

Thermal motor protector
Temperature limiter
Thermal cut-out

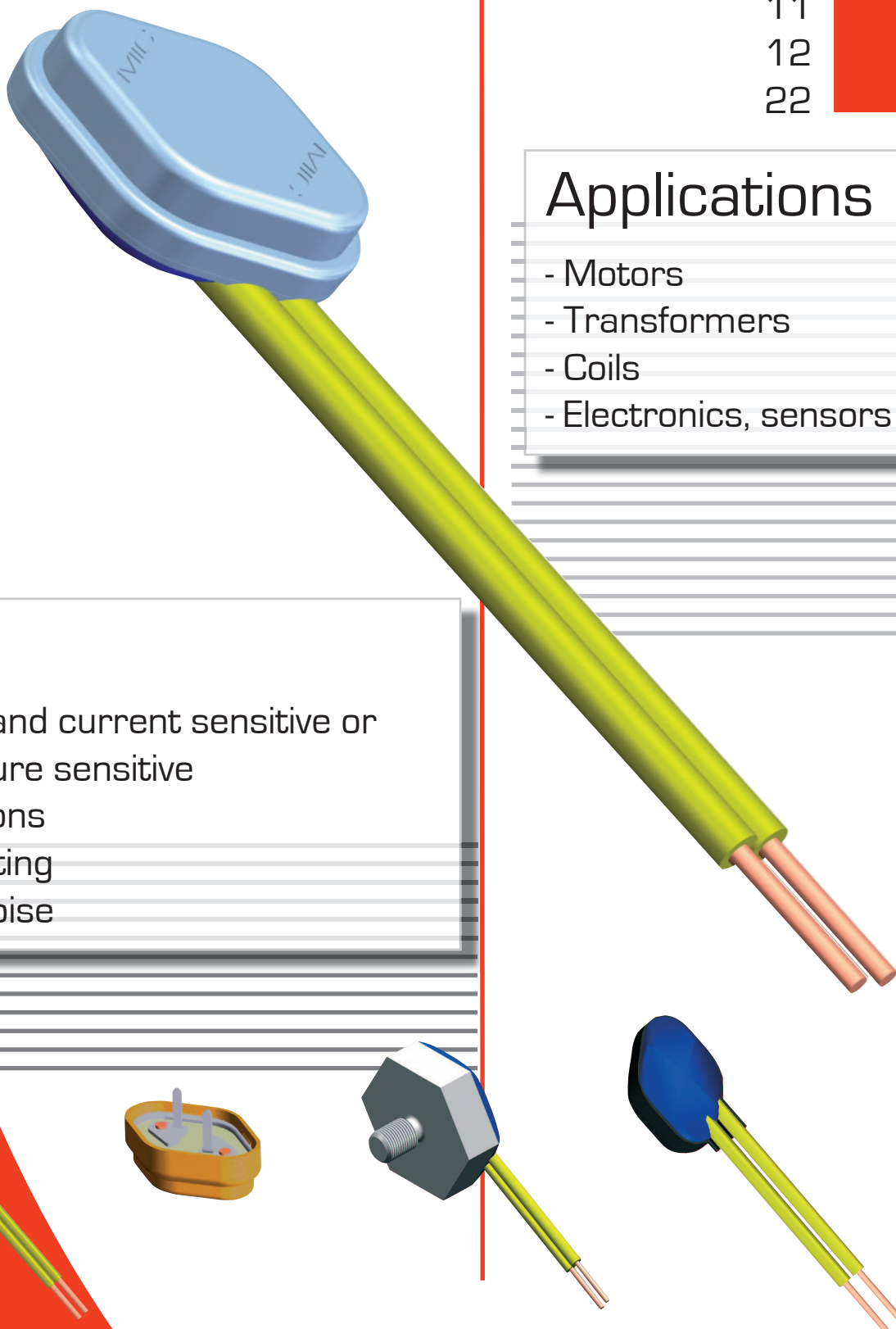
10
11
12
22

Applications

- Motors
- Transformers
- Coils
- Electronics, sensors

Benefits

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



MICROTHERM



Microtherm International Cooperation

Technical data

ratings		control type		T11A / E	T12A / E	T22A	T10B / G	T22B	
version				normally closed			normally open		
rated current at 250 V 50/60 Hz (cos ϕ 0.95 / 0.6)				2.5 A / 1.6 A	6.3 A / 2.5 A	20.0 A / 3.0 A	2.0 A / 1.6 A	3.5 A / 2.0 A	
switching cycles under rated current				10,000					
max. current under failure condition at 250 V 50/60 Hz (cos ϕ 0.95)				10.0 A	12.0 A	30.0 A	10.0 A	20.0 A	
switching cycles under max. current				300		600	300	1,000	
temperature rating T _a (steps in 5 K)				(50) 70 °C... 180 °C ²⁾			80 °C ... 160 °C ³⁾		
tolerances				Standard: ± 5 K					
feature of automatic action				1.C.M, 2.C		2.B, 1.C, 3.C	1.B, 2.C		
contact resistance (incl. wire of 100 mm)				< 50 mΩ					
hysteresis				30 K ± 15 K ⁴⁾ ⁵⁾					
dielectric strength (standard insulation)				2 kV					
shock / vibration testing (similar to EN 50155)				400 m/s² sine half wave / 100 m/s² 5 Hz ... 2.000 Hz sine					
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 ¹⁾						-
	cUL		C22.2 No. 77 / C22.2 No. 24 ¹⁾						-
	CQC		GB14536.1-1998 / GB14536.10-1996 ¹⁾						

¹⁾ on request ²⁾ T_a up to 50 °C on request ³⁾ approval to EN60730-2-2 up to 180 °C

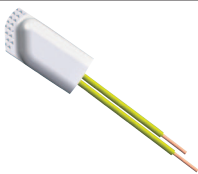
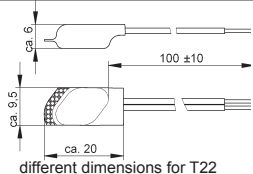
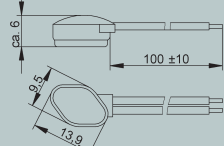
⁴⁾ with $\pm$ 3 K tolerances and smaller hysteresis on request ⁵⁾ at the T_a (upper and lower) limits the hysteresis could deviate

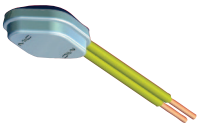
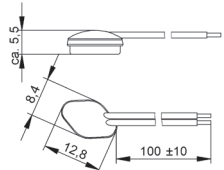
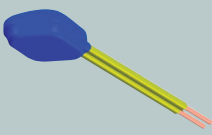
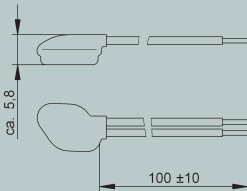
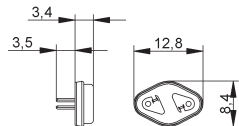
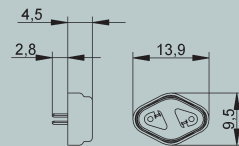
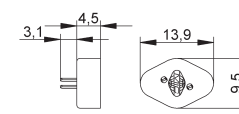
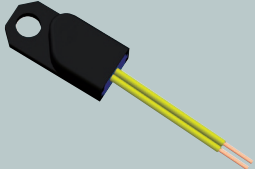
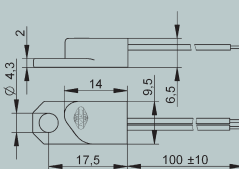
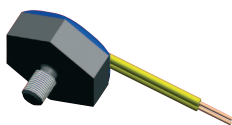
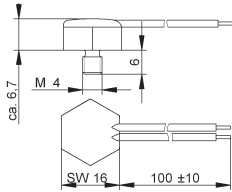
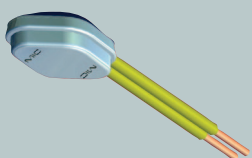
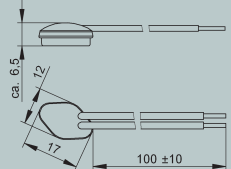
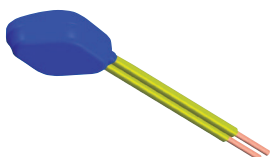
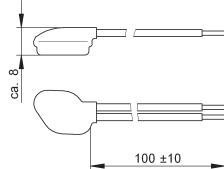
Standard wire (length 100 $\pm$ 10 mm, stripped 6 $\pm$ 1 mm)

lead	code	temperature max.	operating voltage max.	approx. diameter insulation	approx. cross section diameter ²⁾	UL style
stranded white	L300	150 °C	300 V	1.50 mm	AWG24 / 0.25 mm ²	3398
	L310			1.82 mm	AWG20 / 0.50 mm ²	
	L320 ¹⁾			2.10 mm	AWG18 / 1.00 mm ²	
	L360	200 °C	600 V	1.20 mm	AWG24 / 0.25 mm ²	10086
	L370			1.60 mm	AWG20 / 0.50 mm ²	
	L380 ¹⁾			1.80 mm	AWG18 / 1.00 mm ²	
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	

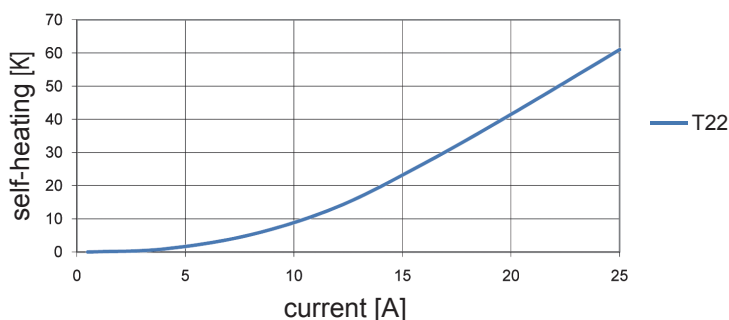
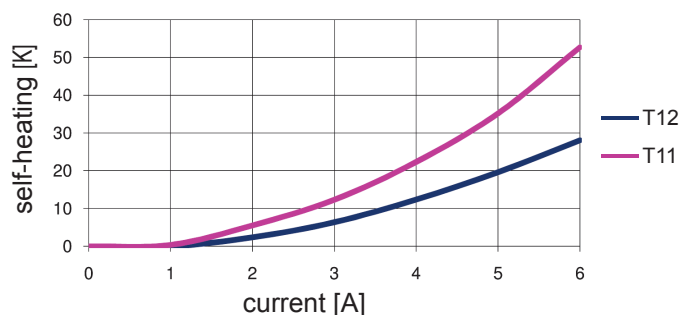
¹⁾ T22 only ²⁾ for T12/T11 AWG20 and for T10 AWG24 is recommended

Standard insulation

control type	nc	no	code	illustration	drawing dimensions (mm)	technical specification	approvals
T10 T11, T12	A	B	U250		 different dimensions for T22	shrink cap potted	VDE, UL, cUL
T22	A	B	U256				
T10 T11, T12	A	B	U174			cap of PPS potted	VDE, UL, cUL

control type	nc	no	code	illustration	drawing dimension (mm)	technical specification	approvals
T10 T11, T12	A	B		 type T11, T12 illustrated		no insulation 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
T22	A	B				no insulation potted	VDE, UL, cUL
T22	A	B	U112			coated T _a max. 160 °C	VDE, UL, cUL

Heating by current



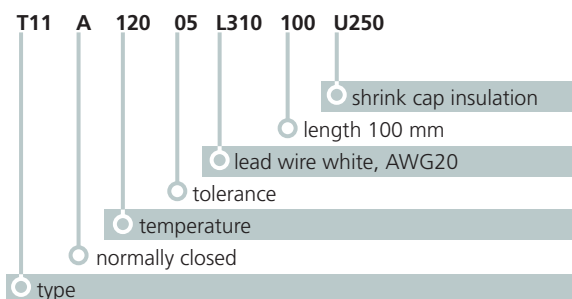
The characteristic curves are measured with a thermal control without any insulation in an oil bath.

Attention:

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

Ordering and marking example

Ordering example



Marking

- T11A** type (T11 nc)
- 12005** response temperature (120°C), tolerance ($\pm 5K$)
- 051D** date of manufacture (May 2011), country (D=Germany)



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Deviations from standard controls on request.

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