

上海良信电器股份有限公司
Shanghai Liangxin Electrical Co., Ltd. (Nader)

(NDQ2A-250)

产品规格书 Product Specification

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

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1、 适用范围与用途

Application Scope and Purpose

NDQ2A-250 系列自动转换开关电器适用于交流额定工作电压 400V 及以下, 额定频率 50Hz, 额定电流 63A 至 250A 的紧急供电系统中两路电源间的自动切换, 以确保重要负荷(如消防负载)工作的连续、安全、可靠。广泛应用于医院、商场、银行、化工、高层建筑、军事设施、消防等不允许断电的重要场所。

NDQ2A-250 series Automatic Transfer Switching Equipment applies to automatic switching between two circuits of the power supply in emergency power supply system with AC rated working voltage below 400 V, rated frequency 50 Hz, and rated current 63 A to 250 A, to ensure continuous, safe and reliable work of important load (such as firefighting load). It is widely used in important places not allowing power interruption, such as hospital, mall, bank, chemical industry, high-rise building, military facilities and firefighting.

本产品符合 GB/T 14048.11-2016 《低压开关设备和控制设备 第 6-1 部分: 多功能电器 转换开关电器》, 等同采用 IEC 60947-6-1: 2013 标准, 符合《高层民用建筑防火规范》、《建筑设计防火规范》、《应急照明设计指南》、《民用建筑电气设计规范》等。

This product complies with the GB/T 14048.11-2016 standard "Low-voltage switchgear and controlgear--Part 6-1: Multiple function equipment--Transfer switching equipment", equivalent to IEC 60947-6-1:2013, and complies with Code for Fire Protection of High-rise Civil Buildings, Code of Design on Building, Design Guidelines on Emergency Lighting, Code for Electrical Design of Civil Buildings etc.

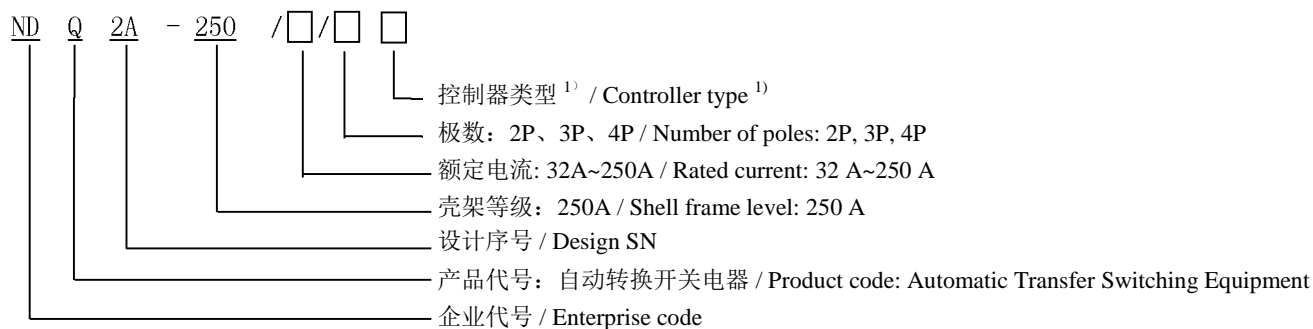
2、 产品图片

Picture of the Product



3、 规格型号说明

Specifications and Model Description



注 1) 标准型: 空白; 智能型: B

Note 1) Standard type: blank; Intelligent type: B

4、 主要技术参数

Main Technical Parameters

表 1 NDQ2A-250 主要技术参数

Table 1 Main Technical Parameters of NDQ2A-250

型号 Model	NDQ2A-250
额定工作电流 Ie Rated working current Ie	32、63、80、100、125、160、200、250
额定绝缘电压 Ui Rated insulation voltage Ui	800V
额定冲击耐受电压 Uimp Rated impulse withstand voltage	8kV
额定工作电压 Ue (V) Rated working voltage Ue (V)	AC230V (2P) AC380V/400V (3P、4P)
触头转换时间 max Contact switching time max	≤2s
转换动作时间 max Switching action time max	≤3.3s
额定限制短路电流 Iq Rated limited short-circuit current Iq	120kA
操作循环周期 (次/分钟) Operation cycle time (times/min)	1
机械寿命 (次) Mechanical life (times)	12000
电气寿命 (次) Electrical life (times)	6000

电器级别 Electrical equipment level	PC 级 PC level
使用类别 Utilization category	AC-33B
极数 Number of poles	2P、3P、4P 2P, 3P and 4P
控制电压 Control voltage	AC230V
接线方式 Wiring mode	板前接线 Front-plate connection
开关位置 Switch position	III 段 Section III

表 2 控制器主要性能指标
Table 2 Main Performance Indexes of the Controller

控制器类型 Controller type	标准型 Standard type	B
采样方式 Sampling method	常用三相 (AN、BN、CN) ; Common three-phase (AN, BN, CN); 备用单相 (CN) Standby single-phase (CN)	常用三相 (AN、BN、CN) ; Common three-phase (AN, BN, CN); 备用三相 (AN、BN、CN) ; Standby three-phase (AN, BN, CN);
工作电压范围/频率 (V/Hz) Operating voltage range/ frequency (V/Hz)	AC230 V \pm 10%/50 Hz	
额定绝缘电压 Ui Rated insulation voltage Ui (V)	690 V	
额定冲击耐受电压 Uimp Rated impulse withstand voltage	2.5k V	
电路实现方式 Circuit implementation model	MCU (微处理器) + 继电器 MCU (microprocessor) + relay	

电磁兼容 EMC Electromagnetic compatibility EMC	1 级 (A 级) Level 1 (Level A)	
结构形式 Structure form	整体式 Integral type	
操作控制符合标准条款 GB/T 14048.11-2016 Operation control complies with standard term GB/T 14048.11-2016	9.3.3.2 操作控制、程序和范围 9.3.3.2 Operation control, procedure and scope	
工作模式 Operation mode	自投自复、自投不自复 Auto switch and auto recover, auto switch without auto recover	
断相保护 Open-phase protection	当电压有效值小于 50V 时, 判定为断相。 When the effective value of voltage is less than 50 V, it is determined as phase failure.	
欠电压保护 Undervoltage protection	/	欠压值: 176V, 回差值 20V。 Undervoltage value: 176 V, return difference value: 20 V.
过电压保护 Overvoltage protection	/	过压值: 264V, 回差值 20V。 Over-voltage value: 264 V, return difference value: 20 V.
过欠压保护精度 Over-voltage/under-voltage protection accuracy	/	±5V
接错线报警 Wrong wiring alarm	控制器上电时若检测到相电压超过有效值 300V, 则判定为相线 When the controller is powered on, if the phase voltage is detected to exceed the effective value of 300 V, it is determined as a phase line 与零线接错, 控制器所有指示灯以 10HZ 频率闪烁报警; 产品在 Wrong connection with the neutral line, and all indicators of the controller flash at the frequency of 10 HZ for alarm; 正常使用过程中电压上升超过 300V 不做报警。 no alarm will be given when the voltage rises to more than 300 V during normal use of the product.	
通讯 Communication	/	RS-485 方式, 执行标准 MODBUS-RTU 协议 RS-485 mode, standard MODBUS-RTU protocol is implemented
通讯端口	/	差分线 A、B。

Communication port	Differential lines A and B.		
串口信息 Serial port information	/	串口信息 Serial port information	
		设定参数类型 Setting parameter type	设定值 Setting value
		设备地址 Device address	1-255 (可修改) 1-255 (modifiable)
		波特率 Baud rate	9600
		校验方式 Check mode	NO
		停止位 Stop bit	1Bit
冷机延时 Cooling delay	发电机模式时使用, 默认 30s 不可调节。 It is used in the generator mode and cannot be adjusted for 30 seconds by default.		

5、 正常工作环境 Normal Working Environment

5.1 正常使用条件 Normal working conditions

5.1.1 周围空气温度 Ambient air temperature

NDQ2A-250 本体运行环境温度范围为-25℃~+70℃, 存储环境温度范围为-55℃~+85℃。

The operating temperature range of the NDQ2A-250 body is -25℃~+70℃, and the storage environment temperature range is -55℃~+85℃.

5.1.2 海拔 Altitude

安装地点的海拔高度不超过 2000m。

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

5.1.3 大气条件 Atmospheric conditions

5.1.3.1 湿度 Humidity

安装地点的空气相对湿度在周围空气温度为+40℃时不超过 50%, 在较低温度下可以有较高的相对湿度。例如: 在某月的平均最低温度为+20℃时, 该月的月平均最高相对

湿度可达 90%。对由于温度变化而产生的凝露应采取适当的措施予以防护。

The relative air humidity at an ambient temperature of +40°C at the installation site 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°C in a month. Proper measures should be taken to address condensing due to temperature fluctuation for prevention reasons.

5.1.3.2 防护等级 IP20

Protection class IP20

5.2 安装条件

Installation condition

5.2.1 ATSE 可以垂直或水平安装在柜体内，特殊要求需特殊订货。

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

5.2.2 应安装在无爆炸危险的介质中，且介质中无腐蚀金属和破坏绝缘的气体与导电尘埃。

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

5.2.3 应安装在没有雨雪侵袭的地方。

The product should be installed free from snow and rain.

5.2.4 安装类别（过电压类别）

Installation category (over-voltage category)

主电路开关电器的安装类别Ⅲ。

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

转换控制器和辅助电路安装类别Ⅱ。

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

6、 产品外形及安装尺寸 Outline and Installation Dimensions

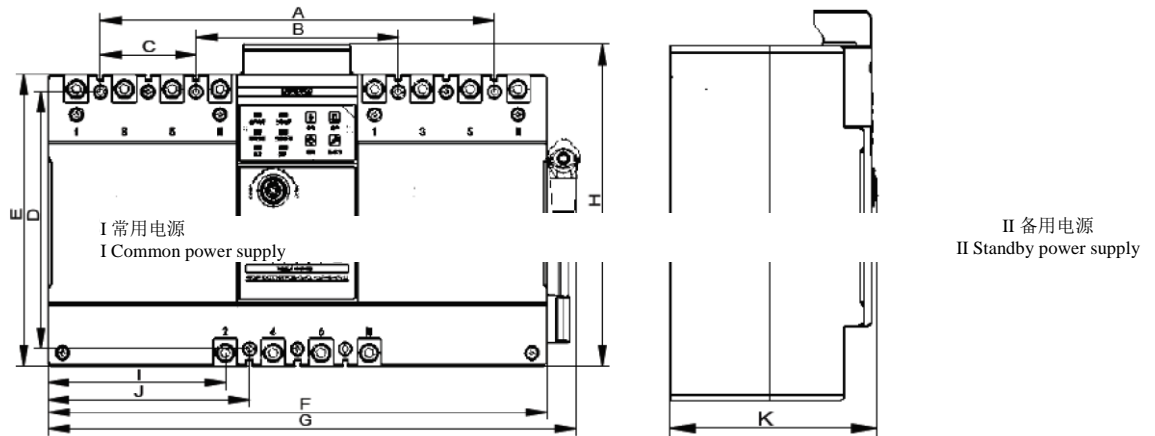


表 2 外形尺寸及安装尺寸
Table 2 Boundary Dimension and Installation Dimension

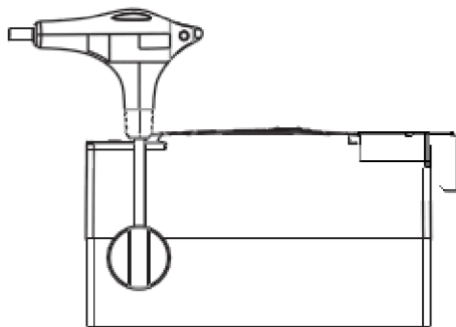
型号规格 Model & specifications	A	B	C	D	E	F	G	H	I	J	K	安装孔 Mounting hole
NDQ2A-250	288	148	70	189	215	365	390	237	130	147.5	125	φ4.5

注: NDQ2A-250 二极、三极、四极外形尺寸与安装尺寸相同。

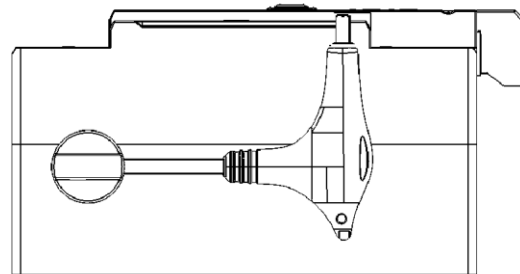
Note: The outline dimensions and installation dimensions of NDQ2A-250 two-pole, three-pole and four-pole are the same.

7、 安装方式 Installation mode

7.1 手柄安装固定 Handle installation and fixation



手柄插入开关并旋转
The handle is inserted into the switch



手柄插入开关旋转后, 手柄固定
After the handle is inserted into the switch and

and rotated

rotated, the handle is fixed

7.2 手柄功能 Handle function



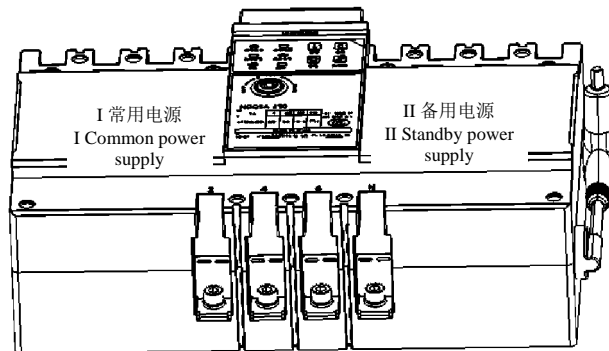
手柄可用于紧固两路负载进出线接线螺钉
The handle can be used to fasten the wiring screws
of two load incoming and outgoing lines

也可用于手动调节双电源自动转换开关。
It can also be used to manually adjust the dual
power automatic transfer switch

8、 接线方式 Wiring mode

8.1 产品接线 Product wiring

常用电源的出线端与备用电源的出线端已通过产品内部进行连接，并接于输出端子。
The outlet terminal of the common power supply and the outlet terminal of the standby power supply
have been connected inside the product and connected to the output terminal.



常用电源与备用电源共用负载输出接线端子
Common power supply and standby power supply share load output terminal blocks

8.2 二次端子接线方式 Secondary terminal connection mode

常用合闸 Common closing	启动发电机（无 源输出）	消防反馈 Fire fighting	485 通讯 485	消防 Firefighting	备用合闸 Standby closing
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地址: 上海市浦东新区申江南路 2000 号
Address: South Shenjiang Road #2000,
Pudong New Area, Shanghai

邮编: 201315
Post code: 201315

电话: (021)68586699
Tel.: (021) 68586699

传真: (021)23025796
Fax: (021) 23025796

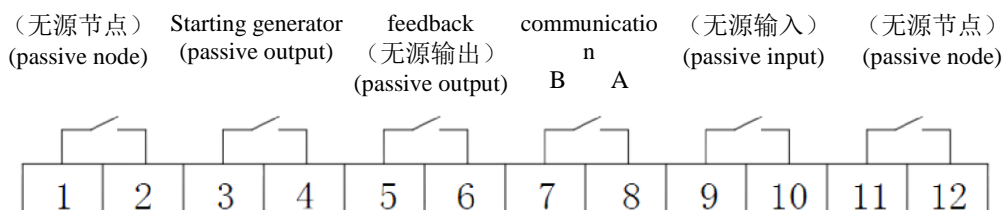


图 1 250 壳架二次端子接线示意图

Figure 1 Thermal memory feature Wiring diagram of 250 shell frame secondary terminal

各端子功能说明

Function description of each terminal

- ① 常用合闸: 无源节点, 产品处于常用合闸状态时导通。
Common closing: passive node, which is conductive when the product is in the common closing state.
- ② 备用合闸: 无源节点, 产品处于备用合闸状态时导通。
Standby closing: passive node, which is connected when the product is in standby closing state.
- ③ 启动发电机: 当产品检测到常用电源异常时, 该端子导通。
Start the generator: when the product detects that the common power supply is abnormal, the terminal is connected.
- ④ 消防反馈: 当产品处于消防状态时导通。
Fire control feedback: it is connected when the product is in fire control state.
- ⑤ 485 通讯: 可提供 RS485 通讯功能, 仅 B 型控制器有通讯功能。
485 communication: RS485 communication function is available, and only Type B controller has communication function.
- ⑥ 消防: 将该端子进行短接, 产品切换到消防状态。
Fire protection: short circuit the terminal and switch the product to fire protection status.

9. 控制器功能及操作

Controller Functions and Operation

NDQ2A-250 操作面板
NDQ2A-250 operation panel

9.1 指示灯功能说明
Function description of indicators表 4 指示灯功能说明
Table 4 Function description of indicators

名称 Name	说明 Description	功能 Function
电源指示 Power indicator	常用电源指示灯 Common power indicator	正常: 常亮 Normal: Constantly on 缺相: 常灭 Default phase: Constantly off 过压: 10Hz 闪烁 Over-voltage: flashing at 10Hz 欠压: 2 Hz 闪烁 Undervoltage: flashing at 2 Hz
	备用电源指示灯 Standby power indicator	
合闸指示 Closing indicator	常用电源合闸指示灯 Common power closing indicator	合闸: 常亮 Closing: Constantly on 分闸: 常灭 Opening: Constantly off
	备用电源合闸指示灯 Standby power closing indicator	
消防 Firefighting	消防信号接入指示灯 Fire signal access indicator	无消防信号触发: 常灭 Fire signal trigger unavailable: Constantly off 有消防信号触发: 常亮 Fire signal trigger available: Constantly on 消防信号解除后: 通过面板上的“自动/手动” After the fire signal is released: via "Auto/Manual" on the panel 按键对消防信号复位, 常灭 Press the button to reset the fire signal, which is normally off
自/手动 Automatic/ manual	自动指示灯 Automatic indicator	自动方式: 常亮 Automatic mode: Constantly on 手动方式: 常灭 Automatic mode: Constantly off
报警指示 Alarm indication	合闸灯组合指示 Combinations of closing indicators	常用→断电故障: 常用合闸灯 2Hz 闪烁 Common → power failure: common closing lamp flashes at 2 Hz 断电→常用故障: 常用合闸灯 10Hz 闪烁 Power failure → common fault: common closing lamp

		flashes at 10 Hz 备用→断电故障: 备用合闸灯 2Hz 闪烁 Standby → power failure: standby closing lamp flashes at 2 Hz 断电→备用故障: 备用合闸灯 10Hz 闪烁 Power failure → standby fault: standby closing lamp flashes at 10 Hz
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9.2 按键说明

Button description

表 5 按键说明
Table 5 Button description

名称 Name	说明 Description	功能 Function
自/手动 Automatic/manual	自/手动方式选择 Automatic/manual mode selection	自动模式下, 按下此键, 变为手动方式, “自/手动”指示灯常灭 By pressing the button, the automatic mode will become manual mode with the "Automatic/Manual" indicator constantly off 手动模式下, 按下此键, 变为自动方式, “自/手动”指示灯常亮 By pressing the button, the manual mode will become automatic mode with the "Automatic/Manual" indicator constantly on
常用 Common	常用电源投入 Common power input	手动状态, 按下此键, 开关切换至常用电源合闸位置 In manual mode, the switch transfers to the common power closing position by pressing the button 自动状态, 此按键无效 In automatic mode, the button is invalid
备用 Standby	备用电源投入 Standby power input	手动状态, 按下此键, 开关切换至备用电源合闸位置 In manual mode, the switch transfers to the standby power closing position by pressing the button 自动状态, 此按键无效 In automatic mode, the button is invalid
断电 Power off	断电位置切换 Power-off position switching	手动状态, 按下此键, 开关切换至断电位置 In manual mode, the switch transfers to the power-off position by pressing the button 自动状态, 此按键无效 In automatic mode, the button is invalid

9.3 控制方式选择

Control mode selection

自动状态下, 同时按下“断电”“手/自动”按键 5s 进入控制方式选择模式, 此时“常用电源”和“备用电源”指示灯亮起, 代表自投自复; 按“常用”按键进行控制方式选择, 按“备用”按键进行确

认。写入成功后,下次进入还对应指示上次保存的状态。

Under the automatic state, press the "Power off" and "Manual/Automatic" buttons simultaneously for 5 seconds to enter the Control Mode Selection mode. Then the "Common Power Supply" and "Standby Power Supply" indicators light up, which means automatic switching and automatic recovery; Press the "Common" button to select the control mode, and press the "Standby" button to confirm. After successful writing, the next entry also indicates the last saved state.

控制方式与亮灯方式如下:

The control mode and lighting mode are as follows:

自投自复: “常用电源”和“备用电源”

Automatic switching and automatic recovery: "common power supply" and "standby power supply"

自投不自复: “常用合闸”和“备用合闸”

Automatic switching without automatic recovery: "common closing" and "standby closing"

10、 包装储存

Packaging and Storage

产品套上防水塑料袋,并使用珍珠棉衬垫,放到专用的纸盒包装箱中,随箱带有产品说明书及合格证。

Products covered with a waterproof plastic bag shall be cushioned with pearl wool, placed in special paper packing boxes and provided with product manuals and certificates.

产品适用的运输及存储温度范围为-25℃ ~ +75℃。在运输过程中产品应注意防湿,不得受强烈的颠簸、振动、碰撞,并防止雨雪侵袭。

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、 环保符合性

Environmental Compliance

非 RoHS

Non RoHS

12、 附件清单及安装

List of Accessories and Installation

序号 SN	名称 Name	规格 Specification	数量/台 Quantity/Set
1	整机 Complete machine	/	1
2	固定螺钉	M4*45	6

地址: 上海市浦东新区申江南路 2000 号 邮编: 201315 电话: (021)68586699 传真: (021)23025796
Address: South Shenjiang Road #2000, Post code: 201315 Tel.: (021) 68586699 Fax: (021) 23025796
Pudong New Area, Shanghai

	Fastening screw		
3	固定螺母 Fixing nut	M4	6
4	隔弧板 Flash barrier	/	4P:9 3P:8 2P:6
5	使用说明书 Operating manual	/	1
6	合格证 Certificate of conformity	/	1

13、 注意事项

Precautions

- ★ 本产品可在 85%Ue~110%Ue 电压下可靠工作。产品在安装接线时, 应严格区分进出线端及 N 极, 中性线不得共用。
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, outgoing line end and N-pole, and do not share the neutral line.
- ★ 严禁在超出正常使用条件的情况下使用本产品, 例如有持续的水汽或凝露而无相应的防范措施, 有可燃或腐蚀性粉尘, 无 SCPD 配合或预期短路电流超出范围, 电压超高或超低, 电流超过额定电流, 海拔超高等。
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.
- ★ 手动转换时请使用随产品提供的专用手柄操作。
Perform operation with the special handle supplied with products for manual switching.
- ★ 因线路或负载故障引起保护电器断开, 应首先排除故障, 再给负载通电。
For disconnection of the protective apparatus due to the line or load fault, first carry out troubleshooting and then energize the load.
- ★ 产品在使用过程中应定期(如每运行三个月)进行一般性检查, 手动或自动转换电源一次, 以检查产品是否正常。
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.