

# Product Specification

Product name: Molded Case Circuit Breaker (MCCB)

Product Model: NDM3A-400M Series

Date: 20170413

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### 1. Applicable Scope and Purpose

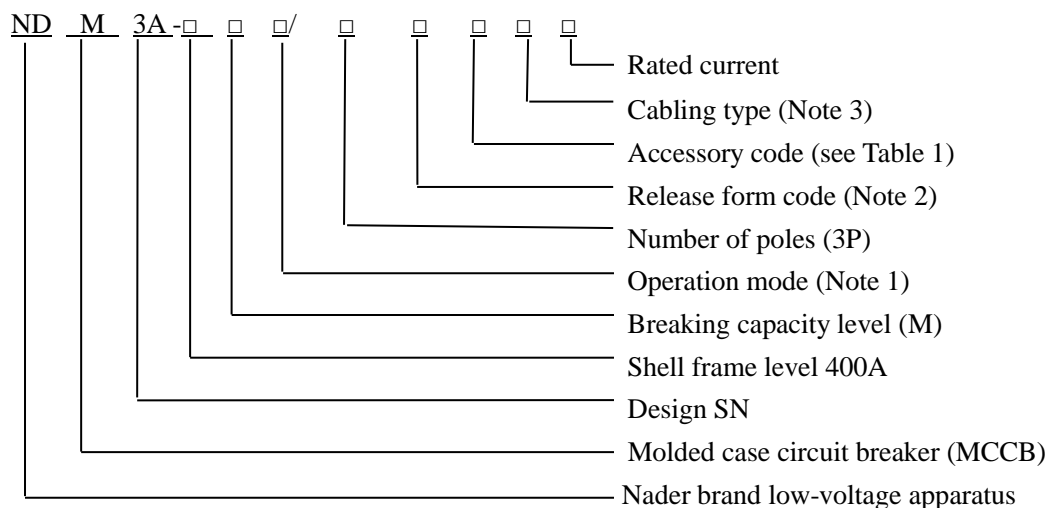
NDM3A series of molded case products apply to infrequent switching of circuits with the AC 50Hz (or 60Hz), the rated working voltage of 1000V and rated working current of 630A. With the overload, short circuit and undervoltage protection functions, the circuit breaker can protect lines and power equipment from damage.

The molded case circuit breaker is widely used in new energy industry, plant, building, household and other occasions.

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



### 3. Specification and Model Description



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Note 1: Handle operation is uncoded; P: Representing the electric operation; Z: Representing the manual operation

Note 2: 0: Release (none); 2: Instantaneous release only; 3: Complex release

Note 3: ① Normal products are uncoded; ② P: Extended connection busbar; ③ Z1: Rear-plate connection; ④ Z2H: Plug-in rear-plate connection; ⑤ Z2Q: Plug-in front-plate connection

Table 1: Comparison Table of Accessory Code:

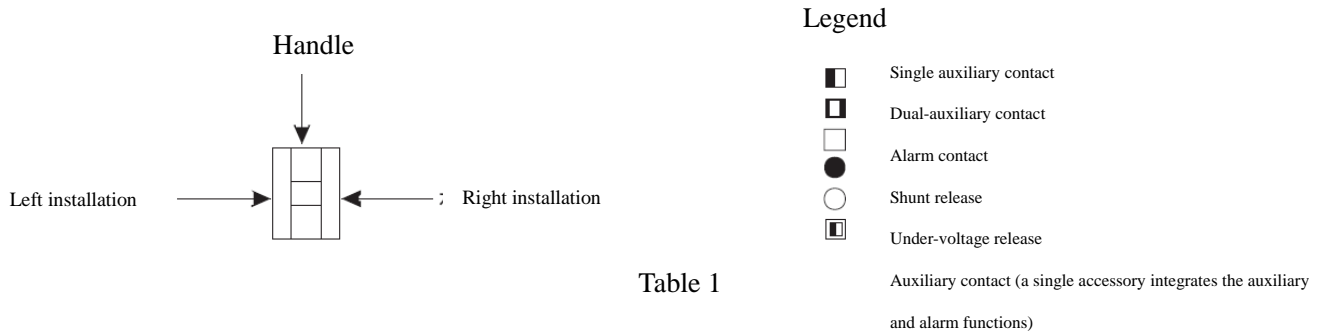


Table 1

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Accessory code	Accessory name	Model		
		NDM3A-250	NDM3A-400	NDM3A-630
Installation position	Number of poles	3	3	3
00	None	—	—	—
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, single auxiliary/alarm contact			
58	Single auxiliary/alarm contact			
68	Dual-auxiliary contact, single auxiliary/alarm contact			
78	Under-voltage release, single auxiliary/alarm contact			

#### 4. Main Technical Parameters

Model	NDM3A-400M				
Rated current of frame Inm (A)	400				
Rated current In (A)	225, 250, 315, 350, 400				
Rated insulation voltage Ui (AC V)	1140				
Rated impulse withstand voltage Uimp (V)	8000				
Power frequency withstand voltage U (V)	3500				
Rated working voltage Ue (AC V)	550	600	690	800	1000
Rated limit short-circuit breaking capacity Icu (kA)	50	42	35	30	12

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Rated operating short-circuit breaking capacity I <sub>cs</sub> (kA)		50	42	35	23	12
Operating performance (times)	Electrical life	4000	2500	2000	1500	1000
	Mechanical life	10000				
Boundary dimension		150×257×104.5				

#### 5. Derating Parameter Table of Temperature for the Circuit Breaker

	Derating factor (I <sub>n</sub> )						
	+40℃	+45℃	+50℃	+55℃	+60℃	+65℃	+70℃
NDM3A-400M	1	0.981	0.962	0.942	0.922	0.901	0.879

Note: The above derating factors are measured at the frame current

#### 6 High-altitude derating factor

Altitude (km)	Rated operating current	Maximum operating voltage	Rated power frequency withstand voltage
2	I <sub>n</sub>	U <sub>e</sub>	U
2.5	I <sub>n</sub>	U <sub>e</sub>	U
3	0.980I <sub>n</sub>	0.870U <sub>e</sub>	0.909U
3.5	0.972I <sub>n</sub>	0.846U <sub>e</sub>	0.858U
4	0.963I <sub>n</sub>	0.813U <sub>e</sub>	0.820U
4.5	0.951I <sub>n</sub>	0.781U <sub>e</sub>	0.784U
5	0.938I <sub>n</sub>	0.743U <sub>e</sub>	0.752U

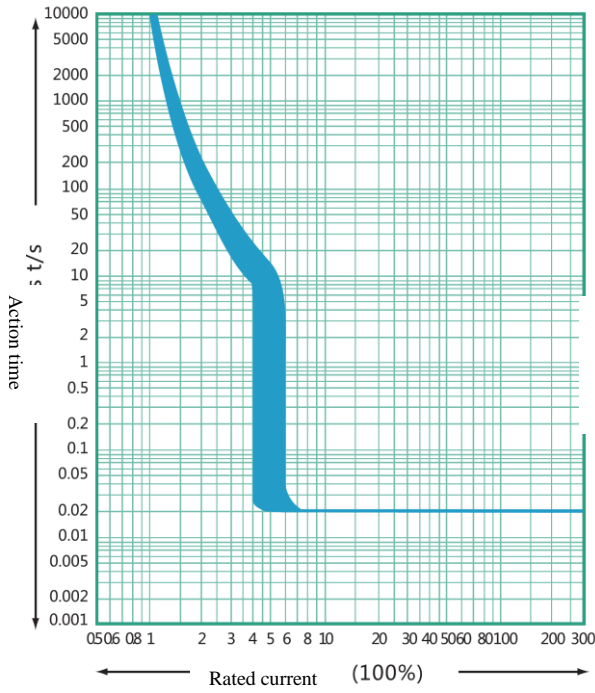
#### 7. Normal Working Environment

- ▲ Altitude: ≤2000m.
- ▲ Ambient temperature: -40℃~+70℃.(Reduced capacity is not considered with the temperature below +40℃)
- ▲ Pollution level: 3.
- ▲ The product can withstand the effects of wet air, salt mist, oil mist and mould.
- ▲ The product should be installed free from snow and rain.
- ▲ The product can be disposed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust.
- ▲ In case of stricter user conditions than the above description, negotiate with the manufacturer.

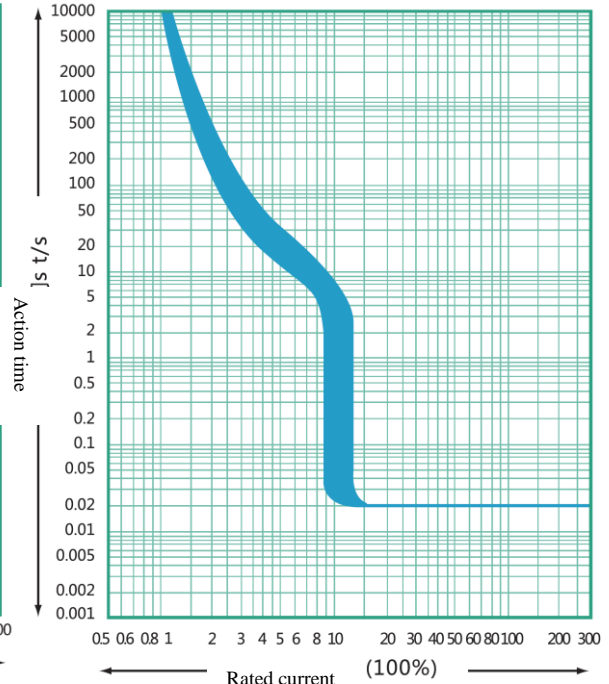
#### 8. Characteristic Curve of Circuit Breaker

Rated current of the release (A)	Thermal release (ambient temperature +40℃)		Action current of the magnetic release (A)	
	1.05I <sub>n</sub> (cold state) inaction time (h)	1.3I <sub>n</sub> (cold state) action time (h)	5I <sub>n</sub>	10I <sub>n</sub> (default)
250≤I <sub>n</sub> ≤400	≥ 2	< 2	5I <sub>n</sub> (1±20%)	10I <sub>n</sub> (1±20%)

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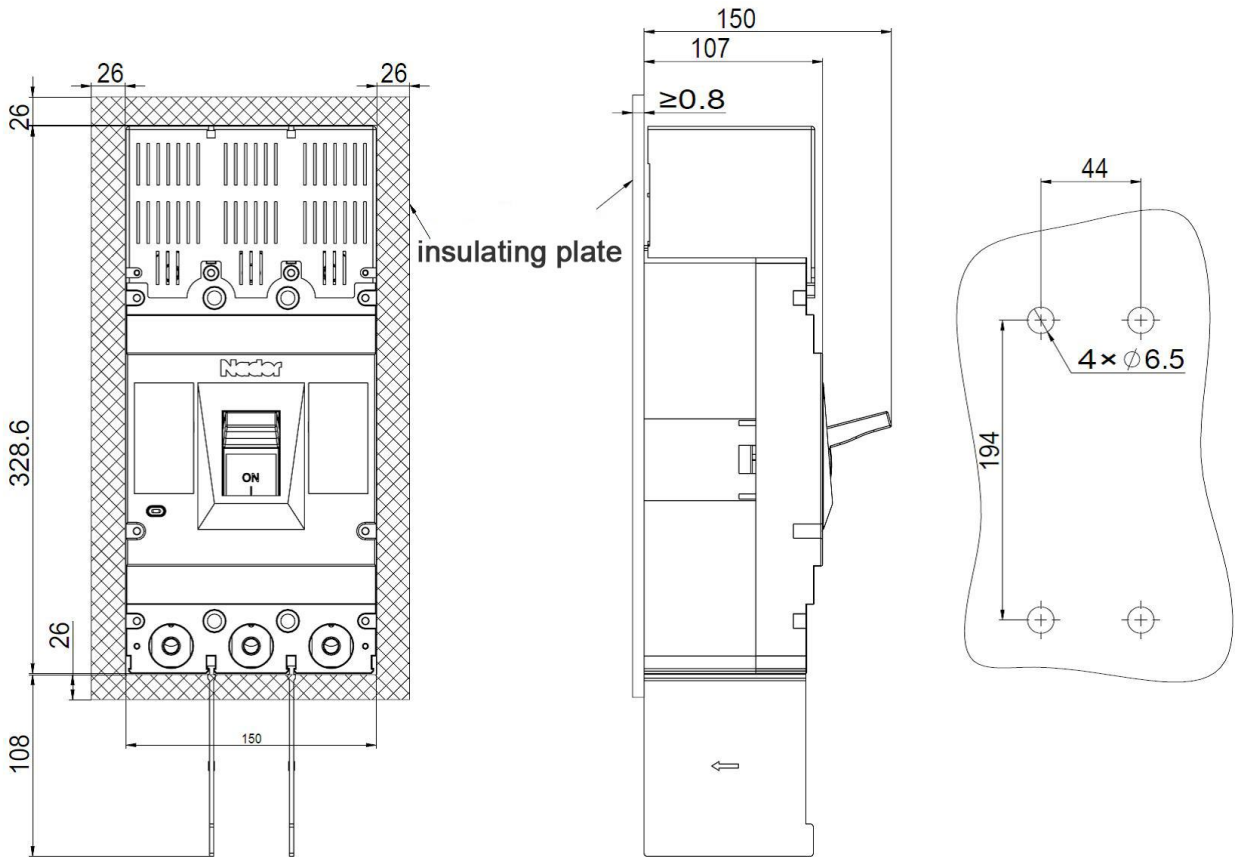


$$I_i = 5 \times I_n$$



$$I_i = 10 \times I_n$$

### 9. Outline and Mounting Hole Dimensions



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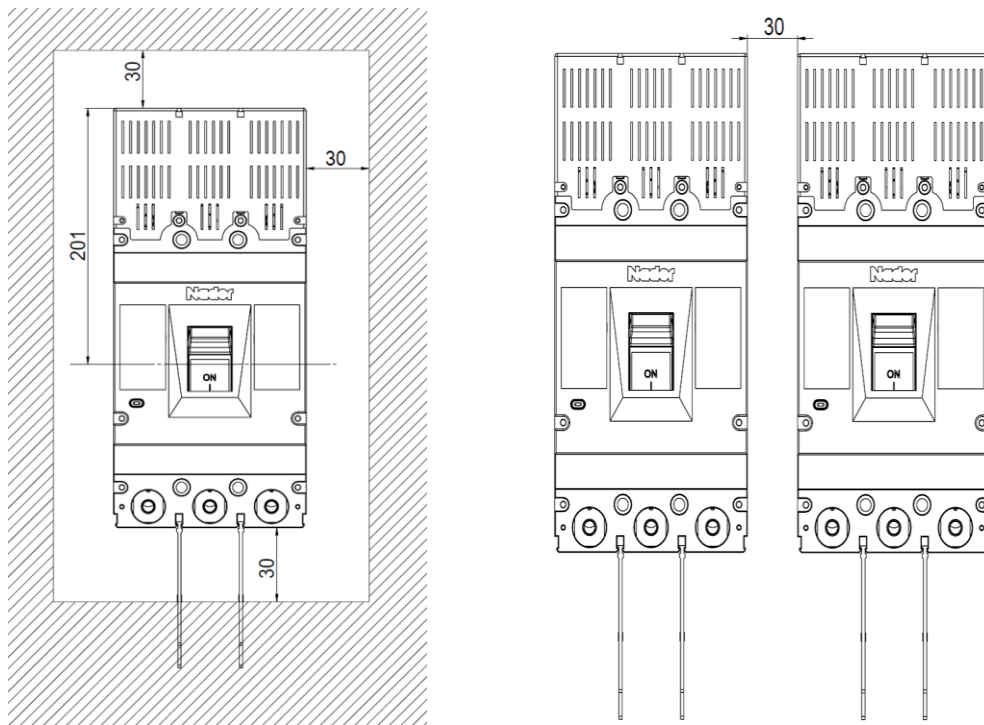
Note 1: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-m.

2: During use, a terminal cover and phase partition shall be installed respectively on the terminal side of 1, 3, 5 as well as 2, 4, 6 as shown in the figure. Besides, an insulating plate shall be inserted between the circuit breaker and the metal mounting plate with the hole dimension of the insulating plate same as the mounting plate (to be prepared by users).

### 10. Installation Mode

Installation mode: The product can be installed horizontally or vertically. For vertical installation of the product, the gradient between the installation surface and the vertical plane is no more than  $\pm 22.5^\circ$ .

#### 1) Insulation distance mounted in the metal cabinet (mm)



#### 2) Minimum center distance between rowed circuit breakers (mm)

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.

### 11. Packaging and Storage

Minimum packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with the ambient temperature condition of  $-40^\circ\text{C} \sim 75^\circ\text{C}$  and the corresponding relative humidity below 80% to the temperature without acidic, alkali or other corrosive gas in the surrounding air. Under the conditions above, the storage period shall be no more than 36 months since the manufacturing date.



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## 12. List of Accessories and Installation

SN	Name	Specification	Quantity/piece
1	Cross small pan-head combination screws	M6×75	4
2.	Washer	6	4
3	Spring washer	6	4
4	Hexagon nut	M6	4
5	Phase partition	—	2

## 13. Precautions

▲ Various characteristics and accessories of the circuit breaker are set in the factory, which shall not be adjusted randomly;

▲ 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.

▲ Make sure to add a phase partition for product use.