

## Description

Miniaturised single pole thermal-magnetic circuit breakers with trip-free mechanism and toggle actuation (S-type TM CBE to EN 60934). Two designs provide the option of either printed circuit board or threadneck panel mounting. A separate shunt tap terminal and auxiliary contacts are available. Fast acting, medium or long delay characteristics can be specified for both models.

**Suitable for use in distribution rails – see section Power Distribution Systems.**

Complies with CBE standard EN 60934 (IEC 60935).

## Typical applications

Control equipment, communications systems, instrumentation.  
Suitable for mounting on Euro cards.

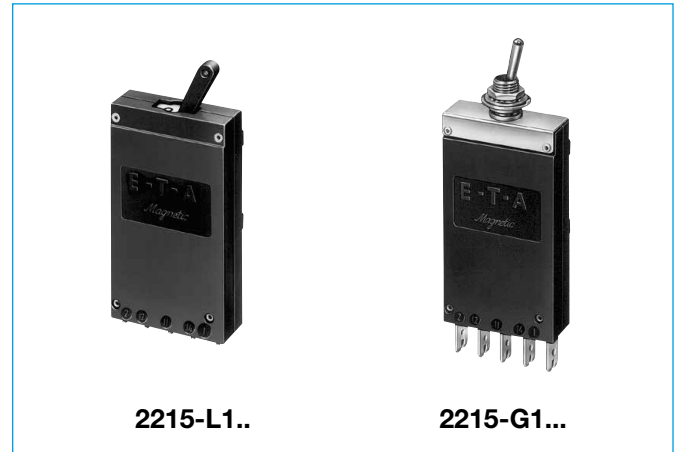
## Ordering information 2215-G1

<b>Type No.</b>	
2215	single pole thermal-magnetic circuit breaker
<b>Mounting</b>	
G1	threadneck panel mounting
<b>Number of poles</b>	
1	1-pole protected
<b>Mounting hardware</b>	
1	2 hex nuts 1/4"-40 UNS-2A, serrated washer, location pin (-G1 only)
<b>Terminal design (main contacts)</b>	
P1	blade terminals 6.3-0.8, without shunt terminal
<b>Characteristic curve</b>	
F1	fast acting: 1.01-1.4xI <sub>N</sub> ; magn. 2-4xI <sub>N</sub> DC (DC only)
M1	standard delay: therm. 1.01-1.4xI <sub>N</sub> ; magn. 4.5-10.5xI <sub>N</sub> DC; magn. 3.5-8xI <sub>N</sub> AC
T1	delayed: therm. 1.01-1.4xI <sub>N</sub> ; DC magn. 8-17xI <sub>N</sub> DC, 6-13xI <sub>N</sub> AC
<b>Auxiliary contacts</b>	
S0	without auxiliary contact
S11	with auxiliary contact (change over) blade terminals 6.3x0.8 (QC .250)
<b>Current ratings</b>	
0.05...10 A	
2215 - G1 1 1 - P1 F1 - S11 - 0.5 A ordering example	

## Ordering information 2215-L1

<b>Type No.</b>	
2215	single pole thermal-magnetic circuit breaker
<b>Mounting</b>	
L1	PCB mounting
<b>Number of poles</b>	
1	1-pole protected
<b>Mounting hardware</b>	
0	without accessories
<b>Terminal design (main contacts)</b>	
L1	solder pins, without shunt terminal
<b>Characteristic curve</b>	
F1	fast acting: 1.01-1.4xI <sub>N</sub> ; magn. 2-4xI <sub>N</sub> DC (DC only)
M1	standard delay: therm. 1.01-1.4xI <sub>N</sub> ; magn. 4.5-10.5xI <sub>N</sub> DC; magn. 3.5-8xI <sub>N</sub> AC
<b>Auxiliary contacts - terminal design</b>	
S0	without auxiliary contact
S12	with auxiliary contact (change over) solder pins
<b>Current ratings</b>	
0.05...10 A	
2215 - L1 1 0 - L1 F1 - S12 - 0.5 A ordering example	

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



## Technical data

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

Voltage rating	AC 250 V (50/60 Hz); DC 50 V (UL: AC 250 V; DC 75 V)	
Current rating range	0.05...10 A (higher current ratings to special order)	
Auxiliary circuit	1 A, AC 250 V / DC 28 V	
Typical life	10,000 operations at 1 x I <sub>N</sub>	
Ambient temperature	-30...+60 °C (-22...+140 °F)	
Insulation co-ordination (IEC 60664 and 60664 A)	rated impulse withstand voltage 2.5 kV	pollution degree 2
	reinforced insulation in operating area	
Dielectric strength IEC 60664 and 60664A)	test voltage operating area AC 3,000 V	main/aux. circuit AC 1,500 V
Insulation resistance	> 100 MΩ (DC 500 V)	
Interrupting capacity I <sub>cn</sub>	300 A	
Interrupting capacity (UL 1077)	I <sub>N</sub>	U <sub>N</sub>
	0.05 A	AC 250 V 200 A
	0.1...6 A	AC 250 V 1,000 A
	8...10 A	AC 250 V 2,000 A
	0.05...10 A	DC 50 V 1,000 A
Degree of protection (IEC 60529/DIN 40050)	operating area IP30 terminal area IP00	
Vibration	curve F1: 6 g (57-500 Hz), ± 0.46 mm (10-57 Hz) curves M1, T1: 8 g (57-500 Hz), ± 0.61 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis	
Shock	curves F1, M1, T1: 30 g (11 ms), directions 1, 2, 3, 4, 5 curve F1: 10 g (11 ms), direction 6 curves M1, T1: 15 g (11 ms), direction 6 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. 25 g	

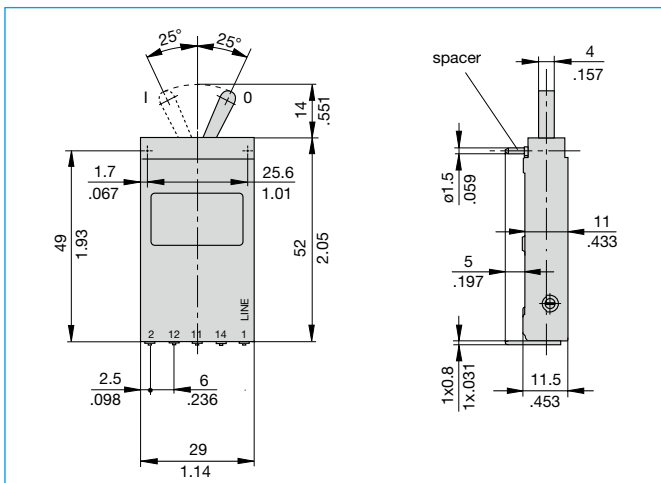
## Approvals

Authority	Standard	Rated voltage	Current ratings
UL	UL 1077	AC 250 V DC 75 V	0.05 A...10 A 0.05 A...10 A (20 A)
CSA	C22.2 No. 235	AC 250 V DC 75 V	0.05 A...10 A 0.05 A...10 A (20 A)

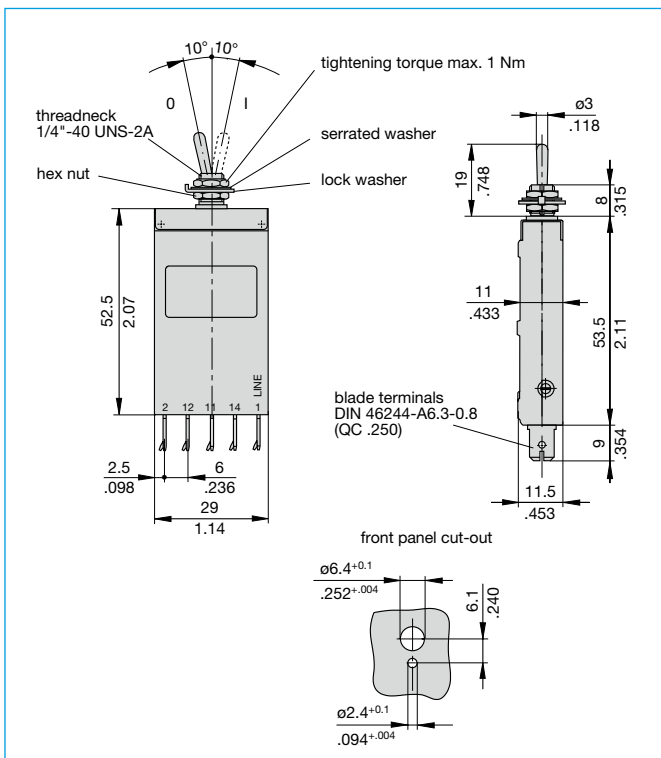
## Standard current ratings and typical internal resistance values

Current ratings (A)	Internal resistance ( $\Omega$ )	Current ratings (A)	Internal resistance ( $\Omega$ )
0.05	440	1.5	0.55
0.1	108	2	0.34
0.2	29.9	2.5	0.21
0.3	14.2	3	0.15
0.4	7.9	4	0.084
0.5	5.0	5	0.057
0.6	3.5	6	0.043
0.8	1.8	8	$\leq 0.02$
1	1.2	10	$\leq 0.02$

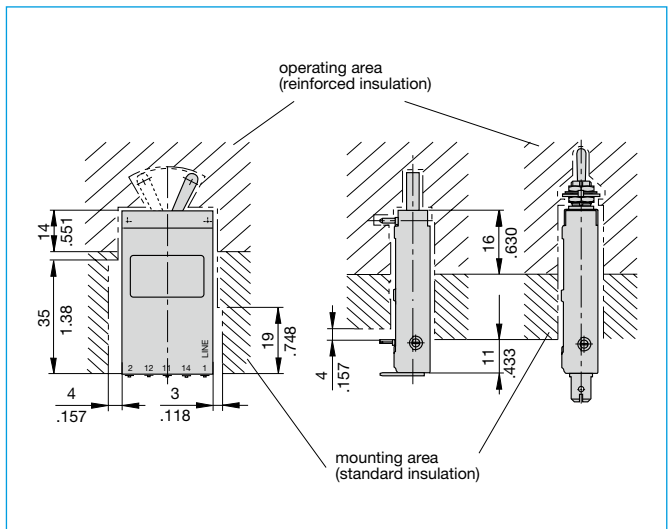
## Dimensions 2215-L1..



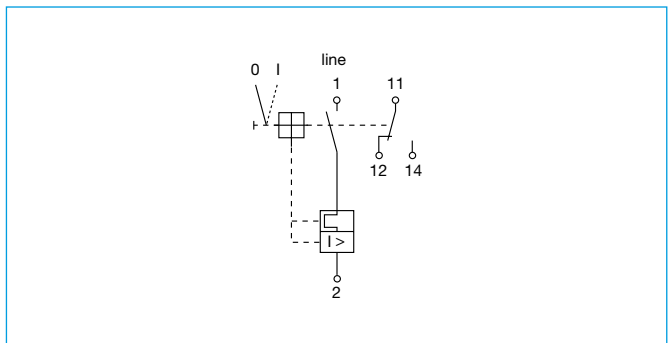
## Dimensions 2215-G1..



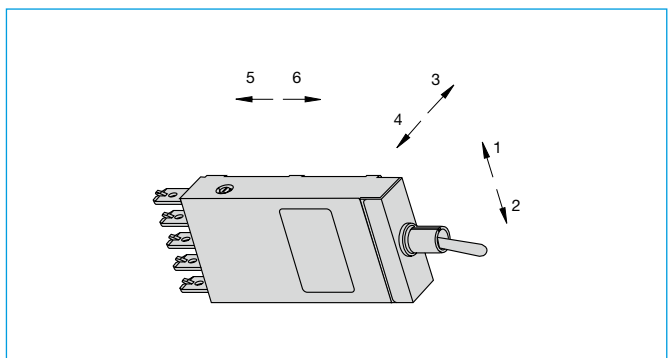
## Installation drawing



## Internal connection diagram



## Shock directions

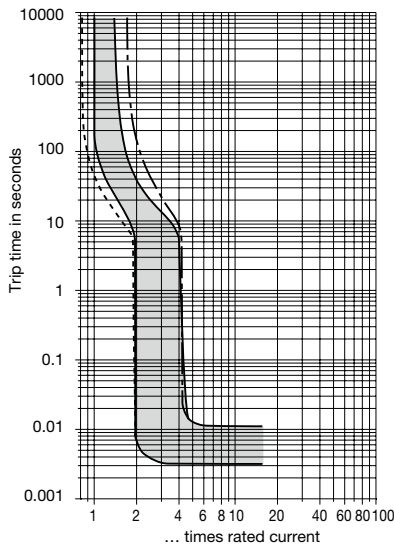


This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

## Typical time/current characteristics

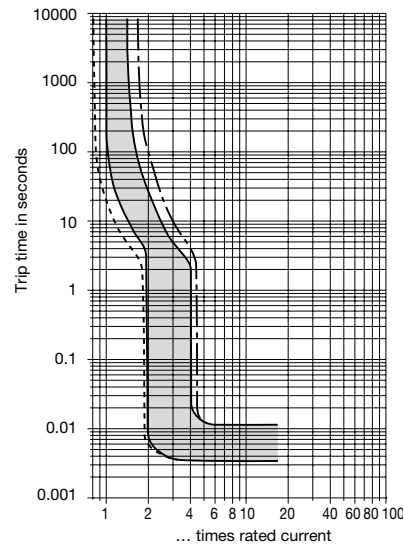
**-F1 0.05...6 A**

**DC only**



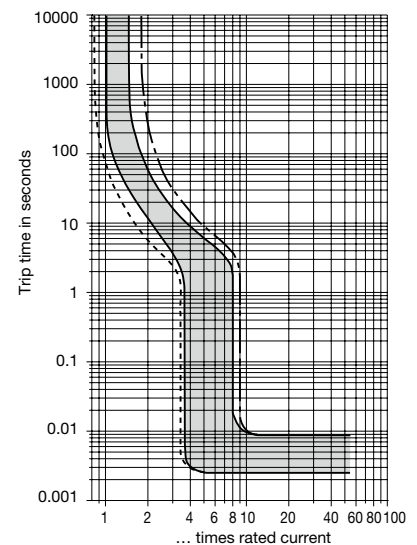
**-F1 8...10 A**

**DC only**



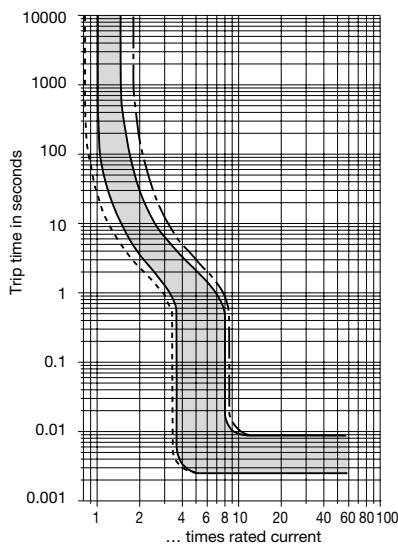
**-M1 0.05...6 A**

**AC/DC <sup>1)</sup>**



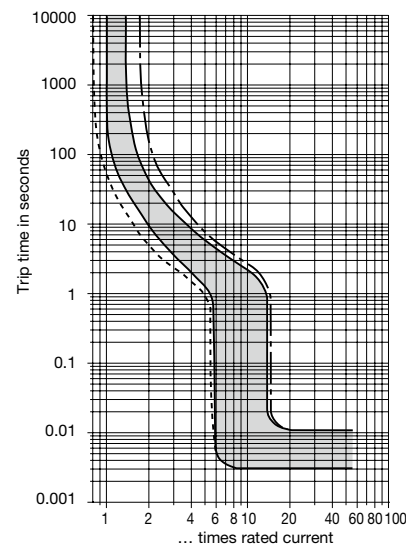
**-M1 8...10 A**

**AC/DC <sup>1)</sup>**



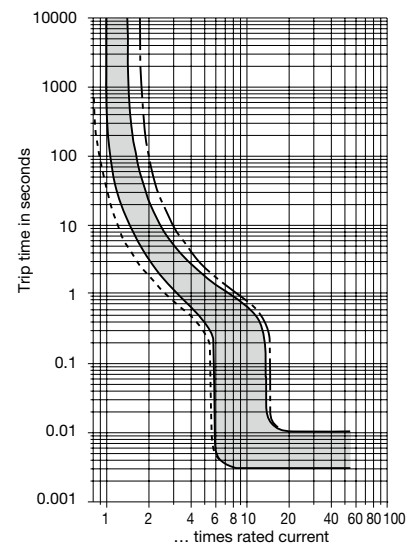
**-T1 0.05...6 A**

**AC/DC <sup>1)</sup>**



**-T1 8...10 A**

**AC/DC <sup>1)</sup>**



--- +60 °C / +140 °F    ——— +23 °C / +73.4 °F    - · - · -30 °C / -22 °F

<sup>1)</sup>Magnetic tripping currents are increased by 30 % on DC supplies (curve M1 and T1).

**0.05...10 A:**

Ambient temp. °F / °C	-22 / -30	-4 / -20	+14 / -10	+32 / 0	+73.4 / +23	+86 / +30	+104 / +40	+122 / +50	+140 / +60
Derating factor	0.76	0.79	0.83	0.88	1	1.04	1.11	1.19	1.29

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.

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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