

Always For Your Safety

ETM1-63,ETM1-63H Miniature Circuit Breaker Usage Manual

Load Standard:IEC/EN 60898-1

Thank you for choosing EK Series Miniature Circuit Breaker. please read this User Manual carefully before installing and using the device and keep it properly for future reference.

Safety Notice

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

⚠ Danger:

- Do not operate the breaker with wet hands;
- Never touch the conductive parts in use;
- Make sure that the product is de-energized during maintenance and care;
- Do not test the product by means of short circuit;

⚠ Attention:

- The installation, repair and maintenance shall be implemented by qualified personnel;
- All features of the product have been set when delivery, do not disassemble or modulate the product at your own discretion;
- Before use, make sure that the working voltage, rated current, frequency and features of the product meet the working requirements;
- To prevent interphase short circuit, the bare wire or copper busbar at the terminal shall be insulated;
- Stop using and contact the supplier immediately in case of any damage or abnormal sound during unpacking;
- Make proper disposal of industrial wastes for end-of-life products.

Thank you for your cooperation.

Conditions of Normal Use

Installation and Transportation

Conditions of normal use and installation

- (1) The ambient temperature ranges between -5℃ and +40℃ with average value in 24h not exceeding +35℃;
- (2) Altitude: ≤2000m;
- (3) The relative humidity should not exceed 50% at a maximum temperature of +40℃; the relative humidity is allowed to increase while under lower temperature, for instance 90% for temperature +20%, but should take condensation into consideration when temperature is changed.
- (4) The external magnetic field near the installation site of the residual current circuit breaker shall not exceed 5 times the geomagnetic field in any direction;
- (5) It shall be installed in medium free of explosion risk and gas or dust that may cause metal corrosion or damage to insulation;
- (6) It shall be installed in places where there is no shock and vibration, or rain and snow either;
- (7) Pollution class: 2;
- (8) Installation category: II & III;
- (9) It shall be installed in distribution box, distribution cabinet or box;
- (10) Negative wiring is allowed for the product;
- (11) For products with N pole, the phase line shall be connected to the pole with the indication N.

Conditions of normal storage and transportation

- (1) Temperature range: -25℃ - +70℃;
- (2) Relative humidity: ≤95%;
- (3) The product shall be handled with care during transportation without upside down. Avoid violent collision.

Main Technical and Performance Parameters

Main technical parameters of the circuit breaker

| Model No. | tripping current | current | limits t | current | current | limits t |
|-----------|------------------|----------|----------|---------|---------|----------|
| B Curve | 1.13× IN | | ≥1h | 3× IN | | ≥0.1s |
| | | 1.45× IN | <1h | | | 5× IN |
| C Curve | 1.13× IN | | ≥1h | 5× IN | | ≥0.1s |
| | | 1.45× IN | <1h | | | 10× IN |
| D Curve | 1.13× IN | | ≥1h | 10× IN | | ≥0.1s |
| | | 1.45× IN | <1h | | | 20× IN |

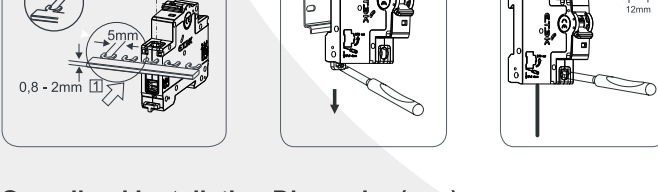
B Type

C Type

D Type

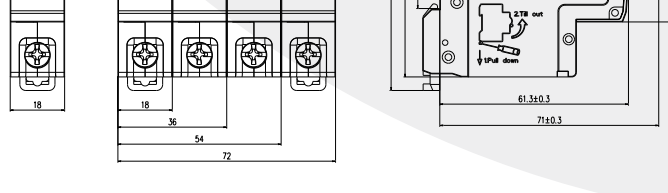
CHARACTERISTICS CURVES

| ETM1-63,ETM1-63H | | | | | | | 30~35℃ |
|------------------|---------------------|------------------|---------------|-------------------|--------------|---------------|--------|
| Thermal Tripping | | | | Magnetic Tripping | | | |
| Asper IEC60898 | No tripping current | Tripping current | Time Limits t | Hold current | Trip current | Time Limits t | |
| B Curve | 1.13× IN | 1.45× IN | ≥1h | 3× IN | 5× IN | ≥0.1s | |
| | | | <1h | | | <0.1s | |
| C Curve | 1.13× IN | 1.45× IN | ≥1h | 5× IN | 10× IN | ≥0.1s | |
| | | | <1h | | | <0.1s | |
| D Curve | 1.13× IN | 1.45× IN | ≥1h | 10× IN | 20× IN | ≥0.1s | |
| | | | <1h | | | <0.1s | |

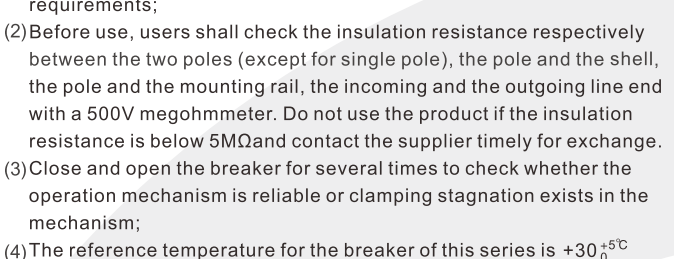


PRODUCT ASSEMBLY

- Product calibrating and programming are performed during manufacturing and each product is offered to sales after a through quality control. There are no maintenance or programming tasks that the users can perform.



Overall Installation Dimension(mm)



Installation, Use and Maintenance

Before breaker installation:

- (1) Check whether the technical parameters of the product meet the use requirements;
- (2) Before use, users shall check the insulation resistance respectively between the two poles (except for single pole), the pole and the shell, the pole and the mounting rail, the incoming and the outgoing line end with a 500V megohmmeter. Do not use the product if the insulation resistance is below 5MΩ and contact the supplier timely for exchange.
- (3) Close and open the breaker for several times to check whether the operation mechanism is reliable or clamping stagnation exists in the mechanism;
- (4) The reference temperature for the breaker of this series is +30⁺⁵℃
- (5) The sectional area of connecting conductor shall fit the rated current of the circuit breaker. See table 1;

Table 1 Rated current and section area of the connecting wire

| Rated current | A | 1, 2, 3, 4, 5, 6 | 8, 10 | 13, 16, 20 | 25 | 32 | 40, 50 | 63 |
|----------------------------|-----|--|-------|------------|----|----|--------|----|
| Cross-section of conductor | mm² | 1 | 1.5 | 2.5 | 4 | 6 | 10 | 16 |
| Wiring tightening torque | N.m | Both power supply terminal and load terminal are 2.0 | | | | | | |

- (6) The breaker of this series adopts DIN rail mounting method, for which TH35-7.5 steel DIN rail shall apply.
- (7) When the ambient temperature changes, the rated current shall be corrected accordingly. For temperature correction coefficient, see table 2.

Table 2

Influence of ambient temperature on load carrying capacity

| Rated current(A) | Correction factor for ambient temperature | | | | | | | | | | |
|------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | -25℃ | -20℃ | -10℃ | 0℃ | 10℃ | 20℃ | 30℃ | 40℃ | 50℃ | 60℃ | 70℃ |
| 1 | 1.27 | 1.25 | 1.20 | 1.15 | 1.11 | 1.05 | 1.00 | 0.94 | 0.88 | 0.82 | 0.75 |
| 2 | 2.54 | 2.50 | 2.40 | 2.30 | 2.22 | 2.10 | 2.00 | 1.88 | 1.76 | 1.64 | 1.50 |
| 3 | 3.81 | 3.75 | 3.60 | 3.45 | 3.33 | 3.15 | 3.00 | 2.82 | 2.64 | 2.46 | 2.25 |
| 4 | 5.08 | 5.00 | 4.80 | 4.60 | 4.44 | 4.20 | 4.00 | 3.76 | 3.52 | 3.28 | 3.00 |
| 5 | 6.35 | 6.25 | 6.00 | 5.75 | 5.55 | 5.25 | 5.00 | 4.70 | 4.40 | 4.10 | 3.75 |
| 6 | 7.62 | 7.50 | 7.20 | 6.90 | 6.66 | 6.30 | 6.00 | 5.64 | 5.28 | 4.92 | 4.50 |
| 8 | 10.16 | 10.00 | 9.60 | 9.20 | 8.88 | 8.40 | 8.00 | 7.52 | 7.04 | 6.56 | 6.00 |
| 10 | 12.70 | 12.50 | 12.00 | 11.50 | 11.10 | 10.50 | 10.00 | 9.40 | 8.80 | 8.20 | 7.50 |
| 16 | 20.32 | 20.00 | 19.20 | 18.40 | 17.76 | 16.80 | 16.00 | 15.04 | 14.08 | 13.12 | 12.00 |
| 20 | 25.40 | 25.00 | 24.00 | 23.00 | 22.20 | 21.00 | 20.00 | 18.80 | 17.60 | 16.40 | 15.00 |
| 25 | 31.75 | 31.25 | 30.00 | 28.75 | 27.75 | 26.25 | 25.00 | 23.50 | 22.00 | 20.50 | 18.75 |
| 32 | 40.64 | 40.00 | 38.40 | 36.80 | 35.52 | 33.60 | 32.00 | 30.08 | 28.16 | 26.24 | 24.00 |
| 40 | 50.80 | 50.00 | 48.00 | 46.00 | 44.00 | 42.00 | 40.00 | 37.60 | 35.20 | 32.80 | 30.00 |
| 50 | 63.50 | 62.50 | 60.00 | 57.50 | 55.50 | 52.50 | 50.00 | 47.00 | 44.00 | 41.00 | 37.50 |
| 63 | 80.01 | 78.75 | 75.60 | 72.45 | 69.93 | 66.15 | 63.00 | 59.22 | 55.44 | 51.66 | 47.25 |

Maintenance and care

- (1) The installation, repair and maintenance shall be implemented by qualified personnel;
- (2) It must be ensured that the product is de-energized;
- (3) Maintenance and care shall be conducted once a year under normal operation condition. The details of maintenance and care are shown in table 3.

Table 3 Maintenance and care

| Item | Content |
|----------------------------------|--|
| Appearance | Free of dust and condensation. Clean, if any. |
| | With no damage |
| | No change of color for the shell and connecting terminal |
| Wiring terminal connection | Tighten according to the torque stipulated in table 3 and ensure it does not loosen. |
| Handle closing/opening operation | Operation shall be smooth and flexible |

Unpacking Inspection

After unpacking, the user must check whether the product is intact, whether the exposed metal is rusty and whether the product is defective due to improper transportation or custody. In case of above phenomenon, do not use the product and timely contact the supplier.

