Shanghai Nader Electrical Co., Ltd.

NDQ3H-400 Product Specification

(IPD-SPT-T11 A0 2014-04-01)

Product Name: Automatic Transfer Switching Equipment

Product Model: NDQ3H-400

Date: 2018-12-6

Prepared by	Feng Daijun	Date	2018-12-6
Reviewed by	Liu Qinglu	Date	2018-12-6
Approved by	Shi Wei	Date	2018-12-6

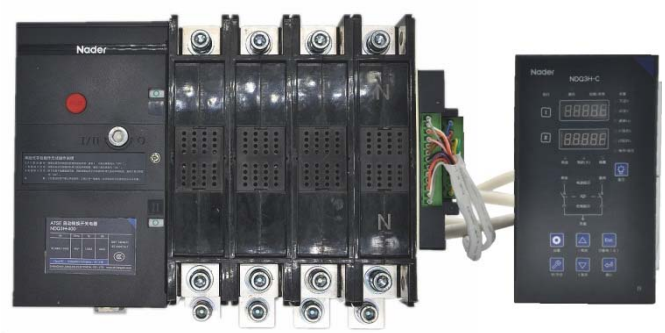
Revision history					
Revision	Revision reasons/contents	Implementation date	Prepared by	Reviewed by	Approved by
0	New addition	2017-03-06	Zhong Yunpan	Jia Jianping	Shi Wei
1	Change the product model from NDQ3A to NDQ3H	2017-04-20	Zhong Yunpan	Jia Jianping	Shi Wei
2	Change the parameters of life	2017-06-20	Zhong Yunpan	Jia Jianping	Shi Wei
3	Add controller functions	2017-06-28	Zhong Yunpan	Jia Jianping	Shi Wei
4	Add controller type D(LCD)	2018-12-6	Feng Daijun	Liu Qinglu	Shi Wei

1. Applicable scope and purpose

The NDQ3H PC-grade automatic transfer switching equipment (ATSE) are applicable for sites with the AC voltage below 400V and the rated frequency of 50/60Hz. This product complies with the GB14048.1-2012 and GB/T14048.11-2016 standards in accordance with *Code for Fire Protection of High-rise Civil Buildings*, *Code of Design on Building*, *Design Guidelines on Emergency Lighting and Code for Electrical Design of Civil Buildings*, etc.

This product mainly applies to the compulsory level I load which is widely used in important places that require the continuous power supply, such as fire protection, telecommunications, hospitals, hotels, urban rail transits, high-rise buildings, industrial assembly lines and TV stations. It adopts the network source, self-starting generator set and battery set as the main and standby power supplies.

2. Picture of the product



3. Specification and model description

ND Q 3H - □ □ □ / □ □ □

1 2 3 4 5 6 7 8 9

Table 1 Specification and model description

SN	SN description	NDQ3H
1	Enterprise code	Nader low-voltage apparatus
2	Product code	Q: ATSE
3	Design code	3H
4	Rated current of housing	400
5	Controller type	A: basic type B: advanced type C: communication type D: LCD Type
6	Rated current	315, 350, 400
7	Number of poles	2-2P 3-3P 4-4P
8	Installation type	Z-Integral type F-Split type
9	Switch position	II: two-segment III: three-segment

Note: If the pure mechanical manually operating transfer switch is needed, please be sure the controller type is empty and structure type is split.

4. Main technical parameters

Rated working voltage Ue: AC230V（2P） AC400V(3P、4P)
Rated frequency: 50/60Hz
Rated insulation voltage Ui: AC800V
Rated impulse withstand voltage Uimp: 8kV
Usage category: AC-33B/AC-33iA
Rated short-circuit making capacity Icm(Peak Value)：17kA
Rated short-time withstand current Icw：10kA On-time（s）：30ms
Rated limited short-circuit current Iq: 120kA
Contact switching time: II≤0.1s III≤0.14s
Mechanical life：20000 times
Electrical life：6000 times

5. Controller functions

Function description		Type A controller	Type B controller	Type C controller	Type D controller
Protection function	Overvoltage protection	√	√	√	√
	Undervoltage protection	√	√	√	√
	Open-phase protection	√	√	√	√
	Overfrequency protection	–	√	√	√
	Underfrequency protection	–	√	√	√
	Phase sequence/phase protection	–	√	√	√
	Wrong wiring alarm	√	√	√	√
Measuring function	Voltage value	–	√	√	√
	Frequency value	–	√	√	√
	Unbalancedness	–	√	√	√
Communication function	MODBUS-RTU protocol	–	–	√	√
Node input/output	Fire signal Input	√	√	√	√
	Normal closing output	√	√	√	√
	Alternative closing output	√	√	√	√
	Generator starting output	√	√	√	√
	Fault alarm output	√	√	√	√
	Communication port	–	–	√	√

	Remote switching control input	–	√	√	√
	Programmable port output	Generator/unload	√	√	√
Display	Normal power (LED)	√	√	√	√
	Alternative power (LED)	√	√	√	√
	Normal closing (LED)	√	√	√	√
	Alternative closing (LED)	√	√	√	√
	Automatic (LED)	√	√	√	√
	Setting (LED)	–	√	√	–
	Running (LED)	–	–	–	√
	Coil (LED)	–	√	√	√
	Fire (III) (LED)	√	√	√	√
	Communication (LED)	√	√	√	√
	Frequency (LED)	–	–	√	√
	Remote/local (LED)	–	√	√	–
	Phase sequence/phase (LED)	–	√	√	√
	Under-voltage (LED)	–	√	√	–
	Overvoltage (LED)	–	√	√	–
	Auto switch and auto recover (LED)	–	√	√	–
	Auto switch and non-auto recover (LED)	√	–	-	–
	Grid-grid (LED)	√	–	-	–
	Grid-generator (LED)	√	–	-	–
	7-segment digital tube	–	√	√	–
	LCD	–	–	–	√
Power supply mode selection	Grid-grid	√	√	√	√
	Grid-generator	√	√	√	√
Operation mode selection	Auto switch and auto recover	√ [1]	√ [1]	√[1]	√[1]
	Auto switch and non-auto recover	√ [1]	√ [1]	√[1]	√[1]
Delay adjustment	Tripping/transfer delay	√	√	√	√
	Closing/return delay	√	√	√	√
	Cold-machine delay adjustment	–	√	√	√
	Generator startup delay	▽	√	√	√

Voltage protection threshold value	Undervoltage value	187V	(0.7～0.85)×230V adjustable		
	Overvoltage value	264V	(1.05～1.3)×230V adjustable		
Keys	Automatic/manual	√	√	√	√
	I normal/△	–	√	√	√
	Setting	–	√	√	√
	II Alternative/▽	–	√	√	√
	Reset	√	√	√	√
	○Power off (III)/Esc	–	√	√	√
	Enter	–	√	√	√
	Power supply mode	√	–	-	-
	Operation mode	√	–	-	-
Other	Remote switching function	–	√	√	√
	Rated frequency selection	–	√	√	√
	Buzzer	√	√	√	√
	Powers priority adjustable	▽	▽	▽	√
	III/II optional function	▽	▽	▽	▽
	Bipolar switch	-	-	-	▽
	Break[2]	-	-	-	▽
	Overvoltage or Undervoltage Return value	-	-	-	▽
	Delete fault record	–	–	–	▽
	Delete operation record	–	–	–	▽
	Normal A phase voltage coefficient	–	–	–	▽
	Normal B phase voltage coefficient	–	–	–	▽
	Normal C phase voltage coefficient	–	–	–	▽
	Alternative A phase voltage coefficient	–	–	–	▽
	Alternative B phase voltage coefficient	–	–	–	▽
	Alternative C phase voltage coefficient	–	–	–	▽
	Correction voltage values	–	–	–	▽

"√" indicates that the function is available; "▽" indicates that it is adjustable inside the company; "-" indicates

that the function is not available.

[1]: When "Grid-Grid" is selected as the power supply mode, selection of the auto switch and auto recover, and auto switch and non-auto recover is available; if "Grid-Generator" is selected as the power supply mode, then selection of the auto switch and auto recover, and auto switch and non-auto recover is invalid set as the auto switch and auto recover automatically.

[2]: After break fuction is turned on，when normal and alternative power fails at the same time，the ATSE transfer to the break position；After break fuction is turned off，when normal and alternative power fails at the same time，the ATS keep current.

6. Normal working environment

6.1 Normal working conditions

6.1.1 Ambient air temperature

The upper and lower limit value of the ambient air temperature is no more than +70℃ and no less than -25℃ respectively, while the average value within 24 hours doesn't exceed +35℃. In case the temperature is above 55℃, consider reducing the capacity for use.

6.1.2 Altitude

The altitude of the installation site doesn't exceed 2,000m.

6.1.3 Atmospheric conditions

6.1.3.1 Humidity

The 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 monthly average maximum relative humidity in the month can be 90% at an average minimum temperature of 20℃ in the wettest month. Proper measures should be taken to address condensing due to temperature fluctuation for prevention reasons.

6.1.3.2 Class of pollution: 3

6.2 Installation conditions

6.2.1 ATSE can be installed vertically or horizontally within the cabinet; special orders are required upon special requests.

6.2.2 The product should be installed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust.

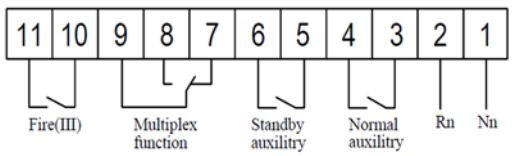
6.2.3 The product should be installed free from snow and rain.

6.3 Usage category AC-33B/AC-33iA.

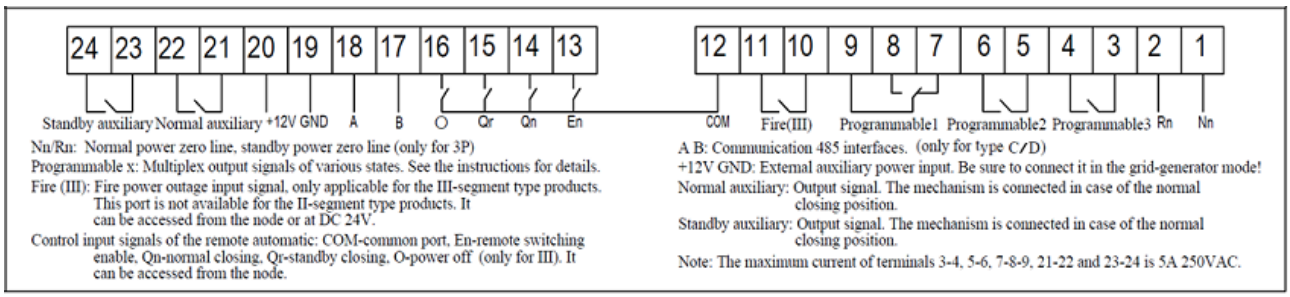
7 Definitions of external interfaces

7.2 Definitions of Type A controller secondary output terminals

Nn / Rn	: Normal power zero line, standby power zero line (only for 3P)
Normal auxiliary	: Output signal. The mechanism is connected in case of the normal closing position.
Standby auxiliary	: Output signal. The mechanism is connected in case of the standby closing position.
Multiplex function	: Output signal. In the grid-grid mode, it gives fault alarms of mechanism switchover, position feedback and error wiring. In case of no fault, 7 and 9 are connected; otherwise, 8 and 9 are connected. In the grid-generator mode, it starts the generator or unloads the load. In case of no signal output, 8 and 9 are connected; otherwise, 7 and 9 are connected.
Fire (III)	: Fire power outage input signal, only applicable for the III-segment type products. This port is not available for the II-segment type products. It can be accessed from the node or at DC 24V.
Note	: The maximum current of terminals 3-4, 5-6 and 7-8-9 is 5A 250VAC.



7.2 Definitions of Type B, Type C and Type D controller secondary output terminals



8. External and installing dimensions

8.1 External dimensions and installation dimensions of integral switches

See Fig. 1 for the outline of integral switches. See Table 2 for parameters of the external dimensions and installation dimensions.

III-segment type

II-segment type

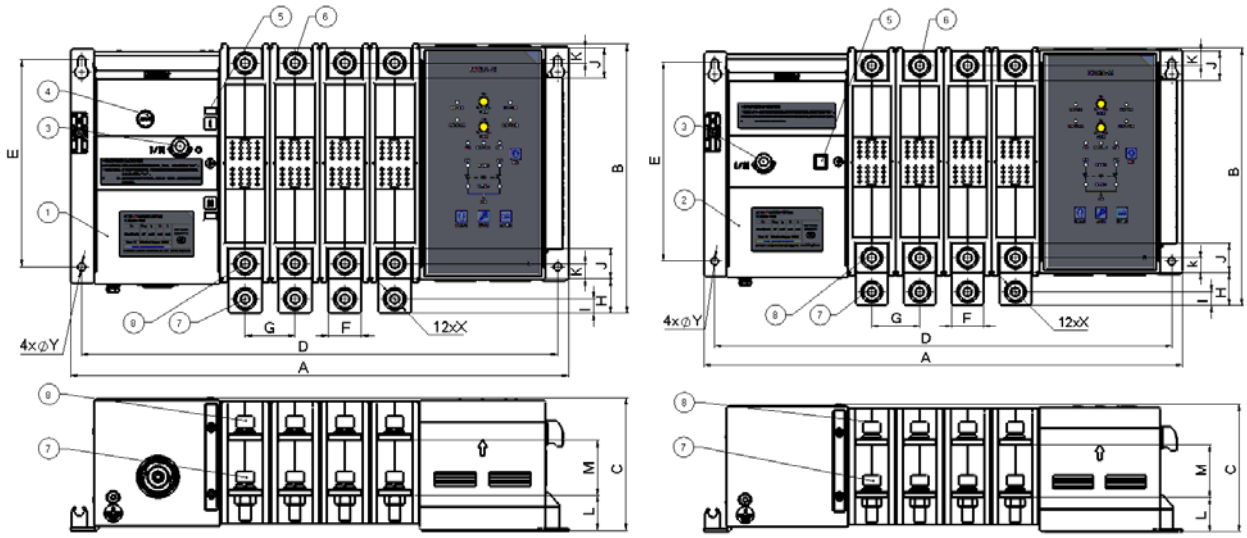


Fig. 1 External dimensions and installation dimensions of integral switch

①III-segment type switch body ② II-segment type switch body ③ Manuel rotation axis ④ III-segment type guide button ⑤ Switch position indicator ⑥ Side mainline terminal of the common power supply ⑦ Side mainline terminal of the load ⑧ Side mainline terminal of the standby power supply

Table 2 External dimensions and installation dimensions of integral switches

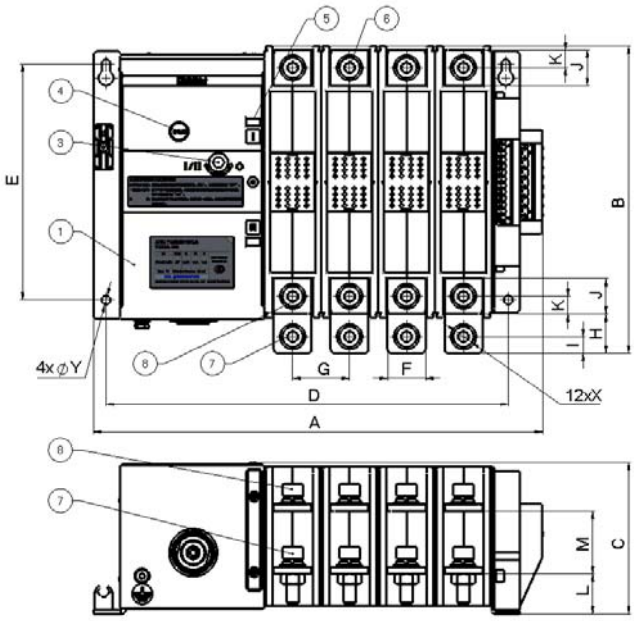
Model		External dimensions (mm)			Installation dimensions (mm)			Other dimensions (mm)								
		Length A	Width B	Height C	Length D	Width E	ΦY	F	G	H	I	J	K	L	M	X
II III	NDQ3H-400/2P	395.5	243	120	339.5	187	7	30	45	31	13	28	14	31.8	49.8	Φ10.5
	NDQ3H-400/3P	404.5	243	120	339.5	187	7	30	45	31	13	28	14	31.8	49.8	Φ10.5
	NDQ3H-400/4P	449.5	243	120	429.5	187	7	30	45	31	13	28	14	31.8	49.8	Φ10.5

Note: The limit deviation of the unspecified tolerance dimension of external dimensions and installation dimension shall comply with GB/T 1804-C.

8.2 External dimensions and installation dimensions of split switches

See Fig. 2 for the outline of the mechanism body of split switches; see Table 3 for parameters of the external dimensions and installation dimensions of the mechanism body; see Fig. 3 for the dimensions of Type A/B/C/D split controller.

III-segment type



II-segment type

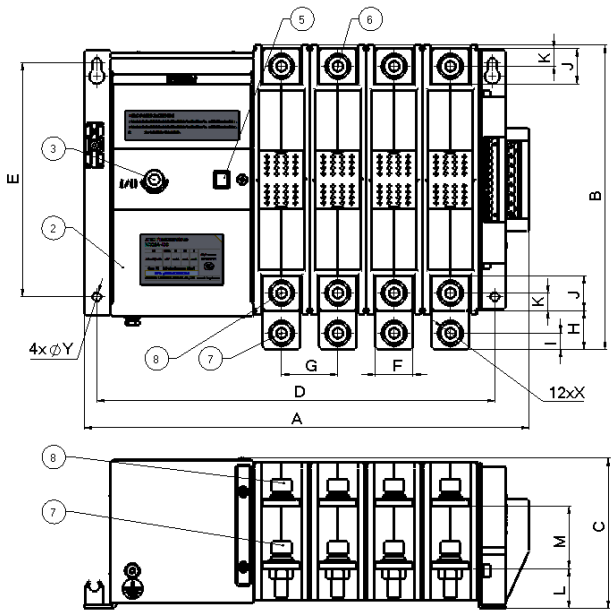


Fig. 2 External dimensions and installation dimensions of mechanism body of split switches

① III-segment type switch body ② II-segment type switch body ③ Manuel rotation axis ④ III-segment type guide button ⑤ Switch position indicator ⑥ Side mainline terminal of the common power supply ⑦ Side mainline terminal of the load ⑧ Side mainline terminal of the standby power supply

Table 3 External dimensions and installation dimensions of mechanism body of split switches

Model		External dimensions (mm)			Installation dimensions (mm)			Other dimensions (mm)								
		Length A	Width B	Height C	Length D	Width E	ΦY	F	G	H	I	J	K	L	M	X
II III	NDQ3H-400/2P	265	243	120	228	187	7	30	45	31	13	28	14	31.8	49.8	Φ10.5
	NDQ3H-400/3P	310	243	120	273	187	7	30	45	31	13	28	14	31.8	49.8	Φ10.5
	NDQ3H-400/4P	333	243	120	318	187	7	30	45	31	13	28	14	31.8	49.8	Φ10.5

Note: The limit deviation of the unspecified tolerance dimension of external dimensions and installation dimension shall comply with GB/T 1804-C.

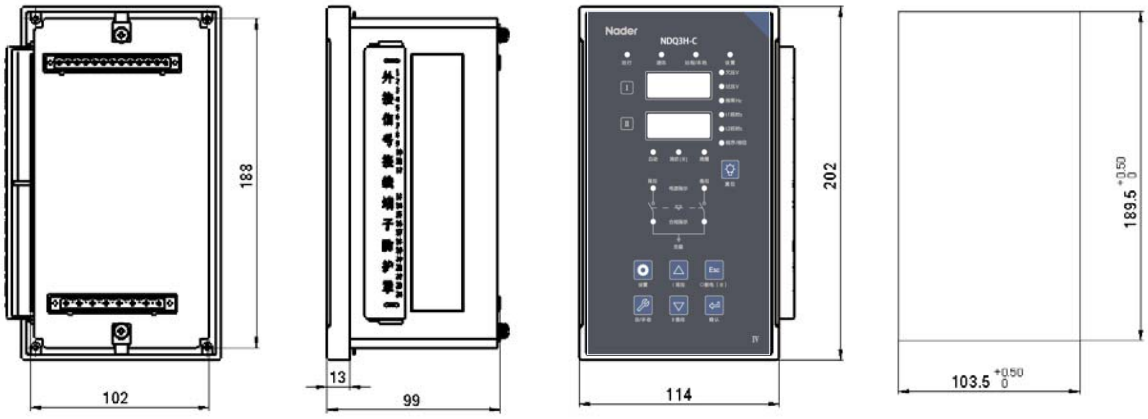


Fig. 3 Dimensions of Type A/B/C/D split controller

Note: The dimensions of Type A/B/C/D split controllers are all the same. Therefore, only one dimension chart is attached here. The limit deviation of the unspecified tolerance dimension shall comply with GB/T 1804-C.

9. Installation mode

The product is installed vertically and fixedly in the cabinet bearing the maximum slope with the vertical installation plane about ±22.5°.

10. Packaging and storage

Products covered with a waterproof plastic bag shall be packaged with special wooden cases, which are fixed in the case with screws and provided with manuals and certificates. The applicable transportation and storage temperature range of the product is from -25℃ to +75℃. Keep the products dry during transportation, which shall not be affected by strong turbulence, vibration and impact as well as be free from snow and rain.

11. List of accessories and installation

SN	Name	Specification	Quantity
1	Cross hexagon head combination screw(s)	M6×16	4
2	Hexagon nut(s)	M6	4
3	Partition between terminals	--	2P: 2, 3P:4, 4P: 6
4	Manual special handle	--	1

12. Precautions

★ This product can operate reliably at the voltage range of 85%Ue~110%Ue. During installation and wiring of the product, strictly distinguish the incoming line, outgoing line and N-pole, and do not share the neutral line.

★ It is prohibited to use this product beyond the normal working conditions, such as the continuous

water vapor or condensation without corresponding precautions, flammable or corrosive dust without SCPD cooperation or expected short-circuit current beyond the scope, ultra-high or ultra-low voltage, current beyond the rated value and ultra-high attitude.

★ Perform operation with the special handle supplied with products for manual switching.

★ For disconnection of the protective apparatus due to the line or load fault, first carry out troubleshooting and then energize the load.

★ During the product use, perform regularly (such as operation every three months) general inspection and switch the power supply once manually or automatically to check whether the product is normal.