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[E-T-A](#)
[106-M2-P10-0.1A](#)

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E-T-A Thermal Overcurrent Circuit Breakers 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. 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 metal hex and plastic knurled nut (hardware bulk shipped with 5 pcs plus)
106-M2	threadneck panel mounting 3/8-27UNS with collar, metal hex nut and plastic knurled nut (hardware bulk shipped with 5 pcs plus)

Terminal design

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

Current ratings

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	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

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 (UL: AC 250 V; DC 48 V)		
Current ratings	0.05...10 A		
Typical life	0.05...5 A	1,000 operations at 2 x I _N , inductive	
	DC 28 V:	3,000 operations at 2 x I _N , inductive	
	6...8 A	500 operations at 2 x I _N , inductive	
	10 A	50 operations at 2 x I _N , inductive	
Ambient temperature	-20...+60 °C (-4...+140 °F) T 60		
Insulation co-ordination (IEC 60664 and 60664 A)	rated impulse withstand voltage	pollution degree	
	2.5 kV	2	
	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 _{cn}	0.05...8 A	6 x I _N AC	
	0.05...10 A	6 x I _N DC	
Interrupting capacity (UL 1077)	I _N	U _N	
	0.05...10 A	AC 250 V	2,000 A
	0.05...10 A	DC 48 V	200 A
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00		
Vibration	10 g (57-500 Hz) ± 0.76 mm (10-57 Hz), to IEC 60068-2-6, test Fc, 10 frequency cycles/axis		
Shock	25 g (11 ms) to IEC 60068-2-27, test Ea		
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka		
Humidity	240 hours at 95 % RH, to IEC 60068-2-78, test Cab		
Mass	approx. 10 g		

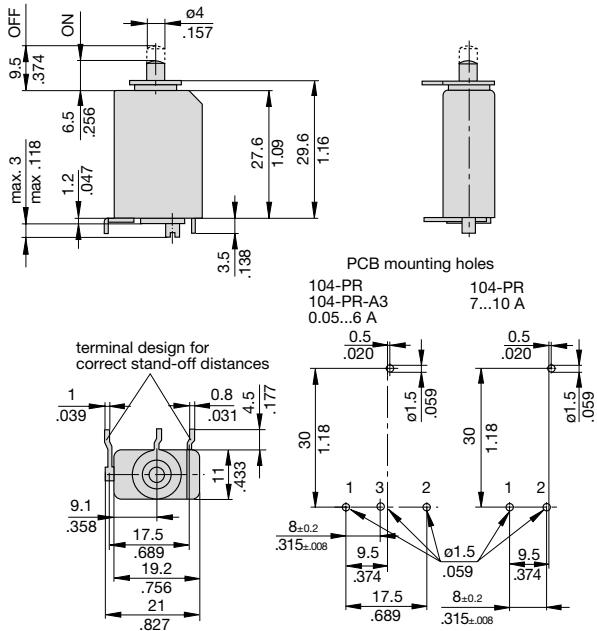
Approvals

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

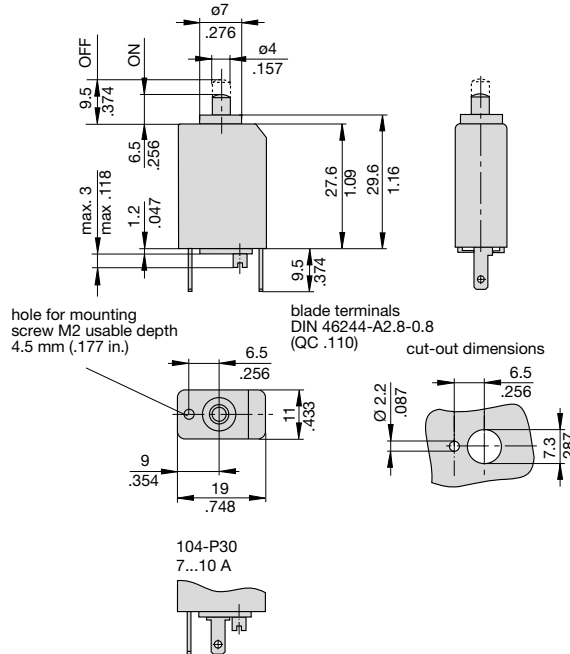
E-T-A Thermal Overcurrent Circuit Breakers 104/105/106-...

Dimensions

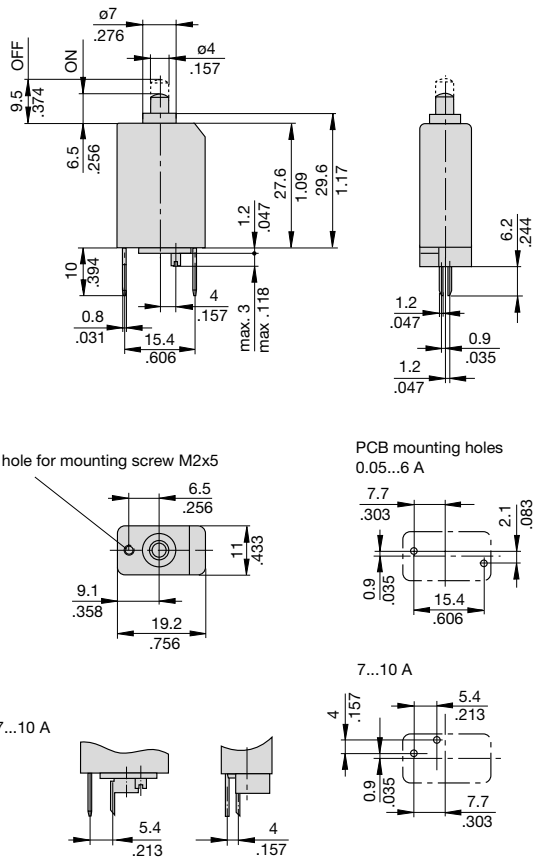
104-PR



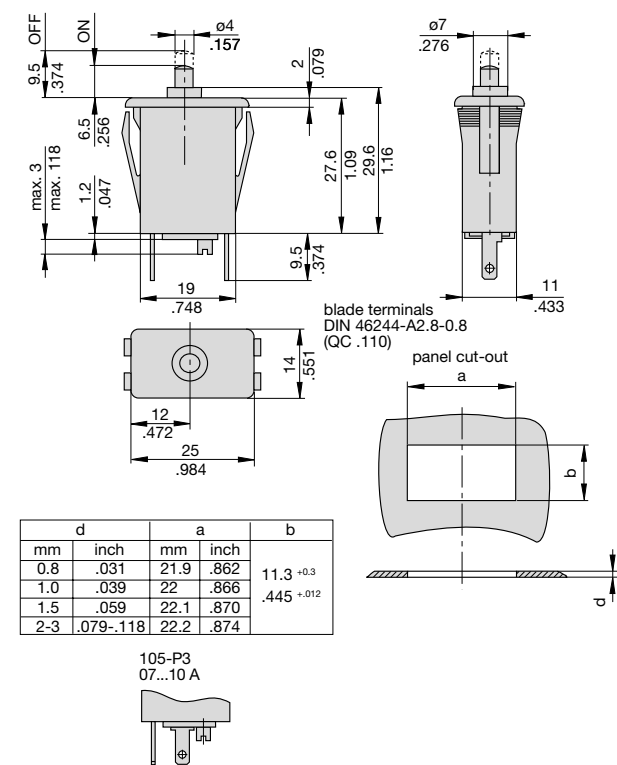
104-P30



104-PR3 0.05...6 A



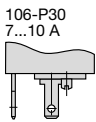
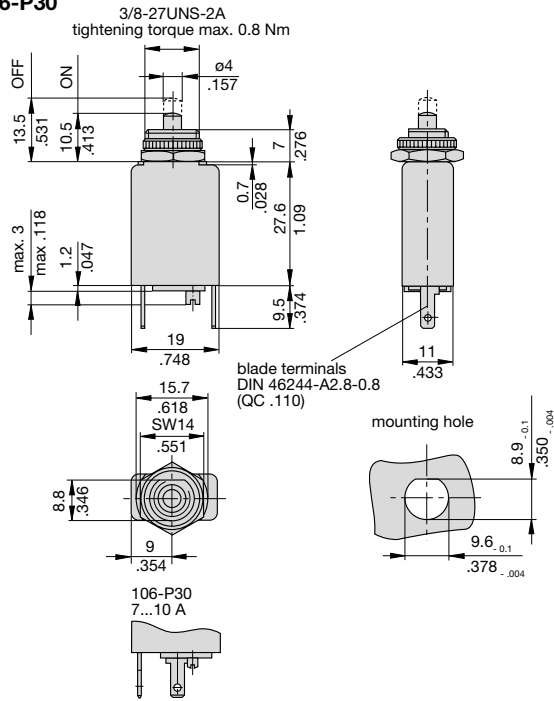
105-P30



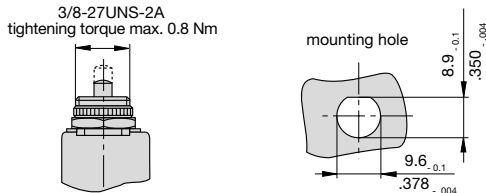
E-T-A Thermal Overcurrent Circuit Breakers 104/105/106-...

Dimensions

106-P30



106-M2

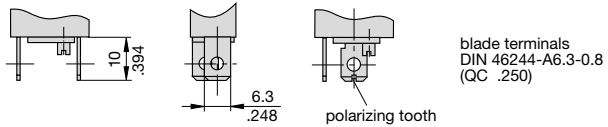


Terminal design

104/105/106-P10

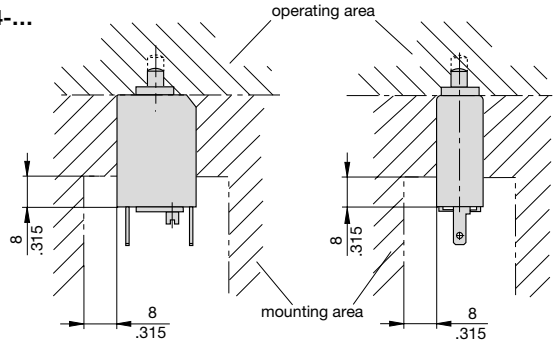
0.05...6 A

7...10 A

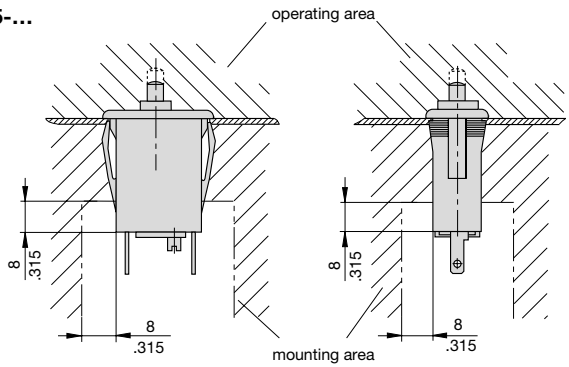


Installation drawings

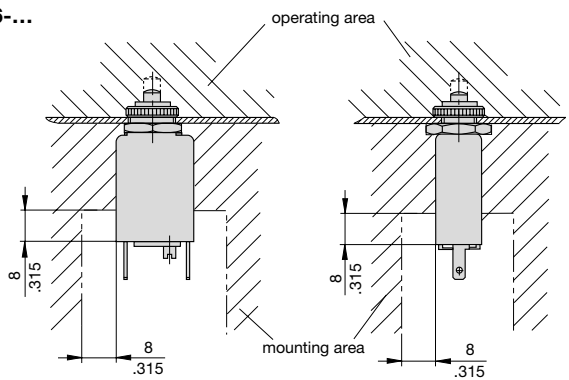
104-...



105-...

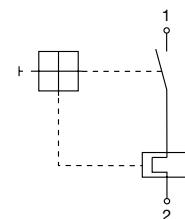


106-...



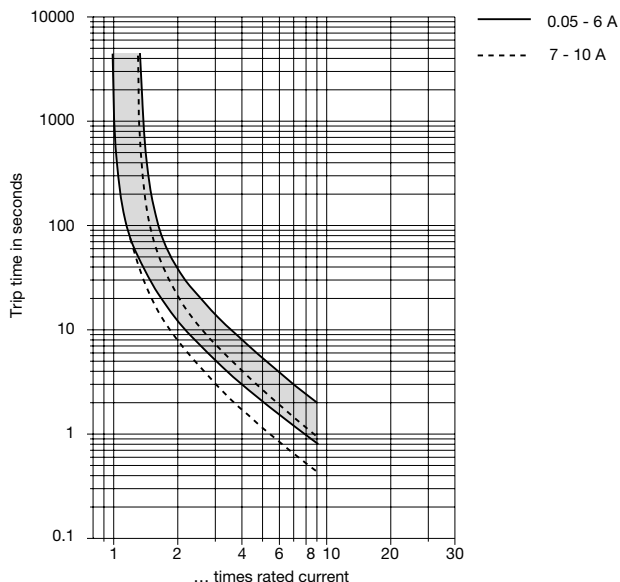
Internal connection diagrams

**Types 104
105
106**



E-T-A Thermal Overcurrent Circuit Breakers 104/105/106-...

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

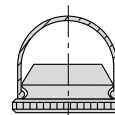


The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section Technical information.

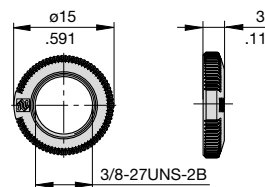
Ambient temperature °F	-4	+14	+32	+73.4	+104	+122	+140
°C	-20	-10	0	+23	+40	+50	+60
Derating factor	0.76	0.84	0.92	1	1.08	1.16	1.24

Accessories

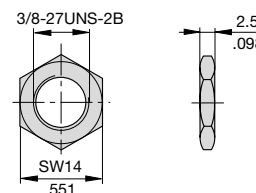
Water splash cover (transparent)/knurled nut assembly
 (type 106-... only)
X 201 285 01 (IP64)



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 ($\frac{mm}{inch}$)

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.

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