

NDM3 -1600 Product Specification

(IPD-ENG-DEV-T20 A0 2014-04-01)

Product name: Molded Case Circuit Breaker (MCCB)

Product model: NDM3 -1600

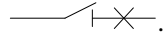
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Revision History					
Version	Revision Reason/Content	Implementation Date	Prepared by	Reviewed by	Approved by
V0	New addition	2017.11.20	Qiu Zhibiao	Huang Yinfang	Wu Chunyan

1 Applicable scope and purpose

The NDM3-1600 series of molded case circuit breakers (referred to as circuit breakers) have a rated insulation voltage of 1000V and apply to circuits with the AC 50Hz/60Hz, the rated working voltage (AC400V/415V, AC500V, AC690V) and rated working current (800A~1250A). The circuit breakers are used for distributing power while protect the overload, short circuit and under-voltage (with an under-voltage release) of lines and power units.

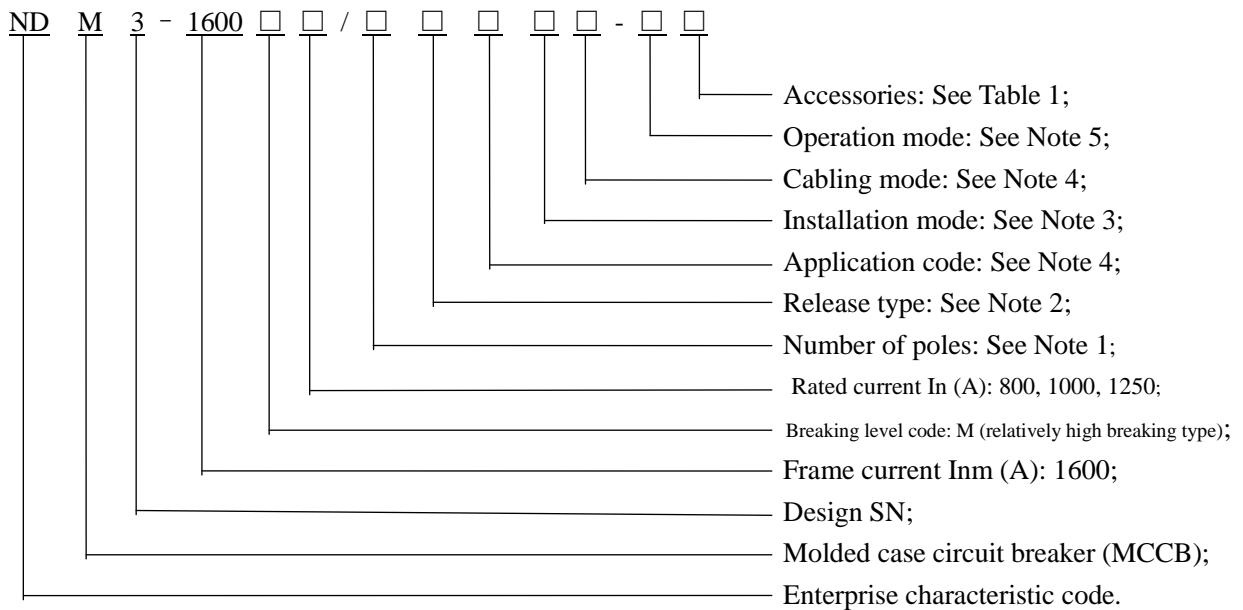
The circuit breaker has an isolating function with the corresponding symbol of .

Comply with standards: IEC 60947-2, GB/T 14048.2.

2 Picture of the Product



3. Specification and Model Description



Note:

1) Product type code: AC thermal-magnetic type; Z is for DC thermal-magnetic type; E is for electronic type.

- 2) Number of poles: 3: 3 poles;
- 3) Release code: TMD: AC thermo-magnetic distribution release; ETB: Electronic release;
- 4) Installation mode: fixed type: no code; drawout type “W”;
- 5) Cabling mode: front connection: no code; front extended connection: “ES”; rear horizontal connection: “HR”; rear vertical connection: “VR”;
- 6) Operation mode: direct handle-operated: no code; rotation handle operated: “R”; motor-operated: “M”.

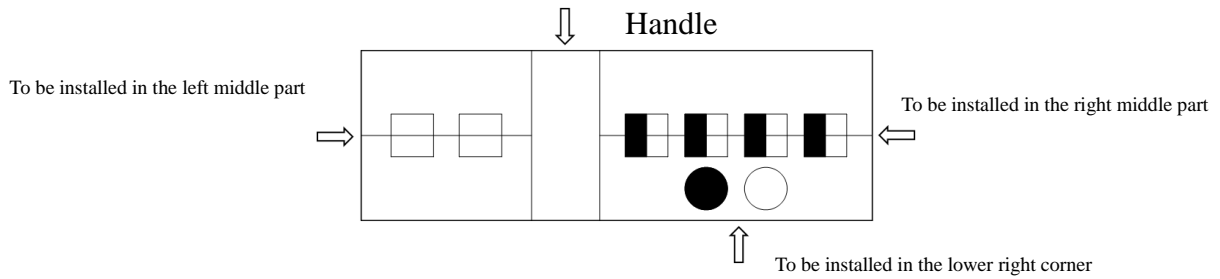
Table 1

Accessory code	Accessory name	Installation
		3P
00	None	—
08	One set of alarm contacts	
98	Two sets of alarm contacts	
10	Shunt release	
K01	Two sets of shunt releases	
30	Under-voltage release	
A01	Two sets of under-voltage releases	
21	Single auxiliary contact	
61	Two sets of single auxiliary contacts	
23	Three sets of single auxiliary contacts	
24	Four sets of single auxiliary contacts	
18	Shunt release, alarm contact	
38	Under-voltage release, alarm contact	
22	Single auxiliary contact, alarm contact	
88	Two sets of single auxiliary contacts, alarm contact	
26	Three sets of single auxiliary contacts, alarm contact	
25	Four sets of single auxiliary contacts, alarm contact	
42	Shunt release, single auxiliary contact, alarm contact	
44	Shunt release, two sets of single auxiliary contacts, alarm contact	
46	Shunt release, three sets of single auxiliary contacts, alarm contact	
14	Shunt release, four sets of single auxiliary contacts, alarm contact	
75	Under-voltage Release, single auxiliary contact, alarm contact	
77	Under-voltage release, two sets of single auxiliary contacts, alarm contact	
81	Under-voltage release, three sets of single auxiliary contacts, alarm contact	
82	Under-voltage release, four sets of single auxiliary contacts, alarm contact	

41	Shunt release, single auxiliary contact	
11	Shunt release, two sets of single auxiliary contacts	
12	Shunt release, three sets of single auxiliary contacts	
13	Shunt release, four sets of single auxiliary contacts	
71	Under-voltage release, single auxiliary contact	
72	Under-voltage release, two sets of single auxiliary contacts	
73	Under-voltage release, three sets of single auxiliary contacts	
74	Under-voltage release, four sets of single auxiliary contacts	
31	Under-voltage release, shunt release, alarm contact	
37	Under-voltage release, shunt release, two sets of single alarm contacts	
51	Under-voltage release, shunt release, single auxiliary contact	
52	Under-voltage release, shunt release, two sets of single auxiliary contacts	
53	Under-voltage release, shunt release, three sets of single auxiliary contacts	
54	Under-voltage release, shunt release, four sets of single auxiliary contacts	
19	Shunt release, two sets of single alarm contacts	
79	Under-voltage release, two sets of single alarm contacts	
63	Single auxiliary contact, two sets of single alarm contacts	
64	Two sets of single auxiliary contacts, two sets of single alarm contacts	
65	Three sets of single auxiliary contacts, two sets of single alarm contacts	
66	Four sets of single auxiliary contacts, two sets of single alarm contacts	
43	Shunt release, single auxiliary contact, two sets of single alarm contacts	
45	Shunt release, two sets of single auxiliary contacts, two sets of single alarm contacts	
47	Shunt release, three sets of single auxiliary contacts, two sets of single alarm contacts	
15	Shunt release, four sets of single auxiliary contacts, two sets of single alarm contacts	
75	Under-voltage release, single auxiliary contact, two sets of single alarm contacts	
77	Under-voltage release, two sets of single auxiliary contacts, two sets of single alarm contacts	
81	Under-voltage release, three sets of single auxiliary contacts, two sets of single alarm contacts	
82	Under-voltage release, four sets of single auxiliary contacts, two sets of single alarm contacts	
32	Under-voltage release, shunt release, single auxiliary contact, alarm contact	
33	Under-voltage release, shunt release, two sets of single auxiliary contacts, alarm contact	
34	Under-voltage release, shunt release, three sets of single auxiliary contacts, alarm contact	
35	Under-voltage release, shunt release, four sets of single auxiliary contacts, alarm contact	
39	Under-voltage release, shunt release, single auxiliary contact, two sets of single alarm contacts	

55	Under-voltage release, shunt release, two sets of single auxiliary contacts two sets of single alarm contacts	
56	Under-voltage release, shunt release, three sets of single auxiliary contacts two sets of single alarm contacts	
36	Under-voltage release, shunt release, four sets of single auxiliary contacts two sets of single alarm contacts	
A02	Two sets of under-voltage releases, single auxiliary contact	
A07	Two sets of under-voltage releases, two sets of single auxiliary contacts	
A08	Two sets of under-voltage releases, three sets of single auxiliary contacts	
A09	Two sets of under-voltage releases, four sets of single auxiliary contacts	
A10	Two sets of under-voltage releases, single auxiliary contact, alarm contact	
A12	Two sets of under-voltage releases, two sets of single auxiliary contacts, alarm contact	
A14	Two sets of under-voltage releases, three sets of single auxiliary contacts alarm contact	
A16	Two sets of under-voltage releases, four sets of single auxiliary contacts, alarm contact	
A11	Two sets of under-voltage releases, single auxiliary contact, two sets of single alarm contacts	
A13	Two sets of under-voltage releases, two sets of single auxiliary contacts, two sets of single alarm contacts	
A15	Two sets of under-voltage releases, three sets of single auxiliary contacts two sets of single alarm contacts	
A17	Two sets of under-voltage releases, four sets of single auxiliary contacts, two sets of single alarm contacts	
A05	Two sets of under-voltage releases, alarm contact	
A06	Two sets of under-voltage releases, two sets of single alarm contacts	
K04	Two sets of shunt releases, single auxiliary contact	
K06	Two sets of shunt releases, two sets of single auxiliary contacts	
K07	Two sets of shunt releases, three sets of single auxiliary contacts	
K08	Two sets of shunt releases, four sets of single auxiliary contacts	
K12	Two sets of shunt releases, single auxiliary contact, alarm contact	
K09	Two sets of shunt releases, two sets of single auxiliary contacts, alarm contact	
K10	Two sets of shunt releases, three sets of single auxiliary contacts, alarm contact	
K11	Two sets of shunt releases, four sets of single auxiliary contacts, alarm contact	
K13	Two sets of shunt releases, single auxiliary contact, two sets of single alarm contacts	
K14	Two sets of shunt releases, two sets of single auxiliary contacts, two sets of single alarm contacts	
K15	Two sets of shunt releases, three sets of single auxiliary contacts, two sets of single alarm contacts	
K16	Two sets of shunt releases, four sets of single auxiliary contacts, two sets of single alarm contacts	
K02	Two sets of shunt releases, alarm contact	
K05	Two sets of shunt releases, two sets of single alarm contacts	

Note: ■ Single auxiliary contact; □ Alarm contact; ● Shunt release; ○ Under-voltage release



4 Main Technical Parameters

Table 2

Model	NDM3-1600M
Number of poles	3
Rated working voltage Ue (V)	AC400V/415V, AC500V, AC690V
Rated current In (A)	800, 1000, 1250
Rated insulation voltage Ui (V)	1000
Power frequency withstand voltage (V)	3500
Rated impulse withstand voltage Uimp (kV)	12
Icu (kA) (AC400V/415V)	70
Ics (kA) (AC400V/415V)	50
Icu (kA) (AC500V)	50
Ics (kA) (AC500V)	50
Icu (kA) (AC690V)	20
Ics (kA) (AC690V)	20
Icw (kA)	/
Utilization category	A
Mechanical life (times)	10000
AC415V Electrical life (times)	1000
AC690V Electrical life (times)	500
Release form	Thermo-magnetic
External dimensions (length×width×height)	268×210×152
Installation Dimension	245×70

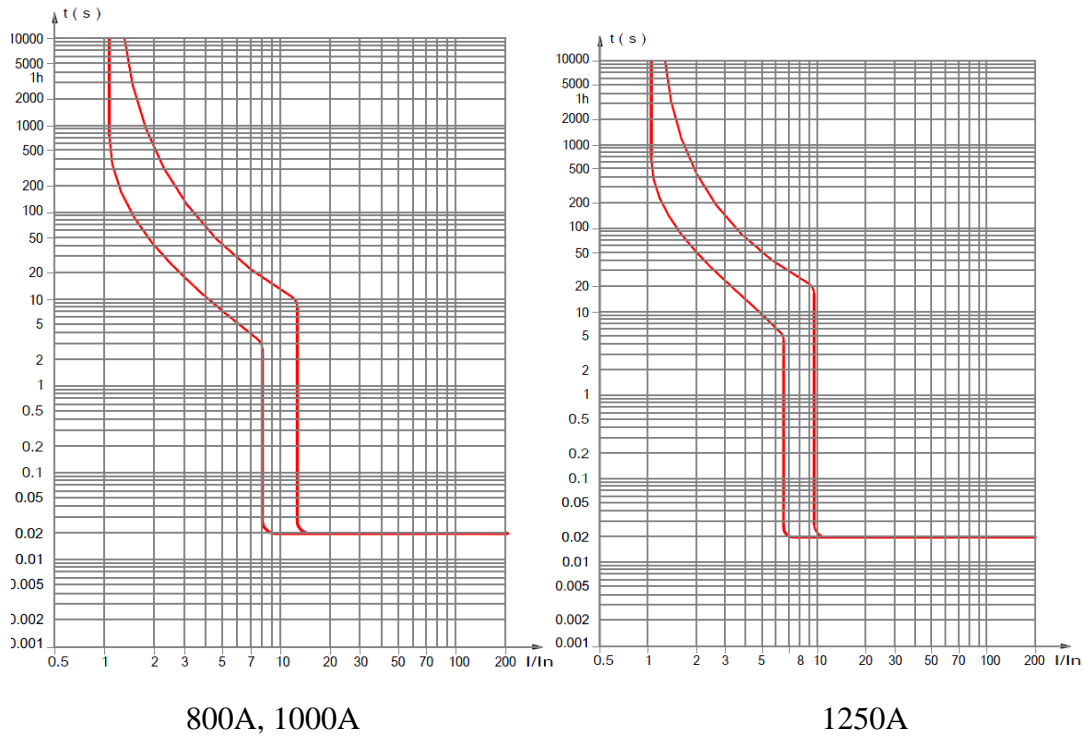
5 Normal Working Environment

- a) Altitude: ≤2000m;
- b) Ambient temperature: -35℃~+70℃;
- c) Pollution level: 3;
- d) Storage environment: -40℃~+75℃;
- e) Installation category: main circuit and under-voltage release; installation category III; auxiliary circuit and control circuit: installation category II;
- f) The product can withstand the effects of wet air, salt mist and oil mist;
- g) The vertical gradient is no more than 5°;

- h) The product can be disposed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust;
- i) The product should be installed free from snow and rain.

6 Tripping Characteristics

6.1 Tripping characteristic curve of NDM3-1600 under normal environment (ambient air temperature: 40°C), see the picture below:



6.2 The tripping characteristics should be corrected due to changes when the ambient air temperature varies (see Table 3 for the correction factor)

Table 3

Ambient air temperature	Correction factor	Ambient air temperature	Correction factor
-35°C	1.42	20°C	1.08
-30°C	1.38	25°C	1.06
-25°C	1.34	30°C	1.04
-20°C	1.30	35°C	1.02
-15°C	1.27	40°C	1
-10°C	1.24	45°C	0.96
-5°C	1.21	50°C	0.92
0°C	1.18	55°C	0.87
5°C	1.15	60°C	0.82
10°C	1.12	65°C	0.76
15°C	1.10	70°C	0.7

Note: The above data is calculated according to the test and theory. The data are only for guidelines and recommendations.

6.3 The tripping characteristics should be corrected due to small changes by considering the air insulation characteristics and cooling capacity with the ambient temperature of +40°C and the altitude above 2,000m (See Table 4)

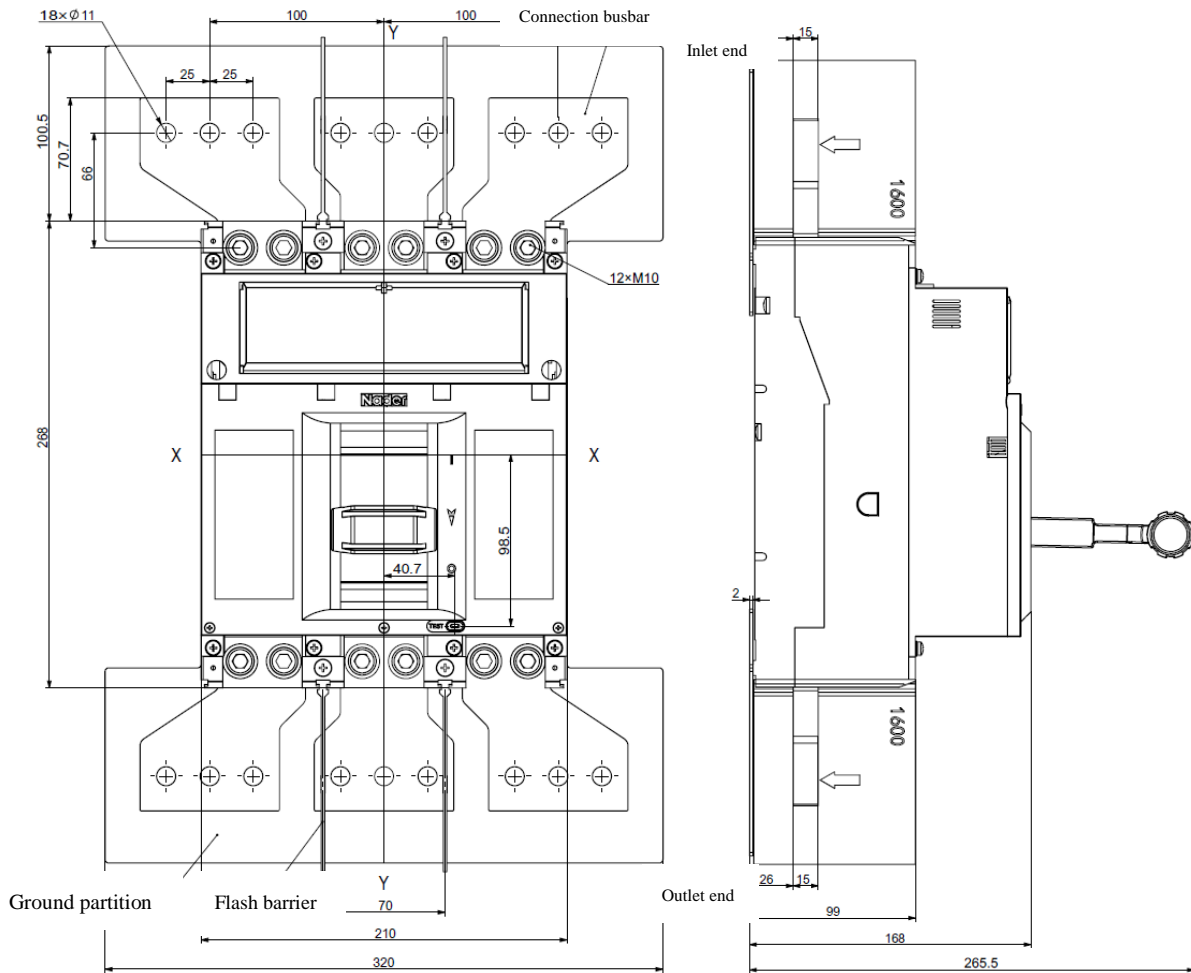
Table 4

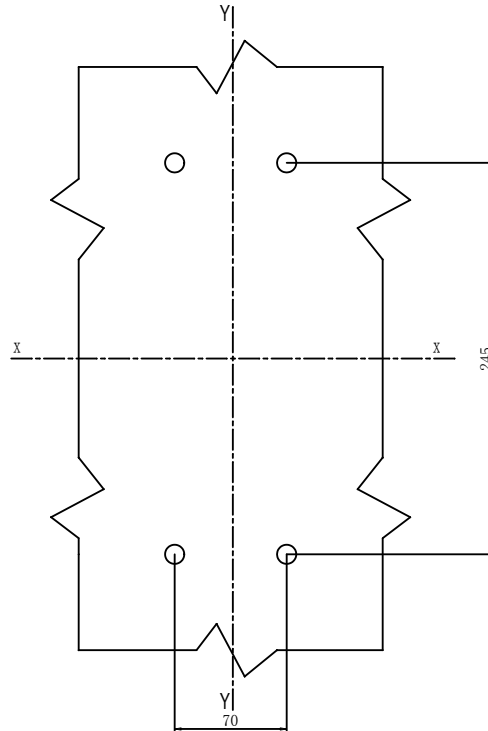
Altitude (m)		2000	3000	4000	5000
Power frequency withstand voltage (v)		3500	3150	2700	2200
Average insulation class (v)		1000	900	780	670
Maximum working voltage (v)		690	600	500	440
Correction factor of the working current (+40°C)	NDM3-1600	1	0.94	0.88	0.81

7 Installation Modes

The circuit breaker can be installed either vertically or horizontally.

8 Outline and Installation Dimensions





9 Packaging and Storage

Minimum packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with the ambient temperature of $-40^{\circ}\text{C}\sim+75^{\circ}\text{C}$ 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.

10 Installation Modes

10.1 The reference sizes of connection copper bars (see table 12)

Table 12

Rated current(A)	800	1000	1250
The sizes of copper bars: width×thickness (mm)	50×5	40×5	50×5
Capacity of copper bars	2	3	4

10.2 The torque requirement of binding screw and installation screw (see table 13)

Table 13

Tightening torque of binding screw M10 (N•m)	20
Tightening torque of installation screw M5 (N•m)	4

11 Environmental Compliance

Complying with the requirements of RoHs directives.

12 Lists of Accessories and Installation

This product is packaged in cartons with a single unit per carton and covered with pearl wool for protection, which contains a circuit breaker, accessories, phase partition, product manual, warranty card, etc.

Series Number	Name	Specification	Quantity
1	Cross small pan-head screw	M5×110	4
2	Plain washer	5	4
3	Spring washer	5	4
4	Hexagon nut	M5	4
5	Phase partition	—	4
6	Ground partition	—	2
7	Extended handle	—	1

13 Precautions

- a) The performance parameters of this specification are suitable for normal conditions. For special requirements, the equipment should be put into use after consulting us with formal confirmation and re-adjusting parameters;
 - b) The circuit breaker, tripping unit or other accessories can only be installed and maintained by the trained or qualified professionals;
 - c) Ensuring that the power supply is off before installing or removing any device.
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