

## Product Specification of NDM2L-125

Product Name:Residual Current Breaker  
with Overload

Product Model:NDM2L-125

# 1 Purpose

NDM2L-125 molded case leakage circuit breaker product specifications, in order to clarify the content and scope of product development, to provide the basis for the follow-up project plan

# 2 Range

This specification applies to NDM2L-125 molded case leakage circuit breaker body and related accessories

# 3 Terminology

| 术语          | 描述                                                                                                                                                                                            |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type AC CBR | The residual sinusoidal alternating current of the non-DC component, whether applied suddenly or slowly, is guaranteed to trip the CBR                                                        |
| Type A CBR  | The residual sine current and the residual pulsating direct current (with / without the superposition of the DC component) that are suddenly applied or slowly raised can ensure that the CBR |

# 4 Reference

| NO | 文档名称                                                                 |
|----|----------------------------------------------------------------------|
| 1  | P12001-NDM2L-125/250/400/630 MCCB Product package requirements table |
| 2  | P12001-NDM2L-125-630 MCCB Conceptual scheme                          |

# 5 Basic Require

## 5.1 Application Range

NDM2L series molded case leakage circuit breaker, the rated insulation voltage of 1000V, for AC 50Hz or 60Hz, rated working voltage 380V / 400V / 415V, do not frequent conversion and the motor is not frequent use. Circuit breakers with overload, short circuit and undervoltage protection, to protect the line and power equipment from damage. AC-type leakage circuit breakers, to ensure that they are tripped with the remaining sinusoidal alternating current of the DC component without any sudden or slow rise. Type A leakage circuit breakers are guaranteed to be tripped with respect to the residual sinusoidal current and the residual pulsating direct current (with or without specified superposed DC component) that is suddenly applied or slowly raised.

NDM2L-125 products, with A and AC-type leakage protection, 3P breaking capacity M, H-type, 4P breaking capacity with the M-type.

NDM2L series of leakage circuit breakers, product structure requirements are integrated structure with leakage alarm does not trip function.

## 5.2 Specification Type



ND M 2 L -        /       /               

1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16

| No. | Implication                                             | NDM2L                                                |
|-----|---------------------------------------------------------|------------------------------------------------------|
| 1   | Brand Code                                              | ND Nader 牌低压电器                                       |
| 2   | Product Code                                            | M                                                    |
| 3   | Design Code                                             | 2                                                    |
| 4   | Derivation code                                         | L: Electric leakage protection function              |
| 5   | Frame size                                              | 125                                                  |
| 6   | Grade of rated ultimate short circuit breaking capacity | Type M                                               |
|     |                                                         | Type H                                               |
|     |                                                         | 4P: No code                                          |
| 7   | Operation method                                        | No code: Direct handle operation                     |
|     |                                                         | P: Motor operation                                   |
|     |                                                         | Z: Rotary handle operation                           |
| 8   | The Tripped type of residual current                    | No code: AC type residual current protective device; |
|     |                                                         | A: A type residual current protective device.        |
| 9   | Type of time delay                                      | No delay: X                                          |
|     |                                                         | Delay: Y                                             |
| 10  | The Tripped type of residual current                    | Type V                                               |
| 11  | Trip unit                                               | 3: Thermal magnetic                                  |
| 12  | Number of poles                                         | 3、4                                                  |
| 13  | Accessory Code                                          | Details in Page 14: Accessory Require                |

|    |                                     |                                                                                                                                                                                                                                       |
|----|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | Application                         | No code: Power distribution                                                                                                                                                                                                           |
| 15 | N-pole type of four pole production | A: N-pole is always close without overload release<br>B: N-pole is open or close together with other three poles and without overload release<br>C: N-pole is open or close together with other three poles and with overload release |
| 16 | Rated current (In)                  | 16/20/25/32/40/50/63/80/100/125                                                                                                                                                                                                       |

## 5.3 Working Environment

| Environment         | Details            |
|---------------------|--------------------|
| Working Temperature | -35~70℃            |
| Altitude            | ≤2000m             |
| Pollution level     | III                |
| Salt fog level      | Satisfied 48 hours |

## 6 Fuction Require

### 6.1 Rated Residual Operating Current

NDM2L-125 Type A 和 AC Electric leakage protection funtion

| Function                                        |                | Residual Operating V     |   |
|-------------------------------------------------|----------------|--------------------------|---|
| Residual Type                                   |                | AC                       | A |
| Current                                         | Non-Delay<br>X | 30mA、100mA、300mA、500mA   |   |
|                                                 | Delay Y        | 100mA、300mA、500mA        |   |
| Rated residual non-operating current            |                | $1/2 \cdot I_{\Delta n}$ |   |
| Rated residual current making/breaking capacity |                | $1/4 \cdot I_{cu}$       |   |

### 6.2 Rated Residual Operating Time

| Residual Current |                                          | $I_{\Delta n}$ | $2 \cdot I_{\Delta n}$ | $5 \cdot I_{\Delta n}$ | $10 \cdot I_{\Delta n}$ |
|------------------|------------------------------------------|----------------|------------------------|------------------------|-------------------------|
| Non-Delay        | Max.Breaking Time (s)                    | 0.2            | 0.1                    | 0.04                   | 0.04                    |
| Delay            | Max.Breaking Time (s)                    | 0.5/1.15/2.15  | 0.35/1/2               | 0.25/0.9/1.9           | 0.25/0.9/1.9            |
|                  | Limiting non-driving time $\Delta t$ (s) | —              | 0.1/0.5/1              | —                      | —                       |

## 7 Technical Indicators

### 7.1 Standard Conformed

|                    |                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GB / T 2423.4-2008 | Environmental testing for electric and electronic products<br>Part 2: Test methods - Test Db: alternating hot and humid                                                  |
| GB/T 4207-2003     | Measurement of Electrical Traces and Resistance Tracing<br>Indexes of Solid Insulating Materials in Humid Conditions                                                     |
| GB14048.1-2006     | Low voltage switchgear and controlgear - Part 1: General (IEC<br>60947-1: 2001, MOD)                                                                                     |
| GB14048.2-2008     | Low voltage switchgear and controlgear - Part 2: Low - voltage<br>circuit - breakers (IEC 60947-2: 2006, IDT)                                                            |
| GB14048.5-2008     | Low voltage switchgear and controlgear - Part 5-1: Control<br>circuits Electrical and switching elements Electromechanical<br>control circuits (IEC 60947-5-1:2003, MOD) |
| GB/T 14092.3-2009  | Mechanical products Environmental conditions High altitude                                                                                                               |
| GB/T 19608.3-2004  | Classification of special environmental conditions Part 3:<br>Plateau                                                                                                    |
| GB/T 20645-2006    | Technical requirements for low - voltage electrical appliances<br>for high altitude in special environmental conditions                                                  |
| GB/T 20626.3-2006  | Special environmental conditions Plateau electronic products<br>Part 3 Protection of lightning foul condensation                                                         |
| JB/T 834-1999      | Technical requirements for tropical low - voltage electrical<br>appliances                                                                                               |

### 7.2 Technical Parameters

#### 7.2.1 Electrical Characteristics

NDM2L-125 Type A 和 AC Electric leakage protection MCCB

| Name                                        | Details                              |
|---------------------------------------------|--------------------------------------|
| Poles                                       | 3P/4P                                |
| Rated Current (A)                           | 16/20/25/32/40/50/63/80/100/125      |
| Rated Voltage (V)                           | 380/400/415                          |
| Rated insulation Voltage Ui(V)              | 1000                                 |
| Frame Size                                  | 125                                  |
| Rated ultimate breaking capacity<br>Icu(kA) | NDM2L-125M&4P:52.5kA NDM2L-125H:85kA |
| Rated operated breaking capacity            | NDM2L-125M&4P:35kA NDM2L-125H:50kA   |

|                               |                              |
|-------------------------------|------------------------------|
| Ics(kA)                       |                              |
| Operating cycles(times)       | Charged:8000 uncharged:20000 |
| Pollution level               | III                          |
| Rated insulation voltage Uimp | 8kV                          |

## 7.2.2 Cable Contents

**Note:** The default dimension for "D" is 150mm. It can be also customized.<sup>Note1</sup>

### ▼ Sectional Area of Connecting Bus and Cable

| Rated current (A)                                   | 10  | 16<br>20 | 25  | 32  | 40<br>50 | 63 | 80 | 100 | 125<br>140 | 160 | 180<br>200<br>225 | 250 | 315<br>350 | 400 |
|-----------------------------------------------------|-----|----------|-----|-----|----------|----|----|-----|------------|-----|-------------------|-----|------------|-----|
| Sectional Area of Connecting Wire(mm <sup>2</sup> ) | 1.5 | 2.5      | 4.0 | 6.0 | 10       | 16 | 25 | 35  | 50         | 70  | 95                | 120 | 185        | 240 |

### ▼ Selection of Cable

| Rated current (A) | Sectional Area of Cable |                                            | Dimension of Copper Bar |                              |
|-------------------|-------------------------|--------------------------------------------|-------------------------|------------------------------|
|                   | Quantity                | Sectional Area of Cable (mm <sup>2</sup> ) | Quantity                | Dimension (mm <sup>2</sup> ) |
| 500               | 2                       | 150                                        | 2                       | 30×5                         |
| 630               | 2                       | 185                                        | 2                       | 40×5                         |
| 700, 800          | 2                       | 240                                        | 2                       | 50×5 <sup>Note2</sup>        |

## 8 Constraint

NDM2L-125 development of type A and AC leakage circuit breaker two;  
Product structure as a whole.

Leakage function to increase leakage instructions, and NDM3L series of leakage circuit breaker consistent.

The above products are subject to the latest requirements of the company.

## 9 Special Require

### 9.1 Environment

Normal working environment:

▲ can withstand the impact of humid air, salt spray, oil mist.

▲ The maximum inclination is 22.5 °.

- ▲ in the absence of explosive media, and the media is not enough to corrode the metal and damage the insulation of the gas and conductive dust place.
- ▲ should be installed in the absence of rain and snow invasion of the place.

### 9.2 Electonmagnetic Compatibility

Meet the EMC performance requirements of GB14048.2

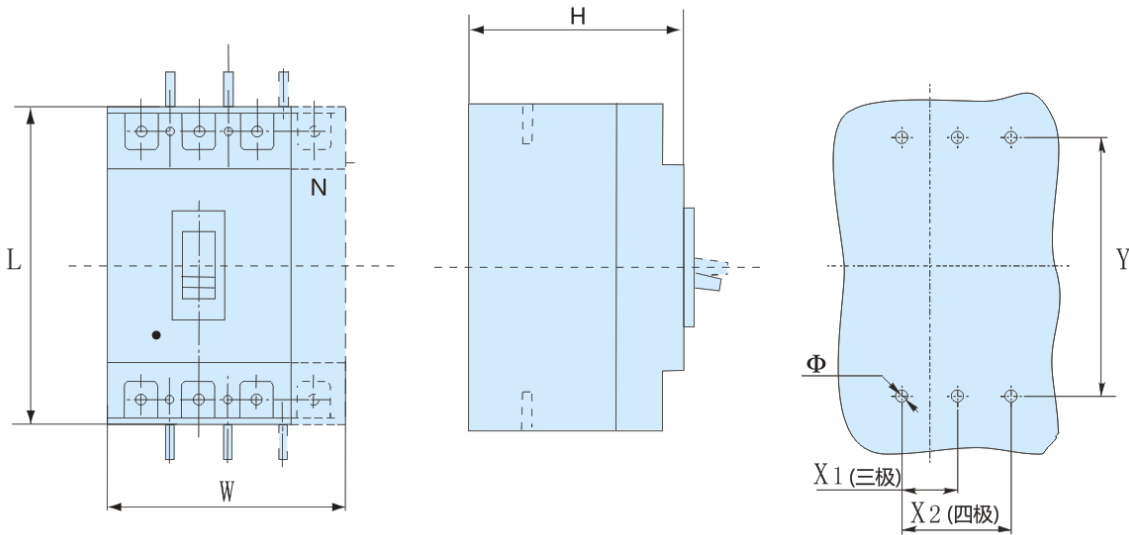
### 9.3 Protection

Protection class: IP20

## 10 External Interface

NDM2L series molded case leakage circuit breaker can increase the leakage alarm does not trip module

## 11 Appearance



Product Size Table (mm)

|           | L   | W  |     | H  | Y   | X1 | X2 | Φ   |
|-----------|-----|----|-----|----|-----|----|----|-----|
|           |     | 3P | 4P  |    |     |    |    |     |
| NDM2L-125 | 150 | 92 | 122 | 92 | 129 | 30 | 60 | 4.5 |

12 Installation

Can be installed horizontally, can also be installed vertically

13 Quality

13.1 Maintainability

The project of the circuit breaker for the new R & D content, manufacturing the site of the majority of production equipment, you can use existing products for maintenance

13.2 Manufacturability

⊠ Circuit breaker body internal zero, parts in the production site assembly, all production site assembly, equipment can borrow the product. Thermo-magnetic and leakage release for the new design, increase the relevant fixture, the use of mature technology for manufacturing

14 Attachment

Accessory Code

Handle

Left mounting →

→ Right mounting

▼ Legends

■ Single auxiliary contact

▣ Double auxiliary contacts

□ Alarm contact

● Shunt Release

○ Undervoltage release

Table 1 Accessory Code

| Code | Mounting Position<br>Name                                            | Type<br>Number of Pole | NDM2L-125 |   | NDM2L-250 |   | NDM2L-400 |   | NDM2L-630 |   |
|------|----------------------------------------------------------------------|------------------------|-----------|---|-----------|---|-----------|---|-----------|---|
|      |                                                                      |                        | 3         | 4 | 3         | 4 | 3         | 4 | 3         | 4 |
| 00   | No accessory                                                         |                        | —         | — | —         | — | —         | — | —         | — |
| 10   | Shunt Release                                                        |                        |           |   |           |   |           |   |           |   |
| 20   | Double Auxiliary Contacts                                            |                        |           |   |           |   |           |   |           |   |
| 21   | Single Auxiliary Contact                                             |                        |           |   |           |   |           |   |           |   |
| 30   | Undervoltage Release                                                 |                        |           |   |           |   |           |   |           |   |
| 40   | Shunt Release and Double Auxiliary Contacts                          |                        |           |   |           |   |           |   |           |   |
| 41   | Shunt Release and Single Auxiliary Contact                           |                        |           |   |           |   |           |   |           |   |
| 50   | Shunt Release and Undervoltage Release                               |                        |           |   |           |   |           |   |           |   |
| 60   | Two Sets Double Auxiliary Contacts                                   |                        |           |   |           |   |           |   |           |   |
| 61   | Two Sets Single Auxiliary Contact                                    |                        |           |   |           |   |           |   |           |   |
| 62   | Double Auxiliary Contacts and Single Auxiliary Contact               |                        |           |   |           |   |           |   |           |   |
| 70   | Undervoltage Release and Double Auxiliary Contacts                   |                        |           |   |           |   |           |   |           |   |
| 71   | Undervoltage Release and Single Auxiliary Contact                    |                        |           |   |           |   |           |   |           |   |
| 08   | Alarm Contact                                                        |                        |           |   |           |   |           |   |           |   |
| 18   | Shunt Release and Alarm Contact                                      |                        |           |   |           |   |           |   |           |   |
| 28   | Double Auxiliary Contacts and Alarm Contact                          |                        |           |   |           |   |           |   |           |   |
| 38   | Undervoltage Release and Alarm Contact                               |                        |           |   |           |   |           |   |           |   |
| 48   | Shunt release, Single Auxiliary Contact and Alarm Contact            |                        |           |   |           |   |           |   |           |   |
| 58   | Single Auxiliary Contact and Alarm Contact                           |                        |           |   |           |   |           |   |           |   |
| 68   | Double Auxiliary Contact, Single Auxiliary Contact and Alarm Contact |                        |           |   |           |   |           |   |           |   |
| 78   | Undervoltage Release, Single Auxiliary Contact and Alarm Contact     |                        |           |   |           |   |           |   |           |   |

Note: 1.For 4-pole products, the accessory on the right side is installed by the position of N pole

2. “—” mean no accessory

3.For 3-pole products, it only can be installed one accessory on the left side

## 15 Environmental Protection

Conform to the RoHs directive

## 16 Certification

CCC certification

## 17 Packaging

Packing capacity of 1 / box (box), packaged into the box of the product, should be in the ambient temperature of  $-40 \sim 75\text{ }^{\circ}\text{C}$ , corresponding to the relative humidity of 80%, the surrounding air without acid, alkaline or other corrosive gas warehouse In the storage. Under the above conditions, the storage period is not more than 18 months from the date of manufacture