

E-T-A Thermal Overcurrent Circuit Breaker 1410-F1...

Description

Miniaturised single pole rocker switch/thermal circuit breaker combining ON/OFF switching and extremely fast overload performance in a single component (S-type TO CBE to EN 60934/IEC 60934). Under overload conditions an internal neon (filament bulb for low voltages) illuminates to give a clear signal of the tripped status of the mechanism and thereby the cause of power interruption, suffix -B. Alternatively the illumination can be conventionally wired to indicate the ON status of the device, suffix -E. Returning the rocker switch through the OFF position and back ON will reset the mechanism and restore the supply. Largely temperature-insensitive.

Typical applications

Motors, transformers, solenoids, PCBs, hand-held machines, appliances, instrumentation.

Ordering information

Type No.	
1410	single pole rocker switch/circuit breaker
Mounting	
F	snap-in panel mounting
Size of frame	
1	to fit mounting cut-out 28 x 12.7 mm (1.1 x .5 in)
Number of poles	
1	single pole, thermally protected
Accessories	
0	without accessories
Terminal design	
P1	blade terminals 2.8-0.8 (QC .110/2x.110)silver-plated
Characteristic curve	
F1	fast acting
Actuator style	
W	rocker, rounded profile
Actuator colour	
14	red translucent
19	green translucent
Actuator markings	
Q	I and 0
Trip/ON illumination (optional)	
B	illuminated when tripped
E	illuminated when ON
..	without illumination
Illumination voltage range (optional)	
2	20-28V marked 24V 35mA
3	90-140V marked 115V <1mA
4	185-275V marked 230V <1mA
Current ratings	
0.63...10 A	

1410 - F 1 1 0 - P1 F1 - W 14 Q E 3 - 2 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.

Packaging quantities: 100, 250, 300, 400, 500 or 1,000 pcs

Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω)	Current rating (A)	Internal resistance (Ω)
0.63	1.8	3.15	< 0.12
0.8	1.7	4	< 0.1
1	1.3	5	< 0.1
1.5	< 1	6.3	< 0.1
1.8	< 1	8	< 0.1
2	< 1	10	< 0.1
2.5	< 0.15		



1410-F1..

Technical data

Voltage rating	AC 240 V; DC 28 V (AC 250 V; DC 48) up to 10A UL/CSA DC 60 V up to 5A	
Current rating range	0.63...10 A	
Typical life circuit 1-3	30,000 operations for $I_N \leq 6.3$ A AC/DC 10,000 operations for $I_N > 6.3$ A AC 3,000 operations for $I_N > 6.3$ A DC	
protection circuit 1-2	300 break operations at $2 \times I_N$	
Ambient temperature	-40...+70 °C (-40...+158 °F)	
Insulation co-ordination (IEC 60664 and 60664A)	Rated impulse withstand voltage 2.5 kV	Pollution degree 2 reinforced insulation in operating area
Dielectric strength (IEC 60664 and 60664A) operating area	Test voltage AC 3,000 V	
Insulation resistance	> 100 MΩ (DC 500 V)	
Interrupting capacity I_{cn}	0.63...2 A 2.5 ...8 A 10 A 3.15...10 A	$12 \times I_N$ $8 \times I_N$, AC max. 50 A $6 \times I_N$ $10 \times I_N$, DC
Interrupting capacity (UL 1077)	0.63...10 A 0.63... 8 A 0.63... 5 A	2,000 A AC 250 V 200 A DC 48 V 200 A DC 60 V
Degree of protection (IEC 60529/DIN 40050)	operating area IP 30 terminal area IP 00	
Vibration	8 g (57-500 Hz) ± 0.61 mm (10-57 Hz), to IEC 60068-2-6, Test Fc, 10 frequency cycles/axis	
Shock	20 g (11 ms) to IEC 60068-2-27, test Ea	
Corrosion	48 hours at 5 % salt mist, to IEC 60068-2-11, test Ka	
Humidity	96 hours at 95 % RH to IEC 60068-2-3, test Ca	
Mass	approx. 9 g	

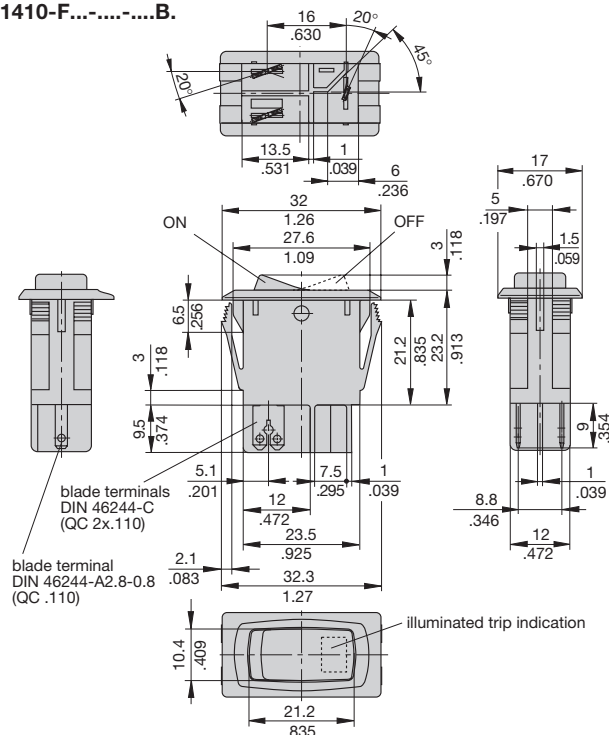
Approvals

Authority	Voltage ratings	Current ratings
CSA, UL	AC 250 V	0.63...10 A
	DC 48 V	0.63... 8 A
UL	DC 60 V	0.63... 5 A
	AC 240 V	0.63... 4 A
SEV (EN 60934)	DC 28 V	0.63... 8 A

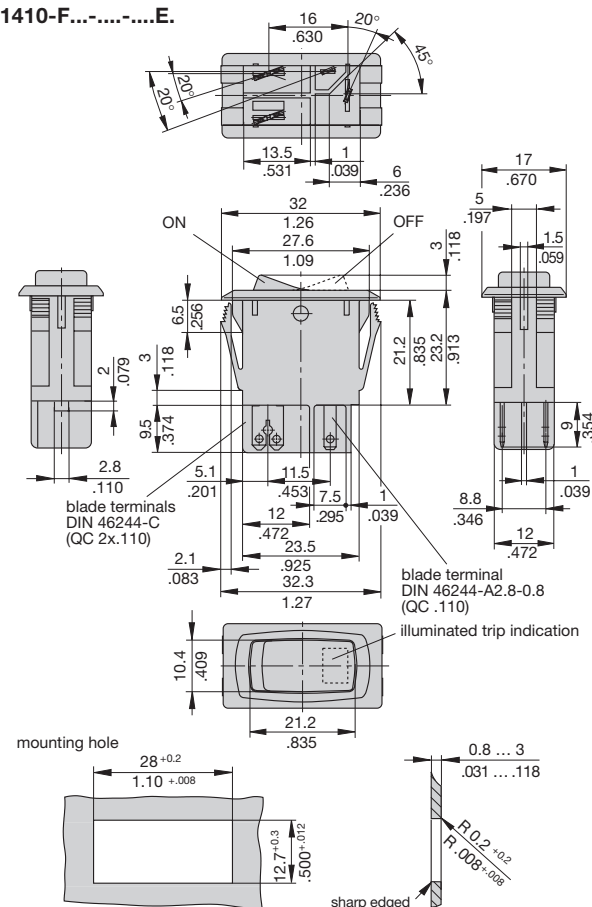
Thermal Overcurrent Circuit Breaker 1410-F1...

Dimensions

1410-F...-...-...B.

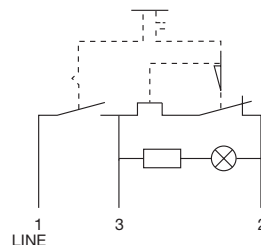


1410-F...-...-...E.



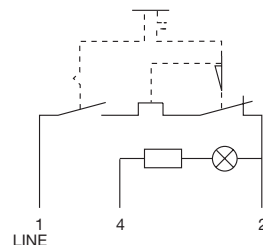
Internal connection diagram

1410-F...-...-...B.

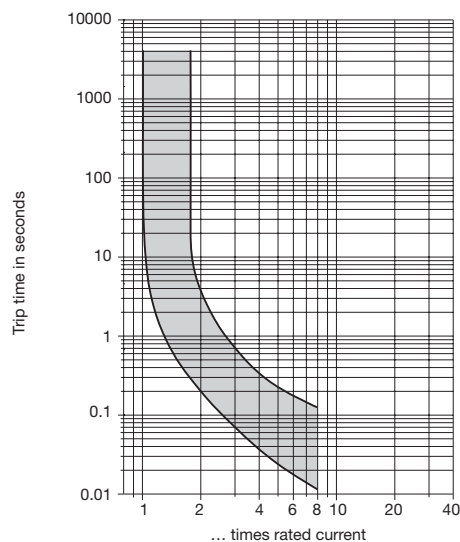


lamp current
24 V = 35 mA
115 V < 1 mA
230 V < 1 mA

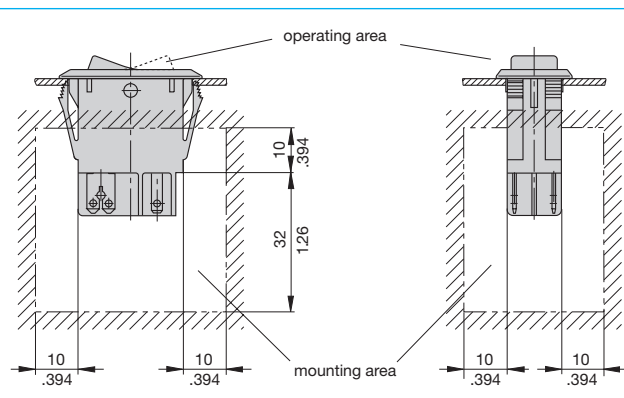
1410-F...-...-...E.



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



Installation drawing



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.

E-T-A® Thermal Overcurrent Circuit Breaker 1410-L/-G...

Description

Single pole press-to-reset thermal circuit breaker with extremely fast overload switching performance (R-type TO CBE to EN 60934). Single hole threadneck, PCB or integral mounting with a choice of designs. Miniaturized construction minimizes PCB real estate required. Type 1410-L2 and 1410-G1 versions feature changeover contacts suitable for providing status output signals. Largely temperature-insensitive.

Typical applications

Motors, transformers, solenoids, PCBs, hand-held machines, appliances, instrumentation.

Ordering information

Type No.	
1410	single pole circuit breaker
Configuration	
L	PCB mounting
G	threadneck panel mounting
Mounting	
1	threadneck 3/8-27 UNS-2A (1410-G)
1	PCB 16.3x4.6 grid (1410-L) .642 x .181
2	PCB 10.15x7.6 grid (1410-L) .400 x .299
Number of poles	
1	1 pole, thermally protected
Hardware	
0	without
1	with hex nut and knurled nut (1410-G only) bulk shipped
Terminal design	
L1	solder pins 1.8x0.8 silver-plated (-L1 only)
L2	solder pins 1x0.8 silver-plated (-L2 and -G1 only)
P2	blade terminals A2.8-0.8 (QC .110) silver-plated (-G1 only)
Characteristic curve	
F1	fast acting
Actuator	
S	manual re-set
Actuator colour	
01	black (for -G1.. and -L1..)
02	white (for -L2..)
Current ratings	
0.63 ... 10 A	

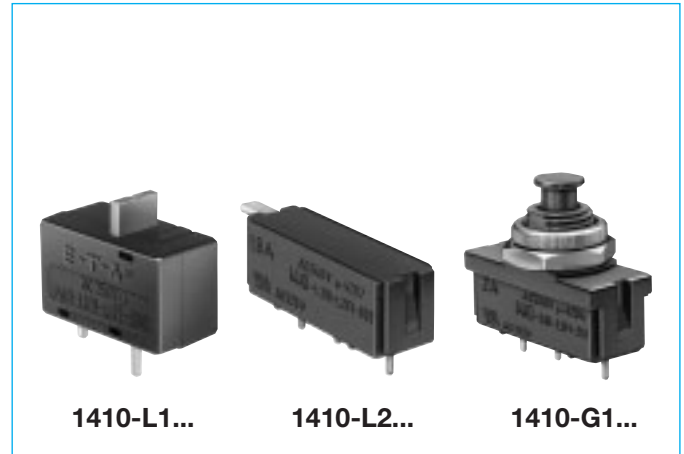
1410- L 1 1 0 - L1 F1 - S 01 - 0.8 A ordering example

Packaging quantities: 100, 250, 300, 400, 500 or 1,000 pcs

Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω)	Current rating (A)	Internal resistance (Ω)
0.63	1.8	3.15	< 0.12
0.8	1.7	4	< 0.1
1	1.3	4.5	< 0.1
1.25	< 1	5	< 0.1
1.5	< 1	6.3	< 0.1
1.8	< 1	8	< 0.1
2	< 1	10	< 0.1
2.5	< 0.15		

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.



Technical data

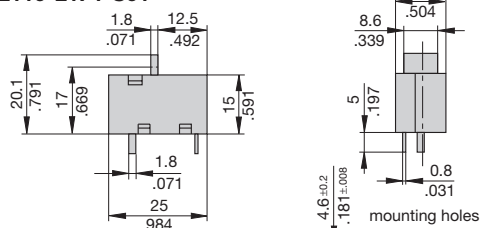
Voltage rating	AC 240 V; DC 28 V (AC 250 V; DC 50 V UL/CSA)	
Current rating range 1-2	0.63...10 A	
Auxiliary circuit 1-3	0.2 x I _N max. 1 A, AC 250 V style -L2 and -G1 only	
Typical life	300 operations at 2 x I _N (-L2...) 500 operations at 2 x I _N (-L1../-G1..)	
Ambient temperature	-20...+100 °C (-4...+212 °F)	
Insulation co-ordination (IEC 60664 and 60664A)	Rated impulse withstand voltage 2.5 kV	Pollution degree 2 reinforced insulation in operating area
Dielectric strength (IEC 60664 and 60664A) operating area	Test voltage AC 1,500 V	
Insulation resistance	> 100 MΩ (DC 500 V)	
Interrupting capacity I _{cn} (o-o-o)	0.63...2 A 2.5 ...8 A 10 A 3.15...10 A	12 x I _N 8 x I _N , AC max. 50 A 6 x I _N , AC 10 x I _N , DC
Interrupting capacity (UL 1077)	0.63...10 A 0.63...10 A	2,000 A AC 250 V 200 A DC 50 V
Degree of protection (IEC 60529/DIN 40050)	operating area IP 40 terminal area IP 00	
Vibration	8 g (57-500 Hz) ±0.61 mm (10-57 Hz), to IEC 60068-2-6, Test Fc, 10 frequency cycles/axis	
Shock	20 g (11 ms) to IEC 60068-2-27, test Ea	
Corrosion	48 hours at 5 % salt mist, to IEC 60068-2-11, test Ka	
Humidity	96 hours at 95 % RH to IEC 60068-2-3, test Ca	
Mass	approx. 5 g	

Approvals

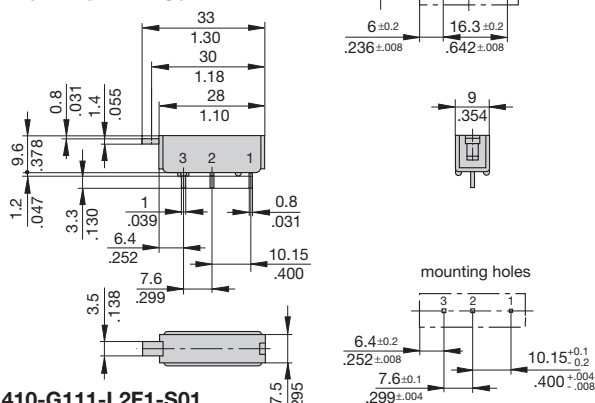
Authority	Voltage rating	Current ratings
VDE	AC 240 V	0.63...10 A
	DC 50 V	0.63...2.5 A
	DC 28 V	2.5 ...10 A
UL, CSA	AC 250 V; DC 50 V	0.63...10 A

Dimensions

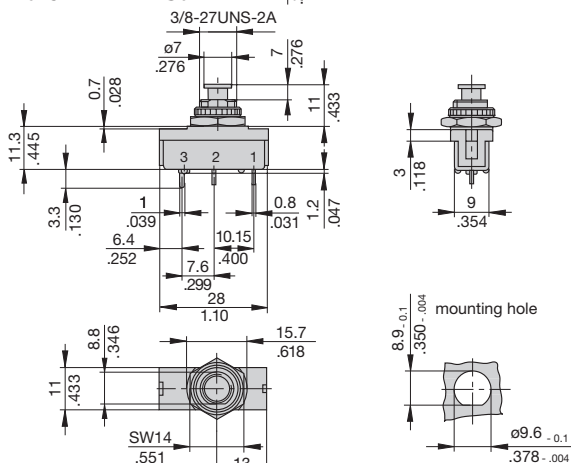
1410-L110-L1F1-S01



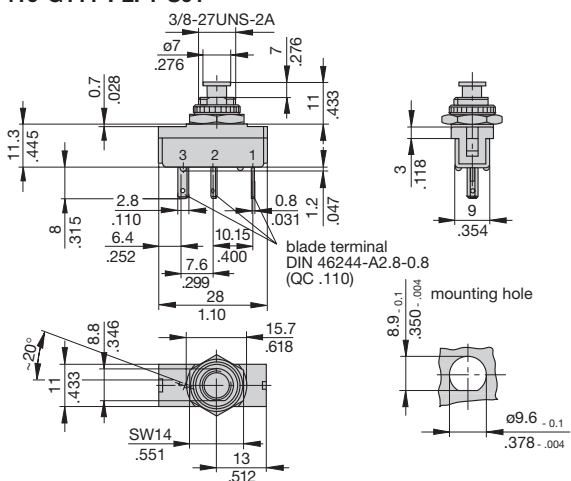
1410-L210-L2F1-S02



1410-G111-L2F1-S01

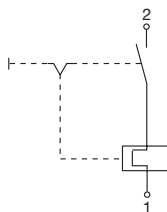


1410-G111-P2F1-S01

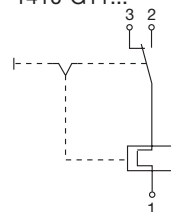


Internal connection diagrams

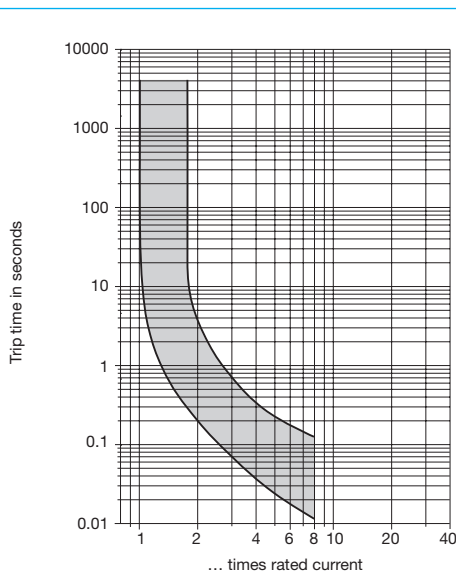
1410-L11...



1410-L21... 1410-G11...

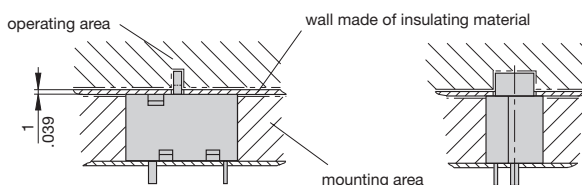


Typical time/current characteristics at +23°C/+73.4°F

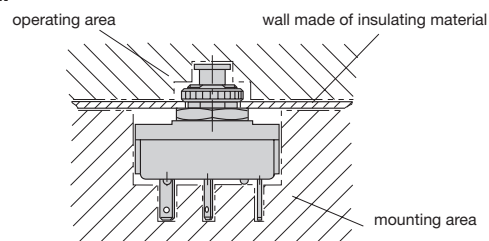


Installation drawings

1410-L11...



1410-G...



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