

Shanghai Liangxin Electrical Co., Ltd.

# NDM3-1600 Product Specification

(IPD-ENG-DEV-T20 A1 2016-09-23)

|                  |     |      |            |
|------------------|-----|------|------------|
| Prepared by      | 杨荣荣 | Date | 2023-06-26 |
| Reviewed by      | 张君  | Date | 2023-06-26 |
| Countersigned by | 杨文学 | Date | 2023-06-26 |
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| Approved by      | 丁飞  | Date | 2023-06-26 |

| Revision History |                                                                                |                         |                  |                 |                 |
|------------------|--------------------------------------------------------------------------------|-------------------------|------------------|-----------------|-----------------|
| Version          | Revision Reason/Content                                                        | Implementati<br>on Date | Prepared<br>by   | Reviewe<br>d by | Approve<br>d by |
| 0                | Newly added                                                                    | 5/8/2020                | Yang<br>rongrong | Zhang<br>jun    | Ding Fei        |
| 1                | Update the product appearance picture and<br>product dimension outline drawing | 30/9/2021               | Yang<br>rongrong | Zhang<br>jun    | Ding Fei        |
| 2                | Add attachment information                                                     | 12/12/2022              | Yang<br>rongrong | Zhang<br>jun    | Ding Fei        |
| 3                | Update attachment list                                                         | 26/06/2023              | Yang<br>rongrong | Zhang<br>jun    | Ding Fei        |
|                  |                                                                                |                         |                  |                 |                 |
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|                  |                                                                                |                         |                  |                 |                 |

## 1. Applicable Scope and Purpose of Circuit Breaker

The NDM3-1600 molded case circuit breaker (hereinafter referred to as circuit breaker) applies to infrequent switching of circuits with the AC50/60Hz, the working voltage of AC690V and working current of 1250A as well as infrequent motor starting. With the overload, short circuit and under-voltage protection functions, the circuit breaker can protect lines and power equipment from damage.

The circuit breaker has an isolating function with the corresponding symbol of  $\text{---} \diagup \diagdown \times \text{---}$  ;

Comply with standards: IEC60947-2, GB/T 14048.2.

Products comply with CCC、CE、TUV and CB certification.

## 2. Product Picture of Circuit Breaker (The picture is for reference only; the specific kind prevail)



Picture of the Product

### 3. Specification and Model Description of Circuit Breaker

|    |                                              |          |                                                                                                  |   |   |   |   |   |    |    |    |    |    |    |
|----|----------------------------------------------|----------|--------------------------------------------------------------------------------------------------|---|---|---|---|---|----|----|----|----|----|----|
| ND | M                                            | 3 - 1600 |                                                                                                  |   | / |   |   |   |    |    |    |    |    |    |
| 1  | 2                                            | 3        | 4                                                                                                | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| SN | SN name                                      |          | NDM3                                                                                             |   |   |   |   |   |    |    |    |    |    |    |
| 1  | Enterprise code                              |          | ND: "Nader" low-voltage apparatus                                                                |   |   |   |   |   |    |    |    |    |    |    |
| 2  | Product code                                 |          | M: Molded case circuit breaker (MCCB)                                                            |   |   |   |   |   |    |    |    |    |    |    |
| 3  | Design SN                                    |          | 3                                                                                                |   |   |   |   |   |    |    |    |    |    |    |
| 4  | Shell frame level                            |          | 1600                                                                                             |   |   |   |   |   |    |    |    |    |    |    |
| 5  | Breaking capacity level                      |          | M: Relatively high breaking type                                                                 |   |   |   |   |   |    |    |    |    |    |    |
| 6  | Operation mode                               |          | No code: Direct handle-operated mode                                                             |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | P: Motor-operated                                                                                |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | Z: Rotary operation                                                                              |   |   |   |   |   |    |    |    |    |    |    |
| 7  | Number of poles                              |          | 3, 4                                                                                             |   |   |   |   |   |    |    |    |    |    |    |
| 8  | Release code                                 |          | 0: Release (none)                                                                                |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | 2: Instantaneous tripper only                                                                    |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | 3: Complex tripper                                                                               |   |   |   |   |   |    |    |    |    |    |    |
| 9  | Accessory code                               |          | See Table 1                                                                                      |   |   |   |   |   |    |    |    |    |    |    |
| 10 | Application code                             |          | No code: Power distribution type                                                                 |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | 2: Motor protection type                                                                         |   |   |   |   |   |    |    |    |    |    |    |
| 11 | N-pole (neutral pole) type of the 4P product |          | B: The N-pole isn't installed with an overcurrent release, but on-off with the other three poles |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | C: The N-pole is installed with an overcurrent tripper, and on-off with the other three poles    |   |   |   |   |   |    |    |    |    |    |    |
| 12 | Rated current                                |          | See Table 2                                                                                      |   |   |   |   |   |    |    |    |    |    |    |
| 13 | Cabling type                                 |          | No code: Normal product                                                                          |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | P: Connection busbar                                                                             |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | HZ1: Rear-plate horizontal connection                                                            |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | CZ1: Rear-plate vertical connection                                                              |   |   |   |   |   |    |    |    |    |    |    |
| 14 | Other code                                   |          | CS2-A/150: Circular eccentric hole rotary handle + shaft length 150mm                            |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | CS2-A/200: Circular eccentric hole rotary handle + shaft length 200mm                            |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | CS2-A/300: Circular eccentric hole rotary handle + shaft length 300mm                            |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | CS2-A/350: Circular eccentric hole rotary handle + shaft length 350mm                            |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | CS2-A/650: Circular eccentric hole rotary handle + shaft length 650mm                            |   |   |   |   |   |    |    |    |    |    |    |
|    |                                              |          | DC1 24V: Electric operation voltage DC24V                                                        |   |   |   |   |   |    |    |    |    |    |    |

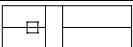
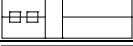
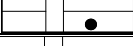
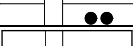
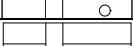
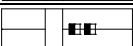
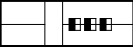
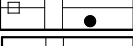
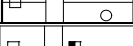
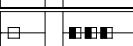
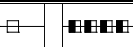
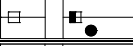
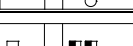
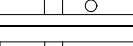
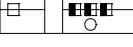
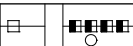
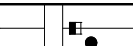
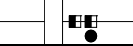
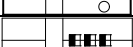
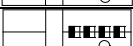
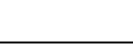
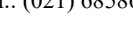
|    |              |                                                                                    |
|----|--------------|------------------------------------------------------------------------------------|
|    |              | DC1 110V: Electric operation voltage AC/DC110V                                     |
|    |              | DC1 220V: Electric operation voltage AC230V/DC220V                                 |
|    |              | DC1 380V: Electric operation voltage AC380/400/415V                                |
|    |              | 230V: Shunt release/Under-voltage release operation voltage AC230V/DC220V          |
|    |              | AC380V: Shunt release/Under-voltage release operation voltage AC380V/AC400V/AC415V |
|    |              | 110V: Shunt release operation voltage AC/DC110V                                    |
|    |              | Z: Terminal housing(only 3p)                                                       |
|    |              | MS2: MS2 lock                                                                      |
| 15 | Special code | Pin 35: default 800A/1000A                                                         |
|    |              | Pin 40: default 1250A                                                              |

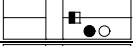
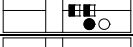
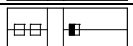
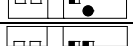
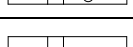
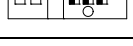
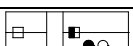
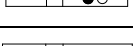
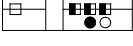
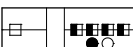
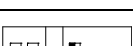
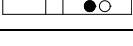
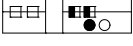
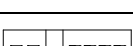
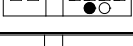
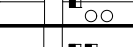
Note: The setting current is factory set to the rated current by default. If you need to set to other settings, please contact the sales person.

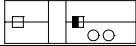
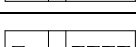
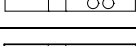
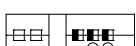
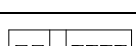
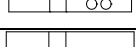
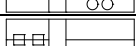
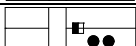
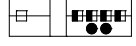
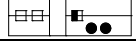
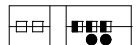
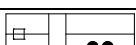
2: Default length of wiring screw: 800A/1000A: nail 35; 1250A: Pin 40. If you need other wiring screw lengths, please refer to Table 8;

3: The length of the wiring screw is reflected after the model, with model description characters exceeding 40, and the nail length is not reflected.

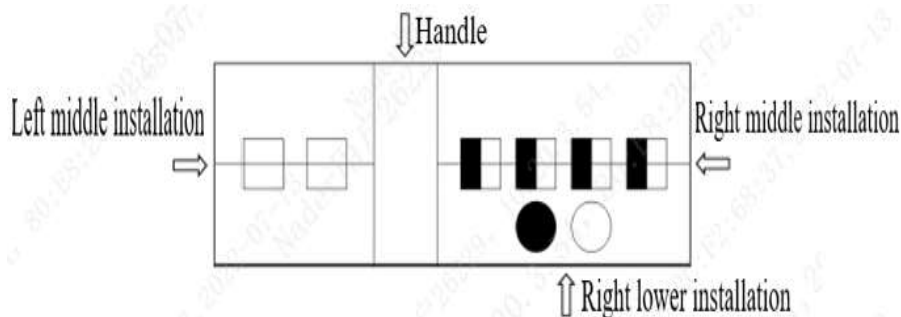
Table 1: Comparison Table of Accessory Code:

| Accessory code | Accessory name                                                             | Installation                                                                          |
|----------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                |                                                                            | 3P、4P                                                                                 |
| 00             | None                                                                       | —                                                                                     |
| 08             | Alarm contact                                                              |    |
| 98             | Two sets of alarm contact                                                  |    |
| 10             | Shunt release                                                              |    |
| K01            | Two sets of shunt release                                                  |    |
| 30             | Under-voltage release                                                      |    |
| A01            | Two sets of under-voltage release                                          |    |
| 21             | Single auxiliary contact                                                   |    |
| 61             | Two sets of single auxiliary contact                                       |    |
| 23             | Three sets of single auxiliary contact                                     |    |
| 24             | Four sets of single auxiliary contact                                      |    |
| 18             | Shunt release、alarm contact                                                |    |
| 38             | Under-voltage release、alarm contact                                        |   |
| 22             | Alarm contact、alarm contact                                                |  |
| 88             | Two sets of alarm contact、alarm contact                                    |  |
| 26             | Three sets of alarm contact、alarm contact                                  |  |
| 25             | four sets of alarm contact、alarm contact                                   |  |
| 42             | Shunt release、alarm contact、alarm contact                                  |  |
| 44             | Shunt release、two sets of single auxiliary contact、alarm contact           |  |
| 46             | Shunt release、three sets of single auxiliary contact、alarm contact         |  |
| 14             | Shunt release、four sets of single auxiliary contact、alarm contact          |  |
| 75             | Under-voltage release、alarm contact、alarm contact                          |  |
| 77             | Under-voltage release、Two sets of single auxiliary contact、alarm contact   |  |
| 81             | Under-voltage release、three sets of single auxiliary contact、alarm contact |  |
| 82             | Under-voltage release、four sets of single auxiliary contact、alarm contact  |  |
| 41             | Shunt release、alarm contact                                                |  |
| 11             | Shunt release、Two sets of single auxiliary contact                         |  |
| 12             | Shunt release、three sets of single auxiliary contact                       |  |
| 13             | Shunt release、four sets of single auxiliary contact                        |  |
| 71             | Under-voltage release、alarm contact                                        |  |
| 72             | Under-voltage release、two sets of single auxiliary contact                 |  |
| 73             | Under-voltage release、three sets of single auxiliary contact               |  |
| 74             | Under-voltage release、four sets of single auxiliary contact                |  |
| 31             | Under-voltage release、shunt release、alarm contact                          |  |

|     |                                                                                                 |                                                                                       |
|-----|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 37  | Under-voltage release、shunt release、Two sets of alarm contact                                   |    |
| 50  | Under-voltage release、shunt release                                                             |    |
| 51  | Under-voltage release、shunt release、alarm contact                                               |    |
| 52  | Under-voltage release、shunt release、Two sets of single auxiliary                                |    |
| 53  | Under-voltage release、shunt release、there sets of single auxiliary                              |    |
| 54  | Under-voltage release、shunt release、four sets of single auxiliary                               |    |
| 19  | Shunt release、two sets of alarm contact                                                         |    |
| 79  | Shunt release、two sets of alarm contact                                                         |    |
| 63  | Single auxiliary contact、two sets of alarm contact                                              |    |
| 64  | Two sets of single auxiliary contact、two sets of alarm contact                                  |    |
| 65  | There sets of single auxiliary contact、two sets of alarm contact                                |    |
| 66  | Four sets of single auxiliary contact、two sets of alarm contact                                 |    |
| 43  | Shunt release、alarm contact、two sets of alarm contact                                           |    |
| 45  | Shunt release、two sets of alarm contact、two sets of alarm contact                               |    |
| 47  | Shunt release、there sets of alarm contact、two sets of alarm contact                             |   |
| 15  | Shunt release、four sets of alarm contact、two sets of alarm contact                              |  |
| 76  | Under-voltage release、alarm contact、two sets of alarm contact                                   |  |
| 80  | Under-voltage release、two sets of alarm contact、two sets of alarm contact                       |  |
| 83  | Under-voltage release、there sets of alarm contact、two sets of alarm contact                     |  |
| 84  | Under-voltage release、four sets of single alarm contact、two sets of alarm contact               |  |
| 32  | Under-voltage release、shunt release、alarm contact、alarm contact                                 |  |
| 33  | Under-voltage release、shunt release、two sets of alarm contact、alarm contact                     |  |
| 34  | Under-voltage release、shunt release、there sets of alarm contact、alarm contact                   |  |
| 35  | Under-voltage release、shunt release、there sets of alarm contact、alarm contact                   |  |
| 39  | Under-voltage release、shunt release、alarm contact、two sets of alarm contact                     |  |
| 55  | Under-voltage release、shunt release、two sets of alarm contact、two sets of alarm contact         |  |
| 56  | Under-voltage release、shunt release、there sets of alarm contact、two sets of alarm contact       |  |
| 36  | Under-voltage release、shunt release、four sets of single alarm contact、two sets of alarm contact |  |
| A02 | Two sets of under-voltage release、alarm contact                                                 |  |
| A07 | Two sets of under-voltage release、two sets of alarm contact                                     |  |
| A08 | Two sets of under-voltage release、there sets of alarm contact                                   |  |
| A09 | Two sets of under-voltage release、four sets of single alarm contact                             |  |

|     |                                                                                               |                                                                                       |
|-----|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| A10 | Two sets of under-voltage release、alarm contact、alarm contact                                 |    |
| A12 | Two sets of under-voltage release、two sets of alarm contact、alarm contact                     |    |
| A14 | Two sets of under-voltage release、three sets of alarm contact、alarm contact                   |    |
| A16 | Two sets of under-voltage release、four sets of single alarm contact、alarm contact             |    |
| A11 | Two sets of under-voltage release、alarm contact、two sets of alarm contact                     |    |
| A13 | Two sets of under-voltage release、two sets of alarm contact、Two sets of alarm contact         |    |
| A15 | Two sets of under-voltage release、three sets of alarm contact、Two sets of alarm contact       |    |
| A17 | Two sets of under-voltage release、four sets of single alarm contact、Two sets of alarm contact |    |
| A05 | Two sets of under-voltage release、alarm contact                                               |    |
| A06 | Two sets of under-voltage release、two sets of alarm contact                                   |    |
| K04 | Two sets of shunt release、alarm contact                                                       |    |
| K06 | Two sets of shunt release、two sets of alarm contact                                           |    |
| K07 | Two sets of shunt release、three sets of alarm contact                                         |    |
| K08 | Two sets of shunt release、four sets of single alarm contact                                   |   |
| K12 | Two sets of shunt release、alarm contact、alarm contact                                         |  |
| K09 | Two sets of shunt release、two sets of alarm contact、alarm contact                             |  |
| K10 | Two sets of shunt release、three sets of alarm contact、alarm contact                           |  |
| K11 | Two sets of shunt release、four sets of single alarm contact、alarm contact                     |  |
| K13 | Two sets of shunt release、alarm contact、Two sets of alarm contact                             |  |
| K14 | Two sets of shunt release、two sets of alarm contact、Two sets of alarm contact                 |  |
| K15 | Two sets of shunt release、three sets of alarm contact、Two sets of alarm contact               |  |
| K16 | Two sets of shunt release、four sets of single alarm contact、Two sets of alarm contact         |  |
| K02 | Two sets of shunt release、alarm contact                                                       |  |
| K05 | Two sets of shunt release、two sets of alarm contact                                           |  |

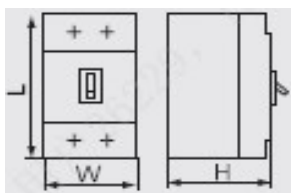
Note: ■ Single auxiliary contact; □ Alarm contact; ● Shunt release; ○ Under-voltage release



Attachment installation diagram

## 4. Main Technical Parameters of Circuit Breaker

Table 2 Main Technical Parameters of Circuit Breaker

|                                                          |                                                                                     |                        |                       |     |     |
|----------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|-----------------------|-----|-----|
| Model                                                    |                                                                                     |                        | NDM3-1600             |     |     |
| Rated current of frame Inm (A)                           |                                                                                     |                        | 1600                  |     |     |
| Rated current In (A)                                     |                                                                                     |                        | 800, 1000, 1250       |     |     |
| Rated insulation voltage Ui (AC V)                       |                                                                                     |                        | 1000                  |     |     |
| Rated impulse withstand voltage Uimp (V)                 |                                                                                     |                        | 12000                 |     |     |
| Rated working voltage Ue (AC V)                          |                                                                                     |                        | 400/415, 500, 660/690 |     |     |
| Power frequency withstand voltage U (1min) (V)           |                                                                                     |                        | 3500                  |     |     |
| Utilization category                                     |                                                                                     |                        | A                     |     |     |
| Number of poles                                          |                                                                                     |                        | 3, 4                  |     |     |
| Breaking capacity level                                  |                                                                                     |                        | M                     |     |     |
| Rated limit short-circuit breaking capacity Icu (kA)     |                                                                                     | AC400/415V             | 70                    |     |     |
|                                                          |                                                                                     | AC500V                 | 50                    |     |     |
|                                                          |                                                                                     | AC660/690V             | 20                    |     |     |
| Rated operating short-circuit breaking capacity Ics (kA) |                                                                                     | AC400/415V             | 50                    |     |     |
|                                                          |                                                                                     | AC500V                 | 50                    |     |     |
|                                                          |                                                                                     | AC660/690V             | 20                    |     |     |
| Operating performance (times)                            | Electrical life                                                                     | AC400/415V             | 1000                  |     |     |
|                                                          |                                                                                     | AC500V                 | 800                   |     |     |
|                                                          |                                                                                     | AC690V                 | 500                   |     |     |
|                                                          | Mechanical life                                                                     | Maintainable free life | 10000（3P）/6000（4P）    |     |     |
|                                                          |                                                                                     | Maintainable life      | 20000（3P）/12000（4P）   |     |     |
| Boundary dimension                                       |  |                        | L(mm)                 | 268 | 268 |
|                                                          |                                                                                     |                        | W(mm)                 | 210 | 280 |
|                                                          |                                                                                     |                        | H(mm)                 | 152 | 152 |
| Flashover distance(mm)                                   |                                                                                     |                        | ≤100                  |     |     |

Note :The overall dimension does not include the dimension of terminal cover。

#### 4.1 Selection of the circuit breaker connecting bus or cable cross-section area:

Table 3 Selection of the Connecting Copper Bar or Cable Cross-section Area

|                                    |      |      |      |
|------------------------------------|------|------|------|
| Rated current (A)                  | 800  | 1000 | 1250 |
| Copper bar size (mm <sup>2</sup> ) | 50×5 | 50×6 | 50×8 |
| Quantity                           | 2    | 2    | 2    |

#### 4.2 Tightening Torque of the Circuit Breaker Terminal and Mounting Screw

Table 4 Tightening Torque of the Circuit Breaker Terminal and Mounting Screw

| Model     | Thread specification | Torque (N·m) |
|-----------|----------------------|--------------|
| NDM3-1600 | M10                  | 20           |
|           | M5                   | 4            |

#### 4.3 Derating factor of temperature change for the circuit breaker

Table 5 Derating Factor Table of Temperature Change for the Circuit Breaker

| Model     | Derating factor of product temperature change |    |      |      |      |      |      |      |
|-----------|-----------------------------------------------|----|------|------|------|------|------|------|
| NDM3-1600 | Temperature (°C)                              | 40 | 45   | 50   | 55   | 60   | 65   | 70   |
|           | Derating factor                               | 1  | 0.96 | 0.92 | 0.87 | 0.82 | 0.76 | 0.70 |

Note: 1) When the operating ambient temperature is below 40℃, the product can be used normally without derating capacity.

2) The above derating factors are measured at the frame current.

#### 4.4 High-altitude derating factor of the circuit breaker

Table 6 High-altitude Derating Factor Table of Circuit Breaker

| Elevation (m) | Working current correction coefficient | Maximum working current correction coefficient | Power frequency withstand voltage correction coefficient | Isolation voltage correction coefficient |
|---------------|----------------------------------------|------------------------------------------------|----------------------------------------------------------|------------------------------------------|
| 2000          | 1                                      | 690                                            | 3500                                                     | 1000                                     |
| 2500          | 1                                      | 690                                            | 3500                                                     | 1000                                     |
| 3000          | 0.98                                   | 620                                            | 3150                                                     | 900                                      |
| 3500          | 0.97                                   | 580                                            | 3000                                                     | 850                                      |
| 4000          | 0.95                                   | 550                                            | 2800                                                     | 810                                      |
| 4500          | 0.94                                   | 520                                            | 2650                                                     | 770                                      |
| 5000          | 0.93                                   | 500                                            | 2500                                                     | 730                                      |

#### 4.5 Power loss coefficient of circuit breaker

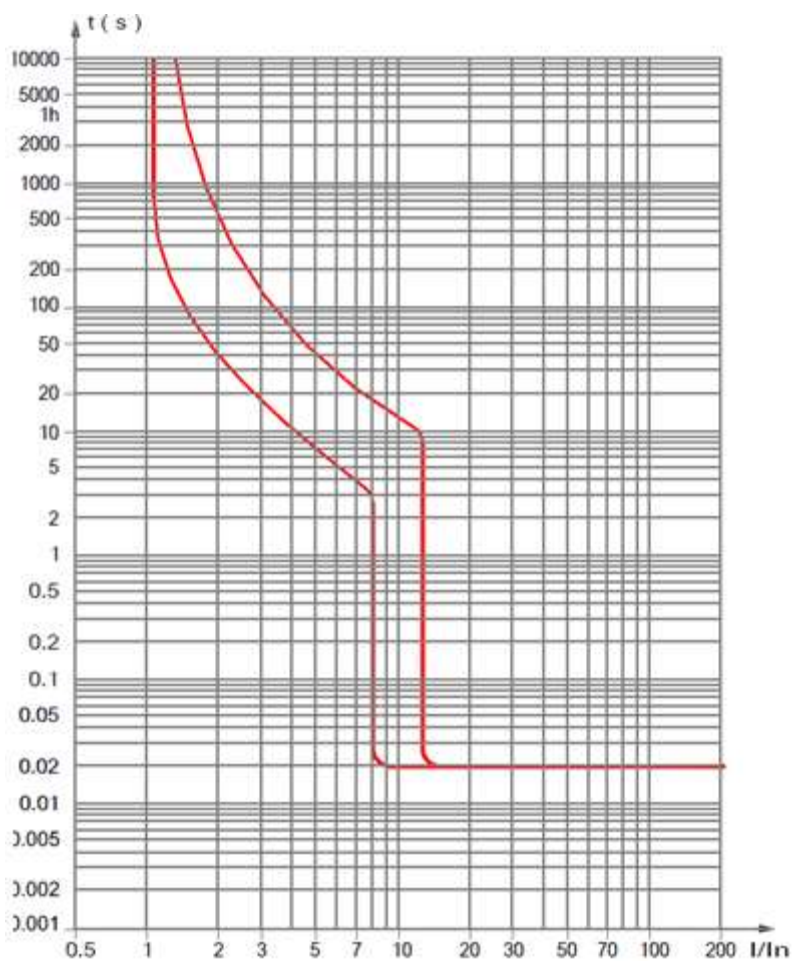
Table 7 Power loss coefficient table of circuit breaker

| Model     | Energizing current(A) | Total power loss(W)           |
|-----------|-----------------------|-------------------------------|
|           |                       | Wiring before and after board |
| NDM3-1600 | 1250                  | 141                           |

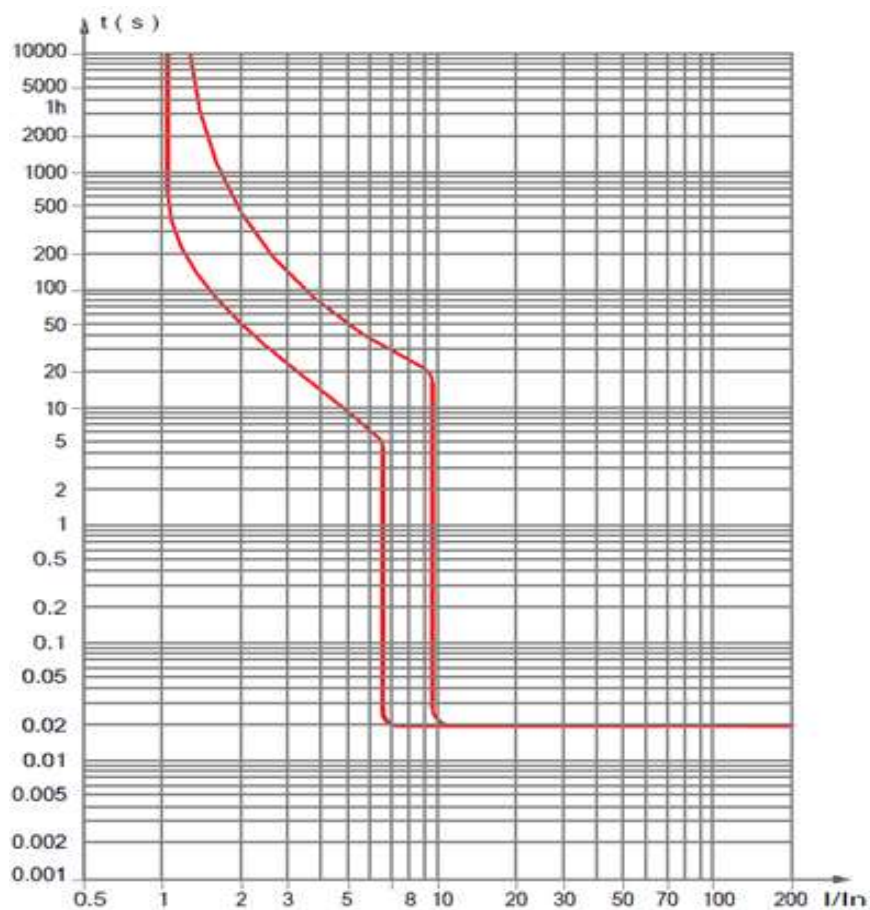
### 5. Normal Working Environment of Circuit Breaker

- 1) The altitude of the installation site doesn't exceed 2,500m. See the "High-altitude Derating Factor Table of Circuit Breaker" for the derating factor at the altitude;
- 2) The ambient temperature is  $-35^{\circ}\text{C} \sim +70^{\circ}\text{C}$ ; the average within 24h shall not be more than  $+35^{\circ}\text{C}$ . If the ambient temperature is higher than  $+40^{\circ}\text{C}$ , the user needs to reduce the capacity. See the "Derating Factor Table of Temperature Change for the Circuit Breaker" for the derating factor;
- 3) Wet heat resistance: Meets the standard IEC60086-2-30 wet heat (95% relative humidity at  $40^{\circ}\text{C}$ );
- 4) The product can withstand the effects of wet air, salt mist, oil mist and mould;
- 5) The installation category of the circuit breaker connected to the main loop is: Category III (power distribution and control level), The installation category of the circuit breaker not connected to the main loop is: Category II (load level);
- 6) The pollution level is Level 3;
- 7) The product should be installed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust, which should be also avoided from snow and rain;
- 8) In case of stricter user conditions than the above description, negotiate with the manufacturer.

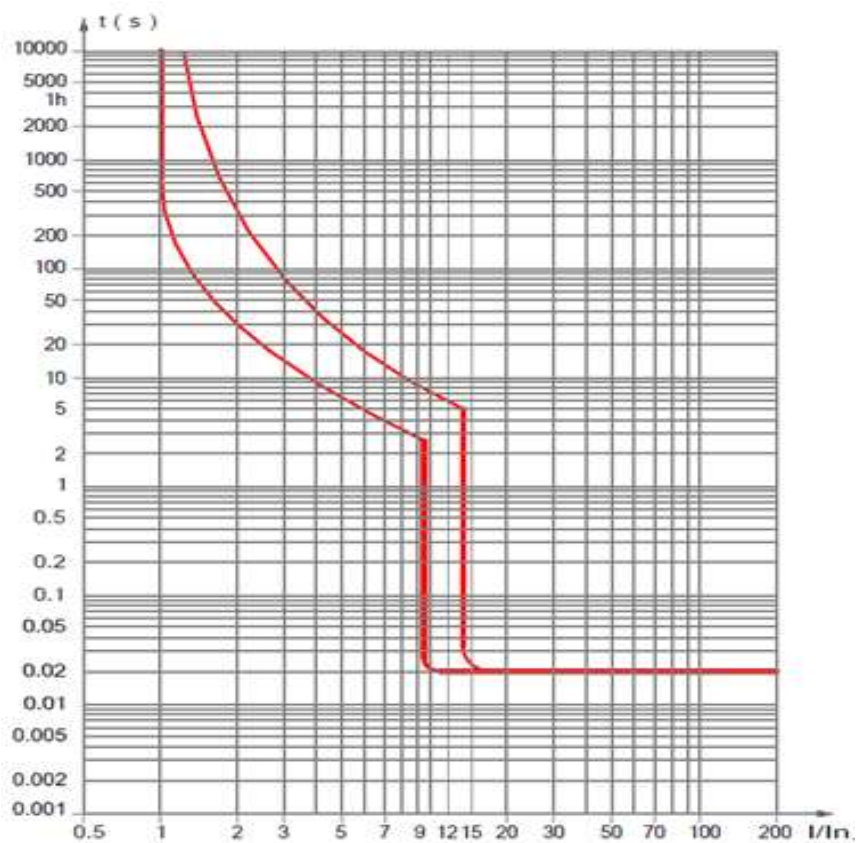
## 6. Short-circuit Overload Protection Characteristic Curve of Circuit Breaker



Power distribution type time/current characteristic curve (800A, 1000A)



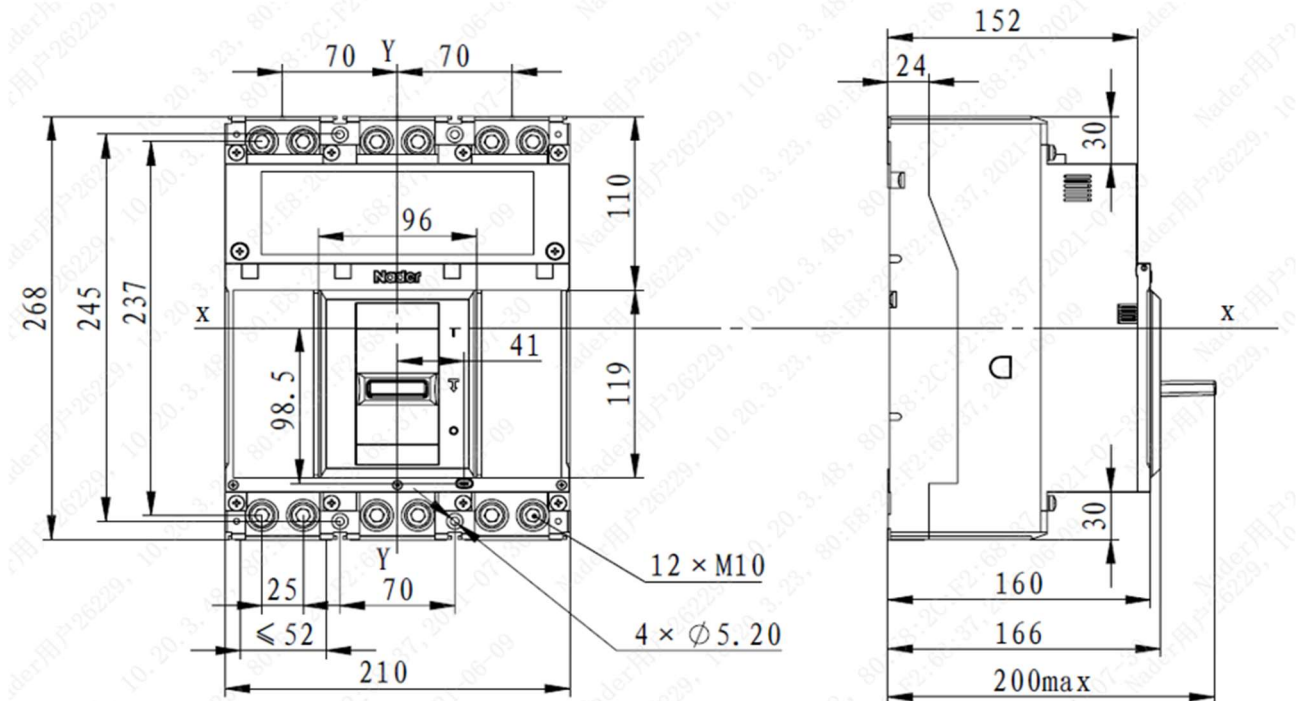
Power distribution type time/current characteristic curve (1250A)



Motor type time/current characteristic curve (800A, 1000A)

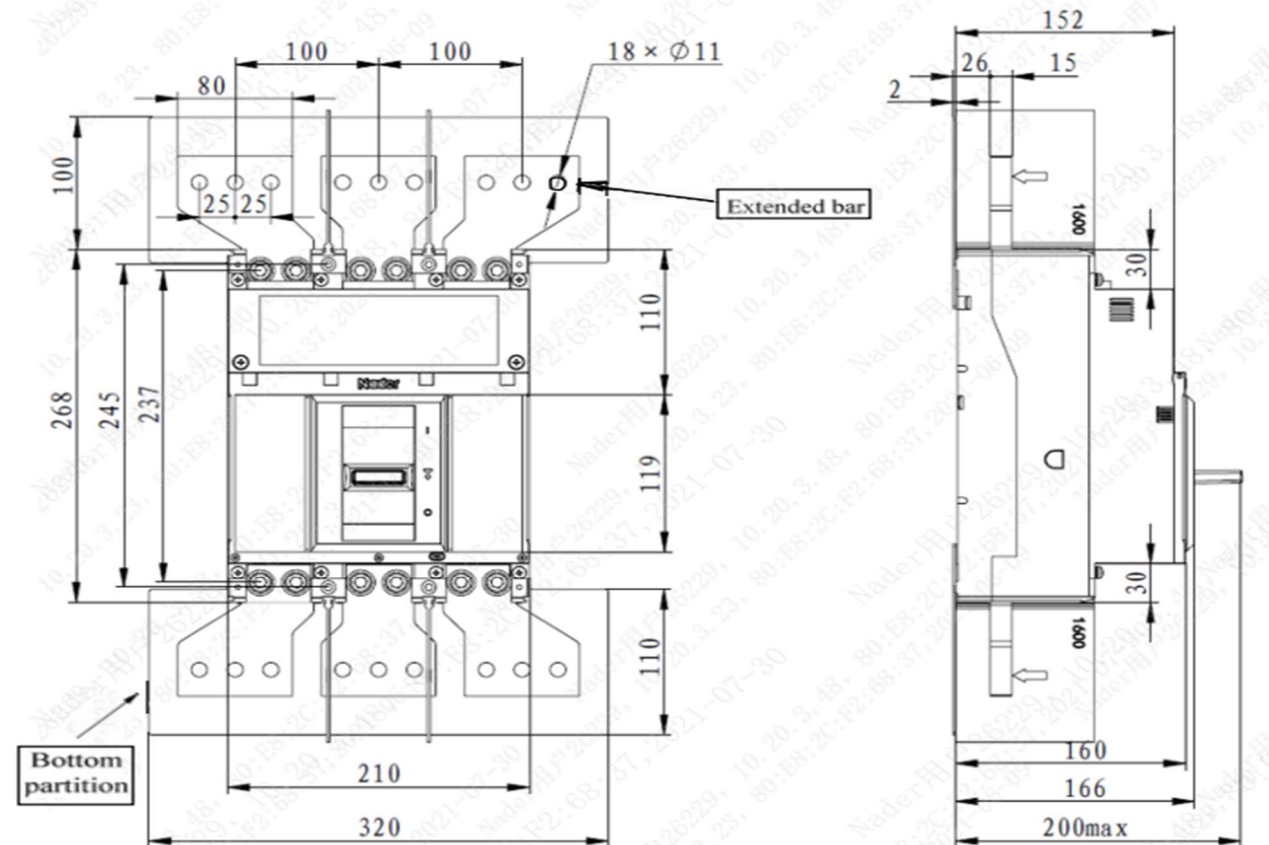
## 7. Outline and Mounting Hole Dimensions of Circuit Breaker

### 7.1 External dimensions of 3P front-plate connection products



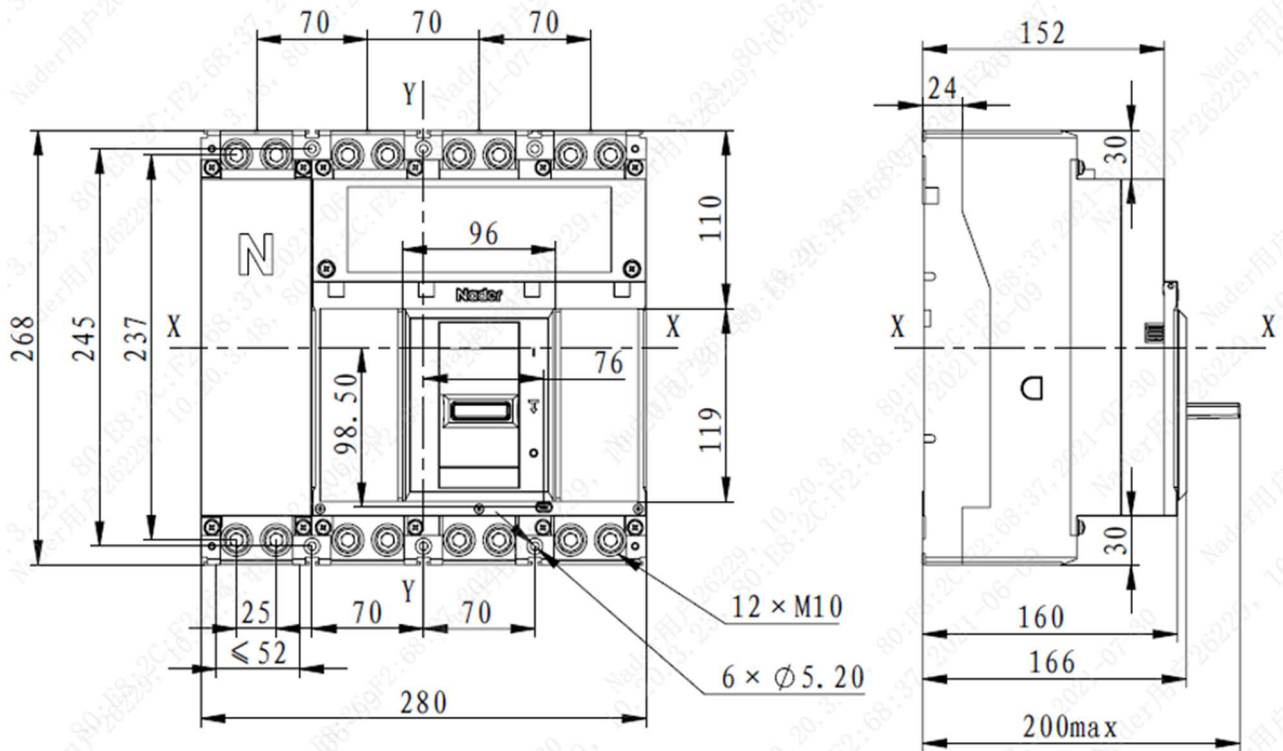
Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

### 7.2 External dimensions of 3P extended front-plate connection products



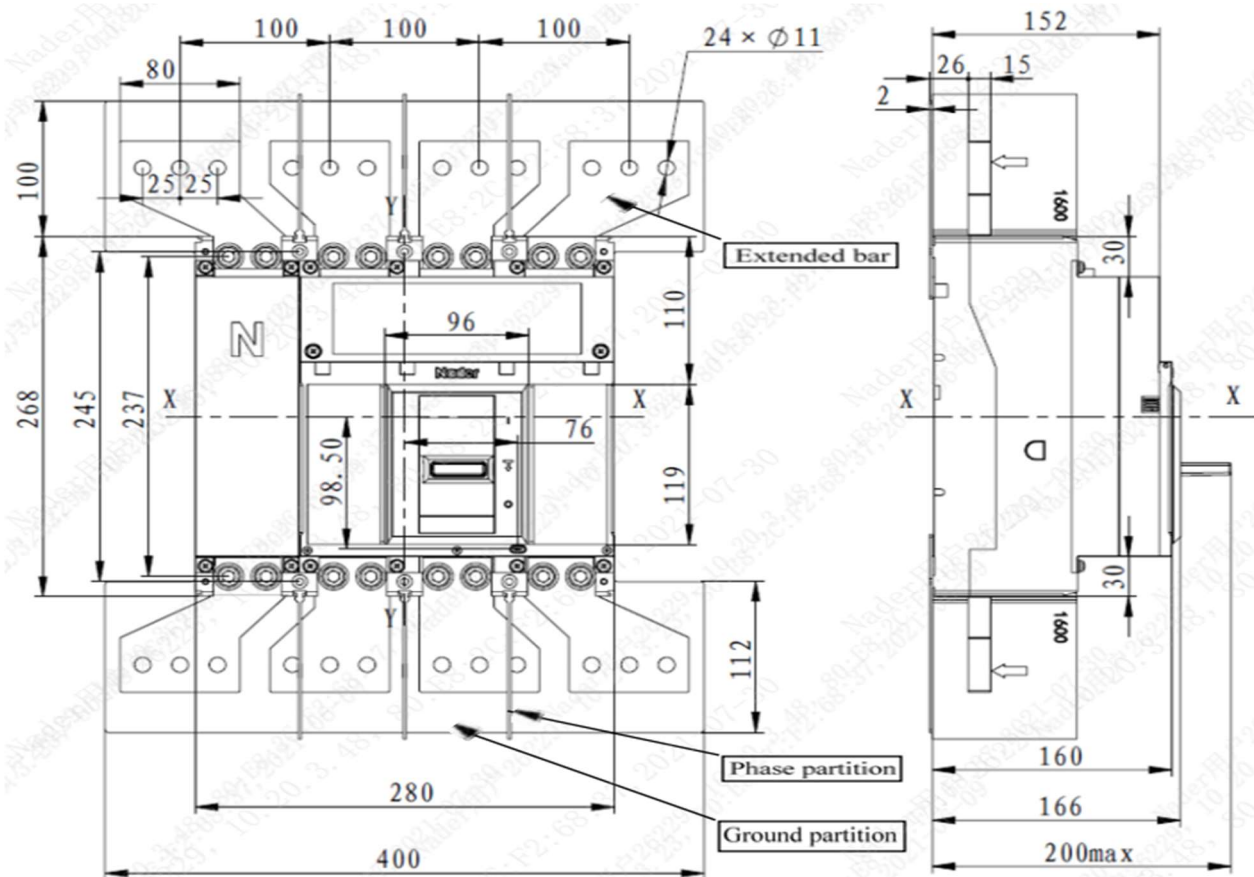
Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

### 7.3 External dimensions of 4P front-plate connection products



Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

### 7.4 External dimensions of 4P extended front-plate connection products



Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

Technical drawings of the 3P level behind plate, showing dimensions and components.

**Front View Dimensions:**

- Total width: 210
- Slot width: 70
- Slot spacing: 70
- Total height: 268
- Slot height: 245
- Interphase partition (central slot)
- Slot height (bottom): 52.4
- Slot width (bottom): 70
- Slot height (top): 19.5

**Side View Dimensions:**

- Total width: 166
- Height: 252.4
- Slot width: 61
- Slot height: 15

**Top View Dimensions:**

- Slot width: 25
- Slot spacing: 48
- Slot height: 34.5
- Slot width (bottom): 12 × Ø 11
- Slot height (bottom): 15

Level behind plate 3P

Technical drawing of the vertical behind plate 3P, showing front and side views with dimensions.

**Front View Dimensions:**

- Overall width: 210
- Distance between vertical lines: 70, 70
- Overall height: 268
- Height of the central section: 245
- Height of the bottom section: 53
- Distance from the bottom to the center of the vertical lines: 15, 19.4
- Width of the bottom section: 70

**Side View Dimensions:**

- Overall width: 166
- Height of the top section: 1600
- Height of the bottom section: 1600
- Distance between the vertical lines: 34.5
- Distance from the top to the center of the vertical lines: 48
- Distance from the bottom to the center of the vertical lines: 62
- Distance from the top to the center of the vertical lines: 263.4
- Distance from the bottom to the center of the vertical lines: 268
- Distance from the top to the center of the vertical lines: 15
- Distance from the bottom to the center of the vertical lines: 11.5
- Distance from the top to the center of the vertical lines: 25
- Distance from the bottom to the center of the vertical lines: 12 x  $\phi 11$

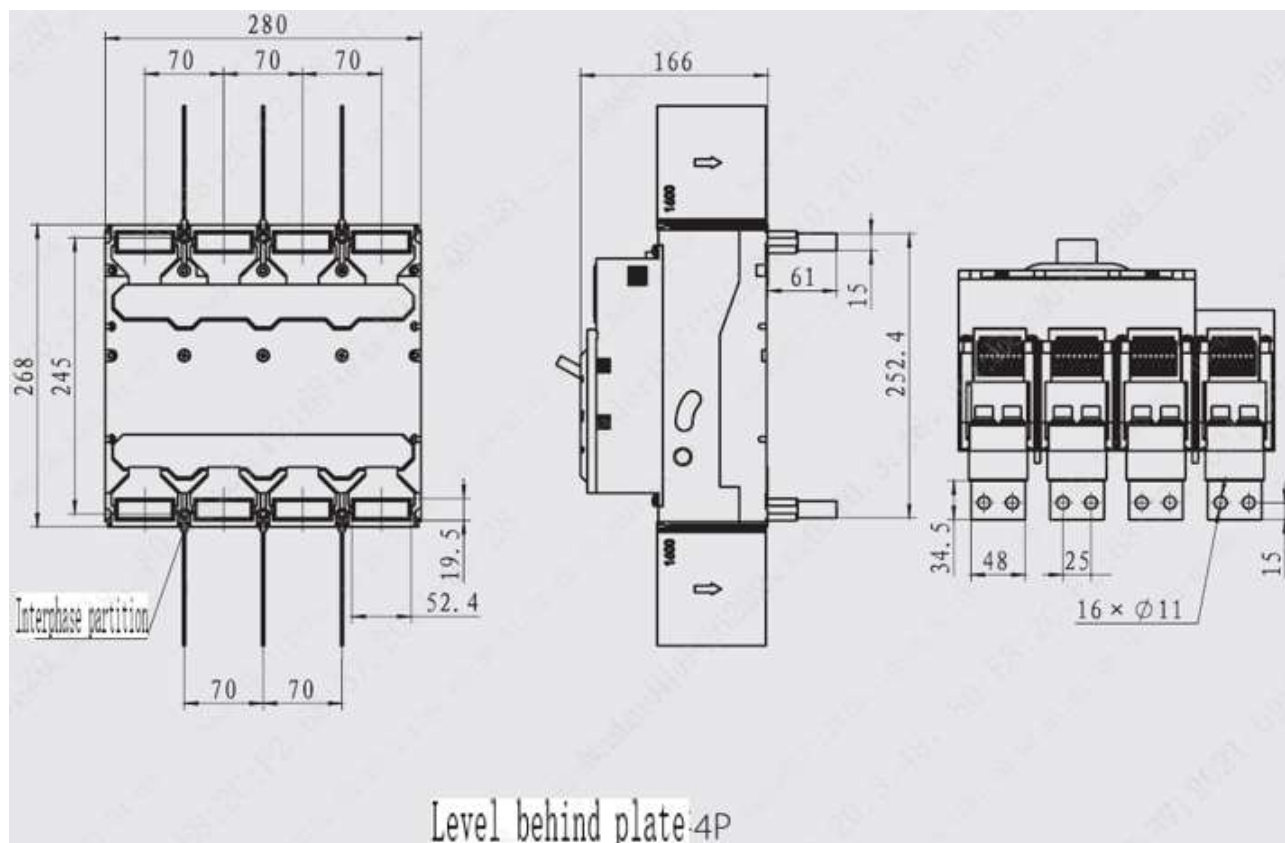
Interphase partition

Vertical behind plate 3P

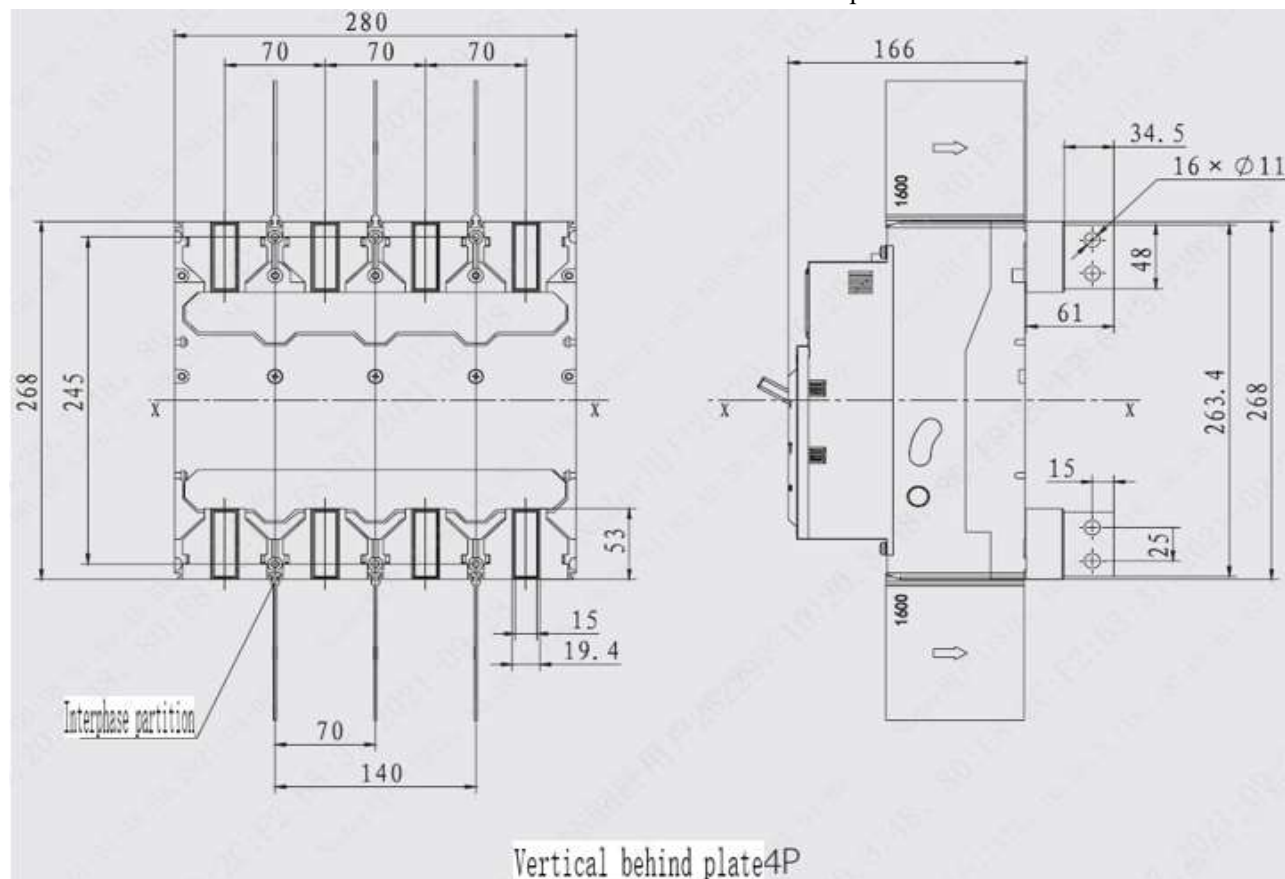
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Page 16 of 25

## 7.6 4P Rear panel wiring

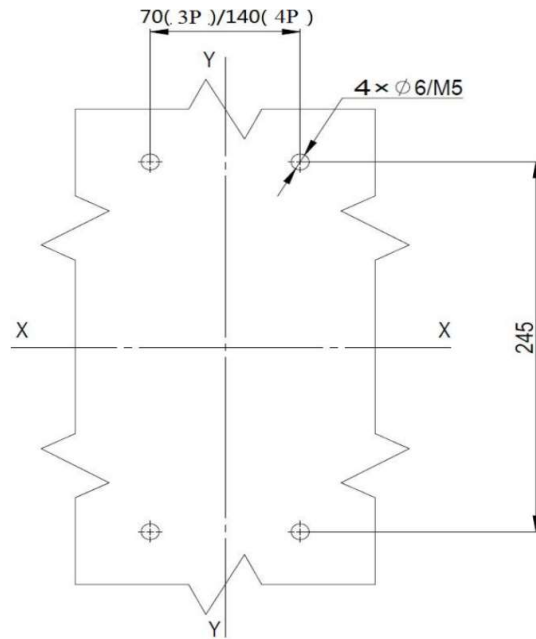


Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.



Note: the unmarked dimensional tolerance shall be in accordance with GB / T 1804-c.

## 7.7 Mounting hole dimensions



Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

Table 8 Wiring Copper Bar Thickness and Screw Length

| SN | Thickness of the wiring | Wiring hexagon screw length |
|----|-------------------------|-----------------------------|
| 1  | 6, 8                    | M10X30                      |
| 2  | 10, 12                  | M10X35                      |
| 3  | 15                      | M10X40                      |

Note: The hexagon screw length shall be indicated when ordering.

## 7.8 Safe mounting distance of circuit breaker

Table 9 Minimum Safety Distance during Installation (Unit: mm)

| Mounting distance | A (inlet wire end to the cabinet face) |                          | B (distance from side to the cabinet face) | C (outlet wire end to the cabinet face) |
|-------------------|----------------------------------------|--------------------------|--------------------------------------------|-----------------------------------------|
| Model             | With a terminal cover                  | Without a terminal cover |                                            |                                         |
| NDM3-1600         | 25                                     | 110                      | 35                                         | 35                                      |

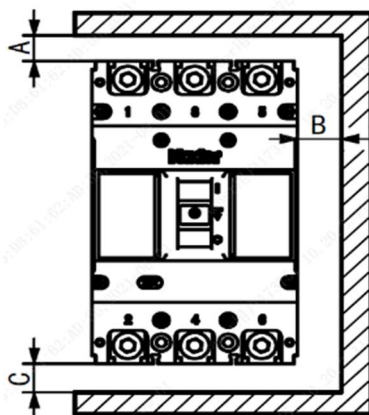


Table 10 Minimum Center Distance between Rowed Circuit Breakers (Unit: mm)

| Model     | Width of circuit breaker |         | I Center distance |         |
|-----------|--------------------------|---------|-------------------|---------|
|           | 3 poles                  | 4 poles | 3 poles           | 4 poles |
| NDM3-1600 | 210                      | 280     | 250               | 320     |

Note: Check the connected busbar or cable during rowing or stacking of the circuit breaker to ensure that the air insulation distance won't be reduced.

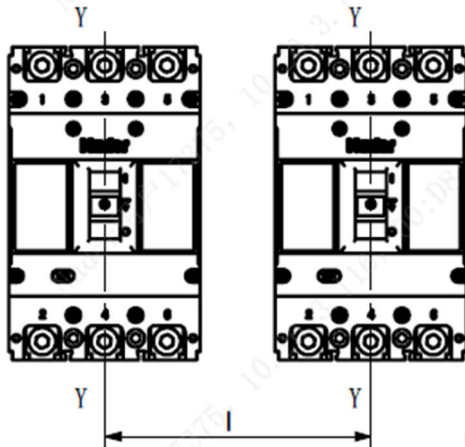


Table 11 Minimum Distance between Stacked Circuit Breakers (Unit: mm)

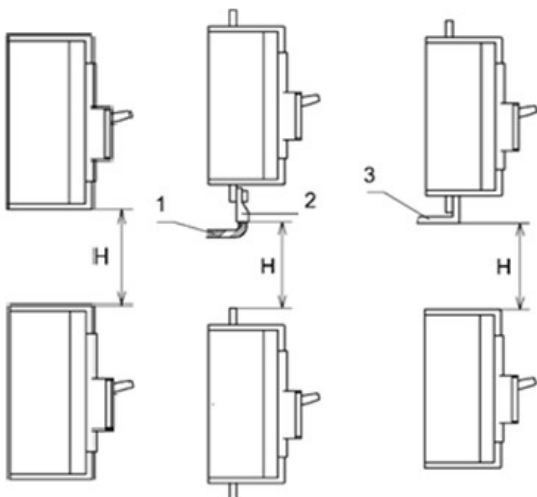
| Model     | H (distance of circuit breaker from bottom) |                          |
|-----------|---------------------------------------------|--------------------------|
|           | With a terminal cover                       | Without a terminal cover |
| NDM3-1600 | /                                           | 155                      |

Note: 1) Bare cable connection

2) Cable insulating connection

3) Connection without insulation

Requirements: Check whether the terminal cover or phase partition is assembled properly before products are energized.



## 8. Accessories Function Description

### 8.1 Under-voltage release

When the power voltage drops to the range (35%~70%) of the under-voltage release, the release can break the circuit breaker reliably;

When the power voltage is 35% lower than the rated working voltage of the under-voltage release, the release can prevent closing of the circuit breaker;

When the power voltage is 85% higher than the rated working voltage of the under-voltage release, the release can guarantee reliable closing of the circuit breaker.

Table 12 Voltage Specifications and Power Consumption of Undervoltage Release

| Accessory name                      | Under-voltage release |           |        |
|-------------------------------------|-----------------------|-----------|--------|
| Voltage specifications (V)          | AC/DC 110             | AC/DC 230 | AC 400 |
| Retention power consumption (W)     | 7                     | 8         | 10     |
| Instantaneous power consumption (W) | 230                   | 500       | 270    |

### 8.2 Shunt release

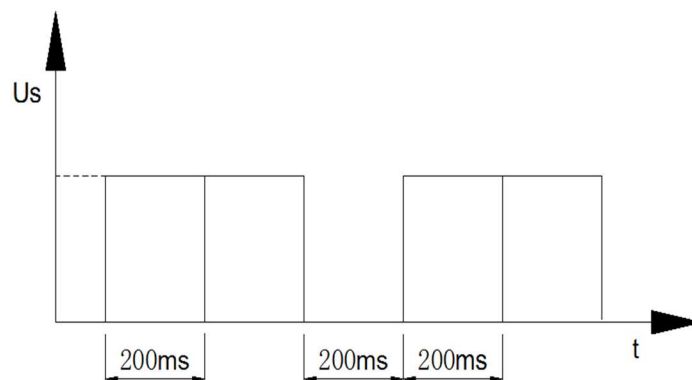
When the external voltage of the shunt release is between 70% and 110% of the rated control power voltage, the release can break the circuit breaker reliably.

Table 13 Voltage Specifications and Power Consumption of Shunt Release

| Accessory name                      | Shunt release |           |           |
|-------------------------------------|---------------|-----------|-----------|
| Voltage specifications (V)          | DC 24         | AC/DC 110 | AC/DC 230 |
| Retention power consumption (W)     | 3.5           | 3.5       | 3.5       |
| Instantaneous power consumption (W) | 240           | 230       | 300       |

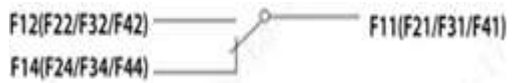
Note: Working principle of the shunt release: a single pulse action (the suggested power-on time above 200ms).

If another action is required, the shunt release can only be operated after being off (the suggested interval time above 200ms), reset and energized. The time from power on of the shunt release (receiving signal) to product tripping is 100ms.



### 8.3 Rated parameters of the auxiliary contact

Table 14 Rated Parameters of the Auxiliary Contact

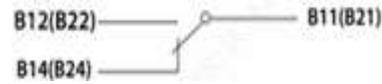
| Accessory name                                |               | Auxiliary contact (conventional)                                                   | Auxiliary contact(Low power consumption) |
|-----------------------------------------------|---------------|------------------------------------------------------------------------------------|------------------------------------------|
| Voltage specifications (V)/conventional (Ith) |               | AC250V/10A、AC400V/3A、<br>DC220V/0.2A                                               | DC30V/0.1A                               |
| Wiring diagram                                | On, off       |  |                                          |
|                                               | Free tripping |  |                                          |
| Internal resistance                           |               | <30mΩ                                                                              | <50mΩ                                    |

Note1): If need DC30V/0.1A Auxiliary contact, please explain when ordering.

2): The first auxiliary harness is identified as F11 (red), F12 (white), F14 (yellow), and the second auxiliary harness is identified as F21 (red), F22 (white), F24 (yellow), and so on. At most four groups of auxiliary harness are installed.

#### 8.4 Rated parameters of the alarm contact

Table 15 Rated Parameters of the Alarm Contact

| Accessory name                                |               | Alarm contact (conventional)                                                         | Alarm contact(Low power consumption) |
|-----------------------------------------------|---------------|--------------------------------------------------------------------------------------|--------------------------------------|
| Voltage specifications (V)/conventional (Ith) |               | AC250V/10A、AC400V/3A、<br>DC220V/0.2A                                                 | DC30V/0.1A                           |
| Wiring diagram                                | On, off       |  |                                      |
|                                               | Free tripping |  |                                      |
| Internal resistance                           |               | <30mΩ                                                                                | <50mΩ                                |

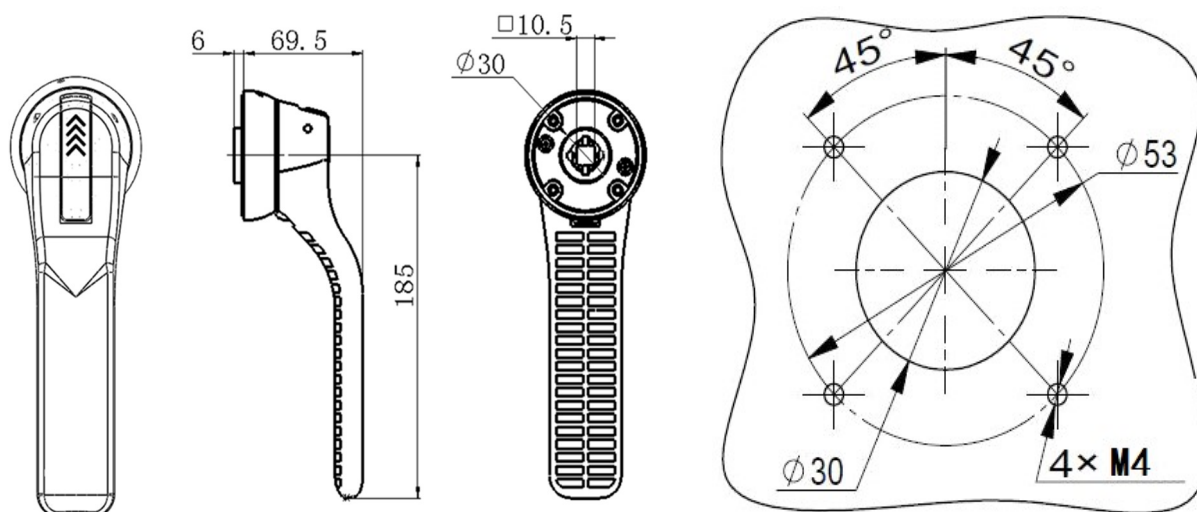
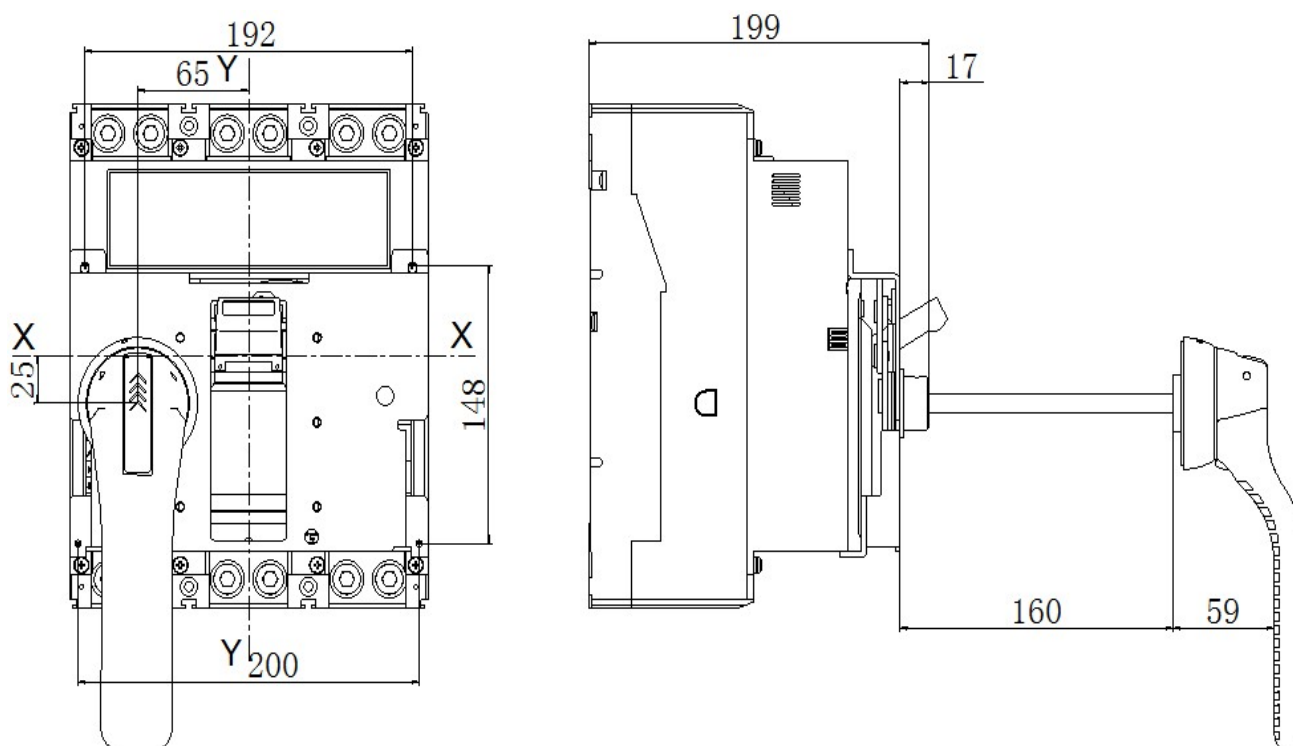
Note 1): If need DC30V/0.1A Auxiliary contact, please explain when ordering.

2)The first alarm harness is identified as B11 (red), B12 (white), B14 (yellow), and the second auxiliary harness is identified as B21 (red), B22 (white), B24(yellow), and so on. At most two groups of alarms are installed.

**Note: The standard wire length of the under-voltage release, shunt release, auxiliary contact and alarm contact wiring is 0.7m, 1m、2m、4m can be customized according to the requirements.**

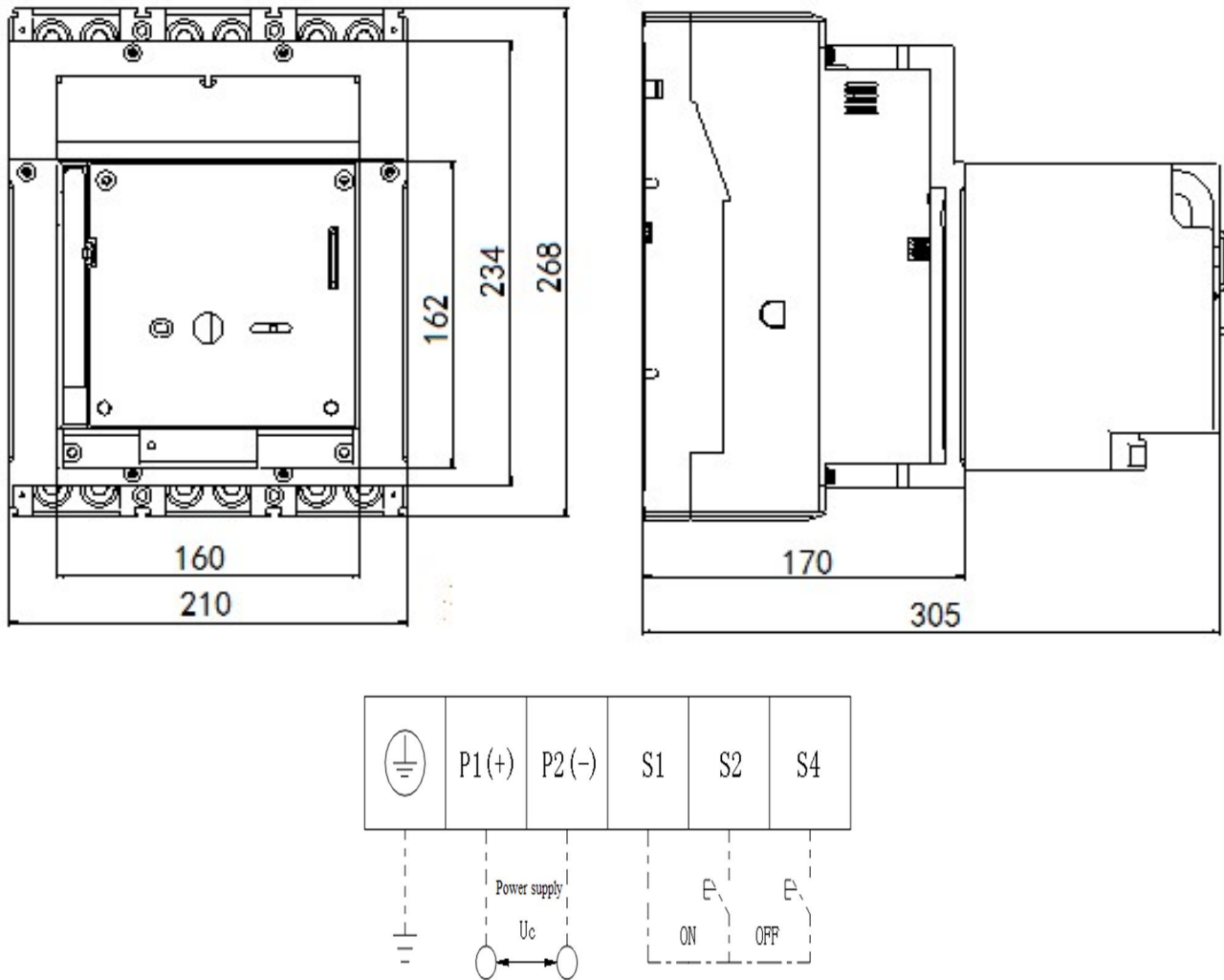
#### 8.5 Operating mechanism of the rotation handle (CS2)

Manual operation—the handle mounting hole diagram and external dimension diagram of manual operation are shown as below:



## 8.6 Electric operating mechanism

Electric operation-the external dimensions of the circuit breaker and its electric operating mechanism installed:



Note: For manual operation, operate it 180° in the clockwise direction while operation in the counterclockwise direction is prohibited;

For electric operation connection, it is prohibited to connect P1 and P2 with S1, S2 and S4.

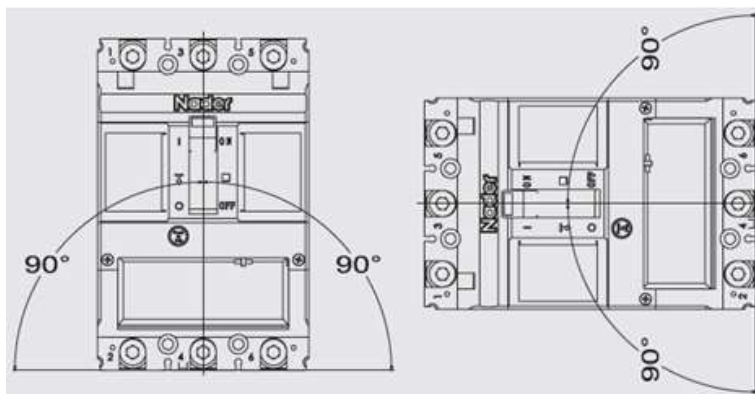
Table 16 Voltage Specifications and Power of Electric Operation

| Accessory name         | Electric operating mechanism |               |               |        |
|------------------------|------------------------------|---------------|---------------|--------|
| Voltage specifications | DC24V                        | AC110V/DC110V | AC230V/DC220V | AC400V |
| Power                  | 240W                         | 400W          | 400W          | 400W   |

## 9. Installation Direction of Circuit Breaker

For vertical installation of the product, the gradient between the installation surface and the vertical plane is no more than  $\pm 5^\circ$ .

Horizontal installation of the product.



Vertical Installation

Horizontal Installation

## 10. Packaging and Storage of Circuit Breaker

Minimum packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with the air ventilation and the relative humidity no more than 80% when the ambient temperature is  $-40^{\circ}\text{C}\sim+75^{\circ}\text{C}$ . No acidic alkaline or other corrosive gas exists in the ambient air in the warehouse. Under the conditions above, the storage period shall be no more than three years since the manufacturing date.

## 11. List of Accessories and Installation

| SN | Name                       | Specification | 3P Quantity/Set | 4P Quantity/Set |
|----|----------------------------|---------------|-----------------|-----------------|
| 1  | Cross small pan-head screw | M5×100        | 4               | 4               |
| 2  | Hexagon nut                | M5            | 4               | 4               |
| 3  | Spring washer              | 5             | 4               | 4               |
| 4  | Plain washer               | 5             | 4               | 4               |
| 5  | Phase partition            | ——            | 4               | 6               |
| 6  | Ground partition           | ——            | 2               | 2               |
| 7  | Extended handle            | ——            | 1               | 1               |
| 8  | Terminal screw*            | see Table 8*  | 12              | 16              |

Note: Terminal screw see Table 8 Wiring Copper Bar Thickness and Screw Length.

## 12. Circuit Breaker Notes

1) Various characteristics and accessories of the circuit breaker are set in the factory. The circuit

breaker, tripping unit or other accessories can only be adjusted, installed and maintained by the trained or qualified professionals according to the parameter requirements of the line design;

- 2) Ensure that the power supply is off before installing or removing any device;
- 3) The circuit breaker handle can be located in three positions, indicating three states: on, off and free tripping. When the handle is in the free tripping position, pull the handle in the off direction when the circuit breaker is connected and on.