Shanghai Liangxin Electrical Co., Ltd.

NDM3-100 Product Specification

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

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Revision History					
Version	Revision Reason/Content	Implementation Date	Prepared by	Reviewed by	Approved by
1	Update as per new template content.	2021.06.28	Sun Lanping	Xiao Botao	Ding Fei

1. Applicable Scope and Purpose of Circuit Breaker

The NDM3-100 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 100A 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

3. Specification and Model Description of Circuit Breaker

ND	M	3 - 100	□	□ / □	□	□	□	□	□	□	□	□
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

SN	SN name	NDM3
1	Enterprise code	ND: “Nader” low-voltage apparatus
2	Product code	M: Molded case circuit breaker (MCCB)
3	Design SN	3
4	Shell frame level	100
5	Breaking capacity level	C: Basic 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	Rated current	See Table 2
14	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
15	Other codes	DL: Dedicated for electric power
		Codes of internal and external accessories: Such as manual operation: CS1-A, electric operation: DC1 220V, shunt: AC230V, undervoltage: DC220V

Table 1: Comparison Table of Accessory Code:

Accessory code	Accessory name	Model: NDM3-100 — Number of poles: 3	4
00	N/A	——	
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			NDM3-100	
Rated current of frame Inm (A)			100	
Rated current In (A)			10, 16, 20, 25, 32, 40, 50, 63, 80, 100	
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	/
Rated limit short-circuit breaking capacity Icu (kA)	AC380/400/415V		40	40
	AC500V		15	15
	AC660/690V		12	12
Rated operating short-circuit breaking capacity Ics (kA)	AC380/400/415V		30	30
	AC500V		12	12
	AC660/690V		10	10
Operating performance (times)	Electrical life		8000	
	Mechanical life	Without maintenance	20000	
		With maintenance	40000	

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

Table 3 Selection of the NDM3-100 Connecting Bus or Cable Cross-section Area

Rated current (A)	10	16, 20	25	32	40, 50	63	80	100
Wire cross-section area (mm^2)	1.5	2.5	4	6	10	16	25	35

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 Specifications	Torque (N m)
NDM3-100	M8	12
	M3	1

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							
NDM3-100	Temperature (℃)	40	45	50	55	60	65	70
	Derating factor	1	0.977	0.954	0.931	0.907	0.883	0.858

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

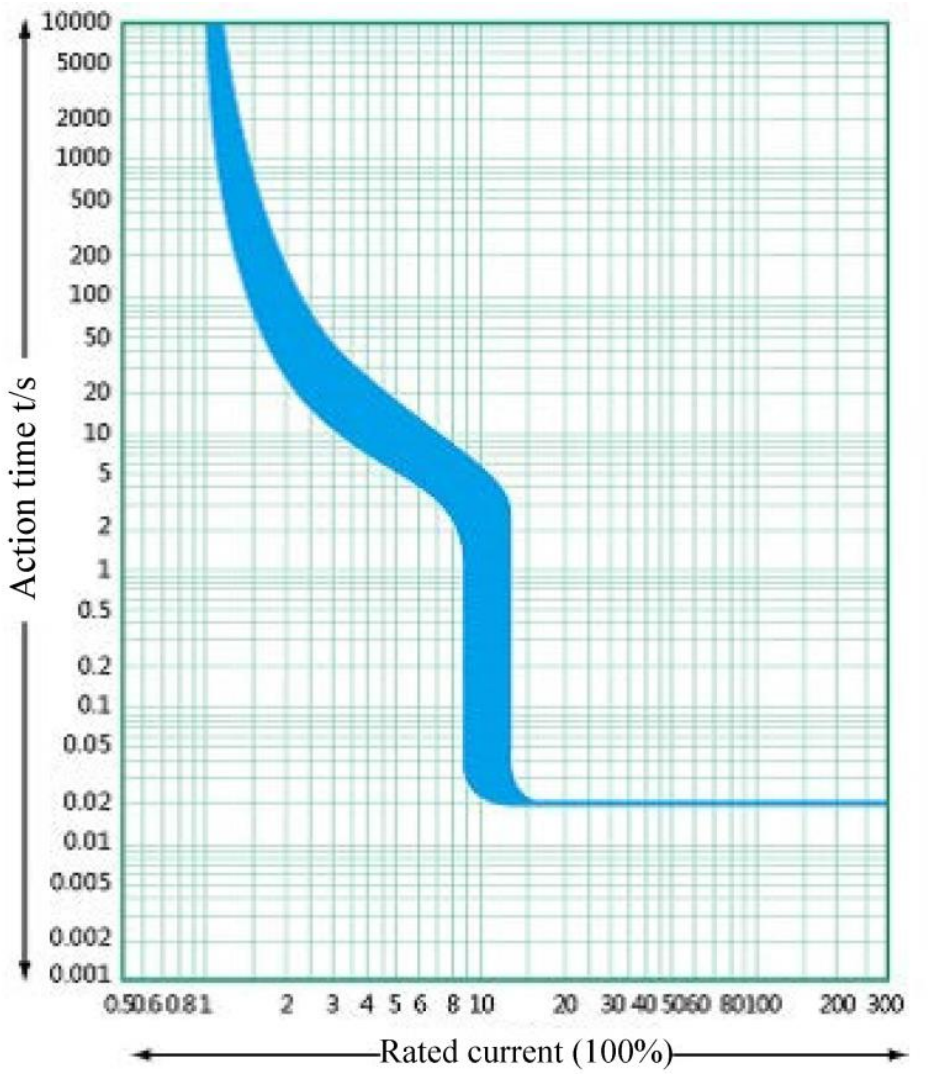
Table 6 High-altitude Derating Factor Table of Circuit Breaker

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

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℃ ~ + 70℃; the average within 24 h shall not be more than +35℃. If the ambient temperature is higher than +40℃, 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℃ should not exceed 50%. A higher relative humidity is allowed at a lower temperature. For example, the relative humidity at 20℃ 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

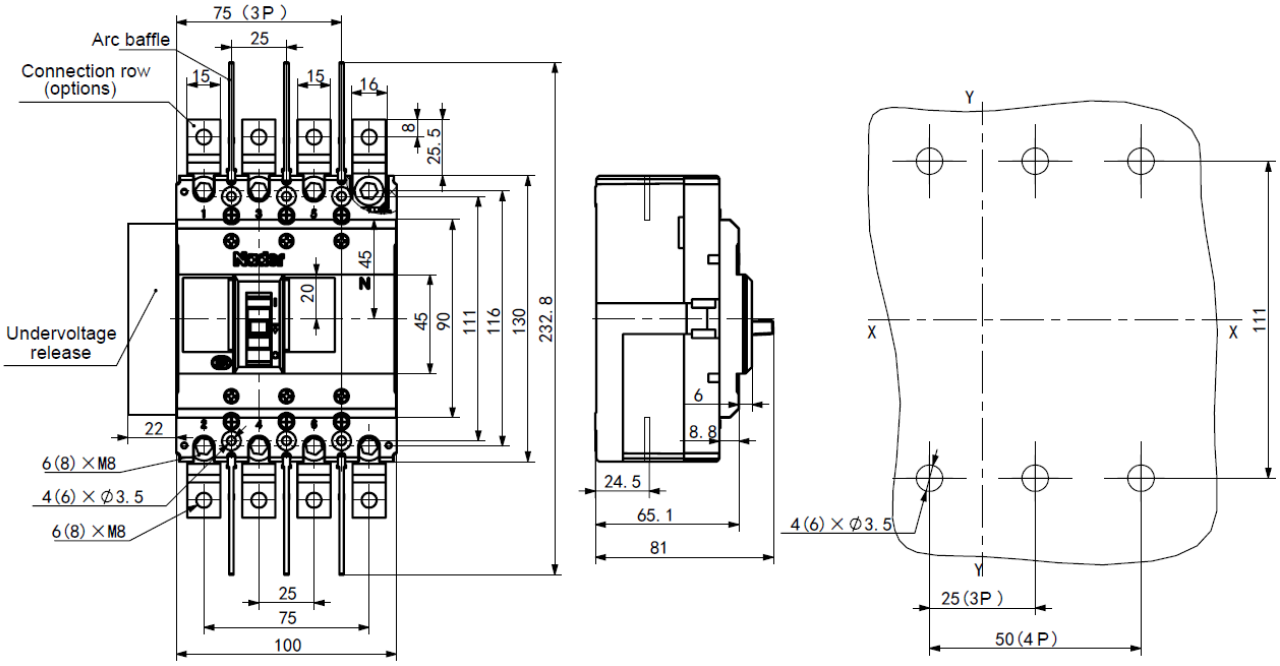


Time/Current Characteristic Curve

Note: The instantaneous action current of 10~25A is 300±20%.

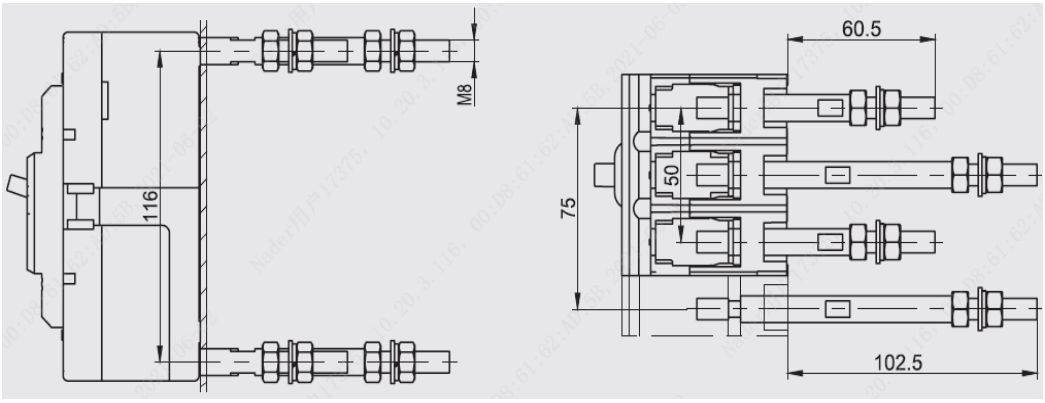
7. Outline and Mounting Hole Dimensions of Circuit Breaker

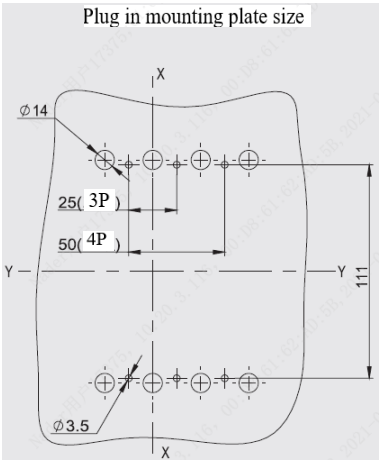
7.1 Outline and mounting hole dimensions of circuit breaker



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

7.2 3P、4P Wiring behind the board





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

7.2 Safe mounting distance of circuit breaker

Table 7 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		
NDM3-100	25	65	30	30

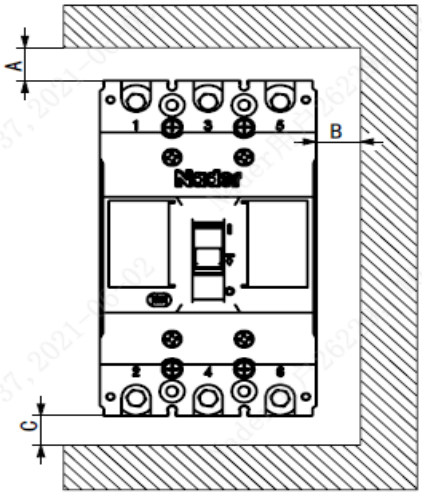


Table 8 Minimum Center Distance between Rowed Circuit Breakers (Unit: mm)

Model	Width of circuit breaker		I Center distance	
	3 poles	4 poles	3 poles	4 poles
NDM3-100	75	100	105	130

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.

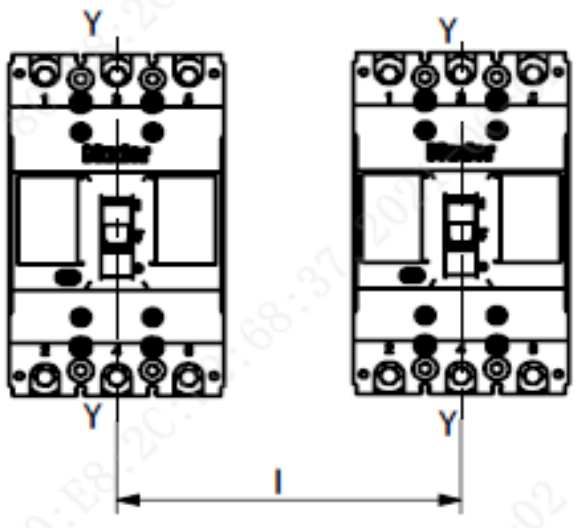


Table 9 Minimum Distance between Stacked Circuit Breakers (Unit: mm)

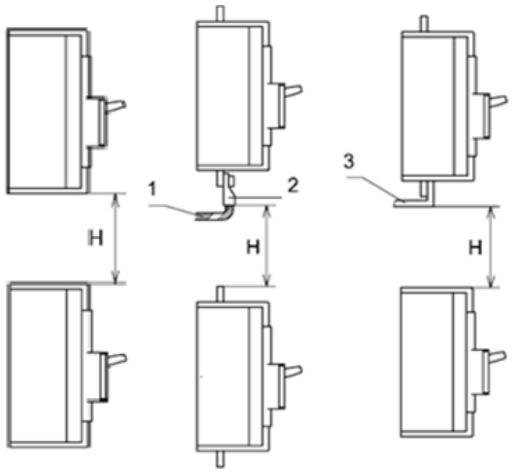
Model	H (distance of circuit breaker from bottom)	
	With a terminal cover	Without a terminal cover
NDM3-100	90	90

Note: 1) Bare cable connection

2) Cable insulating connection

3) Connection without insulation

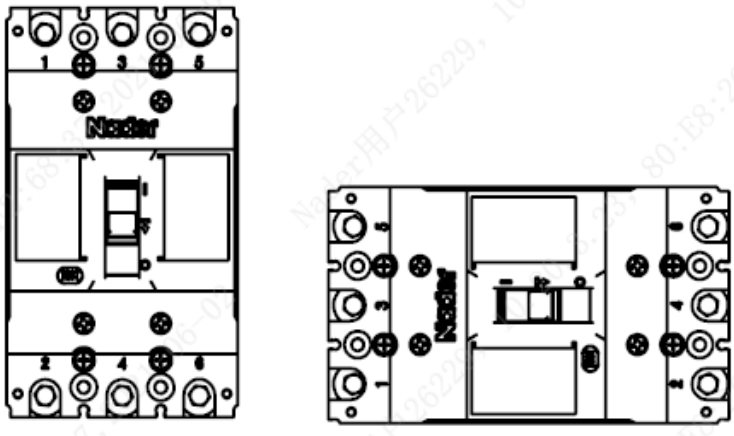
Requirements: Check whether the terminal cover or phase partition is assembled properly before products are energized.



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 ±22.5 °.

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℃~+75 ℃. 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	M3×70	4	6
2	Hexagon nut	M3	4	6
3	Spring washer	3	4	6
4	Plain washer	3	4	6
5	Phase partition	——	4	6

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.