

# E-T-A® 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

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

\* Screws and lock washers bulk shipped

## Standard current ratings and typical voltage drop values

| Current rating (A) | Voltage drop (mV) | Current rating (A) | Voltage drop (mV) |
|--------------------|-------------------|--------------------|-------------------|
| 5                  | ≤ 250             | 12                 | ≤ 250             |
| 6                  | ≤ 250             | 15                 | ≤ 250             |
| 7                  | ≤ 250             | 16                 | ≤ 250             |
| 8                  | ≤ 250             | 20                 | ≤ 250             |
| 9                  | ≤ 250             | 25                 | ≤ 250             |
| 10                 | ≤ 250             | 30                 | ≤ 250             |

## Approvals

| Authority      | Voltage rating    | Current ratings        |
|----------------|-------------------|------------------------|
| VDE (EN 60934) | AC 240 V; DC 28 V | 5...25 A               |
| UL             | AC 240 V          | 5...16 A 1658-G../F..  |
|                | AC 120 V          | 18...30 A 1658-G../F.. |
|                | AC 120 V          | 5...30 A 1658-A...     |
|                | DC 32 V           | 5...30 A 1658-G../F..  |
|                | DC 28 V           | 5...30 A 1658-A..      |



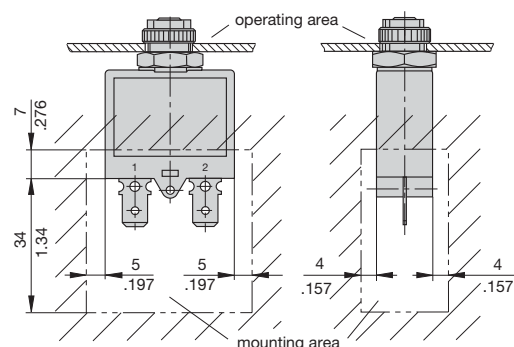
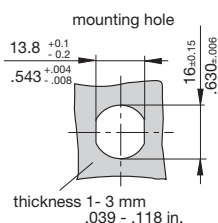
1658-...

## Technical data

For further details please see chapter: Technical Information

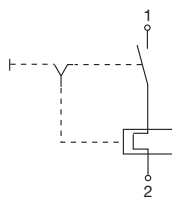
|                                                                 |         |                                                                                                 |                                                              |                                                     |
|-----------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|
| 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 <sub>N</sub> , inductive           |                                                     |
|                                                                 |         | 17...25 A                                                                                       | 1,000 operations at 2 x I <sub>N</sub> , resistive           |                                                     |
| Ambient temperature                                             |         | -20...+60 °C (-4...+140 °F),<br>≤ 7 A max. +40 °C (+104 °F)                                     |                                                              |                                                     |
| Insulation co-ordination<br>(IEC 60664 and 60664 A)             |         | rated impulse<br>withstand voltage<br>2.5 kV<br>reinforced insulation in operating area         | pollution<br>degree<br>2                                     |                                                     |
| Dielectric strength<br>(IEC 60664 and 60664A)<br>operating area |         | test voltage<br>AC 3,000 V                                                                      |                                                              |                                                     |
| Insulation resistance                                           |         | > 100 MΩ (DC 500 V)                                                                             |                                                              |                                                     |
| Interrupting capacity I <sub>cn</sub>                           |         | 5...7 A<br>8...30 A                                                                             | 180 A<br>200 A                                               |                                                     |
| Interrupting capacity<br>(UL 1077/EN 60934 PC1)                 |         | I <sub>N</sub><br>5...16 A<br>17...30 A<br>5...30 A<br>5...30 A                                 | U <sub>N</sub><br>AC 240 V<br>AC 120 V<br>DC 32 V<br>DC 28 V | 2,000 A<br>2,000 A<br>2,500 A<br>2,000 A (1658-A..) |
| Degree of protection<br>(IEC 60529/DIN 40050)                   |         | operating area IP40<br>terminal area IP00                                                       |                                                              |                                                     |
| Vibration                                                       |         | 8 g (57-500 Hz) ± 0.61 mm (10-57 Hz),<br>to IEC 60068-2-6, test Fc,<br>10 frequency cycles/axis |                                                              |                                                     |
| Shock                                                           |         | 30 g (11 ms)<br>to IEC 60068-2-27, test Ea                                                      |                                                              |                                                     |
| Corrosion                                                       |         | 96 hours at 5 % salt mist,<br>to IEC 60068-2-11, test Ka                                        |                                                              |                                                     |
| Humidity                                                        |         | 240 hours at 95 % RH<br>to IEC 60068-2-78, test Cab                                             |                                                              |                                                     |
| Mass                                                            |         | approx. 16 g                                                                                    |                                                              |                                                     |

## Terminal design

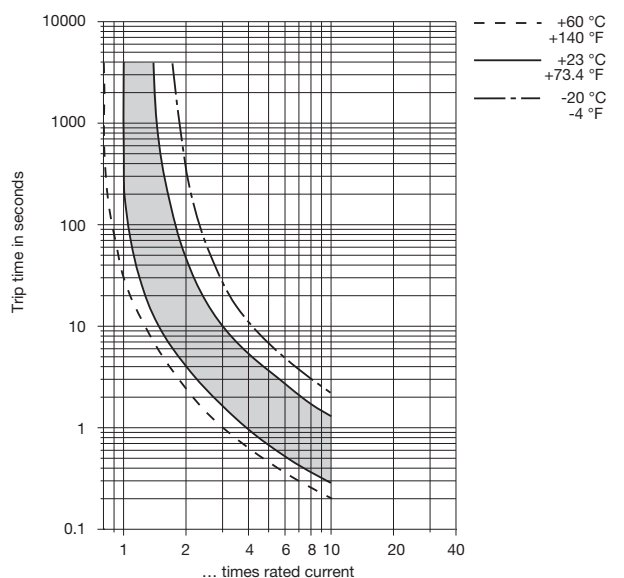


Issue B(020810)

## Internal connection diagram



## Typical time/current characteristics

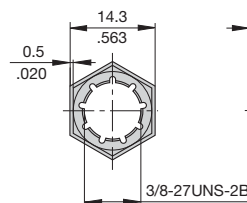


The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section Technical information.

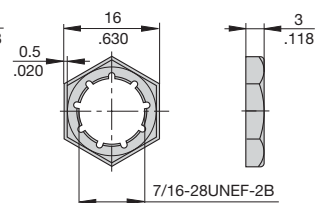
| Ambient temperature °F |               | -4   | +14  | +32  | +73.4 | +104 | +122 | +140 |
|------------------------|---------------|------|------|------|-------|------|------|------|
| °C                     |               | -20  | -10  | 0    | +23   | +40  | +50  | +60  |
| Derating factor        | $I_N > 7A$    | 0.83 | 0.85 | 0.9  | 1     | 1.1  | 1.18 | 1.25 |
|                        | $I_N \leq 7A$ | 0.74 | 0.76 | 0.82 | 1     | 1.23 | -    | -    |

## Accessories

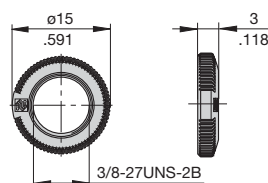
**Mounting nut 3/8", 27-thread**  
Y 306 671 01



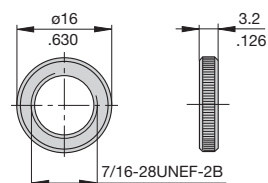
**Mounting nut 7/16", 28-thread**  
Y 303 200 01



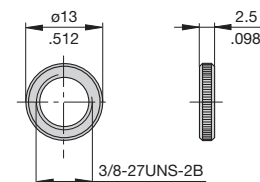
**Knurled nut 3/8", 27-thread plastic (standard)**  
Y 307 117 02



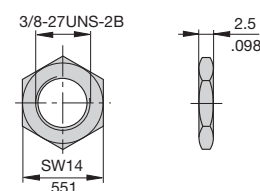
**Knurled nut 7/16", 28-thread nickel-plated brass**  
Y 302 294 03



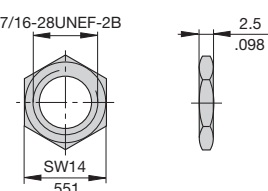
**Knurled nut 3/8", 27-thread nickel-plated brass**  
Y 300 190 03



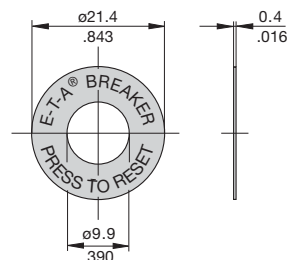
**Hex nut 3/8", 27-thread nickel-plated brass**  
Y 300 192 01



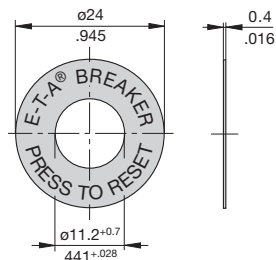
**Hex nut 7/16", 28-thread nickel-plated brass**  
Y 302 295 01



**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)

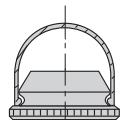
## Accessories

Reset button seal for 3/8", 27-thread,  
short

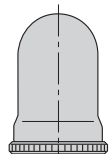
X 201 285 01

long

X 200 799 01



3/8-27 UNS-2B



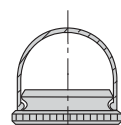
3/8-27 UNS-2B

Reset button seal for 7/16", 28-thread,  
short

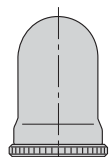
X 222 119 01

long

X 222 119 02



7/16-28 UNS-2B



7/16-28 UNS-2B

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.