotary manual operating handle (NM8(S)-400,630) RH41: Economical extended rotary manual operating handle (NM8(S)-800,1250) RH13: Normal extended rotary manual operating handle(NM8-125) RH23, RH26: Normal extended rotary manual operating handle (NM8-250,NM8S-125,250) RH33, RH36: Normal extended rotary manual operating handle (NM8-400,630,NM8S-400,630) RH12: Normal direct rotary manual operating handle(NM8-125) RH22,RH25: Normal direct rotary manual operating handle (NM8-250,NM8S-125,250) RH32, RH35: Normal direct rotary manual operating handle (NM8-400,630,NM8S-400,630) MO10, MO12, MO13: Motor driven operating mechanism(NM8-125) MO22, MO23: Motor driven operating mechanism(NM8S-125 NM8(S)-250) MO30, MO32, MO33: Motor driven operating mechanism(NM8(S)-400,630) MO40, MO41, MO42: Motor driven operating mechanism(NM8(S)-800,1250) PD1: Locking system(NM8-125) PD2: Locking system (NM8S-125 NM8(S)-250) PD3: Locking system (NM8(S)-400,630) PD4: Locking system (NM8(S)-800,1250) Communication model (NM8S-125,250,400,630,800,1250)		Shunt release SM6:AC220V SH6:AC110V SQ6:AC380V SB1:DC24V SB4:DC110V (NM8-125) SM5:AC220V SH5:AC110V SQ5:AC380V SB0:DC24V SB5:DC110V (NM8S-125, NM8(S)-250, 400,630) SM7:AC220V SH7:AC110V SQ7:AC380V SB3:DC24V SB7:DC110V SB2:DC220V (NM8(S)-800, 1250)		Under voltage release UM6:AC220V UQ6:AC380V (NM8-100) UM5:AC220V UQ5:AC380V UB0:DC24V UB5:DC110V (NM8S-125, NM8(S)-250,400,630) UM7:AC220V UQ7:AC380V UB3:DC24V (NM8(S)-800,1250)	Auxiliary contact (NM8(S)-125, NM8(S)-250,400,630, NM8(S)-800,1250) Alarm contact AL-8/M8 (NM8(S)-125, NM8(S)-250,400,630) AL-8/M8-1250 (NM8(S)-800,1250)

Note



پیمان تابلو

صفر تا صد تابلو برق



NM1 Moulded Case Circuit Breaker

1. General

- 1.1 Certificates: KEMA, UKrSEPRO, EAC, RCC, EK;
- 1.2 Electric ratings: AC 690V/50/60HZ, 10~1250A;
- 1.3 Mounting mode: Vertical and horizontal;
- 1.4 Standard: IEC/EN60947-2.

2. Type designation

N M 1 - □ □ □ / □ □ □ □

Type of N-pole for 4-P breaker*

Application: Blank: for power distribution;
2: for motor protection

Release type and accessory code
(please refer to table on page 94)

Number of poles

Operation mode: Blank: direct operation with handle;
P: motor-driven operation;
Z: Operation with rotary handle

Code of Breaking capacity :
C-basic type;
S-standard type;
H-higher type;
R-current limiting type

Frame size rated current

Design sequence number

MCCB code

Company code

Note *: There is types of N-pole for 4P breaker

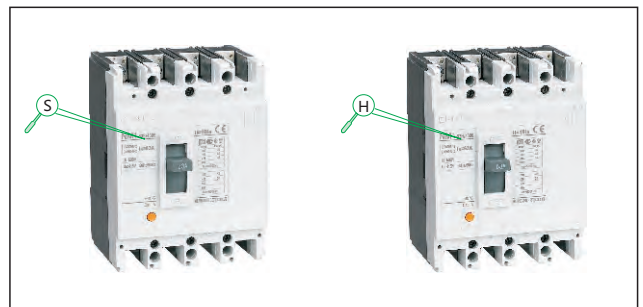
B: Without current release components, N-Pole makes with the other three poles(N-pole first makes then breaks);

3. Classification

According to breaking capacity of breaker:

Standard type (C,S)

Higher type (H)



Current-limiting type (R)



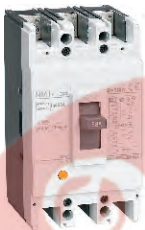
According to wiring mode:

Front connection



According to operation mode:

Direct operation with handle



Operation with rotary handle



Motor-driven operation



According to number of poles:

2P



3P



4P



4. Operating conditions

- 4.1 Temperature: $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$; the average value within 24h shall not exceed $+35^{\circ}\text{C}$. (please refer to coefficients on P79 for temperature compensation correction); for the circuit breaker with thermo-magnetic release, $+40^{\circ}\text{C}$ is set to be the standard temperature for ratings. For temperature not between $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$, please contact us for temperature compensation correction.
- 4.2 Altitude: not exceed 2000m (Please contact with us for reduction coefficient if altitude at the mounted site beyond 2000m).

4.3 Pollution grade: Grade 3

4.4 IP grade: IP30

4.5 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.

5. Technical data

Frame size current		63			125					250							400				630				800					1250
Electric characteristics as per IEC 60947-2, EN 60947-2																														
Rated current (A) In 40°C		10, 16, 20, 25, 30, 32, 40, 50, 63			25, 30, 32, 40, 50, 63, 80, 100, 125					100, 125, 140, 150, 160, 175, 180, 200, 225, 250							250, 300, 315, 350, 400				400, 450, 500, 630				630, 700, 800					800, 1000, 1250
Rated insulation voltage (V) Ui		500			800					800							800				800				800					800
Rated impulse withstand voltage(kV) Uimp		6			8					8							8				8				8					8
Rated operational voltage (V) Ue AC 50/60Hz		415			690					690							690				690				690					690
Arcing distance (mm)		≤50			≤50					≤50							≤100				≤100				≤100					≤100
Breaking capacity code		S		H	C	S		H		R	C		S		H		R	S		H		R	S		H		R	S		H
																														
Number of poles		3	3	4	3	3	2	3	4	3	2	3	4	1	3	4	2	3	4	3	3	4	3	3	3	4	3	4	3	3
Rated ultimate short-circuit breaking capacity Icu (kA, rms)	AC 220/230/240V	20	42	42	25	42	65	65	65	85	25	25	25	20	42	42	65	65	65	85	50	50	85	100	65	65	85	85	100	85
	AC 380/400/415V	15	35	35	20	25	50	50	50	65	20	20	20	10	25	25	50	50	50	65	35	35	50	70	50	50	60	60	70	65
	AC 660/690V	–	–	–	3	3	–	8	8	10	–	5	5	–	5	5	–	8	8	10	10	10	12	15	12	12	15	15	20	20
Rated service short-circuit breaking capacity Ics (%Icu)		50%			50%					50%							50%				50%				50%					50%
Test sequence:O-t-CO-t-CO																														
Isolation function		■			■					■							■				■				■					■
Utilization class		A			A					A							A				A				A					A
Front connection		■			■					■							■				■				■					■
Rear connection		■			■					■							■				■				■					
Plug in type		■			■					■							■				■				■					
Shunt release		■			■					■							■				■				■					■
Under-voltage release		■			■					■							■				■				■					■
Auxiliary contact		■			■					■							■				■				■					■
Alarm contact		■			■					■							■				■				■					

Note:
The symbols O-t-Co, O-t-Co-t-Co are used for defining the sequence of operations.
O: breaking operation; t: the time interval between two successive short-circuit operations;
CO: a making operation followed, after the appropriate opening time, by a breaking operation.

6. Release

Inverse time breaking action property of the over current releasing of the breaker (for power distribution) at the status that all poles are electrified simultaneously

No.	Test current	I/In	Conventional time	Initial status
1	Conventional non-trip current	1.05	2h(In > 63A), 1h(In≤63A)	Cold status
2	Conventional trip current	1.30	2h(In > 63A), 1h(In≤63A)	Right after test no. 1

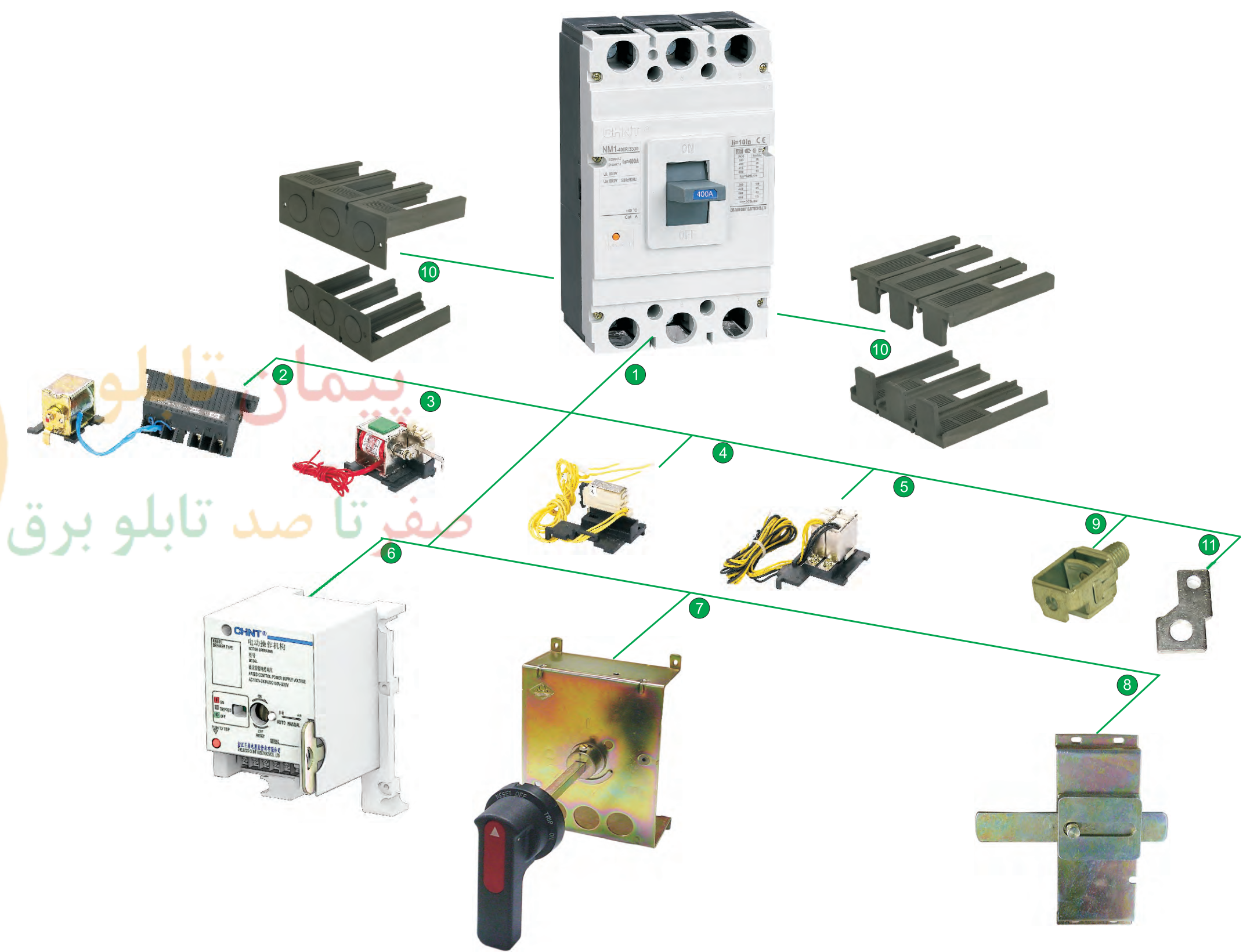
Inverse time-delay breaking operation property of the over current tripping of the breaker(for motor protection) at the status that all poles are electrified simultaneously(conforms to IEC60947-3)

Serial No.	Setting current	Conventional time	Start-up status	Remark
1	1.0In	> 2h	Cold status	
2	1.2In	≤2h	Right after test number 1	
3	1.5In	≤2min	Hot state	10A≤In≤25A
		≤4min	Hot state	25A≤In≤63A
		≤8min	Hot state	125A≤In≤800A
4	7.2In	0.5s≤Tp≤5s	Cold state	10A≤In≤25A
		2s≤Tp≤10s	Cold state	25A≤In≤63A
		4s≤Tp≤10s	Cold state	63A≤In≤125A
		6s≤Tp≤20s	Cold state	125A≤In≤800A

7. Product overview

NM1 Moulded Case Circuit Breaker

- 1
- MCCB (fixed type)
- 2
- Under-voltage release
- 3
- Shunt release
- 4
- Alarm contact
- 5
- Auxiliary contact
- 6
- Motor-driven operation mechanism
- 7
- Extended manual operation handle
- 8
- Mechanical interlock
- 9
- Cage clamp terminal
- 10
- Terminal cover
- 11
- Front connection plate



8. Curves (for power distribution, calibrated at 40°C)

8.1 The characteristic curve of anti-time limit and the correcting curve of temperature see fig.

Fig.1 NM1-63(10~32), NM1-125(25~32)
Characteristic Curve

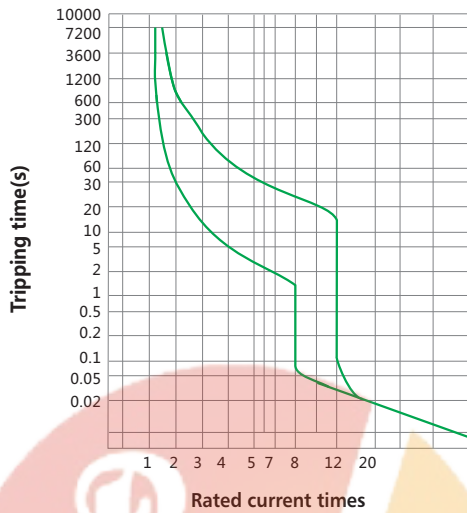


Fig.2 NM1-63(10~32), NM1-125(25~32)
Adjustment curve of temperature

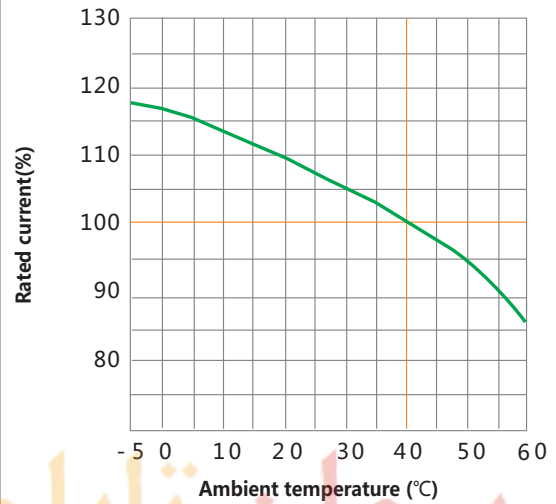


Fig.3 NM1-63(40~63), NM1-125(40~125)
Characteristic Curve

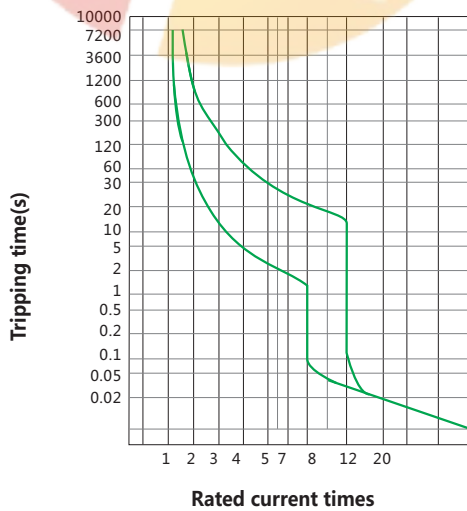


Fig.4 NM1-63(40~63), NM1-125(40~125)
Adjustment curve of temperature

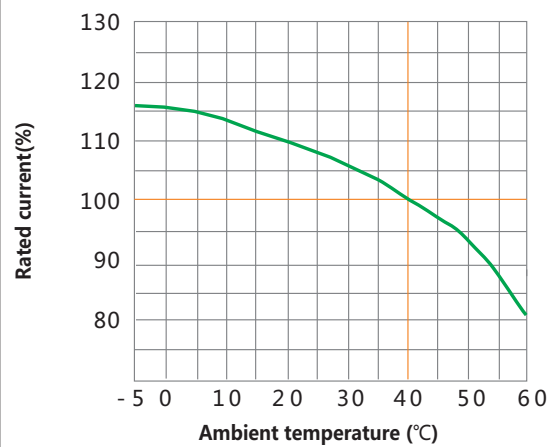


Fig.5 NM1-250 Characteristic Curve

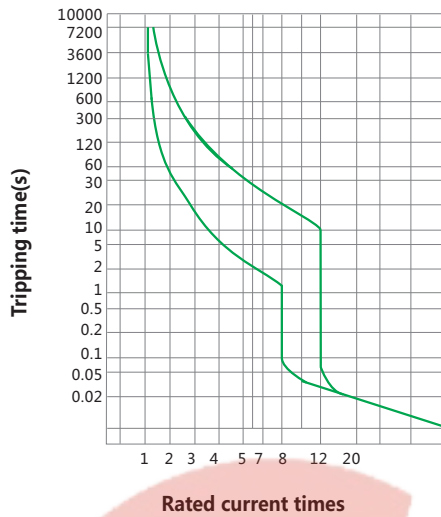


Fig.6 NM1-250 Adjustment curve of temperature

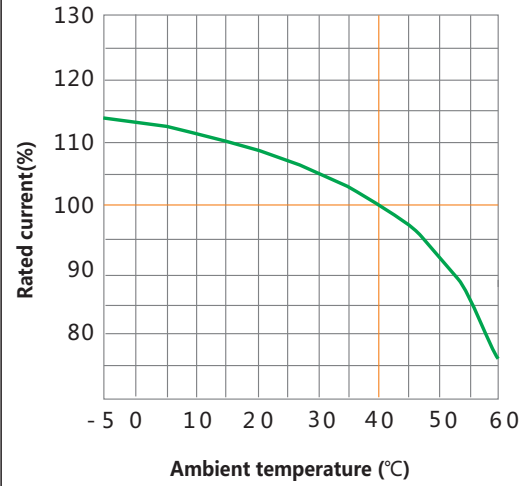


Fig.7 NM1-400 Characteristic Curve

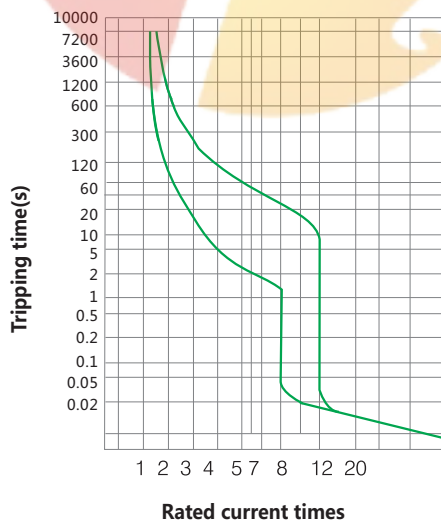


Fig.8 NM1-400 Adjustment curve of temperature

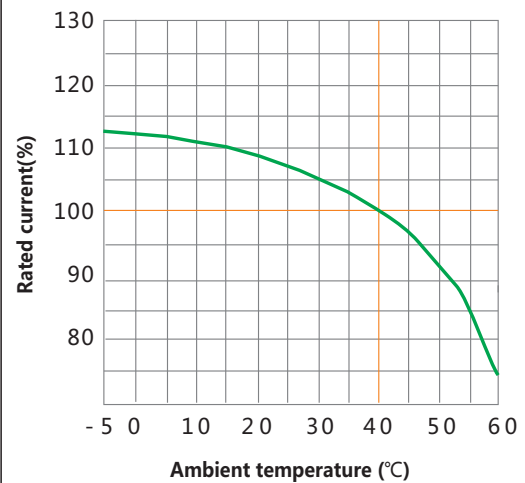


Fig.9 NM1-630, NM1-800 Characteristic Curve

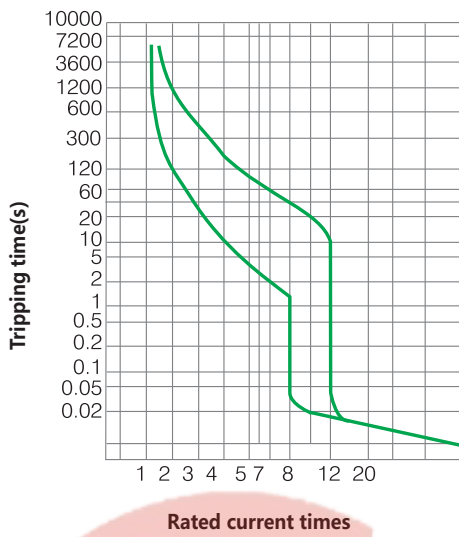


Fig.10 NM1-630, NM1-800 Adjustment curve of temperature

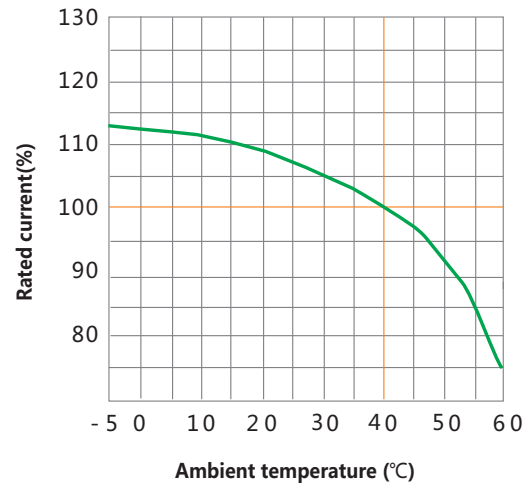


Fig.11 NM1-1250 Characteristic Curve

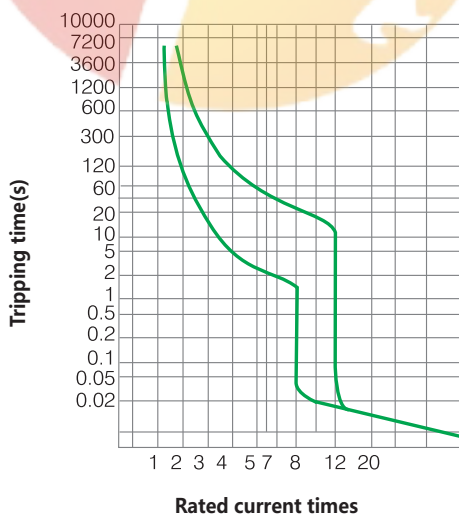
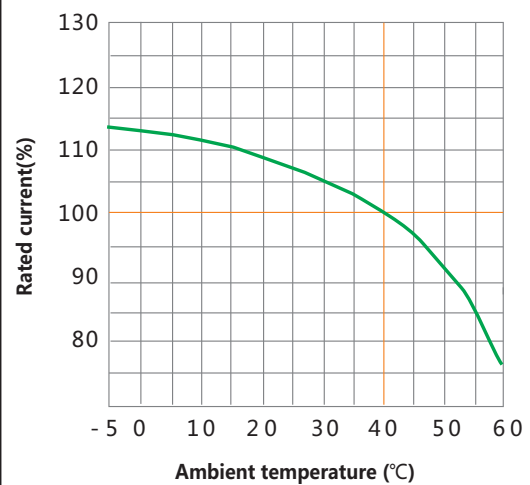


Fig.12 NM1-1250 Adjustment curve of temperature



8.2 Temperature compensation correction

NM1 series temperature compensation coefficient table (calibration at 40°C, for the calibration at other temperature standards please contact with us)

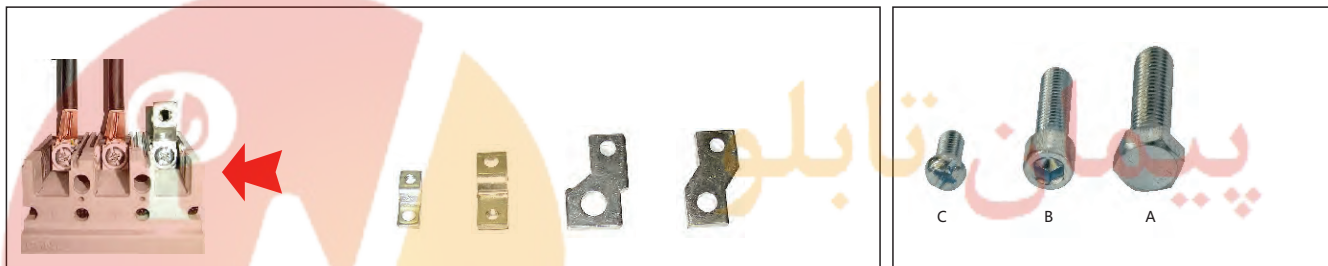
Type	Current range	Compensation coefficient													
		-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
NM1-63S, H	10~32A	1.18	1.17	1.16	1.14	1.12	1.09	1.07	1.05	1.03	1	0.97	0.95	0.92	0.87
NM1-63S, H	40~63A	1.16	1.16	1.15	1.14	1.12	1.10	1.08	1.06	1.03	1	0.97	0.94	0.87	0.82
NM1-125C, S, H, R	25~32A	1.18	1.17	1.16	1.14	1.12	1.09	1.07	1.05	1.03	1	0.97	0.95	0.92	0.87
NM1-125C, S, H, R	40~125A	1.16	1.16	1.15	1.14	1.12	1.10	1.08	1.06	1.03	1	0.97	0.94	0.87	0.82
NM1-250 S, H, R	100~250A	1.14	1.13	1.13	1.12	1.10	1.08	1.07	1.05	1.03	1	0.97	0.93	0.86	0.76
NM1-400S, H, R	225~400A	1.13	1.12	1.12	1.11	1.10	1.08	1.06	1.05	1.03	1	0.97	0.93	0.85	0.75
NM1-630S, H, R	400~630A	1.13	1.12	1.12	1.11	1.10	1.08	1.07	1.05	1.03	1	0.97	0.93	0.85	0.75
NM1-800S, H, R	630~800A	1.13	1.12	1.12	1.11	1.10	1.08	1.07	1.05	1.03	1	0.97	0.93	0.85	0.75
NM1-1250H	700~1250A	1.14	1.13	1.12	1.11	1.10	1.09	1.07	1.05	1.03	1	0.97	0.92	0.85	0.76

9. Wiring

Front connection(Fixed connection)

Extended connection terminals (for products 10~1250A, extended terminals are available)

Connection screws

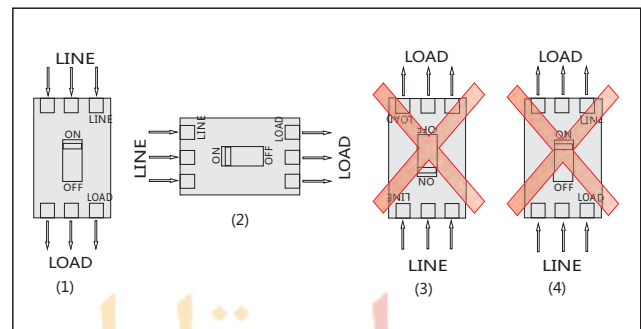
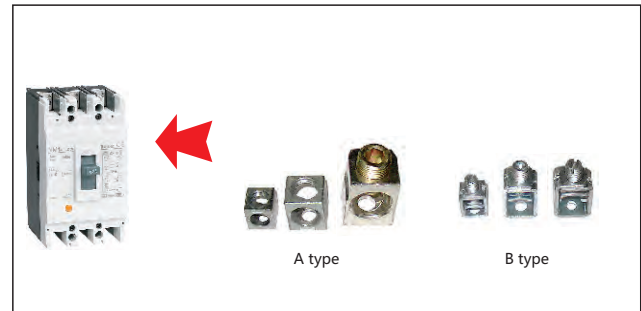


Frame level	Current (A)	Breaking capacity code	Front connection screw		
			Hexagonal head screw (A)	Hexagonal socket screw (B)	Cross screw (C)
63	10	S		■	
		H		■	
	16	S		■	
		H		■	
	20	S		■	
		H		■	
	25	S		■	
		H		■	
	30	S		■	
		H		■	
	32	S		■	
		H		■	
	40	S		■	
		H		■	
	50	S		■	
		H		■	
	60	S		■	
		H		■	
125	25	C		■	■
		S		■	■
	30	H		■	■
		R		■	■
	32	C		■	■
		S		■	■
	40	H		■	■
		R		■	■
	50	C		■	■
		S		■	■
	60	H		■	■
		R		■	■
	63	C		■	■
		S		■	■
	75	H		■	■
		R		■	■

Frame level	Current (A)	Breaking capacity code	Front connection screw		
			Hexagonal head screw (A)	Hexagonal socket screw (B)	Cross screw (C)
125	80	C		■	■
		S		■	■
		H		■	■
	100	R		■	■
		C		■	■
		S		■	■
	125	H		■	■
		R		■	■
		C		■	■
250	100	S		■	
		H		■	
		R		■	
	125	S		■	
		H		■	
		R		■	
	140	S		■	
		H		■	
		R		■	
	150	S		■	
		H		■	
		R		■	
	160	S		■	
		H		■	
		R		■	
	175	S		■	
		H		■	
		R		■	
	180	S		■	
		H		■	
		R		■	
	200	S		■	
		H		■	
		R		■	
	225	S		■	
		H		■	
		R		■	
400	225	S	■	■	
		H	■	■	
		R	■	■	
	250	S	■	■	
		H	■	■	
		R	■	■	
	300	S	■	■	
		H	■	■	
		R	■	■	

Frame level	Current (A)	Breaking capacity code	Front connection screw		
			Hexagonal head screw (A)	Hexagonal socket screw (B)	Cross screw (C)
400	315	S	■	■	
		H	■	■	
		R	■	■	
	350	S	■	■	
		H	■	■	
		R	■	■	
	400	S	■	■	
		H	■	■	
		R	■	■	
630	400	S		■	
		H		■	
		R		■	
	450	S		■	
		H		■	
		R		■	
	500	S		■	
		H		■	
		R		■	
	630	S		■	
		H		■	
		R		■	
800	630	H		■	
		R		■	
		R		■	
	700	H		■	
		R		■	
		R		■	
	800	H		■	
		R		■	

Cage clamp terminals (for products 16~400A, cage clamp terminals are available)

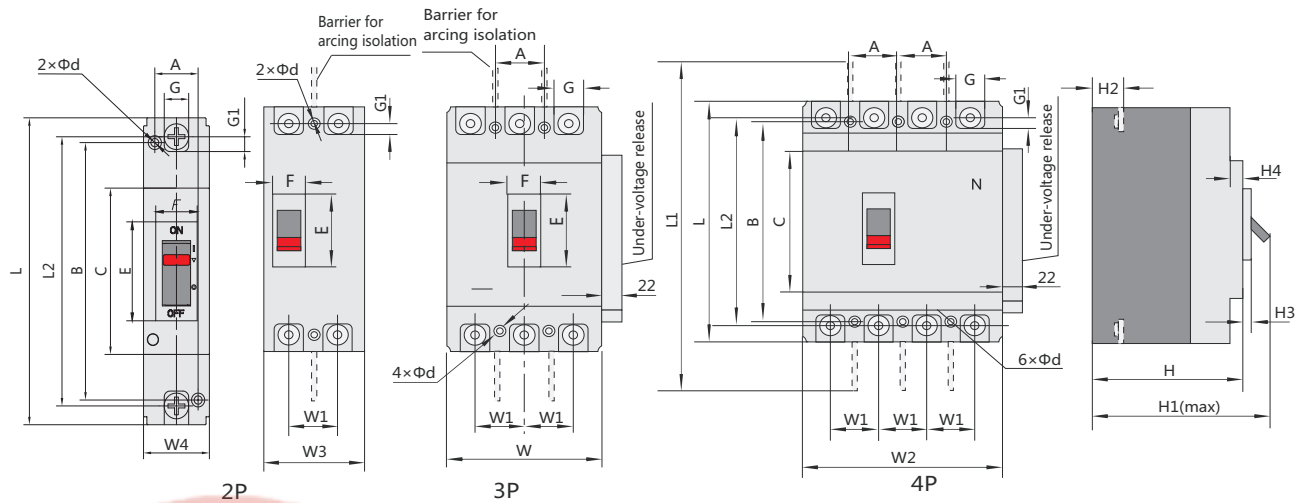


Modes of down-lead (1) and (2) illustrated in the figure are available for your wiring operation. For its breaking capacity may be affected, mode of down-lead (3) is not recommended, before reception of any authorized announcement from the manufacturer; the mode of down-lead (4) is prohibited for your wiring.

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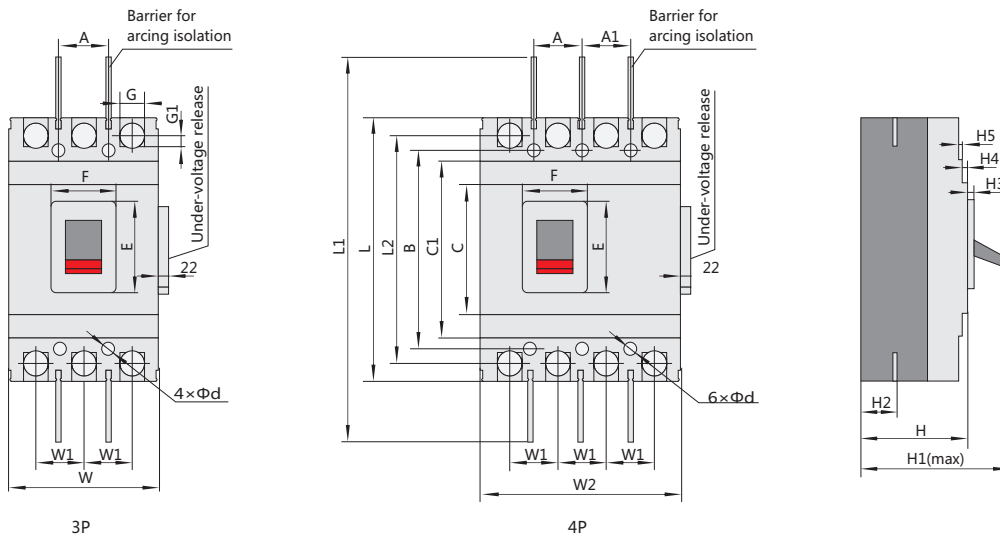
10. Overall and mounting dimensions

Fig.15a NM1-63, 125, 250 fixed connection



		(mm)						
Dimension		NM1-63S	NM1-63H	NM1-125C NM1-125S	NM1-125H NM1-125R	NM1-250S/1P	NM1-250S	NM1-250H NM1-250R
Overall dimensions	C	85	85	85	85	102	102	102
	E	48	48	51	51	51	51	51
	F	23	23	23	23	22	23	23
	G	14	14	17.5	17.5	23	23	23
	G1	6.5	6.5	7.5	7.5	11.5	11.5	11.5
	H	70	80	67	86	86	87	103.5
	H1	91	100	86	104	109	110	127
	H2	19	28	24	24	24	24	24
	H3	6	6	4	4	4.5	3.5	3.5
	H4	5	5	7	7	6	5.5	5.5
	L	135	135	155	155	165	165	165
	L1	235	235	255	255	-	360	360
	L2	117	117	136	136	144	144	144
	W	76	76	90	90	-	105	105
	W1	25	25	30	30	-	-	35
	W2	-	103	-	120	-	-	140
	W3	-	-	-	65	-	-	75
	W4	-	-	-	-	35	-	-
Mounting dimensions	A	25	25	30	30	28	35	35
	B	117	117	130.5	130.5	109	126	126
dimensions		Φd	4.5	4.5	4.5×6	3.5	5	5

Overall and mounting dimensions of NM1-400, 630, 800, 1250(Fixed type)



(mm)

Dimension	NM1-400S NM1-400H NM1-400R	NM1-630S NM1-630H NM1-630R	NM1-800H/R	NM1-1250H
C	128	136	136	265.5
C1	174	184.5	204	345.5
E	89	89	81	100
F	66	66	66	78
G	31	40.5	45	-
G1	12	15.5	12	-
H	107	112	116	141
H1	162	164.5	168	202
H2	38	42	42	1250:56 ; 700A~1000A:54
H3	6	6.5	4.5	19
H4	5	3.5	5	2
H5	4.5	4.5	8	4.5
L	257	270.5	280	406*
L1	459	472	490	715
L2	224	234	243	-
W	150	182	210	210
W1	48	58	70	70
W2	198	240	280	-
A	44	58	70	70
A1	50	58	70	-
B	194	200	243	375
Φd	7	7	7	10

*Note: Length of NM1-1250H with the connection board, is 545mm

11. Accessories

Inner accessories



Accessory	Accessory code		Mounting and wiring mode		
	Magnetic only release	Compound release	NM1-125H,R NM1-250H,R	NM1-63S,H NM1-125C,S,H,R NM1-250S,H NM1-400S,H,R NM1-630S,H,R NM1-800H, R	NM1-1250H
			2P	3P 4P	3P
No accessory	200	300			
Alarm contact	208	308			
Shunt release	210	310			
Auxiliary contact	220	320			
Under-voltage release	230	330			
Shunt release, auxiliary contact	240	340			
Shunt release, under-voltage release	250	350			
Two groups of auxiliary contacts	260	360			
Auxiliary contact, under-voltage release	270	370			
Shunt release, alarm contact	218	318			
Auxiliary alarm contact	228	328			
Under-voltage release, auxiliary alarm contact	238	338			
Shunt release, auxiliary alarm contact	248	348			
Two groups auxiliary contact of auxiliary alarm contact	268	368			
Under-voltage release auxiliary alarm contact	278	378			

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

11.1 Under-voltage release

- $U_n = 70 \sim 35\% U_s$, reliable operation
- $U_n = < 35\% U_s$, prevent breaker from making
- $U_n = > 85\% U_s$, guarantee the breaker making

The rated voltage of the under-voltage release is 50Hz, 230V and 400V.

Code of under-voltage release

code	A2	A4
voltage	AC 230V	AC 400V
rated frequency	50Hz	50Hz



11.2 Shunt release

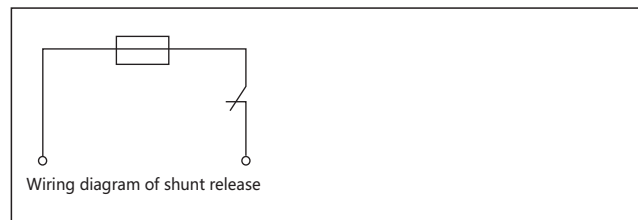
The rated control voltage of shunt release is 50Hz, 230V and 400V.

$U_n = 70\% \sim 110\% U_s$, reliable operation

Code of shunt release

code	A2	A4	D3
voltage	AC 230V	AC 400V	DC 24V
rated frequency	50Hz/ 60Hz	50Hz/ 60Hz	-

Note: when voltage is DC 24V, rated current should be up to $5A \pm 10\%$



11.3 Auxiliary contact and alarm contact

Rated parameter of auxiliary contact

Frame size	Conventional heating current I_{th} (A)	Rated current I_e (A) at AC 400 V	Rated current I_e (A) at DC 230 V
$I_{nm} \leq 250A$	3	0.26	0.14
$I_{nm} \geq 400A$	6	3	0.2

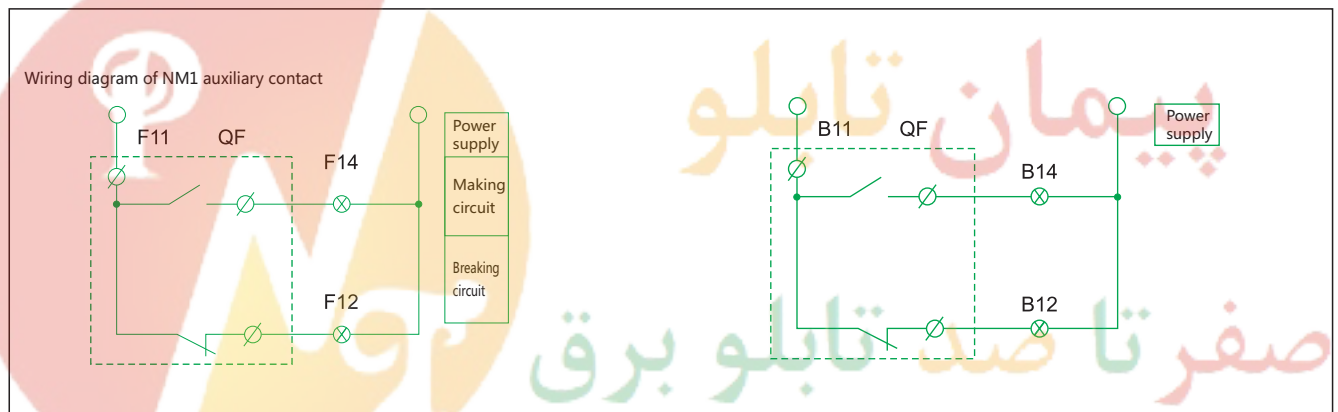
a. Auxiliary contact

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

b. Alarm contact

When circuit breaker normally makes and breaks, alarm contact doesn't operate. After free release (or release due to failure) alarm contact operate; and after the circuit breaker operates again, alarm contact returns to the original status.

Circuit breaker is at "breaking" or "making" status	
Circuit breaker is at free release (or alarming) status	



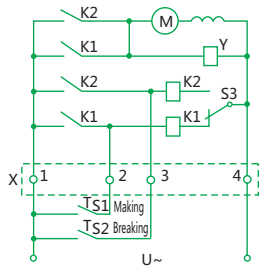
External accessories

11.4 Motor-driven operation mechanism

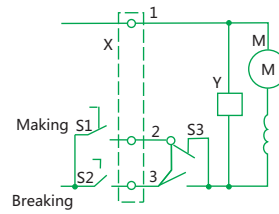
Items	Model	NM1-63 NM1-125, NM1-250, NM1-400, NM1-630, NM1-800, NM1-1250
Structure form	Motor	
Code of AC/DC voltage	A1/D1, A2/D2, A4	

Note: A1 AC 110V, A2 AC 230V, A4 AC 400V, D1 DC 110V, D2 DC 230V

Making and breaking diagram of motor-driven operation mechanism(AC/DC)



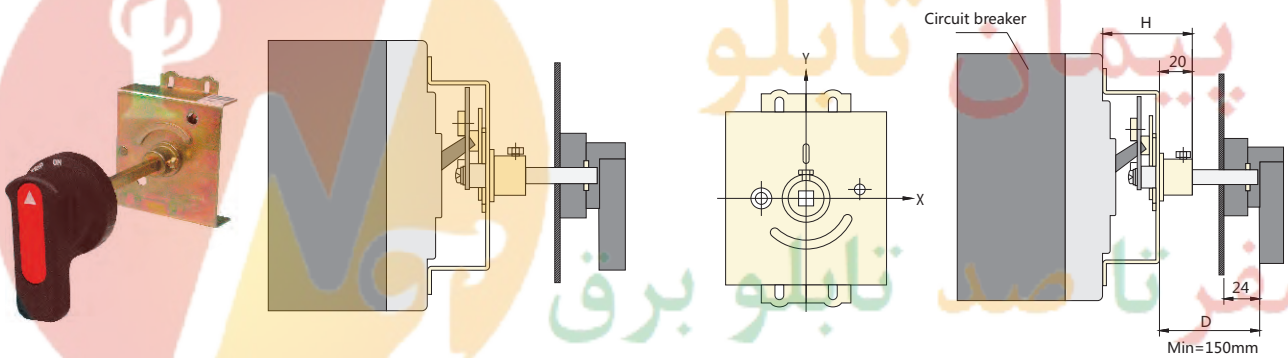
With self-locking relay
Specification AC 50Hz 230V or 400V



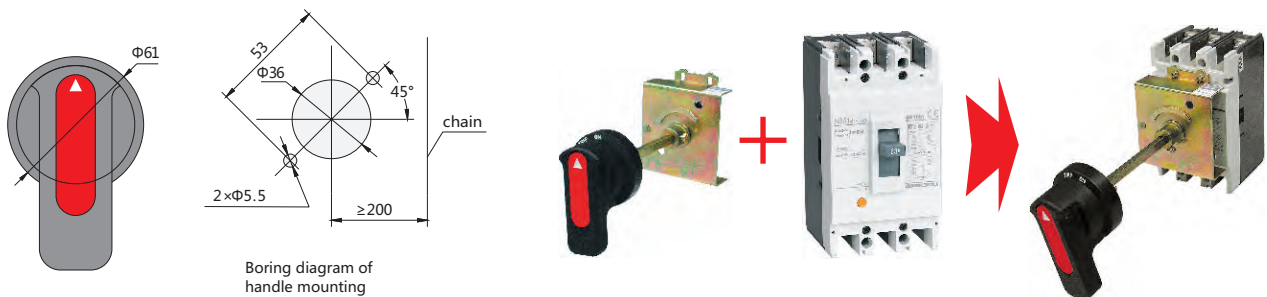
Without self-locking relay
Specification AC 50Hz 230V or 400V

Rotary manual operation mechanism

Making/breaking wiring diagram of manual operation mechanism



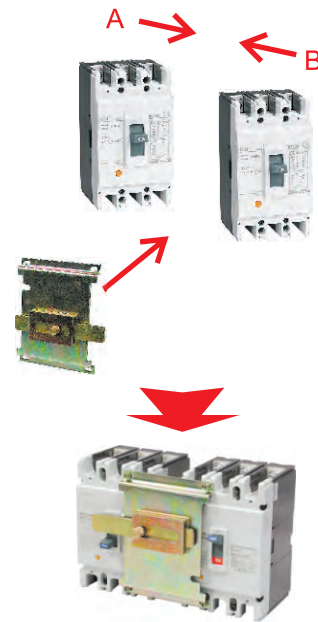
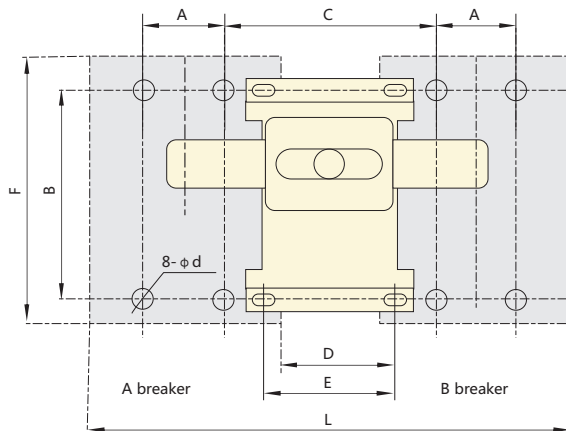
Mounting dimensions of manual operation mechanism



(mm)

Model	NM1-63	NM1-125	NM1-250	NM1-400	NM1-630	NM1-800H NM1-800R	NM1-1250S NM1-1250H
Mounting size H	51	51	54	88	89	96	83
Y value of the handle related to the center of the breaker	0	0	0	0	0	0	0

Mounting and boring dimensions



(mm)

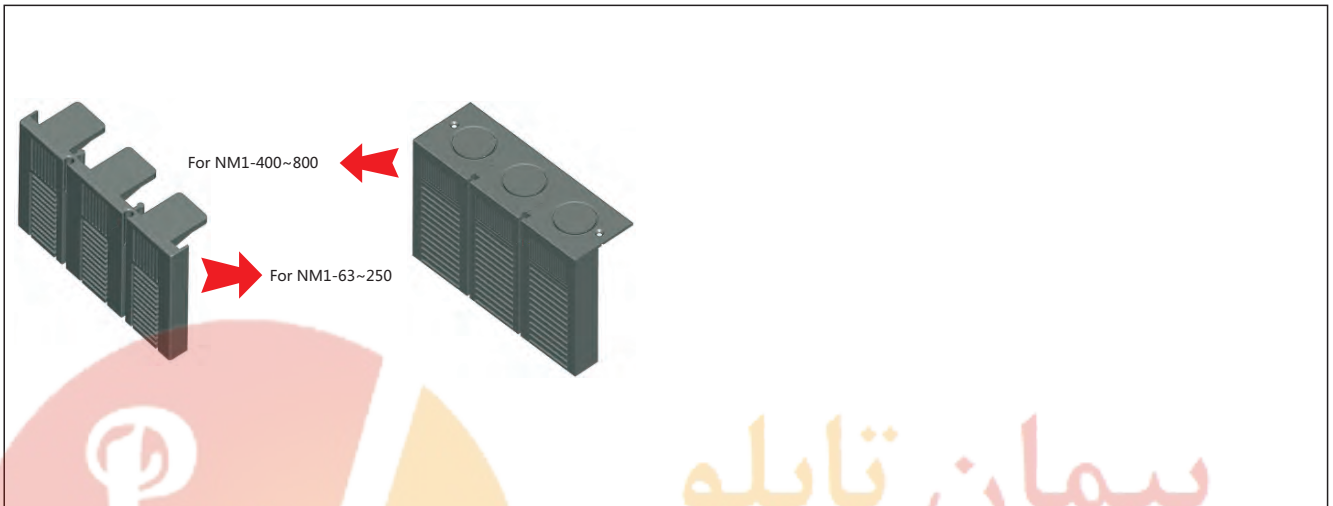
Model	A	B	C	D	E	F	L	Φd
NM1-63	25	117	80	30	80	135	182	4.5
NM1-125	30	130.5	90	30	90	155	210	4.5×6*
NM1-250	35	126	100	30	100	165	240	5.5
NM1-400	44	194	136	30	40	257	330	7
NM1-630	58	200	172	48	62	270	412	7
NM1-800	70	243	167	28	40	280	448	7

Note:

- * stands for length of boring.
- Install the breaker on the frame first, then install the mechanical interlock on the breaker.

12. Complementary technical information

- 12.1 The customized products of NM1-250, of which the capacity can be enriched to 250A is available.
- 12.2 NM1-1250 products are equipped with connection plate when they are sold; if you need connection plate for products of other model, the connection plate should be ordered separately.
- 12.3 Only H type breaker is applicable to manufacture NM1 series switch disconnector.
- 12.4 Terminal covers of the whole series NM1 products are available, and the protection degree can be up to IP40 after the breaker is equipped with terminal cover.
- 12.5 Safe distance between other electric apparatuses for mounting.



(mm)

Type	NM1-63	NM1-125	NM1-250	NM1-400	NM1-630	NM1-800	NM1-1250
Distance(min)							
Line side	50	50	50	100	100	100	100
Load side	20	20	20	20	20	20	20
Right side	25	25	25	25	25	25	25
Left side	25	25	25	25	25	25	25

12.6 Tightening torque table

Wire size(copper)		Rated current (A)	Tightening torque(N·m)	
AWG/MCM	mm ²		Front connection plate	Boxing terminal
16-6	1.5-16	10≤In≤63	5	3
4-3	25-50	63<In≤125	10	8
1-250	50-120	100<In≤250	12	10
250-500	120-240	250<In≤400	22	16
300×2	150×2	400<In≤500	28	18
350×2	185×2	500<In≤630	28	20
500×2	240×2	630<In≤800	30	-
350×4	185×4	800<In≤1250	30	-

12.7 Technical Data of NM1 series

Frame current (A)	Model	Number of poles	Ui (V)	Icu/Ics(kA)			
				220V 230V 240V	380V 400V 415V	660V 690V	
63	NM1-63S	3	500	20/10	15/7.5	-	
	NM1-63H	3/4	500	42/21	35/17.5	-	
125	NM1-125C	3	800	25/12.5	20/10	3/1.5	
	NM1-125S	3	800	42/21	25/12.5	3/1.5	
	NM1-125H	2	800	65/32.5	50/25	-	
		3/4	800	65/32.5	50/25	8/4	
	NM1-125R	3	800	85/42.5	65/32.5	10/5	
250	NM1-250S	1	800	20/10	10/5	-	
		3/4	800	42/21	25/12.5	5/2.5	
	NM1-250H	2	800	65/32.5	50/25	-	
		3/4	800	65/32.5	50/25	8/4	
	NM1-250R	3	800	85/42.5	65/32.5	10/5	
400	NM1-400S	3/4	800	50/25	35/17.5	10/5	
	NM1-400H	3	800	85/42.5	50/25	12/6	
	NM1-400R	3	800	100/50	70/35	15/7.5	
630	NM1-630S	3/4	800	50/25	35/17.5	12/6	
	NM1-630H	3	800	85/42.5	50/25	15/7.5	
	NM1-630R	3	800	100/50	70/35	20/10	
800	NM1-800H	3/4	800	85/42.5	60/30	20/10	
	NM1-800R	3	800	100/50	70/35	20/10	
1250	NM1-1250H	3	800	85/42.5	65/32.5	20/10	

Frame current (A)	Model	Number of poles	Ui (V)	Icu/Ics(kA)						
				220V	230V	240V	380V	400V	415V	660V
63	NM1-63S	3	500	20/40			15/30			-
	NM1-63H	3/4	500	42/88.2			35/73.5			-
125	NM1-125C	3	800	25/52.5			20/40			-
	NM1-125S	3	800	42/88.2			25/52.5			-
	NM1-125H	2	800	65/43			50/105			-
		3/4	800	65/43			50/105			-
	NM1-125R	3	800	85/187			65/143			-
250	NM1-250S	1	800	20/40			-			-
		2/ 3/4	800	42/88.2			25/52.5			-
	NM1-250H	2/ 3/4	800	65/136.5			50/105			-
	NM1-250R	3	800	85/187			65/143			-
400	NM1-400S	3/4	800	50/105			35/73.5			-
	NM1-400H	3	800	85/187			50/105			-
	NM1-400R	3	800	100/220			70/154			-
630	NM1-630S	3/4	800	50/105			35/73.5			-
	NM1-630H	3	800	85/187			50/105			-
	NM1-630R	3	800	100/220			70/154			-
800	NM1-800H	3/4	800	85/187			60/132			-
	NM1-800R	3	800	100/220			70/154			-
1250	NM1-1250H	3	800	85/187			65/143			-

Note: Parameters in black are only for your reference.

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12.8 Cascading

12.8.1 Cascading (220/230/240V)

Upstream: NM1-63~1250

Downstream: DZ47, eB, UB, DZ158, DZ267, NB1, NBH8, NM1-63~1250

Upstream Breaking capacity (kA RMS)	NM1-63S 20	NM1-63H 42	NM1-125S 25	NM1-125H 50	NM1-125R 65	NM1-250S 25	NM1-250H 50
Downstream	Breaking capacity (kA RMS)						
DZ267	20	40	20	35	50	20	25
DZ47, eB, UB	20	40	20	35	50	20	25
NBH8	20	40	20	35	50	20	25
NB1(I _{cn} =6000A)	20	42	25	35	50	25	35
NB1(I _{cn} =10000A)	20	42	25	40	50	25	35
DZ158			25	40	50	25	40
NM1-63S		42	25	50	65	25	50
NM1-63H					65		
NM1-125S				50	65		50
NM1-125H					65		
NM1-250S							50
NM1-250H							
NM1-400S							
NM1-400H							
NM1-630S							
NM1-630H							
NM1-800H							
NM1-1250H							

12.8.2 Cascading (380/400/415V)

Upstream: NM1-63~1250

Downstream: DZ47, eB, UB, DZ158, DZ267, NB1, NBH8, NM1-63~1250

Upstream Breaking capacity (kA RMS)	NM1-63S 15	NM1-63H 35	NM1-125S 25	NM1-125H 50	NM1-125R 65	NM1-250S 25	NM1-250H 50
Downstream	Breaking capacity (kA RMS)						
DZ47, eB, UB	10	15	10	15	15	10	15
NB1(I _{cn} =6000A)	15	20	15	20	20	15	20
NB1(I _{cn} =10000A)	15	20	20	25	25	20	25
DZ158			20	25	35	20	25
NM1-63S		35	25	50	65	25	50
NM1-63H					65		
NM1-125S				50	65		50
NM1-125H					65		
NM1-250S							50
NM1-250H							
NM1-400S							
NM1-400H							
NM1-630S							
NM1-630H							
NM1-800H							
NM1-1250H							

65			70	
65		50	70	
65			70	
		50	70	
			70	
NM1-250R 65	NM1-400S 35	NM1-400H 50	NM1-400R 70	NM1-400L 90

M1-630S 5	NM1-630H 50	NM1-630R 70	NM1-800H 60	NM1-800R 70	NM1-1250H 65
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