

## Description

Single pole thermal circuit breaker in miniaturised design. A positively trip-free snap action mechanism ensures a reliable switching behaviour. They meet the requirements of the circuit breaker standard EN 60934 (IEC 60934): R-Type, TO. For higher current ratings in a similar design please see our 1140 version. The 106 version combined with a C14 appliance inlet is also available as a ready-for-use power entry module (optionally with or without line filter).

## Typical applications

Hand tools, domestic appliances, overcurrent protection of PCB conductor paths, marine vehicles, mobile homes

## Approvals

| Approval authority | Standard     | Rated voltage       | Current rating range              |
|--------------------|--------------|---------------------|-----------------------------------|
| VDE                | EN 60934     | AC 240 V<br>DC 48 V | 0.05 A ... 8 A<br>0.05 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     |

## Compliance



## Preferred types

| Preferred types | Preferred ratings (A) |     |   |     |     |   |   |   |   |   |   |    |
|-----------------|-----------------------|-----|---|-----|-----|---|---|---|---|---|---|----|
|                 | 0.5                   | 0.8 | 1 | 1.2 | 1.5 | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
| 106-P10-        | x                     | x   | x | x   | x   | x | x | x | x | x | x | x  |
| 106-P30-        | x                     | x   | x | x   | x   | x | x | x | x | x | x | x  |



## Technical data

For detailed technical information please see [www.e-t-a.de/ti\\_en](http://www.e-t-a.de/ti_en)

|                                       |                                                                                                       |                                                                                                           |            |
|---------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------|
| Rated voltage                         | AC 240 V, DC 48 V                                                                                     |                                                                                                           |            |
| Current rating range                  | 0.05 ... 10 A                                                                                         |                                                                                                           |            |
| Typical life                          | <b>0.05 ... 5 A</b>                                                                                   | 1,000 cycles at 2 x I <sub>N</sub> , inductive<br>DC 28 V: 3,000 cycles at 2 x I <sub>N</sub> , inductive |            |
|                                       | <b>6 ... 8 A</b>                                                                                      | 500 cycles at 2 x I <sub>N</sub> , inductive                                                              |            |
|                                       | <b>10 A</b>                                                                                           | 50 cycles at 2 x I <sub>N</sub> , inductive                                                               |            |
| Ambient temperature                   | -20 ... 60 °C (T 60)                                                                                  |                                                                                                           |            |
| Insulation coordination (IEC 60664)   | 2.5 kV /2 reinforced insulation at operating area                                                     |                                                                                                           |            |
| Dielectric strength                   | <b>Actuating area</b><br>Test voltage 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)                                                        |            |
| Rupture capacity (UL 1077)            | I <sub>N</sub>                                                                                        | U <sub>N</sub>                                                                                            | S.C.       |
|                                       | 0.05 ... 10 A                                                                                         | AC 250 V                                                                                                  | 2000 A, C1 |
|                                       | 0.05 ... 10 A                                                                                         | DC 48 V                                                                                                   | 200 A, C1  |
| Degree of protection (IEC 60529)      | Operating area IP40<br>IP00 terminal area                                                             |                                                                                                           |            |
| Vibration                             | 10 g (57-500 Hz), ± 0.76 mm (10-57 Hz),<br>Test to IEC 60068-2-6, test Fc<br>10 frequency cycles/axis |                                                                                                           |            |
| Shock resistance                      | 25 g (11 ms)<br>Test to IEC 60068-2-27, test Ea                                                       |                                                                                                           |            |
| Corrosion                             | 96 hours at 5 % salt mist,<br>Test to IEC 60068-2-11, test Ka                                         |                                                                                                           |            |
| Humidity                              | 240 hrs 95 % RH,<br>test acc. to IEC 60068-2-78,<br>Test Cab                                          |                                                                                                           |            |
| Mass                                  | approx. 10 g                                                                                          |                                                                                                           |            |

## Ordering number code

### Type No.

|               |                                                                                       |
|---------------|---------------------------------------------------------------------------------------|
| <b>104</b>    | PCB mounting type (-PR)<br>or mounting type (-P30/-P10)                               |
| <b>105</b>    | Snap-in panel mounting                                                                |
| <b>106</b>    | Threadneck mounting with screw-in hexagonal<br>and plastic knurled nut <sup>(1)</sup> |
| <b>106-M2</b> | Threadneck mounting with large lug and screw-in<br>hexagonal and plastic knurled nut  |

### Terminal design

|            |                                                                     |
|------------|---------------------------------------------------------------------|
| <b>P10</b> | Blade terminal 6.3 x 0.8 mm (IEC 61210)                             |
| <b>P30</b> | Blade terminal 2.8 x 0.8 mm (IEC 61210)                             |
| <b>PR</b>  | PR Soldering pins for horizontal PCB mounting<br>(104 version only) |
| <b>PR3</b> | PR3 Soldering pins for vertical PCB mounting<br>(104 version only)  |

### Current rating range

0.05 ... 10 A

**106 - P30 - 5 A**      Ordering example

<sup>(1)</sup> Use this version for configuration with XR38 power entry module

Please observe our minimum ordering quantities.

## Current ratings and internal resistance values

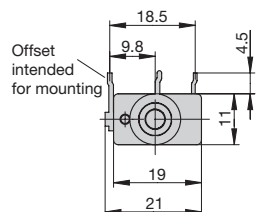
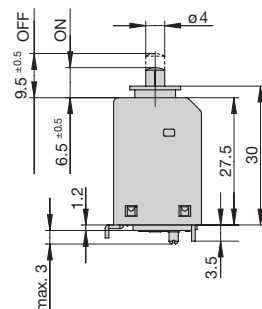
| Current rating<br>(A) | Internal<br>resistance (Ω) | Current rating<br>(A) | Internal<br>resistance (Ω) |
|-----------------------|----------------------------|-----------------------|----------------------------|
| 0.05                  | 285                        | 1.8                   | 0.28                       |
| 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                        |                       |                            |

## Dimensions

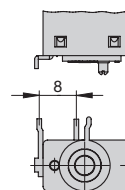
### 104-PR

#### Dimensions

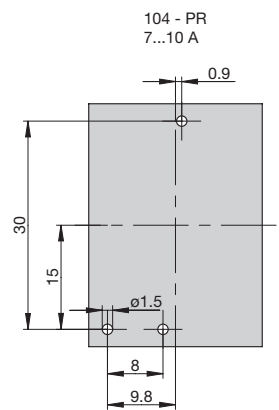
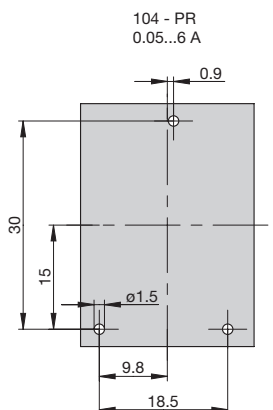
104 - PR  
0.05...6 A



104 - PR  
7...10 A



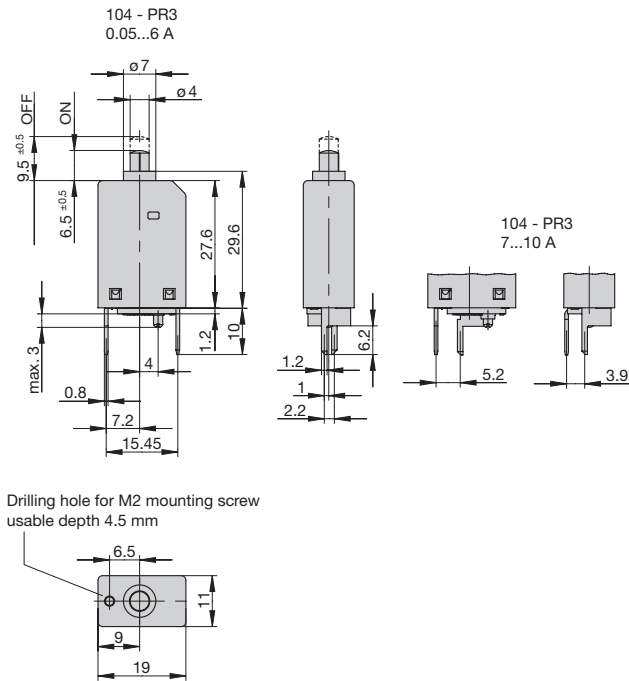
#### PCB drilling hole diagram



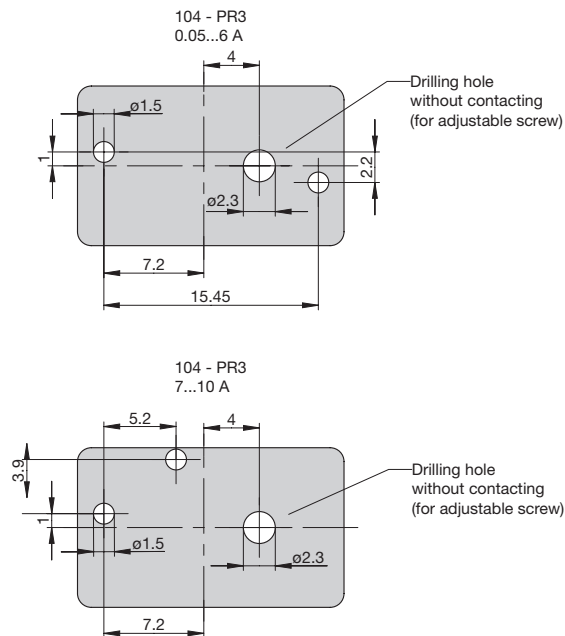
## Dimensions

### 104-PR3

Dimensions

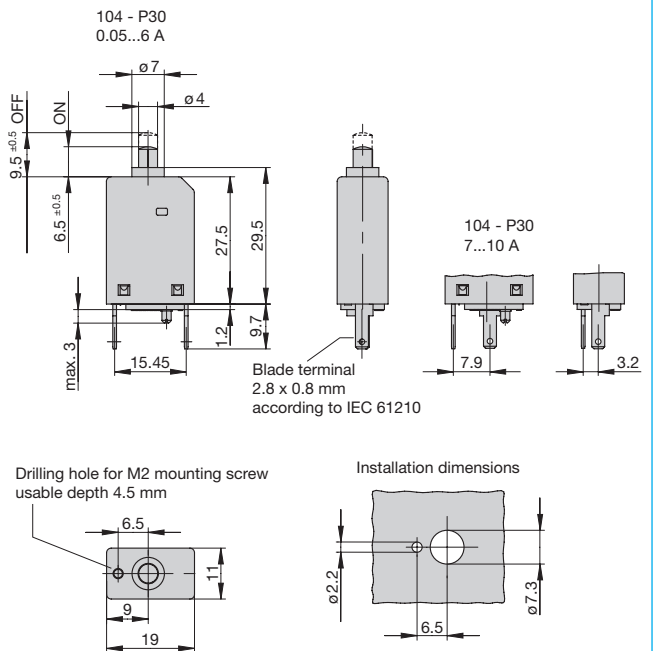


### PCB drilling hole diagram

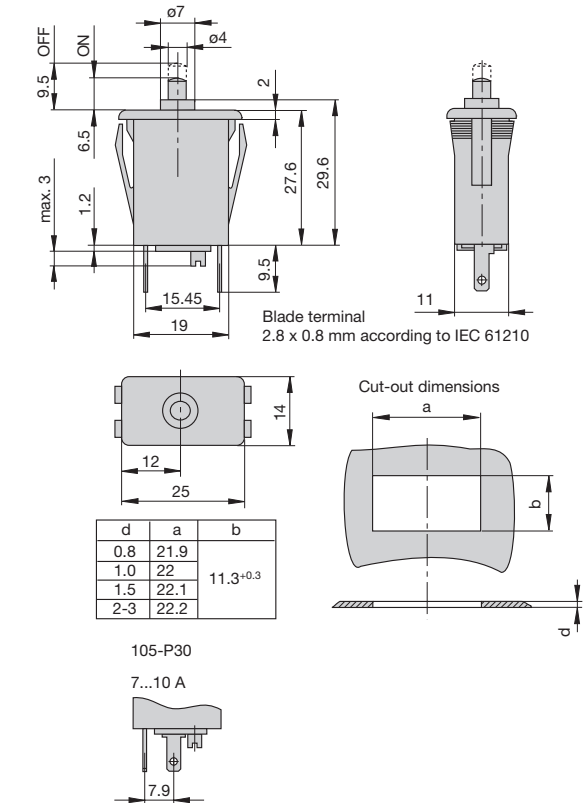


## Dimensions

### 104-P30



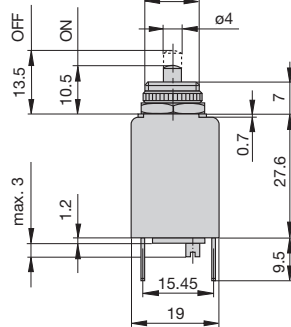
### 105-P30



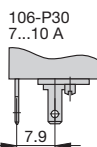
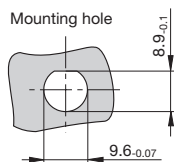
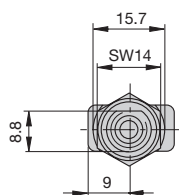
## Dimensions

### 106-P30

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

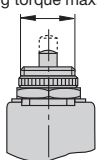


Blade terminals 2.8 x 0.8 mm  
according to IEC 61210

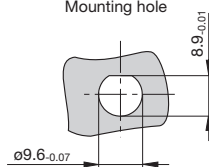


### 106-M2

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

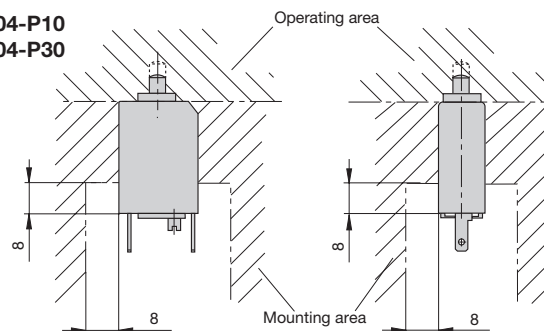


Mounting hole

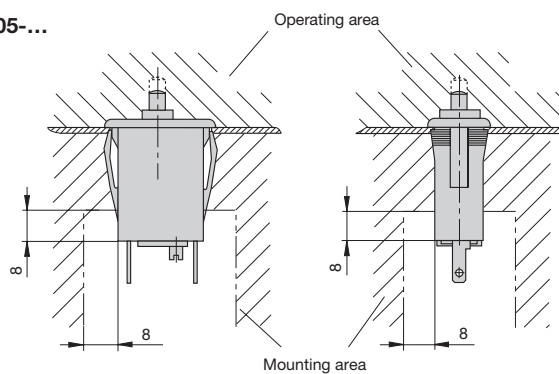


## Installation drawing

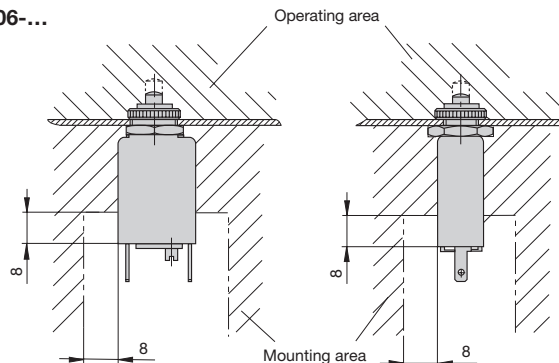
### 104-P10 104-P30



### 105-...



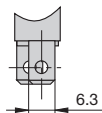
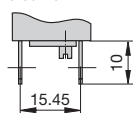
### 106-...



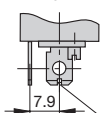
## Terminal types

### 104/105/106-P10

0.05...6 A



7...10 A

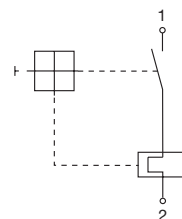


Blade terminal  
6.3 x 0.8 mm  
according to IEC 61210

Polarizing tooth

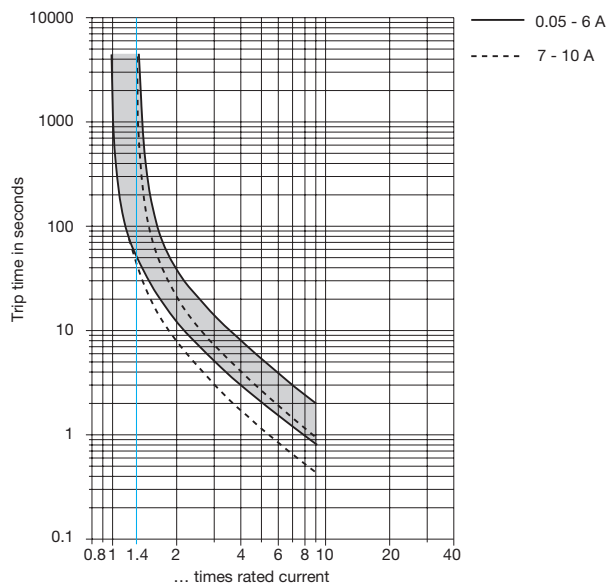
## Schematic diagrams

Types 104  
105  
106



## Time/current characteristics

Ambient temperature 23 °C

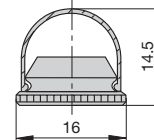


The time/current characteristic depends on the ambient temperature. In order to eliminate nuisance tripping, please multiply the current rating with a temperature factor (see Technical Information chapter)

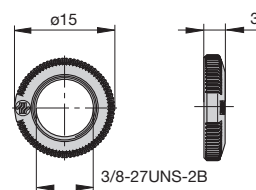
| Ambient temperature [°C] | -20  | -10  | 0    | +23 | +40  | +50  | +60  |
|--------------------------|------|------|------|-----|------|------|------|
| Temperature factor       | 0.76 | 0.84 | 0.92 | 1   | 1.08 | 1.16 | 1.24 |

## Accessories

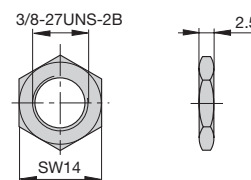
**Water splash cover (transparent)/  
knurled nut assembly (type 106-... only)**  
X 201 285 01 (IP64)



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



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



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