

Shanghai Liangxin Electrical Co., Ltd.
(NDG3-315/400 Disconnecting Switch)
Product Specification
(IPD-SPT-T11 A0 11/15/2016)

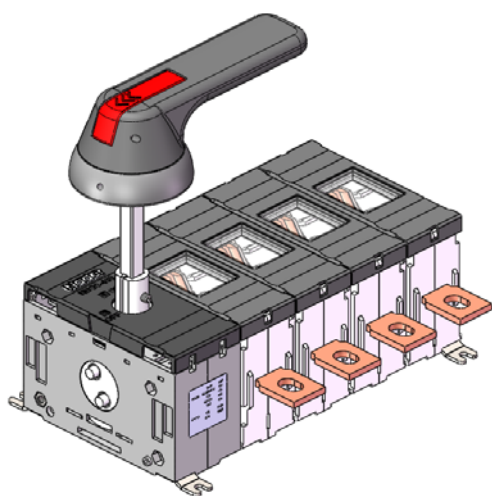
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Countersigned by	Jiang Zhaoyong	Date	2020.06.04
Approved by	Wang Jili	Date	2020.06.04

Revision History					
Version	Revision Reason/Content	Implementation Date	Prepared by	Reviewed by	Approved by
0	New addition	20131230	Xu Tiansi	Liu Zhenggan	Li Bai
1	Description addition of handle outside a cabinet	20160104	Yao Wei	Liu Qinglu	Zhou Bo
2	Specification update; update of dimension figure	20181123	Wang Jili	Zhang Jiazheng	Zhou Bo
3	Inside-cabinet handle update	20190429	Zheng Lei	Fu Chuantao	Wang Jili
4	Upgrade edition	20190510	Zheng Lei	Fu Chuantao	Wang Jili
5	Upgrade edition	20190603	Zheng Lei	Fu Chuantao	Wang Jili

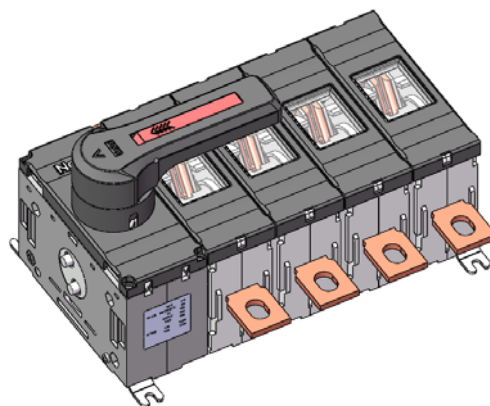
1. Application Scope and Purpose

The NDG3-315/400 disconnecting switch is applicable to the electric system with the rated current of 315/400A and the rated voltage of AC380/400/415V, AC500V, AC660/690V/1000V (50/60Hz) or DC 500V/3 poles, DC 1000V/4 poles in series and below. The product can be used for infrequent making and breaking, to isolate and break the circuit at the voltage up to 1000V. It can be widely used in the main switch of various equipment and machine's motor control center, and has an excellent performance in solving the DC breaking problem for the current solar photovoltaic system.

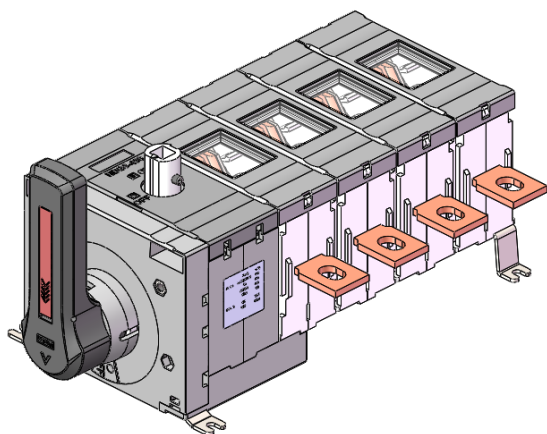
2. Picture of the Product (The picture below is for reference only; please subject to the kind)



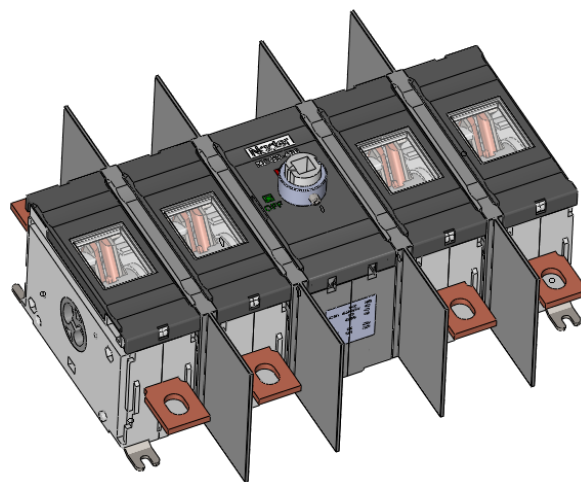
Front cabinet outside a cabinet operation



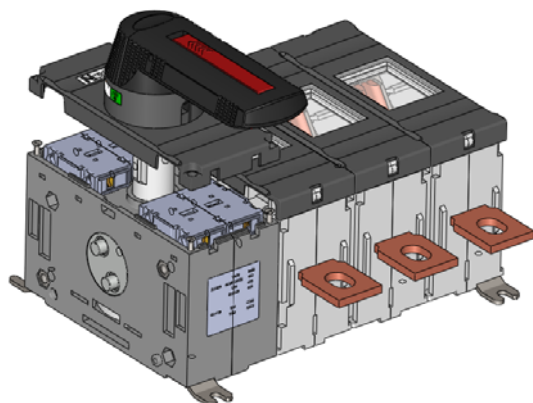
Front inside-cabinet operation



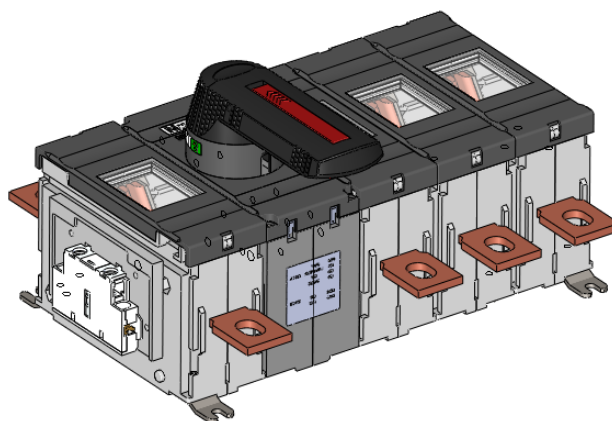
Side operation



Wide phase spacing operation



Internal auxiliary accessory



External auxiliary accessory

Note: The above picture is for the structure reference; the specific kind prevail)

3. Specifications and Models Description

3.1 Product model description of disconnecting switch body

ND G 3 - 400 / 04 W Z P
1 2 3 4 5 6 7 8

SN	Code name	Code description
1	Enterprise code	ND "Nader" brand low-voltage electrical device
2	Product code	G Isolating switch
3	Design SN	3
4	Rated current (A)	315 400
5	Number of poles	03:3P (mechanism is located on the left side of the switch) 12:3P (mechanism is between the switch poles, applicable to the front operation) 04:4P (mechanism is located on the left side of the switch) 22:4P (mechanism is between the switch poles, applicable to the front operation)
6	pole type	No code: Without the neutral pole product A: N pole (neutral pole) product and other products with the same phase pole B: N-pole feed-through neutral pole product W: Wide phase spacing product
7	Operation mode	Z: Front operation C: Side operation
8	Handle type	P: Handle and shaft to be installed outside the cabinet (without a handle, which shall be ordered separately, see "Common Handle Specifications" for details) K: Inside-cabinet installation, direct operation handle

Note: 1) only 3 poles 03 and 4 poles 04 are available for the NDG3-□/□□CK product;

- 2) For the pole type with Type A or B, only 4 poles are available for the product with the neutral pole;
 3) Only 3 and 4 poles are available for the wide phase spacing product;
 4) Common specifications and models:

SN	Type	Specification	Product name (ordering code)
1	Front operation outside a cabinet	NDG3-400/03ZP	30001696
2		NDG3-400/12ZP	30001697
3		NDG3-400/04ZP	30001698
4		NDG3-400/22ZP	30001699
5	With N-pole (neutral pole)	NDG3-400/04AZP	30001702
6		NDG3-400/04BZP	30001703
7	Front inside-cabinet operation	NDG3-400/03ZK	30001704
8		NDG3-400/04ZK	30001705
9	Side operation	NDG3-400/03CK	30001706
10		NDG3-400/04CK	30001707
11	Wide phase spacing operation	NDG3-400/03WZP	30001708
12		NDG3-400/04WZP	30001709
13		NDG3-400/12WZP	30001710

3.2 Product model description of disconnecting switch accessories:

3.2.1 Selection of IP65 handle outside a cabinet

SB 1 -130/G3-400

1 2 3 4

SN	Code name	Code description
1	Accessory code	SB
2	Design SN	1
3	Square shaft length	166: Shaft length 166mm; 185: Shaft length 185mm; 250: Shaft length 250mm; 280: Shaft length 280mm; 325: Shaft length 325mm; 395: Shaft length 395mm; 465: Shaft length 465mm; 535: shaft length 535mm;
4	Body model	G3-400, suitable for NDG3-315/400/500/630/800 products.



3.2.2 Auxiliary switch selection

N G F 1 - 01

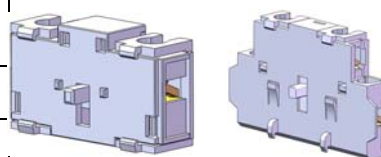
1 2 3 4 5

SN	Code name	Code description
1	Accessory code	N

2	Supporting product code	G Isolating switch
3	Auxiliary code	F
4	Design SN	1
5	Mechanism form	01: NC structure form; 10: NO structure form; 11: NO-NC structure form. (When the model is selected, the mounting base must be selected at the same time)

Note: General auxiliary specifications

SN	Type	Specification	Product name (ordering code)
1	01 NC structure	NGF1-01	30000961
2	10 NO structure	NGF1-10	30000962
3	11 NO-NC structure	NGF1-11	30000396



3.2.3 Selection of mounting base model (borrowing NDG3-250)

N G A 1 - 1 / 250

1 2 3 4 5 6

SN	Code name	Code description
1	Accessory code	N
2	Supporting product code	G Isolating switch
3	Mounting base code	A
4	Design SN	1
5	Installation type	1: Side-hang mounting base
6	Specification	250: NDG3-250

Note: Mounting base specifications

SN	Specification	Product name (ordering code)
1	NGA1-1/250	30001510



3.2.4 Terminal cover selection

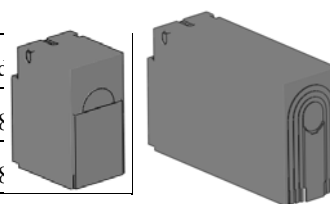
N G Z 1 - 400 / 1 L

1 2 3 4 5 6 7

SN	Code name	Code description
1	Accessory	N

	code	
2	Supporting product code	G Isolating switch
3	Terminal cover code	Z
4	Design SN	1
5	Specification	400: NDG3-400
6	Pole usage type	1: For the single pole
7	Terminal cover type	S: Short terminal cover L: Long terminal cover

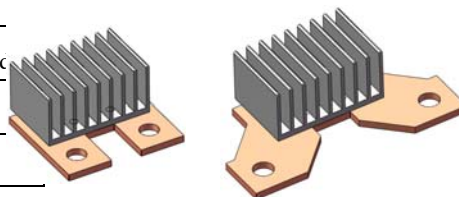
SN	Type	Specification	Product name (ordering code)
1	Short terminal cover	NGZ1-400/1S	3000168
2	Long terminal cover	NGZ1-400/1L	3000168



Note: Each terminal of the terminal cover is provided with one, the above product number includes 6 pieces/set for one set of 3-pole product.

3.2.5 Busbar selection (for appearance, see 9.54 in the specification)

SN	Type	Specification	Product name (ordering code)
1	Short busbar	8LD.585.1090	30001684
2	Long busbar	8LD.585.1096	30001685



Note: Short radiator is used for short connection and series connection of the same side phase pole of the mechanism pole; long radiator is used for short connection and series connection between the phase poles across the structure pole;

The above product number includes 1 radiator.

4. Main Technical Parameters

4.1 Main parameters of the disconnecting switch

Product model			NDG3-315	NDG3-400
Agreed thermal current I _{th} (A)			400	
Number of poles			3, 4	
Rated insulation voltage (V)			1000	
Rated impulse withstand voltage U _{imp} (kV)			12	
Rated working current (A)	Utilization category	Rated voltage (V)	NDG3-315	NDG3-400
	AC-23A	380/400/415	315	400

		500	315	400	
		660/690	315	400	
		1000	315	400	
	DC-21B poles in series	500	315/3	400/3	
		1000	315/4	400/4	
Rated short-time withstand current I _{cw} (kA)			31/0.15s	20/0.5s	15/1s
Rated short circuit making capacity I _{cm} (kA peak value)			50		
Electrical life			1000 times		
Mechanical life			10000 times		
Minimum wire cross section area (mm²)			Main product: 150mm²; auxiliary: 0.75-2.5mm²		
Terminal screw specifications (metric system: diameter×length mm)			Main product: M10×35; auxiliary: M3.5×9.5		
Terminal tightening torque (locking torque Nm)			Main product: 30-44Nm; auxiliary: 0.8Nm;		
Operating torque (N.m)			15		
Weight (without accessories) 3-pole switch (kg)			2.2		
Installation mode			Baseplate screw installation		

- Comply with standards: IEC 60947-3, GB14048.3;
- Frequency: 50/60Hz;
- Certificates: CCC, CE;

4.2 Main parameters of the auxiliary switch

- Electrical parameters

Rated working voltage:	AC230V	AC400V	AC690V	DC220V
Rated working current:	6A	4A	2 A	0.6 A

- Rated insulation voltage: AC690V
- Rated impulse withstand voltage U_{imp}: 4kV
- Agreed thermal current: I_{th}: 16A
- Rated frequency: 50/60Hz
- Utilization category: AC-15, DC-13
- Protection class: IP20
- Electrical life: 20000 times
- Standard certification: GB/T 14048.5, comply with ROHS

5. Normal Working Environment

- 1) The ambient air temperature is $-40^{\circ}\text{C}\sim 70^{\circ}\text{C}$, and its average temperature within 24h shall not exceed $+35^{\circ}\text{C}$.

With the ambient temperature of 75° , the maximum rated current is derated to 350A;

With the ambient temperature of 80° , the maximum rated current is derated to 300A;

With the ambient temperature of 85° , the maximum rated current is derated to 280A. Other current is not derated.

- 2) See the table below for the high altitude derating:

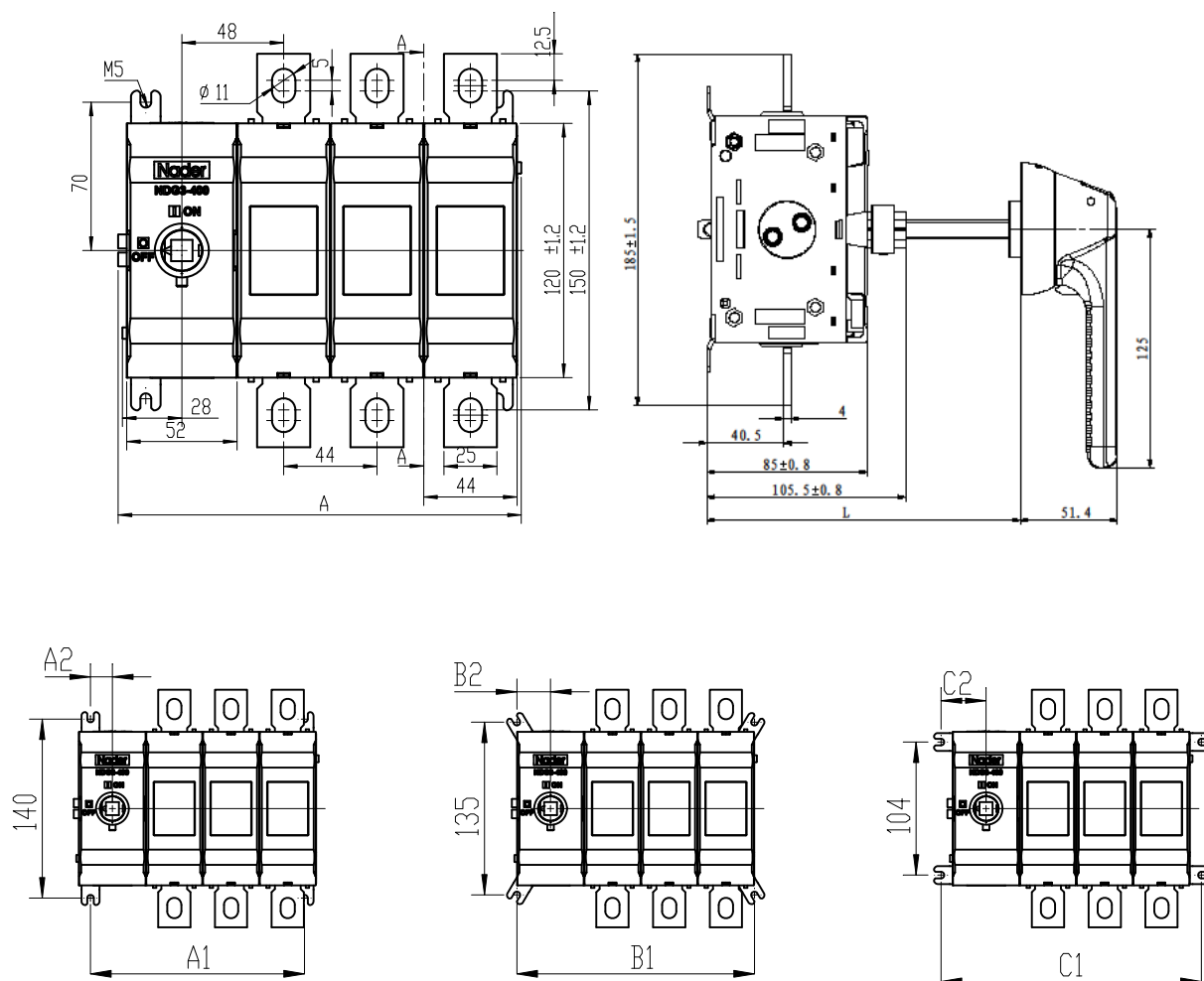
Altitude (m)	2000	3000	3500	4000
Rated insulation voltage	1000V	1000V	1000V	1000V
Impulse withstand voltage	12kV	12kV	12kV	12kV
Power frequency withstand voltage	3500V	3000V	2600V	2200V
Rated working voltage	1000V	1000V	1000V	800V
Rated working current	Not derated			

- 3) The relative humidity at an ambient temperature of $+40^{\circ}\text{C}$ should not exceed 50%. A higher relative humidity is allowed at a lower temperature. For example, it can be 95% at 20°C . Special measures should be taken to address occasional condensing due to temperature fluctuation.
- 4) 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 avoided from snow and rain.
- 5) The product is applicable in an environment with pollution class III.
- 6) Installation category of III and IV.

6. Product Outline and Installation Dimensions (Unit: mm)

6.1 Outline and installation dimensions of front operation product outside a cabinet

6.1.1 Mechanism is located on the left side of the switch



Size specifications of the installation angle:
(The factory default is A1 and A2 form)

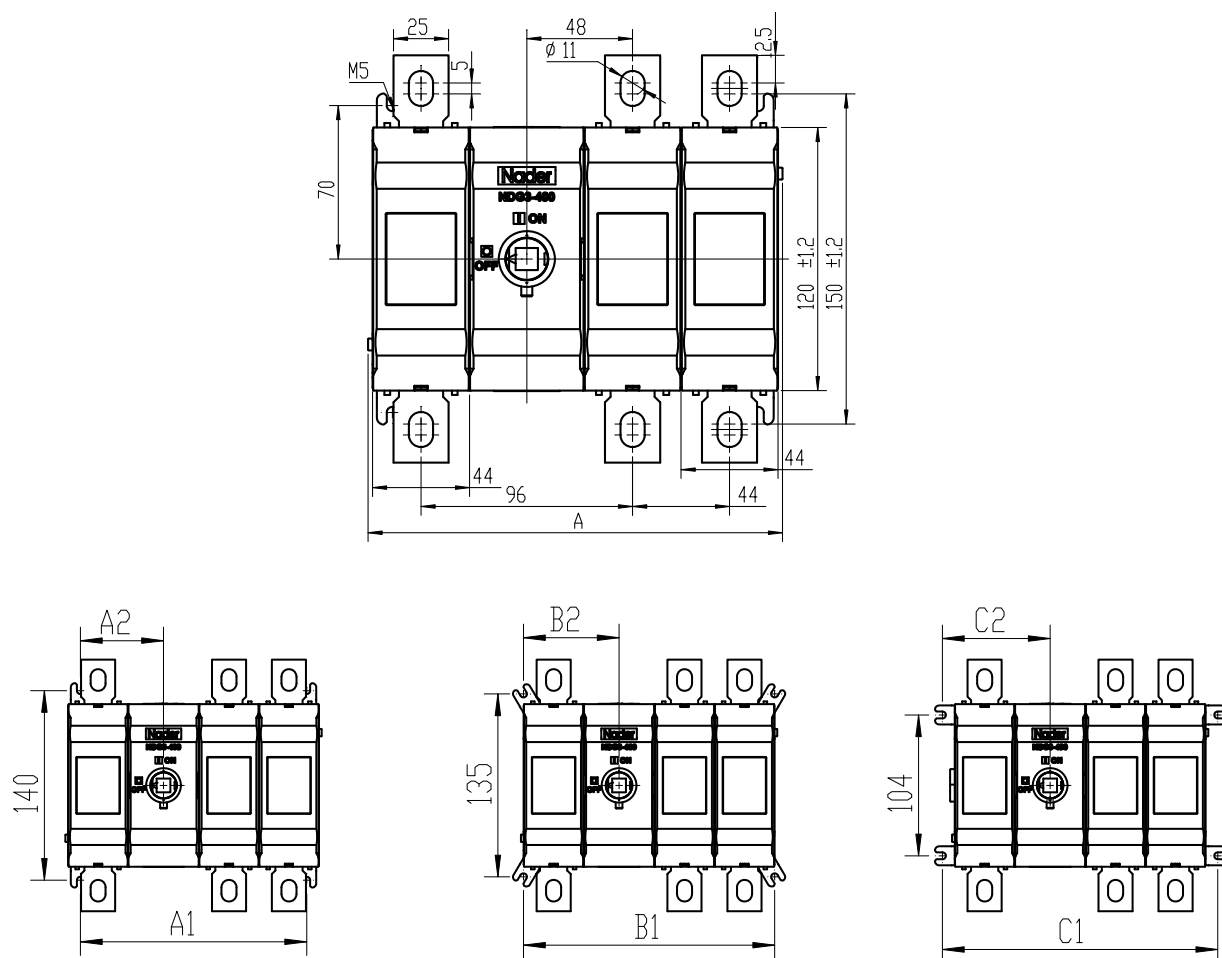
	03	04
A	189	233
A1	166	210
A2	17	17
B1	184	228
B2	26	26
C1	202	246
C2	35	35

Square shaft depth specification of handle
outside a cabinet:

(SB1 "X"/G3 400)

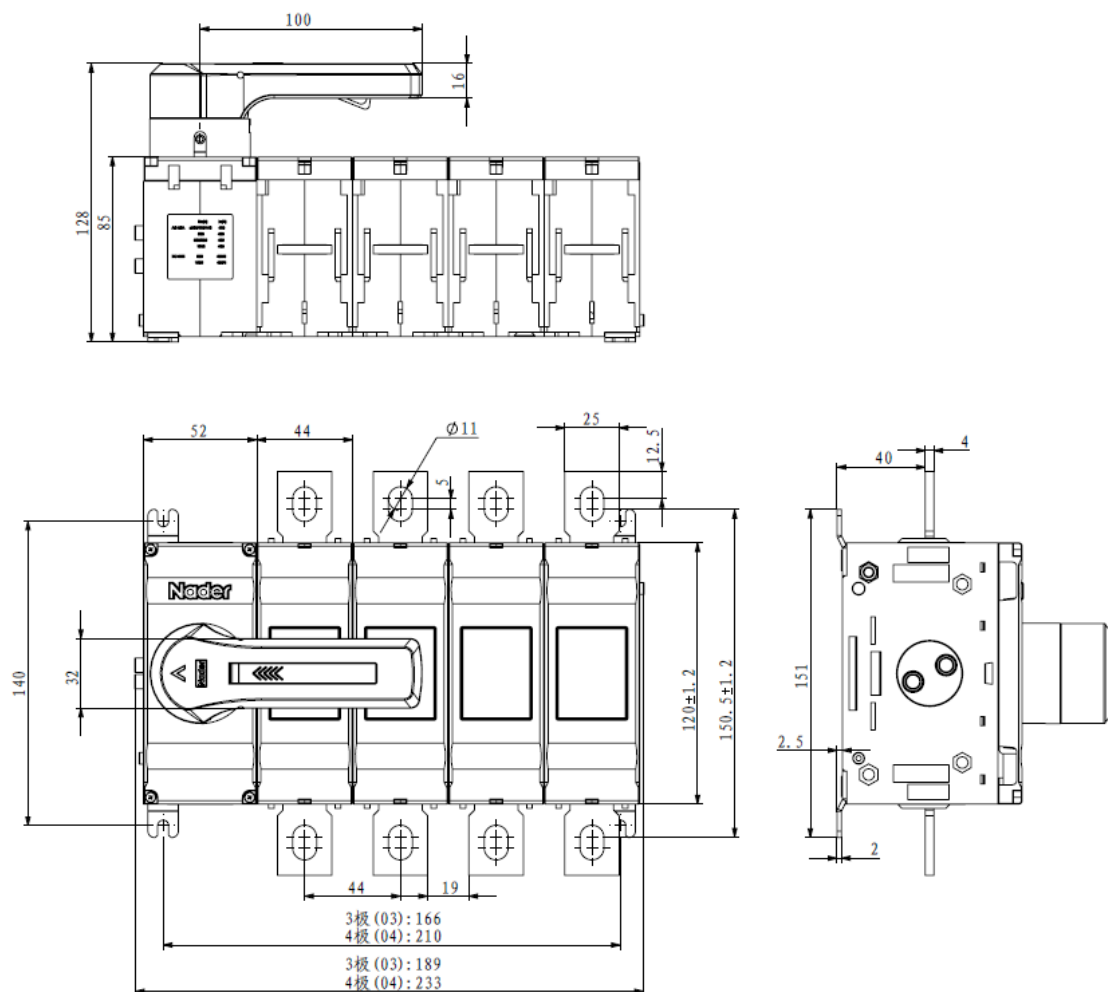
X	L
166	136-201
185	155-220
250	220-285
280	250-315
325	295-360
395	365-430
465	435-500
535	505-570

6.1.2 Mechanism is between the switch poles

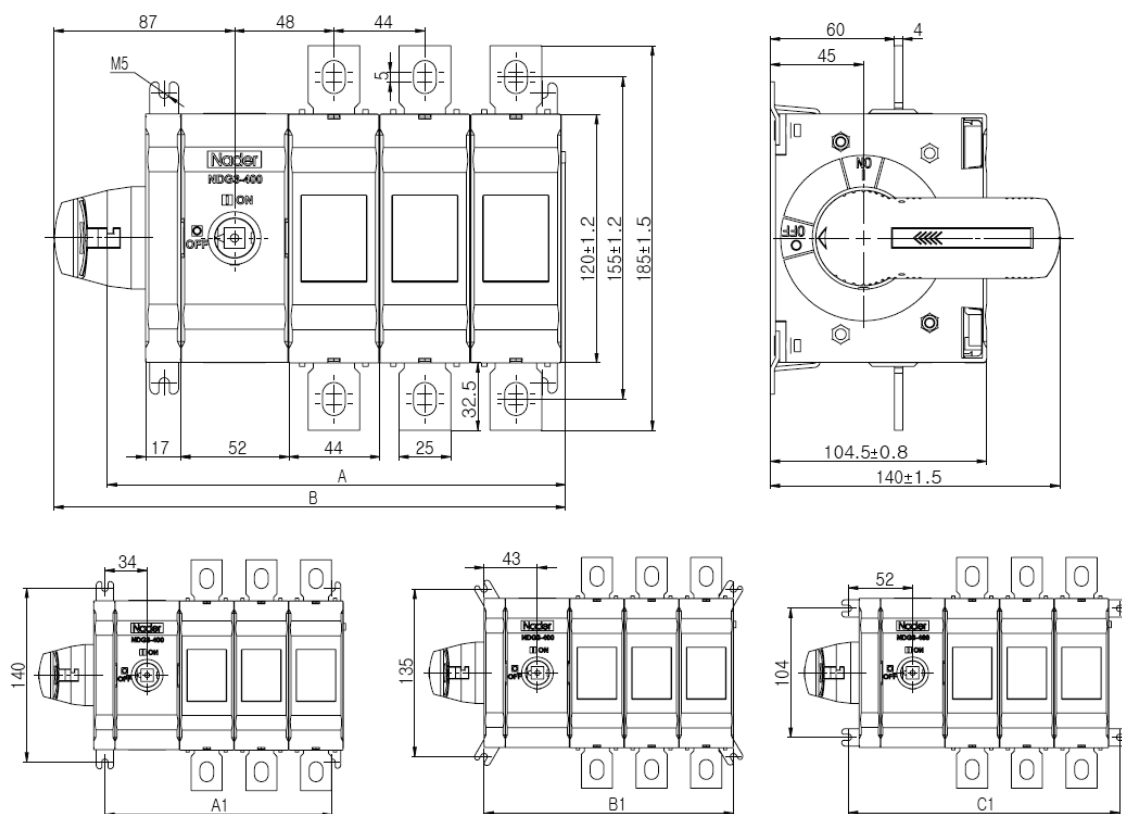


	12	22
A	189	233
A1	166	210
A2	61	105
B1	184	228
B2	70	114
C1	202	246
C2	79	123

6.2 Outline and installation dimensions of front inside-cabinet operation product



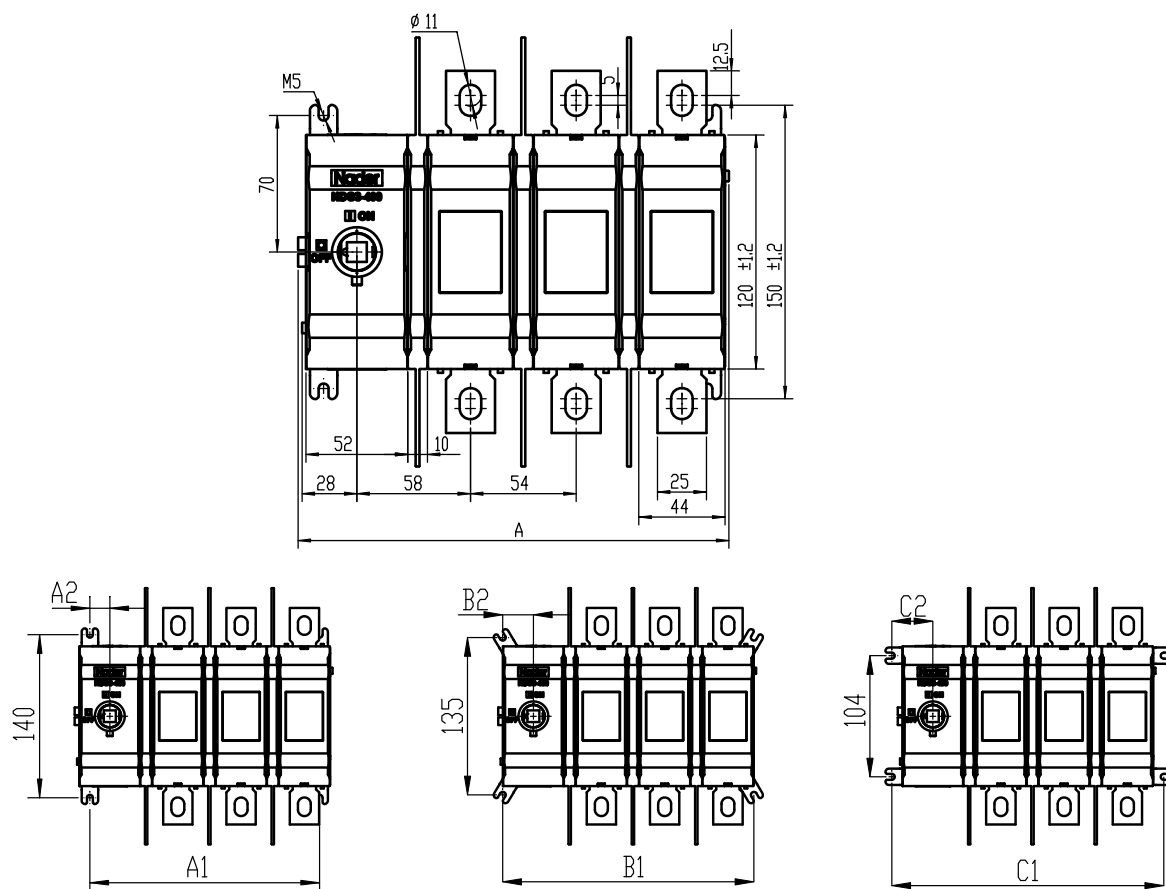
6.3 Outline and installation dimensions of side operation product



	03	04
A	221.5	265.5
B	247	291
A1	183	227
B1	201	245
C1	219	263

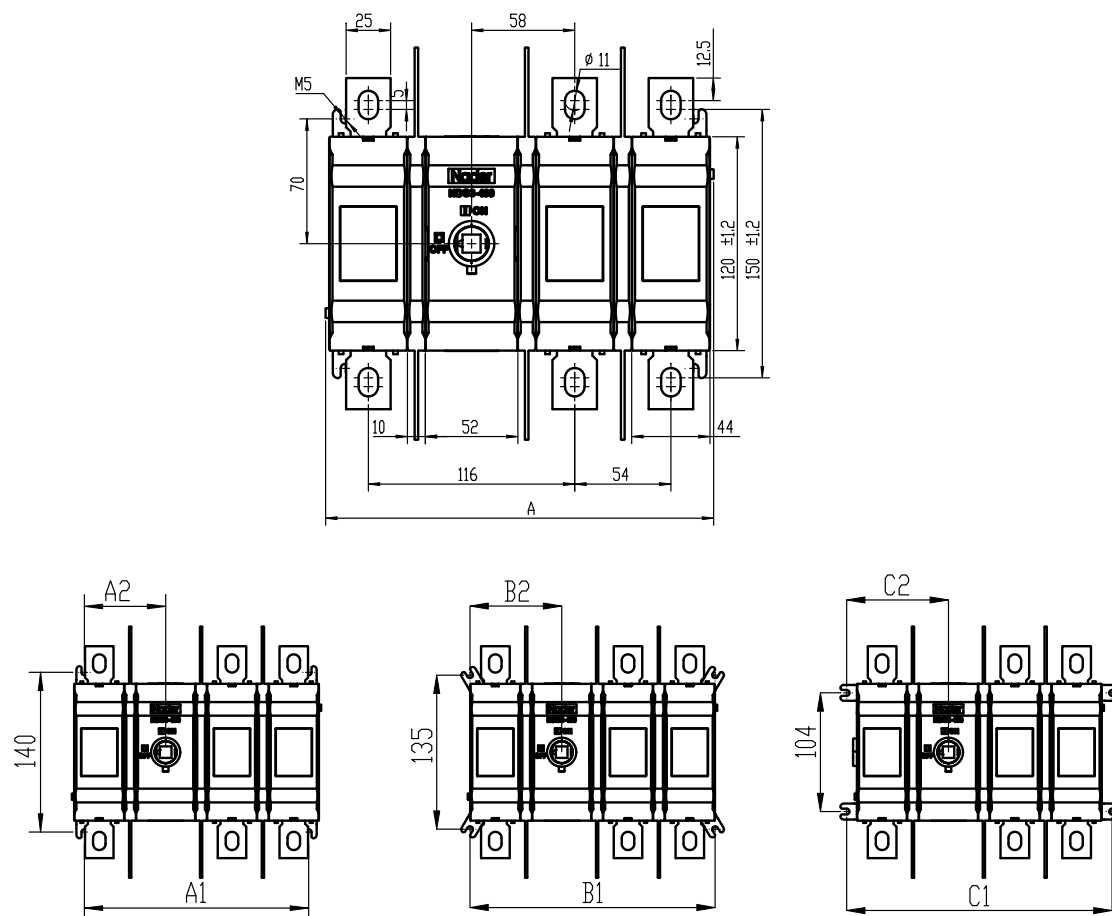
6.4 Outline and installation dimensions of wide phase spacing operation product

6.4.1 Mechanism is located on the left side of the switch



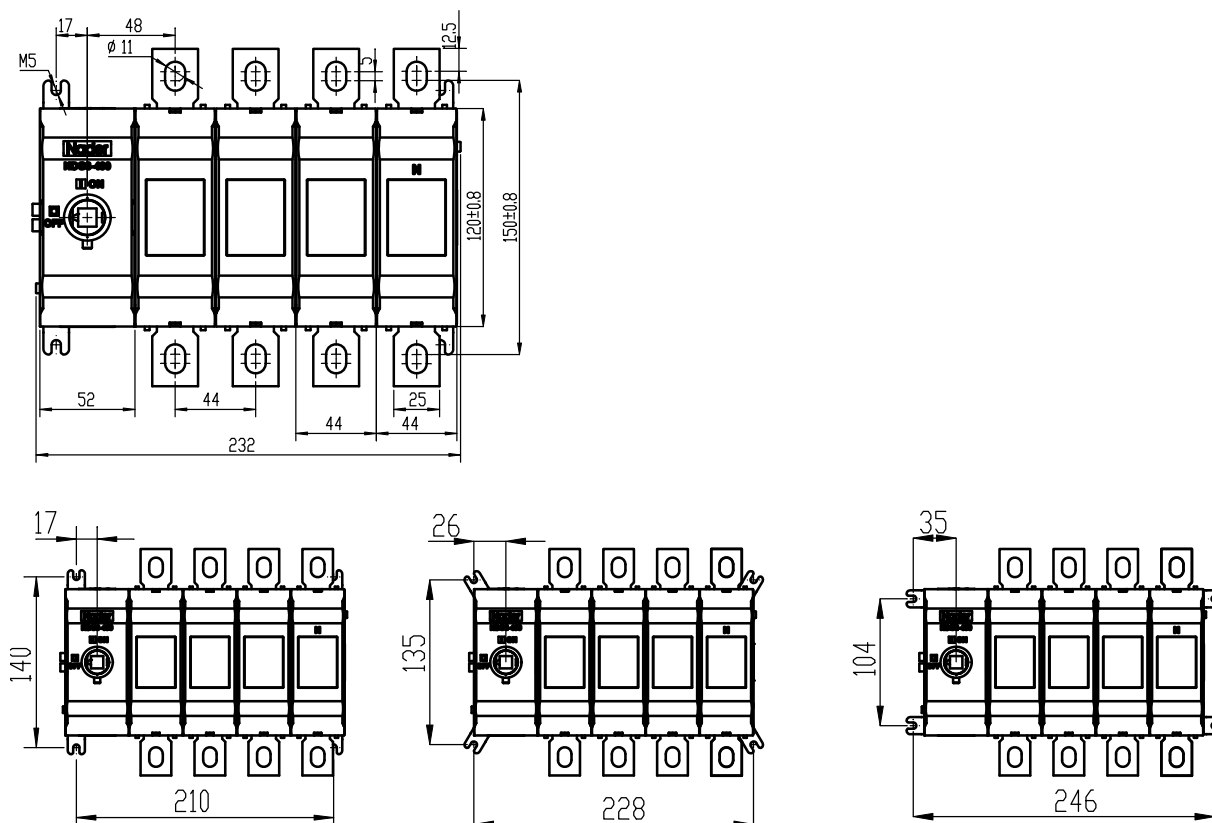
	03	04
A	220	274
A1	196	250
A2	17	17
B1	214	268
B2	26	26
C1	232	286
C2	35	35

6.4.2 Mechanism is between the switch poles



	12	22
A	220	274
A1	196	250
A2	71	71
B1	214	268
B2	80	80
C1	232	286
C2	89	89

6.5 Outline and installation dimensions of the N-pole neutral pole product (only for the 04 product)

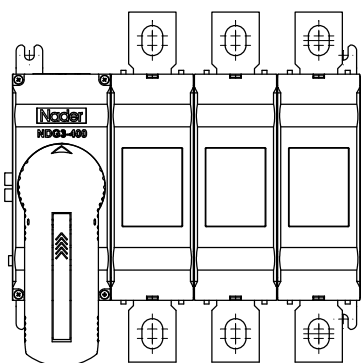


7. Installation Mode

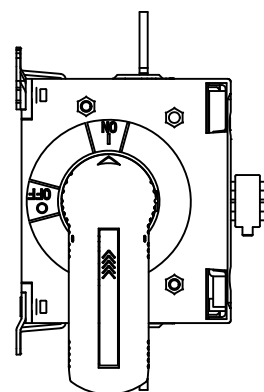
Installation mode: Baseplate installation;

Installation position: vertical installation and horizontal installation. In case of vertical installation, the inclination of the vertical installation plane shall not be more than 5°

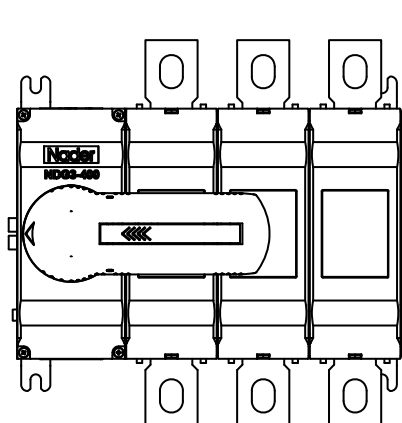
Status position: This product has two status positions, making position "I/ON" and breaking position "O/OFF", as shown in the figure below.



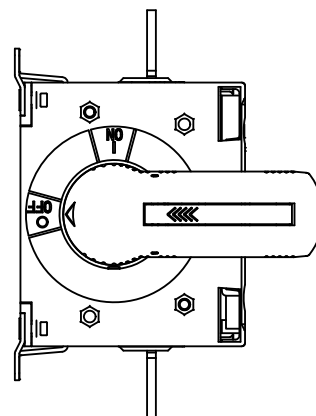
Front operation closing



Side operation closing



Front operation breaking



Side operation breaking

8. Packaging and Storage

8.1 Isolating switch packaging: (Maximum packaging quantity)

SN	Specification	Number of poles	Quantity	Number of boxes
1	Front operation	3P	1 set/box	2 boxes/carton
		4P	1 set/box	2 boxes/carton
2	Side operation	3P	/	1 unit/box
		4P	/	1 unit/box
3	Wide phase spacing operation	3P	1 set/box	1 boxes/carton
		4P	1 set/box	1 boxes/carton

8.2 Accessories packaging: (Maximum packaging quantity)

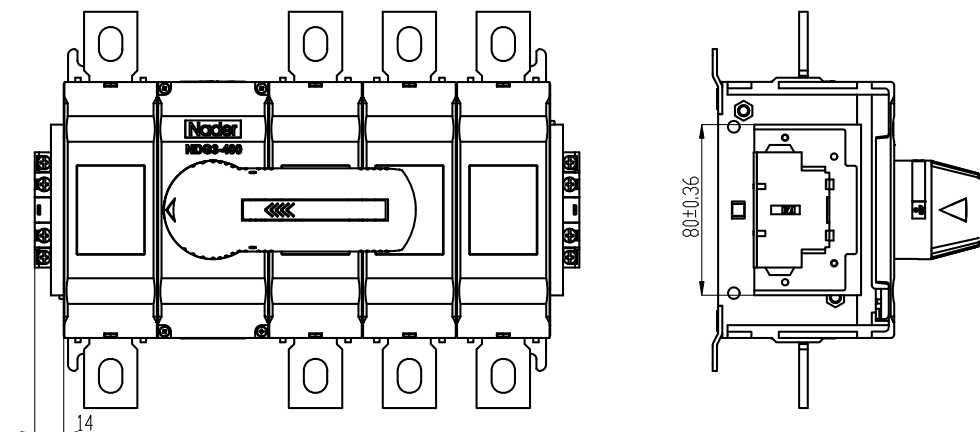
Name	Quantity
Short terminal cover packaging	6 piece/box, 12 boxes/carton
Long terminal cover packaging	4 piece/box, 12 boxes/carton
Radiator packaging	4 sets/box, 12 boxes/carton
Handle	4 sets/box, 12 boxes/carton
Mounting base packaging	5 sets/box 18 boxes/carton

The transportation and storage temperature range of the disconnecting switch product and its accessories is between -40°C and $+75^{\circ}\text{C}$, which can reach 70°C within a very short time (24h). The

disconnecting switch shall not suffer irreversible damage without operation under extreme temperature conditions. The storage period shall be no more than 18 months since the manufacturing date.

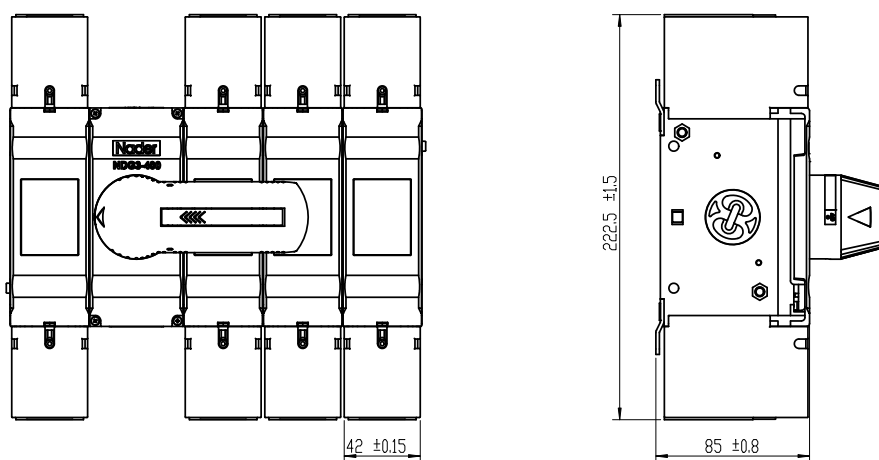
9. Accessories List and Installation (Unit: mm)

9.1 Outline and installation dimensions of auxiliary switch NGF1-11 product

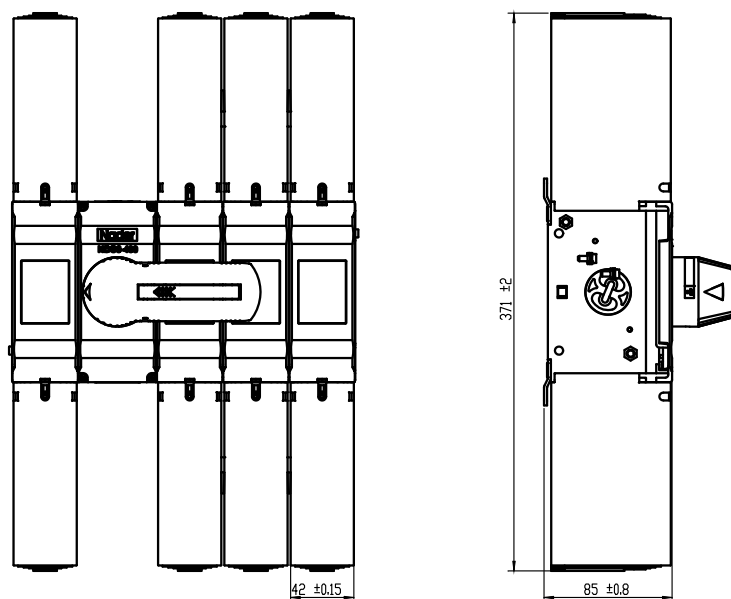


9.2 Outline and installation dimensions of the terminal cover product

9.2.1 Short terminal cover product

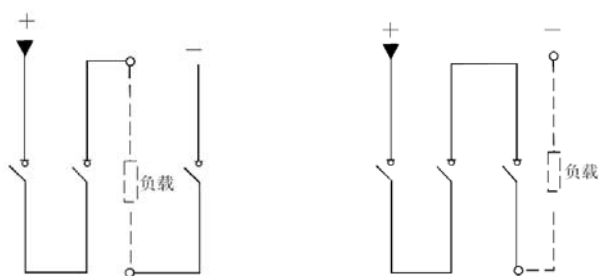


9.2.2 Long terminal cover product



9.3 Appearance and wiring mode of the DC busbar product

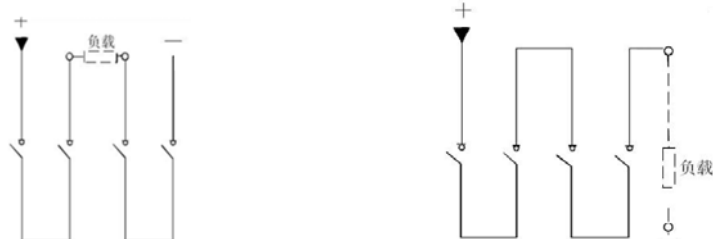
9.3.1 Three-pole string connection mode



Normal wiring

Optional wiring

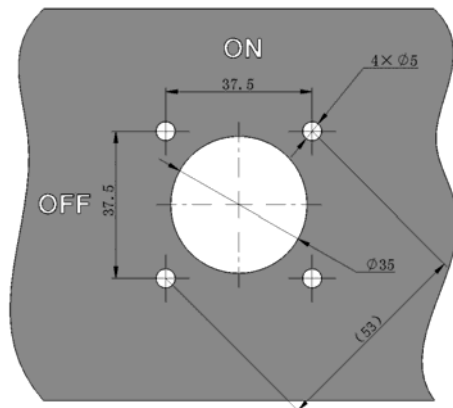
9.3.2 Four-pole string connection mode



Normal wiring

Optional wiring

9.4 Cabinet door opening dimensions of handle outside a cabinet



10. Precautions

- 1) Any quality problem due to disassembly without permission will be the liability of the user;
- 2) Do not touch the non-insulated exposed parts of the disconnecting switch when it is connected to a power supply;
- 3) Reliable cabling is required to prevent the terminals from being burnt out due to abnormal heat at the terminals.
- 4) The connecting conductor shall be fastened onto the frame of the power distribution cabinet. The switch shall not undertake the weight of the conductor. Before fastening the conductor, it is required to make the plane of the busbar or cable terminal in parallel to that of the wiring terminal of the switch. After the conductor is connected with the wiring terminal of the switch by using the bolts, the switch shall not undertake any mechanical stress.