# NM1
# Moulded Case Circuit Breaker

## 1. General

1.1 Certificates: KEMA, ESC, UKrSEPRO, GOST, RCC, KC;
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— □ □ □/□ □ □ □

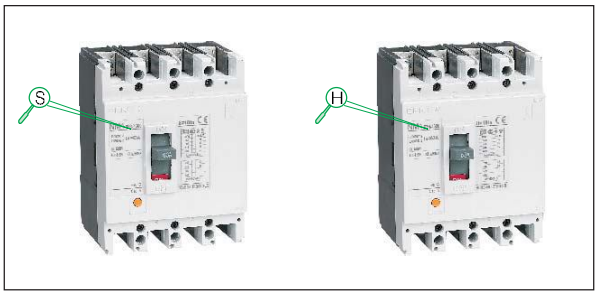
- Company code
- MCCB code
- Design sequence number
- Frame size rated current
- Code of Breaking capacity : S-standard type; H-higher type; R-current limiting type
- Operation mode: Blank: direct operation with handle; P: motor-driven operation; Z: Operation with rotary handle
- Number of poles
- Release type and accessory code (please refer to table on page 94)
- Application: Blank: for power distribution; 2: for motor protection
- Type of N-pole for 4-P breaker*

Note *: There are 4 types of N-pole for 4P breaker
A: without current release components, N-Pole is always at making status, not makes and breaks with other three poles;
B: Without current release components, N-Pole makes with the other three poles(N-pole first makes then breaks);
C: With current release components, N-Pole makes and breaks with other three poles(N-pole first makes then breaks);
D: With current release components, N-Pole is always at making status, not makes and breaks with other three poles;

## 3. Classification

According to breaking capacity of breaker:

Standard type (S) Higher type (H)




Current-limiting type (R)

According to wiring mode:

Front connection

Rear conection

plug-in

According to operation mode:

Direct operation with handle

Operation with rotary handle

Motor-driven operation

According to number of poles:

2P

3P

4P

## 4. Operation conditions

4.1 Temperature: -5℃～+40℃; the average value within 24h shall not exceed +35℃.(please refer to coefficients on P107 for temperature compensation correction); for the circuit breaker with thermo-magnetic release, +40℃ is set to be the standard temperature for ratings. For temperature not between -5℃～+40℃, 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 Air conditions

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

## 8. Curves (for power distribution, calibrated at 40℃)

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

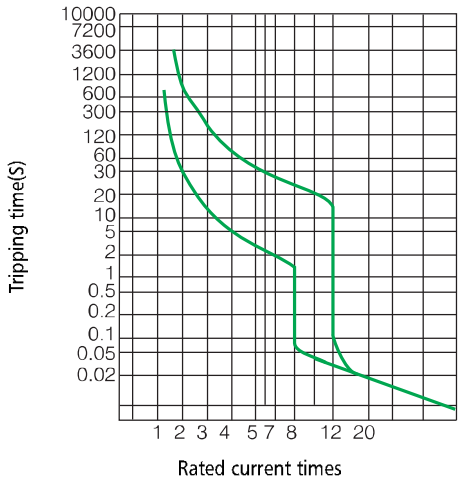



Fig.2 NM1-63(10~32), NM1-125(25~32)
Adjustment curve of temperature

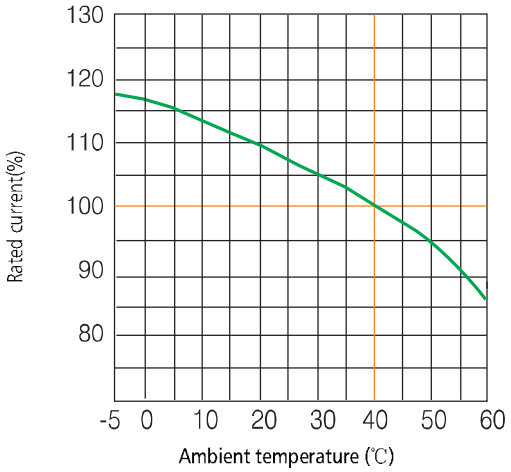



Fig.3 NM1-63(40~63), NM1-125(40~125)
Characteristic Curve

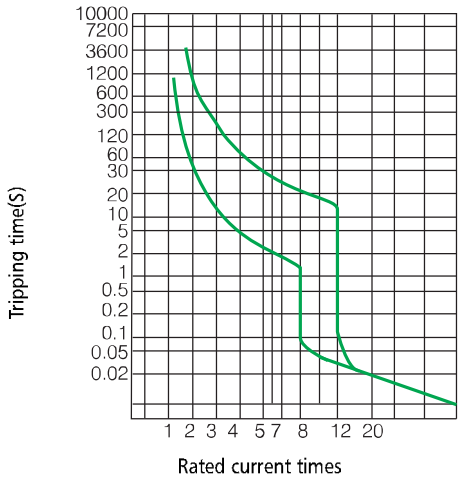
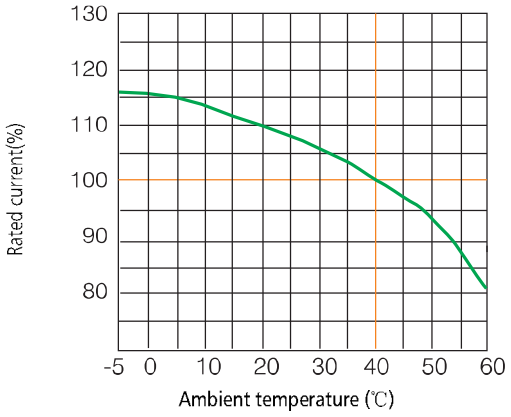



Fig.4 NM1-63(40~63), NM1-125(40~125)
Adjustment curve of temperature



## 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℃ | | 10, 16, 20, 25, 30, 32, 40, 50, 60, 63 | | | 25, 30, 32, 40, 50, 60, 63, 75, 80, 100, 125 | | | | | | 100, 125, 140, 150, 160, 175, 180, 200, 225, 250 | | | | | | | 225, 250, 300, 315, 350, 400 | | | | 400, 450, 500, 630 | | | | 630, 700, 800 | | | 700, 800, 900, 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 | S | | H | | | R | | S | H | | R | S | H | | R | H | | R | H |
| Number of poles | | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 4 | 3 | 1 | 3 | 2 | 3 | 4 | 2 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 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 | 20 | 42 | 65 | 65 | 65 | 85 | 85 | 50 | 50 | 85 | 100 | 50 | 50 | 85 | 100 | 85 | 85 | 100 | 85 |
| | AC 380/400/415V | 15 | 35 | 35 | 20 | 25 | 50 | 50 | 50 | 65 | - | 25 | 50 | 50 | 50 | 65 | 65 | 35 | 35 | 50 | 70 | 35 | 35 | 50 | 70 | 60 | 60 | 70 | 65 |
| Test sequence:O-t-CO | AC 660/690V | - | - | - | 3 | 3 | - | 8 | 8 | 10 | - | 5 | - | 8 | 8 | - | 10 | 10 | 10 | 12 | 15 | 12 | 12 | 15 | 15 | 20 | 20 | 20 | 20 |
| Rated service short-circuit breaking capacity Ics (%Icu) Test sequence:O-t-CO-t-CO | | 50% | | | 50% | | | | | | 50% | | | | | | | 50% | | | | 50% | | | | 50% | | | 50% |
| 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 | ≤4min | Cold status | 10≤In≤250 |
| | | ≤8min | Cold status | 250≤In≤630 |
| 4 | 7.2In | 4s≤t≤10s | Cold status | 10≤In≤250 |
| | | 6s≤t≤20s | Cold status | 250≤In≤630 |

N-pole of 4P circuit breaker is at the right side, see table below for rated current of N-pole release.

| Frame size rated current (A) | Rated current (A) | Rated current at N-pole (A) |
|---|---|---|
| 63 | 10 | 10 |
| | 16 | 16 |
| | 20 | 20 |
| | 25 | 25 |
| | 30 | 30 |
| | 32 | 32 |
| | 40 | 40 |
| | 50 | 50 |
| | 60 | 60 |
| | 63 | 63 |
| 125 | 25 | 25 |
| | 30 | 30 |
| | 32 | 32 |
| | 40 | 40 |
| | 50 | 50 |
| | 60 | 60 |
| | 63 | 63 |
| | 75 | 63 |
| | 80 | 63 |
| | 100 | 63 |
| | 125 | 63 |

| Frame size rated current (A) | Rated current (A) | Rated current at N-pole (A) |
|---|---|---|
| 250 | 100 | 100 |
| | 125 | 100 |
| | 140 | 100 |
| | 150 | 100 |
| | 160 | 100 |
| | 175 | 100 |
| | 180 | 100 |
| | 200 | 100 |
| | 225 | 125 |
| | 250 | 125 |
| 400 | 225 | 225 |
| | 250 | 225 |
| | 300 | 225 |
| | 315 | 225 |
| | 350 | 225 |
| | 400 | 225 |
| 630 | 400 | 400 |
| | 450 | 400 |
| | 500 | 400 |
| | 630 | 400 |
| 800 | 630 | 500 |
| | 700 | 500 |
| | 800 | 500 |

Note: The rated current of N-pole can be made equal to the other phases.

## 7. Product overview

NM1 Moulded Case Circuit Breaker

1. MCCB (fixed type)
2. Plug-in type
3. Rear connection
4. Under-voltage release
5. Shunt release
6. Alarm contact
7. Auxiliary contact
8. Motor-driven operation mechanism
9. Extended manual operation handle
10. Mechanical interlock
11. Cage clamp terminal (Refer to P102)
12. Terminal cover
13. Front connection plate

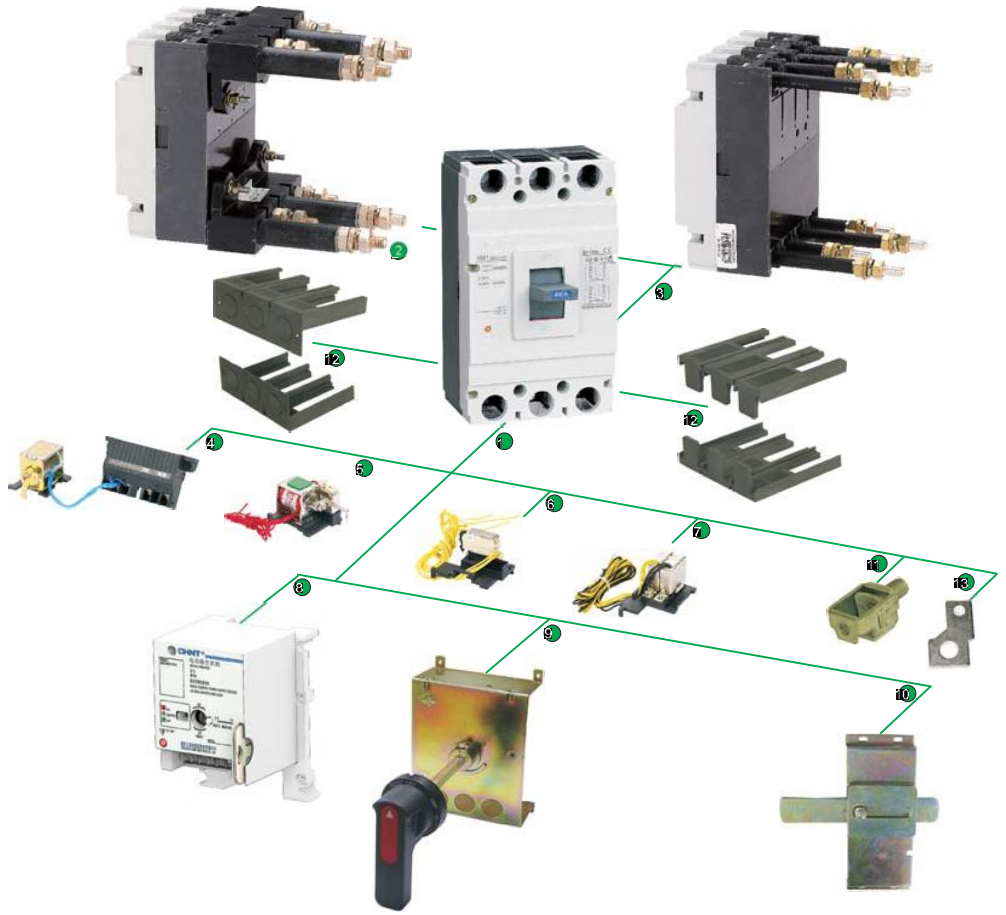


Fig.5 NM1-250 Characteristic Curve

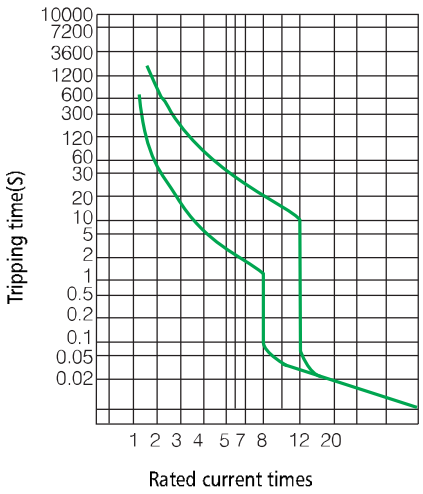



Fig.6 NM1-250 Adjustment curve of temperature

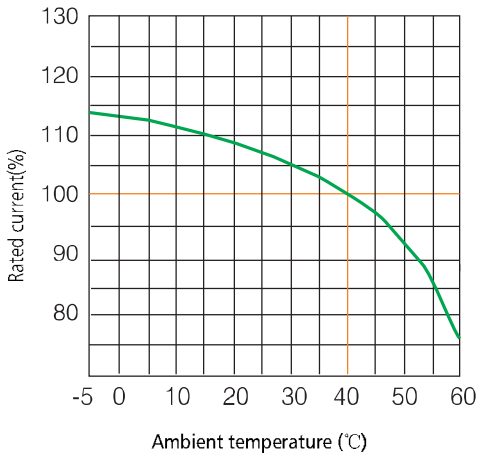



Fig.7 NM1-400 Characteristic Curve

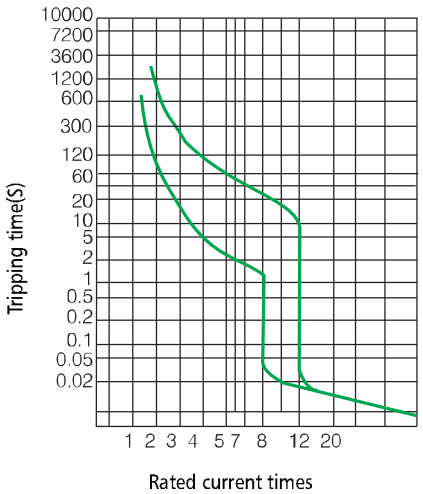



Fig.8 NM1-400 Adjustment curve of temperature

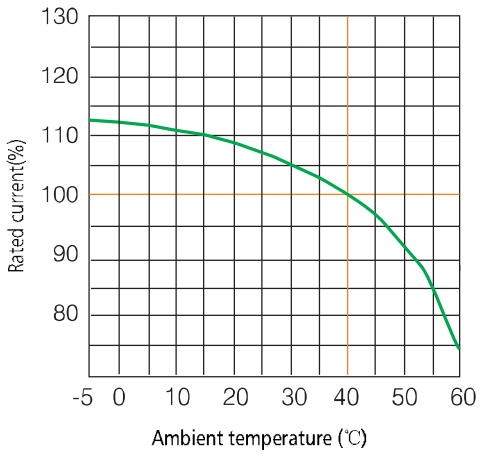


Fig.9 NM1-630, NM1-800 Characteristic Curve

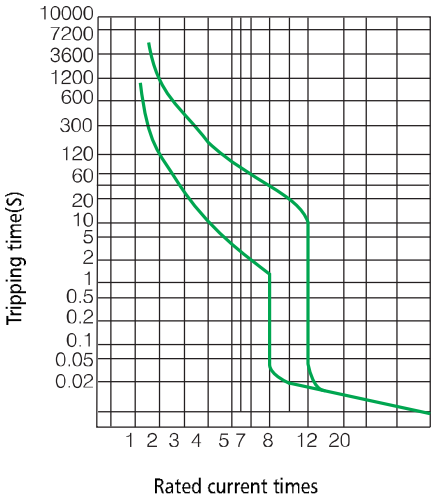



Fig.10 NM1-630, NM1-800 Adjustment curve of temperature

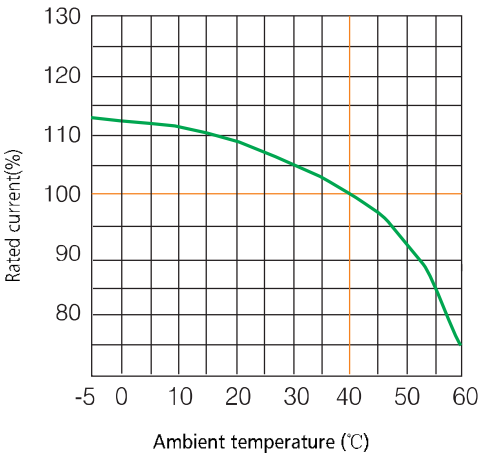



Fig.11 NM1-1250 Characteristic Curve

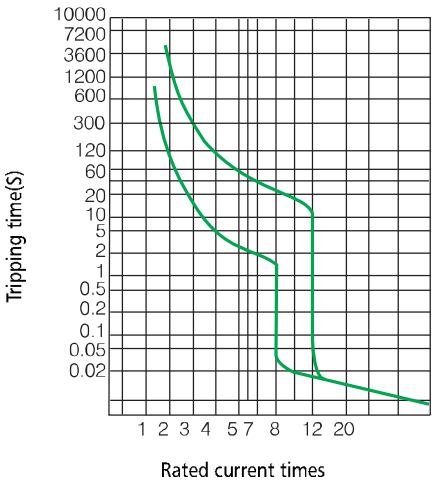
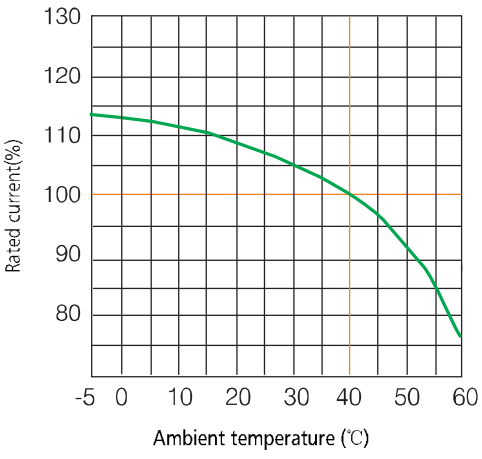



Fig.12 NM1-1250 Adjustment curve of temperature



8.2 Temperature compensation correction

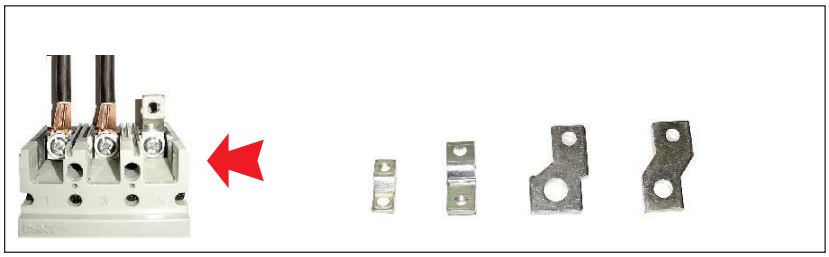
NM1 series temperature compensation coefficient table (calibration at 40℃, for the calibration at other temperature standards please contact with us)

| Type | Current range | Compensation coefficient | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -5℃ | 0℃ | 5℃ | 10℃ | 15℃ | 20℃ | 25℃ | 30℃ | 35℃ | 40℃ | 45℃ | 50℃ | 55℃ | 60℃ |
| 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 |
| NM1-250C, 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 |

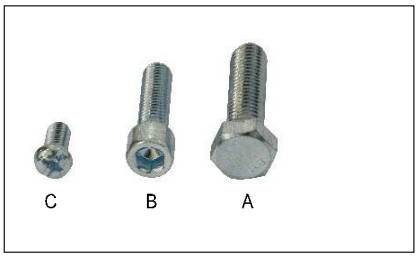
## 9. Wiring

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 | ■ | | |
| | 63 | S | ■ | | |
| | | H | ■ | | |
| 125 | 25 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 30 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 32 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 40 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 50 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 60 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 63 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 75 | C | ■ | | |
| | | S | ■ | | |
| | | 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 | ■ | | |
| | | R | ■ | | |
| | 100 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| | 125 | C | ■ | | |
| | | S | ■ | | |
| | | H | ■ | | |
| | | R | ■ | | |
| 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 | ■ | | |
| | 250 | 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 | | | ■ |
| | 700 | H | | | ■ |
| | | R | | | ■ |
| | 800 | H | | | ■ |
| | | R | | | ■ |

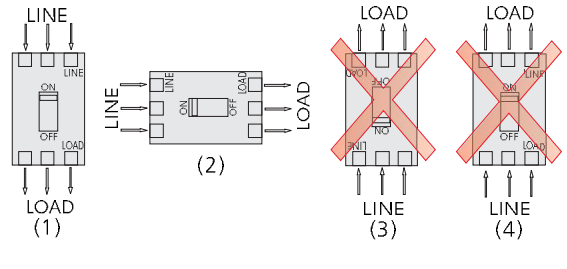
Cage clamp terminals (for products 16~630A, cage clamp terminals are available)


Rear connection

Rear connection is applicable to 3P and 4P products of NM1-63~NM1-800

Plug-in connection

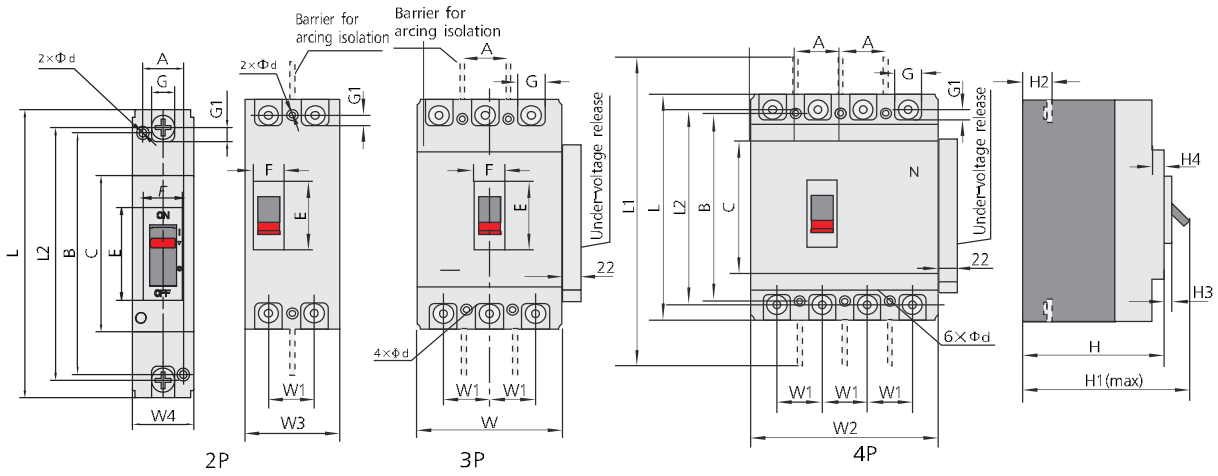
Plug-in connection is applicable to 3P and 4Pproducts of NM1-63~NM1-800




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.

## 10. Overall and mounting dimensions

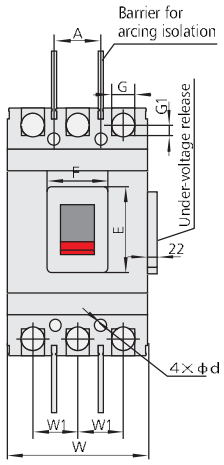
Fig.15a NM1-63, 125, 250 fixed connection



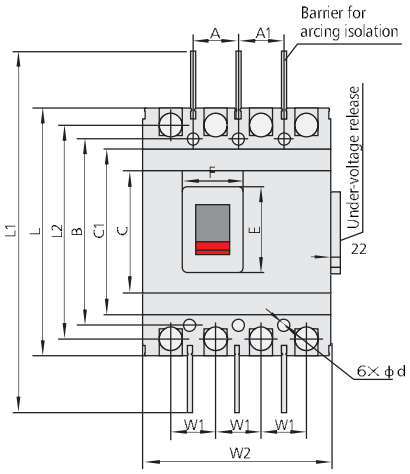

(mm)

| Dimension | | NM1-63S | NM1-63H | NM1-125C NM1-125S | NM1-125H NM1-125R | NM1-250S/1P | NM1-250C NM1-250S | NM1-250H NM1-250R |
|---|---|---|---|---|---|---|---|---|
| Overall dimensions | C | 85 | 85 | 84 | 84 | 102 | 102 | 102 |
| | E | 48 | 48 | 50.5 | 50.5 | 51 | 50 | 50 |
| | F | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| | G | 14 | 14 | 17.5 | 17.5 | 17.5 | 23 | 23 |
| | G1 | 6.5 | 6.5 | 7.5 | 7.5 | 9 | 11.5 | 11.5 |
| | H | 72 | 82 | 68 | 86 | 85 | 86 | 103 |
| | H1 | 90 | 100 | 86 | 104 | 109 | 110 | 127 |
| | H2 | 18 | 28 | 24 | 24 | 23 | 24 | 24 |
| | H3 | 4 | 4 | 4 | 4 | 4.5 | 4 | 4 |
| | H4 | 6 | 6 | 7 | 7 | 6 | 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 | 35 |
| | W2 | - | 102.5 | - | 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 |
| | Φd | 4.5 | 4.5 | 4.5×6 | 4.5×6 | 5 | 5 | 5 |

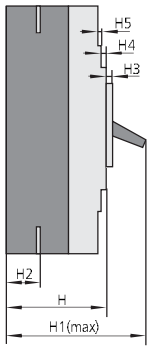
Overall and mounting dimensions of NM1-400, 630, 800, 1250(Fixed type)




3P




4P

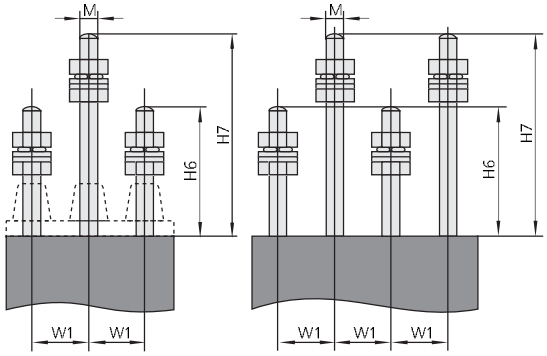



(mm)

| Dimension | | NM1-400S<br>NM1-400H<br>NM1-400R | NM1-630S<br>NM1-630H<br>NM1-630R | NM1-800H/R | NM1-1250H |
|---|---|---|---|---|---|
| Overall dimensions | C | 127.5 | 134.5 | 136 | 265.5 |
| | C1 | 173.5 | 184.5 | 204 | 345.5 |
| | E | 88.5 | 89 | 81 | 97 |
| | F | 65 | 65.5 | 66 | 78 |
| | G | 30.5 | 44 | 45 | - |
| | G1 | 11 | 13.5 | 12.5 | - |
| | H | 107 | 112 | 116 | 141 |
| | H1 | 162 | 164.5 | 168 | 202 |
| | H2 | 40 | 42 | 41.5 | 58 |
| | H3 | 6.5 | 7 | 4.5 | 16.5 |
| | H4 | 5 | 3.5 | 5 | 2 |
| | H5 | 5 | 4.5 | 8 | 4.5 |
| | L | 257 | 270.5 | 280 | 406* |
| | L1 | 457 | 470 | 485 | 715 |
| | L2 | 224 | 234 | 243 | - |
| | W | 150 | 182 | 210 | 210 |
| | W1 | 48 | 58 | 70 | 70 |
| | W2 | 197.5 | 240 | 280 | - |
| Mounting dimensions | A | 44 | 58 | 70 | 70 |
| | A1 | 50 | - | - | - |
| | B | 194 | 200 | 243 | 375 |
| | ϕd | 7 | 7 | 7 | 10 |

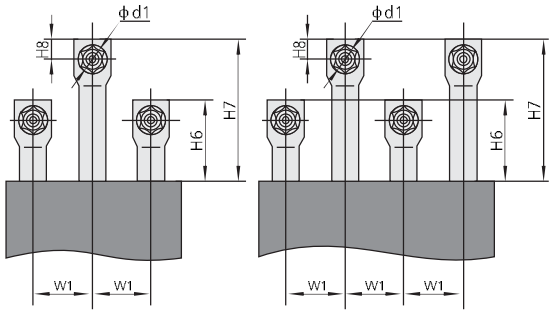
*Note: Lengh of NM1-1250H with the connection board, is 545mm

Overall and mounting dimensions of
NM1-63, 125, 250(rear connection)



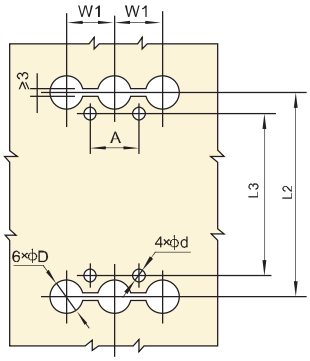

3P 4P

Overall and mounting dimensions of
NM1-400, 630, 800(rear connection)

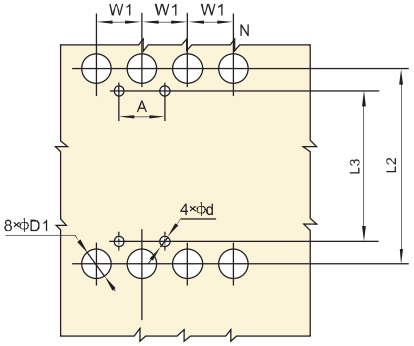



3P 4P

Boring diagram of rear connection

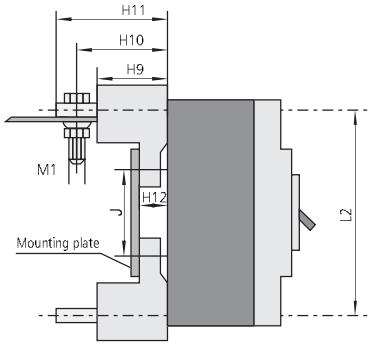



3P

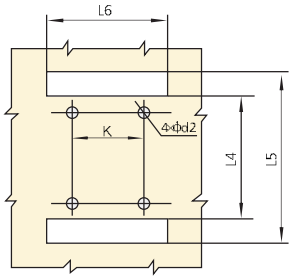



4P

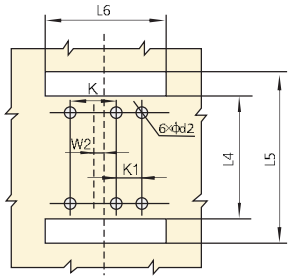
Plug-in type




3P mounting diagram




3P boring diagram of mounting plate




4P boring diagram of mounting plate

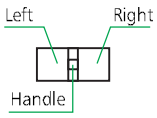
(mm)

| Dimension | | NM1-63S NM1-63H | NM1-125S NM1-125H NM1-125R | NM1-250S NM1-250H NM1-250R | NM1-400S NM1-400H NM1-400R | NM1-630S NM1-630H NM1-630R | NM1-800H NM1-800R |
|---|---|---|---|---|---|---|---|
| Dimensions of rear connection and plug-in type | A | 25 | 30 | 35 | 44 | 58 | 70 |
| | ϕd | 4.5 | 4.5×6 | 5.5 | 7 | 7 | 7 |
| | ϕd1 | - | - | - | ϕ12 | ϕ16 | ϕ16 |
| | ϕd2 | 6 | 8 | 8 | 9 | 9 | 12 |
| | ϕD | 8 | 10 | 12 | 33 | 37 | 37 |
| | ϕD1 | 8 | 10 | 12 | 33 | 37 | 37 |
| | H6 | S:32 / H:23 | 63.5 | 67.5 | 39 | 45 | 64 |
| | H7 | S:47 / H:38 | 96.5 | 118.5 | 74 | 79 | 64 |
| | H8 | - | - | - | 18 | 20 | 20 |
| | H9 | 28 | 50 | 50 | 60 | 60 | 87 |
| | H10 | 38 | 67.5 | 71.5 | 88 | 92 | 143.7 |
| | H11 | 44.5 | 81 | 84.5 | 111 | 110 | 158.7 |
| | H12 | 10 | 18 | 18 | 21.5 | 21 | 27 |
| | L2 | 117 | 136 | 144 | 224 | 234 | 243 |
| | L3 | 117 | 130.5 | 126 | 194 | 200 | 243 |
| | L4 | 97 | 93 | 93 | 163 | 165 | 173 |
| | L5 | 138 | 180 | 190 | 285 | 302 | 305 |
| | L6 | 80/105* | 95/125* | 110/140* | 150/198* | 180/238* | 215/285* |
| | M | M6 | M8 | M10 | - | - | - |
| | K | 50 | 60 | 70 | 60 | 100 | 90 |
| | K1 | 25 | 30 | 35 | 66 | 66 | 95 |
| | J | 60 | 58 | 54 | 130.4 | 124 | 146 |
| | M1 | M5 | M8 | M8 | M10 | M12 | M12 |
| | W1 | 25 | 30 | 35 | 48 | 58 | 70 |
| | W2 | 12.5 | 15 | 17.5 | 24 | 29 | 35 |

Note: With "*" stands for dimension of 4P circuit breaker

## 11. Accessories

Inner accessories




Auxiliary contact

Shunt release

Alarm contact

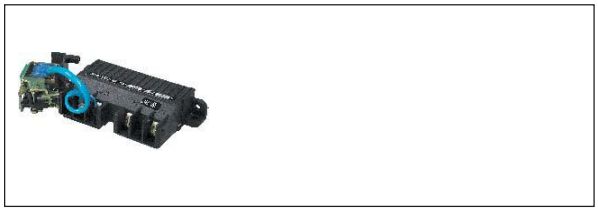
Under-voltage release

| Accessory | Accessory code | | Mounting and wiring mode | | | | |
|---|---|---|---|---|---|---|---|
| | Magnetic only release | Compound release | NM1-63S NM1-125C,S,H,R NM1-250C,S,H,R | NM1-63S,H NM1-125C,S,H,R NM1-250S,H,R NM1-400S,H,R | NM1-630S,H,R | NM1-800H, R | NM1-1250H |
| | | | 2P | 3P 4P | 3P 4P | 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, 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 | |  |  |  | |

11.1 Under-voltage release
a. Un=70~35% Us, reliable operation
b. Un=<35% Us, prevent breaker from making
c. Un=>85% Us, 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 | D1 | D2 |
|---|---|---|---|---|
| voltage | AC 230V | AC 400V | DC 110V | DC 220V |
| rated frequency | 50Hz | 50Hz | - | - |

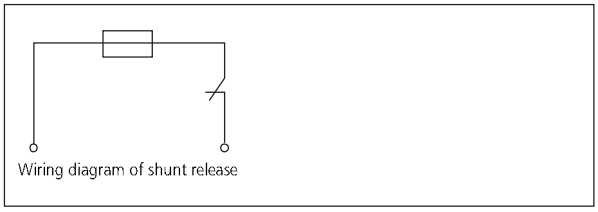


11.2 Shunt release
The rated control voltage of shunt release is 50Hz, 230V and 400V.
Un=70%~110% Us, reliable operation

Code of shunt release

| code | A1 | A2 | A4 | D1 | D2 | D3 |
|---|---|---|---|---|---|---|
| voltage | AC 110/ 127V | AC 230V | AC 400V | DC 110V | DC 220V | DC 24V |
| rated frequency | 50Hz | 50Hz/ 60Hz | 50Hz/ 60Hz | - | - | - |

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

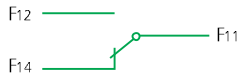



11.3 Auxiliary contact and alarm contact

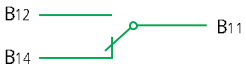
Rated parameter of auxiliary contact

| Frame size | Conventional heating current Ith (A) | Rated current Ie (A) at AC 400 V | Rated current Ie (A) at DC 220 V |
|---|---|---|---|
| Inm≤225A | 3 | 0.26 | 0.14 |
| Inm≥400A | 6 | 3 | 0.2 |

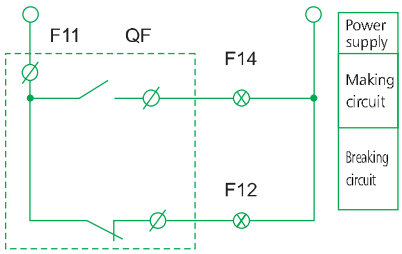
a. Auxiliary contact

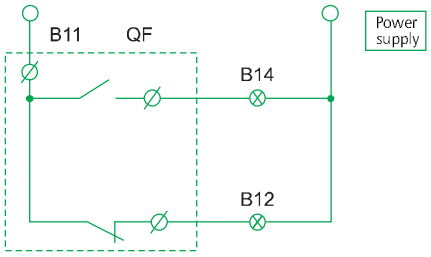
| | |
|---|---|
| Circuit breaker is at “breaking” status |   |
| Circuit breaker is at “making” status |   |

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 |   |

Wiring diagram of NM1 auxiliary contact



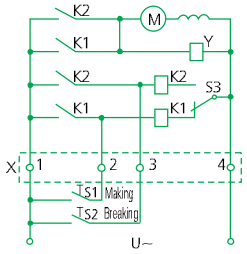

External accessories

11.4 Motor-driven operation mechanism

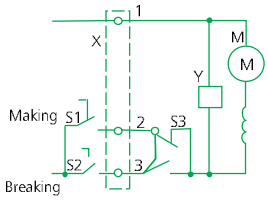
| Items / Model | NM1-63 NM1-125, NM1-250, NM1-400, NM1-630, NM1-800, NM1-1250 | |
|---|---|---|
| Structure form | Electromagnet | Motor |
| Code of AC/DC voltage | A1/D1, A2/D2, A4, D3 | |

Note: A1 AC 110V, A2 AC 230V, A4 AC 400V, D1 DC 110V, D2 DC 220V, D3 DC 24V,

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



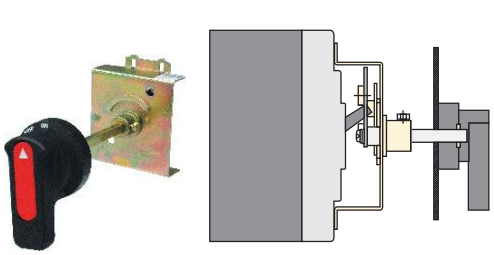

With self-locking relay
Specification AC 50Hz 230V or 400V

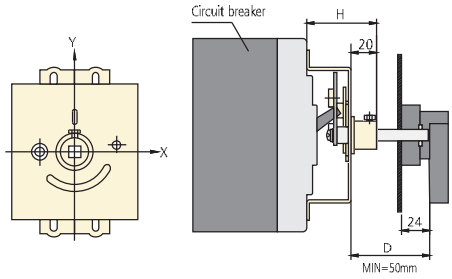



Without self-locking relay
Specification AC 50Hz 230V or 400V

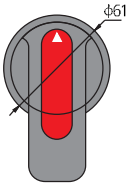
Rotary manual operation mechanism

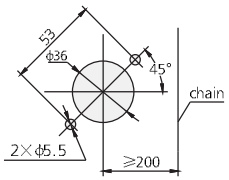
Making/breaking wiring diagram of manual operation mechanism






Mounting dimensions of manual operation mechanism



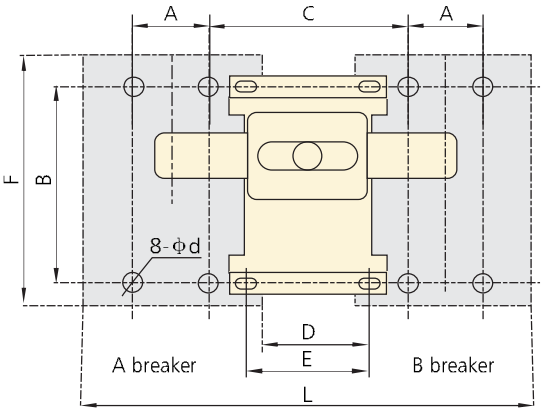



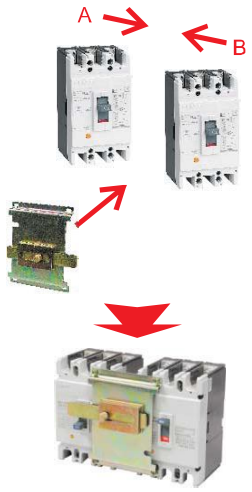

Boring diagram of
handle mounting

(mm)

| Model | NM1-63 | NM1-125 | NM1-250 | NM1-400 | NM1-630 | NM1-800H<br>NM1-800R |
|---|---|---|---|---|---|---|
| Mounting size H | 49 | 51 | 54 | 88 | 89 | 96 |
| Y value of the handle related to the center of the breaker | 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:
1. * stands for length of boring.
2. Install the breaker on the frame first, then install the mechanical interlock on the breaker.

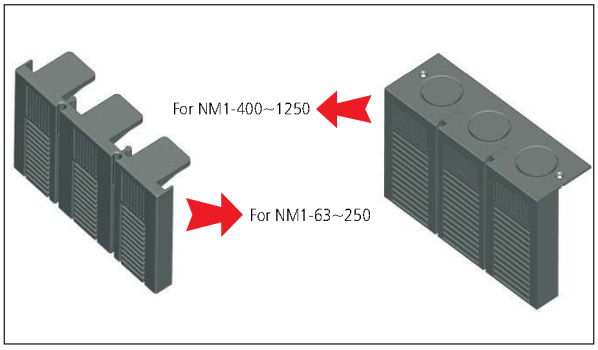
## 12. Complementary Technical Information

12.1 The customized products of NM1-225, 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)

| Distance(min) \ Type | NM1-63 | NM1-125 | NM1-250 | NM1-400 | NM1-630 | NM1-800 | NM1-1250 |
|---|---|---|---|---|---|---|---|
| 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 | 25-35 | 63<In≤100 | 10 | 8 |
| 2-4/0 | 50-95 | 100<In≤225 | 14 | 10 |
| 300-500 | 120-240 | 225<In≤400 | 18 | 16 |
| 250×2 | 150×2 | 400<In≤500 | 22 | 18 |
| 350×2 | 185×2 | 500<In≤630 | 26 | 20 |
| 500×2 | 240×2 | 630<In≤800 | 28 | - |
| 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 | - | - |
| | | 3 | 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/Icm(kA) | | |
|---|---|---|---|---|---|---|
| | | | | 220V 230V 240V | 380V 400V 415V | 660V 690V |
| 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 | - | - |
| | | 3 | 800 | 42/88.2 | 25/52.5 | - |
| | NM1-250H | 2 | 800 | 65/43 | 50/105 | - |
| | | 3/4 | 800 | 65/43 | 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.

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(Icn=6000A) | 20 | 42 | 25 | 35 | 50 | 25 | 35 | |
| NB1(Icn=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(Icn=6000A) | 15 | 20 | 15 | 20 | 20 | 15 | 20 | |
| NB1(Icn=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 | | | | | | | | |

| NM1-250R 65 | NM1-400S 35 | NM1-400H 50 | NM1-400R 70 | NM1-630S 35 | NM1-630H 50 | NM1-630R 70 | NM1-800H 60 | NM1-800R 70 | NM1-1250H 65 |
|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | | | | | |
| 30 | | | | | | | | | |
| 30 | | | | | | | | | |
| 35 | | | | | | | | | |
| 40 | | | | | | | | | |
| 50 | 30 | 40 | 50 | | | | | | |
| 65 | | | | | | | | | |
| 65 | | | | | | | | | |
| 65 | | 50 | 70 | | 50 | 70 | 60 | 70 | 65 |
| 65 | | | 70 | | | 70 | | 70 | |
| 65 | | 50 | 70 | | 50 | 70 | 60 | 70 | 65 |
| 65 | | | 70 | | | 70 | | 70 | |
| | | 50 | 70 | | 50 | 70 | 60 | 70 | 65 |
| | | | 70 | | | 70 | | 70 | |
| | | | | | 50 | 70 | | | |
| | | | | | | 70 | | | |
| | | | | | | | | 70 | |
| | | | | | | | | | |

| NM1-250R 65 | NM1-400S 35 | NM1-400H 50 | NM1-400R 70 | NM1-630S 35 | NM1-630H 50 | NM1-630R 70 | NM1-800H 60 | NM1-800R 70 | NM1-1250H 65 |
|---|---|---|---|---|---|---|---|---|---|
| 15 | | | | | | | | | |
| 20 | | | | | | | | | |
| 25 | | | | | | | | | |
| 35 | 20 | 25 | 35 | | | | | | |
| 65 | | | | | | | | | |
| 65 | | | | | | | | | |
| 65 | | 50 | 70 | | 50 | 70 | 60 | 70 | 65 |
| 65 | | | 70 | | | 70 | | 70 | |
| 65 | | 50 | 70 | | 50 | 70 | 60 | 70 | 65 |
| 65 | | | 70 | | | 70 | | 70 | |
| | | 50 | 70 | | 50 | 70 | 60 | 70 | 65 |
| | | | 70 | | | 70 | | 70 | |
| | | | | | 50 | 70 | | | |
| | | | | | | 70 | | | |
| | | | | | | | | 70 | |
| | | | | | | | | | |