63.00 mm

87.50 mm

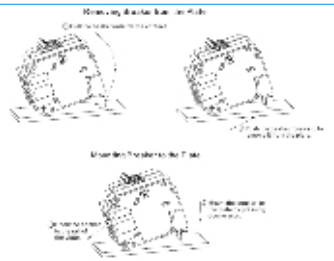

Fig. 2 Outline and installation dimensions

**Installation, use and maintenance**

●Before installing the circuit breaker:

(1) Check whether the technical parameters on the printed sign meet the use requirements;

(2) Before use, the user shall use a 500V megohmmeter to check that the insulation resistances between the poles (except for the single pole) of the circuit breaker, the pole and the housing, the pole and the mounting rail, the incoming terminal and the outgoing terminal; if not less than 5MΩ, this product shall be rejected and replaced by the supplier timely;

(3) Turn on and off the circuit breaker several times to check the circuit breaker operating mechanism for blockage and check that the mechanism works reliably;

(4) The reference temperature of this series of circuit breakers is $50^{+5}_{0}$℃. If multiple circuit breakers are installed in a closed box, the box temperature will increase accordingly, and the current used is 0.8In.

(5) The cross-sectional area of the connecting conductor should be consistent with the rated current of the circuit breaker, as shown see Table 3;

Table 3 The rated current and the cross-sectional area of connecting wires

| Rated current value A | 6 | 10 | 16, 20 | 25 | 32 | 40, 50 | 63 |
|---|---|---|---|---|---|---|---|
| Wire cross-sectional area mm² | 1 | 1.5 | 2.5 | 4 | 6 | 10 | 16 |
| Wiring torque N.m | 2.0 at power supply end and load end | | | | | | |

(6) This series of circuit breakers are installed in the slat insertion method;

(7) When the ambient temperature changes, its rated current value is corrected accordingly. The temperature correction factor is shown in Table 4.

Table 4 Rated current temperature correction factor table

| Rated current A | Rated current correction value A | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | -5℃ | 0℃ | 5℃ | 10℃ | 15℃ | 20℃ | 25℃ | 30℃ | 35℃ | 40℃ | 45℃ | 50℃ |
| 6 | 8.11 | 7.93 | 7.72 | 7.58 | 7.45 | 7.31 | 7.17 | 6.96 | 6.75 | 6.54 | 6.3 | 6 |
| 10 | 13.39 | 13.1 | 12.75 | 12.52 | 12.29 | 12.06 | 11.83 | 11.49 | 11.14 | 10.8 | 10.4 | 10 |
| 16 | 21.42 | 20.96 | 20.41 | 20.04 | 19.67 | 19.31 | 18.94 | 18.39 | 17.83 | 17.28 | 16.64 | 16 |
| 20 | 26.78 | 26.2 | 25.51 | 25.05 | 24.59 | 24.13 | 23.67 | 22.98 | 22.29 | 21.6 | 20.8 | 20 |
| 25 | 33.47 | 32.75 | 31.89 | 31.32 | 30.74 | 30.52 | 29.59 | 28.73 | 27.87 | 27.01 | 25.97 | 25 |
| 32 | 42.85 | 41.93 | 40.82 | 40.09 | 39.35 | 38.62 | 37.88 | 36.78 | 35.67 | 34.57 | 33.28 | 32 |
| 40 | 53.56 | 52.41 | 51.03 | 50.11 | 49.19 | 48.27 | 47.35 | 45.97 | 44.59 | 43.21 | 41.6 | 40 |
| 50 | 66.95 | 65.51 | 63.79 | 62.64 | 61.49 | 60.34 | 59.19 | 57.47 | 56.39 | 54.02 | 52.01 | 50 |
| 63 | 84.35 | 82.55 | 80.37 | 78.93 | 77.48 | 76.03 | 74.58 | 72.41 | 70.24 | 68.06 | 65.52 | 63 |

●Maintenance:

(1) The maintenance work must be performed by the qualified personnel;

(2) Do not power on the product;

(3) Maintenance is performed once a year under normal operating conditions. The maintenance contents are shown in Table 5.

Table 5 Maintenance

| Item | Contents |
|---|---|
| Appearance | No dust, no condensation; cleaning if necessary; no damage; no color change on the housing and the connecting terminal |
| Terminal connection | Tightened according to the tightening torques listed in Table without any looseness |
| Turn on / off by handle | Free and smooth operation |

**Unpacking inspection**

After unpacking, the user must check whether the product is intact, whether the exposed metal parts are rusted, whether the product is damaged due to improper transportation and storage. If the above phenomenon occurs, the product cannot be used. Please contact the supplier in time for this.

**Company commitment**

Under the premise that the use and storage conditions are met and that the product is well sealed, the defective product that is damaged or cannot be used normally due to its poor manufacturing quality will be repaired or replaced free of charges within 24 months from the date of production. The paid repair is required if the warranty period expires. However, the paid repair is also available for damage caused by one of the following situations even if the product is within the warranty period:

(1) Improper use, maintenance or storage;

(2) Self-modification and improper maintenance;

(3) Damage caused by the falling-off or during th installation;

(4) Damage caused by force majeure such as earthquakes, fires, lightning strikes, abnormal voltages and secondary disasters.

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Nov. 2018

# HDBK

## Miniature Circuit Breaker

# Use Manual

**Complied Standard: IEC/EN 60898-1**

Please carefully read the User Manual before the installation and use of the products, keep it properly as backup.

Himel
The Right Choice!

## HDBK Miniature Circuit Breaker Use Manual

### Safety Notice

Please read this manual carefully before installation, operation, use, maintenance, and inspection, and install and use this product according to the manual.

### ⚠ Danger:

●Do not operate the circuit breaker with wet hands;

●Do not touch the conductive part during use;

●Power off the product during maintenance;

●Do not perform the product test by a short circuit method;

### ⚠ Attention:

●Installation, maintenance and repair work shall be preformed by the qualified personnel;

●As the characteristics of the product have been set in factory, do not dismantle or adjust the product without permission during use;

●Check that the rated voltage, rated current, frequency and characteristics of the product meet the working requirements before use;

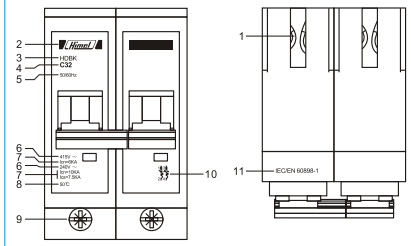
●In order to prevent phase-to-phase short circuit, the bare wire or copper busbar of the terminal should be insulated;

●If found any damage or abnormal sound when unpacking, stop immediately and contact the supplier;

●Please properly dispose the product waste for the scrapped product. Thank you for your cooperation.

**Introduction on HDBK miniature circuit breaker**

●Panel introduction




1. Power supply terminal 2. Company logo 3. Product model
4. Current specification (trip type+rated current) 5. Frequency
6. Rated voltage 7. Breaking capacity (see Table 1)
8. Reference temperature 9. Load end 10. Wiring diagram
11. Comply with standard

**Normal use, installation and transportation conditions**

●Normal use and installation conditions

(1) The upper limit of ambient air temperature does not exceed +50℃, the lower limit is not lower than -5℃, and the average temperature does not exceed +50℃ within 24 hours;

(2) The altitude of the installation site does not exceed 2000m;

(3) When the temperature is +40℃, the relative humidity of the air does not exceed 50%; a larger relative humidity is allowed at lower temperatures. For example, at +20℃, the relative humidity does not exceed 90%. The special protection measures shall be taken for occasional condensation due to temperature changes;

(4) The external magnetic field near the installation site of the circuit breaker shall not exceed 5 times the earth's magnetic field in any direction;

(5) The product is installed in a medium free of explosion hazard, and there is gas or dust that is not sufficient to cause corrosion to metals and damage to the insulation in the medium;

(6) Installed in places where there is no significant impact vibration and no rain or snow;

(7) Pollution level: Level 2;

(8) Installation category: Class II, Class III

(9) Installed in a distribution box, a power distribution cabinet or box;

●Normal storage and transportation conditions

(1) The lower temperature limit is not lower than -40℃, and the upper limit is not more than +70℃;

(2) The relative humidity (at 25℃) does not exceed 95%;

(3) The product should be handled slightly during transportation and should not be placed upside down with any violent collision avoided as much as possible.

**Main technical performance parameters**

●Main technical parameters of circuit breaker

Table 1 Main technical parameters

| Trip type | Rated current In A | Number of poles | Rated voltage Ue V | Rated breaking capacity Icn |
|---|---|---|---|---|
| C type | 6, 10, 16, 20, 25, 32, 40, 50, 63 | 1 | 240<br>120 | 240V/415V:Icn=Ics=6KA<br>120V/240V:Icn=10KA |
| | | 2, 3 | 415<br>240 | Ics=7.5KA |

●The overcurrent protection characteristics of the circuit breaker are shown in Table 2.

Table 2 Overcurrent protection characteristics of circuit breaker

| Tripper type | Rated current In A | Test current A | Start state | Start time | Expected results | Remarks | Reference temperature |
|---|---|---|---|---|---|---|---|
| C | ≤63 | 1.13 In | Cold state | t≤1h | No trip | —— | $+50^{+5}_{0}$℃ |
| C | ≤63 | 1.45 In | Connection test | t<1h | Trip | Current rises to the specified value within 5s | |
| C | ≤32 | 2.55 In | Cold state | 1s<t<60s | Trip | —— | |
| C | >32 | | | 1s<t<120s | | | |
| C | ≤63 | 5 In | Cold state | t≤0.1s | No trip | Turn on the auxiliary switch to power on | |
| C | ≤63 | 10 In | Cold state | t<0.1s | Trip | Turn on the auxiliary switch to power on | |

● Other technical parameters

1. Mechanical life: 10,000 times;
2. Electrical life: 4000 times;
3. Rated impulse withstand voltage (Uimp): 4kV;

● The protection characteristic curve of the circuit breaker is shown in Figure 1

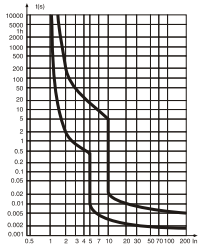



Figure 1 Type C thermal/electromagnetic tripping characteristic curve

**Outline and installation dimensions**

This series of circuit breaker is installed in slat insertion mode. The shape and installation dimensions are shown in Figure 2.