MICROTHERM
sentronic

T

10

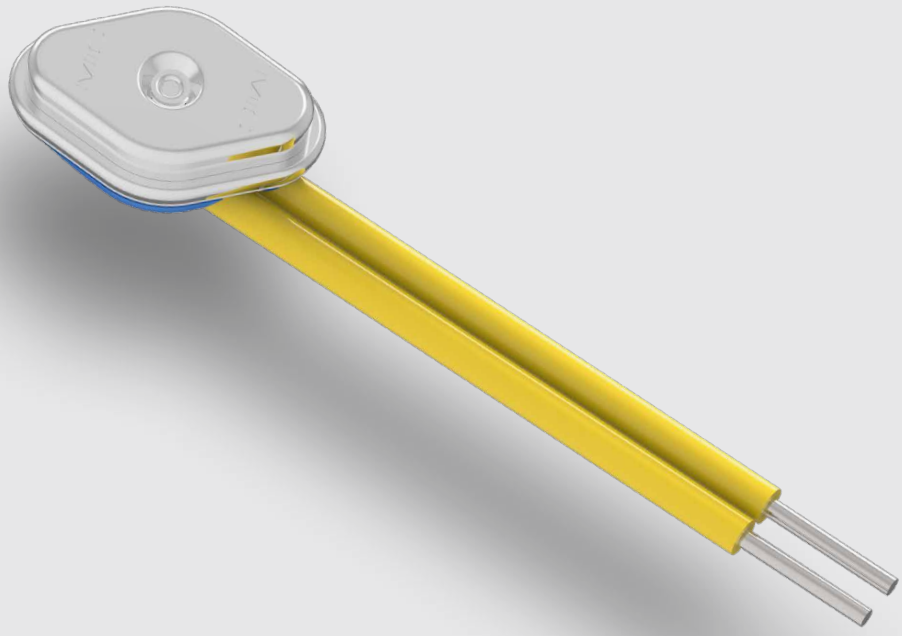
11

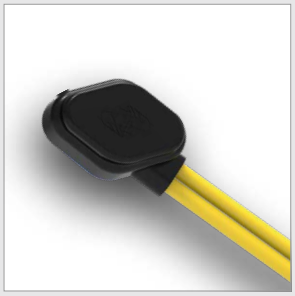
12

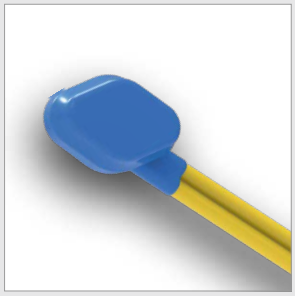
Thermal motor protector

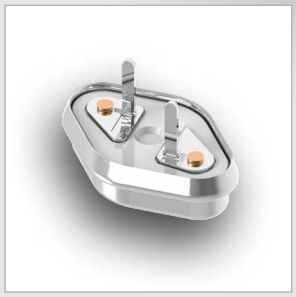
Temperature limiter

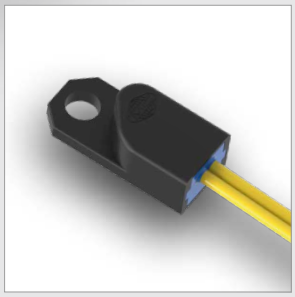
Thermal cut-out











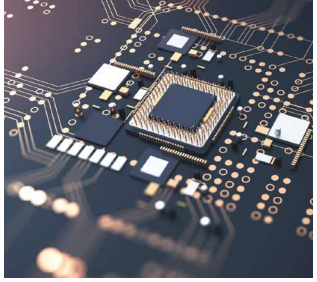
Applications

- Motors
- Transformers
- Coils
- Electronics, sensors

Benefits

- Temperature and current sensitive or only temperature sensitive
- Small dimensions
- High power rating
- No vibration noise

Description

Switches of the **T1 type series** are based on a **two-contact system**. A thermobimetal snap-disc, which is influenced by temperature, switches on or closes a circuit when the permanently set switching temperature is reached. In this case, the electr. current directly through the bimetallic discharge element, and thus allows a **combination of temperature and current sensitive monitoring**.

The temperature will thereby be applied to the inner precision switching unit from all sides. The current sensitivity of the switching element is particularly effective when the motor is blocked, and the current flow is considerably higher: the drive is **switched off very quickly** and thus damage to the device is prevented through an increased temperature.

Beside the standard counters in single implementation the protectors are also offered in **twin and triplet configuration**.

Technical data

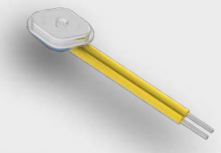
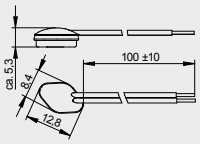
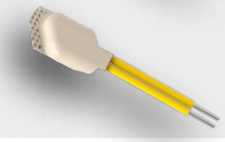
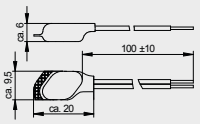
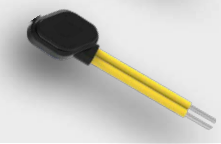
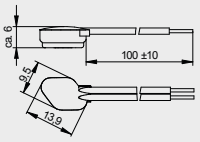
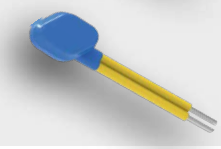
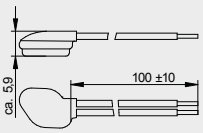
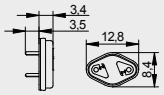
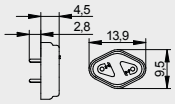
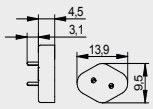
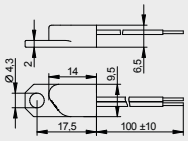
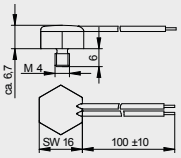
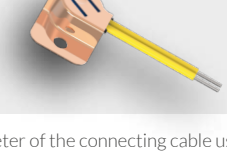
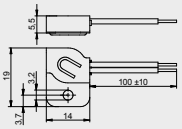
type ratings			control		
			T11 A / E	T12 A / E	T10B / G
version			normally closed		normally open
rated current at 250 V 50/60 Hz (power factor 0.95 / 0.6)			6,3 (1) A	6,3 (1) A	2 (0,3) A
switching cycles under rated current			10,000		
max. current under failure conditions at 250 V 50/60 Hz (power factor 0.95)			8 (2) A	*/*	*/*
switching cycles under max. current			1.000		
temperature rating T_A (steps in 5 °C)			(50) 70 °C... 180 °C [1]		80 °C ... 160 °C [2]
tolerances			Standard: ± 5 °K		
feature of automatic action			1.C.M, 2.C		1.B, 2.C
contact resistance (incl. wire of 100 mm)			< 50 mΩ		
hysteresis			30 °K ± 15 °K [3] [4]		
dielectric strength (standard insulation)			2 kV		
vibration resistance (10 to 60 Hz)			100 m/s^2		
resistances to impregnation			tight against ordinary resins and lacquers		
degrees of protection provided by enclosures (EN 60529)			IP00		
suitable for use in protection category			I, II		
approvals	VDE / ENEC		EN 60730-1 / -2-9		
	UL		UL 2111 / UL 873 [5]		
	CSA / cUL		C22.2 No. 77 / C22.2 No. 24 [5]		
	CQC		GB14536.1-1998 / GB14536.10-1996 [5]		

[1] T_A up to 50°C on request [2] approval to EN60730-2-2 up to 180°C [3] with ± 3 K tolerances and smaller hysteresis on request
[4] at the T_A (upper and lower) limits the hysteresis could deviate [5] on request

The variety of our product variations is nearly infinite. Microtherm distinguishes itself by a high expert's know-how in the area of customised developments. We will be pleased to give you specific advice during a personal consultation and present you all the options suitable for your application:

- application of plug connectors
- unique packaging and overmolding variations
- specific cable assemblies and many more

Versions

control type	n.c.	n.o.	code	illustration	drawing dimensions (mm) *	technical specification	approvals
T10 T11, T12	 A	B				no insulation, potted	VDE, UL, cUL
T10 T11, T12	 A	B	U250			shrink cap, potted	VDE, UL, cUL
T10 T11, T12	 A	B	U174			cap of PPS, potted	VDE, UL, cUL
T10 T11, T12	 A	B	U112			coated, T_A max. 160 °C	VDE, UL, cUL
T11, T12	A		A334			no insulation PCB connector grid dimension 5.08	VDE, UL, cUL
T11, T12	A		A334 U314			cap of PPS PCB connector grid dimension 5.08	VDE, UL, cUL
T11, T12	A		A334 U315			cap of PPS PCB connector grid dimension 5.08	VDE, UL, cUL
T10 T11, T12	 A	B	U293			housing of PPS, potted	VDE, UL, cUL
T10 T11, T12	 E	G	G502			potted aluminium housing anodized black M4x6 T_A max. 150 °C	VDE, UL, cUL
T10 T11, T12	 A	B	B199			CuBe mounting cap combined with U174 / U250 / U112	VDE, UL, cUL

* The overall height depends on the max. outer diameter of the connecting cable used. The actual max. overall height is available on request.

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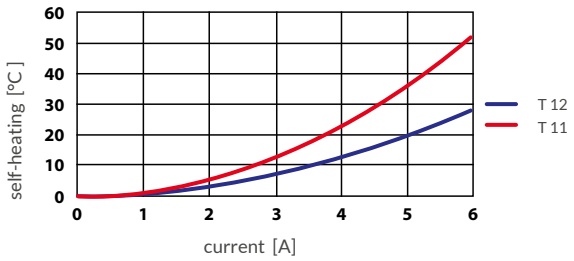
Standard wire

lead	code	temperature max.	operating voltage max.	approx. diameter-insulation	approx. cross section / diameter	UL style
stranded white	L300	150 °C	300 V	1,50 mm	AWG24 / 0,25 mm²	3398
	L310			1,82 mm	AWG20 / 0,50 mm²	
	L360	200 °C	600 V	1,10 mm	AWG24 / 0,25 mm²	10086
	L370			1,50 mm	AWG20 / 0,50 mm²	
solid yellow	L400	150 °C	300 V	1,35 mm	AWG24 / 0,50 mm	3398
	L410			1,66 mm	AWG20 / 0,80 mm	
	L430	200 °C	300 V	1,16 mm	AWG24 / 0,50 mm	1332
	L440			1,54 mm	AWG20 / 0,80 mm	

Standard length 100 ± 10 mm, stripped 6 ± 1 mm, for T10 AWG24 and for T11 / T12 AWG20 is recommended

Heating by current



The characteristic curve in the diagram is measured with a thermal switch without any insulation in an oil bath.

Note: The self-heating depends on the thermal conduction of the control to the equipment or part which should be protected.

Ordering example

T11 | A | 120 | 05 | L310 | 300 | U174 | B199

- B199 — mounting cap
- U174 — cap of PPS potted
- 300 — length 300 mm
- L310 — lead wire white, AWG20
- 05 — tolerance
- 120 — temperature
- A — normally closed
- T11 — type

Marking

T11A	type (T11 n.c.)
12005	response temperature (120°C), tolerance (± 5°C)
101D	date of manufacture (October 2021), country (D=Germany)

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