

Shanghai Liangxin Electrical Co., Ltd.

NDM3Z-320V(DC1500V)

Product Specification

(IPD-ENG-DEV-T22 A1 2016-09-23)

Prepared	孙兰萍	Date	2021-09-29
Reviewed	徐富平	Date	2021-09-30
Countersign	黄金华	Date	2021-09-30
Approved	丁飞	Date	2021-09-30

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Version	Revised contents and reasons	Date	Prepared	Reviewed	Approved
0	Newly added	6/9/2020	Jiang Wushan	Ding fei	Cao Jian
1	Revised Product	7/22/2020	Jiang Wushan	Ding fei	Cao Jian
3	Update the product appearance picture and product dimension outline drawing	30/9/2021	Sun Lanping	Xun Funping	Ding Fei

1 Application scope and purpose

The NDM3Z-320V DC1500V molded case circuit breakers (referred to as circuit breakers) have a rated insulation voltage of DC1500V, the rated working voltage to DC1500V and rated working current 250A to 320A. The circuit breakers are used for distributing power while protect the overload and short circuit of lines and power units.

The circuit breaker has an isolating function with the corresponding symbol of $\text{---} \diagup \diagdown \text{---}$;

Comply with standards: IEC60947-2, GB/T 14048.2.

2 Pictures of the product






Product

3 Model and implication

$\frac{\text{ND}}{1}$	$\frac{\text{M}}{2}$	$\frac{3}{3}$	$\frac{\square}{4}$	$-\frac{320}{5}$	$\frac{\square}{6}$	$/\frac{\square}{7}$	$\frac{\square}{8}$	$\frac{\square}{9}$	$\frac{\square}{10}$	$\frac{\square}{11}$	$\frac{\square}{12}$
No.	Name						NDM3Z				
1	Enterprise characteristic code						ND: Nader				
2	Product code						M: MCCB				
3	Design SN						3				
4	Derivation code						Z: DC MCCB				
5	Frame current Inm (A)						320A				
6	High voltage level						V				
7	Operation mode						No code: handle direct operation				
8	Number of poles						3				
9	Release code						3: Multiple release				
10	Accessories						See Table 1				
11	Rated current In (A)						See Table 2				
12	Cabling mode						3P no code: general product				

Table 1 Accessories

No.	Accessories	product
		NDM3Z-320V
00	None	—
10	Shunt release	
21	Single auxiliary contact	
41	Shunt release+ Single auxiliary contact	

4 Main technical parameters

Table 2 Main technical parameters

Type			NDM3Z-320V
Frame current $I_{nm}(A)$			320
Current $I_n (A)$			250, 300, 320
Rated insulation voltage $U_i(V)$			1500
Rated impulse withstand voltage $U_{imp}(kV)$			12
Power frequency withstand voltage (1min)			3820
Usage category			A
Poles			3
Rated insulation voltage $U_i(V)$			1500
Rated ultimate short-circuit breaking capacity $I_{cu}(kA)$		10	20 ($\tau=5ms$)
Rated service short-circuit breaking capacity $I_{cs}(kA)$		10	20 ($\tau=5ms$)
Operating performance (times)	Electrical life		1000
	Mechanical life	Maintainable free life	10000
		Maintainable life	20000

4.1 Selection of sectional area of busbar and cable of the circuit breaker

Table 3 Selection of sectional area of busbar and cable of NDM3Z-320V

Rated current (A)	250	300	320
Wire cross-section area (mm ²)	120	185	185

4.2 Connecting terminal/Tightening torque value of mounting screw

Table 4 Connecting terminal/Tightening torque value of mounting screw

Type	Thread diameter (mm)	Torque value (N·m)
NDM3Z-320V	M8	12
	M4	2.4

4.3 Table of elevation reduction of circuit breaker

Table 5 Table of elevation reduction of circuit breaker

Frame current	Table of elevation reduction of products corresponding to temperature							
320	Temperature (°C)	40	45	50	55	60	65	70
	Correction factor	1	1	1	0.95	0.93	0.91	0.88

Note: 1) When the operating ambient temperature is below + 50°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 elevation reduction coefficient

Table 6 High altitude elevation reduction coefficient of circuit breaker

Elevation (m)	Working current correction coefficient	Maximum working current correction coefficient (V)	Power frequency withstand voltage correction coefficient (V)	Isolation voltage correction coefficient (V)
2000	1	1	1	1
2500	1	1	1	1
3000	0.98	1	1	1
3500	0.95	1	1	1
4000	0.93	1	1	1
4500	0.91	1	1	1
5000	0.89	1	1	1

Note: If the altitude is more than 2500m, the electrical performance of the circuit breaker shall be corrected according to table 6, and the insulation plate shall be padded between the circuit breaker and the metal insulation plate when the NDM3Z-320V 3P is used for the altitude above 3000m (see 7.3) .

5 Normal Working Environment of Circuit Breaker

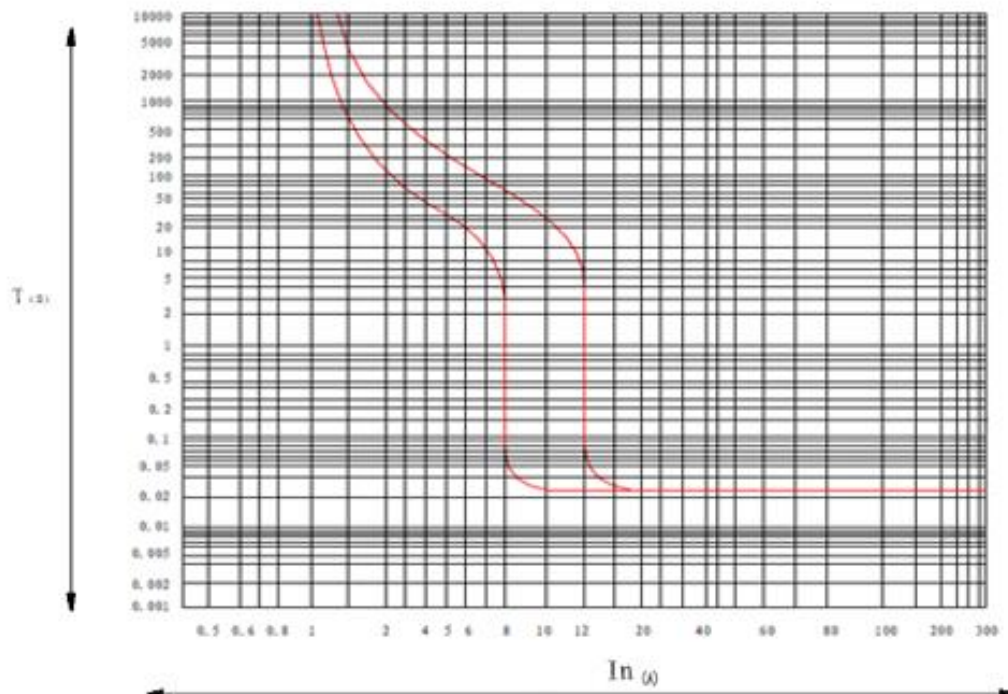
- 1) The altitude of the installation site doesn't exceed 2,500m. See the "High-altitude Derating Factor Table of Circuit Breaker" for the derating factor at the altitude;
- 2) The ambient temperature is -35°C ~ + 70°C; the average within 24 h shall not be more than +35°C. If the ambient temperature is higher than +50°C, the user needs to reduce the capacity.

See the "Derating Factor Table of Temperature Change for the Circuit Breaker" for the

derating factor;

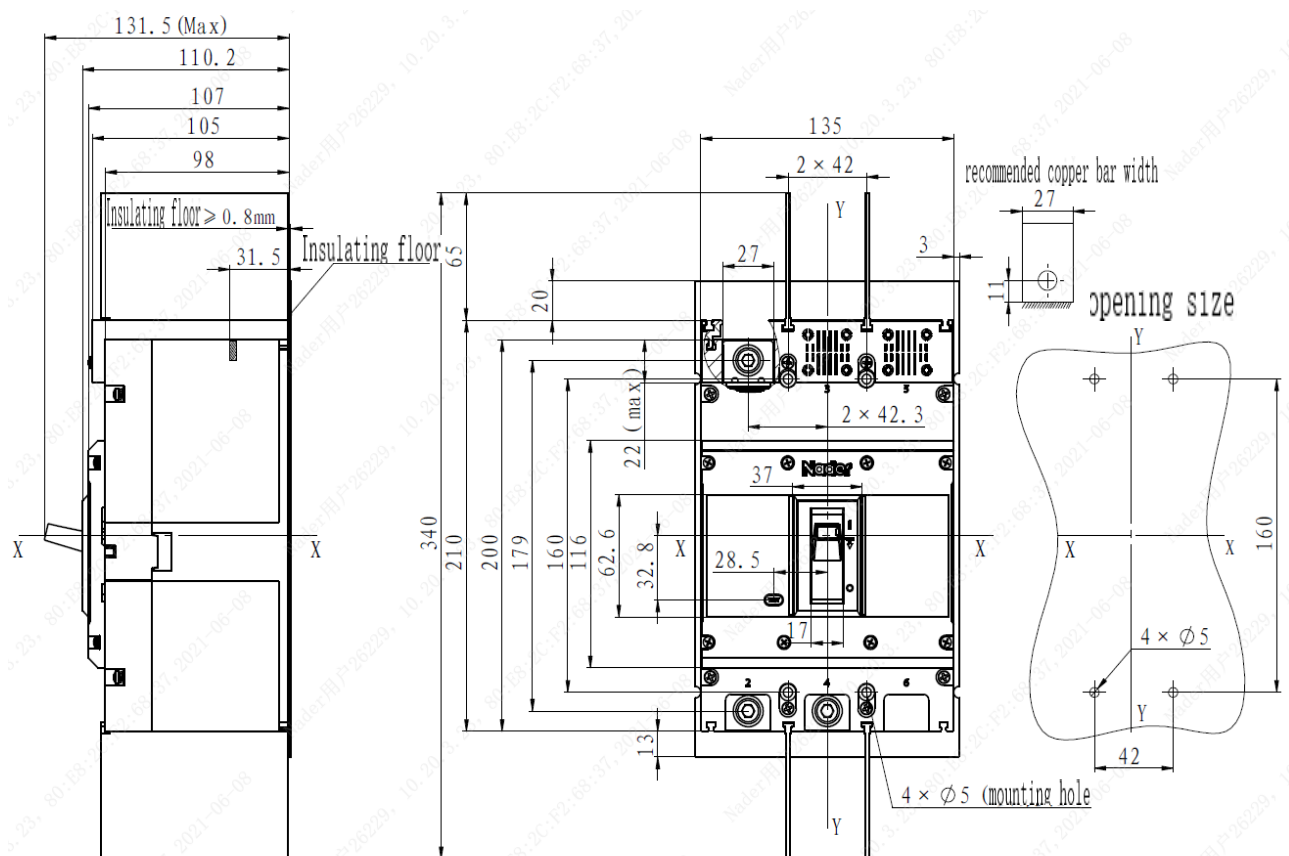
- 3) Its relative humidity at an ambient temperature of +40°C should not exceed 50%. A higher relative humidity is allowed at a lower temperature. For example, the relative humidity at 20°C can reach 90%; for frost due to temperature change, the corresponding measures should be taken;
- 4) The product 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

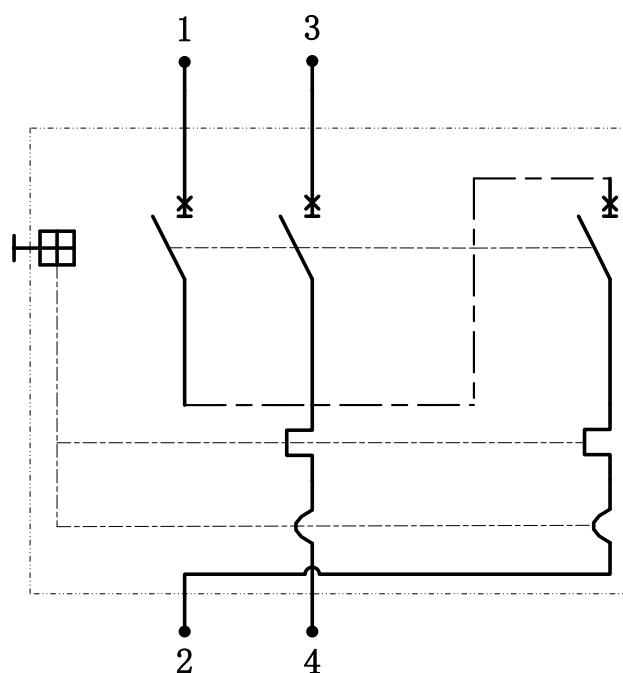


7 Outline and installation dimensions

7.1 External dimensions of products

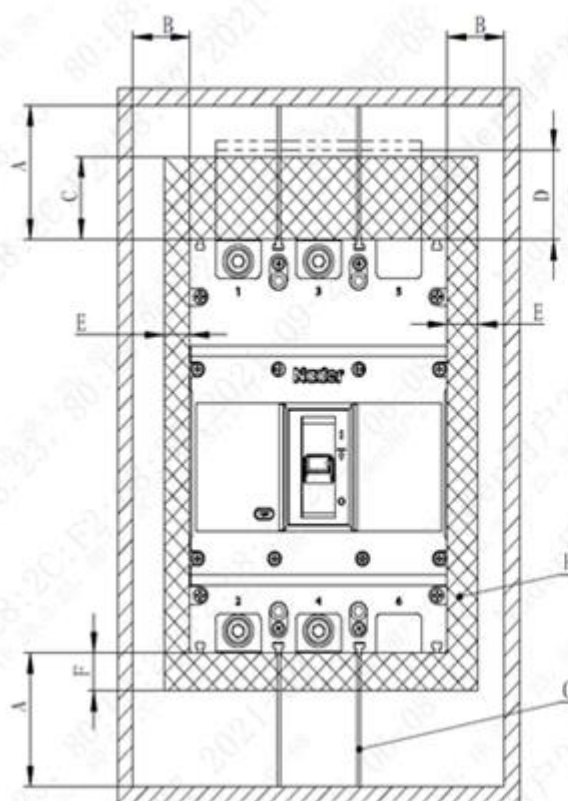


7.2 Wiring diagrams of the product main circuit



NDM3Z-320V/3P

7.3 Safety spacing (mm)



- A: From incoming line section to cabinet surface
 B: distance from side to cabinet body
 C / E / F: distance from circuit breaker to insulating board
 D: distance from circuit breaker to non-conductive parts
 G: interphase partition H: insulating board, thickness $\geq 0.8\text{mm}$

Table 7 Insulation distance installed in metal cabinet (mm)

Type	A	B	C	D	F	H	I
NDM3Z-320V	65	30	65	25	3	20	13

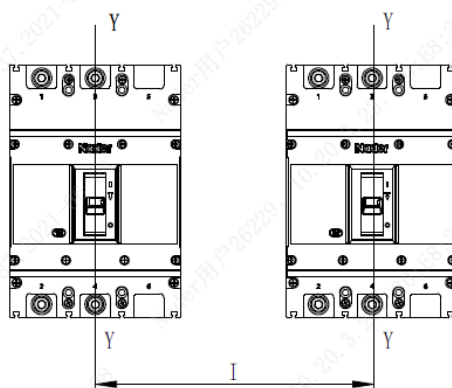


Table 8 Minimum distance between row of circuit breakers (mm)

Type	L
	3P
NDM3Z-320V	190

Note: When the circuit breaker is arranged of stacked, check the connecting busbar or cable to ensure that the air insulation distance will not be reduced.

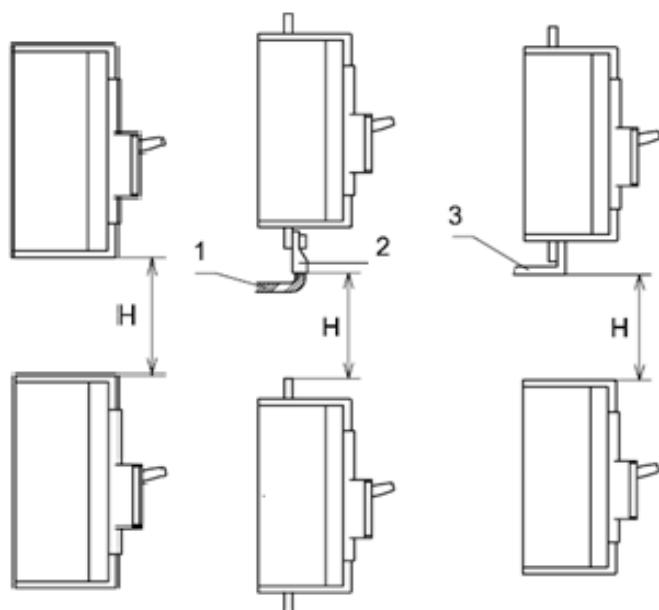
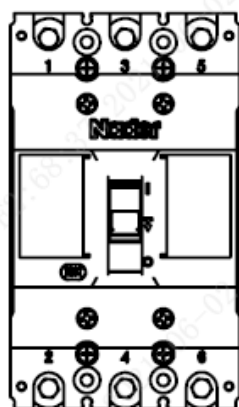


Table 9 Minimum center distance between circuit breaker stacks (mm)

Type	H
	with terminal cover
NDM3Z-320V	95

8 Installation method

The product allowable installation mode is shown as the figure below. Inclination of mounting surface and vertical surface $\leq \pm 22.5^\circ$



Vertical installation



Horizontal installation

9 Packaging and storage

Minimum packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with air circulation and relative humidity no more than +80°C, ambient temperature no more than +75°C and no less than -

Add: No.2000, South Shen Jiang Rd. Pudong District, Shanghai, 201315, PRC Tel:(021)68586699 Fax:(021)23025796

35°C and without acidic, alkali or other corrosive gas in the surrounding air.

Users shall obey the storage and use conditions. In case of product damage or abnormal use due to manufacturing quality issues within 36 months from the date of factory delivery, the factory shall be responsible for free maintenance or replacement.

10 Accessory list and installation

SN	Name	Specifications	Quantity / Set (3P)
1	Cross small pan-head screw(s)	M4×45	4
	Combination screws	M3.5×37.5	2
2	Hexagon nut(s)	M4	4
3	Flash barrier	——	8
	Insulating base	——	1

11 Notices

- 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.