


Product Specification

Product Name: Directional Contactor

Product Model: NDC1N-09~95

Date: 20160517

| Prepared by | Reviewed by | Countersig ned by | Approved by |
|----------------|----------------|----------------------|-----------------|
| Lu Xiaomiao | Bai Yaya | Li Lv | Liu Changyou |

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|---|------------------------|-----------------------------------|---------------------|------------|
|  | Document name | Product Specification | Document No. | NDT2930158 |
| | Product Model and Name | NDC1N-09~95 Directional Contactor | Version | 1 |
| | | | Implementation Date | 20181022 |

Revision History

| Version | Revision Content | Revision Date | Revised by |
|---------|-------------------------------|---------------|--------------|
| 0 | Addition | 20160517 | Lu Xiaomiao |
| 1 | Some content has been updated | 2018/10/22 | Jian Shuimao |
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1、Application

NDC1N-09~95 series of directional contactor have the AC 50Hz (or 60Hz) and the rated insulation voltage of 690V, and are mainly used for the electric circuit with the rated working voltage of 415A and the rated working current of 44A as well as the motor and dual power control for controlling reversible operation or reverse braking. They can be used as magnetic starters with the appropriate thermal overload relays to protect the circuit in which overload may occur.

Outline sketch of the contactor (only for reference)

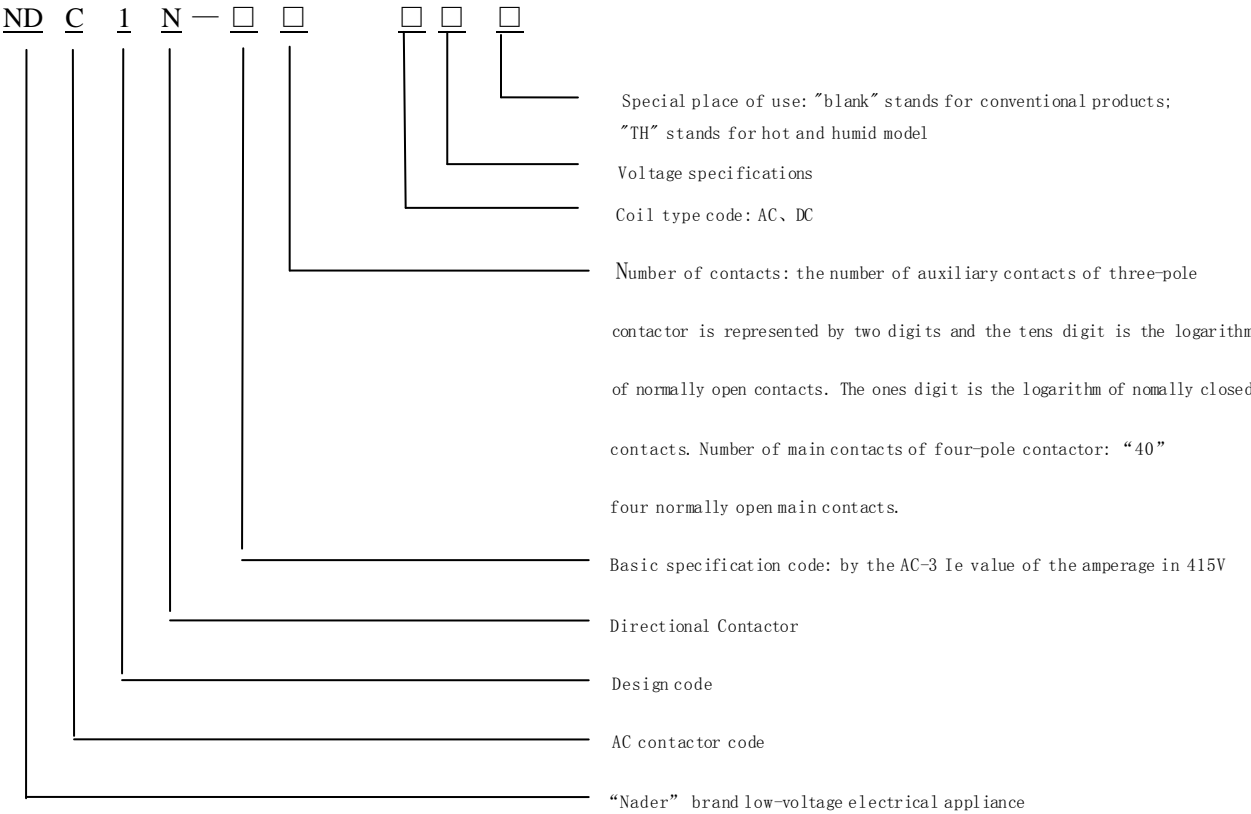


(Add two sets of NF1)



(Add two sets of NF2)

3、Model implications of the contactor



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4、Technical Parameter

4.1 Technical parameters of main products

| Model | | | NDC1 (N) -09 | NDC1 (N) -12 | NDC1 (N) -18 | NDC1 (N) -25 | NDC1 (N) -32 | NDC1 (N) -38 | NDC1 (N)- 40 | NDC1 (N)- 50 | NDC1 (N)- 65 | NDC1 (N)- 80 | NDC1 (N)- 95 |
|---|--|------------------|--|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|---------------------------------------|--------------------|--------------------|--------------------|
| Rated operatin g current I _e /A | AC-3 | 415V | 9 | 12 | 18 | 25 | 32 | 38 | 40 | 50 | 65 | 80 | 95 |
| | | 690V | 6.6 | 8.9 | 12 | 18 | 21 | 21.5 | 34 | 39 | 42 | 49 | 49 |
| | AC-4 | 415V | 3.5 | 5 | 7.7 | 8.5 | 12 | 13.9 | 18.5 | 24 | 28 | 37 | 44 |
| | | 690V | 1.5 | 2 | 3.8 | 4.4 | 7.5 | 8 | 9 | 12 | 14 | 17.3 | 21.3 |
| Conventional thermal current I _{th} A | | | 25 | 25 | 32 | 40 | 50 | 50 | 60 | 80 | 80 | 125 | 125 |
| Nominal insulation voltage U _i V | | | 1000 | | | | | | | | | | |
| Rated operational voltage U _e V | | | 380/415 660/690 | | | | | | | | | | |
| AC-3 (6I _e 、I _e) | Electrical life | | 100× 10 ⁴ | 100×10 ⁴ | 100×10 ⁴ | 100×10 ⁴ | 80×10 ⁴ | 80×10 ⁴ | 80×10 ⁴ | 60×10 ⁴ | 60×10 ⁴ | 60×10 ⁴ | 60×10 ⁴ |
| | Operating frequency h ⁻¹ | | 1200 | 1200 | 1200 | 1200 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| AC-4 (6I _e 、6I _e) | Electrical life | | 20×10 ⁴ | 20×10 ⁴ | 20×10 ⁴ | 20×10 ⁴ | 20×10 ⁴ | 15×10 ⁴ | 15×10 ⁴ | 15×10 ⁴ | 15×10 ⁴ | 10×10 ⁴ | 10×10 ⁴ |
| | Operating frequency h ⁻¹ | | 300 | | | | | | | | | | |
| Auxilia ry contact | Agreed thermal current of the free air I _{th} A | | 10 | | | | | | | | | | |
| | Electrical life | AC-15 (360VA) | 100×10 ⁴ | | | | 80×10 ⁴ | | | | 60×10 ⁴ | | |
| | | DC-13 (33W) | | | | | | | | | | | |
| | Minimum connected load | | 17V 5mA | | | | | | | | | | |
| Coil | Rated control voltage U _s V | | AC(50/60Hz):24、36、48、110、220/230、240、380/400、415、440 | | | | | | | | | | |
| | Pull-in voltage V | | 65%U _s ~120%U _s | | | | | | | 75%U _s ~110%U _s | | | |
| | Discharge voltage V | | 20%U _s ~60%U _s | | | | | | | | | | |
| | 50Hz AC | Starting | 65 | 65 | 65 | 100 | 100 | 100 | 200 | 200 | 200 | 200 | 200 |

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| | Coil power VA | Caging | 8 | 8 | 8 | 11 | 11 | 11 | 20 | 20 | 20 | 20 | 20 |
| Electrical life | | | 1000×10 ⁴ | | | | 800×10 ⁴ | | | | 600×10 ⁴ | | |
| Ampheno 1 connect or Wireabi lity mm ² (min/max) | Non-prefabricated terminal soft cord | 1 | 1/4 | 1.5/6 | 1.5/10 | 2.5/10 | | 2.5/25 | | 4/50 | | | |
| | | 2 | — | -- | -- | -- | | 2.5/16 | | 4/25 | | | |
| | Prefabricated terminal soft cord | 1 | 1/4 | 1/6 | 1/6 | 1/10 | | 2.5/25 | | 4/16 | | | |
| | | 2 | -- | -- | -- | -- | | 2.5/10 | | 4/16 | | | |
| | Prefabricated terminal hard cord | 1 | 1/4 | 1.5/6 | 1.5/6 | 1.5/10 | | 2.5/16 | | 4/50 | | | |
| | | 2 | -- | --- | -- | -- | | 2.5/16 | | 4/25 | | | |

Table 1: Control power meter

| Model of directional contactor | Agreed thermal current of the free air Ith/A | AC-4 usage type | | | |
|--------------------------------|--|------------------------------|------|---|------|
| | | Rated operating current Ie/A | | The maximum power of the controllable three-phase squirrel-cage motor /kW | |
| | | 415V | 690V | 415V | 690V |
| NDC1N-09 | 25 | 3.5 | 1.5 | 1.5 | 1.1 |
| NDC1N-12 | 25 | 5 | 2 | 2.2 | 1.5 |
| NDC1N-18 | 32 | 7.7 | 3.8 | 3.7 | 3 |
| NDC1N-25 | 40 | 8.5 | 4.4 | 4 | 3.7 |
| NDC1N-32 | 50 | 12 | 7.5 | 5.5 | 5.5 |
| NDC1N-38 | 50 | 13.9 | 8 | 5.5 | 5.5 |
| NDC1N-40 | 60 | 18.5 | 9 | 7.5 | 7.5 |
| NDC1N-50 | 80 | 24 | 12 | 11 | 10 |
| NDC1N-65 | 80 | 28 | 14 | 15 | 11 |
| NDC1N-80 | 125 | 37 | 17.3 | 18.5 | 15 |
| NDC1N-95 | 125 | 44 | 21.3 | 22 | 18.5 |

4.2 Appendix technical parameters

4.2.1 Auxiliary contactor block

| Parameter | Model | NF1/NF2 |
|--|-------|---------------------------|
| Up to standard | | IEC60947-5-1 GB/T 14048.5 |
| Rated insulation voltage Ui V | | 1000V |
| Rated operating voltage Ue V | | AC 380/415、660/690 DC:220 |
| Agreed thermal current of the free air Ith A | | 10A |

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|--|------------------------------|-------------|------|-----------|
| Rated operating current Ie A | | AC-15 | 380V | 0.95 |
| | | | 415V | 0.95 |
| | | | 480V | 0.5 |
| | | DC-13 (33W) | | 0.15 |
| Minimum connected load | | | | 17V 5mA |
| Operating frequency h ⁻¹ | | | | 2400 |
| Life | Mechanical life Ten thousand | | | 1000 |
| | Electrical life Ten thousand | | | 120 |
| Insulation resistance MΩ | | | | 10 |
| Power frequency withstand voltage (V) | | | | 1890 1min |
| Wiring capacity of terminal mm ² (min/max) | Soft cord | 1 or 2 | | 2.5 |
| | Hard cord | 1 or 2 | | 4 |
| Torque of connection screw N·m | | | | 0.8~1.2 |

4.2.2 Delay auxiliary contact module (air type)


| Parameter | | | Model | NS1 | |
|--|--|------------------------------|--------|---------------|---------------|
| Up to standard | | | | IEC60947-5 | GB/T 14048. 5 |
| Rated insulation voltage Ui V | | | | 690V | |
| Rated operating voltage Ue V | | | | AC 380 DC:220 | |
| Agreed thermal current of the free air Ith A | | | | 10A | |
| Rated operating current Ie A | | AC-15(360VA) | | 0. 95 | |
| | | DC-13(33W) | | 0. 15 | |
| Minimum connected load | | | | 17V | 5mA |
| Operating frequency h-1 | | | | 1200 | |
| Life | | Mechanical life Ten thousand | | 300 | |
| | | Electrical life Ten thousand | | 50 | |
| Insulation resistance MΩ | | | | 10 | |
| Power frequency withstand voltage (V) | | | | 1890 1 分钟 | |
| Delay repetition error | | | | ± 5% | |
| Delay stability error | | | | ± 15% | |
| Temperature error | | | | ± 0. 3% | |
| Wiring capacity of terminal mm2 (min/max) | | Soft cord | 1 or 2 | 2. 5 | |
| | | Hard cord | 1 or 2 | 4 | |

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|---------------------------------|---------|
| Torque of connection screw N :m | 0.8-1.2 |
|---------------------------------|---------|

Note: NF1/NS1 can only choose one of the two; NF2 can choose two sets, which are respectively installed on the left and right sides of the contactor.

4.2.3 Coil surge suppression module

| Installation mode | Protection type | Voltage of coil applied | Specifications and model | Contactor applied | Main performance index |
|--|--------------------------------|-------------------------|--------------------------|-------------------|---|
| Plug-in  | Voltage dependent resistor | AC 24V~48V | NG1-2NRE | NDC1N-09~38 | a) The maximum transient overvoltage limit is 2Uc. b) The contactor release time is about 1.1 to 1.5 times of the normal release time. |
| | | AC 50V~127V | NG1-2NRG | NDC1N-09~38 | |
| | | AC 110V~240V | NG1-2NRU | NDC1N-09~38 | |
| | | AC 380V~415V | NG1-2NRN | NDC1N-09~38 | |
| | Resistance-capacitance circuit | AC 24V~48V | NG1-2RCE | NDC1N-09~95 | a) The maximum transient overvoltage is limited to 3Uc, and the maximum oscillation frequency is limited to 400Hz. b) The contactor release time is about 1.2 to 2 times of the normal release time. |
| | | AC 50V~127V | NG1-2RCG | NDC1N-09~95 | |
| | | AC 110V~240V | NG1-2RCU | NDC1N-09~95 | |
| | | AC 380V~415V | NG1-2RCN | NDC1N-09~95 | |

5、Working condition

1) Free from acidic, alkaline or other corrosive gases in the ambient air.

2) Temperature:

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

Operating: $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$;

Maximum allowable temperature: $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}^{1)}$.

3) Altitude:

Normal condition: $\leq 3000\text{m}$;

Maximum allowable use: $\leq 5000\text{m}^{2)}$.

4) Humidity requirements:

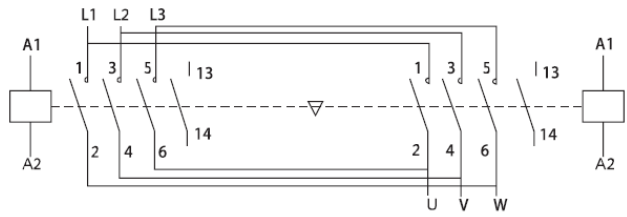
Under normal use, the limit humidity shall not exceed 95%, the duration shall not exceed 24h, and measures to prevent condensation shall be taken. The environmental humidity is associated with the temperature; at high temperature, the humidity shall be low; if the temperature exceeds $+40^{\circ}\text{C}$, relative humidity shall be no more than 50%.

1), 2) please contact our company for the capacity reduction plan.

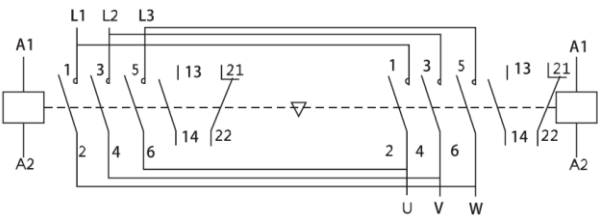
6、Wiring diagram

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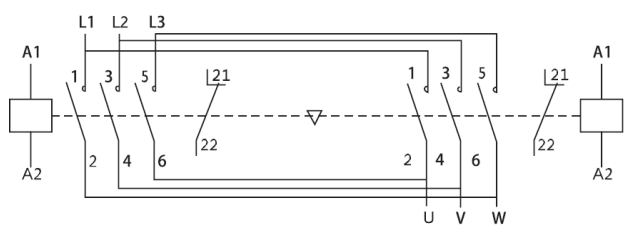
NDC1N-0910 ~ 3810



NDC1N-4011 ~ 9511

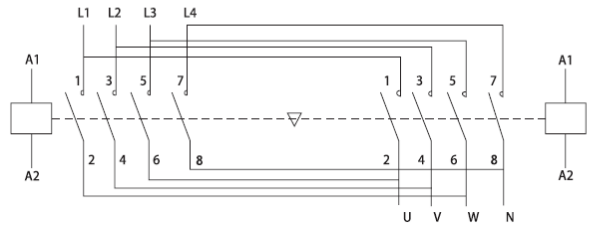


NDC1N-0901 ~ 38011

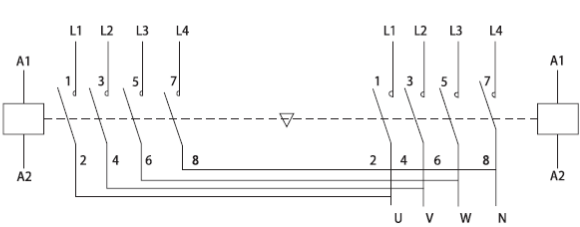


NDC1N-0940 ~ 9540

a. 控制可逆运转时接线图



b. 控制双电源切换时接线图

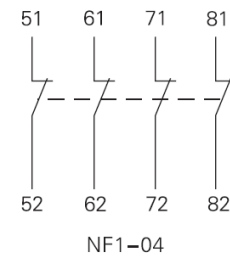
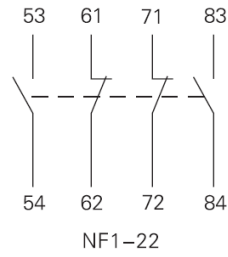
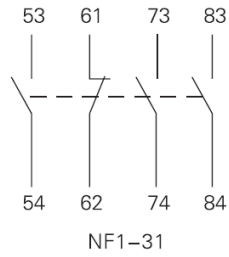
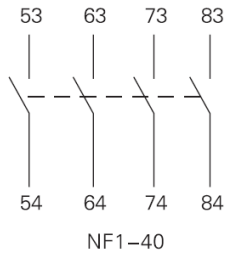
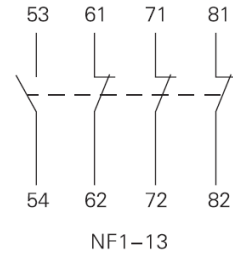
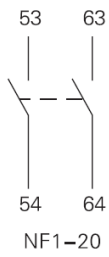


a. Wiring diagram for control of reversible operation

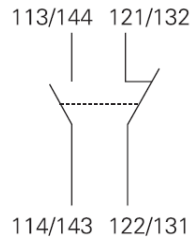
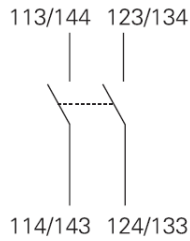
b. Wiring diagram for the control of switching between two power supplies

NF1 auxiliary contact set wiring diagram

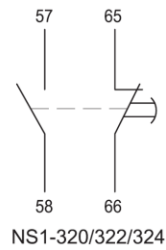
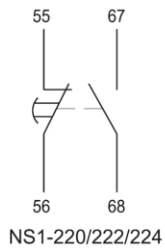
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NF2 auxiliary contact set wiring diagram

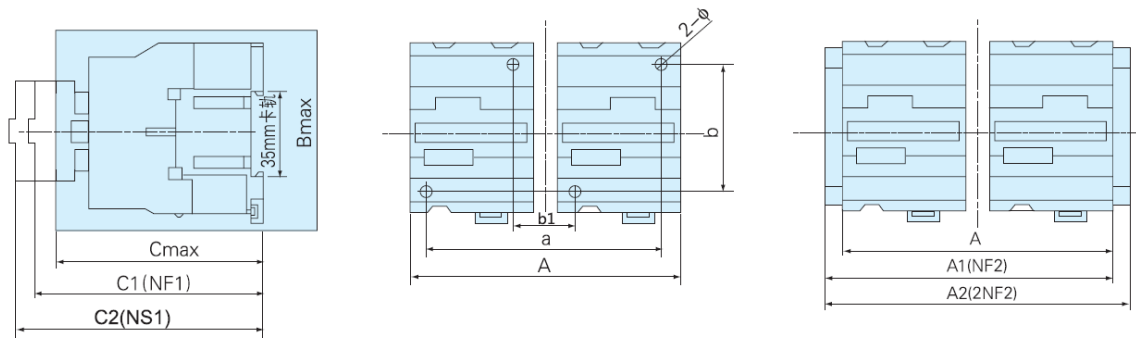


NS1 air delay head wiring diagram



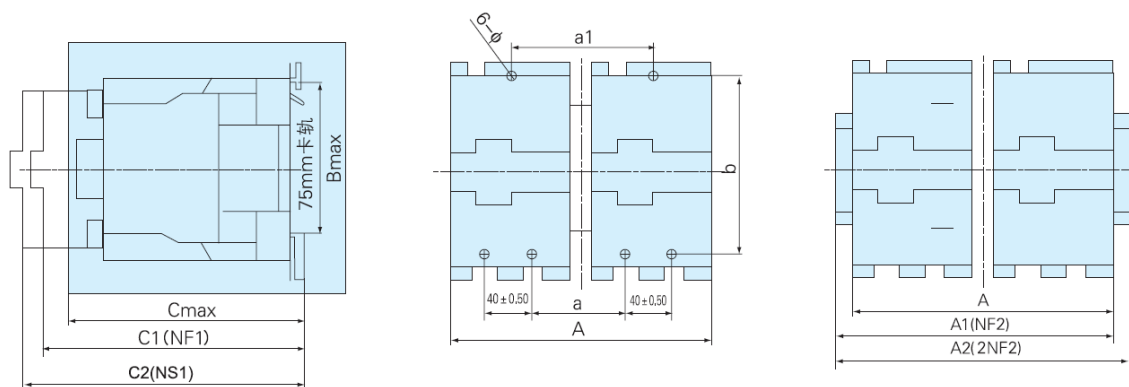
7、Outline and installing dimensions

7.1 NDC1N-09~38 Outline and installing dimensions



7.2 NDC1N-40~95 Outline and installing dimensions

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Unit: mm

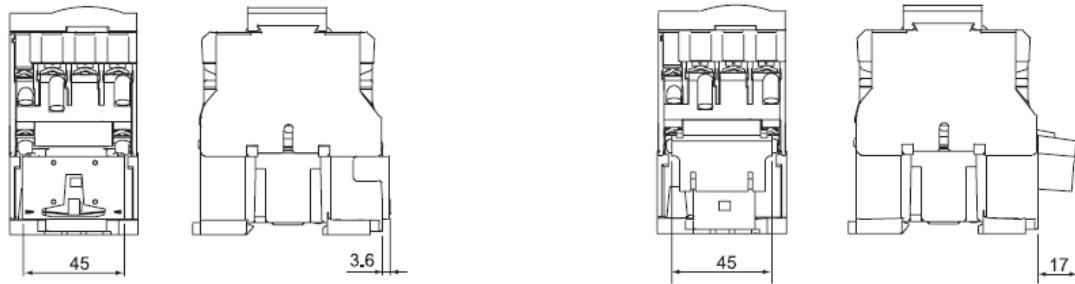
| Contactor type number | A | A1 | A2 | Bmax | Cmax | a | a1 | b | b1 | C1 | C2 | Φ |
|---|-----|-----|-----|------|------|--------------|--------------|--------------------------|----|-----|-----|-----|
| NDC1N-09~12 (including four-pole) | 104 | 118 | 131 | 85 | 93 | 95 ± 0.7 | — | 50/60 (± 0.5) | 26 | 115 | 135 | 4.5 |
| NDC1N-18 (including four-pole) | 105 | 119 | 132 | 86 | 90 | 95 ± 0.7 | — | 50/60 (± 0.5) | 26 | 120 | 140 | 4.5 |
| NDC1N-25 (including four-pole) | 128 | 142 | 154 | 98 | 102 | 112 ± 1 | — | 50/60 (± 0.5) | 32 | 128 | 148 | 4.5 |
| NDC1N-32~38 | | | | 100 | 120 | | | | 32 | 133 | 153 | |
| NDC1N-40~65 | 166 | 178 | 192 | 138 | 145 | 50 ± 0.5 | 90 ± 0.7 | 100/110 (± 1.1) | — | 149 | 169 | 6.5 |
| NDC1N-4040~6540 | 182 | 194 | 205 | 146 | 162 | 57 ± 0.5 | 97 ± 0.7 | | | | | |
| NDC1N-80~95 | 181 | 194 | 205 | 146 | 162 | 57 ± 0.5 | 96 ± 0.7 | | | | | |
| NDC1N-8040~9540 | 205 | 220 | 232 | 152 | 170 | 71 ± 0.7 | 111 ± 1 | | — | 156 | 176 | |

Note 1: C1: NDC1N+NF1; C2: NDC1N+NS1; A1: NDC1N+NF2; A2: NDC1N+2NF2; "Max" is the maximum value of its corresponding size.

Note 2: Unnoted tolerance 1mm.

Contactor+NG1

| | | | | | |
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NG1-1 20/5000 Outline of coil surge suppression module when clamping the contactor

NG1-2 Outline of coil surge suppression module when mounting the contactor

8、Installation Mode

- NDC1N-09~38: Bolt installation or installed on 35mm standard guide rail;
- NDC1N-40~95: Bolt installation or installed on 35mm, 75mm standard guide rail.

9、Packaging and Storage

Each set of assembled product is packed in a case, which should be stored in a warehouse with the air ventilation and the temperature between -60℃ and +80℃. No acidic alkaline or other corrosive gas exists in the ambient air in the warehouse.

10、Accessories and Delivery List

User manual, certificate of qualification.

11、Precautions

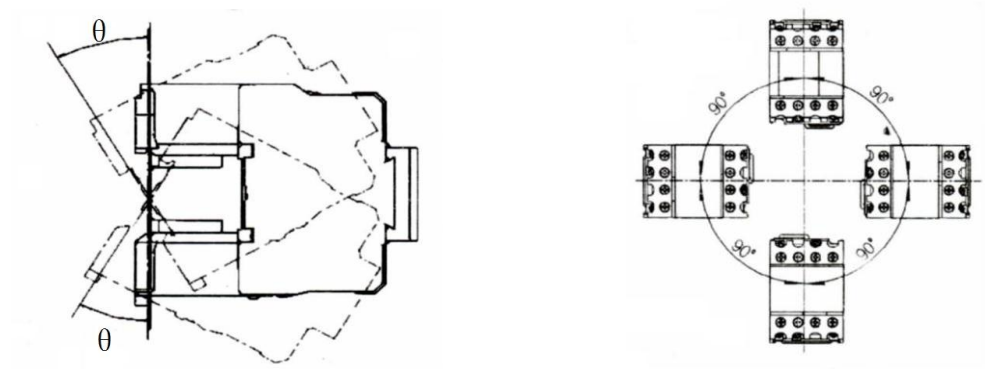
- 1) The installation site of the product should not be shaky or vibrant.
- 2) For vertical installation of the product, the gradient between the installation surface and the horizontal plane is no more than $\pm 5^\circ$;
- 3) Reliable cabling(see Table 2 below for tightening torque of wiring screws) is required to prevent the terminals from being burnt out due to abnormal heat at the terminals;

Table 2: Tightening torque of connection screw Unit: N.m

| Specifications | NDC1 (N) -09~18 | NDC1 (N) -25~38 | NDC1 (N) -40~65 | NDC1 (N) -80~95 |
|--|-----------------|-----------------|-----------------|-----------------|
| Tightening torque of main terminal | 1.7 | 2.5 | 5 | 9 |
| Auxiliary & coil end tightening torque | 1.7 | 1.2 | 1.2 | 1.2 |

Appended Drawings Installation angle diagram:

| | | | | | |
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θ : standard installation $\pm 5^\circ$, maximum installation $\pm 30^\circ$ 。