

Shanghai Liangxin Electrical Co., Ltd.

NDM3-400 Product Specification

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

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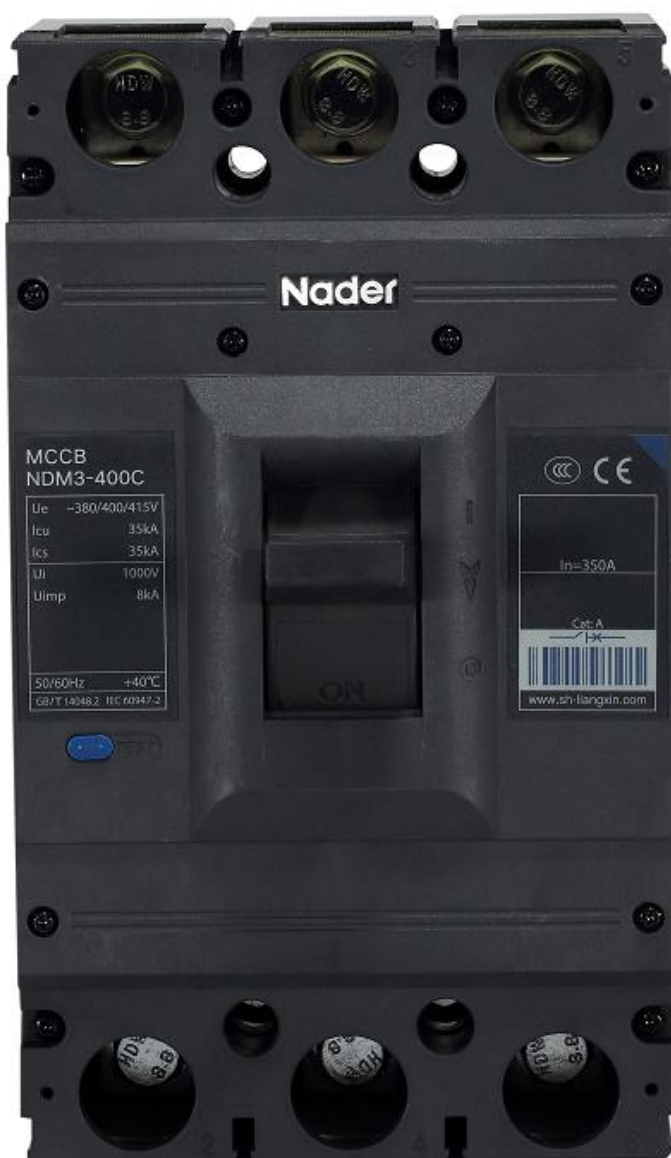
Revision History					
Version	Revision Reason/Content	Implementati on Date	Prepared by	Reviewe d by	Approve d by



1. Applicable Scope and Purpose of Circuit Breaker

The NDM3-400 molded case circuit breaker (hereinafter referred to as circuit breaker) applies to infrequent switching of circuits with the AC 50/60Hz, the working voltage of AC690V and working current of 400A as well as infrequent motor starting. With the overload, short circuit and undervoltage protection functions, the circuit breaker can protect lines and power equipment from damage.

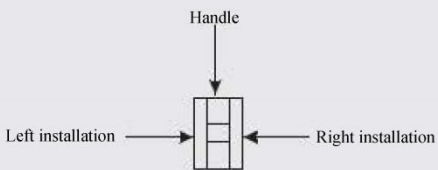














































2. Product Picture of Circuit Breaker (The picture is for reference only; the specific kind prevail)



Picture of the Product



Table 1: Comparison Table of Accessory Code:

<div>  </div>			<div> <p>Legend</p> <ul style="list-style-type: none">  Single auxiliary contact  Dual-auxiliary contact  Alarm contact  Shunt release  Under-voltage release  Auxiliary alarm contact (a single accessory features the auxiliary and alarm functions) </div>	
Accessory code	Accessory name	Model	Number of Poles	
			3	4
00	N/A	NDM3-400	—	—
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			

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4. Main Technical Parameters of Circuit Breaker

Table 2 Main Technical Parameters of Circuit Breaker

Model		NDM3-400				
Rated current of frame Inm (A)		400				
Rated current In (A)		225, 250, 315, 350, 400				
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)		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	35	50	70	100	70
	AC500V	/	/	50	/	50
	AC660/690V	/	/	20	/	20
Rated operating short-circuit breaking capacity Ics (kA)	AC380/400/415V	35	50	70	75	70
	AC500V	/	/	50	/	50
	AC660/690V	/	/	15	/	15
Operating performance (times)	Electrical life	7500				
	Mechanical life	10000				



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

Table 3 Selection of the NDM3-400 Connecting Bus or Cable Cross-section Area

Rated current (A)	225	250	315, 350	400
Wire cross-section area (mm ²)	95	120	185	240

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 diameter (mm)	Torque (N m)
NDM3-400	M10	20
	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							
NDM3-400	Temperature (°C)	40	45	50	55	60	65	70
	Derating factor	1	0.981	0.962	0.942	0.922	0.901	0.879

Note: 1) When the operating ambient temperature is below +40°C, 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

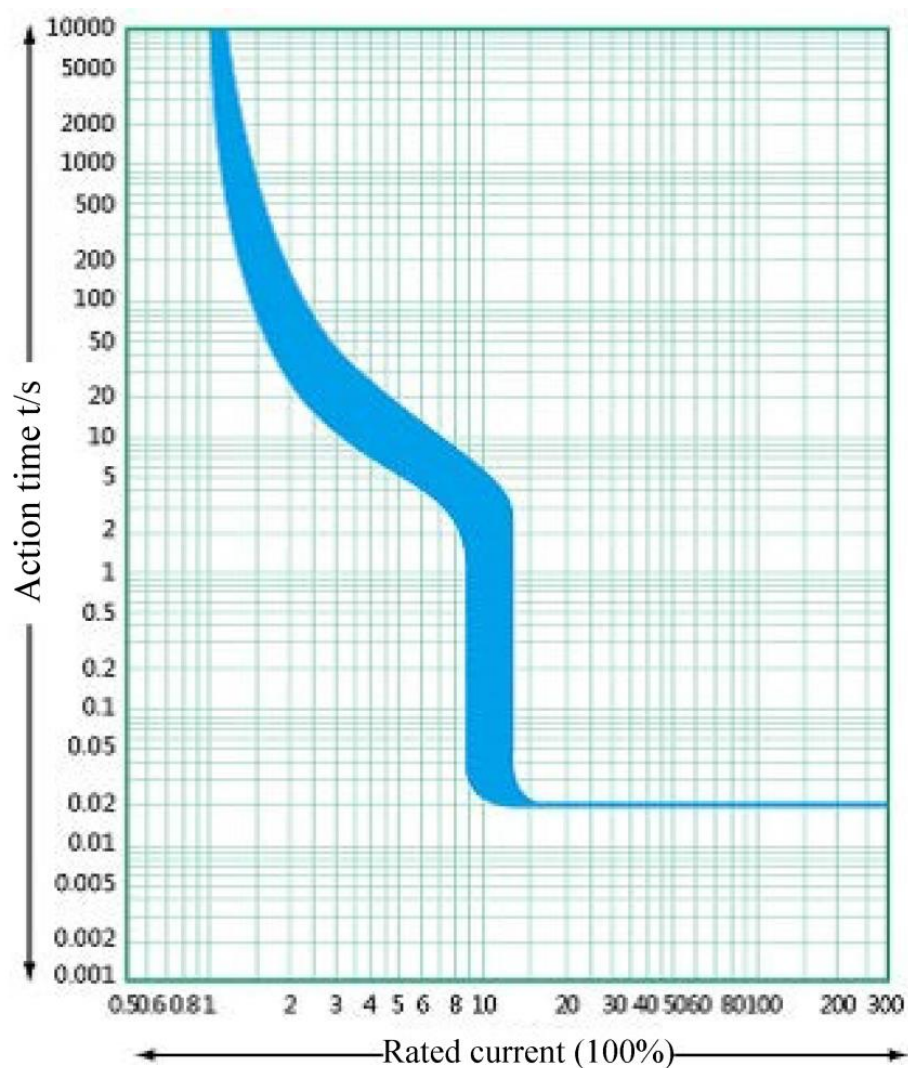
Altitude (km)	Correction factor of the working current	Correction factor of the working voltage	Correction factor of the power frequency withstand voltage
2	In	Ue	U
2.5	In	Ue	U
3	0.980In	0.87Ue	0.909U
3.5	0.972In	0.846Ue	0.858U
4	0.963In	0.813Ue	0.820U
4.5	0.951In	0.781Ue	0.784U
5	0.938In	0.743Ue	0.752U

5. Normal Working Environment of Circuit Breaker

- 1) The altitude of the installation site doesn't exceed 2,000m. 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 24 h 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°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



Table 8 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
NDM3-400	150	198	190	238

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.

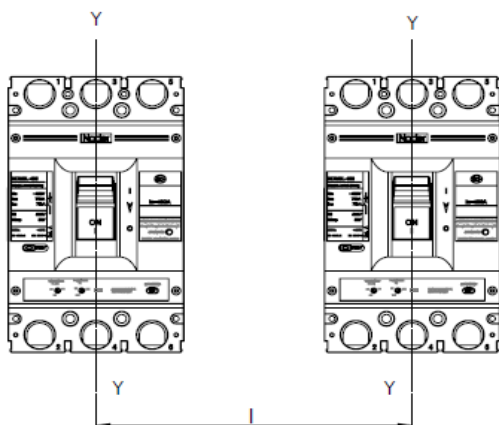


Table 9 Minimum Distance between Stacked Circuit Breakers (Unit: mm)

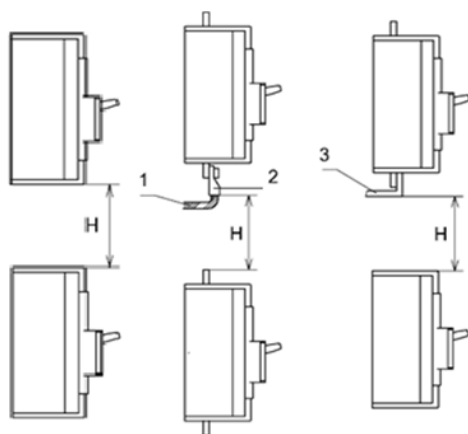
Model	H (distance of circuit breaker from bottom)	
	With a terminal cover	Without a terminal cover
NDM3-400	155	155

Note: 1) Bare cable connection

2) Cable insulating connection

3) Connection without insulation

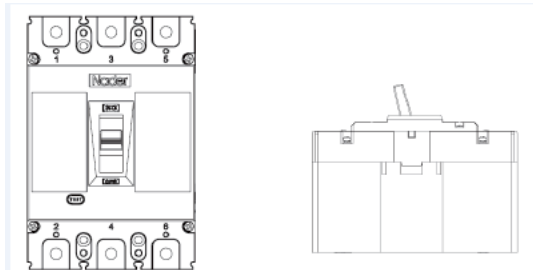
Requirements: Check whether the terminal cover or phase partition is assembled properly before products are energized.



8. 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

9. 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.

10. Installation Direction of Circuit Breaker

SN	Name	Specification	3P Quantity/Set	4P Quantity/Set
1	Cross small pan-head screw	M6×70	4	6
2	Hexagon nut	M6	4	6
3	Spring washer	6	4	6
4	Plain washer	6	8	12
5	Phase partition	——	4	6
6	Plug	——	6	8

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11. 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.



“The storage life is three years”

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