

Shanghai Liangxin Electrical Co., Ltd.

NDM3G-400(V) Product Specification

(IPD-ENG-DEV-T20 A1 2016-09-23)

Prepared by	杨荣荣	Date	2024-03-30
Reviewed by	陈新明	Date	2024-03-30
Countersigned by	张健	Date	2024-03-30
Approved by	丁飞	Date	2024-03-30

Revision History					
Version	Revision Reason/Content	Implementati on Date	Prepared by	Reviewed by	Approv ed 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	Chen Xinming	Ding Fei
3	Normalized information update for attachment p ackage	13/04/2024	Yang rongrong	Chen Xinming	Ding fei

1. Applicable Scope and Purpose of Circuit Breaker

The NDM3G-400(V) molded case disconnecting switch (hereinafter referred to as switch) applies to infrequent switching of circuits with the AC 50/60Hz, the working voltage of AC 690V and DC 1000V, and the working current of 400A, with the load capacity. They can achieve effective isolation between the electric equipment and the power supply to guarantee the safe and reliable maintenance.

The Disconnecting Switch has an isolating function with the corresponding symbol of



Comply with standards: IEC60947-3, GB/T 14048.3.

Products comply with CCC、CE、TUV and CB certification.

Disconnecting Switch can be connected by lower incoming line.

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



Picture of the Product

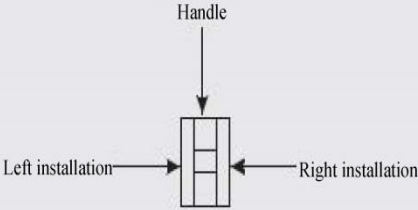
3. Specification and Model Description of Circuit Breaker

ND 1	M 2	3 3	G 4	- 5	400 5	☐ 6	☐ / ☐ 7 8	☐ 9	☐ 10	☐ 11	☐ 12
SN	SN name		NDM3G								
1	Enterprise code		ND: "Nader" low-voltage apparatus								
2	Product code		M: Molded case circuit breaker (MCCB)								
3	Design SN		3								
4	Derived code of the series		G: Disconnecting switch								
5	Shell frame level		400								
6	Derived code of the type		V: High voltage								
7	Operation mode		No code: Direct handle-operated mode								
			P: Motor-operated								
			Z: Rotary operation								
8	Number of poles		20,30, 40								
9	Accessory code		See Table 1								
10	Rated current		See Table 2								
11	Cabling type		No code: Normal product								
			P: Connection busbar								
12	Other code		CS1-A/150: Circular center hole rotary handle + shaft length 150mm								
			CS1-A/200: Circular center hole rotary handle + shaft length 200mm								
			CS1-A/300: Circular center hole rotary handle + shaft length 300mm								
			CS1-A/350: Circular center hole rotary handle + shaft length 350mm								
			CS1-A/650: Circular center hole rotary handle + shaft length 650mm								
			CS1-F/150: Square center hole rotary handle + shaft length 150mm								
			CS1-F/200: Square center hole rotary handle + shaft length 200mm								
			CS1-F/300: Square center hole rotary handle + shaft length 300mm								
			CS1-F/350: Square center hole rotary handle + shaft length 350mm								
			CS1-F/650: Square center hole rotary handle + shaft length 650mm								
			CS2-A/150: Circular eccentric hole rotary handle + shaft length 150mm								

	CS2-A/200: Circular eccentric hole rotary handle + shaft length 200mm
	CS2-A/300: Circular eccentric hole rotary handle + shaft length 300mm
	CS2-A/350: Circular eccentric hole rotary handle + shaft length 350mm
	CS2-A/650: Circular eccentric hole rotary handle + shaft length 650mm
	CS2-F/150: Square eccentric hole rotary handle + shaft length 150mm
	CS2-F/200: Square eccentric hole rotary handle + shaft length 200mm
	CS2-F/300: Square eccentric hole rotary handle + shaft length 300mm
	CS2-F/350: Square eccentric hole rotary handle + shaft length 350mm
	CS2-F/650: Square eccentric hole rotary handle + shaft length 650mm
	CS1-IP65/150/200/300/350/650: IP65 Square center hole rotary handle + shaft length 150/200/300/350/650mm
	CS2-IP65/150/200/300/350/650: IP65 Square eccentric hole rotary handle + shaft length 150/200/300/350/650mm
	DC1 24V:Electric operation voltage DC24V
	DC1 110V: Electric operation voltage AC/DC110V
	DC1 220V: Electric operation voltage AC230V/DC220V
	DC1 380V: Electric operation voltage AC380/400/415V
	MS2: MS2 lock
	AC230V: Shunt release operation voltage AC220V/AC230V
	AC380V: Shunt release/ Under-voltage release operation voltage AC380V/AC400V/AC415V
	DC24V: Shunt release operation voltage DC24V
	DC220V: Shunt release operation voltage DC220V
	Z: Terminal housing
	MS2: MS2 lock
	DB: Insulating base plate* (NDM3G-400V)

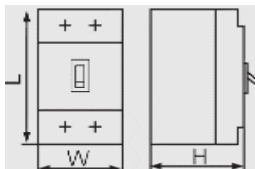
Note: NDM3G-400V standard insulating base plate.

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	Model	NDM3G-400		
			2	3	4
00	N/A		—		
20	Dual-auxiliary contact				
21	Single auxiliary contact				

4. Main Technical Parameters of Circuit Breaker

Table 2 Main Technical Parameters of Circuit Breaker

Model			NDM3G-400			NDM3G-400V
Rated current of frame Inm (A)			400			400
Rated current In (A)			400			400
Rated insulation voltage Ui (AC V)			1000			1140
Rated impulse withstand voltage Uimp (V)			8000			8000
Rated working voltage Ue (V)			AC380/400 /415、 AC500、 AC660/690 DC500	AC380/400 /415、 AC500、 AC660/690 DC750	AC380/400/ 415、AC500、 AC660/690 DC1000	AC1140
Power frequency withstand voltage U (1min) (V)			3000			3000
Utilization category			AC-21A/22A/23A、DC-21A/22A/23A			AC-21B
Number of poles			2	3	4	3
Rated short circuit making capacity Icm (kA)			5			5
Rated short-time withstand current Icw (kA/1s)			5			5
Operating performanc e (times)	Electrical life		7500			1000
	Mechanical life	Maintainable free life	10000			10000
		Maintainable life	20000			20000
Boundary dimension			L(mm)	257		257
			W(mm)	150		198
			H(mm)	107		107
Flashover distance(mm)			≤100			

Note :The overall dimension does not include the dimension of terminal cover。

NDM3G-400V standard insulated floor.

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

Table 3 Selection of the NDM3G-400(V) Connecting Bus or Cable Cross-section Area

Rated current (A)	400
Wire cross-section area (mm ²)	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

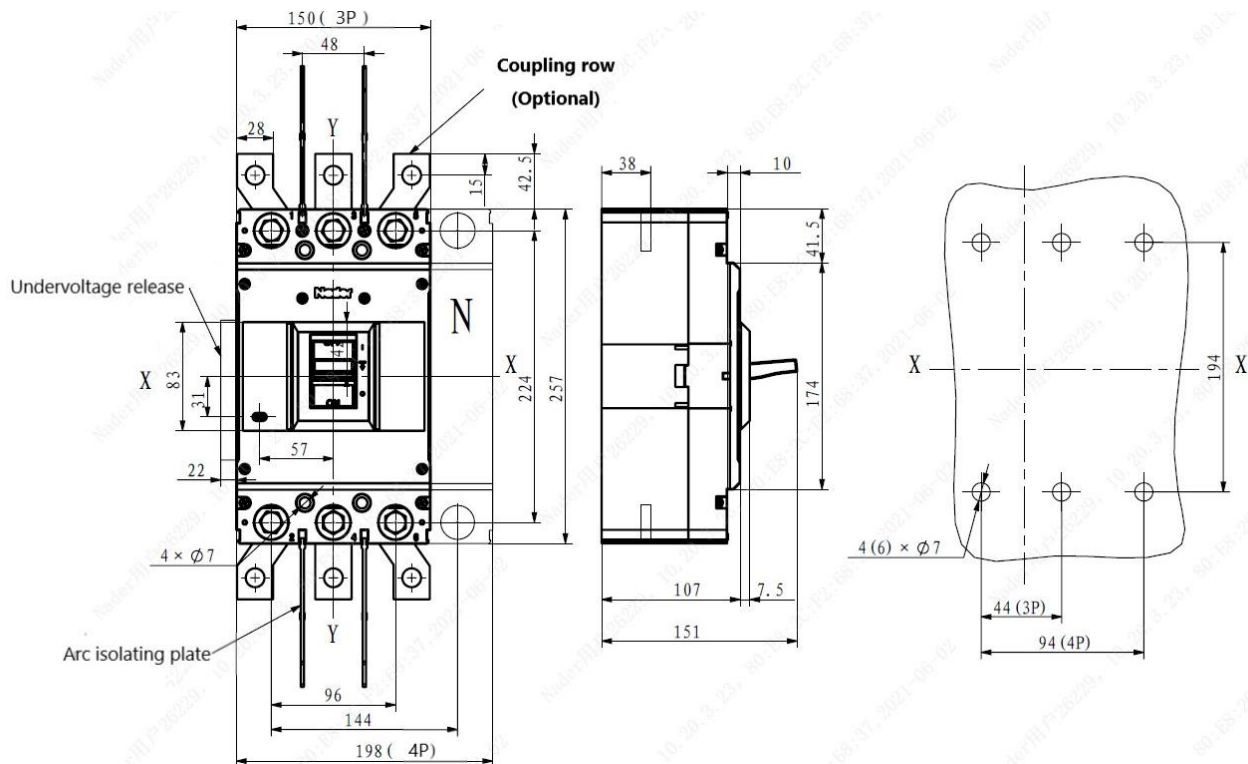
Model	Thread diameter (mm)	Torque (N·m)
NDM3G-400(V)	M10	20
	M6	6

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.

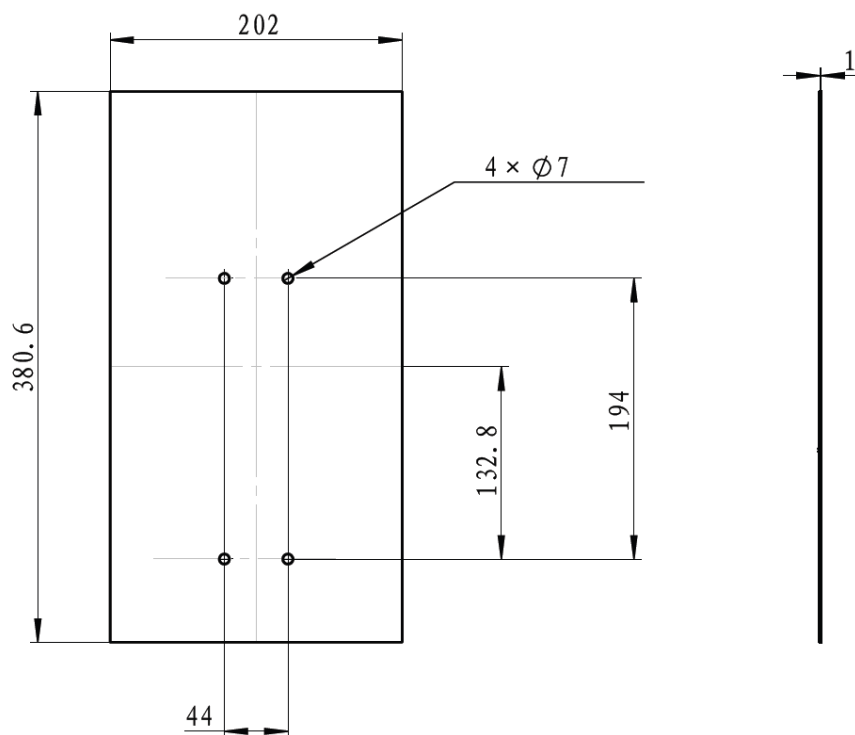
6. Outline and Mounting Hole Dimensions of Circuit Breaker

6.1 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.

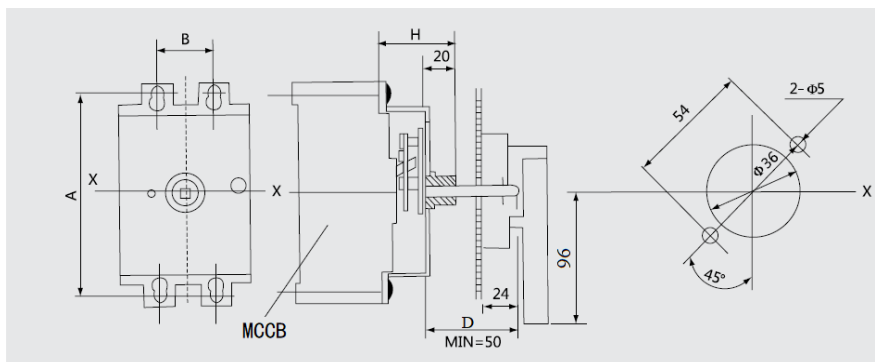
6.2 Insulating base (Unit: mm)



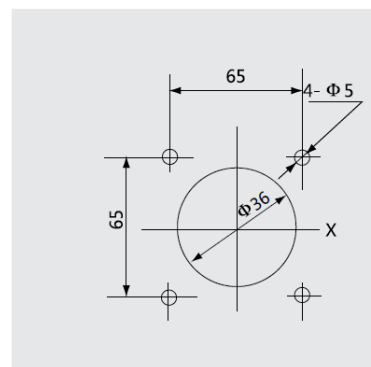
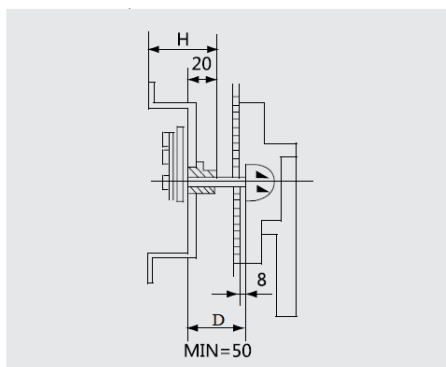
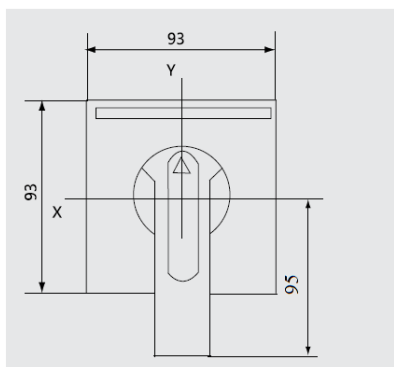
Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

6.3 Manual operating mechanism

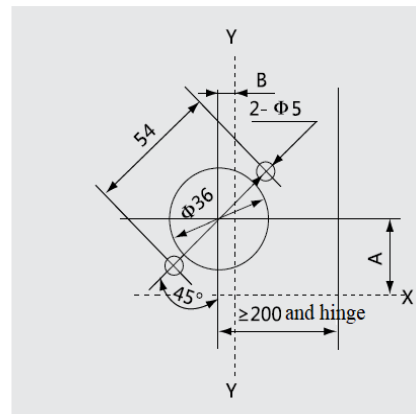
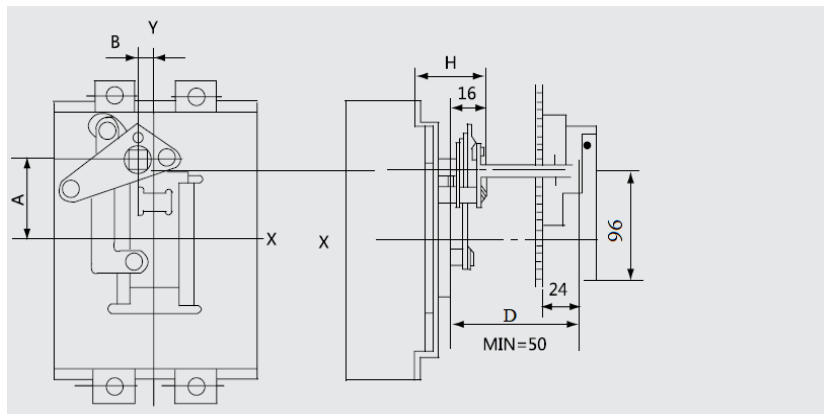
6.3.1 Manual operating mechanism and CS1-A handle



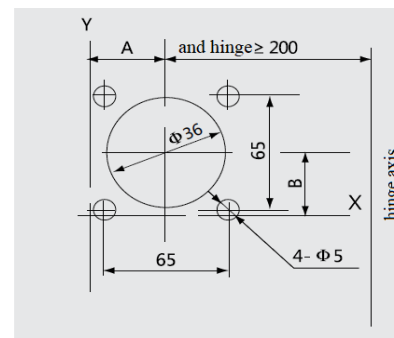
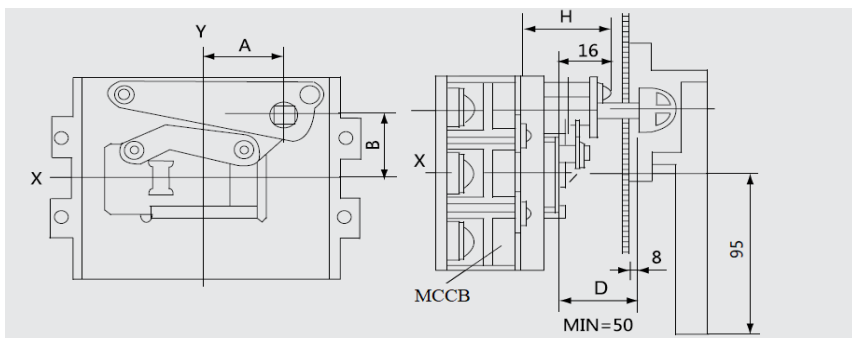
6.3.2 Manual operating mechanism and CS1-F handle



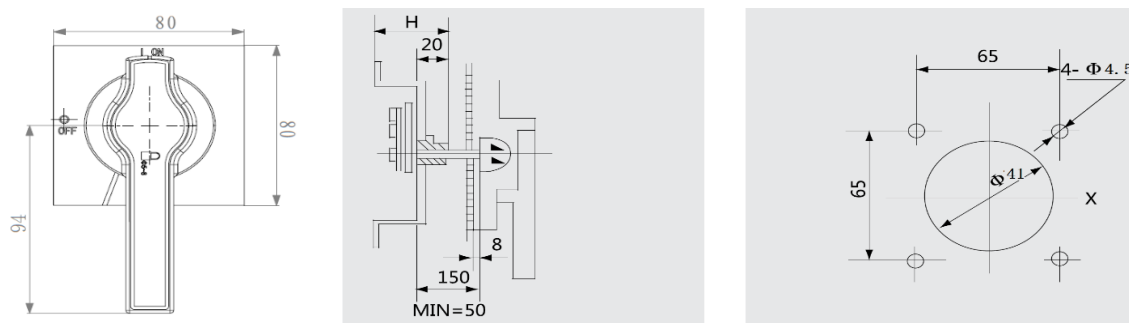
6.3.3 Manual operating mechanism and CS2-A handle



6.3.4 Manual operating mechanism and CS2-F handle



6.3.5 Manual operating mechanism and CS1-IP65 handle



6.3.6 Manual operating mechanism and CS2- IP65 handle

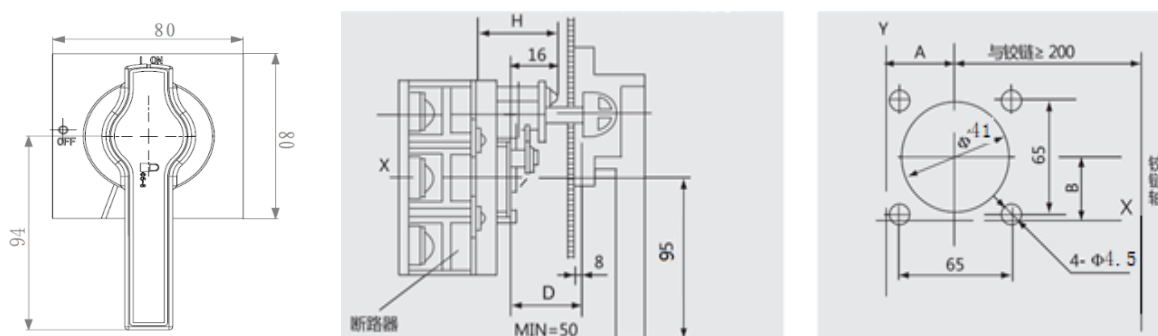


Table 5 Installation mode of electric operating mechanism (Unit: mm)

Manual operation type	Model	Installation dimension of manual operating mechanism				Installation mode
		H	A	B		
				2/3P	4P	
CS1	NDM3G-400	85	194	137	185	Vertical installation
CS2	NDM3G-400V	61	68	15		

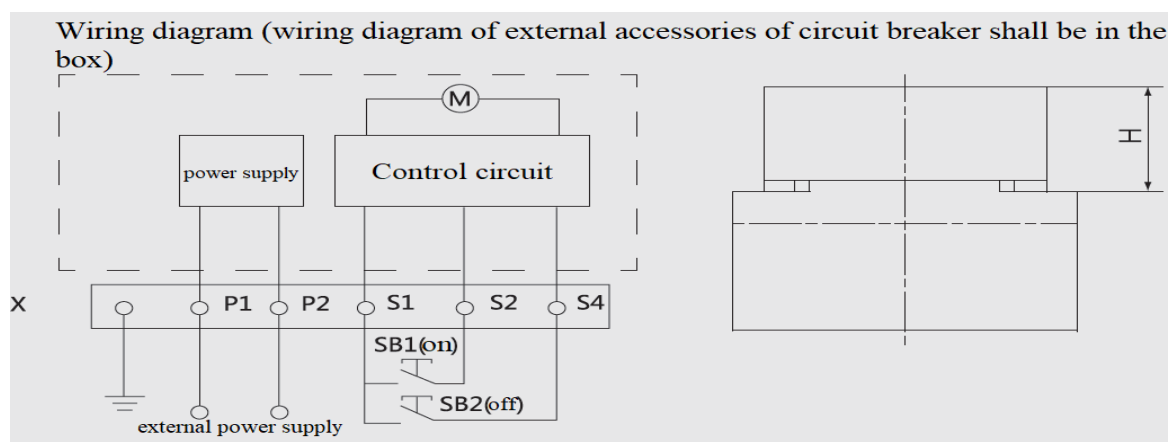
Note :1)Type A is round handle, type F is square handle;

2) The length of A-type handle is 96mm and that of F-type handle is 95mm;

3) The D dimension in the drawing is 150mm by default, and the customizable length is 200 / 300 / 350 / 650mm;

4) The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c

6.4 Electric operating mechanism



Symbol description: SB1、SB2: Operation button (provided by the customer)

X: Terminal block P1、P2: External power supply

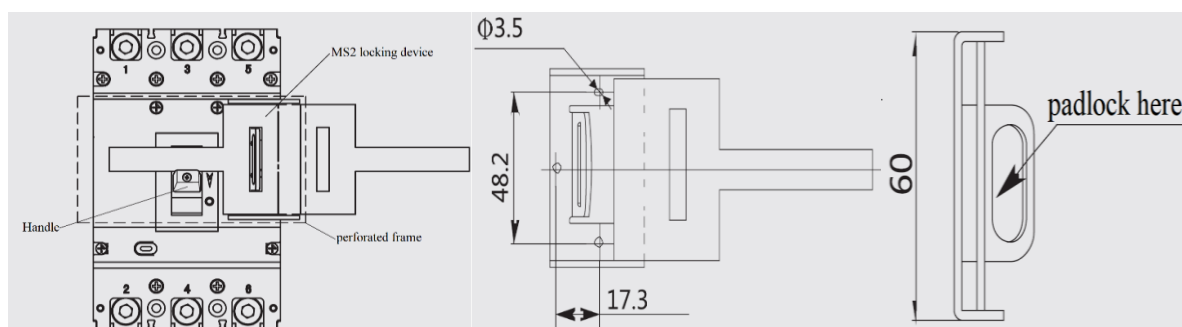
Voltage specification: AC110V、AC220V、AC380V、DC24V、DC110V、DC220V

Table 6 Main technical parameters of electric operating mechanism

Equipped with circuit breaker	Electric power (W)				Service life / time	Operating mechanism height H(mm)
	AC/DC220V	AC/DC110V	AC380V	DC24V		
NDM3G-400 (V)	≤350	≤250	≤600	160	10000	149

6.5 MS2 locking device

MS2 is a split locking device (i.e. the device is installed on the left or right side of the circuit breaker cover, and the default is installed on the right side if there are no special requirements). It is used for NDM3G series products to prevent manual closing and opening (the dotted line part is the circuit breaker part).



Installation diagram of MS2 lock mechanism (Unit: mm)

Note 1: After MS2 accessories are selected, other internal and external accessories cannot be installed on the same side;

Note 2: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

7、Attachment function description

7.1 Current parameters of auxiliary contact

Auxiliary contact

The circuit breaker is in the "open" and "free tripping" positions	Dual-auxiliary contact		
	Single auxiliary contact		
the circuit breaker is in the "close" position	"close" to "open"、" open " to " close "		

8.3.1 Current parameters of auxiliary contact

Table 16 Current parameters of auxiliary contact

Category	Frame current (A)	Ith(A) Conventional thermal current Ith (A)	Rated working current Ie(A)	
			AC400V(AC-15)	DC220V(DC-13)
Auxiliary contact	400	3	1.5	0.15
Note :minimum applicable load: 5V, 1mA.				

8.3.2 Electrical life of auxiliary contact

Table 17 Electrical life of auxiliary contact

Ues category	On			Off			Times	Frequency	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	$\geq 0.05s$
DC-13	1	1	6Pe	1	1	6Pe			$\geq T0.95ms$

8.3.3 Making and breaking capacity of auxiliary contact

Table 18 Making and breaking capacity of auxiliary contact

Ues category	On			Off			Times	Frequency	Power on time
	I/Ie	U/Ue	cosφ	I/Ie	U/Ue	cosφ			
AC-15	10	1.1	0.3	10	1.1	0.3	10	360	$\geq 0.05s$
DC-13	1.1	1.1	6Pe	1.1	1.1	6Pe			$\geq T0.95ms$

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		
NDM3G-400(V)	25	120	35	35

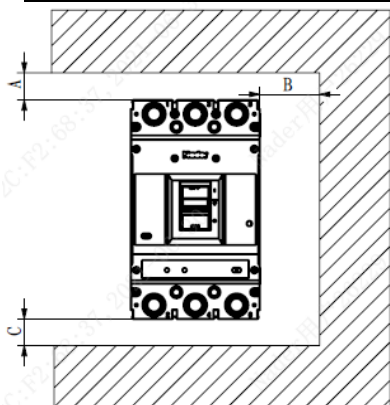


Table 8 Minimum Center Distance between Rowed Circuit Breakers (Unit: mm)

Model	Width of circuit breaker		I Center distance	
	3 poles	4 poles	3 poles	4 poles
NDM3G-400(V)	150	198	190	238

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.

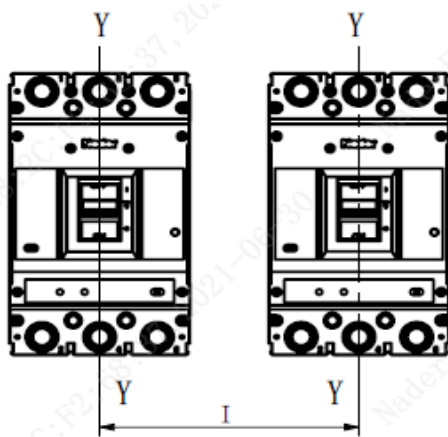


Table 9 Minimum Distance between Stacked Circuit Breakers (Unit: mm)

Model	H (distance of circuit breaker from bottom)	
	With a terminal cover	Without a terminal cover
NDM3G-400(V)	155	155

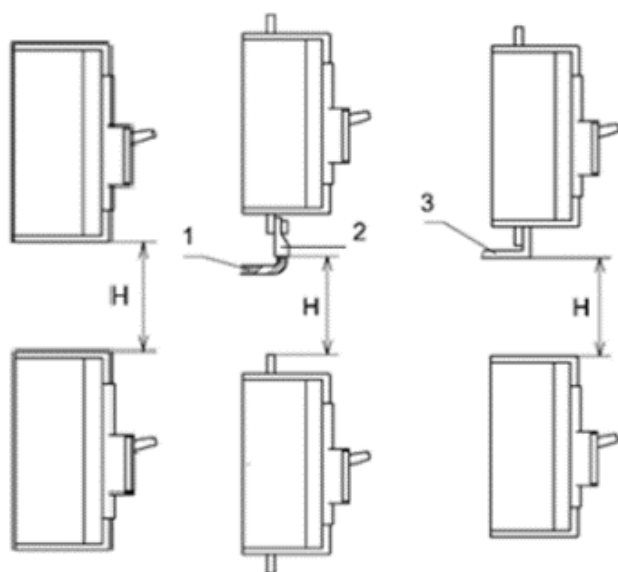
Note: 1) Bare cable connection

2) Cable insulating connection

3) Connection without insulation

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

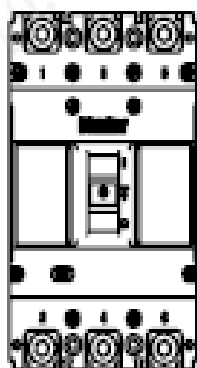
are energized.



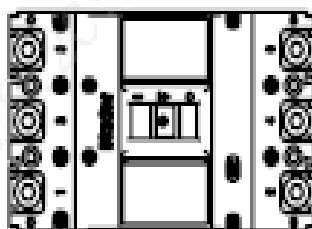
8. Installation Direction of Circuit Breaker

For vertical installation of the product, the gradient between the installation surface and the vertical plane is no more than $\pm 22.5^\circ$.

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 $-40^\circ\text{C} \sim +75^\circ\text{C}$. 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	2/3P Quantity/Set	4P Quantity/Set
1	Cross small pan-head screw	M6×70	4	4
2	Hexagon nut	M6	4	4
3	Plain washer	6	4	4
4	Phase partition	——	4	6
5	Plug	——	6	8
6	Insulating base*	——	1 (NDM3G-400V)	/
7	Hexagon head combination bolt	M10×35	4	6

Note: NDM3G-400V standard insulating base plate.

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.