

Thermal motor protector  
Temperature limiter  
Thermal cut-out

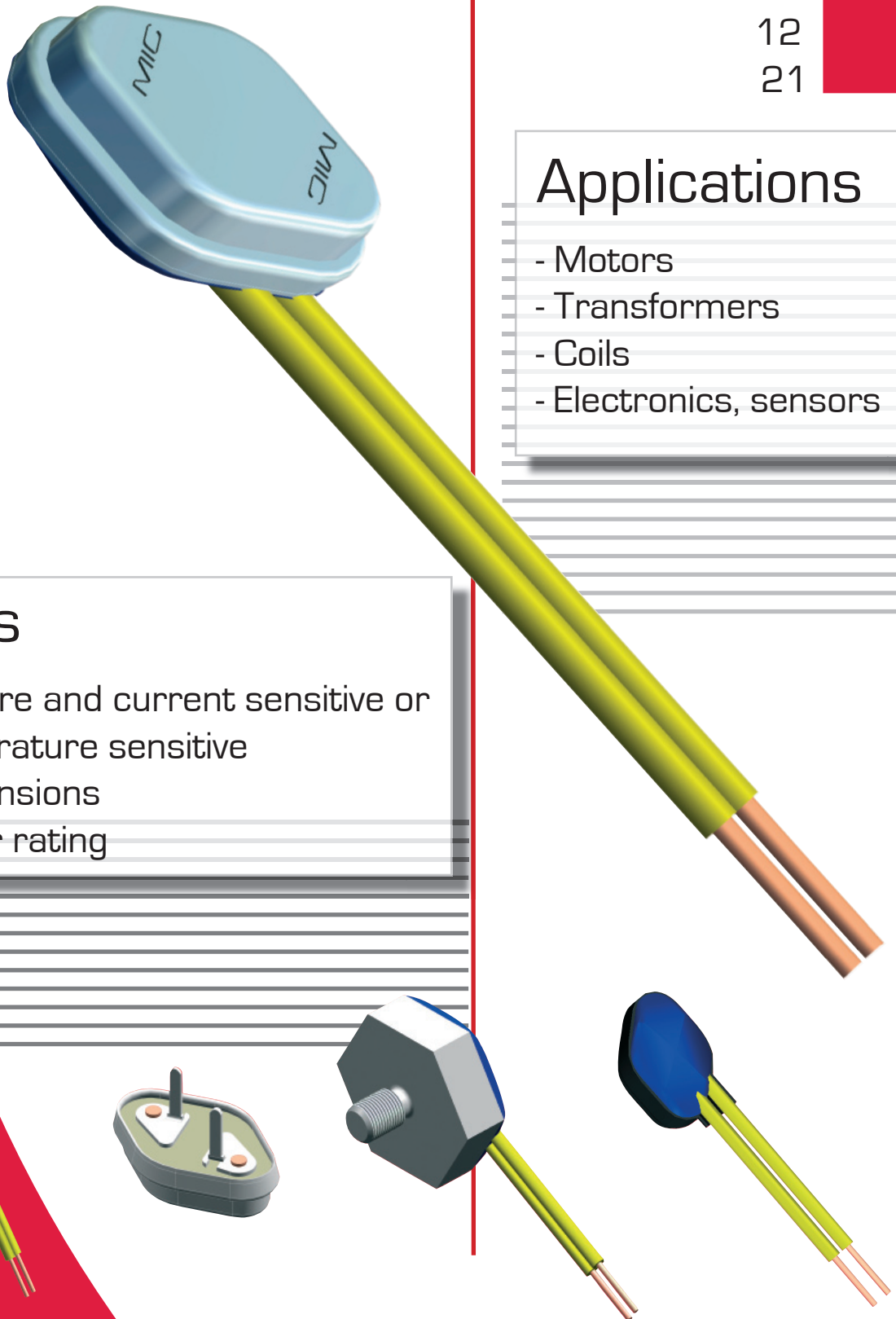
10  
11  
12  
21

## 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 <sup>1)</sup>	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 <sup>2)</sup>			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 <sup>2</sup> sine half wave / 100 m/s <sup>2</sup> 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 <sup>3)</sup> / -2-9					
	UL		UL 2111 / UL 873 <sup>4)</sup>					
	CSA		C22.2 No. 77 / C22.2 No. 24 <sup>4)</sup>					

<sup>1)</sup> available with ± 3K tolerances and smaller hysteresis

<sup>3)</sup> different power rating

<sup>2)</sup> T10 max. Ta 160°C

<sup>4)</sup> on demand

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

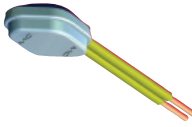
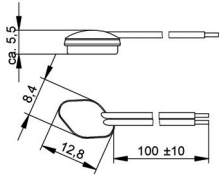
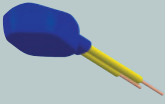
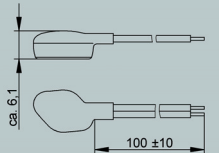

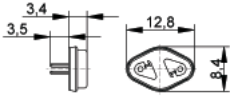

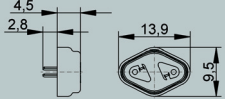

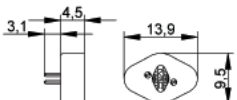
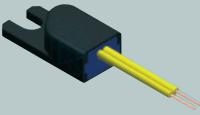
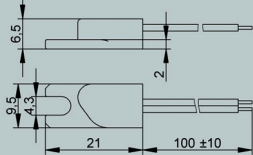
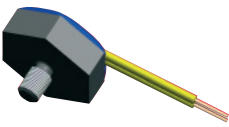
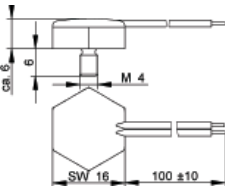
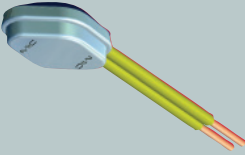
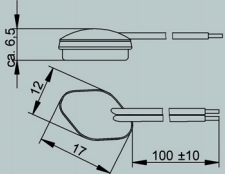
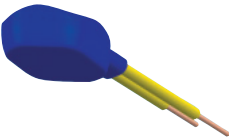
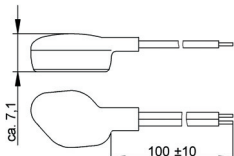
lead	code	temperature max.	operating voltage max.	diameter insulation	cross section diameter	UL style
stranded white	L300	150 °C	300 V	1.57 mm	AWG24 / 0.21 mm <sup>2</sup>	3398
	L310			1.80 mm	AWG20 / 0.48 mm <sup>2</sup>	
	L320 <sup>1)</sup>			2.15 mm	AWG18 / 0.96 mm <sup>2</sup>	
	L330	200 °C	600 V	0.90 mm	AWG24 / 0.24 mm <sup>2</sup>	3557
	L340			1.26 mm	AWG20 / 0.62 mm <sup>2</sup>	
	L350 <sup>1)</sup>			1.50 mm	AWG18 / 0.96 mm <sup>2</sup>	
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	

<sup>1)</sup> T21

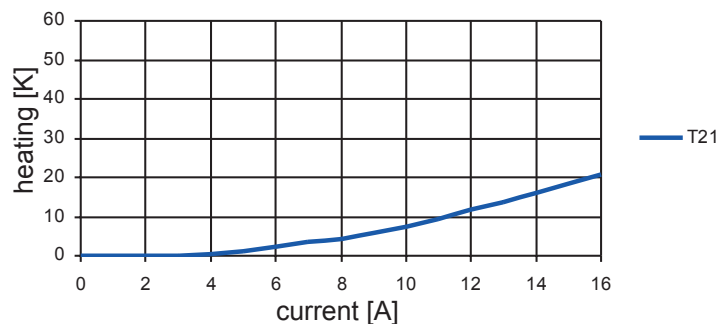
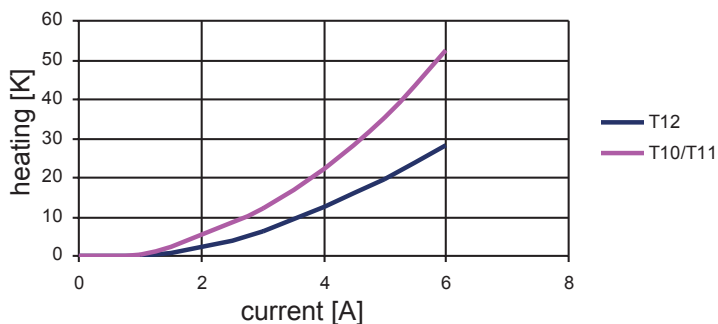
## Standard insulation

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



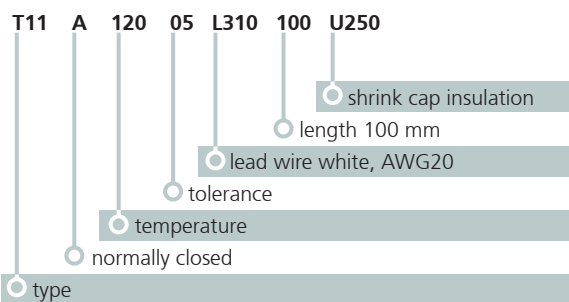
The diagrams are measured with a thermal control without any insulation in an oil bath.

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)

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