



## NB1-63DC DC Circuit Breaker

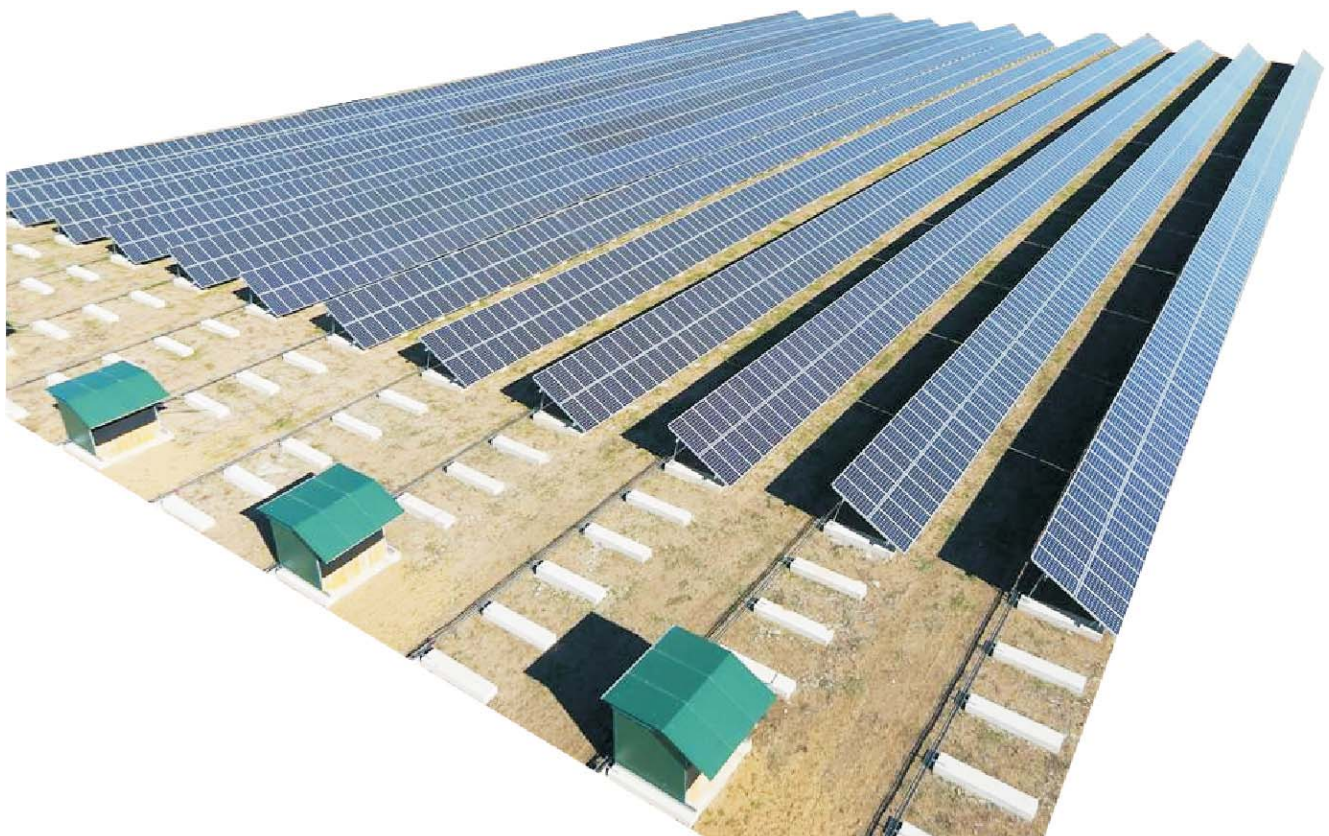
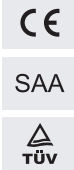
### 1. General & features

#### 1.1 General

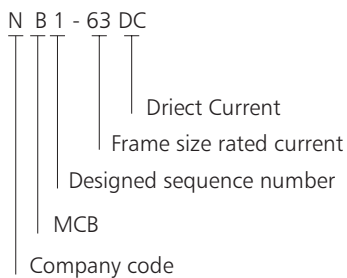
- 1.1.1 Certificates: CCC,CE,CB,SAA,TUV;
- 1.1.2 Standard: IEC/EN 60947-2 ,RoHS;
- 1.1.3 Rated voltage up to 1000V, Rated current up to 63A;
- 1.1.4 Protection of circuits against overload currents;
- 1.1.5 Protection of circuits against short-circuit currents;
- 1.1.6 NB1-63 DC circuit-breakers are used in communication systems and PV DC systems.

#### 1.2 Features

- 1.2.1 Hight breaking capacity
- 1.2.2 Connection type :Wire and busbar
- 1.2.3 Storage operation make on/off faster
- 1.2.4 Installation and disassembly convenient
- 1.2.5 color coded contact position indicator provides visual indication of the device status and insulation function.



## 2. Type designation



## 3. Operation conditions

- 3.1 Ambient temperature:  $-35^{\circ}\text{C} \sim +70^{\circ}\text{C}$  (Refer to 4.3)
- 3.2 The atmosphere condition:  $\leq 95\%$
- 3.3 Pollution degree: II
- 3.4 Altitude:  $\leq 2000\text{m}$  (if exceed 2000m, Refer to 4.4)

## 4. Technical data

- 4.1 Classification
  - 4.1.1 Rate Current  $I_n$ : 1A, 2A, 3A, 4A, 6A, 10A, 13A, 16A, 20A, 25A, 32A, 40A, 50A, 63A
  - 4.1.2 Number of poles: 1P, 2P, 4P
  - 4.1.3 Tripping curves: C Type, (7~10) $I_n$
- 4.2 Parameters
  - 4.2.1 Rated breaking capacity  $I_{cn}$

| Rated current $I_n$ (A) | Number of poles | Rated voltage $U_e$ (V) | Rated breaking capacity $I_{cn}$ (A) |
|-------------------------|-----------------|-------------------------|--------------------------------------|
| 1~63                    | 1               | 250                     | 6000                                 |
|                         | 2               | 500                     | 6000                                 |
|                         | 4               | 1000                    | 6000                                 |

- 4.2.2 Electrical and mechanical life
  - a. Electrical life:  $> 1500$
  - b. Mechanical life:  $> 20,000$
- 4.2.3 Rated impulse withstand voltage  $U_{imp}$ : 4KV
- 4.2.4 (28-32)  $^{\circ}\text{C}$  ambient temperature over-current protection features.

| Test | Test current | Initial state             | Time limit for tripping or not tripping  | Expected result | Remarks                         |
|------|--------------|---------------------------|--|-----------------|---------------------------------|
| a    | 1.05 $I_n$   | Cold state a              | $t < 1\text{h}$  | Not tripping    |                                 |
| b    | 1.30 $I_n$   | Right after test number a | $t < 1\text{h}$  | Tripping        | The current is rising within 5s |
| c    | 7 $I_n$      | Cold state a              | 0.2s $< t < 15\text{s}$ ( $I_n \leq 32\text{A}$ )<br>0.2s $< t \leq 30\text{s}$ ( $I_n > 32\text{A}$ ) | Tripping        |                                 |
| d    | 10 $I_n$     | Cold state a              | $t < 0.1\text{s}$  | Tripping        |                                 |

Note: The terminology "Cold state" means that the test is performed at the base calibration temperature with no load prior to the test.

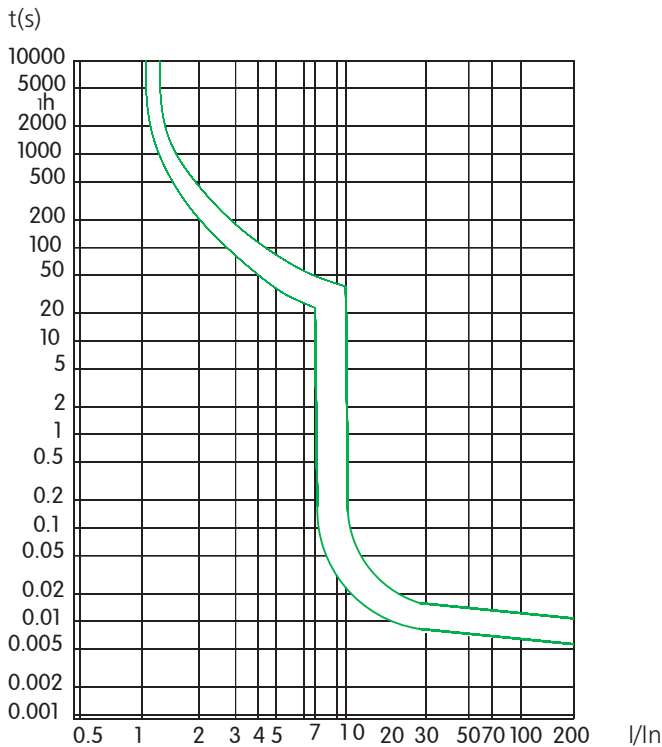
4.3 Temperature derating

| Rated current (A) | Temperature compensation coefficient under various operational temperature. |       |       |       |       |       |       |     |       |       |       |       |
|-------------------|---|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|
|                   | -35℃  | -30℃  | -20℃  | -10℃  | 0℃    | 10℃   | 20℃   | 30℃ | 40℃   | 50℃   | 60℃   | 70℃   |
| 1                 | 1.3   | 1.26  | 1.23  | 1.19  | 1.15  | 1.11  | 1.05  | 1   | 0.96  | 0.93  | 0.88  | 0.83  |
| 2                 | 2.6   | 2.52  | 2.46  | 2.38  | 2.28  | 2.2   | 2.08  | 2   | 1.92  | 1.86  | 1.76  | 1.66  |
| 3                 | 3.9   | 3.78  | 3.69  | 3.57  | 3.42  | 3.3   | 3.12  | 3   | 2.88  | 2.79  | 2.64  | 2.49  |
| 4                 | 5.2   | 5.04  | 4.92  | 4.76  | 4.56  | 4.4   | 4.16  | 4   | 3.84  | 3.76  | 3.52  | 3.32  |
| 6                 | 7.8   | 7.56  | 7.38  | 7.14  | 6.84  | 6.6   | 6.24  | 6   | 5.76  | 5.64  | 5.28  | 4.98  |
| 10                | 13.2  | 12.7  | 12.5  | 12    | 11.5  | 11.1  | 10.6  | 10  | 9.6   | 9.3   | 8.9   | 8.4   |
| 13                | 17.16   | 16.51 | 16.25 | 15.6  | 14.95 | 14.43 | 13.78 | 13  | 12.48 | 12.09 | 11.57 | 10.92 |
| 16                | 21.12   | 20.48 | 20    | 19.2  | 18.4  | 17.76 | 16.96 | 16  | 15.36 | 14.88 | 14.24 | 13.44 |
| 20                | 26.4  | 25.6  | 25    | 24    | 23    | 22.2  | 21.2  | 20  | 19.2  | 18.6  | 17.8  | 16.8  |
| 25                | 33  | 32    | 31.25 | 30    | 28.75 | 27.75 | 26.5  | 25  | 24    | 23.25 | 22.25 | 21    |
| 32                | 42.56   | 41.28 | 40    | 38.72 | 37.12 | 35.52 | 33.93 | 32  | 30.72 | 29.76 | 28.16 | 26.88 |
| 40                | 53.2  | 51.2  | 50    | 48    | 46.4  | 44.8  | 42.4  | 40  | 38.4  | 37.2  | 35.6  | 33.6  |
| 50                | 67  | 65.5  | 63    | 60.5  | 58    | 56    | 53    | 50  | 48    | 46.5  | 44    | 41.5  |
| 63                | 83.79   | 81.9  | 80.01 | 76.86 | 73.71 | 70.56 | 66.78 | 63  | 60.48 | 58.9  | 55.44 | 52.29 |

4.4 Altitude derating

| Tripping type | Rated current In (A)                      | Current correction factor |            |        | For example  |
|---------------|---|---------------------------|------------|--------|--|
|               |   | ≤2000                     | 2000~3000m | ≥3000m |  |
| C             | 1,2,3,4,6,10,<br>13,16,20,32,<br>40,50,63 | 1                         | 0.9        | 0.8    | Rated current of 10A products rated current derating 2500m:0.9×10=9A |

4.5 Curves shown in Figure 1



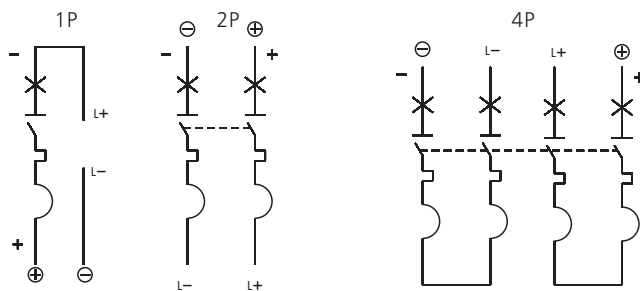
4.6 Wiring: Apply to 25 mm<sup>2</sup> wire connection terminals Tightening torque 2.5N·m

| Rated current In (A) | Copper wire nominal cross sectional area(mm <sup>2</sup> ) |
|----------------------|--|
| 1~6                  | 1  |
| 10                   | 1.5  |
| 13,16,20             | 2.5  |
| 25                   | 4  |
| 32                   | 6  |
| 40,50                | 10   |
| 63                   | 16   |

4.7 Each pole power consumption of the circuit breaker

| Rated current In (A) | Each pole maximum power consumption(W) |
|----------------------|--|
| 1~10                 | 2                                      |
| 13~32                | 3.5                                    |
| 40~63                | 5                                      |

4.8 DC application wiring diagram shown in Figure 2



Wiring diagram description:

1. ⊕ Positive    ⊖ Negative
2. L+ Load positive    L- Load negative
3. Prohibit power reversed
4. Rated voltage: 1P:250V, 2P:500V, 4P:1000V
5. Strictly forbidden to remove the four poles products of sealing plug wiring operation.

## 5. Overall & installation dimensions(mm)

