Product Specification

Product name : Molded Case Circuit Breaker (MCCB)

Product model: NDM2-250 series

Date: 20150915

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Nader 良信电器	Document name	Product Specification	Document No.	NDT2930077
	Product model and name	NDM2-250 series Molded Case Circuit Breakers	Version	1
			Implement ation date	20160531

Revision History			
Version	Revision Content	Revision Date	Revised by
0	New addition	20150915	Sun Conglin
1	1. Update of the product's new reference picture 2. New addition of the accessory content 3. Mounting distance of molded case circuit breakers is added 4. New addition of the torque requirements	20160529	Sun Conglin

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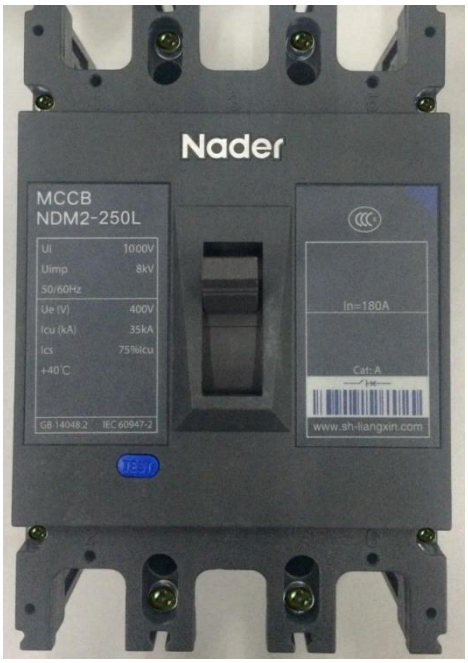
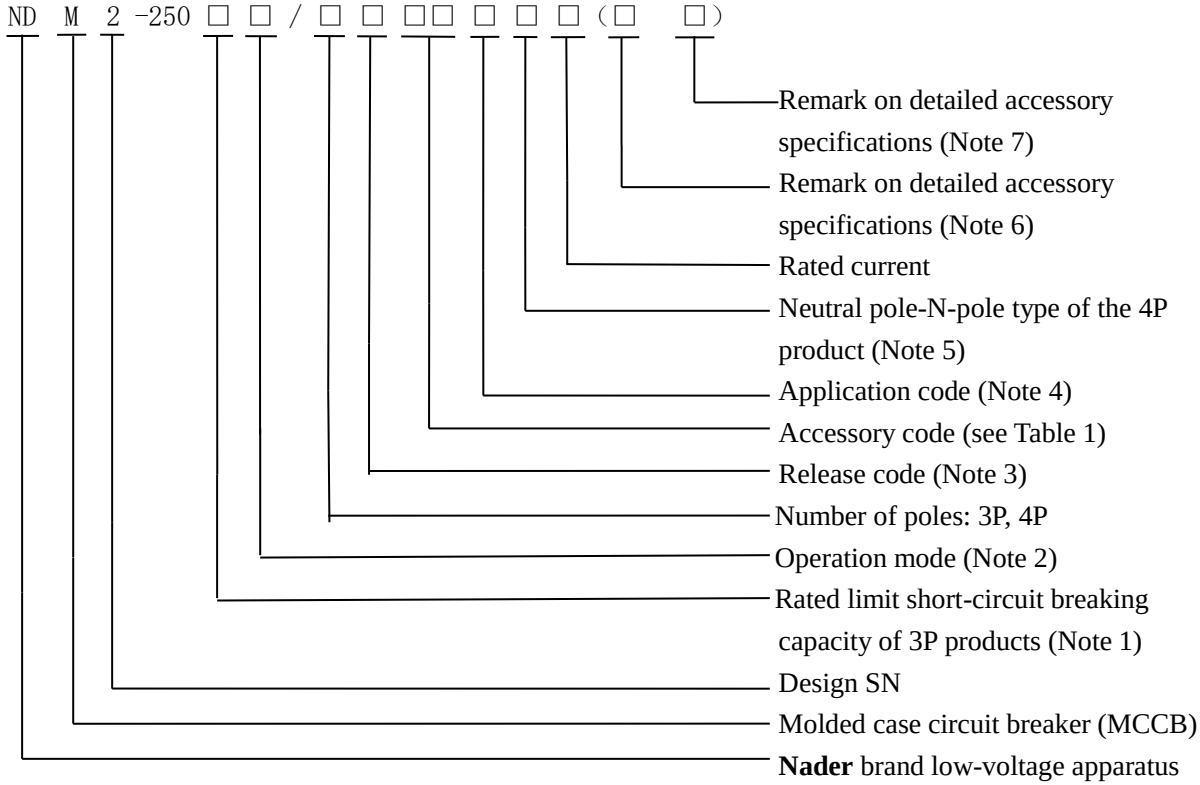
1. Applicable Scope and Purpose

NDM2 series of molded case products apply to infrequent switching of circuits with the AC 50Hz (or 60Hz), the rated working voltage of 690V and rated working current of 800A 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. Picture of the Product (The picture is for reference only; the specific kind prevails)



3. Specification and Model Description



Note 1: Rated limit short-circuit breaking capacity of 3P products:

C: Basic type, L: Standard type, M: Relatively high breaking type, H: High breaking type;

Note 2: Operation mode:

No code is available for the direct handle-operated mode

P: Motor-operated

Z: Rotation handle;

Note 3: Release code:

0: Tripper (none)

2: Instantaneous tripper only

3: Complex tripper;

Note 4: Application code

No code is available for the circuit breaker for distribution

2: Protection motor type;

Note 5: The neutral pole-N-pole type of the 4P product is divided into three types:

Type A: The N-pole isn't installed with an overcurrent tripper, but always connected;

Type B: The N-pole isn't installed with an overcurrent tripper, but on-off with the other three poles;

Type C: The N-pole is installed with an overcurrent tripper, and on-off with the other three poles.

Note 6: Remark on detailed accessory specifications

1. Detailed description of connection-type or rotation handle:
   - ① Normal products are uncoded;
   - ② P: Extended connection busbar;
   - ③ JK: Only the inlet wire end adopts the connection frame while the outlet wire end adopts the front-plate connection mode as the wiring mode;
   - ④ CK: Only the outlet wire end adopts the connection frame while the inlet wire end adopts the front-plate connection mode as the wiring mode;
   - ⑤ K: Inlet and outlet wire ends adopt the connection frame as the wiring mode;
   - ⑥ H: Rear-plate connection
   - ⑦ Z1: Plug-in rear-plate connection
   - ⑧ Z2: Plug-in front-plate connection

For example:

NDM2-250M/3300 250A (plug-in rear-plate connection),

NDM2-250LZ/3321 125A(CS1-A),

NDM2-250M/33002 200A (connection busbar), etc.

Note 7: Indicate the accessory voltage; the voltage of the electric operating mechanism, undervoltage tripper and shunt tripper shall be indicated temporarily:

① The voltage of the electric operating mechanism is represented as CD2 space+voltage: For example NDM2-250LP/3020 250A (CD2 DC24V),

② If only the voltage exists in the (), the voltage of the shunt tripper or undervoltage tripper from the accessories is indicated in default,

For example:

NDM2-250L/3341 200A (AC220V)

③ If the shunt tripper or undervoltage tripper exists simultaneously with the different voltage, it shall be clearly marked in front of the voltage,

For example:

NDM2-250M/3350 125A(MX AC220V+Q AC380V),

MX and Q represent the shunt tripper and undervoltage tripper respectively.

Table 1: Comparison Table of Accessory Code:

Table 1

Accessory code	Accessory name	NDM2-250		NDM2-400		NDM2-630		NDM2-800	
	Installation position / Model / Number of poles	3	4	3	4	3	4	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

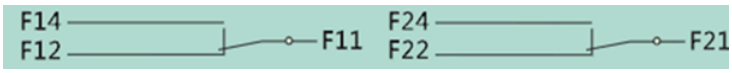
Model		NDM2-250				
Rated current of frame Inm (A)		250				
Rated current In (A)		100、125、140、160、180、200、225、250				
Rated insulation voltage Ui (AC V)		1000				
Rated impulse withstand voltage Uimp (V)		8000				
Rated working voltage Ue (AC V)		AC400V、AC690V				
Number of poles		3				4
Rated limit short-circuit breaking capacity level		C	L	M	H	/
Rated limit short-circuit breaking capacity Icu (KA)	400V	25	35	50	85	50
	690V			10		
Rated operating short-circuit breaking capacity Ics (KA)	400V	19	26	38	64	38
	690V			8		
Operating performance	POWER ON	8000				
	Without electricity	20000				

2) Connection capacity:

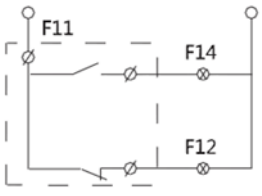
Rated current A	100	125/140	160	180/200/225	250
Wire cross-section area mm2	35	50	70	95	120

3) Auxiliary contact

① Auxiliary contact and its combination

The circuit breaker is in the “Off” or “Free tripping” position	Dual-auxiliary contact	
	Single auxiliary contact	
The circuit breaker is in the “On” position	“Closing” converted to “Disconnection”, and “Disconnection” converted to “Closing”	

② Wiring diagram of the auxiliary contact

	Power supply
	On circuit
	Off circuit

③ Current parameters of the auxiliary contact

Rated current of frame	Agreed thermal current Ith	Rated operating current at AC 400V
125-630	3A	0.30A

④ Electrical life of the auxiliary contact

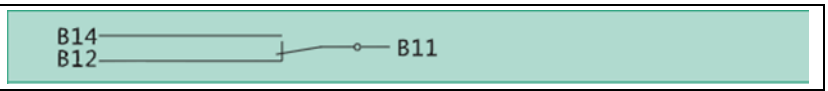
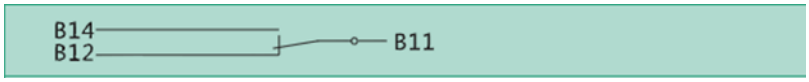
Usage category	Connecting			Breaking			Times	Operation frequency (times/h)	Power-on time
	I/Ie	U/Ue	cosφ	I/Ie	U/Ue	cosφ			
AC-15	10	1	0.3	1	1	0.3	6050	360	≥0.05s
DC-13	1	1	6Pe	1	1	6Pe			≥T0.95

⑤ Making and breaking capacity of the auxiliary contact

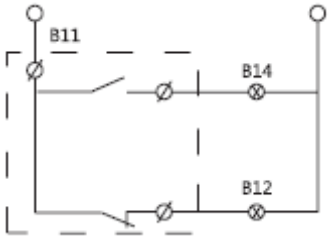
Usage category	Connecting			Breaking			Times	Operation frequency (times/h)	Power-on time
	I/Ie	U/Ue	cosφ	I/Ie	U/Ue	cosφ			
AC-15	10	1.1	0.3	1	1.1	0.3	10	120	≥0.05s
DC-13	1.1	1.1	6Pe	1.1	1.1	6Pe			≥T0.95

4) Alarm contact

① Alarm contact and its combination

The circuit breaker is in the "On" and "Off" position	
The circuit breaker is in the "Free tripping" position	

② Wiring diagram of the alarm contact



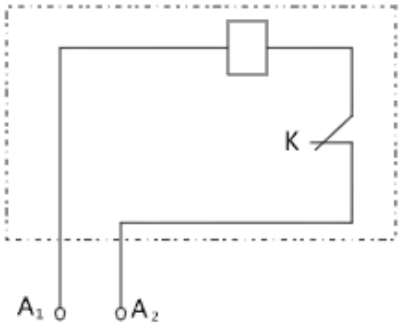
During normal on-off of the circuit breaker, the contact won't act and only change its original status after free tripping (or fault trip) with the normally-open state changed to be closed and normally-closed state changed to be open. After the circuit breaker is tripper, the contact will be restored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

③ Alarm contact parameters

Ue=220V, Ith=3A

5) Shunt tripper

① Wiring diagram of the shunt tripper



Power input

② Control voltage of the shunt tripper : AC 50Hz 230V 400V
DC 24V 220V

With the rated control voltage within 70%110%, the shunt tripper should make the reliable tripping under all the operation conditions.

5. Derating Parameter Table of Temperature for the Circuit Breaker

	Derating factor (In)						
	+40℃	+45℃	+50℃	+55℃	+60℃	+65℃	+70℃
NDM2-250	1	0.982	0.963	0.944	0.924	0.904	0.882

Note: The above derating factors are measured at the current of 250A

6 High-altitude derating factor

Altitude (km)	Rated operating current	Maximum operating voltage	Rated power frequency withstand voltage
2	In	Ue	U
2.5	In	Ue	U
3	0.980In	0.870Ue	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

7. Normal Working Environment

- ▲ Altitude: ≤2000m.
- ▲ Ambient temperature: -35℃~+70℃. (Reduced capacity is not considered with the temperature below +40℃)
- ▲ The relative humidity at an ambient temperature of +40℃ should not exceed 50%. A higher relative humidity is allowed at a lower temperature.
- ▲ Pollution level: 3.
- ▲ The product can withstand the effects of wet air, salt mist, oil mist and mould.
- ▲ The product should be installed free from snow and rain.
- ▲ The product can be disposed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust.
- ▲ In case of stricter user conditions than the above description, negotiate with the manufacturer.

8. Characteristic Curve of Circuit Breaker

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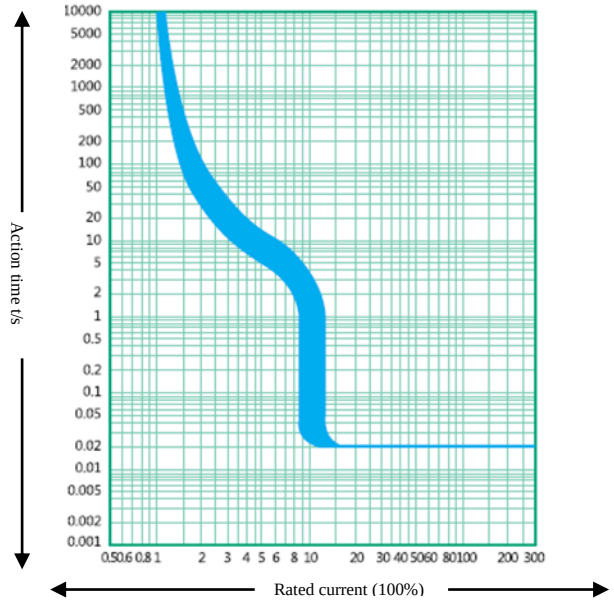
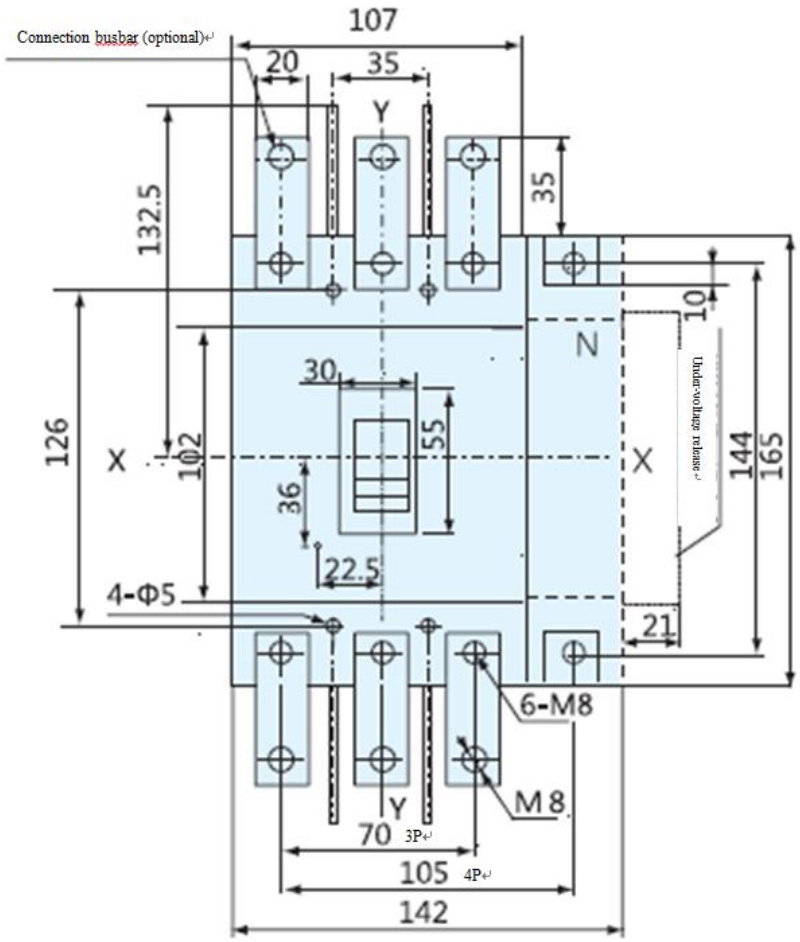
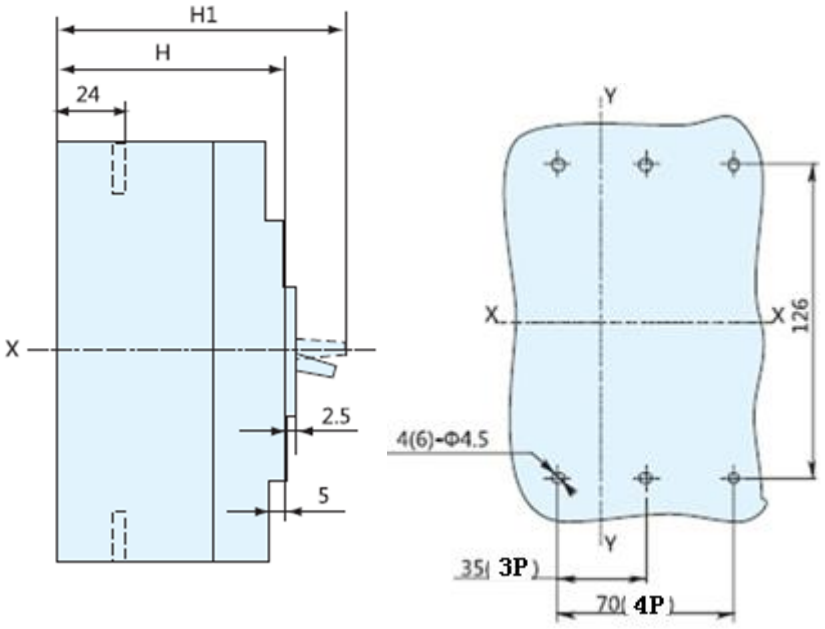


9. Outline and Mounting Hole Dimensions





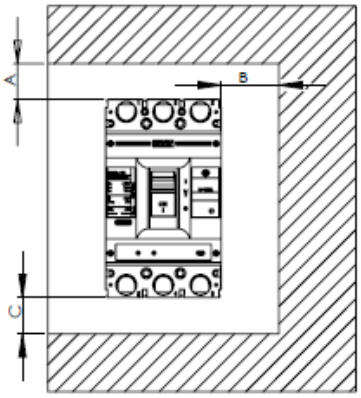
Model	H	H1
NDM2-250C、L	86	110
NDM2-250M、H	103	127
NDM2-250 4P		

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

10. Installation Mode

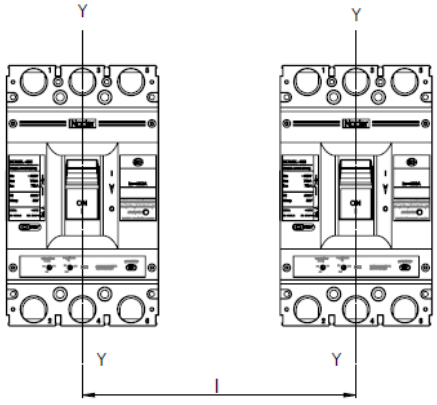
Installation mode: To be installed horizontally or vertically.

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		
NDM2-250	25	65	30	30

2) Minimum center distance between rowed circuit breakers (mm)

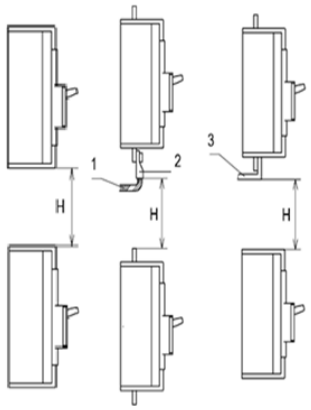


Specification	Width of circuit breaker		I Center distance	
	3P	4P	3P	4P
NDM2-250	107	142	137	172

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 (mm)

Specification	H (distance of circuit breaker from bottom)	
	With a 0 arcing cover	Without a 0 arcing cover
NDM2-250	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

11. 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 36 months since the manufacturing date.

12、**List of Accessories and Installation**

SN	Name	Specification	Quantity/Set（3P）	Quantity/Set（4P）
1	Cross small pan-head screws	M4X45	4	6
2.	Plain washer	4	4	6
3	Spring washer	4	4	6
4	Hexagon nut	M4	4	6
5	Phase partition	——	4	6

13. 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 2.4Nm; when the terminal screw adopts the M8 hexagon screw, tighten it with a torque of 12m.