Shanghai Liangxin Electrical Co., Ltd.

NDM2Z-250 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
0	Newly added	5/8/2020	Wang Hu	Peng Haorang	Hu Qi
1	Update the product appearance picture and product dimension outline drawing	30/9/2021	Sun Lanping	Xu Fuping	Ding Fei

1. Applicable Scope and Purpose of Circuit Breaker

The NDM2Z-250 DC molded case circuit breaker (hereinafter referred to as circuit breaker) applies to the DC system application environment and the electric circuit with the working voltage of DC250V and the working current of 250A. 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)

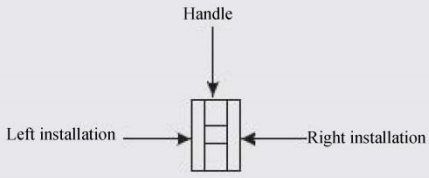
Picture of the Product

3. Specification and Model Description of Circuit Breaker

ND	M	2	Z - 250	□ / □	□	□	□	□
1	2	3	4	5	6	7	8	9	10	11

SN	SN name	NDM2Z
1	Enterprise code	ND: “Nader” low-voltage apparatus
2	Product code	M: Molded case circuit breaker (MCCB)
3	Design SN	2
4	Derived code of the series	Z: DC
5	Shell frame level	250
6	Operation mode	No code: Direct handle-operated mode
		P: Motor-operated
		Z: Rotation handle
7	Number of poles	2, 3
8	Release code	0: Release (none)
		2: Instantaneous tripper only
		3: Complex tripper
9	Accessory code	See Table 1
10	Rated current	See Table 2
11	Cabling type	No code: Normal product
		P: Connection busbar
		Z1: Rear-plate connection
		Z2Q: Plug-in front-plate connection
		Z2H: Plug-in rear-plate connection

Table 1: Comparison Table of Accessory Code:



Legend

- 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)

Accessory code	Accessory name	NDM2Z-250
	Installation Position / Model / Number of poles	2、3
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			NDM2Z-250	
Rated current of frame Inm (A)			250	
Rated current In (A)			125, 140, 160, 180, 200, 225, 250	
Rated insulation voltage Ui (AC V)			1000	
Rated impulse withstand voltage Uimp (V)			8000	
Power frequency withstand voltage U (1min) (V)			3500	
Utilization category			A	
Rated working voltage Ue (DC V)			250	
Number of poles			2	3
Rated limit short-circuit breaking capacity Icu (kA)			35	35
Rated operating short-circuit breaking capacity Ics (kA)			35	35
Operating performance (times)	Electrical life		1500	
	Mechanical life	Maintainable free life	8500	
		Maintainable life	17000	

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

Table 3 Selection of the NDM2Z-250 Connecting Bus or Cable Cross-section Area

Rated current (A)	125, 140	160	180, 200, 225	250
Wire cross-section area (mm^2)	50	70	95	120

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)
NDM2Z-250	M8	12
	M4	2.4

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							
NDM2Z-250	Temperature (℃)	40	45	50	55	60	65	70
	Derating factor	1	0.982	0.963	0.944	0.924	0.904	0.882

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

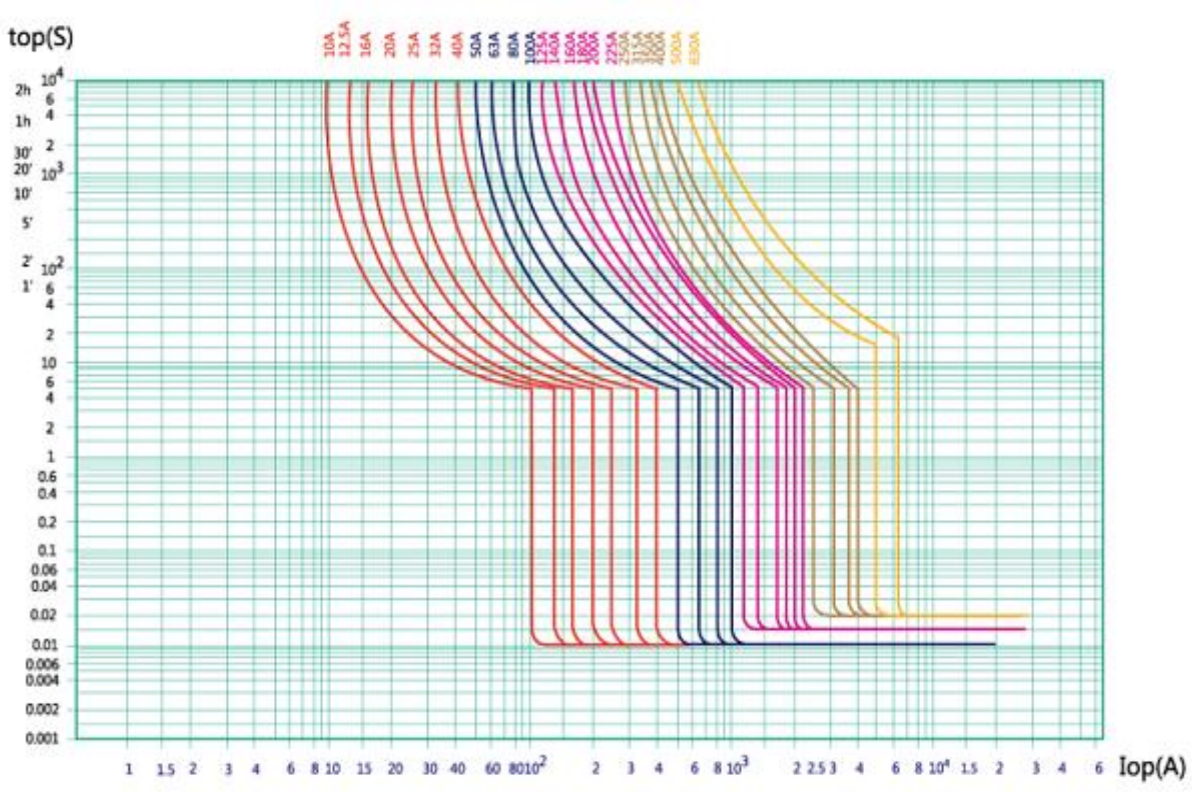
Table 6 High-altitude Derating Factor Table of Circuit Breaker

Elevation (m)	Working current correction coefficient	Power frequency withstand voltage correction coefficient	Isolation voltage correction coefficient
2000	1	3500	1000
2500	1	3500	1000
3000	0.98	3150	900
3500	0.97	3000	850
4000	0.95	2800	810
4500	0.94	2650	770
5000	0.93	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.

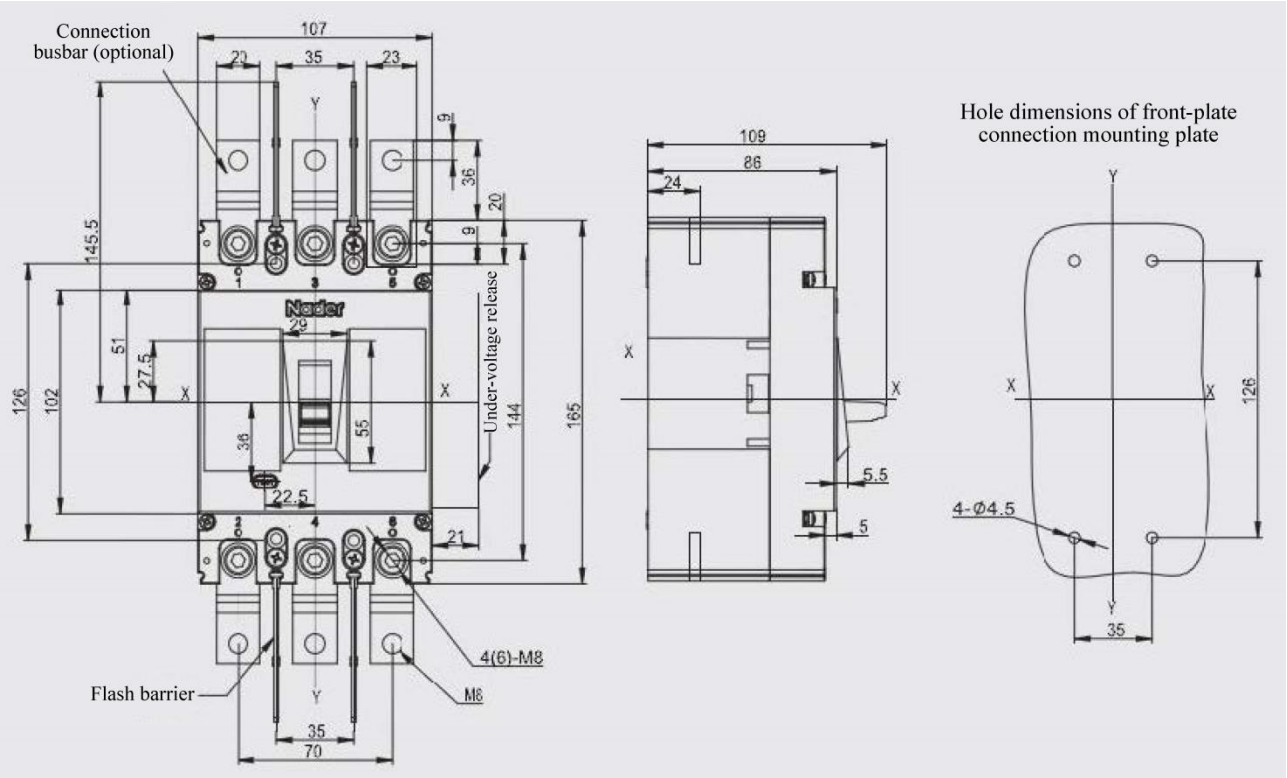
6. Short-circuit Overload Protection Characteristic Curve of Circuit Breaker



Time/Current Characteristic Curve

7. Outline, Mounting Hole Dimensions and Safety Distance 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 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		
NDM2Z-250	25	65	30	30

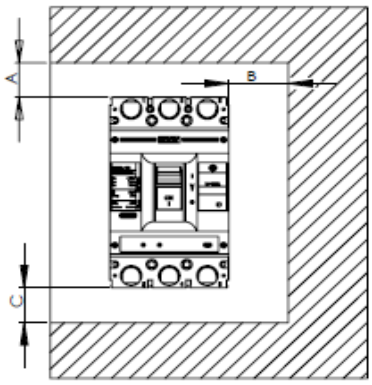


Table 8 Minimum Center Distance between Rowed Circuit Breakers (Unit: mm)

Model	Width of circuit breaker		I Center distance	
	2 poles	3 poles	2 poles	3 poles
NDM2Z-250	107	107	137	137

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.

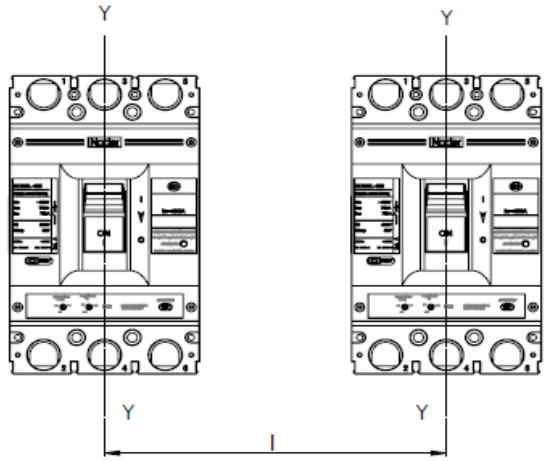


Table 9 Minimum Center Distance between Stacked Circuit Breakers (Unit: mm)

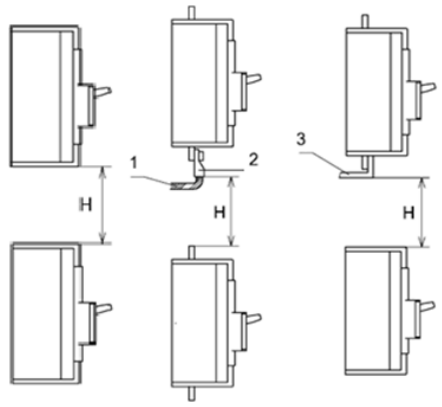
Model	H (distance of circuit breaker from bottom)	
	With a terminal cover	Without a terminal cover
NDM2Z-250	90	93

Note: 1) Bare cable connection

2) Cable insulating connection

3) Connection without insulation

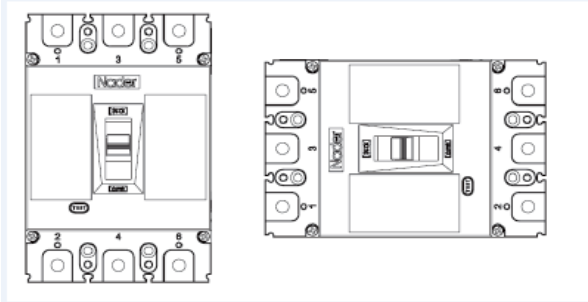
Requirements: Check whether the terminal cover or phase partition is assembled properly before products are energized.



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	2P Quantity/Set	3P Quantity/Set
1	Cross small pan-head screw	M4×45	4	4
2	Hexagon nut	M4	4	4
3	Spring washer	4	4	4
4	Plain washer	4	4	4
5	Phase partition	——	4	4

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.