

Shanghai Liangxin Electrical Co., Ltd.

# NDM3-630 Product Specification

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

|                  |     |      |            |
|------------------|-----|------|------------|
| Prepared by      | 杨荣荣 | Date | 2025-02-24 |
| Reviewed by      | 张健  | Date | 2025-02-24 |
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| Approved by      | 丁飞  | Date | 2025-02-25 |

| Revision History |                                                                                |                         |                  |                 |                 |
|------------------|--------------------------------------------------------------------------------|-------------------------|------------------|-----------------|-----------------|
| Version          | Revision Reason/Content                                                        | Implementati<br>on Date | Prepared<br>by   | Reviewed<br>by  | Approve<br>d by |
| 0                | Newly added                                                                    | 5/8/2020                | Wang Hu          | Peng<br>Haorang | Hu Qi           |
| 1                | Update the product appearance picture<br>and product dimension outline drawing | 30/9/2021               | Sun<br>Lanping   | Chen<br>Xinming | Ding<br>Fei     |
| 2                | Add attachment information                                                     | 09/06/2022              | Yang<br>rongrong | Chen<br>Xinming | Ding<br>Fei     |
| 3                | Add IP65                                                                       | 09/03/2023              | Yang<br>rongrong | Chen<br>Xinming | Ding<br>Fei     |
| 3                | Logo change                                                                    | 2025.02.24              | Yang<br>rongrong | Zhang<br>jian   | Ding fei        |
|                  |                                                                                |                         |                  |                 |                 |
|                  |                                                                                |                         |                  |                 |                 |
|                  |                                                                                |                         |                  |                 |                 |
|                  |                                                                                |                         |                  |                 |                 |
|                  |                                                                                |                         |                  |                 |                 |
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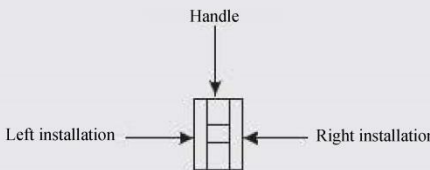
### 3. Specification and Model Description of Circuit Breaker

|    |                                              |         |                                                                                                  |   |   |   |   |    |    |    |    |    |    |    |  |
|----|----------------------------------------------|---------|--------------------------------------------------------------------------------------------------|---|---|---|---|----|----|----|----|----|----|----|--|
| ND | M                                            | 3 - 630 |                                                                                                  |   | / |   |   |    |    |    |    |    |    |    |  |
| 1  | 2                                            | 3 4     | 5                                                                                                | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |  |
| 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                            |         | 630                                                                                              |   |   |   |   |    |    |    |    |    |    |    |  |
| 5  | Breaking capacity level                      |         | C: Basic type                                                                                    |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | L: Standard type                                                                                 |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | M: Relatively high breaking type                                                                 |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | H: 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 |         | A: The N-pole isn't installed with an overcurrent release, but always connected                  |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | 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 | Special use                                  |         | Q: Voltage-check self-reset                                                                      |   |   |   |   |    |    |    |    |    |    |    |  |
| 13 | Special function code                        |         | I: Non-tripping at the time of alarming                                                          |   |   |   |   |    |    |    |    |    |    |    |  |
| 14 | Rated current                                |         | See Table 2                                                                                      |   |   |   |   |    |    |    |    |    |    |    |  |
| 15 | Cabling type                                 |         | No code: Normal product                                                                          |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | P: Connection busbar                                                                             |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | Z1: Rear-plate connection                                                                        |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | Z3H: Integrated plug-in rear-plate connection                                                    |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | Z3Q: Integrated plug-in front-plate connection                                                   |   |   |   |   |    |    |    |    |    |    |    |  |
| 16 | Other code                                   |         | CS1-A/150: Circular center hole rotary handle + shaft length 150mm                               |   |   |   |   |    |    |    |    |    |    |    |  |
|    |                                              |         | CS1-A/200: Circular center hole rotary handle + shaft length 200mm                               |   |   |   |   |    |    |    |    |    |    |    |  |

|  |                                                                               |
|--|-------------------------------------------------------------------------------|
|  | CS1-A/300: Circular center hole rotary handle + shaft length 300mm            |
|  | CS1-A/350: Circular center hole rotary handle + shaft length 350mm            |
|  | CS1-A/650: Circular center hole rotary handle + shaft length 650mm            |
|  | CS1-F/150: Square center hole rotary handle + shaft length 150mm              |
|  | CS1-F/200: Square center hole rotary handle + shaft length 200mm              |
|  | CS1-F/300: Square center hole rotary handle + shaft length 300mm              |
|  | CS1-F/350: Square center hole rotary handle + shaft length 350mm              |
|  | CS1-F/650: Square center hole rotary handle + shaft length 650mm              |
|  | 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         |
|  | CS2-F/150: Square eccentric hole rotary handle + shaft length 150mm           |
|  | CS2-F/200: Square eccentric hole rotary handle + shaft length 200mm           |
|  | CS2-F/300: Square eccentric hole rotary handle + shaft length 300mm           |
|  | CS2-F/350: Square eccentric hole rotary handle + shaft length 350mm           |
|  | CS2-F/650: Square eccentric hole rotary handle + shaft length 650mm           |
|  | CS1-IP65/150: IP65 Circular eccentric hole rotary handle + shaft length 150mm |
|  | CS1-IP65/200: IP65 Circular eccentric hole rotary handle + shaft length 200mm |
|  | CS1-IP65/300: IP65 Circular eccentric hole rotary handle + shaft length 300mm |
|  | CS1-IP65/350: IP65 Circular eccentric hole rotary handle + shaft length 350mm |
|  | CS1-IP65/650: IP65 Circular eccentric hole rotary handle + shaft length 650mm |
|  | CS2-IP65/150: IP65 Square eccentric hole rotary handle + shaft length 150mm   |
|  | CS2-IP65/200: IP65 Square eccentric hole rotary handle + shaft length 200mm   |
|  | CS2-IP65/300: IP65 Square eccentric hole rotary handle + shaft length 300mm   |
|  | CS2-IP65/350: IP65 Square eccentric hole rotary handle + shaft length 350mm   |
|  | CS2-IP65/650: IP65 Square eccentric hole rotary handle + shaft length 650mm   |
|  | DC1 24V:Electric operation voltage DC24V                                      |

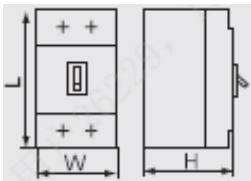
|  |  |                                                                           |
|--|--|---------------------------------------------------------------------------|
|  |  | DC1 110V: Electric operation voltage AC/DC110V                            |
|  |  | DC1 220V: Electric operation voltage AC230V/DC220V                        |
|  |  | DC1 380V: Electric operation voltage AC380/400/415V                       |
|  |  | DC24V: Shunt release operation voltage DC24V                              |
|  |  | DC220V: Shunt release operation voltage DC220V                            |
|  |  | AC380V: Shunt release/ Under-voltage release operation voltage AC380/400V |
|  |  | AC230V: Shunt release/ Under-voltage release operation voltage AC220/230V |
|  |  | Z: Terminal housing                                                       |
|  |  | J: Mechanical interlocking                                                |
|  |  | S: Heating handle                                                         |
|  |  | MS2: MS2 lock                                                             |

Table 1: Comparison Table of Accessory Code:

| <div>  </div> |                                                  |          | <div> <p>Legend</p> <ul style="list-style-type: none"> <li> Single auxiliary contact</li> <li> Dual-auxiliary contact</li> <li> Alarm contact</li> <li> Shunt release</li> <li> Under-voltage release</li> <li> Auxiliary alarm contact (a single accessory features the auxiliary and alarm functions)</li> </ul> </div> |                                                                                     |
|------------------------------------------------------------------------------------------------|--------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Accessory code                                                                                 | Accessory name                                   | Model    | Number of poles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |
|                                                                                                |                                                  |          | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4                                                                                   |
| 00                                                                                             | N/A                                              | NDM3-630 | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | —                                                                                   |
| 10                                                                                             | Shunt release                                    |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |
| 20                                                                                             | Dual-auxiliary contact                           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |
| 21                                                                                             | Single auxiliary contact                         |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |
| 30                                                                                             | Under-voltage release                            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |
| 40                                                                                             | Shunt release, dual-auxiliary contact            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 41                                                                                             | Shunt release, single auxiliary contact          |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 50                                                                                             | Shunt release, under-voltage release             |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 60                                                                                             | Two sets of dual-auxiliary contacts              |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 61                                                                                             | Two sets of single auxiliary contacts            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 62                                                                                             | Dual-auxiliary contact, single auxiliary contact |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 70                                                                                             | Under-voltage release, dual-auxiliary contact    |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 71                                                                                             | Under-voltage release, single auxiliary contact  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 08                                                                                             | Alarm contact                                    |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 18                                                                                             | Shunt release, alarm contact                     |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 28                                                                                             | Dual-auxiliary contact, alarm contact            |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 38                                                                                             | Under-voltage release, alarm contact             |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 48                                                                                             | Shunt release, auxiliary alarm contact           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 58                                                                                             | Auxiliary alarm contact                          |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 68                                                                                             | Dual-auxiliary contact, auxiliary alarm contact  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 78                                                                                             | Under-voltage release, auxiliary alarm contact   |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |

#### 4. Main Technical Parameters of Circuit Breaker

Table 2 Main Technical Parameters of Circuit Breaker

|                                                          |                                                                                     |                |                           |     |                        |       |     |       |
|----------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|---------------------------|-----|------------------------|-------|-----|-------|
| Model                                                    |                                                                                     |                | NDM3-630                  |     |                        |       |     |       |
| Rated current of frame Inm (A)                           |                                                                                     |                | 630                       |     |                        |       |     |       |
| Rated current In (A)                                     |                                                                                     |                | 400, 500, 630             |     |                        |       |     |       |
| Rated insulation voltage Ui (AC V)                       |                                                                                     |                | 1000                      |     |                        |       |     |       |
| Rated impulse withstand voltage Uimp (V)                 |                                                                                     |                | 8000                      |     |                        |       |     |       |
| Rated working voltage Ue (AC V)                          |                                                                                     |                | 380/400/415, 500, 660/690 |     |                        |       |     |       |
| Power frequency withstand voltage U (1min) (V)           |                                                                                     |                | 3500                      |     |                        |       |     |       |
| Utilization category                                     |                                                                                     |                | A                         |     |                        |       |     |       |
| Number of poles                                          |                                                                                     |                | 3                         |     |                        |       | 4   |       |
| Breaking capacity level                                  |                                                                                     |                | C                         | L   | M                      | H     | /   |       |
| Rated limit short-circuit breaking capacity Icu (kA)     |                                                                                     | AC380/400/415V | 36                        | 50  | 70                     | 100   | 70  |       |
|                                                          |                                                                                     | AC500V         | /                         | /   | 30                     | /     | 30  |       |
|                                                          |                                                                                     | AC660/690V     | /                         | /   | 20                     | /     | 20  |       |
| Rated operating short-circuit breaking capacity Ics (kA) |                                                                                     | AC380/400/415V | 36                        | 50  | 70                     | 75    | 70  |       |
|                                                          |                                                                                     | AC500V         | /                         | /   | 30                     | /     | 30  |       |
|                                                          |                                                                                     | AC660/690V     | /                         | /   | 15                     | /     | 15  |       |
| Operating performance (times)                            | Electrical life                                                                     |                | 7500                      |     |                        |       |     |       |
|                                                          |                                                                                     |                | Mechanical life           |     | Maintainable free life |       |     | 10000 |
|                                                          |                                                                                     |                | Maintainable life         |     |                        | 20000 |     |       |
| Boundary dimension                                       |  |                | L(mm)                     | 270 | 270                    | 270   | 270 | 270   |
|                                                          |                                                                                     |                | W(mm)                     | 182 | 182                    | 182   | 182 | 240   |
|                                                          |                                                                                     |                | H(mm)                     | 111 | 111                    | 111   | 111 | 111   |
| 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 NDM3-630 Connecting Bus or Cable Cross-section Area

| Rated current (A) | Cable section |                                       | Copper bar size |                                       |
|-------------------|---------------|---------------------------------------|-----------------|---------------------------------------|
|                   | Quantity      | Cross-section area (mm <sup>2</sup> ) | Quantity        | Cross-section area (mm <sup>2</sup> ) |
| 400               | 1             | 240                                   | /               | /                                     |
| 500               | 2             | 150                                   | 2               | 30×5                                  |
| 630               | 2             | 185                                   | 2               | 40×5                                  |

#### 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) |
|----------|----------------------|--------------|
| NDM3-630 | M12                  | 28           |
|          | M6                   | 6            |

#### 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 |    |       |       |       |       |       |       |
|----------|-----------------------------------------------|----|-------|-------|-------|-------|-------|-------|
| NDM3-630 | Temperature (°C)                              | 40 | 45    | 50    | 55    | 60    | 65    | 70    |
|          | Derating factor                               | 1  | 0.979 | 0.958 | 0.937 | 0.915 | 0.893 | 0.871 |

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

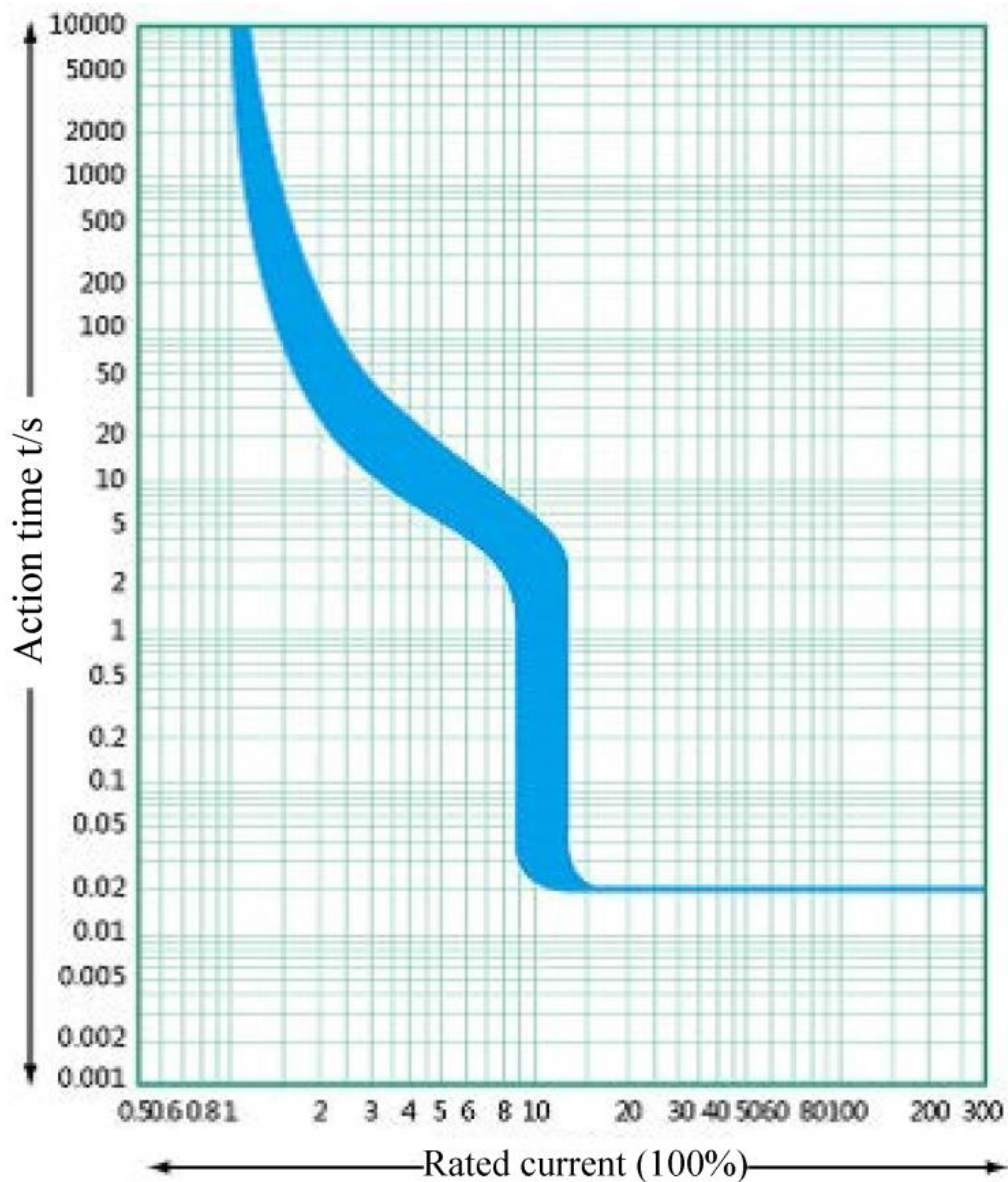
Table 7 Power loss coefficient table of circuit breaker

| Model                                             | Energizing current(A) | Total power loss(W)           |                           |
|---------------------------------------------------|-----------------------|-------------------------------|---------------------------|
|                                                   |                       | Wiring before and after board | Plug in bear board wiring |
| NDM3-630 (C/L/M/H)<br>Mesothermal type (400-630A) | 630                   | 187                           | 200                       |

### 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) Its relative humidity at an ambient temperature of  $+40^{\circ}\text{C}$  should not exceed 50%. A higher relative humidity is allowed at a lower temperature. For example, the relative humidity at  $20^{\circ}\text{C}$  can reach 90%; for frost due to temperature change, the corresponding measures should be taken;
- 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.

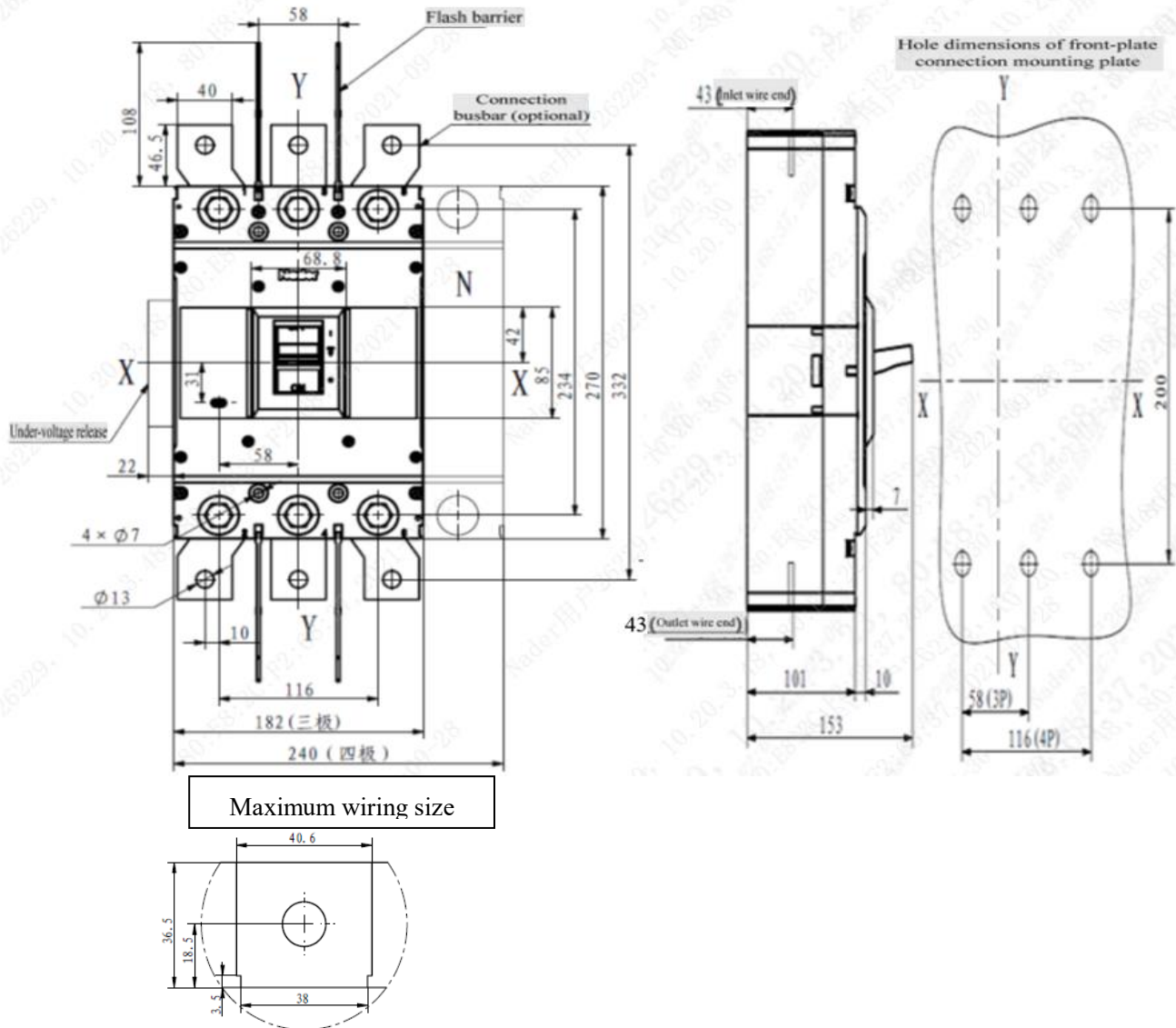
## 6. Short-circuit Overload Protection Characteristic Curve of Circuit Breaker



Time/Current Characteristic Curve

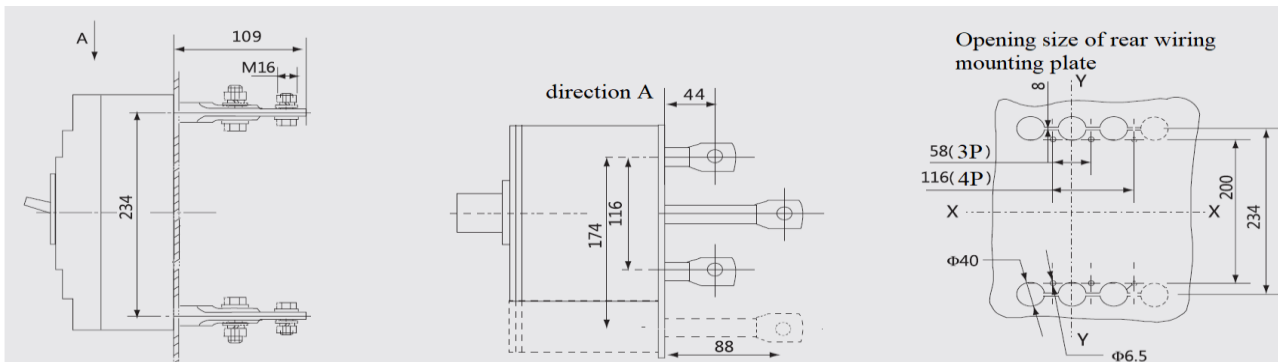
## 7. Outline and Mounting Hole Dimensions of Circuit Breaker

### 7.1 Outline and mounting hole dimensions of circuit breaker



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

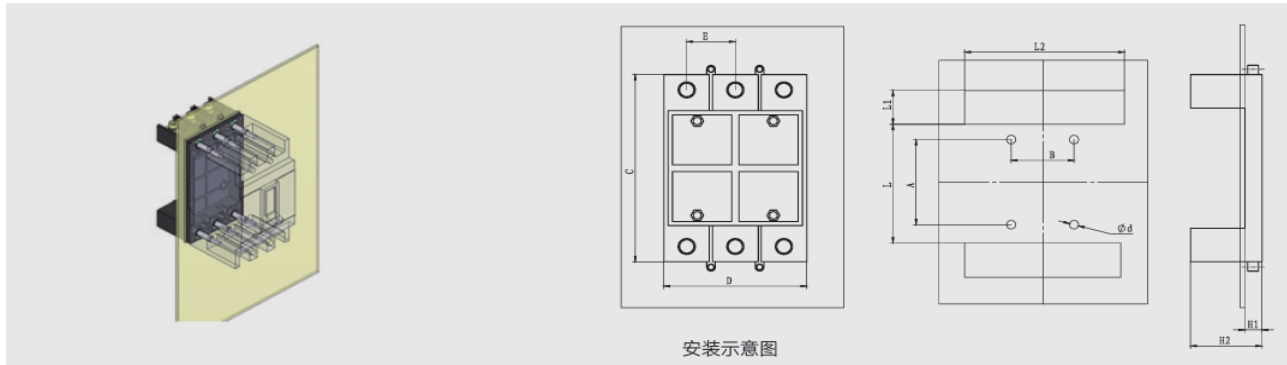
### 7.2 Rear plate installation (Unit: mm)



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

### 7.3 Z3H: 3P、4P Plug-in front-plate connection

#### 7.3.1 Integrated plug-in rear-plate connection



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

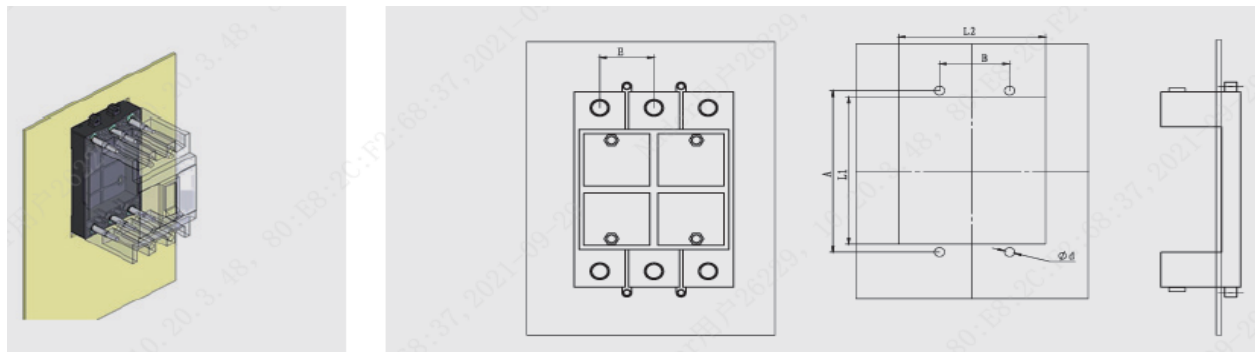
| Model    | A   | B  | L   | L1 | L2  | d | C   | D   | E  | H1 | H2 |
|----------|-----|----|-----|----|-----|---|-----|-----|----|----|----|
| NDM3-400 | 140 | 96 | 182 | 70 | 150 | 7 | 274 | 148 | 48 | 37 | 85 |

Note 1: When the product is 4-pole, the distance E increases for dimension D

Note 2: When the product is 4-pole, dimension B remains unchanged, Increase the distance E in the L2 direction by increasing the N phase direction;

Note3: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

#### 7.3.2 Installation after large opening plate

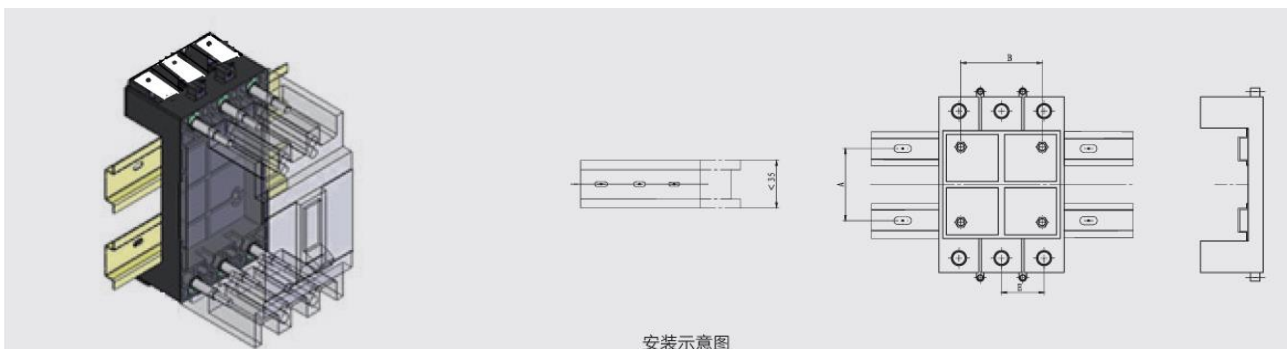


| Model    | A   | B  | L1  | L2  | d | E  |
|----------|-----|----|-----|-----|---|----|
| NDM3-630 | 316 | 58 | 302 | 176 | 6 | 58 |

Note 1: When the product is 4-pole, dimension B、L2 increases the distance E;

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

#### 7.3.3 Installation of rack type boards after installation

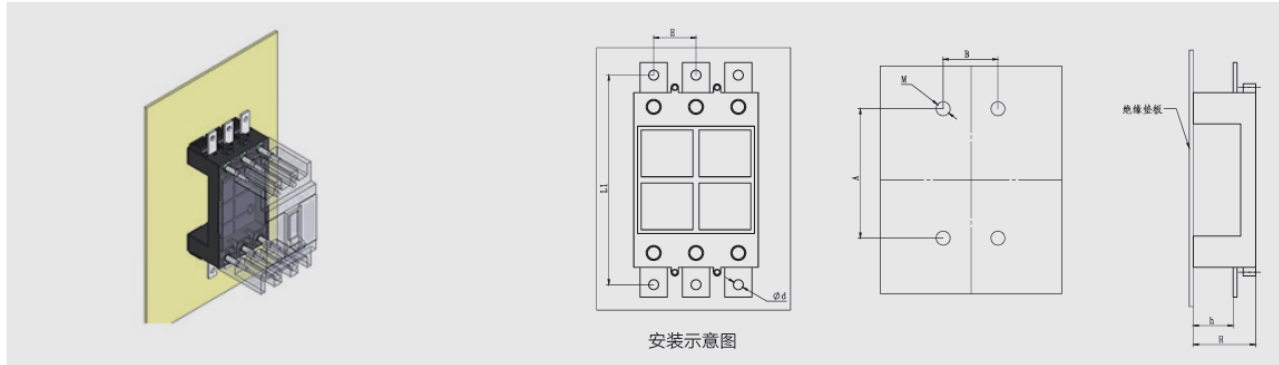


| Model    | A   | B  | E  |
|----------|-----|----|----|
| NDM3-400 | 140 | 96 | 48 |

Note1: When the product is 4-pole, dimension B increases the distance E

Note2: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

#### 7.4 Z3Q: 3P、4P Plug-in rear-plate connection

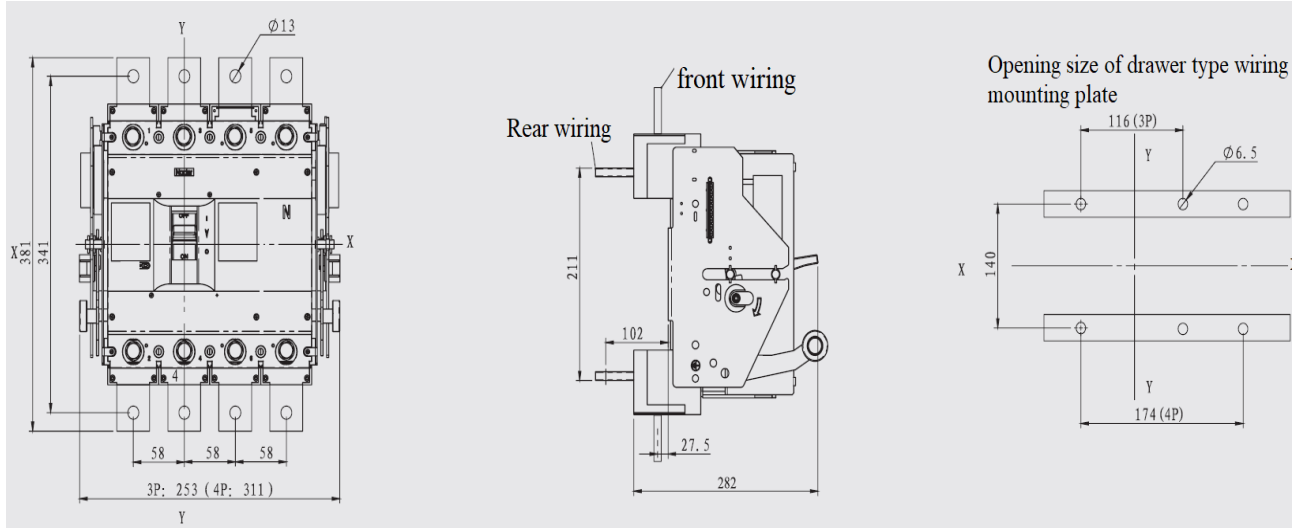


| Model    | A   | B  | L1  | E  | d    | M  | H  | h  |
|----------|-----|----|-----|----|------|----|----|----|
| NDM3-400 | 244 | 48 | 326 | 48 | 10.5 | M5 | 85 | 36 |

Warning: Insulation pads must be used for installation in front of the board;

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

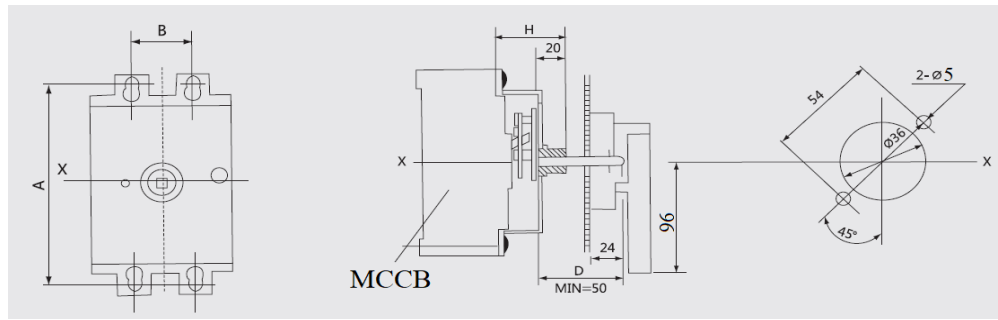
#### 7.5 Drawer type wiring (Unit: mm)



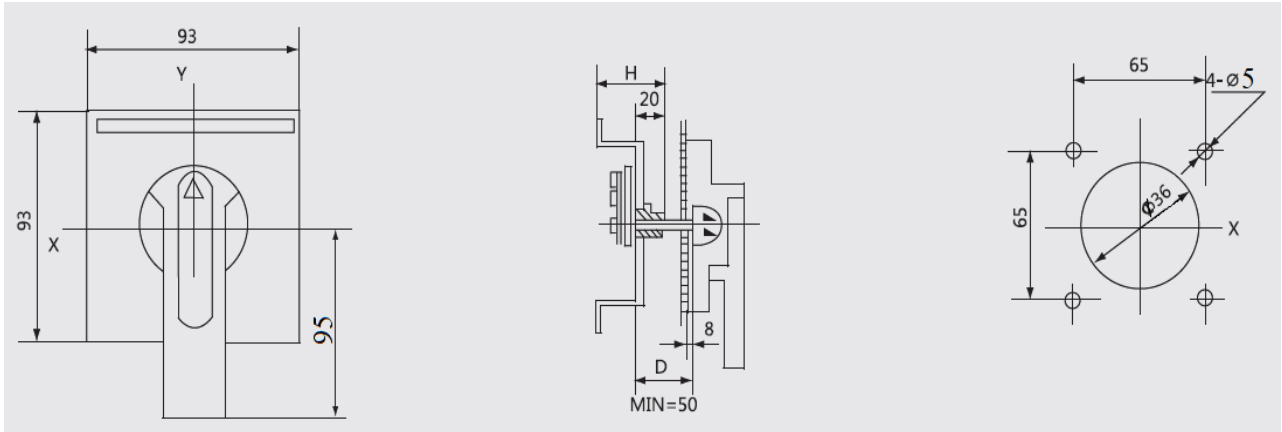
Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

#### 7.6 Manual operating mechanism

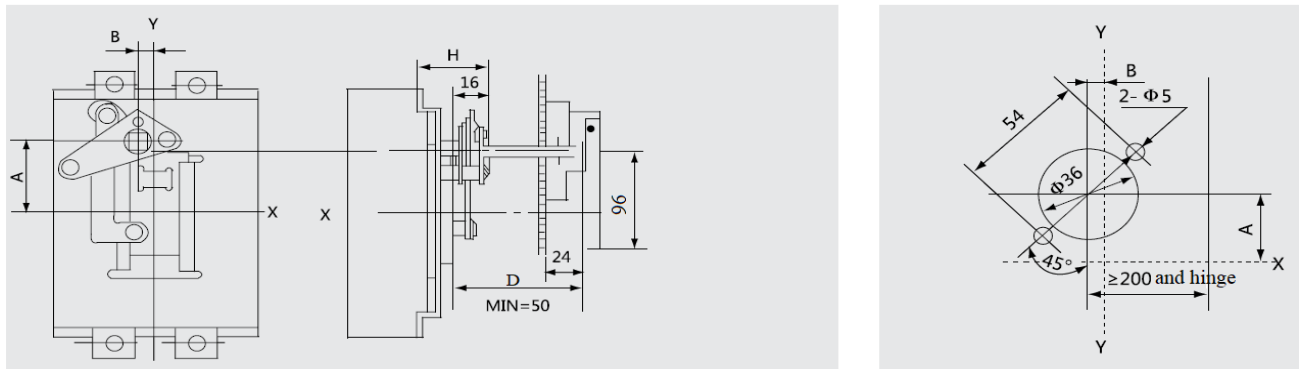
##### 7.6.1 Manual operating mechanism and CS1-A handle



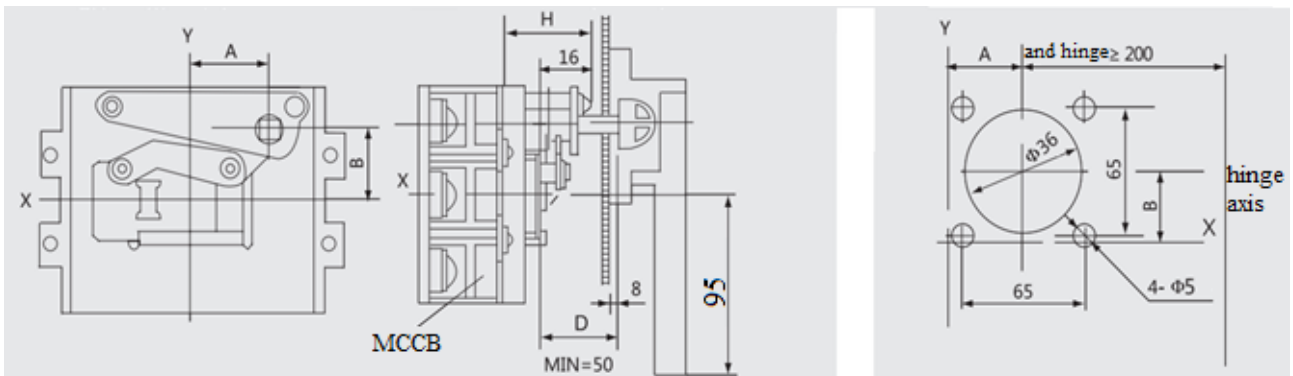
7.6.2 Manual operating mechanism and CS1-F handle



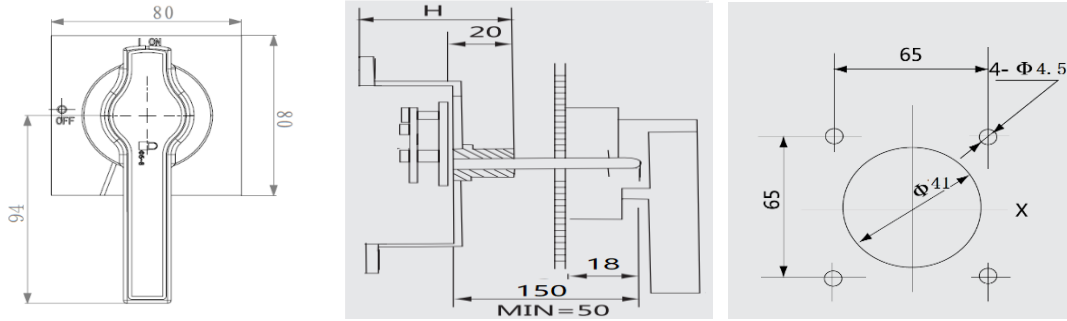
7.6.3 Manual operating mechanism and CS2-A handle



7.6.4 Manual operating mechanism and CS2-F handle



7.6.5 Manual operating mechanism and CS1-IP65 handle



### 7.6.6 Manual operating mechanism and CS2-IP65 handle

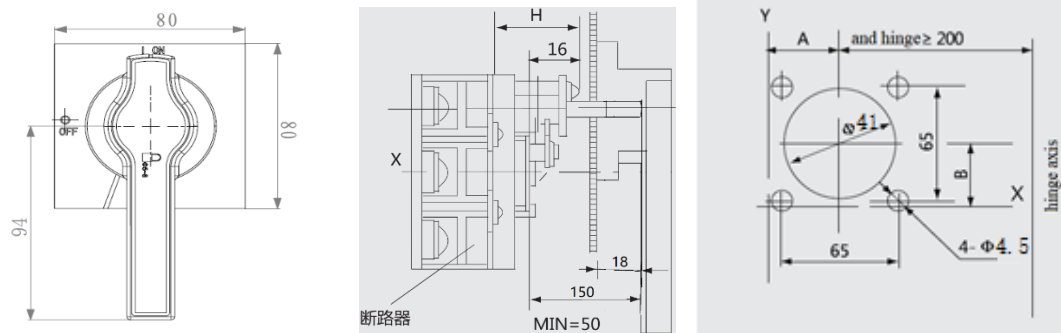


Table 8 Installation dimension of manual operating mechanism (Unit: mm)

| Manual operation type | Model    | Installation dimension of manual operating mechanism |      |     |     | Installation mode     |
|-----------------------|----------|------------------------------------------------------|------|-----|-----|-----------------------|
|                       |          | H                                                    | A    | B   |     |                       |
|                       |          |                                                      |      | 3P  | 4P  |                       |
| CS1                   | NDM3-630 | 84                                                   | 200  | 171 | 229 | Vertical installation |
| CS2                   | NDM3-630 | 61                                                   | 67.5 | 15  |     |                       |

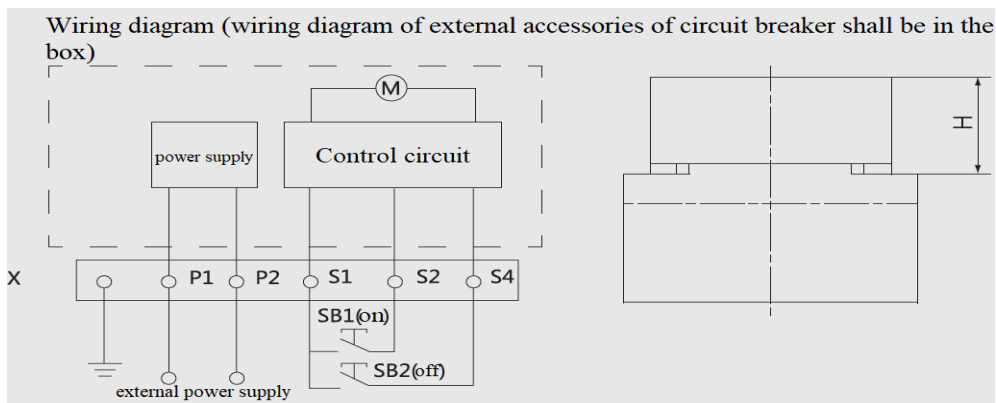
Note: 1) A type is round handle, F type is square handle;

2) The length of A-type handle is 96mm and that of F-type handle is 95mm;

3) The D dimension in the drawing is 150mm by default, and the customizable length is 200 / 300 / 350 / 650mm;

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

## 7.7 Electric operating mechanism



Symbol description: SB1、SB2: Operation button (provided by the customer)

X: Terminal block P1、P2: External power supply

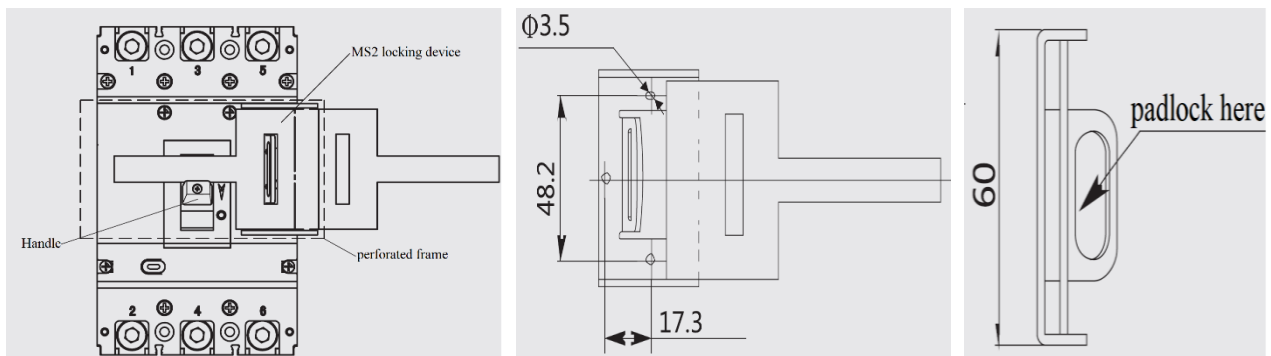
Voltage specification: AC110V、AC220V、AC400V、DC24V、DC110V、DC220V

Table 9 Main technical parameters of electric operating mechanism

| Equipped with circuit breaker | Electric power(W) |           |        |       | service life / time | Operating mechanism height H(mm) |
|-------------------------------|-------------------|-----------|--------|-------|---------------------|----------------------------------|
|                               | AC/DC220V         | AC/DC110V | AC380V | DC24V |                     |                                  |
| NDM3-630                      | 350               | 250       | 600    | 160   | 10000               | 147                              |

## 7.8 MS2 locking device

MS2 is a split locking device (i.e. the device is installed on the left or right side of the circuit breaker cover, and the default is installed on the right side if there are no special requirements). It is used for NDM3 series products to prevent manual closing and opening (the dotted line part is the circuit breaker part).



Installation diagram of MS2 lock mechanism (Unit: mm)

Note 1: After MS2 accessories are selected, other internal and external accessories cannot be installed on the same side;

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

## 7.9 Mechanical interlocking

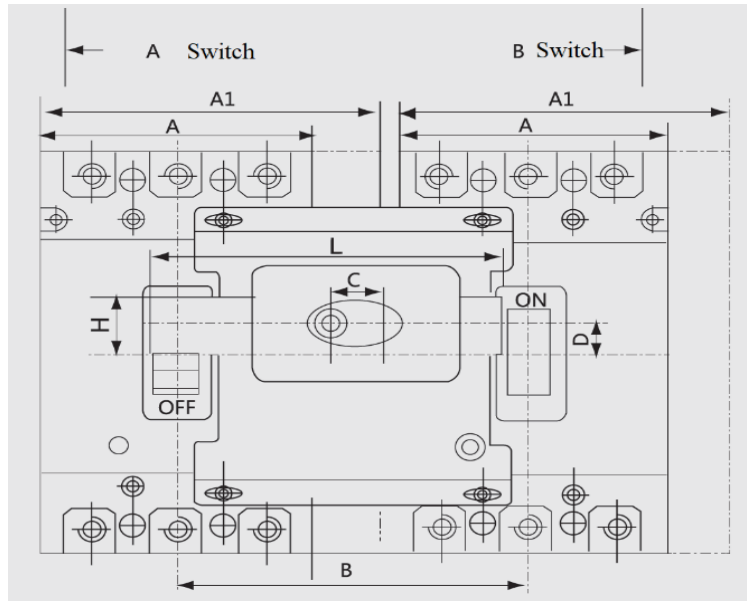


Table 10 Installation dimension of mechanical interlocking (Unit: mm)

| Model         | A   | A1  | B   | C  | D | L   | H  |
|---------------|-----|-----|-----|----|---|-----|----|
| NDM3-630      | 182 | /   | 234 | 58 | 8 | 240 | 30 |
| NDM3-630 (4P) | /   | 240 | 292 | 58 | 8 | 310 | 30 |

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

#### 7.10 Safe mounting distance of circuit breaker

Table 11 Insulation Distance Mounted in the Metal Cabinet (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 |                                            |                                         |
| NDM3-630          | 25                                     | 120                      | 35                                         | 35                                      |

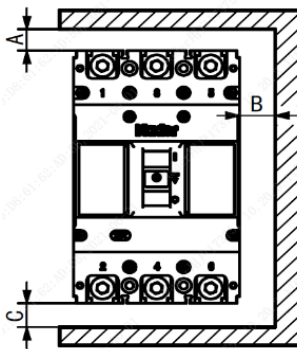


Table 12 Minimum Center Distance between Rowed Circuit Breakers (Unit: mm)

| Model | Width of circuit breaker |         | I Center distance |         |
|-------|--------------------------|---------|-------------------|---------|
|       | 3 poles                  | 4 poles | 3 poles           | 4 poles |

|          |     |     |     |     |
|----------|-----|-----|-----|-----|
| NDM3-630 | 182 | 240 | 222 | 280 |
|----------|-----|-----|-----|-----|

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.

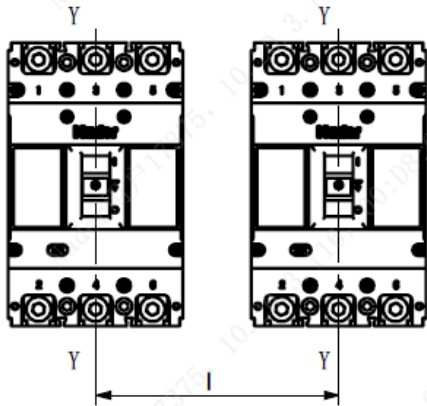


Table 13 Minimum Distance between Stacked Circuit Breakers (Unit: mm)

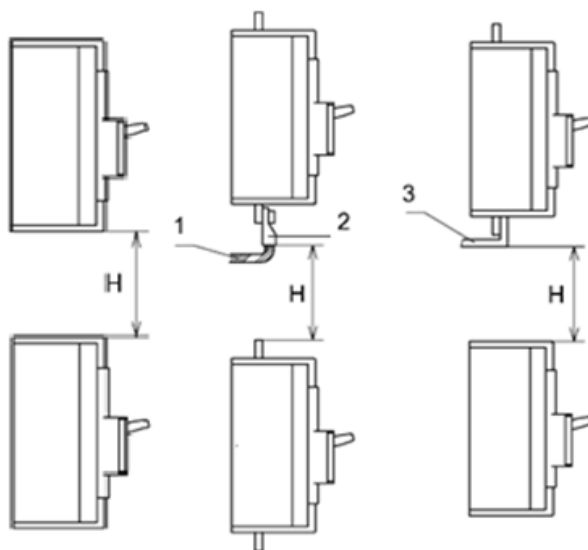
| Model    | H (distance of circuit breaker from bottom) |                          |
|----------|---------------------------------------------|--------------------------|
|          | With a terminal cover                       | Without a terminal cover |
| NDM3-630 | 155                                         | 155                      |

Note: 1) Insulated cable

2) Cable terminal

3) Connection without insulation

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



## 8、 Attachment 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 14 Voltage Specifications and Power Consumption of Under-voltage Release

| Model    | Instantaneous current value(A) |        | Power waste (W)           |        |                            |        |
|----------|--------------------------------|--------|---------------------------|--------|----------------------------|--------|
|          |                                |        | Pull in power consumption |        | maintain power consumption |        |
|          | AC230V                         | AC380V | AC230V                    | AC380V | AC230V                     | AC380V |
| NDM3-630 | 0.8                            | 0.5    | 190                       | 223    | 0.8                        | 0.9    |

Note: The under-voltage release must be energized before the circuit breaker can be switched on and closed again, otherwise the circuit breaker will be damaged。

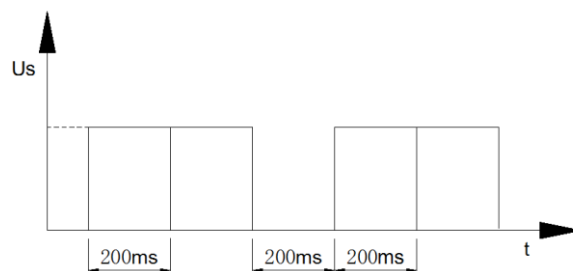
## 8.2 Shunt release

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 15 Voltage Specifications and Power Consumption of shunt release

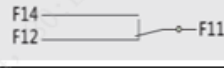
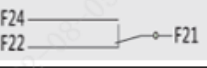
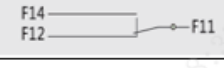
| Model    | Shunt release                  | DC24V | AC230V | DC220V | AC380V |
|----------|--------------------------------|-------|--------|--------|--------|
| NDM3-630 | Instantaneous current value(A) | 6.8   | 0.76   | 0.48   | 0.28   |
|          | Power waste (W)                | 164.5 | 176.3  | 105    | 112    |

Note: The working principle of shunt release device: there is a coil inside the shunt release device, which can only work for a short time, and the shunt action is a single pulse action (it is recommended that the power supply time is greater than 200ms). Shunt trip power (received signal) to the product trip time is  $\leq 200\text{ms}$ , it is recommended to use 500ms-1s pulse power supply.



Working principle diagram of shunt trip device

## 8.3 Auxiliary contact

|                                                                    |                                         |                                                                                    |                                                                                     |
|--------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| The circuit breaker is in the "open" and "free tripping" positions | Dual-auxiliary contact                  |  |  |
|                                                                    | Single auxiliary contact                |  |                                                                                     |
| the circuit breaker is in the "close" position                     | "close" to "open"、" open " to " close " |                                                                                    |                                                                                     |

### 8.3.1 Current parameters of auxiliary contact

Table 16 Current parameters of auxiliary contact

| Category                                | Frame current (A) | Conventional thermal current Ith (A) | Rated working current Ie(A) |               |
|-----------------------------------------|-------------------|--------------------------------------|-----------------------------|---------------|
|                                         |                   |                                      | DC220V(DC-13)               | AC400V(AC-15) |
| Auxiliary contact                       | 630               | 3                                    | 0.15                        | 0.4           |
| Note :minimum applicable load: 5V, 1mA. |                   |                                      |                             |               |

### 8.3.2 Electrical life of auxiliary contact

Table 17 Electrical life of auxiliary contact

| Ues category | On   |      |      | Off  |      |      | Times | Frequency | Power on time |
|--------------|------|------|------|------|------|------|-------|-----------|---------------|
|              | I/Ie | U/Ue | cosφ | I/Ie | U/Ue | cosφ |       |           |               |
| AC-15        | 10   | 1    | 0.3  | 1    | 1    | 0.3  | 6050  | 360       | ≥0.05s        |
| DC-13        | 1    | 1    | 6Pe  | 1    | 1    | 6Pe  |       |           | ≥T0.95ms      |

### 8.3.3 Making and breaking capacity of auxiliary contact

Table 18 Making and breaking capacity of auxiliary contact

| Ues category | On   |      |      | Off  |      |      | Times | Frequency | Power on time |
|--------------|------|------|------|------|------|------|-------|-----------|---------------|
|              | I/Ie | U/Ue | cosφ | I/Ie | U/Ue | cosφ |       |           |               |
| AC-15        | 10   | 1.1  | 0.3  | 10   | 1.1  | 0.3  | 10    | 360       | ≥0.05s        |
| DC-13        | 1.1  | 1.1  | 6Pe  | 1.1  | 1.1  | 6Pe  |       |           | ≥T0.95ms      |

### 8.4 Alarm contact

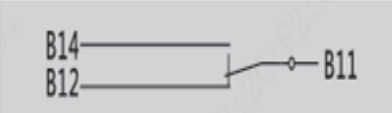
|                                                                   |                                                                                      |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| The circuit breaker is in the position of "opening" and "closing" |  |
| The circuit breaker is in the position of "free tripping"         |  |

Table 19 Current parameters of alarm contact

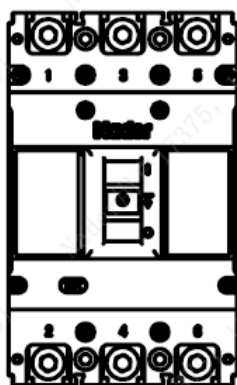
| Category      | Frame current (A) | Conventional thermal current Ith(A) | Rated working current Ie(A) |        |
|---------------|-------------------|-------------------------------------|-----------------------------|--------|
|               |                   |                                     | DC220V                      | AC400V |
| Alarm contact | 630               | 3                                   | 0.15                        | 0.4    |

Note: Shunt release, auxiliary contact and alarm contact wiring standard wire length is 0.7m, 1m、2m、4m can be customized according to demand 。

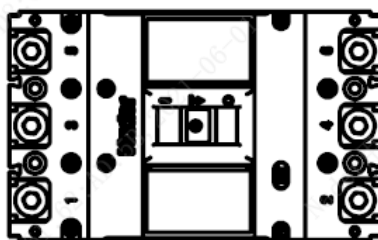
## 9. Installation Direction of Circuit Breaker

For vertical installation of the product, the gradient between the installation surface and the vertical plane is no more than  $\pm 22.5^\circ$ .

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. Installation Direction of Circuit Breaker

| SN | Name                       | Specification | 3P Quantity/Set | 4P Quantity/Set |
|----|----------------------------|---------------|-----------------|-----------------|
| 1  | Cross small pan-head screw | M6×75         | 4               | 4               |
| 2  | Hexagon nut                | M6            | 4               | 4               |
| 3  | Plain washer               | 6             | 4               | 6               |

|   |                               |        |   |   |
|---|-------------------------------|--------|---|---|
| 4 | Phase partition               | ——     | 4 | 8 |
| 5 | Hexagon head combination bolt | M12×35 | 6 | 8 |

## 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.