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### 1. Applicable Scope and Purpose

The NDK1 series of switching capacitor contactors (hereinafter referred to as contactors) have the AC 50Hz (or 60Hz) and the rated insulation voltage of 690V, and are applicable to the rated working voltage of 400V and the rated working current to 87A as well as the AC-6b utilization category, which are widely used in the low-voltage passive compensation equipment for connecting and breaking the capacitor bank. The contactors are provided with surge suppression devices, which can effectively reduce the impact of on-off inrush on the capacitor bank and the overvoltage.

### 2. Picture of the Product (for reference only)

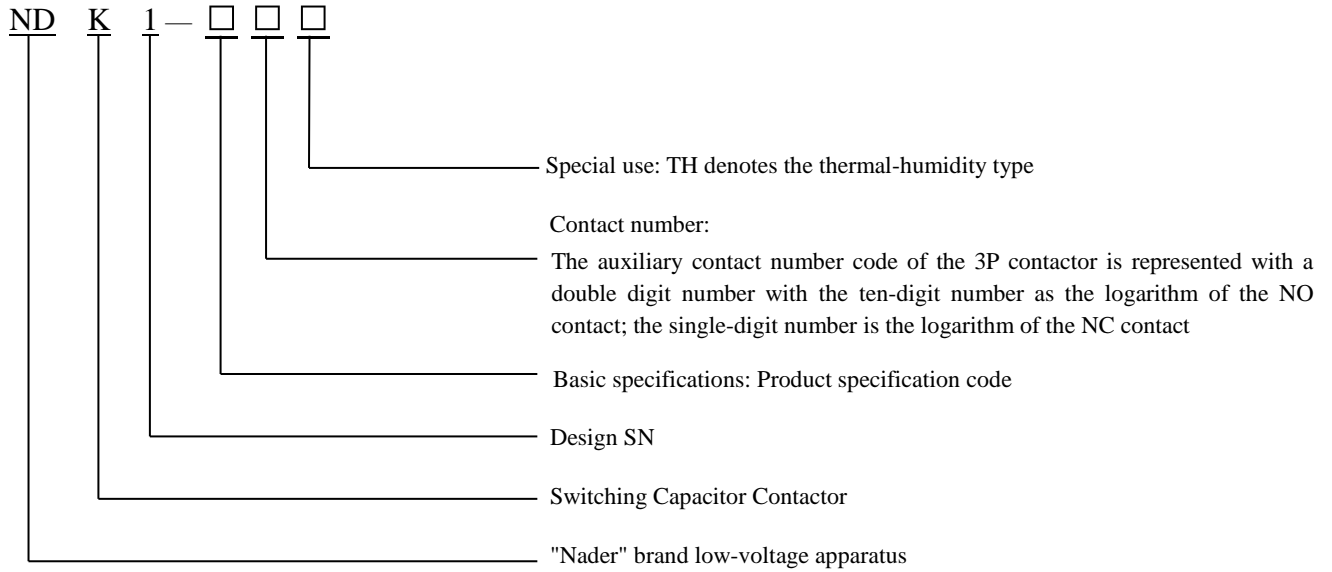


Figure 1 NDK1-3220

Note: This reference picture is for the NDK1-32 series product, while that of the others is omitted.

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### 3. Specification and Model Description



### 4. Main Technical Parameters

See Table<sup>1</sup> for the main performance indexes

Table<sup>1</sup>

Model		NDK1-25	NDK1-32	NDK1-40	NDK1-50	NDK1-60	NDK1-80	NDK1-125
Agreed free thermal current		32	40	50	60	80	80	125
Rated working current		18	24	29	36	48	58	87
Controllable capacity	200~240V	6.7	85	10	15	20	25	40
	400~440V	12.5	16.7	20	25	33.3	40	60
Surge suppression capacity (times)		20						
Electrical life (times)		12 × 10 <sup>4</sup>			10 × 10 <sup>4</sup>			
Mechanical life (times)		300 × 10 <sup>4</sup>						
Maximum operation frequency h <sup>-1</sup>		300			120			
Rated insulation voltage Ui V		690						
Contactor specifications		NDK1-2520、 2511、2502	NDK1-3220、 3211、3202	NDK1-4020、 4011、4002	NDK1-5021、 5012	NDK1-6021、 6012	NDK1-8021、 8012	NDK1-12521、 12512
Auxiliary contact	Agreed free thermal current I <sub>th</sub> A		10					
	Electrical life (times)		12 × 10 <sup>4</sup>					
	Minimum connected load		17V 5mA					
Current limiting resistance time input		7~9						
Coil	50Hz	Starting	70	110	200			
		Pull-in	8	11	20			
	60Hz	Starting	80	115	220			
		Pull-in	8	11	20			

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Rated control supply voltage	AC(50Hz、50Hz/60Hz):24、36、48、110、220、380、400			
Pull-in time	12~22	15~24	20~26	20~35
Discharge time	4~12	5~19	8~12	6~20
Pull-in voltage	85%~110%Us			
Discharge voltage	30%~55%Us		30%~60%Us	

Continued Table 1

Piece(s) of conductors	1	2	1	4	1	2	1	2	1	2	1	2	1	2	
Connection capacity of terminals	Soft wire	4	4	4	4	6	6	16	16	16	16	16	16	50	25
	Hard wire	6	6	6	6	10	10	25	16	25	16	25	16	50	25

Note: 1. Due to the voltage fluctuation and harmonics, the capacitor circuit generally operator at the current 1.3 times of the rated current of the capacitor;

2. The manufacturing error of the capacitor is generally -5%~+10%, so that the actual circuit current can reach  $I=1.3 \times 1.1 \times I_n=1.43 I_n$ . Therefore, consider this situation for selection of the contactor.

## 5. Field of Application

### 5.1 Operating ambient temperature/storage temperature

Standard operating ambient temperature:  $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$ ;

Ultimate operating ambient temperature:  $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$ ;

Storage temperature:  $-60^{\circ}\text{C} \sim +80^{\circ}\text{C}$ .

### 5.2 Operating altitude

The altitude of the installation site  $\leq 3000$  m, above  $> 5000\text{m}^2$  X.

### 5.3 Operating/storage relative humidity

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: When the ambient air temperature is  $20^{\circ}\text{C}$ , the relative humidity can be up to 90%. Users shall take special precautions to address occasional condensing due to temperature fluctuation.

#### 5.3.2 Pollution level

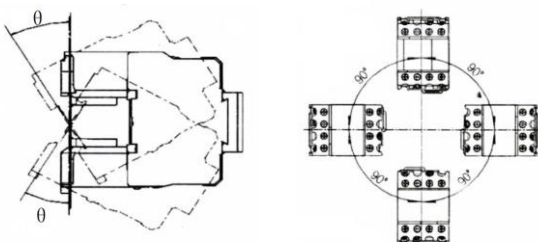
The pollution level of the contactor's installation site is Level 3.

### 5.4 Installation Category

Category III (power distribution and control level)

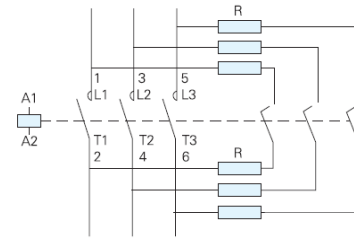
### 5.5 Installation direction

For vertical installation of the product, the gradient  $\theta$  between the installation surface and the vertical plane:  $\pm 5^{\circ}$  for the standard installation,  $\pm 30^{\circ}$  for the ultimate installation



## 6. Electric Circuit Diagram

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7. Outline and Installation Dimensions

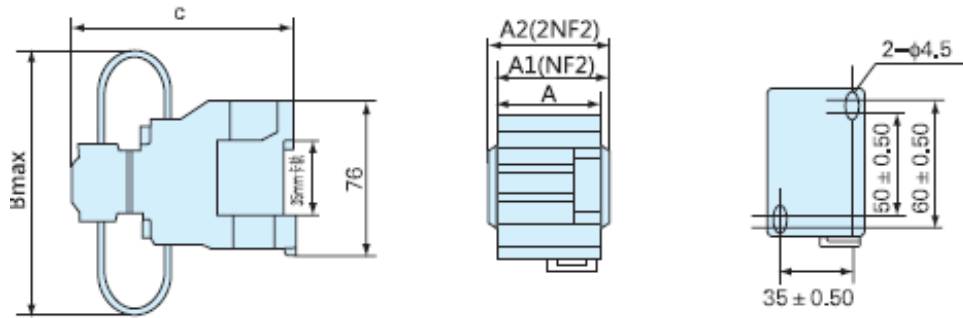


Figure 1 NDK1-25 External Dimensions and Installation Dimensions

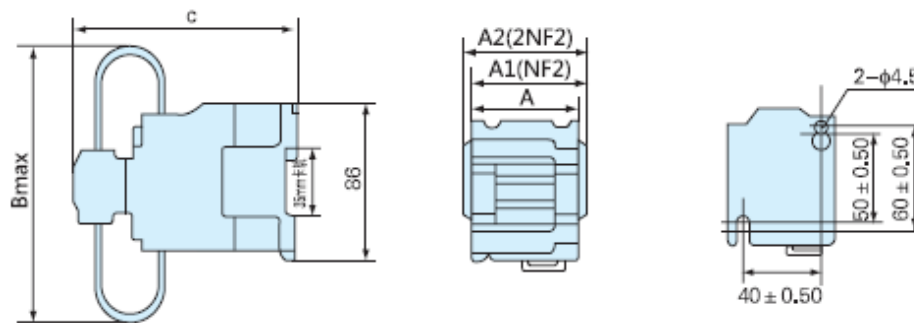


Figure 2 NDK1-32, 40 External Dimensions and Installation Dimensions

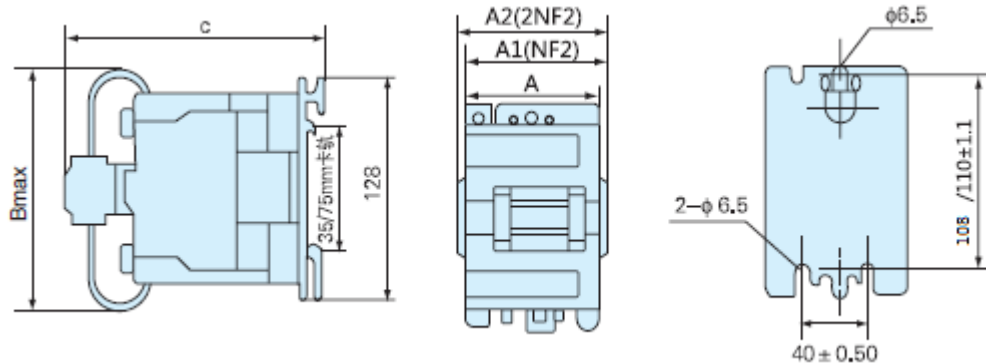


Figure 3 NDK1-50, 60, 125 External Dimensions and Installation Dimensions

Table<sup>2</sup> External Dimensions and Installation Dimensions of Contactor

Unit: mm

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Contacteur model	A	A1	A2	Bmax	C
NDK1-25	45	60	72	130	122
NDK1-32	56	71	84	145	135
NDK1-40	56	71	84	145	135.5
NDK1-50~80	75	90	102	170	151
NDK1-125	85	100	110	178	158.5

## 8. Installation Mode

- a) NDK1-25~40: Screw installation or to be installed on the 35mm standard guide;
- b) NDK1-50~125: Screw installation or to be installed on the 35mm or 75mm standard guide.

## 9. Packaging and Storage

Each set of assembled product is packed with a packaging box and put into a case. The packaged products should be stored in a warehouse with the air ventilation and the temperature between -60°C and 80°C.. No acidic, alkaline or other corrosive gas exists in the ambient air in the warehouse.

## 10. List of Accessories and Installation

User manual, quality certificate.

## 11. Precautions

- 1) Before installation, check the technical data of coil (for example, whether the rated voltage and frequency are in accordance with the power supply);
- 2) Tighten and mark the terminal screws, check the proper cabling, turn on and off the contactor with power on, and then put it into use after reliable test action;
- 3) The movable parts shall not be jammed, and fasteners or connecting conductors shall not be loosened. After one month's use of the product, the terminal screws shall be fastened once, and then fastened once a year thereafter, and each part of the product shall be checked for reliability;
- 4) Ensure the operating environment of contact. If harmful gas or dust is found, reliable protection should be given to ensure the operation reliability of contact.
- 5) The torsional moment of terminal screws is set according to the corresponding specifications (see Table 3 below). Reliable cabling is required to prevent the terminals from being burnt out due to abnormal heat at the terminals.

Table<sup>3</sup> Corresponding Table of Terminal Screw Torsional Moment

Specification	Torsional moment	
	Main circuit	Auxiliary, coil loop
NDK1-32	0.8 (screwdriver)	0.8
NDK1-40	1.2 (screwdriver)	
NDK1-50、60	3.5(screwdriver)	
NDK1-125	4 (screwdriver), 10 (hexagon)	