

# ETA® Thermal Overcurrent Circuit Breaker 104/105/106-...

## 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. For higher current ratings see type 1140, pages 43 to 46.

## Typical applications

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

## Accessories

- Y 303 344 01 Clip-on frame to convert type 104 from built-in to snap-in panel mounting.
- X 201 285 01 Water splashcover/knurled nut assembly for type 106.

## Ordering information

Type No.	Description
104	PCB mounting type (-PR), or integral type (-P30/P10)
105	snap-in panel mounting
106	threadneck panel mounting with hex and knurled nut *
106-M1	threadneck mounting for standard fuseholder cutout *
<b>Terminal design</b>	
P10	blade terminals A6.3-0.8
P30	blade terminals A2.8-0.8
PR	solder terminal pins for PCB mounting (type 104 only)
<b>Shunt terminal (optional)</b>	
A3	same as main terminals (up to IN 6 A/3 A max. load)
<b>Auxiliary contacts (optional)</b>	
Si51	N/C potential free (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.

\* mounting hardware bulk shipped

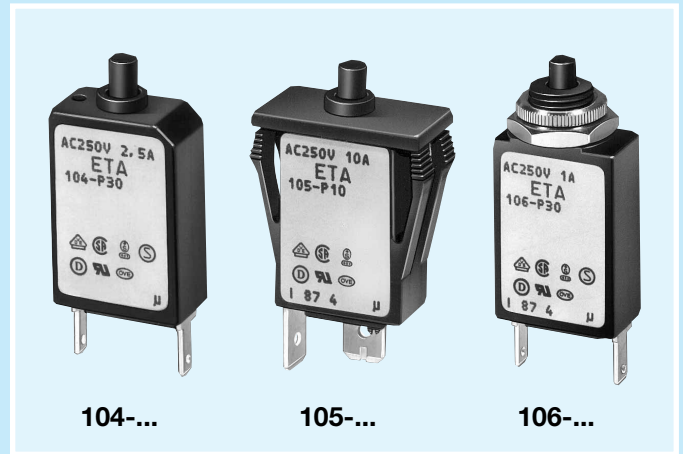
## Standard current ratings and typical internal resistance values

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		

## Approvals

Authority	Voltage ratings	Current ratings
VDE, Demko,	AC 250 V, DC 28 V	0.05...10 A
SEV, ÖVE	AC 250 V, DC 28 V	0.05...10 A
CSA, UL	AC 250 V, DC 48 V	0.05...10 A
Semko	AC 250 V, DC 48 V	0.1...10 A
Nemko	AC 250 V	0.05...10 A
Fimko	AC 250 V	0.1...10 A

Circuit breakers with -Si51 not approved

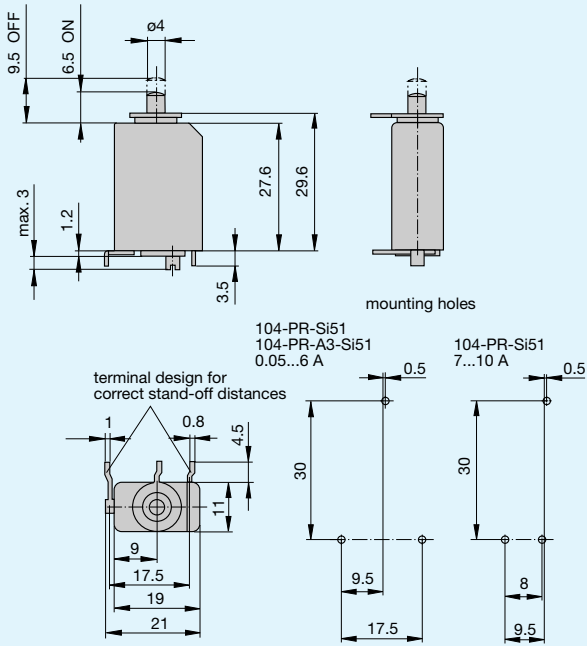


## Technical data

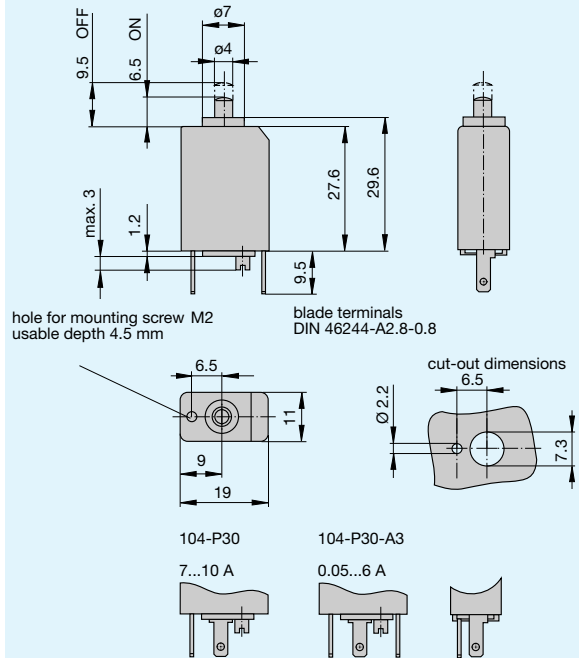
Max. voltage rating	AC 250 V; DC 28 V (DC 48 V UL/CSA)		
Current ratings	0.05...10 A		
Auxiliary circuit	0.5 A, AC 250 V, DC 28 V, non-inductive		
Protection class (IEC 730-1)	I (II when mounted to the installation drawing)		
Typical life/contact rating	0.05... 3 A: 5000 operations at 2 x I <sub>N</sub> 3.5 ...10 A: 1000 operations at 10 A		
Temperature range	0...55 °C		
Creepage resistance	PTI 125 to IEC 112		
Insulation co-ordination (IEC 664 and 664 A) operating area	Rated impulse withstand voltage	Pollution degree	
	2.5 kV	2	
Dielectric strength (IEC 664 and 664A) operating area	Test voltage		
	AC 4000 V (double insulation)		
Insulation resistance	>100 MΩ (DC 500 V)		
Interrupting capacity (VDE 0660, Part 101, P-2)	0.05 ... 2 A	6 x I <sub>N</sub>	
	2.5 ...10 A	5 x I <sub>N</sub>	
Interrupting capacity (UL 1077/EN 60934 PC 1)	I <sub>N</sub>	U <sub>N</sub>	
	0.05...4.5 A	AC 250 V	200 A
	5 A	AC 250 V	1000 A
	6...10 A	AC 250 V	2000 A
	0.05...10 A	DC 48 V	200 A
Environmental protection (IEC 529/DIN 40050)	operating area	IP 40	
	terminal area	IP 00	
Vibration	10 g (57-500 Hz), ±0.76 mm (10-57 Hz), to IEC 68-2-6, test Fc, 10 frequency cycles/axis		
Shock	25 g ( 11 ms) to IEC 68-2-27, test Ea		
Corrosion	96 hours at 5 % saltspray, to IEC 68-2-11, test Ka		
Humidity	240 hours at 95 % RH, to IEC 68-2-3, test Ca		
Mass	approx. 10 g		

## Dimensions

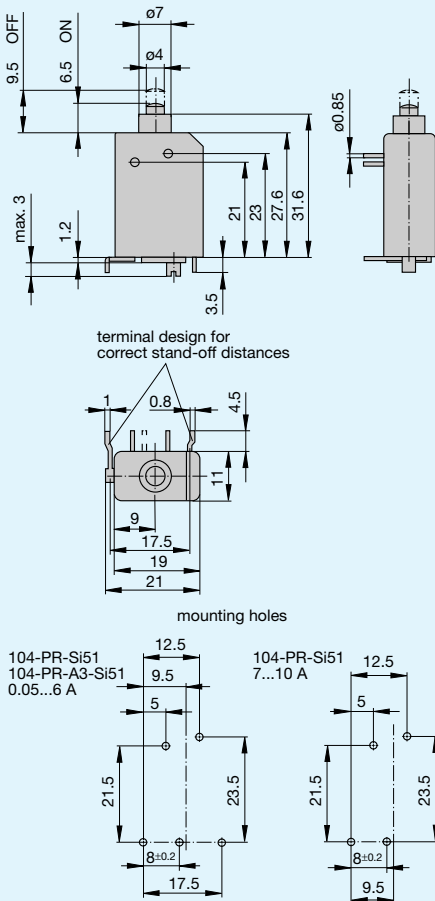
### 104-PR



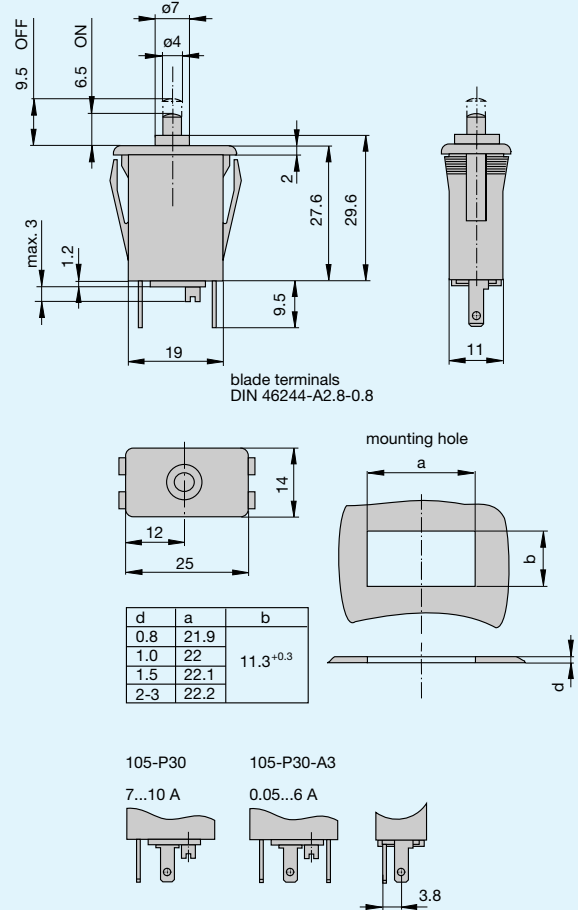
### 104-P30



### 104-PR-Si51

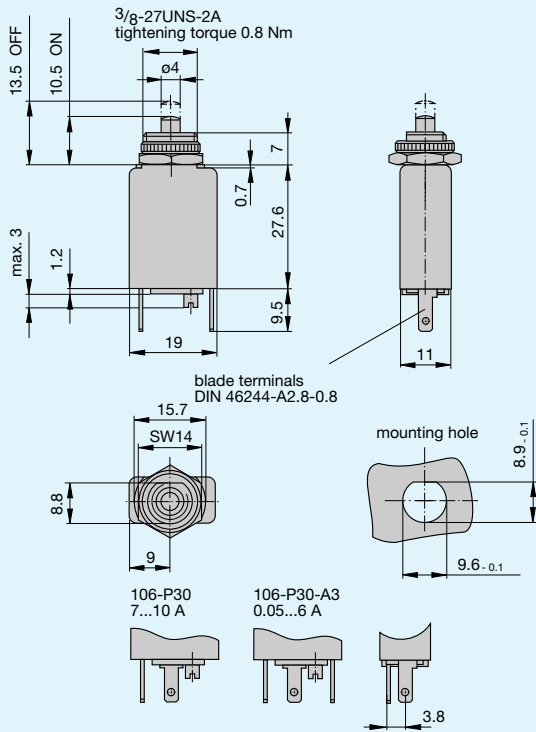


### 105-P30

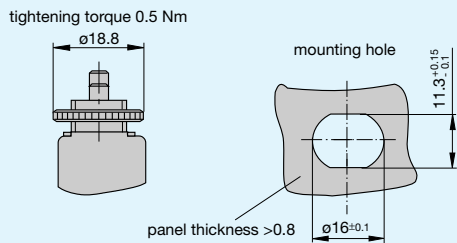


## Dimensions

### 106-P30

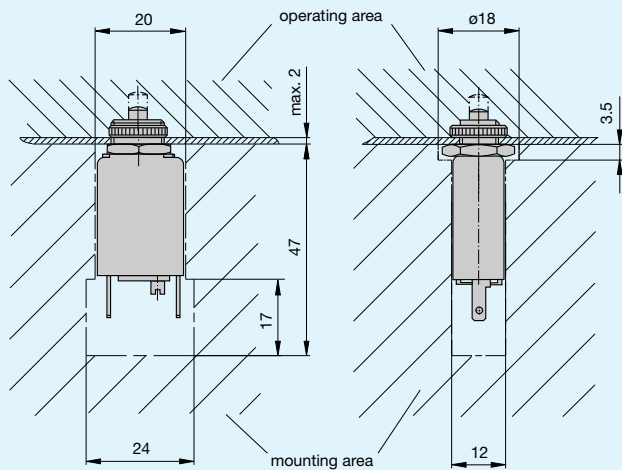


### 106-M1



## Installation drawing for type 106

for protection class II (IEC 730-1)

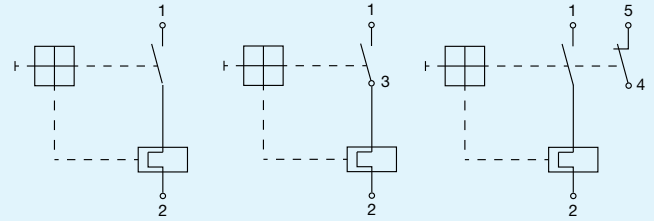


## Internal wiring diagrams

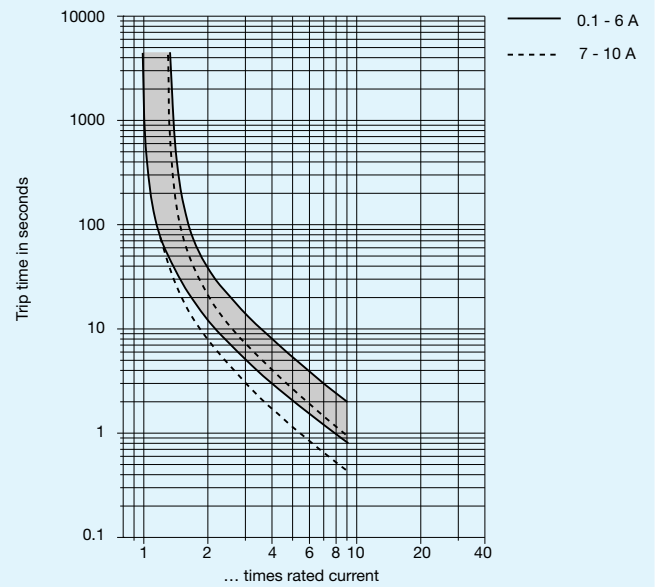
Types 104  
105  
106

Types 104-A3  
105-A3  
106-A3

Types 104-A3-Si51



## Typical time/current characteristics at 23°C



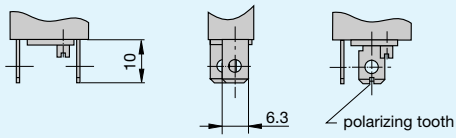
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below.

Ambient temperature °C	-10	0	+10	+20	+30	+40	+50	+60
Multiplication factor	0.84	0.92	1	1	1	1.08	1.16	1.23

## Terminal design

### 104/105/106-P10

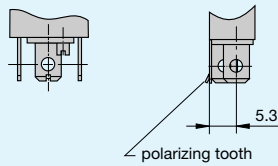
0.05...6 A



7...10 A

### 104/105/106-P10-A3

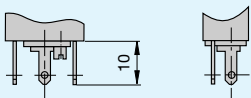
0.05...6 A



blade terminals  
DIN 46244-A6.3-0.8

### 104/105/106-P30-A3

0.05...6 A



## Accessories

Water splash cover (transparent)/knurled nut assembly  
(type 106-... only)  
X 201 285 01  
Environmental protection IP 64

