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
- F01 snap in

Hardware
- 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

Ordering example

1658 - G21 - 02 - P10 - 5 A

* Screws and lock washers bulk shipped

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
- AC + DC 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 2
- 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_on
- 5...7 A 180 A
- 8...30 A 200 A

Interrupting capacity (UL 1077/EN 60934 PC1)
- I_N 5....16 A U_N AC 240 V 2,000 A
- 18..30 A AC 120 V 2,000 A
- 5....30 A DC 28 V 2,000 A

Degree of protection

Operating area IP40

Terminal area IP00

Vibration
- 8 g (57-500 Hz) ±0.61 mm (10-57 Hz),
- test Fs, 10 frequency cycles/axis

Shock
- 30 g (11 ms)
- test Ea

Corrosion
- 96 hours at 5 % salt mist,
- test Ka

Humidity
- 240 hours at 95 % RH
- test Cab

Mass
- approx. 16 g

Approvals

<table>
<thead>
<tr>
<th>Authority</th>
<th>Voltage range</th>
<th>Current ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDE (EN 60934)</td>
<td>AC 240 V; DC 28 V</td>
<td>5...30 A</td>
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<tr>
<td>UL</td>
<td>AC 240 V</td>
<td>5...16 A 1658-G...</td>
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<tr>
<td>1658-G...</td>
<td>AC 120 V</td>
<td>20...30 A 1658-G...</td>
</tr>
<tr>
<td>1658-A...</td>
<td>AC 120 V</td>
<td>5...30 A 1658-A...</td>
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<tr>
<td>1658-G...</td>
<td>DC 28 V</td>
<td>5...30 A 1658-G...</td>
</tr>
</tbody>
</table>

Standard current ratings and typical voltage drop values

<table>
<thead>
<tr>
<th>Current rating (A)</th>
<th>Voltage drop (mV)</th>
<th>Current rating (A)</th>
<th>Voltage drop (mV)</th>
</tr>
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<tbody>
<tr>
<td>5</td>
<td>≤ 150</td>
<td>12</td>
<td>≤ 140</td>
</tr>
<tr>
<td>6</td>
<td>≤ 150</td>
<td>15</td>
<td>≤ 240</td>
</tr>
<tr>
<td>7</td>
<td>≤ 150</td>
<td>16</td>
<td>≤ 240</td>
</tr>
<tr>
<td>8</td>
<td>≤ 150</td>
<td>20</td>
<td>≤ 240</td>
</tr>
<tr>
<td>9</td>
<td>≤ 150</td>
<td>25</td>
<td>≤ 240</td>
</tr>
<tr>
<td>10</td>
<td>≤ 140</td>
<td>30</td>
<td>≤ 240</td>
</tr>
</tbody>
</table>
Thermal Overcurrent Circuit Breaker 1658-...

### Dimensions

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A00</td>
<td>3/8-27UNS-2A</td>
<td>9.6-0.1</td>
</tr>
<tr>
<td>A21</td>
<td>9.6-0.1</td>
<td>1.356</td>
</tr>
<tr>
<td>G21</td>
<td>9.6-0.1</td>
<td>3.020</td>
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<tr>
<td>A41</td>
<td>10.2-0.1</td>
<td>3.942</td>
</tr>
<tr>
<td>G41</td>
<td>11.2-0.1</td>
<td>4.102</td>
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<tr>
<td>F01</td>
<td>13.8-0.1</td>
<td>5.943</td>
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<tr>
<td></td>
<td></td>
<td>1.3 mm</td>
</tr>
</tbody>
</table>

Caution: Please keep a tight grip on the unit while removing the female connectors.

See ordering information for mounting hardware.

### Terminal design

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

- **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)
  - Terminal screw 6-32 UNC
  - Lock washer

- **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**

This is a metric design and millimeter dimensions take precedence (mm > in)
Internal connection diagram

Typical time/current characteristics

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 9 – Technical information.

<table>
<thead>
<tr>
<th>Ambient temperature °F</th>
<th>Derating factor</th>
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<tbody>
<tr>
<td>-4</td>
<td>0.83</td>
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<tr>
<td>-20</td>
<td>0.74</td>
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<tr>
<td>-10</td>
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<td>+14</td>
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<tr>
<td>+32</td>
<td>1.11</td>
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<tr>
<td>+73.4</td>
<td>1.18</td>
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<tr>
<td>+104</td>
<td>1.25</td>
</tr>
<tr>
<td>+122</td>
<td>-</td>
</tr>
<tr>
<td>+140</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient temperature °C</th>
<th>Derating factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>0.83</td>
</tr>
<tr>
<td>-10</td>
<td>0.74</td>
</tr>
<tr>
<td>0</td>
<td>0.76</td>
</tr>
<tr>
<td>+23</td>
<td>1.11</td>
</tr>
<tr>
<td>+50</td>
<td>1.18</td>
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<tr>
<td>+80</td>
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</tr>
<tr>
<td>+118</td>
<td>-</td>
</tr>
<tr>
<td>+140</td>
<td>-</td>
</tr>
</tbody>
</table>

Accessories

Mounting nut 3/8", 27-thread plastic (standard) Y307 117 02
Knurled nut 3/8", 27-thread nickel-plated brass Y300 190 03
Hex nut 3/8", 27-thread nickel-plated brass Y300 192 01
Hex nut 7/16", 28-thread nickel-plated brass Y302 295 01
Press to Reset Plate for 3/8" thread, aluminium Y 301 059 02
Press to Reset Plate for 7/16" thread, aluminium Y 302 732 01

This is a metric design and millimeter dimensions take precedence (mm) inch
This is a metric design and millimeter dimensions take precedence (mm). Inch dimensions 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.