

Shanghai Liangxin Electrical Co., Ltd.

NDQ1-225 Series

Product Specification

(IPD-ENG-DEV-T20 A1 2024-04-15)

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Approved by	Wang Jili	Date	2024-04-15

Revision History					
Version	Revision Reason/Content	Implementation Date	Prepared by	Reviewed by	Approved by
1	Add the accessory selection table	2024-04-15	Zhang Yilian	Cao Xuehu	Wang Jili
7					

1. Applicable Scope and Purpose

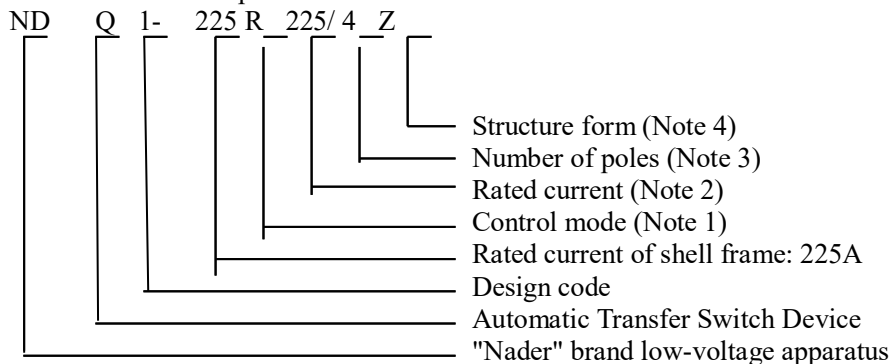
The NDQ1-225 series ATSE (Automatic Transfer Switching Equipment) applies to the transfer between two-way power supplies (common power supply, standby power supply) with the working voltage of AC400V/415V, 50Hz and rated current of 100A to 225A, with the molded case circuit breaker as the actuator. This product is suitable for hospitals, shopping malls, banks, hotels and fire protection and other important occasions where power off is not allowed.

2. Product Picture (The picture is for reference only, subject to the actual product) Standard bonding bar



Integral type

3. Specification and Model Description



Note 1.: R: Auto switch and auto recover; S: Auto switch and non-auto recover; F: Grid - Generator.

2. Rated current: 100A, 125A, 160A, 180A, 200A, 225A

3. Pole number: 3P, 4P.

4. Z: Integral type; F: Split type.

Users can choose different types of protection characteristics or accessories according to the actual situation, and see the following table

Optional accessories table

Shell frame	Standard Circuit Breaker		Optional protection	Optional accessories
	3P	4P	Default Duplex Release	Shunt release Single auxiliary contact Dual-auxiliary contact
225	NDM2-250L/3300	NDM2-250/4300B	No release	
			Instantaneous release only	
			Motor protection type	

Note: Please inform us in advance if you want to order the optional functions in the table

4. Main Technical Parameters

Electrical characteristics:

- ▲ Rated working voltage U_e : AC 400V
- ▲ Rated insulation voltage U_i : 690V
- ▲ Rated impulse withstand voltage U_{imp} : 8kV
- ▲ Rated current of frame I_{nm} : 225A
- ▲ Rated short-circuit making capacity I_{cm} (peak value): 105kA
- ▲ Rated short-circuit breaking capacity I_{cn} : 50kA

Operating performance:

- ▲ With electricity: 6,000 times
- ▲ Without electricity: 12,000 times
- ▲ Contact switching time(S): ≤ 2
- ▲ Switching action time(S): ≤ 3

5. Normal Working Environment

- ▲ Altitude: $\leq 2000m$.
- ▲ Ambient temperature: $-25^{\circ}C \sim +70^{\circ}C$.
- ▲ When the temperature is $45^{\circ}C$, the relative humidity of air is less than 95%, a high relative humidity is allowed under a low temperature, e.g. 90% under $20^{\circ}C$. Special measures should be taken to address occasional condensing due to temperature fluctuation.
- ▲ Pollution level: 3.
- ▲ The maximum gradient is 22.5° .
- ▲ 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 installed free from snow and rain.

5.1 Temperature variation coefficient of capacity reduction

Derating Factor Table of Temperature Change

Model	Derating factor of product temperature change							
NDQ1-225	Temperature ($^{\circ}C$)	40 $^{\circ}C$	45 $^{\circ}C$	50 $^{\circ}C$	55 $^{\circ}C$	60 $^{\circ}C$	65 $^{\circ}C$	70 $^{\circ}C$
	Derating factor	1	0.982	0.963	0.944	0.924	0.904	0.882

5.2 Altitude Derating Factor

Altitude Derating Factor Table

Altitude (m)	2000	2500	3000	3500	4000	4500	5000
Correction factor of the working current	1	1	0.98	0.97	0.95	0.94	0.93
Power Frequency withstand voltage (V)	2000	2000	1800	1800	1500	1500	1200
Insulation voltage (V)	690	690	620	610	550	540	414

6. Operation and Use Instructions for the Controller

6.1 Controller panel (see Figure 1)

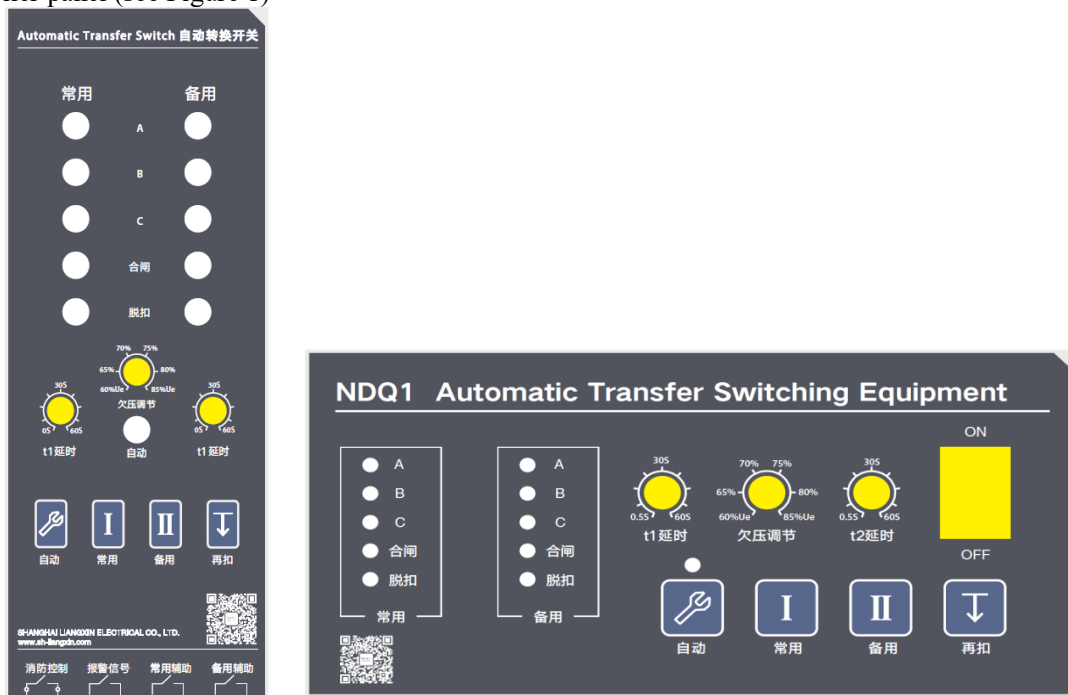


Figure 1

6.1.1 Wiring description of controller output terminal

A	B	1	2	3	4	5	6	7	8
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1: A-B are 485 communication interfaces. Only the split-type controller has communication function, while the integral-type controller only has 1-8 ports, and no communication function.

2: 1, 2 are fire control terminals, shorting signal. To resume, you need to confirm that the fire signal is released and press the Manual/Automatic key continuously in the manual screen.

3: 3, 4 are an alarm signals, closed when the backup power supply fails. Type R, S are valid, Type F is invalid.

4: 5, 6 are common auxiliary terminals and power generation control (starting generator) terminals respectively in Type R, S and Type F, passive node.

5: 7, 8 are standby auxiliary terminals and uninstall instruction terminals respectively in Type R, S and Type F, passive node.

6.1.2 Function description of indicators (see Table 1)

Table 1 Function Description of Controller Indicators

Name	Description	Function
Power indicator	ABC three phases of the common power supply	Normal: Constantly on Default phase: Constantly off
	ABC three phases of the standby power supply	Overvoltage: Flashing frequency 10Hz Undervoltage: Flashing frequency 2Hz
Closing indicator	Common power closing indicator	Closing: Constantly on Opening: Constantly off
	Standby power closing indicator	In case of a transfer fault or position feedback error for the switch, the common and standby closing indicators will flash at 10Hz
Tripping	Tripping status indicator	Tripping: Constantly on

	of the circuit breaker	Closing/opening: Constantly off
Automatic	Automatic/manual indicator	Automatic mode: Flashing frequency 1Hz Automatic mode: Constantly off

6.1.3 Function description of keys (see Table 2)

Table 2 Function Description of Controller Keys

Name	Description	Function
Automatic/Manual	Automatic/manual mode selection	By pressing the key, the automatic mode will become manual mode with the "Automatic/Manual" indicator constantly off By pressing the key, the automatic mode will become manual mode with the "Automatic/Manual" indicator blinks at 1Hz
Common	Common power input	In manual mode, the switch transfers to the common power closing position by pressing the key In automatic mode, the key is invalid
Standby	Standby power input	In manual mode, the switch transfers to the standby power closing position by pressing the key In automatic mode, the key is invalid
Re-tripping	Re-tripping of the circuit breaker after fault tripping	In manual mode, press the key so that the equipment will cut off the load power supply for re-tripping of the circuit breaker after fault tripping In automatic mode, the key is invalid

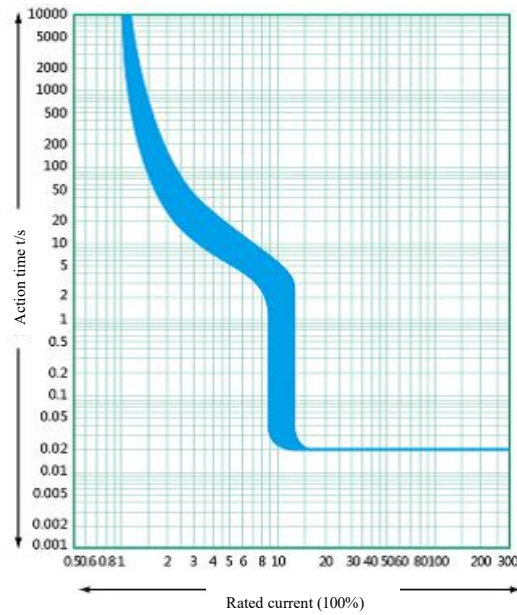
6.1.4 Function description of knobs (see Table 3)

Table 3 Function Description of Controller Knobs

Name	Description	Function
Under-voltage adjustment	Adjust the under-voltage setting value	Adjustable range 60%U _e -85%U _e , continuously adjustable, with 85%U _e as the factory default value
t1 delay	Adjust the tripping delay time	Adjustable range 0s-60s, continuously adjustable, with 0s as the factory default value
t2 delay	Adjust the closing Delay time	

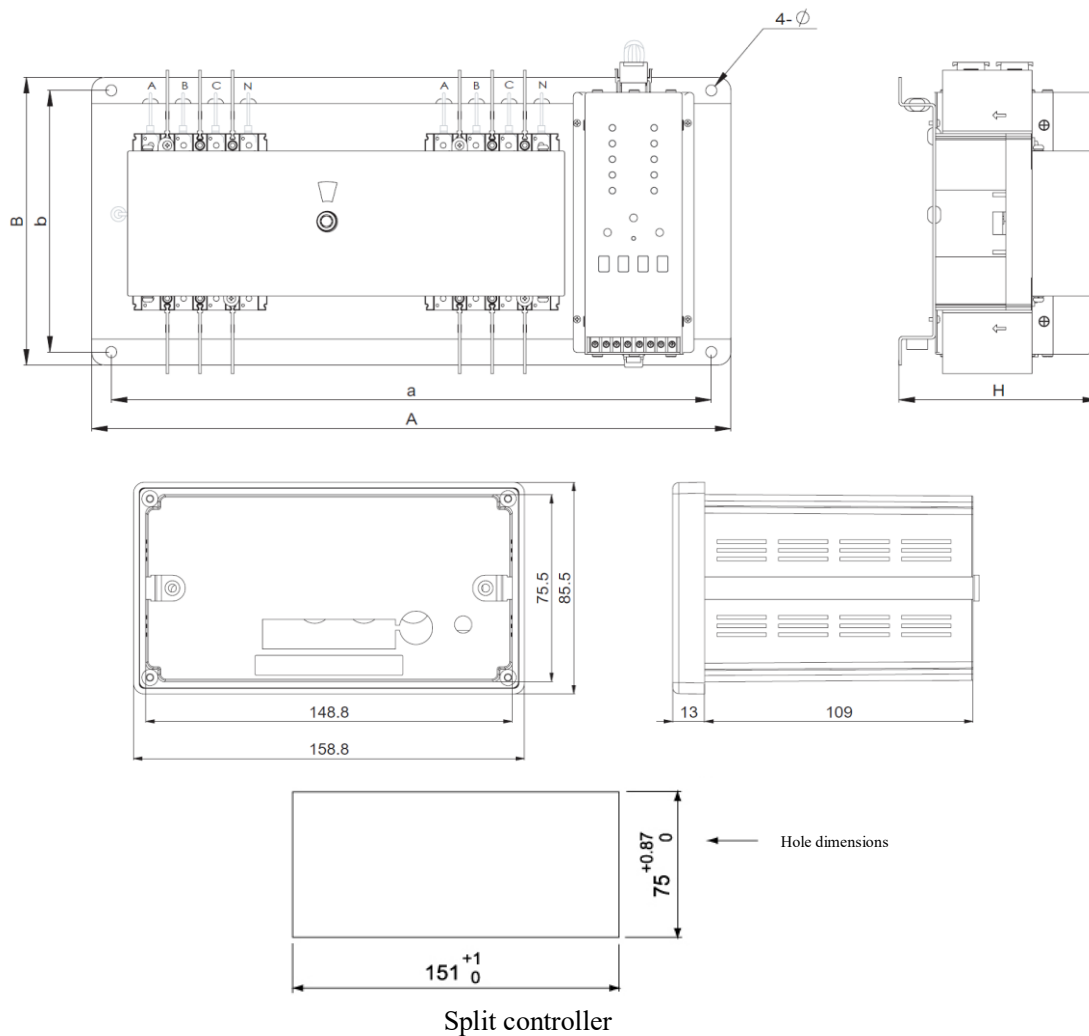
Note: The tripping action (t1 tripping delay) is defined as switching from the common or the standby power supply to the power-off position; the closing action (t2 closing delay) is defined as switching from the power-off position to the common or the standby power supply.

7. Short-circuit Overload Protection Characteristic Curve of Circuit Breaker



Time/Current Characteristic Curve

8. Outline and Installation Dimensions



Split controller

Model	External dimensions					Installation Dimension			
	A		B	H		a		b	Φ
	3P	4P		3P	4P	3P	4P		
NDQ1-225	475	510	240	161	178	446	480	220	8.5

Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-v.

8.1 Tightening torque of terminal screws

Tightening torque table for terminal screws

Model	Thread diameter (mm)	Torque (N·m)
NDQ1-225	Terminal screw M8	12
	Controller secondary terminal screw M3	1

4.1 Selection of the Connecting Bus or Cable Cross-section Area:

Selection of cross-sectional area of connecting busbar or cable

Rated Current (A)	100	125	160	180、200、225
Cross-section Area	35	50	70	95

9. Installation Mode

To be installed horizontally or vertically

10. Packaging and Storage

Packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with the ambient temperature of -55°C~85°C and the corresponding relative humidity below 80% without acidic, alkali or other corrosive gas in the surrounding air. Under the conditions above, the storage period shall be no more than 18 months since the manufacturing date.

11. This product has been subject to the insulation test before the factory delivery, and wrong dielectric test will damage the control system. Dielectric test is prohibited with ATS.

12. List of Accessories and Installation

SN	Name	Specification	Quantity/Set
1	Hexagonal rotation handle	---	1