

Shanghai Liangxin Electrical Co., Ltd.

PRODUCT SPECIFICATION

NDMNZ-630V

Molded Case Circuit Breaker

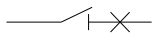
(IPD-ENG-DEV-T22 A2 2023-03-14)

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Revision information					
Version	Revised contents and reasons	Date	Prepared	Reviewed	Approved
0	Newly added	20250805	甘嘉奇	蒋武山	敖志宁

1 Application

NDMNZ-630V molded case circuit breaker (hereinafter referred to as circuit breaker) is suitable for working voltage below DC1500V and rated working current in DC systems up to 630A. The circuit breaker has the function of overload and short circuit protection, which can protect the line and power supply equipment from damage caused by overcurrent. It can be used in power generation, power transmission and transformation, photovoltaic new energy, communication and other fields.

The breaker has disconnecting function. The symbol of isolation is : 

The breaker meets the criterions: IEC 60947-2、GB/T14048.2。

The breaker meets the criterions: CCC、CE、TUV。

2 Product pictures

(The pictures are for reference only, which are subject to the real thing)

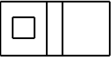


3 Product model

ND M N □ - 630 □ □ / □ □ □ □ □ □
 1 2 3 4 5 6 7 8 9 10 11 12 13

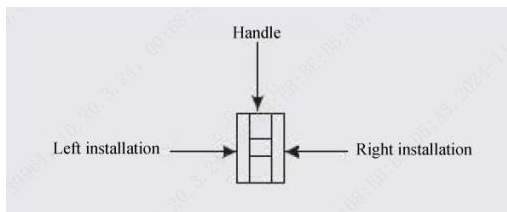
Item	Parameter type	NDMNZ-630V
1	Enterprise code	ND
2	Product code	M: Molded case circuit breaker (MCCB)
3	Design SN	N:New energy
4	Derived codename	Z:DC
5	Shell frame grade	630
6	High voltage level	V
7	Operation mode	No code: directly handle operation
		Z: Rotary operation
8	Pole	2
9	Operation mode	3: represents both thermal and matnetic
10	Accessory code	See Table 1
11	Rated current	400A、500A、630A
12	Cabling type	No code: Normal product
13	Other code	CZ: Terminal cover

Table 1: Comparison Table of Accessory Code:

Accessory code	Accessory name	Installation Location
00	None	—
08	Alarm contact	
10	Shunt release	
20	Dual-auxiliary contact	
21	Single auxiliary contact	
41	Shunt release , Single auxiliary contact	
58	Auxiliary alarm contact	

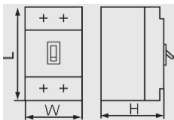
Note:

- Single auxiliary contact; ■ Dual-auxiliary contact □ Alarm contact;
 ● Shunt release ■ Single auxiliary contact ■ Shunt release, Single auxiliary contact



4 Main technical parameters

Table 2 Main Technical Parameters of Circuit Breaker

Type		NDMNZ-630V	
Rated current of frame Inm (A)		630	
Rated current In (A)		400、500、630	
Rated insulation voltage Ui (DC V)		1600	
Rated impulse withstand voltage Uimp (kV)		12	
Rated working voltage Ue (DC V)		1500	
Power frequency withstand voltage U (1min) （V）		3820	
Utilization category		A	
Number of poles		2	
Rated limit short-circuit breaking capacity Icu (kA)	DC1000V		20kA(τ=10ms)
	DC1500V		10kA(τ=10ms)/ 20kA(τ=2ms)
Rated operating short-circuit breaking capacity Ics (kA)	DC1000V		20kA(τ=10ms)
	DC1500V		10kA(τ=10ms)/ 20kA(τ=2ms)
Life(times)		Electrical life (DC1500V)	1000
		Mechanical life (maintenance-free)	5000
Boundary dimension		L(mm)	275
		W(mm)	110
		H(mm)	138
Flashover distance(mm)			0 (With terminal cover) 150(Without terminal cover)
Cabling type			front-plate connection

Maintenance-free definition: The ability of a product or component to function properly without manual maintenance or intervention during its expected life under normal conditions of use.

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

Table 3 Selection of the NDMNZ-630V Connecting Bus or Cable Cross-section Area

Rated current (A)	400	500	630
Cross-section area of cable (mm ²)	240	150×2	185×2

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 specification	Torque (N·m)
NDMNZ-630V	Wiring screw M10	25
	Product mounting screw M5	2.8
	Product mounting screw M3 (terminal cover)	0.8

4.3 Derating factor of temperature change for the circuit breaker

Table 5 Derating Factor Table of Temperature Change for the Circuit Breaker

Model	Derating factor of product temperature change										
NDMN Z-630 V	Temperature (°C)	40	45	50	55	60	65	70	75	80	85
	Derating factor	1	1	1	1	0.96	0.93	0.90	0.86	0.83	0.75

Note: 1) When the operating ambient temperature is below +55°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 derating factor of the circuit breaker

Table 6 High-altitude Derating Factor Table of Circuit Breaker

Elevation (m)	2000	2500	3000	3500	4000	4500	5000
Working current correction coefficient	1	1	0.98	0.97	0.96	0.94	0.93

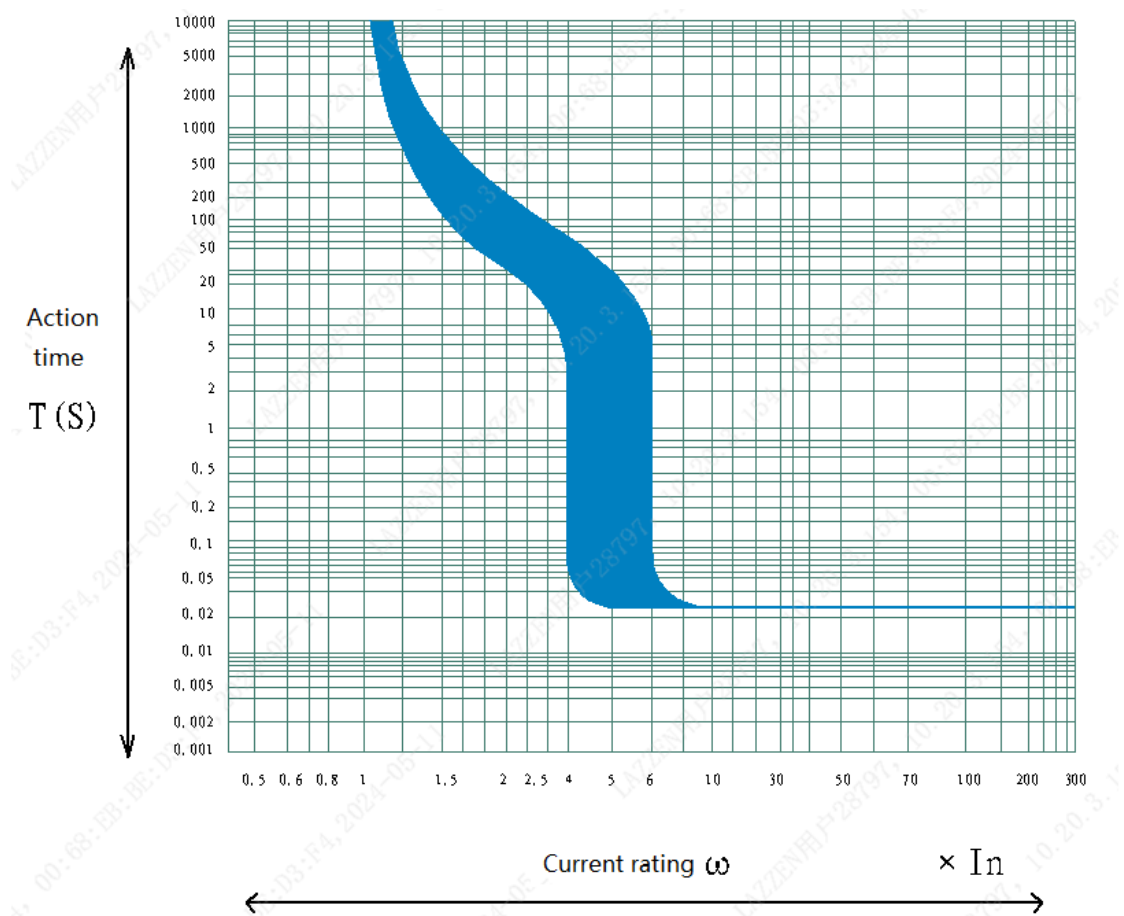
Maximum operating voltage	1	1	1	1	1	1	1
Power frequency withstand voltage correction coefficient	1	1	1	1	1	1	1
Isolation voltage correction coefficient (V)	1	1	1	1	1	0.67	0.67

5 Working conditions

- 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 -40°C~ +85°C; If the ambient temperature is higher than +85°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) Degree of protection: IP20;
- 8) The product is installed in a medium without explosion hazard, and the medium is free of gases and conductive dust that can corrode the metal and destroy the insulation, and avoid use in places where rain and snow invade;
- 9) In case of stricter user conditions than the above description, negotiate with the manufacturer.

6 Time-current curves

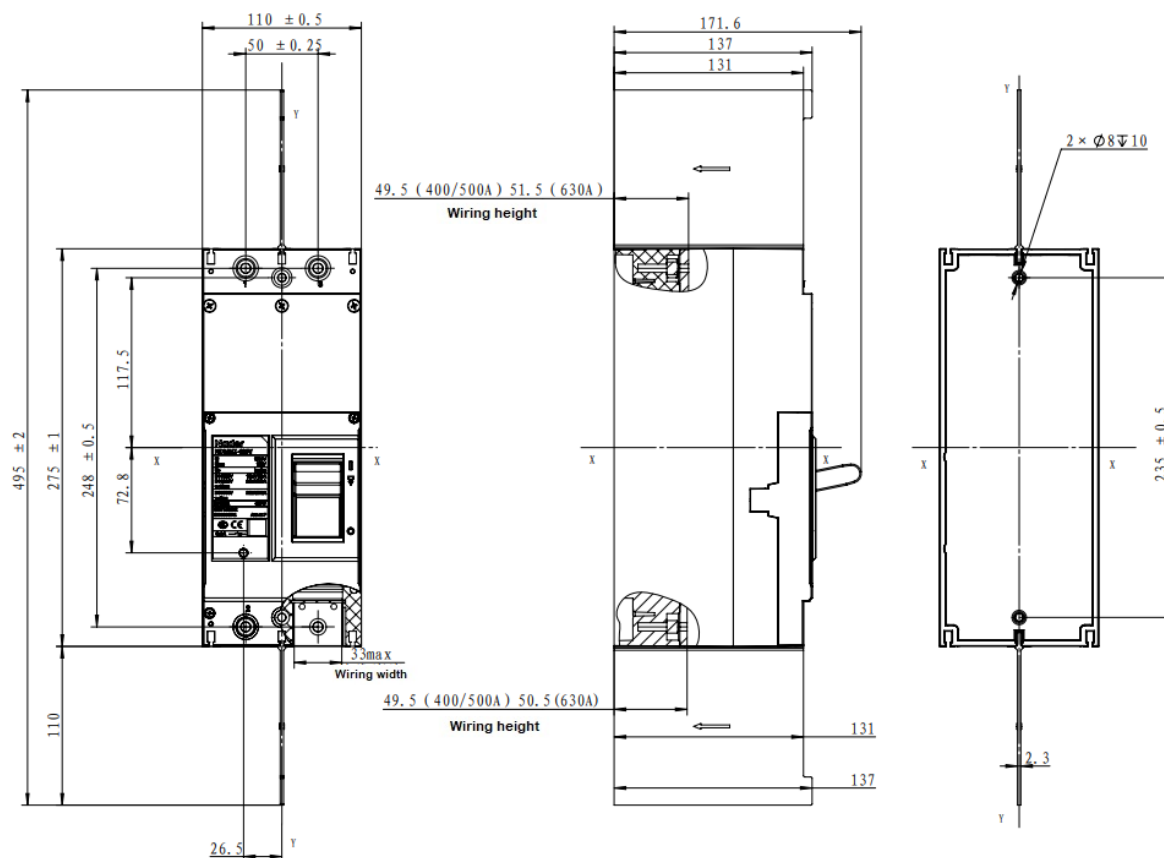
Characteristic curve of short-circuit overload protection ($5I_n$, accuracy of action value is $\pm 20\%$)



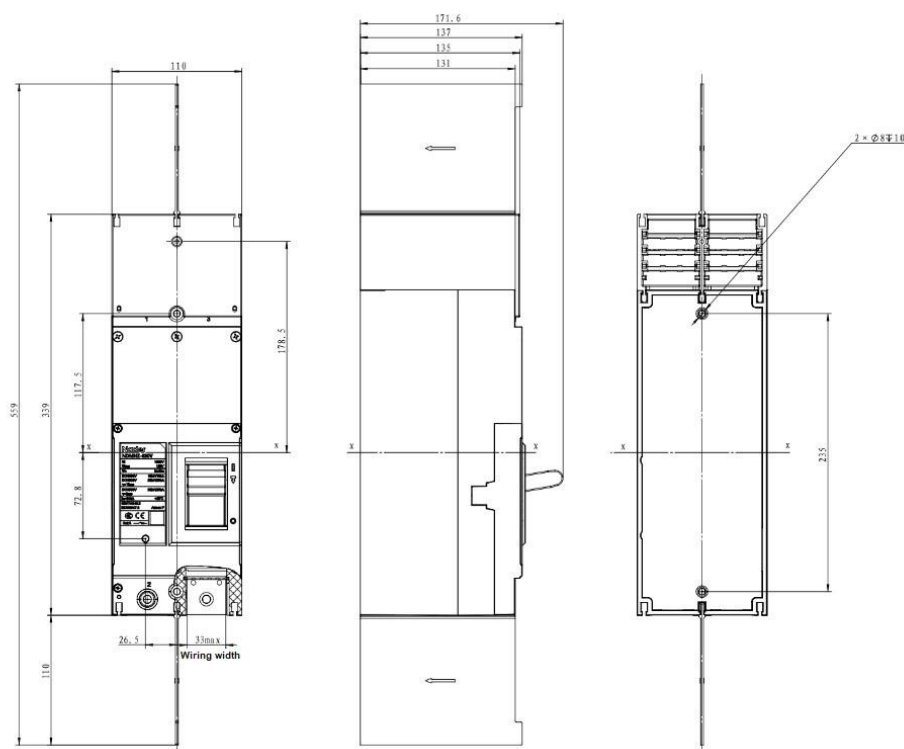
Time/current characteristic curves

7 Shape, installation opening size and safety distance

7.1 Dimensions

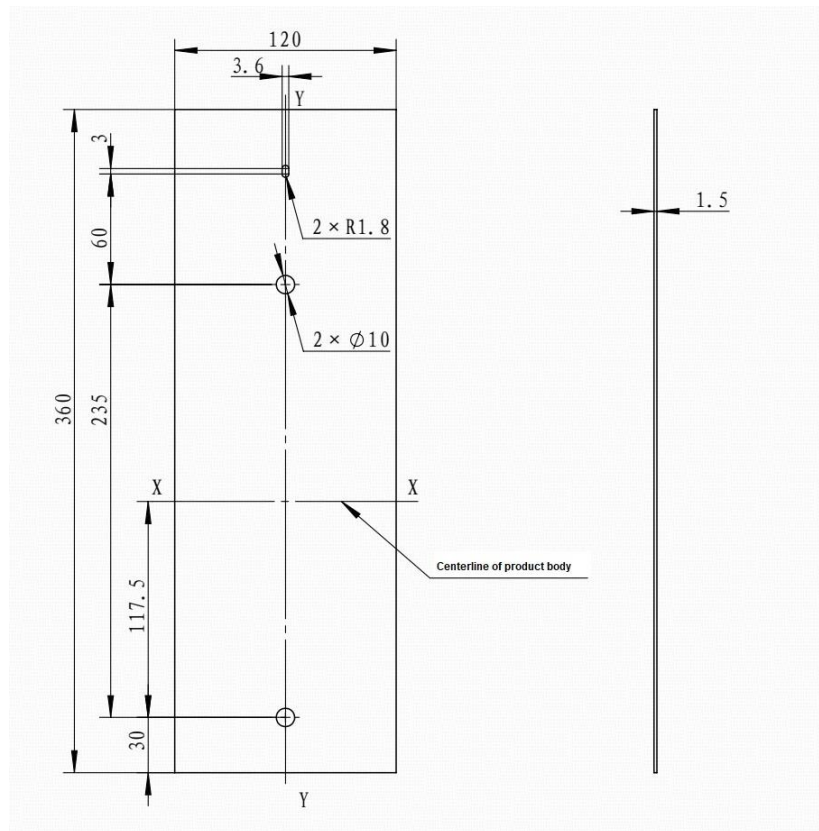


The overall dimensions of the product body



Product dimensions for with terminal cover

7.2 Insulating base dimensions

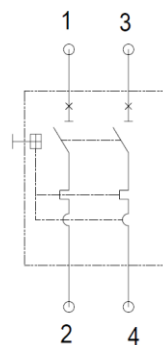


Outline dimensions of the Insulating base

Note

1. The limit deviation of unmarked tolerance dimensions shall be in accordance with GB/T 1804-c;
2. Insulated base plate is used as standard
3. The 2D dimension drawing is a general version, marked with key shape, installation and wiring dimensions. The accessories, partitions and other elements appearing on the drawing surface, as well as non-key elements such as nameplate, LOGO and some lines are not used as inspection basis, and the actual product shall prevail

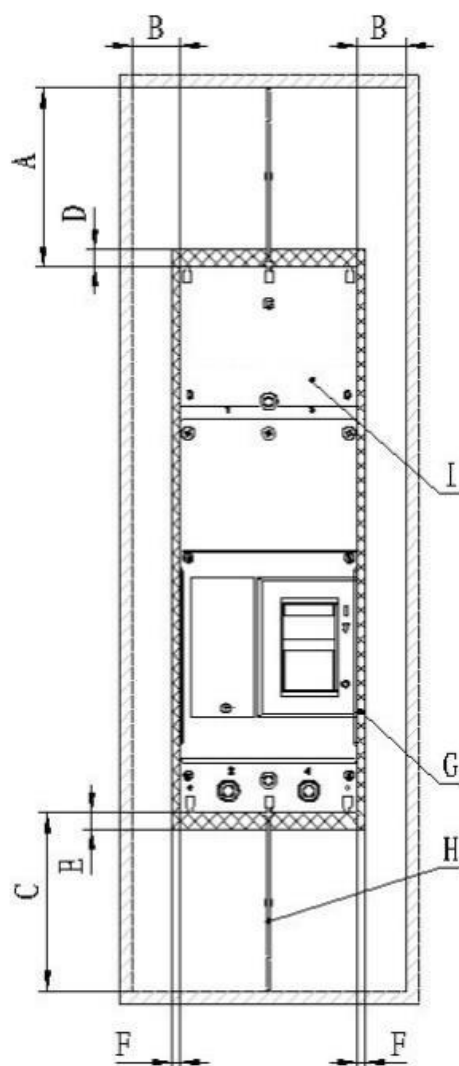
7.3 circuit breaker wiring diagram



Wiring Diagram for NDMNZ-630V 2P

Note: The product can be poured into the line

7.4 Circuit breaker installation safety distance



- A: Distance from terminals 1 and 3 to cabinet surface
 B: Distance from side to cabinet
 C: Distance from terminals 2 and 4 to cabinet surface
 D/E/F: Distance from circuit breaker to edge of insulating baseplate
 G: Insulation board thickness 1.5mm
 H: Interphase partition
 I: Terminal cover (described as "CZ")

Table 7 Safety distance parameter table for installation in metal cabinet (unit: mm)

Model	A		B	C	D	E	F
	Without terminal cover	With terminal cover					
NDMNZ-630V	150	30	30	110	10	10	5

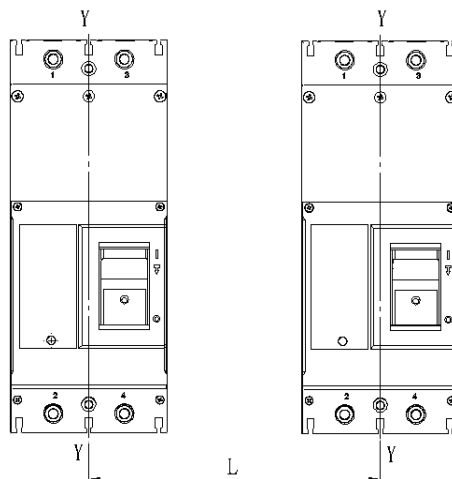


Table 8: Parameter table of minimum center distance between circuit breaker rows(unit: mm).

Model	L (Side-by-side circuit breaker center distance)
	2P
NDMNZ-630V	140

Note:

When the circuit breakers are arranged or stacked, check the connection busbar or cable to ensure that the air insulation distance will not be reduced.

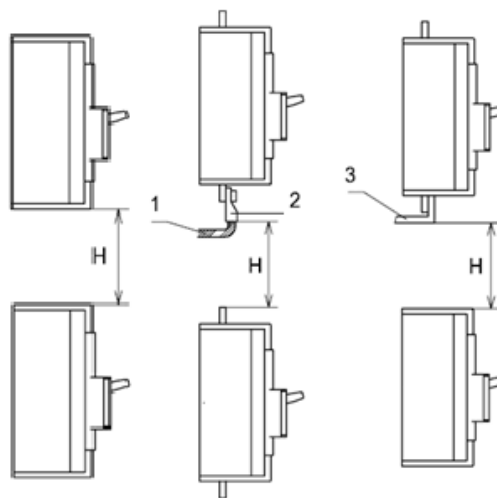


Table 9:Parameters of the minimum center distance between circuit breaker stacks(unit: mm)

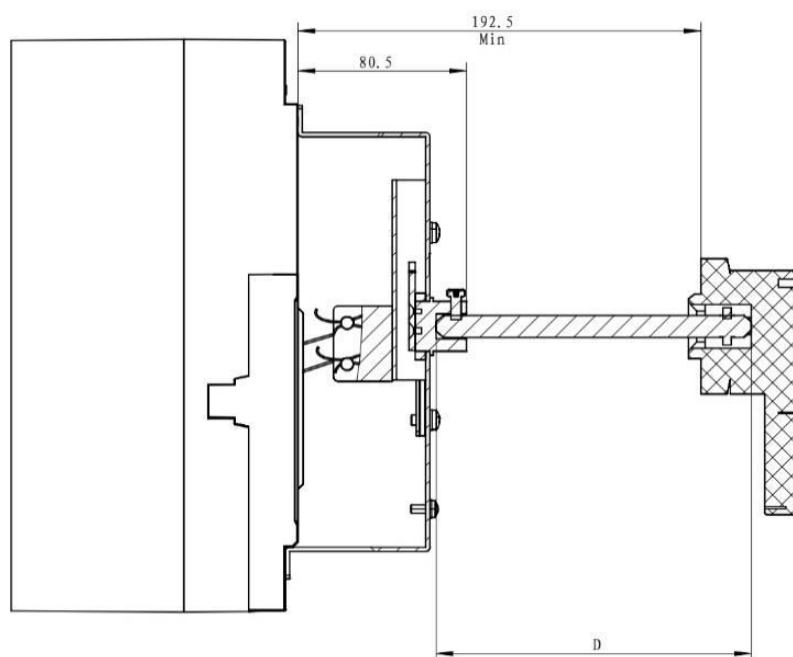
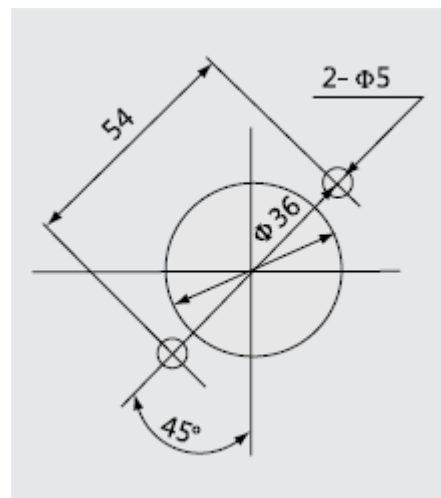
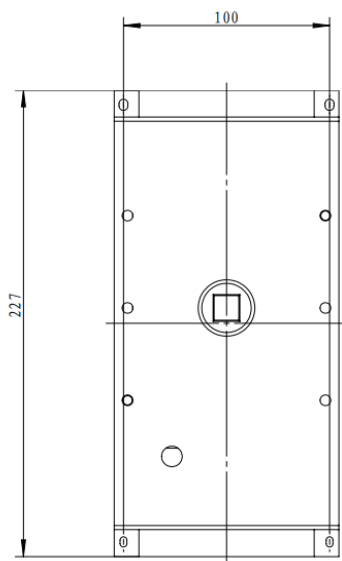
Model	H (up and down distance of stacked circuit breakers).
NDMNZ-630V	With terminal cover
	220

Note:

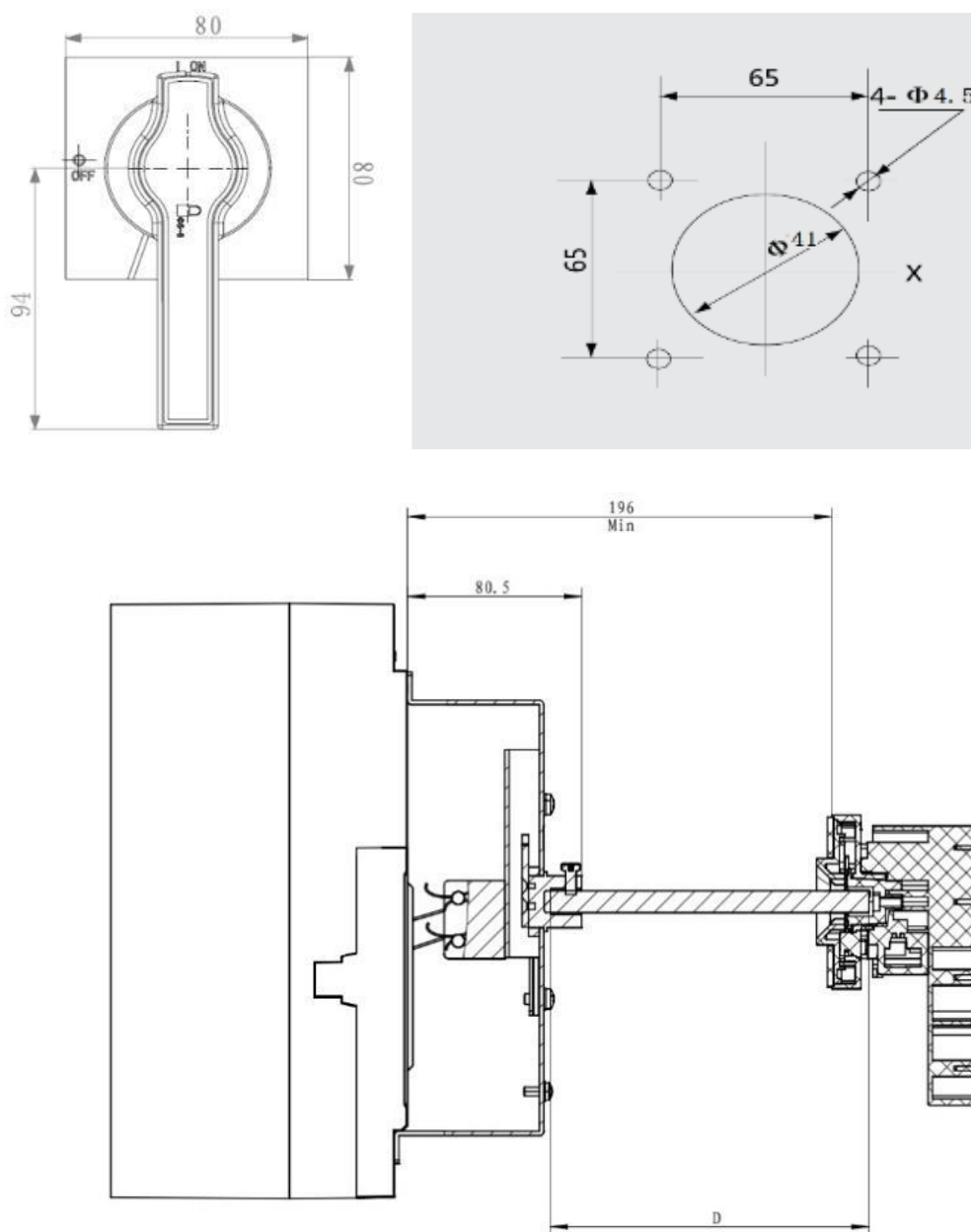
- 1 in the above figure is an insulated cable; 2 is a cable terminal; 3 is connected - no insulation;
- Before the product is powered on, please check that the terminal cover and phase spacer are assembled in place.

7.5 Manual operating mechanism

7.5.1 Schematic Diagram for Installation Opening of CS1-A Handle



7.5.2 Schematic Diagram for Installation Opening of CS1-IP65 Handle



Note: 1) A type is round handle, The length of A-type handle is 65;

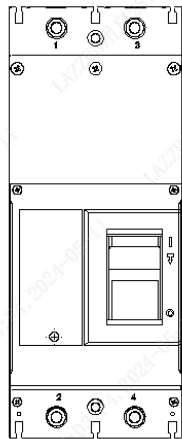
2) The D dimension in the drawing is 150mm by default, and the customizable length is 200 / 300 / 350 / 650mm;

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

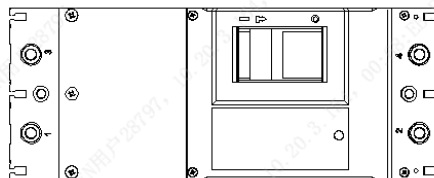
8 Installation Direction of Circuit Breaker

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 Attachment function description

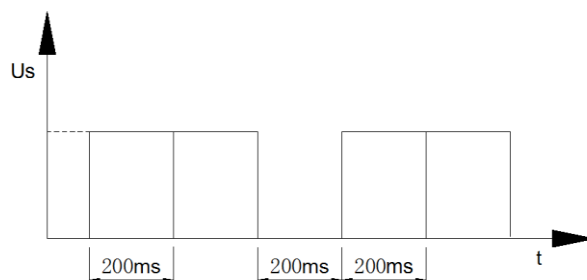
9.1 Shunt release

When the external voltage of the shunt release is between 70% and 110% of the rated control power voltage, the release can break the circuit breaker reliably.

Table 10: Parameter table of shunt release

Model	Shunt release			
Voltage specification (V)	AC/DC220V	AC380V	DC24V	AC/DC110V
Instantaneous current value (A)	0.065	0.112	0.33	0.058
Instantaneous Power waste (W)	15	43	8	15

Note: Working principle of shunt release: the longest time from energizing (receiving signal) of shunt release to product trip is 200ms, and the shunt action is a single pulse action (it is recommended that the power-on time be longer than 200ms); There is a coil inside the shunt release, which can only work for a short time. The longest power-on time is 500ms. It is recommended to use pulse power supply. If a single pulse does not trip, it is recommended to control the number of pulses within 3 times.



9.2 Auxiliary contacts

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 "	

9.2.1 Auxiliary contact current parameters

Table 11 Auxiliary contact current parameters

Model	Conventional thermal current Ith (A)	Rated working current Ie(A)	
		AC380V(AC-15)	DC220V(DC-13)
NDMNZ-630V	3	0.4	0.2

9.2.2 Electrical life of auxiliary contact

Table 12 Electrical life of auxiliary contact

Usage category	On			Off			Times	Power on time
	I/Ie	U/Ue	Cosφ or T _{0.95}	I/Ie	U/Ue	Cosφ or T _{0.95}		
AC-15	10	1	0.3	1	1	0.3	6050	≥0.05s
DC-13	1	1	6P	1	1	6P		≥T _{0.95} ms

9.3 Alarm contacts

Table 13 Alarm contact current parameters

Attachment name		Alarm contact (conventional)
Voltage specification/Agreed heating current (Ith).		AC380V/0.4A、DC220V/0.2A
Schematic diagram of wiring	Open and close	
	Free tripping	

Note:

The standard wire length of the shunt release, auxiliary contact and alarm contact is 0.7 meters, and 1 meter, 2 meters and 4 meters can be customized according to requirements.

10 Packaging and storage

The minimum packaging quantity is 1 / box, and the products packed into boxes should be stored in a warehouse with air circulation and relative humidity of no more than 80% at an ambient temperature of -40 °C ~ +85 °C. It is stored in a warehouse where there are no acidic, alkaline or other corrosive gases in the surrounding air. Under the above conditions, the storage period shall not exceed 3 years from the date of production.

11 List of installation accessories

SN	Name	Specification	Quantity/Set
1	Cross small pan-head screw	M5×80	2
2	Phase spacer	110	2
3	Nut rubber sleeve	--	2
4	Allen socket wiring combination screws	M10×30	4
5	Insulated base plate	360×120×1.5	1
6	Terminal cover	110×65×135	1 (optional)
7	Terminal cover mounting screw	M3×100	1 (optional)

Note: The nut rubber sleeve is installed on the terminal mounting screw of product 1 and 3.

12 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.