CCC, CQC, CB, CE, TUV

Moulded Case Circuit Breaker

NDM3Z-250 series

QUISURE
Keep quick, Make sure
ISO9001:2015
QUALITY GUARANTEED

1. Application Scope and Purpose

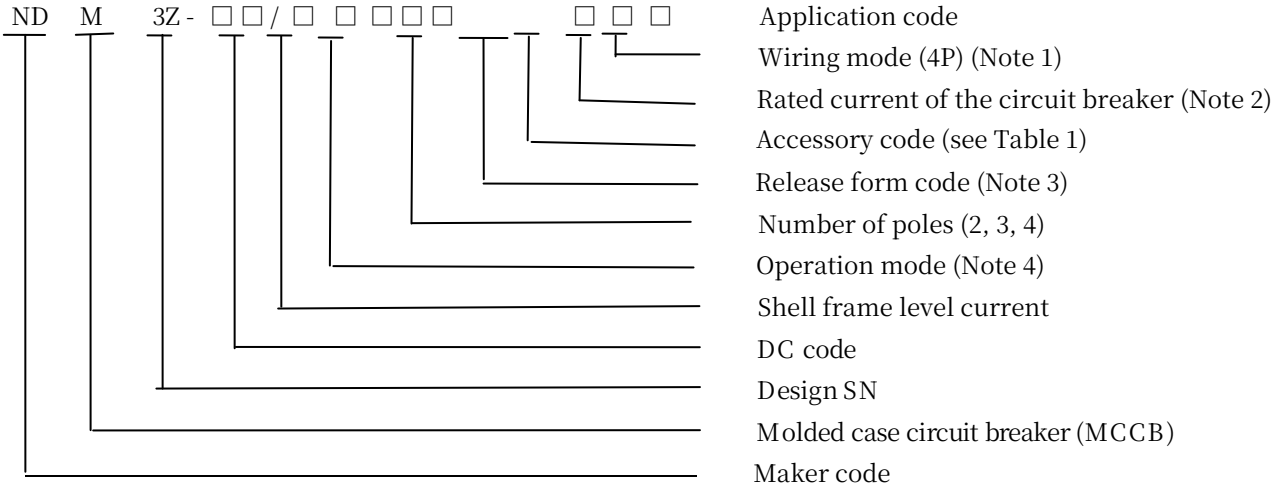
The NDM3Z series of molded case DC circuit breakers (referred to as circuit breakers) apply to the DC system with the rated working DC voltage less than 1200V, and the rated working current to 800A. The circuit breaker features the overload, short circuit and undervoltage protection functions. It can protect lines and power equipment from damage caused due to overvoltage and overcurrent. It is widely used in power generation, power transmission, new energy, communication, construction and other fields.

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

2P and 3P Appearance

4P Appearance

3. Specification and Model Description



Note 1: Wiring mode of the 4P product:J0 (free wiring), J1, J2, J3 and J3-general wiring (see the DC1000V Wiring Diagram);

Note 2: The rated current is: 125A, 140A, 160A, 180A, 200A, 225A, 250A;

Note 3: Release form code;

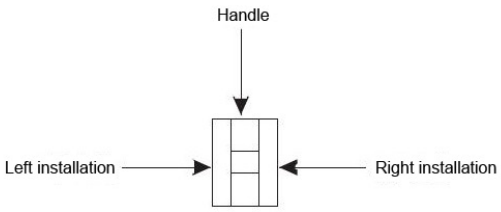
0: Tripper (none)

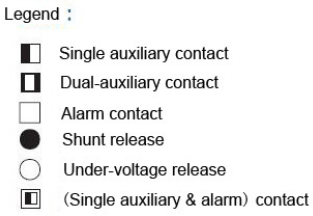
2: Instantaneous tripper only

3: Complex tripper

Note 4: No code is available for the direct handle-operated mode; P: Motor-operated; Z: Rotation handle-operated

Table 1: Comparison Table of Accessory Code:





Accessory code	Accessory name	NDM3Z-125			NDM3Z-250			NDM3Z-400			NDM3Z-630			NDM3Z-800		
	Installation position / Model / Number of poles	2	3	4	2	3	4	2	3	4	2	3	4	2	3	4
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

1) Electrical characteristics

- ▲ Rated insulation voltage Ui: 1200V
- ▲ Rated working voltage Ue: DC500V (2P in series), DC 750V (3P in series), DC 1000V (4P in series), DC 1200V (4P in series)
- ▲ Rated current of housing Inm: 250A
- ▲ Rated limit short-circuit breaking current Icu:
  DC750V, DC1000V, J3 general wiring -upper wiring: 40 KA,
  DC500V: 35kA ,
  J3 general wiring-lower wiring: 20kA,
  DC1200V: 10kA
- ▲ Rated operating short-circuit breaking current Ics:
  DC750V, DC1000V, J3 general wiring -upper wiring: 25 KA,
  DC500V: 35kA,
  J3 general wiring-lower wiring: 25kA,
  DC1200V: 10kA

2) Operating performance

- ▲ With electricity: 5,000 times
- ▲ Without electricity: 10,000 times

3) Connection capacity:

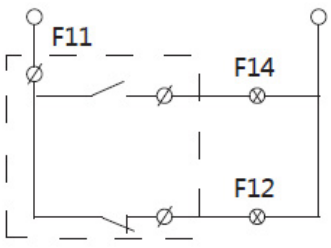
Rated current A	125/140	160	180/200/225	250
Wire cross-section area mm^2	50	70	95	120

4) Auxiliary contact

① Auxiliary contact and its combination

Breaker in position "OPEN" or "FREE TRIP"	Double auxiliary contacts	F14 F12 — F11; F24 F22 — F21
	Single auxiliary contact	F14 F12 — F11
Breaker in position "CLOSED"	From "CLOSED" to "OPEN"; From "OPEN"to "CLOSE".	

② Wiring diagram of the auxiliary contact



Power Supply
Turned-on loop
Turned-off loop

③ Current parameters of the auxiliary contact

Frame Size	Conventional Thermal Current Ith	Rated Current at AC 400V
100-800	3A	0.30A

④ Electrical life of the auxiliary contact

Utilisation Category	Making			Breaking			Times	Operating Frequency (times/h)	Duration under Current
	I/Ie	U/Ue	cosφ	I/Ie	U/Ue	cosφ			
AC-15	10	1	0.3	1	1	0.3	6050	360	≥0.05s
DC-13	1	1	6Pe	1	1	6Pe			≥T0.95

⑤ Making and breaking capacity of the auxiliary contact

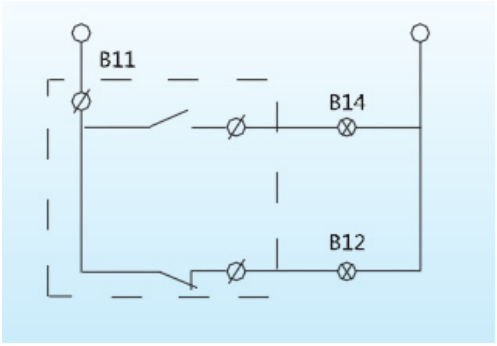
Utilisation Category	Making			Breaking			Times	Operating Frequency (times/h)	Duration under Current
	I/Ie	U/Ue	cosφ	I/Ie	U/Ue	cosφ			
AC-15	10	1.1	0.3	1.0	1.1	0.3	10	120	≥0.05s
DC-13	1.1	1.1	6Pe	1.1	1.1	6Pe			≥T0.95

5) Alarm contact

① Alarm contact and its combination

Alarm Contact and Its Combination	Alarm contact Ue=220V, Ith=3A
Breaker in the position"OPEN", "CLOSED"	
Breaker in the position"FREE TRIP"	

② Wiring diagram of the alarm contact



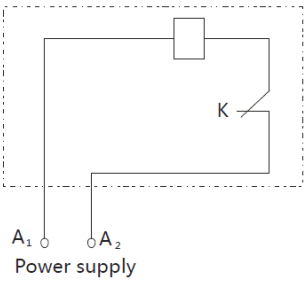
During normal onoff of the circuit breaker, the contact won't act and only change its original status after free tripping (or fault trip) with the normally-open state changed to be closed and normally - closed state changed to be open. After the circuit breaker is tripper, the contact will be restored to the original position.

③ Alarm contact parameters

Ue=220V, Ith=3A

6) Shunt tripper

① Wiring diagram of the shunttripper



② Control voltage of the shunt tripper

AC 50HZ 230V 400V

DC 24V 220V

With the rated control voltage within 0% - 110%, the shunt tripper should make the reliable tripping under all the operation conditions.

③ Instantaneous acting current and power consumption of the shunt tripper

Type	Instantaneous current (A)				Power consumption (W)			
	AC 400V	AC 230V	DC 220V	DC 24V	AC 400V	AC 230V	DC 220V	DC 24V
NDM3Z-125	0.288	0.425	0.341	4	96.8	73	90.7	91.2
NDM3Z-250	0.313	0.412	0.341	3.87	112	68.8	90.7	85.3
NDM3Z-400	0.197	0.325	0.4	3.87	67	62.3	94.4	100
NDM3Z-630	0.199	0.314	0.4	3.87	68	58.2	94.4	100
NDM3Z-800	0.196	0.320	0.4	3.87	68	59.4	94.4	100

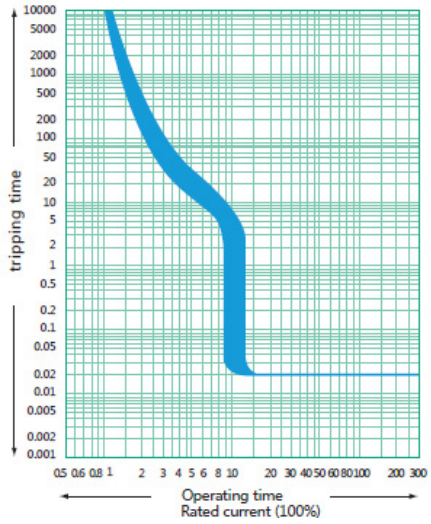
5. Normal Working Environment

- ▲ Altitude: ⩽4000m (if the altitude is higher than 4000m, consider reducing the capacity, as shown in the Attached Sheet of Derating Factor).
- ▲ Operating ambient temperature:-35℃~+70 ℃ (if the temperature is higher than 50 ℃, consider reducing the capacity, as shown in the Attached Sheet of Derating Factor; negotiate with the factory in case the temperature is lower than -35℃).
- ▲ The 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.

- Pollution level: 3.
- The product can withstand the effects of wet air, salt mist and oil mist.
- The maximum gradient is 22.5°.
- The product can be disposed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust.
- The product should be installed free from snow and rain.
- In case of stricter user conditions than the above description, negotiate with the manufacturer.

6. Tripping Characteristics

NDM3 Z-250 Time/Current Characteristic Curve:



7. Derating Factor Table

1) Derating factor of the ambient temperature for the circuit breaker

	Derating coefficient (In)						
	+40℃	+45℃	+50℃	+55℃	+60℃	+65℃	+70℃
NDM3Z-125	1	1	1	0.96	0.91	0.85	0.78
NDM3Z-250	1	1	1	0.95	0.93	0.91	0.88
NDM3Z-400	1	1	1	0.93	0.91	0.89	0.85
NDM3Z-630	1	1	1	0.92	0.9	0.89	0.83
NDM3Z-800	1	1	1	0.92	0.89	0.85	0.8

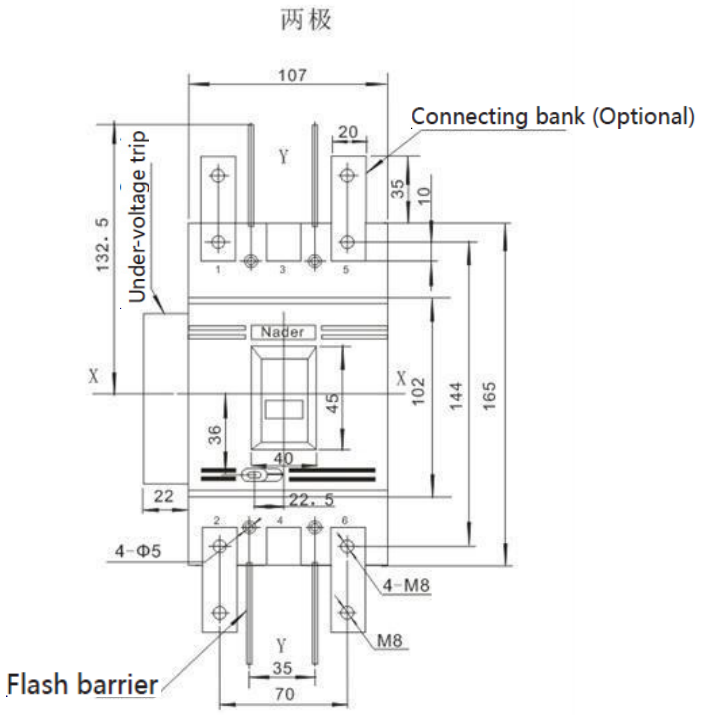
Note 1: The above derating factors are measured at the frame current

2) Derating factor of the altitude for the circuit breaker

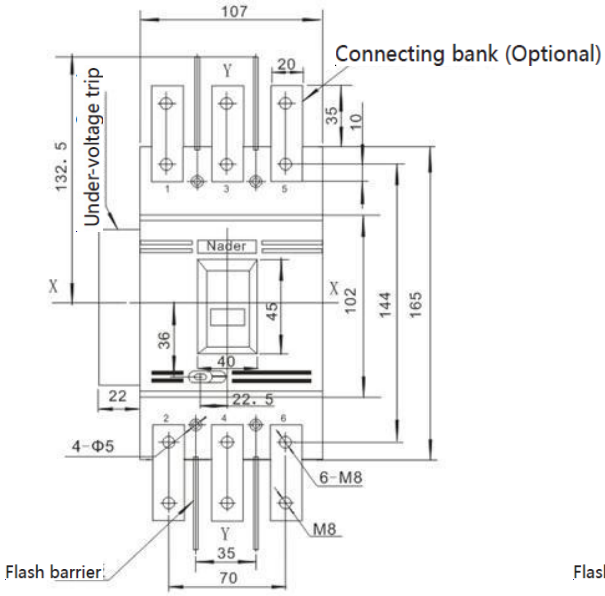
Altitude (m)	2000	3000	4000	5000
Rated power frequency withstand voltage	U	U	U	U
Max. working voltage	Ue	Ue	Ue	Ue
Rated working current	In	0.97In	0.93In	0.89In

8. Outline, Installation Dimensions and Wiring Diagram

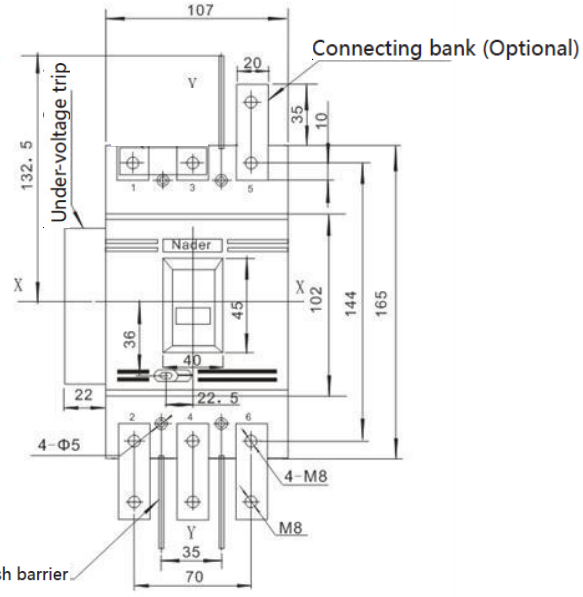
1) Outline and installation dimensions



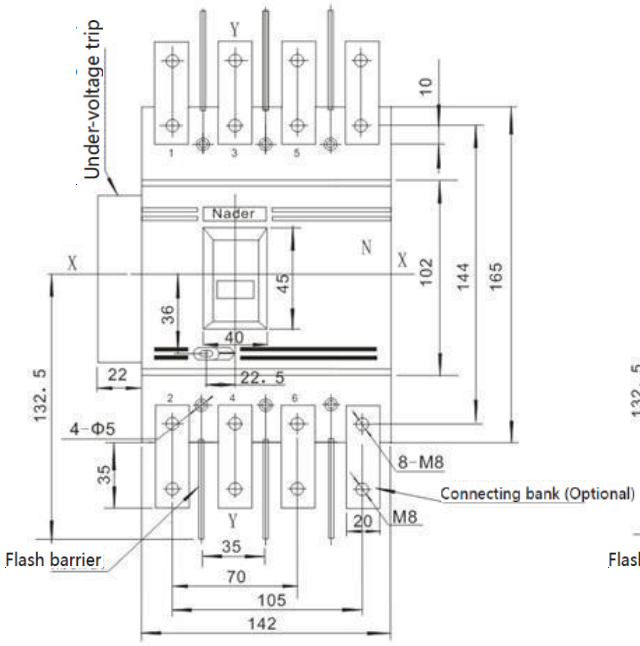
3P Normal Installation Dimension Diagram



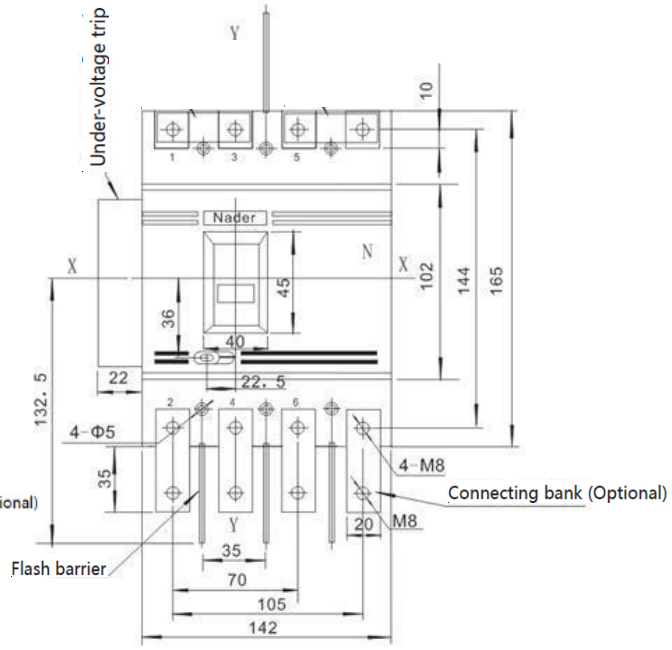
3P Free Wiring Diagram

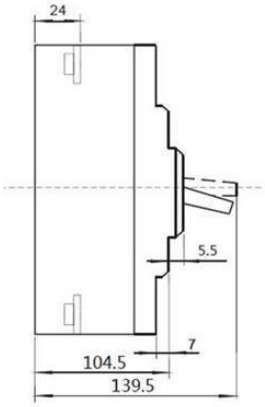


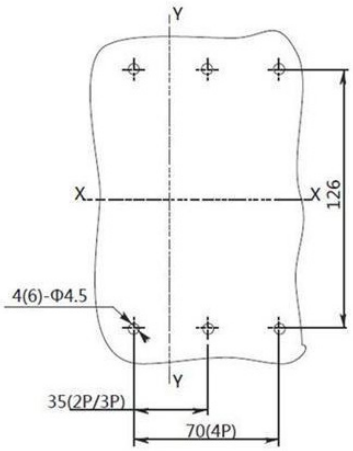
4P Normal Installation Dimension Diagram



4P Free Wiring

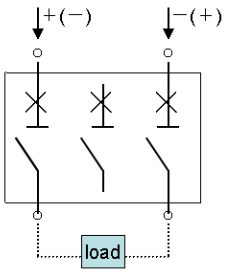






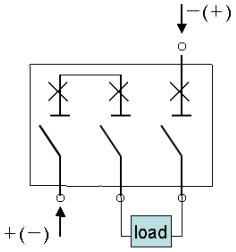
2) Product wiring diagram

DC500V Wiring Diagram

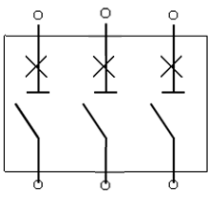


3P Normal Wiring

Load

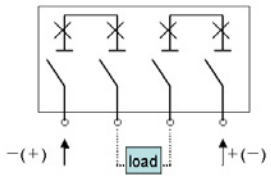


DC750V Wiring Diagram

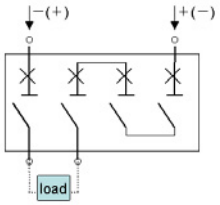


3P J0 Wiring

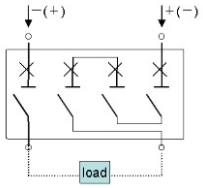
DC1000V and DC1200V Wiring Diagrams



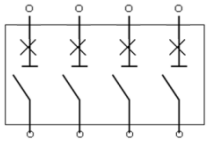
J1-type



J2-type



J3-type

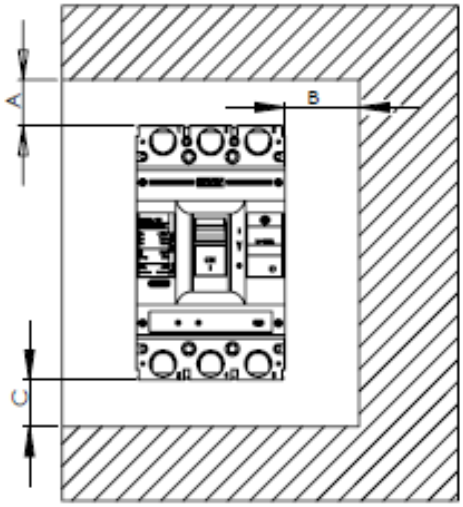


4P J0 Free Wiring

9. Installation Mode and Mounting Distance

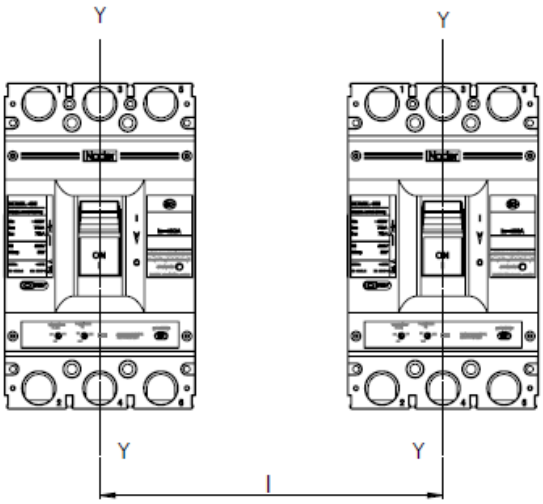
The product can be installed horizontally or vertically

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



Mounting distance	A (inlet wire end to the cabinet face)		B (distance from side to cabinet)	C (outlet wire end to the cabinet face)
Specification	With a 0 arcing cover	Without a 0 arcing cover		
NDM3Z-250	25	65	30	30

2) Minimum center distance between rowed circuit breakers

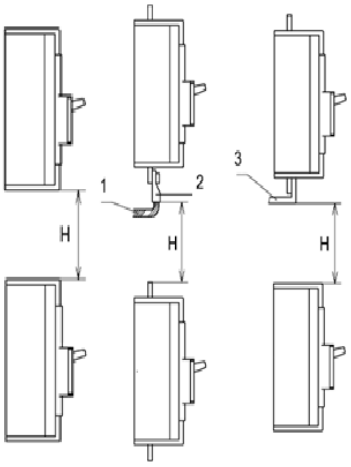


Specification	Width of circuit breaker (mm)		I Center distance (mm)	
	2, 3 poles	4P	2, 3 poles	4P
NDM3Z-250	107	142	137	172

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.

3) Minimum center distance between stacked circuit breakers

Specification	H (distance of circuit breaker from bottom)	
	With a 0 arcing cover	Without a 0 arcing cover
NDM3Z-250	90	93



Note: 1 Bare cable connection
2 Cable insulating connection
3 Connection without insulation

Requirements: Check whether the 0 arcing cover or phase partition is assembled properly before products are energized.

10. Packaging and Storage

Minimum packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with the ambient temperature of-40℃~75 ℃ and the corresponding relative humidity below 80% without acidic, alkali or other corrosive gas in the surrounding air. Under the conditions above, the storage period shall be no more than 18 months since the manufacturing date.

11. List of Accessories and Installation

SN	Name	Specification	Quantity /Set (2P)	Quantity /Set (3P)	Quantity/Set (4P J1, 2, 3)	Quantity/Set (4P J0 and J3 are interchangeable)
1	Cross small pan-head screws	M4X45	4	4	6	6
2	Plain washer	4	4	4	6	6
3	Spring washer	4	4	4	6	6
4	Hexagon nut	M4	4	4	6	6
5	Phase partition	——	4	4	4	6

12. 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.

▲ Tighten the accessory kit mounting screw M4 with a torque of 1.21.8Nm; when the terminal screw adopts the M8 hexagon screw, tighten it with a torque of 12m.

Attached Sheet I

Product Specification Sampling Record

Specification Edition	Product Model	Barcode	Sampled on	Sampled at	Sampling Personnel
0					
1					
2					
...					