

Thermal motor protector  
Temperature limiter  
Thermal cut-out

# B

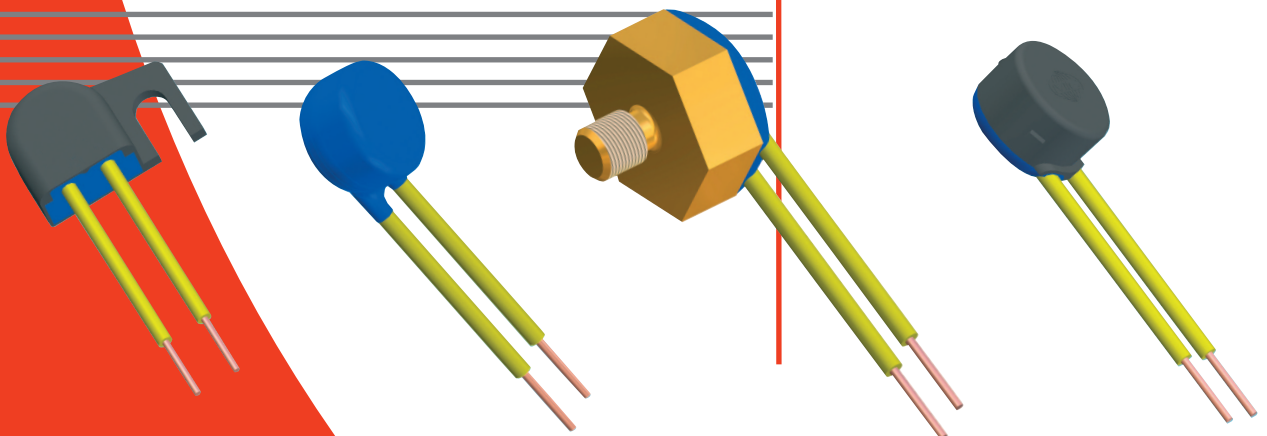
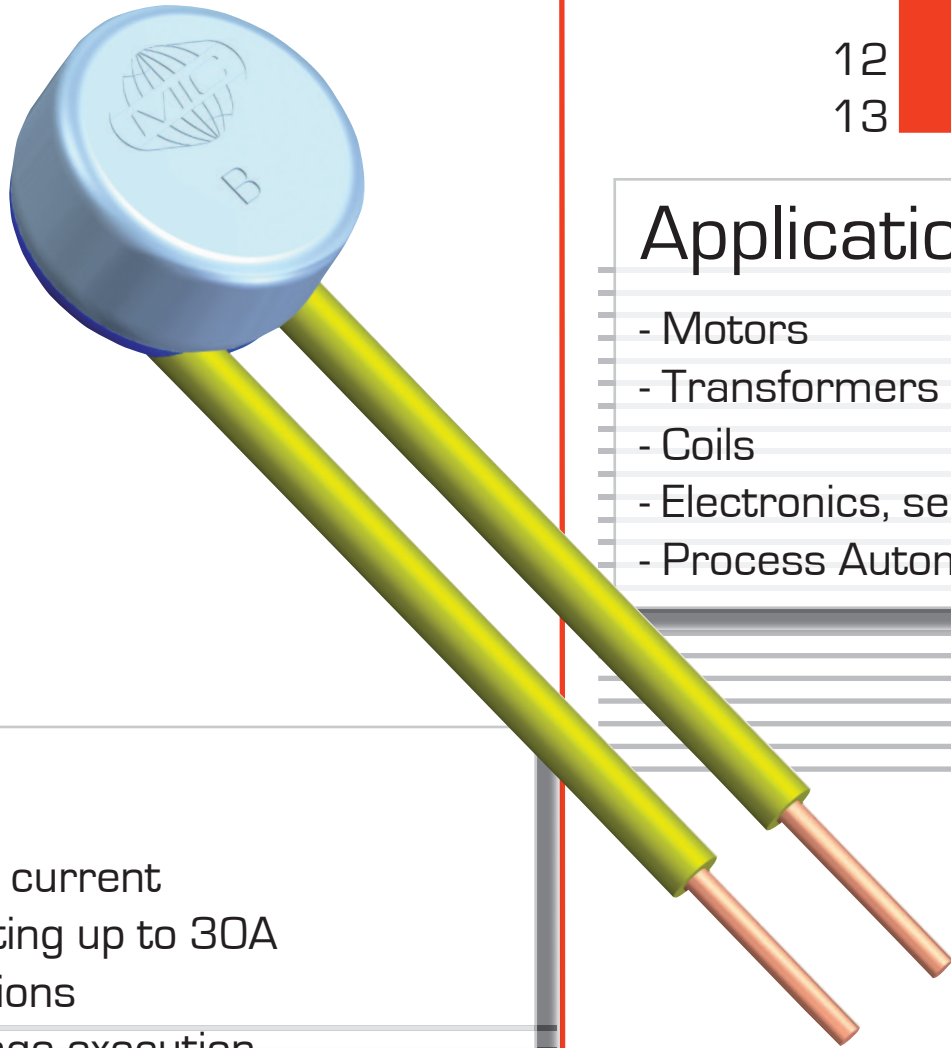
12  
13

## Applications

- Motors
- Transformers
- Coils
- Electronics, sensors
- Process Automation

## Benefits

- Non-sensitive to current
- High current rating up to 30A
- Manifold executions
- Special low voltage execution







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# Technical data

type ratings	control	B12A / E		B12B / G	B13N / T
version		normally closed		normally open	normally closed/ open
rated current at 250 V 50/60 Hz (cos φ 0.95 / 0.6)		6.3 A / 6.0 A	10.0 A / 6.0 A	5.0 A / 1.6 A	1...100 mA (24 Vdc)
switching cycles under rated current		10,000	5,000	5,000	10,000
max. current under failure conditions at 250 V 50/60 Hz (cos φ 0.95)		30.0 A			-
switching cycles under max. current		100			-
temperature rating T <sub>a</sub> (steps in 5 K)		70 °C ... 190 °C	70 °C ... 160 °C	70 °C ... 155 °C	70 °C ... 160 / 155 °C
tolerances		standard: ± 5 K			
feature of automatic action		1.B.M, 2.B, 1.C		1.B	-
contact resistance (incl. wire of 100 mm)		< 50 mΩ			
hysteresis		30 K ± 15 K <sup>1)</sup>			
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 / ENEC		EN 60730-1 / -2-9		no approval required to voltage ratings lower than 42 V
	UL		UL 2111 / UL 873 <sup>2)</sup>		
	CSA / cUL		C22.2 No. 77 / C22.2 No. 24 <sup>2)</sup>		
	CQC		GB14536.1-1998 / GB14536.10-1996 <sup>2)</sup>		

<sup>1)</sup> at the T<sub>a</sub> (upper and lower) limits the hysteresis could deviate      <sup>2)</sup> on request

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

lead	code	temperature max.	operating voltage max.	approx. diameter insulation	approx. cross section diameter <sup>2)</sup>	UL style
stranded white	L300 <sup>1)</sup>	150 °C	300 V	1.50 mm	AWG24 / 0.25 mm <sup>2</sup>	3398
	L310			1.82 mm	AWG20 / 0.50 mm <sup>2</sup>	
	L320			2.10 mm	AWG18 / 1.00 mm <sup>2</sup>	
	L360 <sup>1)</sup>	200 °C	600 V	1.20 mm	AWG24 / 0.25 mm <sup>2</sup>	10086
	L370			1.60 mm	AWG20 / 0.50 mm <sup>2</sup>	
	L380			1.80 mm	AWG18 / 1.00 mm <sup>2</sup>	
solid yellow	L410	150 °C	300 V	1.66 mm	AWG20 / 0.80 mm	3398
	L440	200 °C	300 V	1.54 mm	AWG20 / 0.80 mm	1332

<sup>1)</sup> B13 only      <sup>2)</sup> AWG20 is recommended

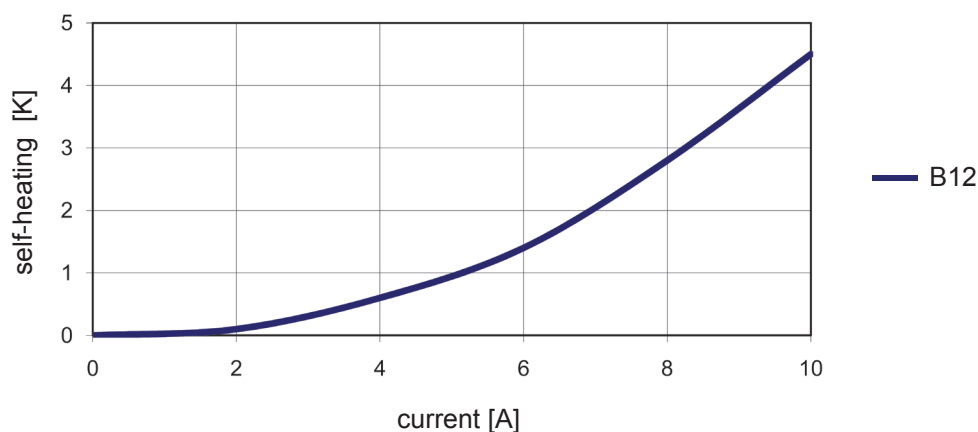
control type	nc	no	code	illustration	drawing dimensions ( mm )	technical specification	approvals <sup>1)</sup>
B12 B13	A N	B T	U253			shrink cap potted	VDE, UL, cUL
B12 B13	A N	B T	U186			cap of PPS potted	VDE, UL, cUL

# Specific variations

control type	nc	no	code	illustration	drawing dimensions ( mm )	technical specification	approvals <sup>1)</sup>
B12 B13	A N	B T				not insulated potted	VDE, UL, cUL, CSA
B12 B13	A N	B T	U112			coated T <sub>a</sub> max. 160°C	VDE, UL, cUL
B12 B13	A N	B T	U294			housing of PPS potted T <sub>a</sub> max. 160°C	VDE, UL, cUL
B12 B13	A N	B T	A800			not insulated potted	VDE, UL, cUL
B12 B13	E N	G T	G402			aluminium housing thread M4x6 potted T <sub>a</sub> max. 150 °C	VDE, UL, cUL
B12 B13	E N	G T	G714			brass housing thread M4x5 potted T <sub>a</sub> max. 150 °C	VDE, UL, cUL

<sup>1)</sup> B12 only

## Heating by current



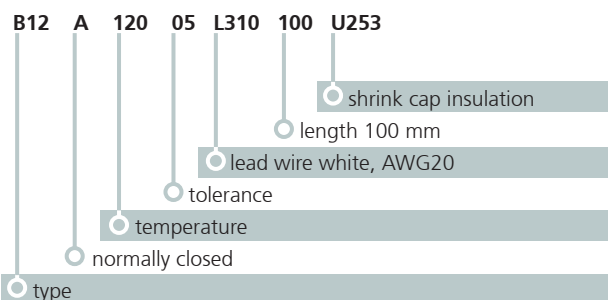
The diagram is measured with a thermal control without any insulation in an oil bath.

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

- B12A** type (B12 nc)  
**12005** response temperature (120°C), tolerance ( $\pm 5K$ )  
**051D** date of manufacture (May 2011), 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: [info@microtherm.de](mailto:info@microtherm.de)  
Internet: [www.microtherm.de](http://www.microtherm.de)

Deviations from standard controls on request.

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