

## Description

Miniaturised single pole thermal circuit breaker with push-to-reset, tease-free, trip-free, snap action mechanism (R-type TO CBE to EN 60934). Available in versions for PCB or panel mounting, snap-in or threadneck, or as an integral type. Approved to CBE standard EN 60934 (IEC 60934). For higher current ratings see type 1140.

## Typical applications

Motors, transformers, solenoids, printed circuit boards, hand-held machines and appliances, marine applications, caravans.

## Ordering information

| Type No.               |                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------|
| 104                    | PCB mounting type (-PR), or integral type (-P30/P10)                                                             |
| 105                    | snap-in panel mounting                                                                                           |
| 106                    | threadneck panel mounting with hex and knurled nut (hardware bulk shipped with 5 pcs plus)                       |
| 106-M2                 | threadneck panel mounting 3/8-27UNS with collar, hex nut and knurled nut (hardware bulk shipped with 5 pcs plus) |
| <b>Terminal design</b> |                                                                                                                  |
| P10                    | blade terminals A6.3-0.8 (QC .250)                                                                               |
| P30                    | blade terminals A2.8-0.8 (QC .110)                                                                               |
| PR                     | solder terminal pins for PCB mounting (type 104 only)                                                            |
| PR3                    | PCB mounting (vertical), type 104 only                                                                           |
| <b>Current ratings</b> |                                                                                                                  |
| 0.05...10 A            |                                                                                                                  |
| 106 - P30 - 5 A        | ordering example                                                                                                 |

The exact part number required can be built up from the table of choices shown above. Ordering references for optional features should be omitted if not required.

## Preferred types

| Preferred types | Standard current ratings (A) |     |   |     |     |   |   |   |   |   |    |
|-----------------|------------------------------|-----|---|-----|-----|---|---|---|---|---|----|
|                 | 0.5                          | 0.8 | 1 | 1.2 | 1.5 | 2 | 3 | 4 | 5 | 6 | 10 |
| 106-P10-        | x                            | x   | x | x   | x   | x | x | x | x | x | x  |
| 106-P30-        | x                            | x   | x | x   | x   | x | x | x | x | x | x  |

## Standard current ratings and typical internal resistance values

| Current rating (A) | Internal resistance (Ω) | Current rating (A) | Internal resistance (Ω) |
|--------------------|-------------------------|--------------------|-------------------------|
| 0.05               | 285                     | 1.8                | 0.28                    |
| 0.08               | 134                     | 2                  | 0.25                    |
| 0.1                | 81                      | 2.5                | 0.18                    |
| 0.2                | 22                      | 3                  | 0.11                    |
| 0.3                | 8.7                     | 3.5                | 0.076                   |
| 0.4                | 5.5                     | 4                  | 0.067                   |
| 0.5                | 3.3                     | 4.5                | 0.051                   |
| 0.6                | 2.45                    | 5                  | ≤ 0.05                  |
| 0.7                | 1.6                     | 6                  | ≤ 0.05                  |
| 0.8                | 1.45                    | 7                  | ≤ 0.05                  |
| 1                  | 0.9                     | 8                  | ≤ 0.05                  |
| 1.2                | 0.6                     | 10                 | ≤ 0.05                  |
| 1.5                | 0.4                     |                    |                         |



## Technical data

For further details please see chapter: Technical Information

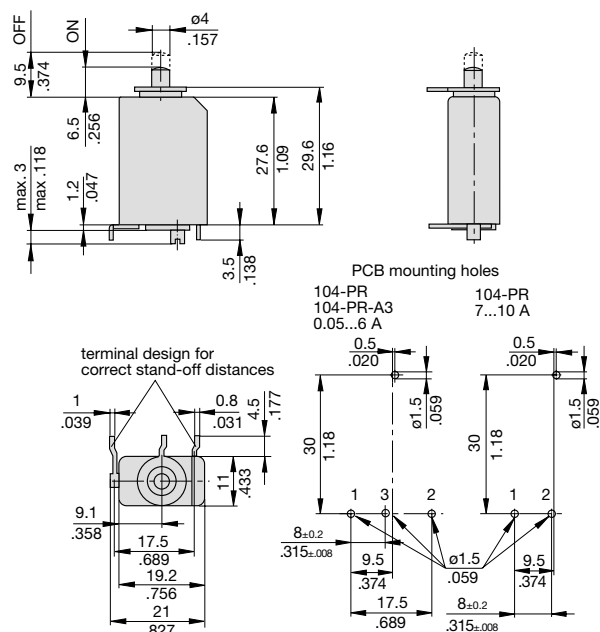
|                                                                 |            |                                                                                                  |                                                |                  |
|-----------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------|------------------------------------------------|------------------|
| Voltage rating                                                  |            | AC 240 V; DC 48 V<br>(UL: AC 250 V; DC 48 V)                                                     |                                                |                  |
| Current ratings                                                 |            | 0.05...10 A                                                                                      |                                                |                  |
| Auxiliary circuit                                               |            | 0.5 A, AC 240 V, DC 28 V                                                                         |                                                |                  |
| Typical life                                                    | 0.05...5 A | 1,000 operations at 2 x I <sub>N</sub> , inductive                                               |                                                |                  |
|                                                                 | DC 28 V:   | 3,000 operations at 2 x I <sub>N</sub> , inductive                                               |                                                |                  |
|                                                                 | 6...8 A    | 500 operations at 2 x I <sub>N</sub> , inductive                                                 |                                                |                  |
|                                                                 | 10 A       | 50 operations at 2 x I <sub>N</sub> , inductive                                                  |                                                |                  |
| Ambient temperature                                             |            | -20...+60 °C (-4...+140 °F) T 60                                                                 |                                                |                  |
| 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>                           |            | 0.05...8 A<br>0.05...10 A                                                                        | 6 x I <sub>N</sub> AC<br>6 x I <sub>N</sub> DC |                  |
| Interrupting capacity<br>(UL 1077)                              |            | I <sub>N</sub><br>0.05...10 A<br>0.05...10 A                                                     | U <sub>N</sub><br>AC 250 V<br>DC 48 V          | 2,000 A<br>200 A |
| Degree of protection<br>(IEC 60529/DIN 40050)                   |            | operating area IP40<br>terminal area IP00                                                        |                                                |                  |
| Vibration                                                       |            | 10 g (57-500 Hz) ± 0.76 mm (10-57 Hz),<br>to IEC 60068-2-6, test Fc,<br>10 frequency cycles/axis |                                                |                  |
| Shock                                                           |            | 25 g (11 ms) 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. 10 g                                                                                     |                                                |                  |

## Approvals

| Authority | Standard     | Rated voltage       | Current ratings                |
|-----------|--------------|---------------------|--------------------------------|
| VDE /SEV  | IEC/EN 60934 | AC 240 V<br>DC 48 V | 0.02 A... 8 A<br>0.02 A...10 A |
| UL        | UL1077       | AC 250 V<br>DC 48 V | 0.05 A...10 A<br>0.05 A...10 A |
| CSA       | C22.2 No 235 | AC 250 V<br>DC 48 V | 0.05 A...10 A<br>0.05 A...10 A |
| CQC       | GB 17701     | AC 240 V<br>DC 48 V | 0.05 A...8 A<br>0.05 A...10 A  |

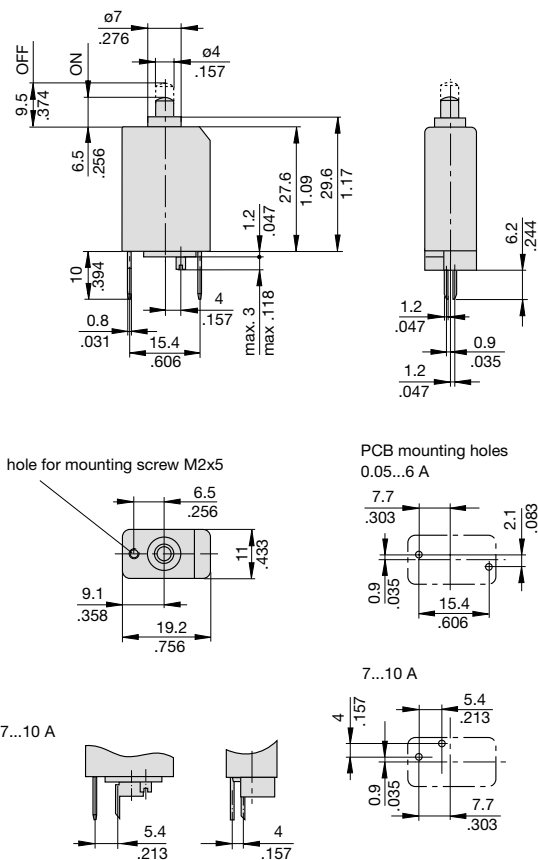
## Dimensions

### 104-PR

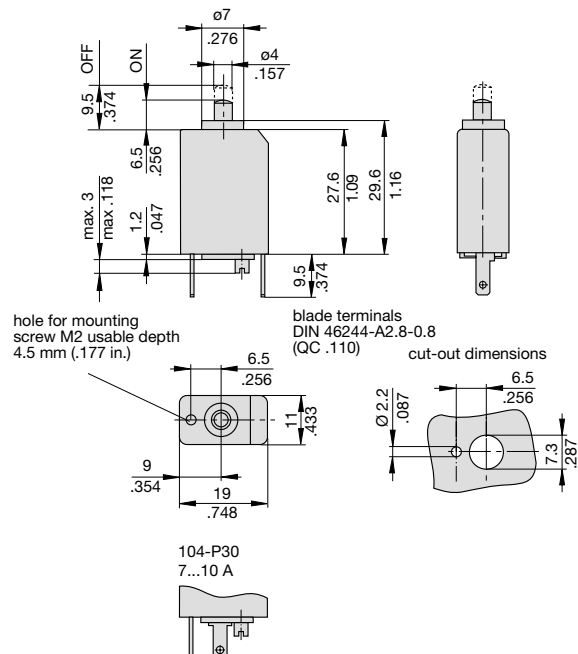


### 104-PR3

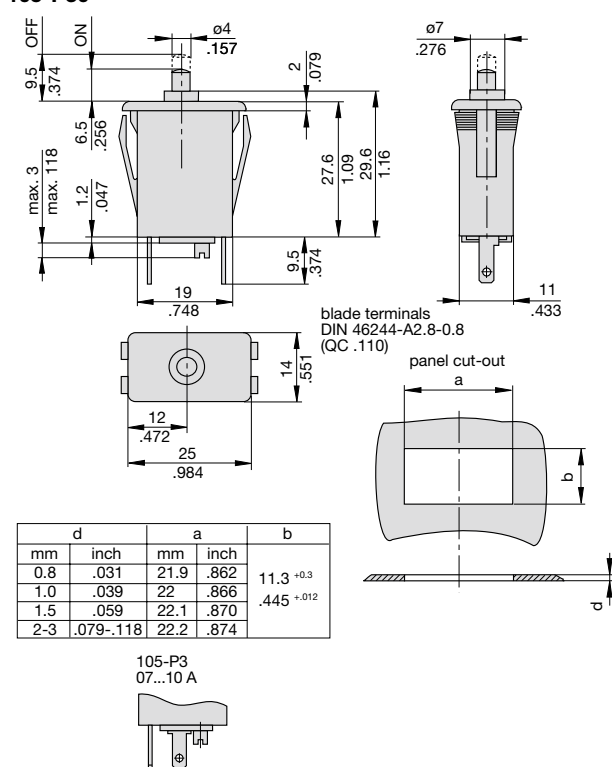
0.05...6 A



### 104-P30



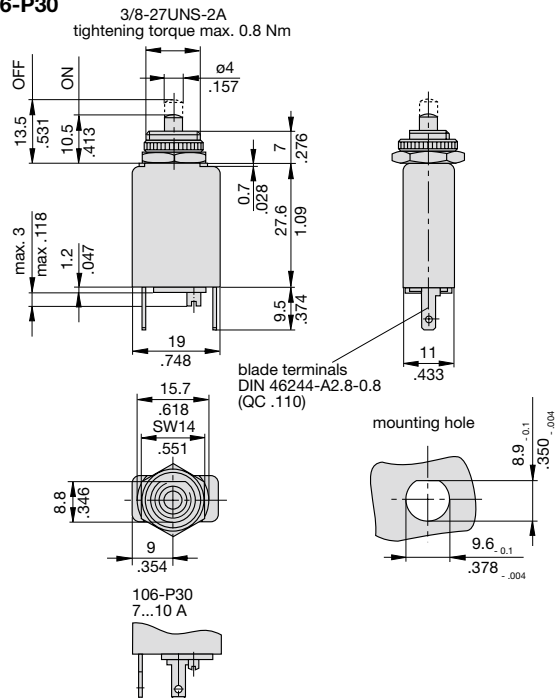
### 105-P30



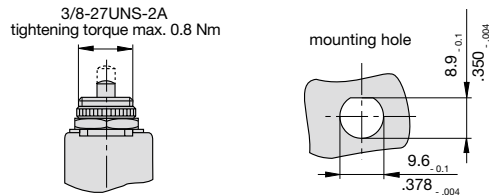
This is a metric design and millimeter dimensions take precedence (mm/inch)

## Dimensions

### 106-P30



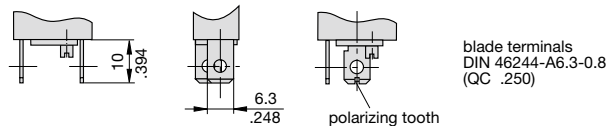
### 106-M2



## Terminal design

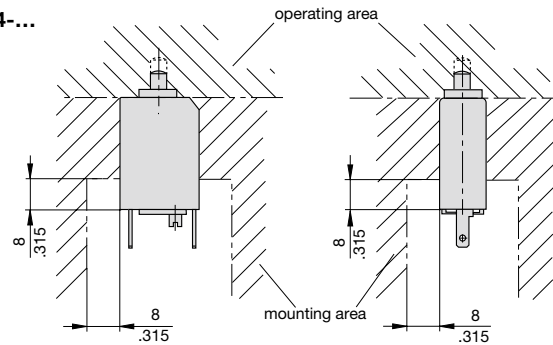
### 104/105/106-P10

0.05...6 A

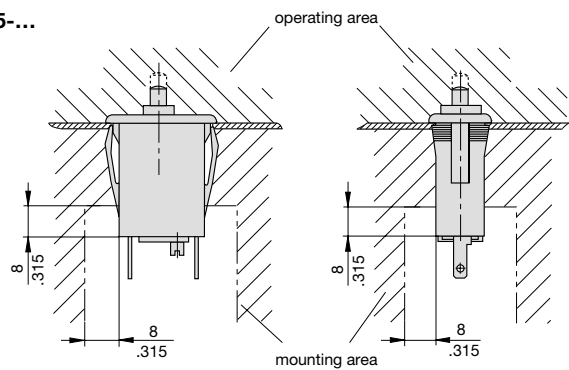


## Installation drawings

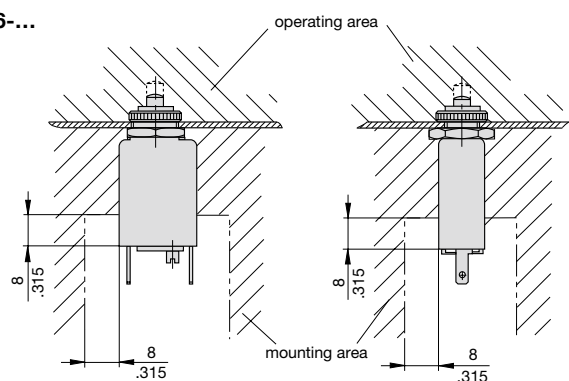
### 104-...



### 105-...

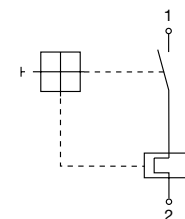


### 106-...

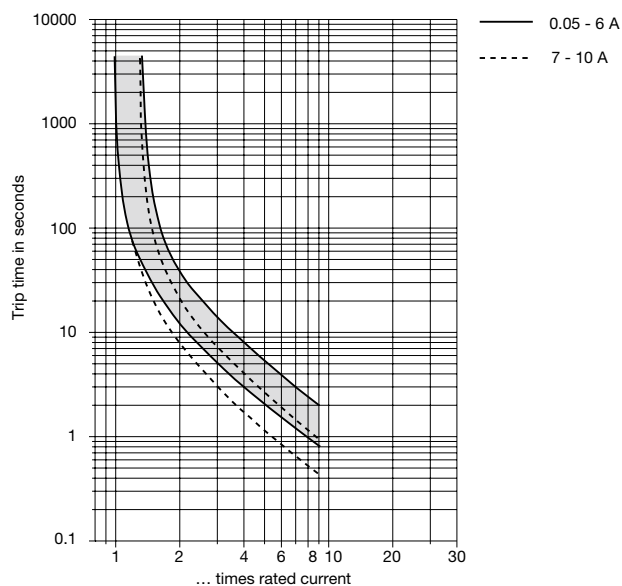


## Internal connection diagrams

### Types 104 105 106



## Typical time/current characteristics at +23 °C/+73.4 °F

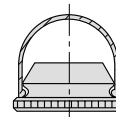


The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section Technical information.

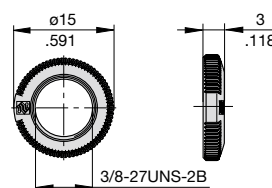
| Ambient temperature °F<br>°C | -4<br>-20 | +14<br>-10 | +32<br>0 | +73.4<br>+23 | +104<br>+40 | +122<br>+50 | +140<br>+60 |
|------------------------------|-----------|------------|----------|--------------|-------------|-------------|-------------|
| Derating factor              | 0.76      | 0.84       | 0.92     | 1            | 1.08        | 1.16        | 1.24        |

## Accessories

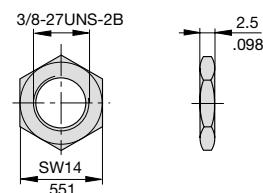
**Water splash cover (transparent)/knurled nut assembly**  
 (type 106-... only)  
**X 201 285 01** (IP64)



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



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



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

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.