

## 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

A00 auto reset type, without threadneck

### Hardware

00 no hardware

01 one PAL nut Y306 671 01, bulk

02 one PAL nut Y306 671 01,  
one knurled nut Y307 117 02, bulk

### Terminals

P10 blade terminals A6.3-0.8 (QC .250)

P13 blade terminals A6.3-0.8 (QC .250), 90°

### Current ratings

5 ...30 A

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

\* Screws and lock washers bulk shipped

Please be informed that we have minimum ordering quantities to be observed.

## Compliances



## Preferred types

| Preferred types  | Standard current ratings (A) |   |   |   |   |    |    |    |    |    |    |    |
|------------------|------------------------------|---|---|---|---|----|----|----|----|----|----|----|
|                  | 5                            | 6 | 7 | 8 | 9 | 10 | 12 | 15 | 16 | 20 | 25 | 30 |
| 1658-G21-02-P10- | x                            | x | x | x | x | x  | x  | x  | x  | x  | x  | x  |
| 1658-G21-02-P13- | x                            | x | x | x | x | x  | x  | x  | x  |    |    |    |
| 1658-A00-00-P10- | x                            | x | x | x | x | x  | x  | x  | x  |    |    |    |

## Standard current ratings and typical voltage drop values

| Current rating (A) | voltage drop values (mV) | Current rating (A) | voltage drop values (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                    |



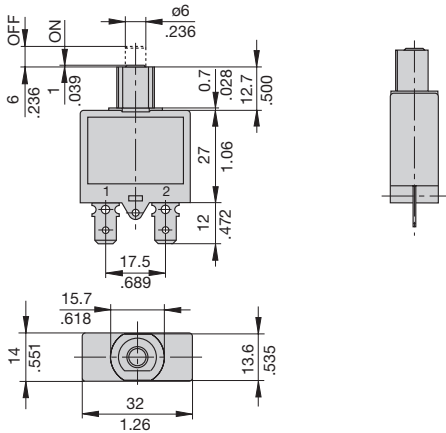
1658-...

## Technical data

For further details please see: [http://www.e-t-a.de/ti\\_e](http://www.e-t-a.de/ti_e)

|   |   |  |   |
|---|---|--|---|
| Voltage rating  | AC 240 V; DC 28 V   |  |   |
| Current ratings   | 5...30 A  |  |   |
| Typical life  | 5...16 A  | 1,000 operations at 2 x I <sub>N</sub> , inductive |   |
| AC + DC   | 17...25 A   | 1,000 operations at 2 x I <sub>N</sub> , resistive |   |
| Behaviour at rated switching capacity (EN 60934; test sequence D) | operat.   | I <sub>N</sub>                                     | U <sub>N</sub>  |
| 40  | 5...16 A  | AC 240 V   | 6 x I <sub>N</sub> ind  |
| 40  | 5...16 A  | DC 28 V  | 4 x I <sub>N</sub> ind  |
| 40  | 17...25 A   | AC 240 V   | 120 A resistive   |
| 40  | 17...25 A   | DC 28 V  | 120 A resistive   |
| Ambient temperature   | -20...+60 °C (-4...+140 °F),<br>≤ 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<br>reinforced insulation in operating area |
| Dielectric strength (IEC 60664 and 60664A)                        | test voltage operating area   | AC 3,000 V   |   |
| Insulation resistance   | > 100 MΩ (DC 500 V)   |  |   |
| Interrupting capacity I <sub>cn</sub>                             | 5...7 A   | 180 A  |   |
|   | 8...30 A  | 200 A  |   |
| Interrupting capacity (UL 1077/EN 60934 PC1)                      | I <sub>N</sub>  | U <sub>N</sub>                                     |   |
|   | 5...16 A  | AC 240 V   | 1 000 A, C, 1   |
|   | 5...30 A  | AC 125 V   | 2 000 A, C, 1   |
|   | 5...30 A  | DC 32 V  | 2 000 A, C, 1   |
|   | 5...30 A  | AC 125 V   | 2 000 A, C, 1   |
|   |   | DC 28 V  | (1658-A...)   |
| Degree of protection (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  |  |   |

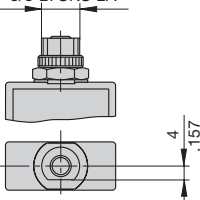
## Dimensions



**A00**



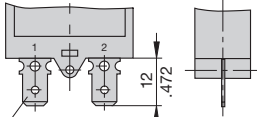
**G21** tightening torque max. 0.8 Nm  
3/8-27UNS-2A



See ordering information for mounting hardware.

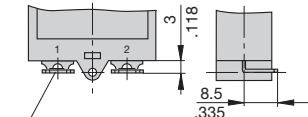
## Terminal design

**P10**



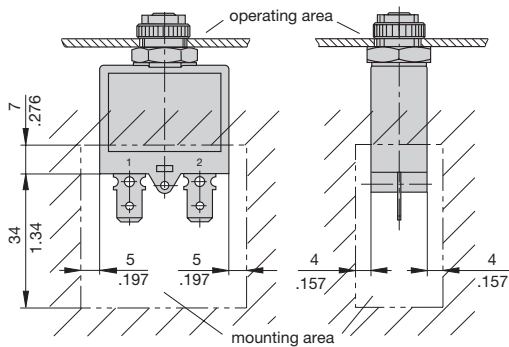
blade terminals DIN 46244-A6.3-0.8  
(QC .250)

**P13**

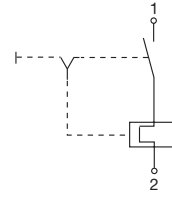


blade terminals DIN 46244-A6.3-0.8 (QC .250)  
angled 90°

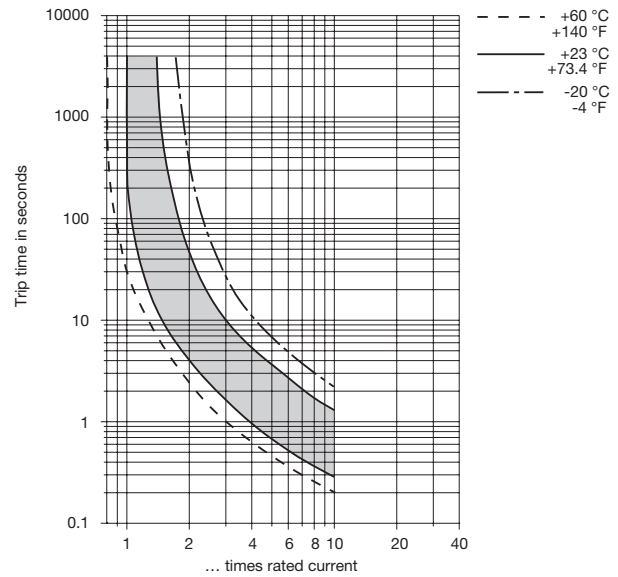
## Installation drawing



## 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 temp. °F           | -4   | +14  | +32  | +73.4 | +104 | +122 | +140 |
|----------------------------|------|------|------|-------|------|------|------|
| Ambient temp. °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 |
| Derating factor $I_N < 7A$ | 0.74 | 0.76 | 0.82 | 1     | 1.23 | -    | -    |

This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )