

Thermal motor protector
Temperature limiter
Thermal cut-out

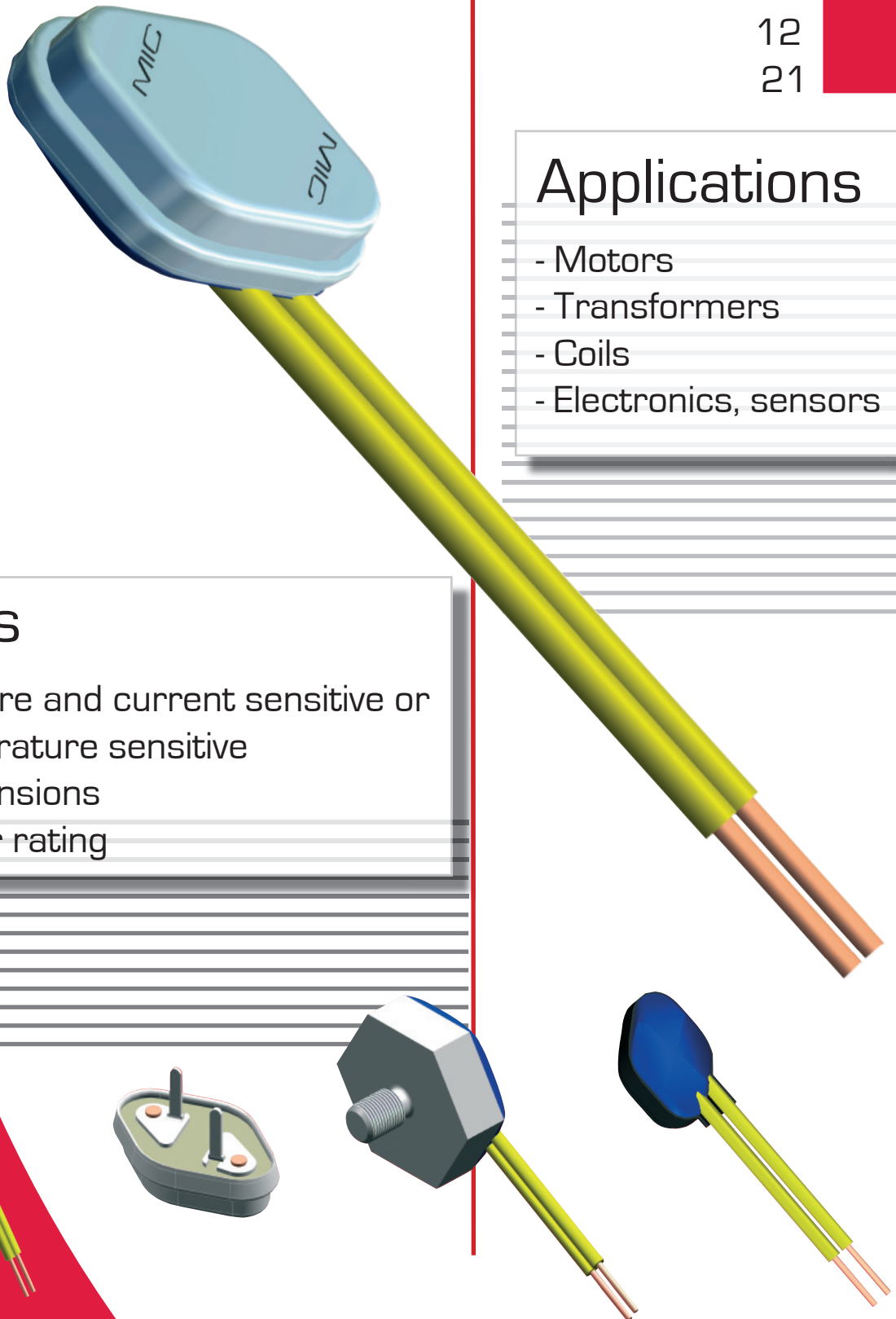
10
11
12
21

Applications

- Motors
- Transformers
- Coils
- Electronics, sensors

Benefits

- Temperature and current sensitive or only temperature sensitive
- Small dimensions
- High power rating



MICROTHERM



Microtherm International Cooperation

Technical data

ratings		control type		T10A / E ¹⁾	T10B / G	T12A / E	T21A / E	T21B / G
				T11A / E				
version				normally closed	normally open	normally closed	normally closed	normally open
rated current at 250 V 50/60 Hz (power factor 0.95 / 0.6)				2.5 A / 1.6 A	2.0 A / 1.6 A	6.3 A / 2.5 A	10.0 A / 2.0 A	3.5 A / 2.0 A
switching cycles				10,000				
max. current at 250 V 50/60 Hz (power factor 0.95)				10.0 A		12.0 A	20.0 A	
switching cycles under max. current				300		300	1,000	
temperature rating Ta (steps in 5 K)				(50) 70 °C... 180 °C ²⁾			80 °C ... 160 °C	
feature of automatic action				1.C.M, 2.C, 3.C		1.C, 3.C	1.B, 2.C, 3.C	
tolerances				Standard: ± 5 K				
contact resistance (incl. wire of 100 mm)				< 50 mΩ				
hysteresis				30 K ± 15 K				
dielectric strength (standard insulation)				2 kV				
shock- / vibration testing (similar to EN 50155)				400 m/s ² sine half wave / 100 m/s ² 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		EN 60730-1 / -2-2 / -2-3 ³⁾ / -2-9					
	UL		UL 2111 / UL 873 ⁴⁾					
	CSA		C22.2 No. 77 / C22.2 No. 24 ⁴⁾					

¹⁾ available with ± 3K tolerances and smaller hysteresis

³⁾ different power rating

²⁾ T10 max. Ta 160°C

⁴⁾ on demand

Standard wire (length 100 ± 10 mm, stripped 6 ± 1 mm)

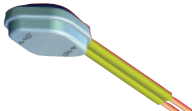
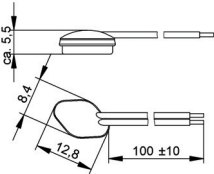
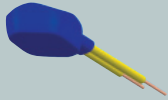
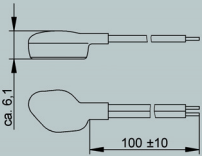

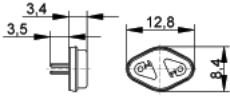

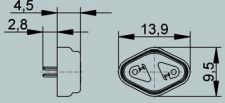

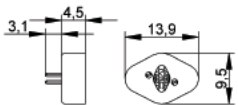
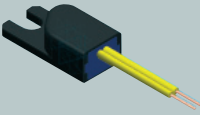
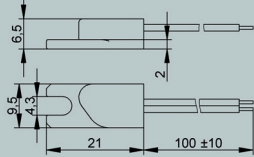
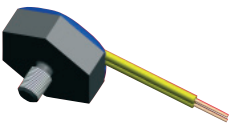
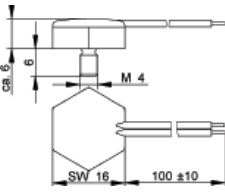
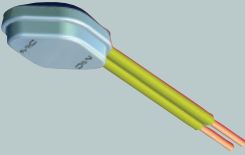
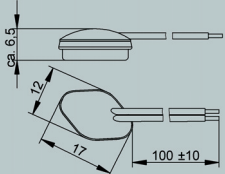
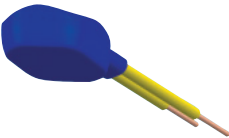
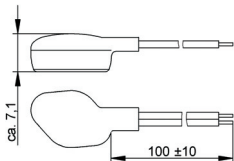
lead	code	temperature max.	operating voltage max.	diameter insulation	cross section diameter	UL style
stranded white	L300	150 °C	300 V	1.57 mm	AWG24 / 0.21 mm ²	3398
	L310			1.80 mm	AWG20 / 0.48 mm ²	
	L320 ¹⁾			2.15 mm	AWG18 / 0.96 mm ²	
	L330	200 °C	600 V	0.90 mm	AWG24 / 0.24 mm ²	3557
	L340			1.26 mm	AWG20 / 0.62 mm ²	
	L350 ¹⁾			1.50 mm	AWG18 / 0.96 mm ²	
solid yellow	L400	150 °C	300 V	1.40 mm	AWG24 / 0.51 mm	3398
	L410			1.65 mm	AWG20 / 0.81 mm	
	L430	200 °C	300 V	1.21 mm	AWG24 / 0.51 mm	1332
	L440			1.71 mm	AWG20 / 0.81 mm	

¹⁾ T21

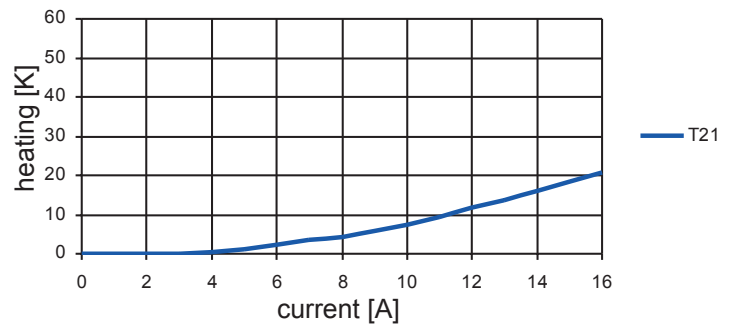
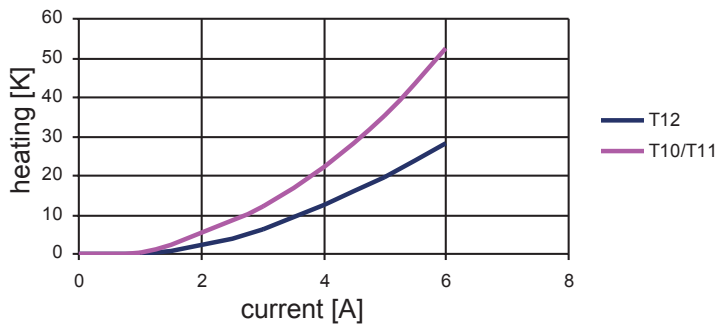
Standard insulation

control type	nc	no	code	illustration	drawing dimensions (mm)	technical specification	approvals
T10	A	B	U250			shrink cap potted Attention: Ta max. 155 °C	VDE, UL
T11, T12	A	B					
T21	A	B	U256		different dimensions for T21		
T10	A	B	U174			cap of PPS potted	VDE, UL
T11, T12	A	B					

Specific variations

control type	nc	no	code	illustration	drawing dimension (mm)	technical specification	approvals
T10 T11, T12	A A	B		 type T11, T12 illustrated		no insulation potted	VDE, UL, CSA
T10 T11, T12	A A	B	U112			coated Attention: Ta max. 160°C	VDE, UL
T10, T11	A		A334			no insulation PCB connector grid dimension 5.08	VDE, UL
T10, T11	A		A334 U314			cap of PPS PCB connector grid dimension 5.08	VDE, UL
T10, T11	A		A334 U315			cap of PPS PCB connector grid dimension 5.08	VDE, UL
T10 T11, T12	A A	B	U298			housing of PPS potted	VDE, UL
T10 T11, T12	E E	G	G502			potted aluminium housing anodized black M4x6 Attention: Ta max. 150 °C	VDE, UL
T21	A	B				no insulation potted	VDE, UL, CSA
T21	A	B	U112			coated	VDE, UL

Heating by current



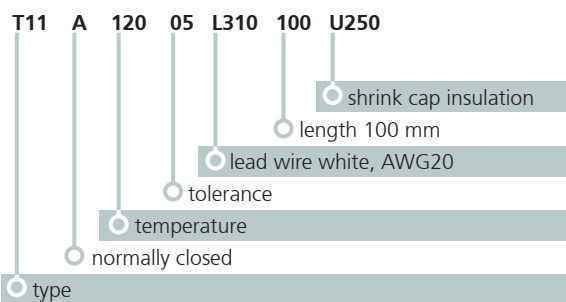
The diagrams are measured with a thermal control without any insulation in an oil bath.

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



Deviations from standard controls on request.

Marking

- T11A** type (T11 nc)
- 12005** response temperature (120°C), tolerance ($\pm 5K$)
- 026D** date of manufacture (Feb.2006), country (D=Germany)

Representation office:

Microtherm GmbH
Taschenwaldstraße 3
Postfach 1208
D-75112 Pforzheim

Fon: +49 (0)7231 787-0
Fax: +49 (0)7231 787-155
E-Mail: mic-pforzheim@microtherm.de
Internet: www.microtherm.de