

Shanghai Liangxin Electrical Co., Ltd.

(NDG3-160 Disconnecting Switch)

Product Specification

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

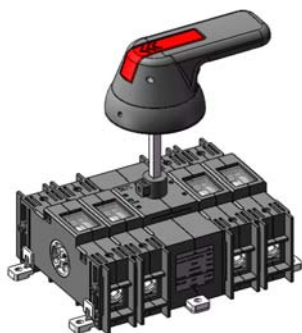
Prepared by	<u>Zheng Lei</u>	Date	<u>2020.05.25</u>
Reviewed by	<u>Fu Chuantao</u>	Date	<u>2020.05.25</u>
Countersigned by	<u>Jiang Zhaoyong</u>	Date	<u>2020.05.25</u>
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Approved by	<u>Wang Jili</u>	Date	<u>2020.05.25</u>

Revision History					
Version	Revision Reason/Content	Implementati on Date	Prepared by	Reviewe d by	Approve d by
1	Handle outside a cabinet is required to be ordered separately when operation mode of the handle outside a cabinet is optional.	20160104	Yao Wei	Liu Qinglu	Zhou Bo
2	AC1000V addition; addition of the IP65 handle; update of dimension figure.	20181123	Wang Jili	Zhang Jiazheng	Zhou Bo
3	Template update; update of the derating factor, outline dimensions, etc.	20200409	Zheng Lei	Fu Chuantao	Wang Jili

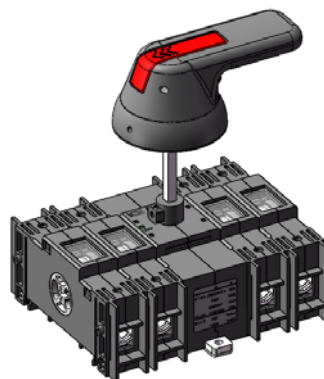
1. Applicable Scope and Purpose

The NDG3-160 disconnecting switch is applicable to the electric system with the rated current of 160A and the rated voltage of AC380/400/415V, AC500V, AC660/690V, AC1000V (50/60Hz) or DC500V, DC750V and below, which provides the breaking and isolation function in the line. The product can also be used for infrequent making and breaking. It can be widely used in construction, telecommunication, metallurgy and other industries, for the line isolation, motor control of various equipment and other fields.

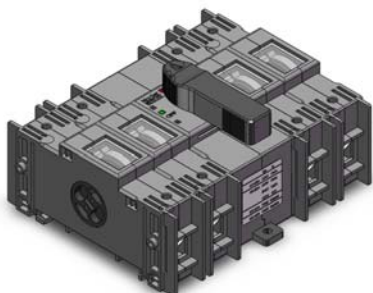
2. Picture of the Product (The picture below is for reference only; please subject to the kind)



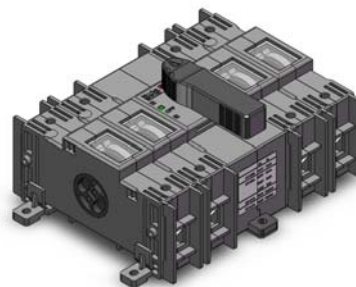
Screw installation (operation outside a cabinet)



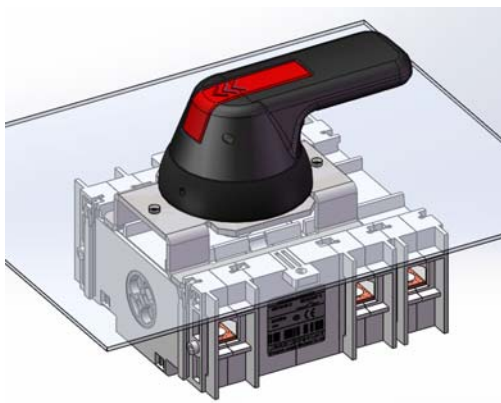
Guide rail installation (operation outside a cabinet)



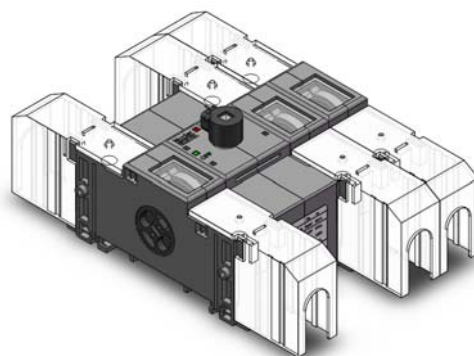
Guide rail installation (inside-cabinet operation)



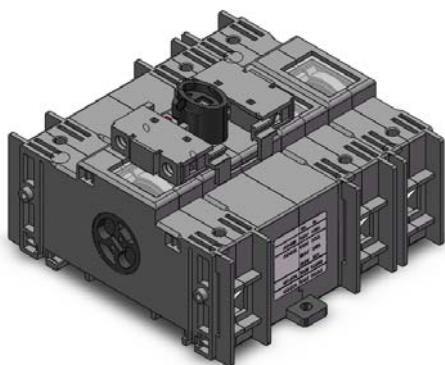
Screw installation (inside-cabinet operation)



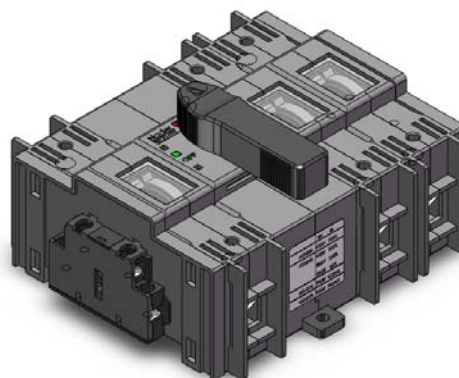
Cabinet door installation (operation outside a cabinet)



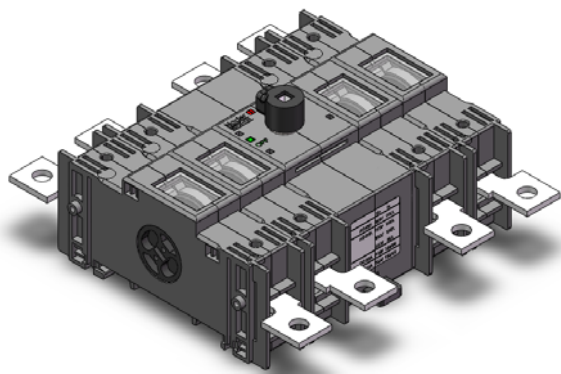
Terminal cover



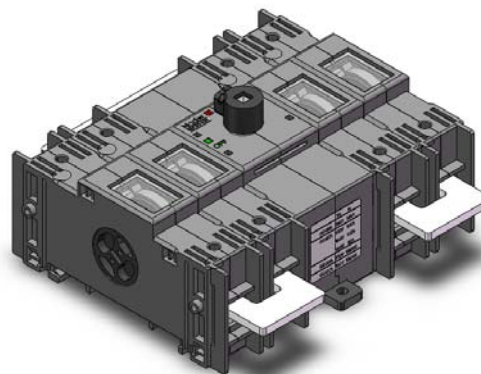
Top-hang auxiliary accessory



Side-hang auxiliary accessory



Secondary wiring terminal accessory



DC short busbar

3. Specification and Model Description

3.1 Product model description of disconnecting switch body:

ND G 3 - 160 / 3 A Z K

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 code	3
4	Rated current (A)	160
5	Number of poles	3, 4
6	Neutral pole type	A-Neutral pole to be on-off with the phase contact B-Feed-through neutral pole No code-No neutral pole
7	Installation mode	Z-Guide rail and screw installation M-Cabinet door installation (without the inside-cabinet operation) ¹⁾
8	Handle type	K: Inside-cabinet handle No code: No handle (handle outside a cabinet is provided, which shall be ordered separately, see "Common Handle Specifications" for details)

- Note:** 1) Cabinet door installation (without the inside-cabinet operation);
2) Common specifications and models:

SN	Type	Specification	Product name (ordering code)
1	3P, guide rail and screw installation	NDG3-160/3 Z	600014
2	3P, guide rail and screw installation, inside-cabinet handle	NDG3-160/3 ZK	
3	3P, cabinet door installation	NDG3-160/3 M	
4	4P, N-phase break point, guide rail and screw installation	NDG3-160/4 AZ	
5	4P, N-phase break point, guide rail and screw installation, inside-cabinet handle	NDG3-160/4 AZK	
6	4P, N-phase break point, cabinet door installation	NDG3-160/4 AM	
7	4P, N-phase without break point, guide rail and screw installation	NDG3-160/4 BZ	
8	4P, N-phase without break point, guide rail and screw installation, inside-cabinet handle	NDG3-160/4 BZK	
9	4P, N-phase without break point, cabinet door installation	NDG3-160/4 BM	

3.2 Product model description of disconnecting switch accessories:

3.2.1 Selection of IP65 handle outside a cabinet

SB 1 - 130/G3-125

1 2 3 4

SN	Code name	Code description
1	Accessory code	SB
2	Design SN	1
3	Square shaft length	130: Shaft length 130mm; 150: Shaft length 150mm; 161: Shaft length 161mm; 185: Shaft length 185mm; 210: Shaft length 210mm; 260: Shaft length 260mm; 290: Shaft length 290mm.
4	Body model	G3-125: suitable for NDG3-100/125/160/200/250 products.



Note: 1) The square shaft length is only 130mm for the cabinet door installation.

3.2.2 Auxiliary switch selection (the mounting base must be selected at the same time when the switch is selected)

N G F 1 - 01

1 2 3 4 5

SN	Code name	Code description
1	Enterprise code of accessories	N

2	Supporting product code	G Isolating switch
3	Auxiliary code	F
4	Design code	1
5	Contact form	01— One NC; 10— One NO; 11— One NO, one NC

Note: General auxiliary specifications

SN	Type	Specification	Product name (ordering code)	Remarks
1	01— One NC	NGF2-01	30000301	1) It must be used with the mounting base NGA1-2/160;
2	10— One NO	NGF2-10	30000302	2) It can't be selected for the inside-cabinet handle; 3) A maximum of 2 on each side, installed on either side of the left or right.
3	11— One NO, one NC	NGF1-11	30000396	1) It must be used with the mounting base NGA1-1/160; 2) The auxiliary switch can't be selected for the screw installation; 3) A maximum of 2 on each side, installed on either side of the left or right.

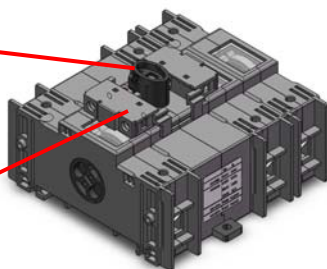
Mounting base:

NGA1-2/160

Auxiliary:

NGF1-10

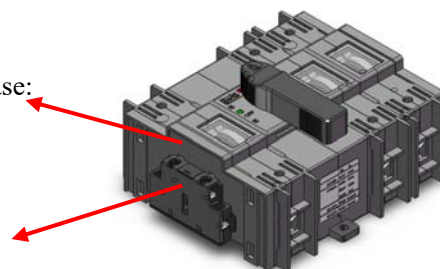
Or NGF1-01



Mounting base:

NGA1-1/160

Auxiliary:
NGF1-11



3.2.3 Selection of mounting base model-optional table

N G A 1 -1 / 160

1 2 3 4 5 6

SN	Code name	Code description
1	Enterprise code of accessories	N
2	Supporting product code	G Isolating switch
3	Mounting base	A

	code	
4	Design code	1
5	Installation type	1-Side-hang mounting base (the screw installation is not optional); 2-Top-hang mounting base (the inside-cabinet handle is not optional)
6	Specification	160: NDG3-160

Note: Mounting base specifications

SN	Specification	Product name (ordering code)	Applicable auxiliary switch
1	NGA1-1/160	30000303	NGF1-11
2	NGA1-2/160	30000304	NGF2-01, NGF2-10

3.2.4 Secondary wiring terminal

N G XTG 1 - 160

1 2 3 4 5

SN	Code name	Code description
1	Enterprise code of accessories	N
2	Supporting product code	G Isolating switch
3	Secondary wiring terminal code	XTZ
4	Design code	1
5	Specification	160: NDG3-160

Note: Specifications of secondary wiring terminal

SN	Type	Specification	Product name (ordering code)	Remarks
1	Secondary terminal	NGXTG1-160	30000294	Including 1; can't be used with the terminal cover at the same time

3.2.5 Terminal cover selection

N G Z 1 - 160 / 1

1 2 3 4 5 6

SN	Code name	Code description
1	Enterprise code of accessories	N
2	Supporting product code	G Isolating switch
3	Terminal cover code	Z
4	Design code	1

5	Specification	160: NDG3-160
6	Pole usage type	1: For the single pole

Note: Terminal cover specifications

SN	Type	Specification	Product name (ordering code)	Remarks
1	Terminal cover	NGZ1-160/1	30000295	Including 6; can't be used with the secondary wiring terminal at the same time

3.2.6 Selection of DC short busbar

SN	Type	Specification	Product name (ordering code)	Remarks
1	(Short) short busbar	8LD.585.1093	30000292	Including 1
2	(Long) short busbar	8LD.585.1094	30000293	Including 1

4. Main Technical Parameters

4.1 Main parameters of the disconnecting switch

Specification			NDG3-160
Rated insulation voltage Ue (V)			1000
Rated impulse voltage Uimp (kV)			12
Agreed thermal current Ith (A)			200
Rated working current Ie (A)	AC-21A AC-22A	AC380/AC400/AC415V AC500V AC660/AC690V	160
	AC-23A	AC380/AC400/AC415V	135
		AC500V	125
		AC660/AC690V	80
	AC-21B	AC1000V	160
	DC-21A	750V	160/4
	DC-21A DC-22A	500V	160/3
Rated short-time withstand current Icw (kA)		690V 1s	4
Rated short circuit making capacity (Icm) (kA) AC (peak value)			12
Rated short circuit making capacity (Icm) (kA) DC			12
Mechanical life			20000 times
Electrical life			1000 times
Weight (without accessories) 3-pole switch (kg)			0.88

Terminal tightening torque (locking torque Nm)	6
Operating torque (Nm)	5
Wire cross-section area (mm ²)	10~70

- 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
- Minimum applicable load: DC24V/10mA
- 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

5.1 The ambient air temperature is -40℃~70℃, and its average temperature within 24h shall not exceed +35℃.

See the table below for usage in the high ambient temperature:

Ambient temperature (°C)	75	80	85
Rated working current (A)	140	120	100

5.2 See the table below for the altitude application:

Altitude (m)	2000	3000	3500	4000
Rated insulation voltage	1000V	1000V	750V	690V
Impulse withstand voltage	12	12	12	12
Power frequency withstand voltage	3500V	3000V	2500V	2000V
Rated working voltage	690V	690V	690V	690V
Rated working current	160A	160A	160A	160A

5.3 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 90% at 20°C . Special measures should be taken to address occasional condensing due to temperature fluctuation.

5.4 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.

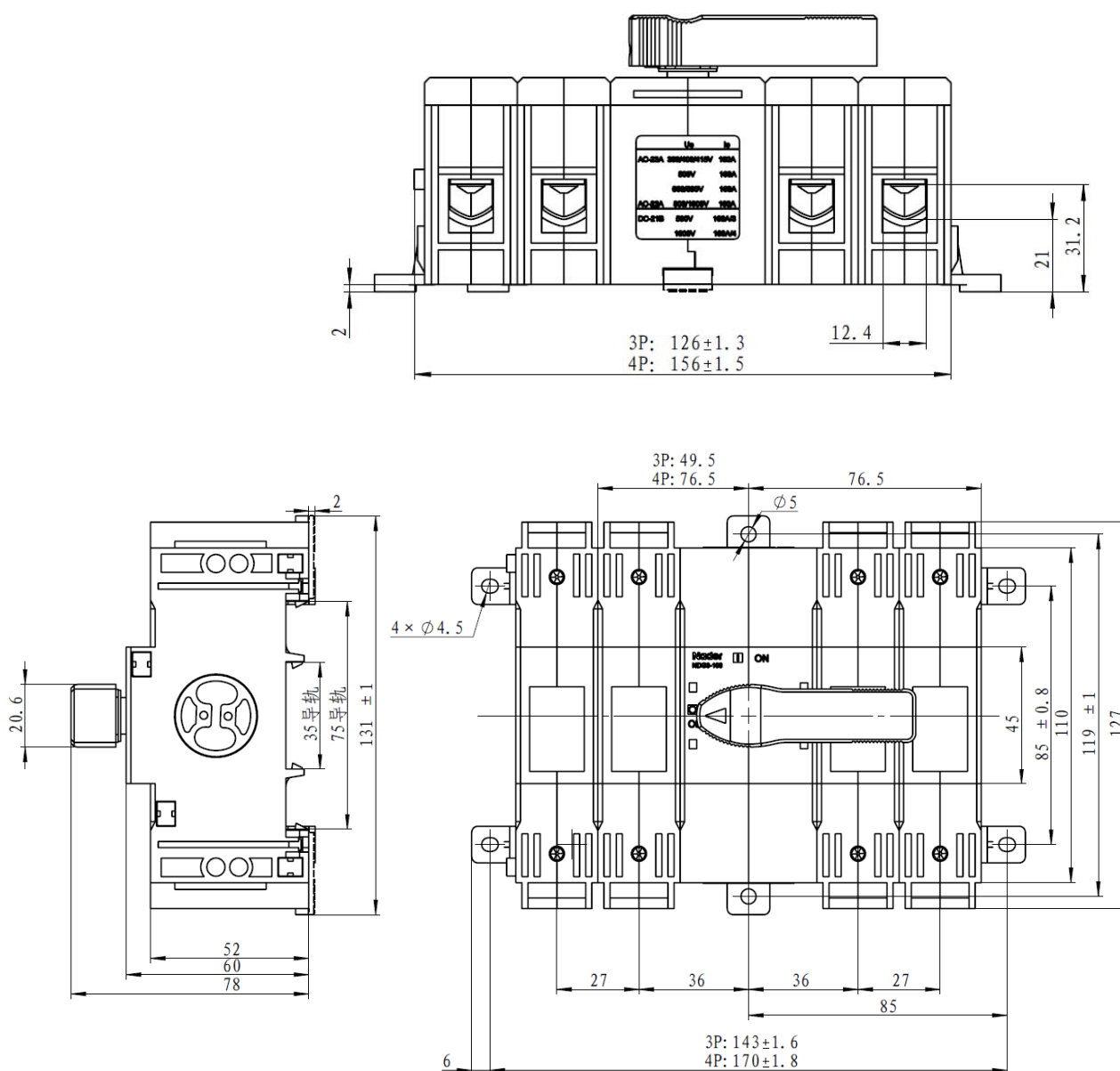
5.5 The product is applicable in an environment with pollution class III.

5.6 Installation category of III and IV.

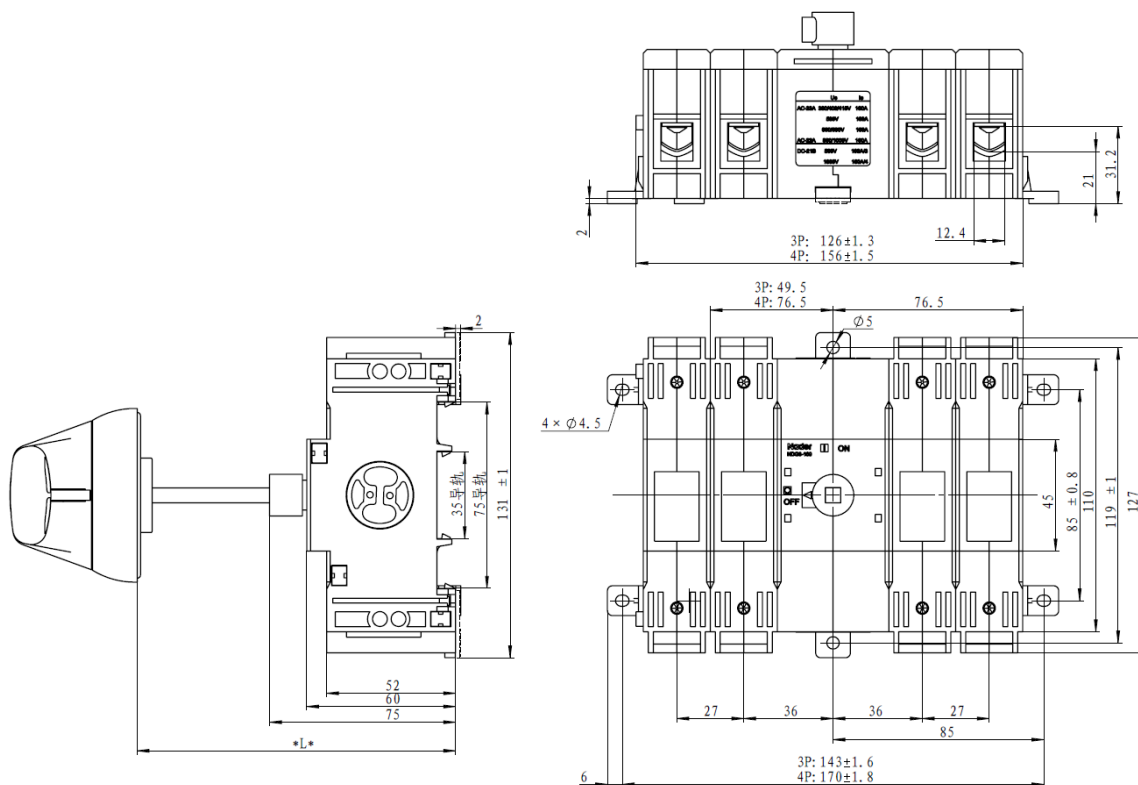
6. Product Outline and Installation Dimensions (Unit: mm)

6.1 Outline and installation dimensions of the guide rail and screw installation

6.1.1 Inside-cabinet operation product



6.2 Outline and installation dimensions of the installation outside a cabinet: Model SB1-*A*/G3-125 of handle outside a cabinet



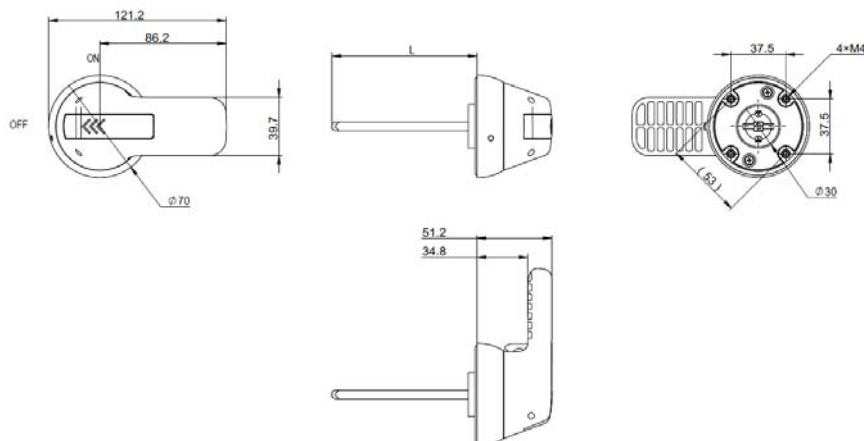
SB1-“A”/G3-125:

A represents the square shaft length specification of handle outside a cabinet

Note: The handle's square shaft can penetrate through the square hole of switch; the minimum L dimension is 100mm if there is no occlusion at the back of the square hole.

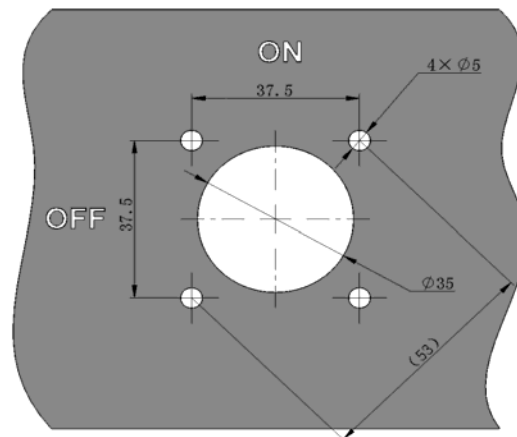
A	L
130	145-155
150	165-175
161	176-186
185	200-210
210	225-235
260	275-285
290	305-315

6.3 Outline and installation dimensions of SB1-*A*/G3-125 handle outside a cabinet:

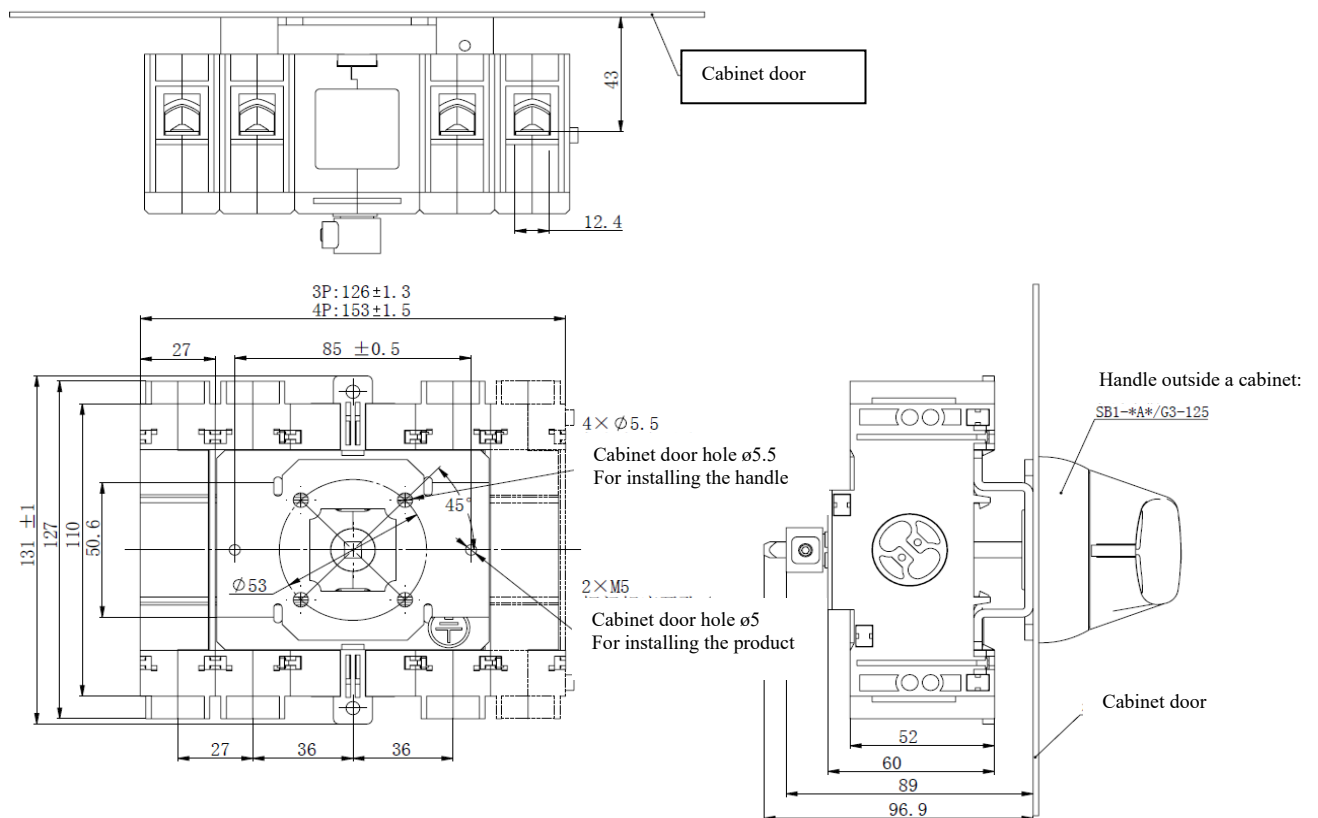


L: (square shaft length-30) ± 1.5 mm

6.4 Dimension figure of handle outside a cabinet opening:



6.5 Outline and installation dimension diagram of the cabinet door installation product:



7. Installation Mode and Position

Installation mode: Guide rail, screw installation, cabinet door 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°;

Positions: The product has two switch positions, which are the "I/ON" position and "O/OFF" position.

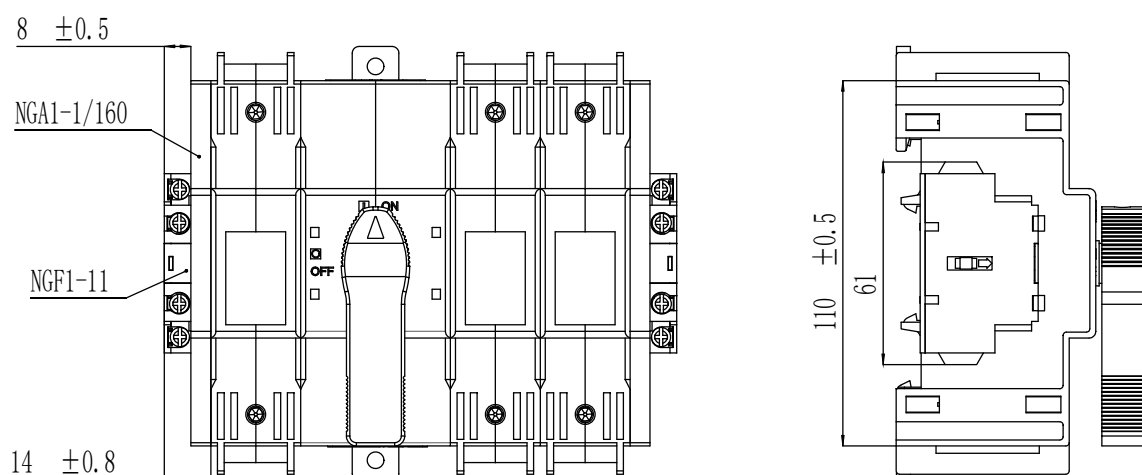
8. Packaging and Storage

SN	Product specifications	Quantity
1	Product body NDG3-160	1 set/box, 4 boxes/carton
2	Secondary wiring terminal NGXTG1-160	10 pieces/bag, 8 bags/box, 24 boxes/carton
3	Short busbar (short) 8LD.585.1093	2 pieces/bag, 16 bags/box, 24 boxes/carton
4	Short busbar (long) 8LD.585.1094	1 piece/bag, 16 bags/box, 24 boxes/carton
5	Auxiliary switch NGF2-01/10	1 piece/bag, 15 bags/box, 24 boxes/carton
	Auxiliary switch NGF1-11	8 piece/box, 24 boxes/carton
6	NGZ1-160/1 terminal cover	2 pieces/bag, 8 bags/box, 18 boxes/carton
7	Mounting base NGA1-1/160	1 set/bag, 8 bags/box, 18 boxes/carton
8	Mounting base NGA1-2/160	8 set/bag, 5 bags/box, 24 boxes/carton
9	Handle (outside a cabinet)	4 sets/box, 12 boxes/carton

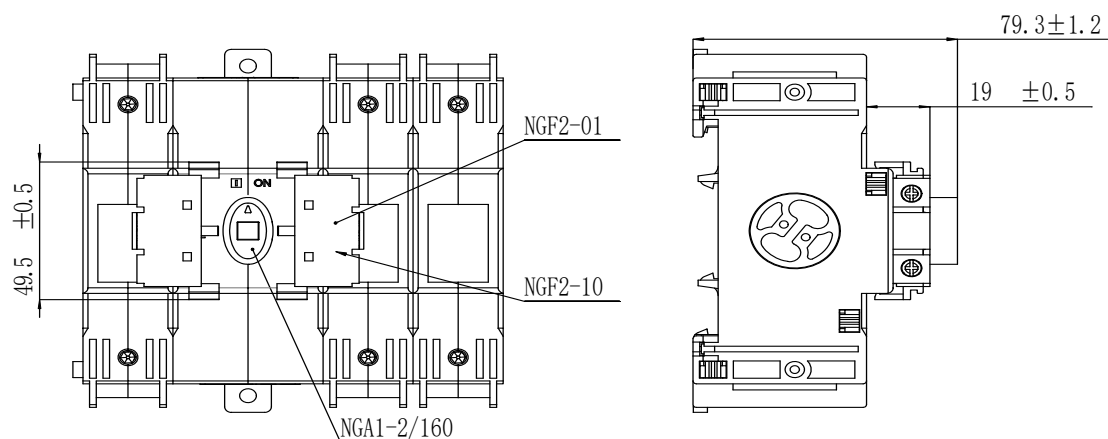
The transportation and storage temperature range of the disconnecting switch product and its accessories is between -35°C and $+55^{\circ}\text{C}$, which can reach 70°C within a very short time (24h). The disconnecting switch shall not suffer irreversible damage without operation under extreme temperature conditions. The storage period shall be no more than 18 months since the manufacturing date.

9. Optional Accessories List and Installation (Unit: mm)

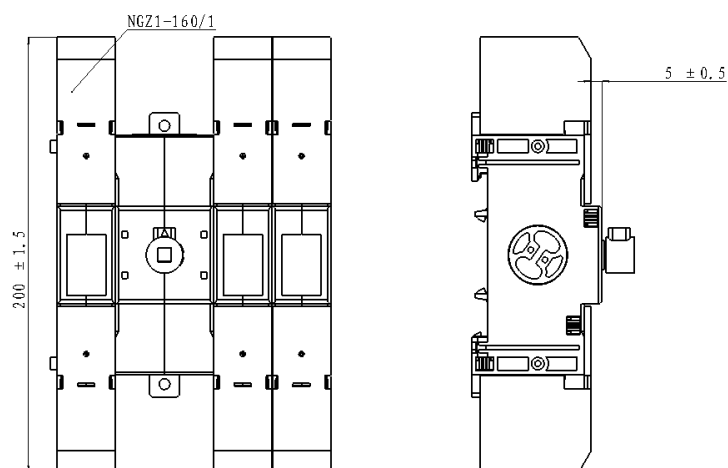
9.1 Outline dimensions of auxiliary NGF1-11 product



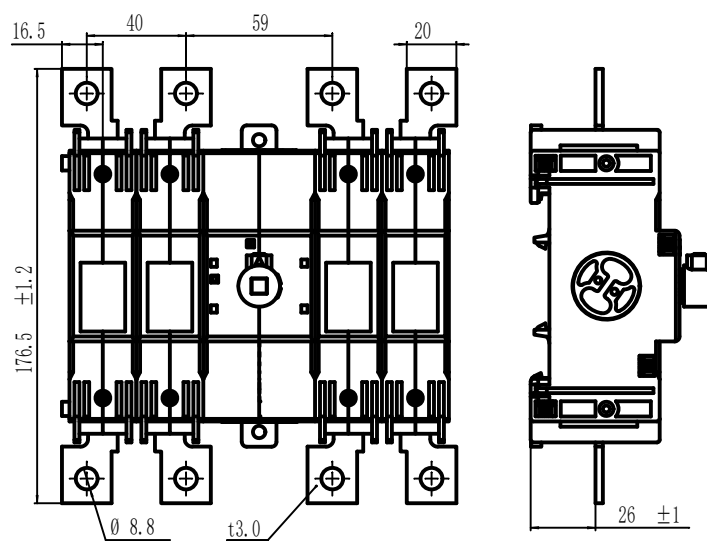
9.2 Outline dimensions of auxiliary NGF2-01/10 product



9.3 Outline dimensions of the terminal cover product

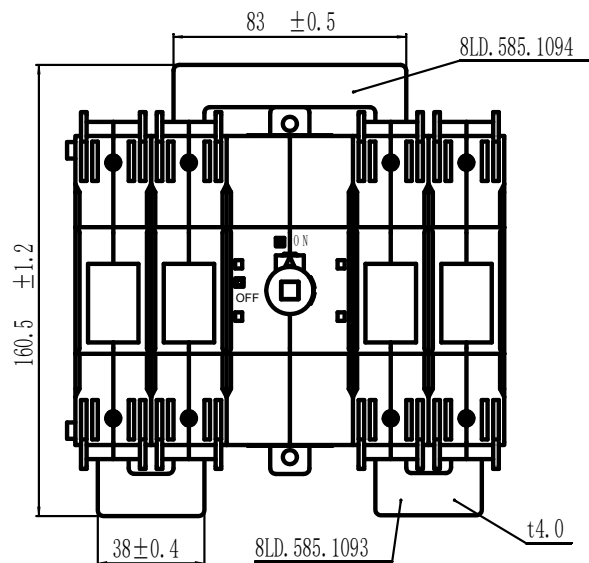


9.4 Outline dimensions of the secondary wiring terminal



9.5 Appearance and wiring mode of the DC short busbar product

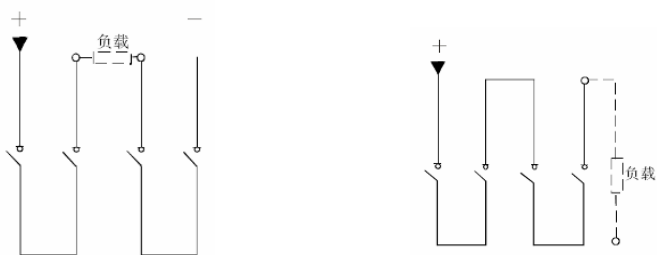
9.5.1 Outline dimensions



9.5.2 Three-pole string connection mode



9.5.3 Four-pole string connection mode



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.