

Shanghai Liangxin Electrical Co., Ltd.

NDQ3H-5000 Product Specification

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

Product Name: Automatic Transfer Switching Equipment

Product Model: NDQ3H-5000

Date : 2018-12-06

Prepare by	GaoXu	Date	2018-12-06
Reviewed by	CaoXuehu	Date	2018-12-06
Approved by	GaoXu	Date	2018-12-06

Revision history					
Revision	Revision reasons/contents	Implementation date	Prepared by	Reviewed by	Approved by
0	New addition	2017-05-15	Zhong Yunpan	Jia Jianping	Shi Wei
1	Revising parameters	2018-12-06	GaoXu	CaoXuehu	ZhouBo

1. Applicable scope and purpose

NDQ3H-5000 PC-grade automatic transfer switching equipment (ATSE) is 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

Table 1 Specification and model description

SN	SN description	NDQ3H
1	Enterprise code	ND: Nader low-voltage apparatus
2	Product code	Q: ATSE
3	Design code	3H
4	Conventional thermal current	5000
5	Controller type	D: intelligent type
6	Rated working current	4000、5000
7	Number of poles	3-3P 4-4P
8	Switch position	II: two-segment

4. Main technical parameters

Rated working voltage U_e : AC400V
Rated frequency: 50/60Hz
Rated insulation voltage U_i : AC1000V
Rated impulse withstand voltage U_{imp} : 12kV
Usage category: AC-33iB
Rated short-time withstand current I_{cw} : 50kA
Rated short-circuit making capacity I_{cm} : 105kA
Contact switching time: $\leq 200ms$
Mechanical life: 10000 times
Electrical life: 2000times

5. Controller functions

- (1) Optional power supply modes: Grid - rid, grid – generator.
- (2) Optional operation modes: Manual operation, electric (key-based) operation, automatic operation.
- (3) Protection types: Open-phase protection, undervoltage protection, overvoltage protection, voltage loss protection and phase unbalance protection.
- (4) Optional operation modes: Auto switch and auto recover, auto switch and non-auto recover.
- (5) Delay adjustable: Transfer delay, auto recover delay, fault duration, auto recover voltage duration, generator shutdown delay.
- (6) Protection parameters adjustable: Undervoltage range, overvoltage range, phase unbalance parameters.
- (7) LCD display status and parameter setting information, LED display power supply and closing status.
- (8) The output power supply, closing status and generator signal for the dry contact of the secondary terminal.
- (9) Two-way power priority setting.
- (10) Fire control linkage (DC signal starting, passive signal starting).
- (11) Communication (remote measurement, remote regulating, and remote control).
- (12) Voltage calibration.
- (13) Password protection (initial password: 8888).
- (14) Accumulation, inquiry and clearing of switching times.
- (15) Fault record (power system fault and switch fault), inquiry and clearing.
- (16) Diversification of the alarm signals (acoustic-optical signal, passive signal).
- (17) Output the passive signal when the power supply of any way is normal.
- (18) Give an alarm and output the passive signal in case of failure to operate.
- (19) Alarm sound may be closed.
- (20) Wiring circuit self-check function.
- (21) Standby screen protection.
- (22) Factory status information inquiry and recovery.

6. Operating conditions

6.1 Normal working conditions

6.1.1 Ambient air temperature

The operating ambient temperature range of the NDQ3H body is $-25^{\circ}C \sim +70^{\circ}C$ with the storage ambient

temperature range from -55°C to $+85^{\circ}\text{C}$.

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

When the highest temperature is $+40^{\circ}\text{C}$, the relative humidity of air should not exceed 50%; a high relative humidity is allowed under a low temperature, e.g. 90% under $+20^{\circ}\text{C}$. Special measures should be taken to address occasional condensing due to temperature fluctuation.

6.1.3.2 Class of pollution: 3

6.1.3.3 Protection grade: IP20

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.

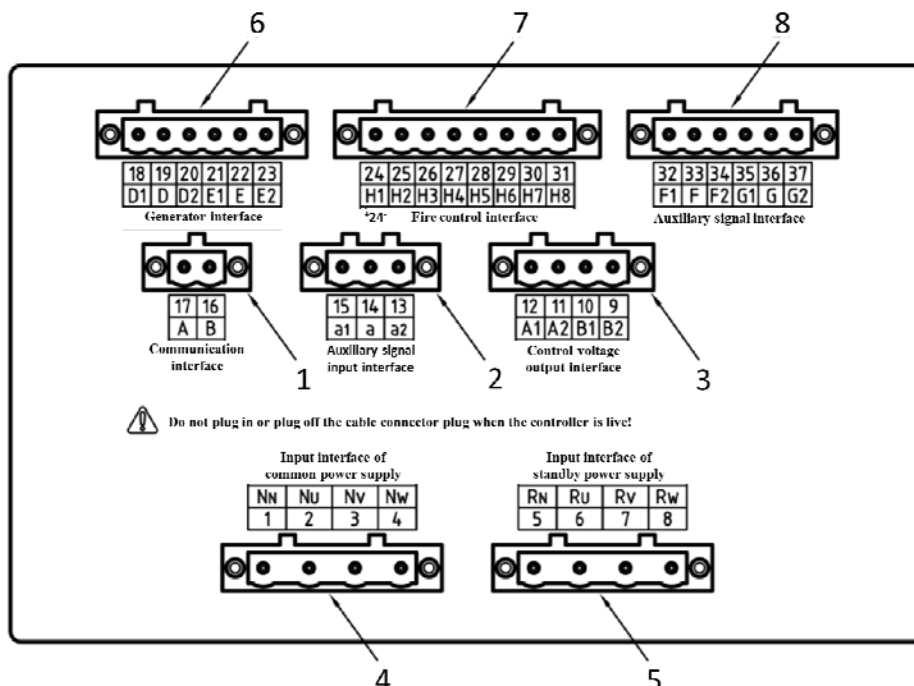
6.2.4 Installation category (overvoltage category)

The installation category of the main circuit switching device belongs to III.

The installation category of the transfer controller and auxiliary circuit belongs to II.

6.3 Usage category: AC-33iB.

7. Definitions of controller interface



Controller interface function explanation:

1 - Communication interface

Communication interface is used with the standby RS485 serial port, with which it is possible to realize the remote communication, remote control and remote regulating functions. Modbus protocol is used on the software.

2 - Auxiliary signal input interface

This port group is used only in pair with the secondary wiring ports of the switch. This port is passive signal input port, and it is prohibited to input any electric signal.

3 - Control voltage output interface

This port group is used only in pair with the secondary wiring ports of the switch. This port is the control voltage output port, and it is prohibited to input any electric signal. (Recommendation: the specification of copper conductor is 2.5mm²)

4 - Input interface of standby power supply

This port group includes sampling signal input ports of R power supply, for real-time collection of the status information of R power supply and for offering of the working power supply to this controller. It is required to carry out wiring strictly according to the phase sequence on the sticker. The current-carrying capacity of the sampling wire shall not be lower than 18A. (Recommendation: the specification of copper conductor is 2.5mm²)

5 - Input interface of common power supply

This port group includes sampling signal input ports of N power supply, for real-time collection of the status information of N power supply and for offering of the working power supply to this controller. It is required to carry out the wiring strictly according to the phase sequence on the sticker. The current-carrying capacity of the sampling wire shall not be lower than 18A. (Recommendation: the specification of copper conductor is 2.5mm²)

6 - Generator interface

This port group includes the passive signal output ports, for use in combination with the load tripper and the generator.

D1, D and D2 are used in combination with the load tripper. D1 is the normally open point; D2 is the normally closed point; D is the public point (in the status without power supply), and the contact capacity is AC240V 12A.

E1, E and E2 are used in combination with the generator starter. E1 is the normally open point; E2 is the normally closed point; E is the public point (in the status without power supply), and the contact capacity is AC240V 12A.

7 - Fire control interface

H1 and H2 are DC24V signal input interfaces, where H1 is the positive input terminal, and H2 is the negative input terminal. It is prohibited to exchange the polarity. If H1 and H2 ports have DC24V signal input, this controller will immediately go into the fire control status.

H3 and H4 are one group of passive signal detection ports, and it is prohibited to input any electric signal. If H3 and H4 have detected the closing signal, this controller will immediately go into the fire control status.

H5 and H6 are one group of passive signal output ports, and the contact is of normally open type with the contact capacity of AC240 12A. If the controller is in the fire control status, this group of contacts will be closed till the elimination of the firefighting status.

H7 and H8 are one group of passive signal output ports, and the contact is of normally open type with the contact capacity of AC240 12A. If the switch itself does not act or is in fault, this group of contacts will be closed till the elimination of the fault.

8 - Auxiliary signal interface

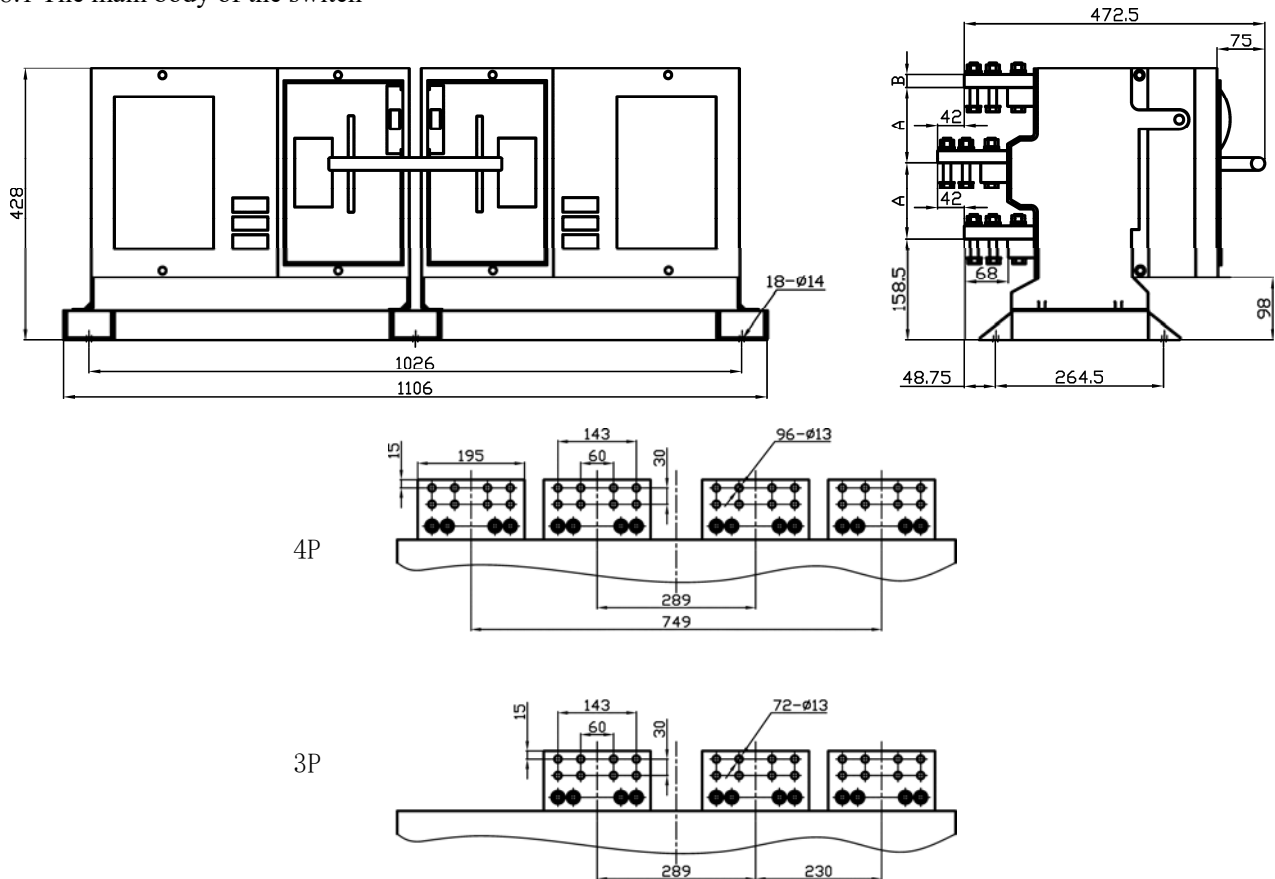
F1, F and F2 are one group of passive signal output ports, where F is the public point with the contact capacity of AC240 12A. The status of F1, F and F2 depends on the closing condition of the power supply. If N

power supply is put into use, then F1 and F will be closed; if R power supply is put into use, then F2 and F will be closed.

G1, G and G2 are one group of passive signal output ports, where G is the public point with the contact capacity of AC240 12A. If both power supplies are in fault, then G1 and G will be closed; if any power supply is normal, then G2 and G will be closed.

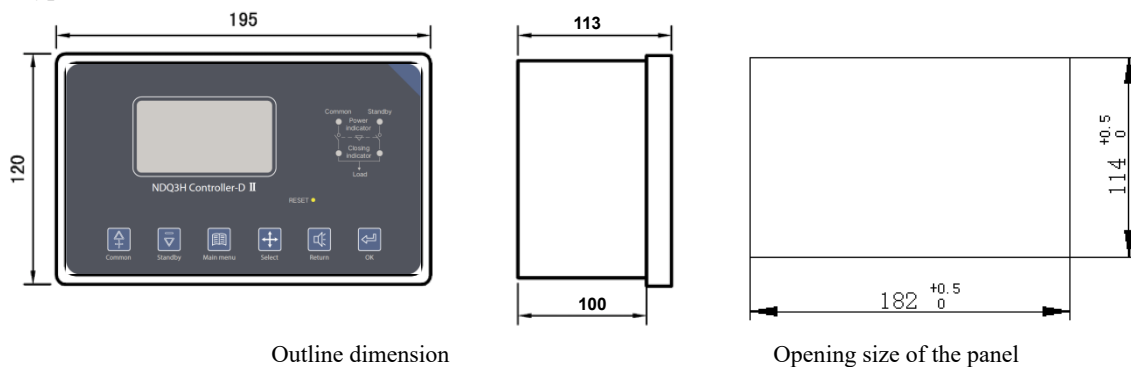
8. Outline and installation dimensions

8.1 The main body of the switch



Ie	4000A	5000A
A	112	119.5
B	15	20

8.2 Type-D controller



Outline dimension

Opening size of the panel

9. Installation mode

The product is installed vertically and fixedly in the cabinet bearing the maximum slope with the vertical installation plane about $\pm 22.5^\circ$.

After the ATSE installation, the user may carry out the wiring, and choose the conductor section complying with the standard according to the rated current of ATSE. It is required to pay attention to the phase sequence, add one conductor with the section no less than 0.5mm^2 for the three-pole ATSE, so as to connect the neutral wire N of the power supply with the wiring terminal of the neutral wire N in the bottom plate of the ATSE. For the four-pole ATSE, N pole of common power supply and standby power supply shall be correctly connected with the N pole of ATSE respectively, it is required to ensure reliable and correct wiring; the wire harness for connecting the controller with the mechanism will not be supplied at the factory delivery, and the conductor will be prepared by the customer for connection according to the instruction, before the energizing and use.

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°C to $+75^\circ\text{C}$. 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. Precautions

In the operations or tests, the user shall observe the related regulations and notice the following items, to ensure correct and safe use of the products of our company.

- (1) The neutral wire N cannot be wrongly connected and shall be reliably wired, otherwise ATSE cannot work normally, and even the controller and the mechanism will be burnt.
- (2) The metal bottom plate of ATSE shall be reliably earthed to ensure the safety.
- (3) It is required to distinguish the neutral wire (N) and the earthing protection wire (PE), which cannot be wrongly connected.
- (4) In the power frequency withstand voltage test, the controller shall be disconnected.
- (5) When ATSE is in "Automatic" working mode, it is prohibited to make manual switching by using the operation handle! In the manual operation, and it is required to ensure that the switching power supply and the load are correct before switching.
- (6) When the power supply system supplies power to ATSE, the cable connector plug shall be firmly inserted. The user shall not plug in or plug off the cable connector plug when the controller is live, otherwise adverse accident might happen. Plugging in or plugging off the cable connector plug shall be carried out in case of the power interruption of the common power supply and standby power supply. In case of plugging in or plugging off the cable connector plug when the controller is live, it is required to place the controller in the "Manual" working mode in advance and cut off the power supply switch of the controller, then start plugging in or plugging off the cable connector plug while being careful in the operation!
- (7) When connecting the main circuit, it is required to check whether the phase sequence of two power sources is consistent.
- (8) For the product being put out of use for a long time, it is required to take the moisture-proof and dust-proof measures, and before the use, it is required to carry out the commissioning according to the above contents.