Thermal Overcurrent Circuit Breaker 1658-...

Description

Very cost effective design to meet international requirements. No exposed metal parts which are, or could become, current-carrying except for terminals. R-type TO CBE to EN 60934.

- Manual reset, cycling trip free mechanism
- Extremely small and lightweight
- UL, CSA, VDE and EN 60934 (IEC 60934) approved

Typical applications

Battery chargers, consumer products, power supplies, motors.

Ordering information

Type No. 1658 single pole thermal circuit breaker

Threadneck design

- G21 manual reset type, 3/8"-27 threadneck
- G41 manual reset type, 7/16"-28 threadneck
- A21 auto reset type, 3/8"-27 threadneck
- A41 auto reset type, 7/16"-28 threadneck
- A00 auto reset type, without threadneck

Hardware

- F01 snap in

- 00 no hardware
- 01 one PAL nut, bulk
- 02 one PAL nut, one knurled nut, bulk
- 03 one PAL nut mounted
- 04 one PAL nut, one knurled nut, mounted
- 05 one PAL nut mounted, one knurled nut, bulk
- 06 one knurled nut, bulk
- 07 one hex nut, bulk
- 08 two hex nuts, bulk

Terminals

- P10 blade terminals A6.3-0.8 (QC .250)
- P13 blade terminals A6.3-0.8 (QC .250), 90°
- S80 straight screw terminals*
- S83 90° bent screw terminals*

Current ratings

- 5...30 A

1658 - G21 - 02 - P10 - 5 A  Ordering example

* Screws and lock washers bulk shipped

Standard current ratings and typical voltage drop values

<table>
<thead>
<tr>
<th>Current rating (A)</th>
<th>Voltage (mV)</th>
<th>Current rating (A)</th>
<th>Voltage (mV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>≤ 250</td>
<td>12</td>
<td>≤ 250</td>
</tr>
<tr>
<td>6</td>
<td>≤ 250</td>
<td>15</td>
<td>≤ 250</td>
</tr>
<tr>
<td>7</td>
<td>≤ 250</td>
<td>16</td>
<td>≤ 250</td>
</tr>
<tr>
<td>8</td>
<td>≤ 250</td>
<td>20</td>
<td>≤ 250</td>
</tr>
<tr>
<td>9</td>
<td>≤ 250</td>
<td>25</td>
<td>≤ 250</td>
</tr>
<tr>
<td>10</td>
<td>≤ 250</td>
<td>30</td>
<td>≤ 250</td>
</tr>
</tbody>
</table>

Approvals

<table>
<thead>
<tr>
<th>Authority</th>
<th>Voltage rating</th>
<th>Current ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDE (EN 60934)</td>
<td>AC 240 V; DC 28 V</td>
<td>5...25 A</td>
</tr>
<tr>
<td>UL</td>
<td>AC 240 V</td>
<td>5...16 A 1658-G../F..</td>
</tr>
<tr>
<td></td>
<td>AC 120 V</td>
<td>18...30 A 1658-G../F..</td>
</tr>
<tr>
<td></td>
<td>AC 120 V</td>
<td>5...30 A 1658-A..</td>
</tr>
<tr>
<td></td>
<td>DC 32 V</td>
<td>5...30 A 1658-G../F..</td>
</tr>
<tr>
<td></td>
<td>DC 28 V</td>
<td>5...30 A 1658-A..</td>
</tr>
</tbody>
</table>

Technical data

For further details please see chapter: Technical Information

Voltage rating

- AC 240 V; DC 28 V

Current ratings

- 5...30 A

Typical life

- AC + DC 5...16 A 1,000 operations at 2 x I N, inductive
- 17...25 A 1,000 operations at 2 x I N, resistive

Ambient temperature

- -20...+60 °C (-4...+140 °F), ≤ 7 A max. +40 °C (+104 °F)

Insulation co-ordination (IEC 60664 and 60664 A)

- Rated impulse withstand voltage 2.5 kV pollution degree
- Reinforced insulation in operating area

Dielectric strength (IEC 60664 and 60664A)

- Test voltage AC 3,000 V

Insulation resistance

- > 100 MΩ (DC 500 V)

Interrupting capacity

- I N  U N (UL 1077/EN 60934 PC1)
  - 5...16 A AC 240 V 2,000 A
  - 17...30 A AC 120 V 2,000 A
  - 5...30 A DC 32 V 2,500 A
  - 5...30 A DC 28 V 2,000 A (1658-A..)

Degree of protection

- Operating area IP40
- Terminal area IP00

Vibration

- 8 g (57-500 Hz) ± 0.61 mm (10-57 Hz), to IEC 60068-2-6, test Fc, 10 frequency cycles/axis

Shock

- 30 g (11 ms), to IEC 60068-2-27, test Ea

Corrosion

- 96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka

Humidity

- 240 hours at 95 % RH, to IEC 60068-2-78, test Cab

Mass

- approx. 16 g
**Dimensions**

- **A00**
- **A21**
  - Tightening torque max. 0.8 Nm
  - 3/8-27UNS-2A
- **G21**
  - Tightening torque max. 0.8 Nm
  - 3/8-27UNS-2A
- **A41**
  - 10
  - .394
- **G41**
  - 10
  - .394
- **F01**
  - 6
  - .36
  - .66

**Terminal design**

- **P10**
  - Blade terminals DIN 46244-A6.3-0.8 (QC .250)
- **S83**
  - Blade terminals DIN 46244-A6.3-0.8 (QC .250)
  - Terminal screw 6-32 UNC
  - Lock washer
- **P13**
  - Blade terminals DIN 46244-A6.3-0.8 (QC .250)
  - Angled 90°
- **P10-S83**
  - Blade terminals DIN 46244-A6.3-0.8 (QC .250)
  - Terminal screw 6-32 UNC
  - Lock washer

**Installation drawing**

- Operating area
- Mounting area

See ordering information for mounting hardware.

This is a metric design and millimeter dimensions take precedence (mm) instead of inch.
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section "Technical information."

<table>
<thead>
<tr>
<th>Ambient temperature °F</th>
<th>-4</th>
<th>+14</th>
<th>+32</th>
<th>+73.4</th>
<th>+104</th>
<th>+122</th>
<th>+140</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>-20</td>
<td>-10</td>
<td>0</td>
<td>+23</td>
<td>+60</td>
<td>+50</td>
<td>+60</td>
</tr>
<tr>
<td>Derating factor</td>
<td>I_N &gt; 7A</td>
<td>0.83</td>
<td>0.85</td>
<td>0.9</td>
<td>1.1</td>
<td>1.16</td>
<td>1.25</td>
</tr>
<tr>
<td>I_N ≤ 7A</td>
<td>0.74</td>
<td>0.76</td>
<td>0.82</td>
<td>1</td>
<td>1.23</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Typical time/current characteristics**

**Accessories**

- **Mounting nut 3/8", 27-thread**
  - Y 306 671 01
  - 14.3 ø18.5
  - 0.5 ø11.2+0.7

- **Mounting nut 7/16", 28-thread**
  - Y 303 200 01
  - 16 ø21.4
  - 3 ø16

- **Knurled nut 3/8", 27-thread**
  - plastic (standard)
  - Y 306 671 01
  - ø15
  - 3 ø16

- **Knurled nut 7/16", 28-thread**
  - nickel-plated brass
  - Y 302 294 03
  - ø16
  - 3.2 ø11.2

- **Knurled nut 3/8", 27-thread**
  - nickel-plated brass
  - Y 300 190 03
  - ø13
  - 2.5 ø9

- **Knurled nut 7/16", 28-thread**
  - nickel-plated brass
  - Y 302 295 01
  - ø24
  - 2.5 ø9

- **Hex nut 3/8", 27-thread**
  - nickel-plated brass
  - Y 300 192 01
  - ø3/8
  - 2.5 ø9

- **Hex nut 7/16", 28-thread**
  - nickel-plated brass
  - Y 302 295 01
  - ø7/16
  - 2.5 ø9

- **Press to Reset Plate for 3/8"**
  - thread, aluminium
  - Y 301 059 02
  - ø21.4
  - 0.4 ø16

- **Press to Reset Plate for 7/16"**
  - thread, aluminium
  - Y 302 732 01
  - ø11.2
  - 0.4 ø16

This is a metric design and millimeter dimensions take precedence.
Accessories

Reset button seal for 3/8", 27-thread,
short X 201 285 01
long X 200 799 01

Reset button seal for 7/16", 28-thread,
short X 222 119 01
long X 222 119 02

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.