

Product Bulletin

TH11 and TH21

Self-hold Thermal Cut-outs

Texas Instruments has developed the electrical self-hold temperature cut-out in order to offer a non-self resetting device, suitable for high current applications, thus fulfilling the growing need for higher safety.

Design and operating principles

The TH11 and TH21 consists of two nickel-plated supports, held together with ceramic pins. One support holds the high-performance Klaxon™ bimetal disc, which, in combination with the sophisticated contact system, guarantees the superior cycling performance. One ceramic pin has a layer of resistive material, functioning as a small heater when a voltage is supplied. A wide temperature range, standard 5K tolerance, different bimetal resistivity and various optional terminal configurations make the TH11 and TH21 suitable for a wide range of applications. Whereas the TH11 operates at 230 Vac. The TH21 is designed for 120 Vac applications. Because of their identical dimensions, the TH11 and TH21 can be easily exchanged with the auto reset thermal protector TH10.

The operating principle of the TH series is both simple and effective. A current flows through the resistive Klaxon™ bimetal disc. When a fault condition occurs, the increased ambient temperature causes the bimetal disc to snap open the contacts. The resistive layer spots the voltage over the open contacts and a current flows through the resistor, generating sufficient heat to keep the contacts open. When the power is switched off, the device cools down to a safe temperature and the contacts will close.

Applications

The TH11 and TH21 are temperature resistive cut-outs for such applications as:

- Fan heaters
- Convector heaters
- Hair dryers

and various other applications that require a non-self resetting protector like transformers, cable reels etc. can also be equipped with a TH11 device.

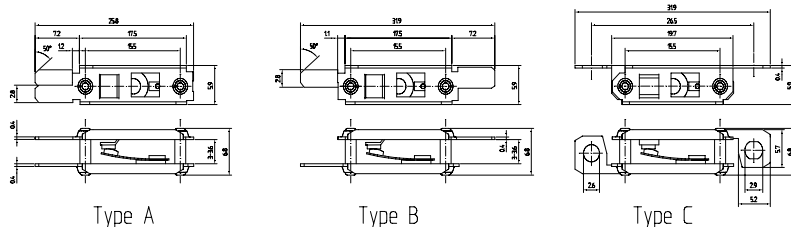


Key Benefits

- Flexible mounting:
Three terminal configurations available
- Robust design:
The bimetal disc is protected by the metal support
- Full automated live:
Provides stable setting values
- Low price:
The particular design provides high competitiveness



Dimensions (mm)



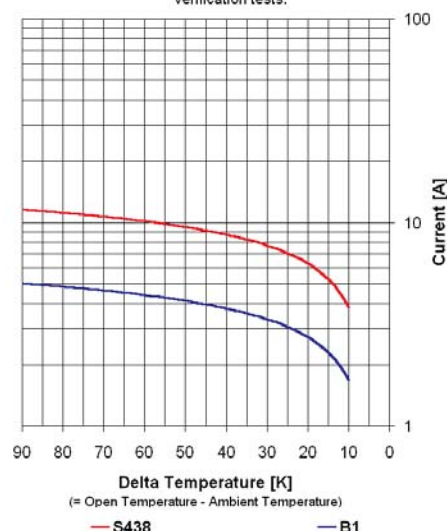
Type A

Type B

Type C

Ultimate Trip Current vs. Ambient Temperature (non-circulating air)

Approx. to be used for selecting samples for verification tests.



(= Open Temperature - Ambient Temperature)

— S438 — B1

Coding System

Function		Terminal Configuration		Disc and contact support material		Standard opening temperature		
11	220V selfhold	Code	Terminals	Code	Material	Operating Temp.	Low resistivity bimetal disc (F30)	High resistivity bimetal disc (B1)
21	110V selfhold	A	Terminals on same end	A	Steel	60°C	031	035
		B	Terminals on opposite end			65°C	041	045
		C	Terminals on opposite end (with holes)			70°C	051	055
						75°C	061	065
						80°C	071	075
						85°C	081	085
						90°C	091	095
						95°C	101	105
						100°C	111	115
						105°C	121	125
						110°C	131	135
						115°C	141	145
						120°C	151	155
						125°C	161	165
						130°C	171	175
						135°C	181 (*)	
						140°C	191 (*)	
						145°C	201 (*)	
						150°C	211 (*)	

(*): TH11 only

Specifications

Standard operating temperature range	from 60°C - 150°C TH11 from 60°C - 130°C TH21
Max. Ambient temperature	200°C
Tolerance on open temperature	± 5K
Selfhold function in still-air	> -20°C TH11 > -35°C TH21

Declarations

Declarations to EN60730-2-9	
Purpose of the control.....	Voltage maintained Thermal cut-out
Construction.....	Incorporated, non-electronic
Degree of protection.....	IP00
Terminals for ext. conductors.....	For internal conductors only
Method of (dis) connection of terminals.....	Riveting, soldering, spotwelding, spring loaded contacting
Temperature limits of the switchhead.....	200°C
PTI of insulation materials.....	PTI 250
Method of mounting.....	By various means in conjunction with (holes in) terminals, such that adequate creepage and clearance distances are maintained between live parts and accessible metal parts
Operating time.....	For continuous operation
Type of action.....	Type 2C
Reset characteristic.....	Voltage maintained off-position thru heat from the heaterfilm on one ceramic pin Device resets byh interrupting the power supply
Extent of sensing element.....	Whole control
Control pollution degree.....	Normal

Certifications

Agency	File number	Rating
ENEC	2014531.14	16(2)A250 / 1.000
UL	E 54813	13(2)A250 / 30.000
CSA	LR31809-61	13(2)A250 / 10.000

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