

Thermal motor protector
Temperature limiter
Thermal cut-out

B

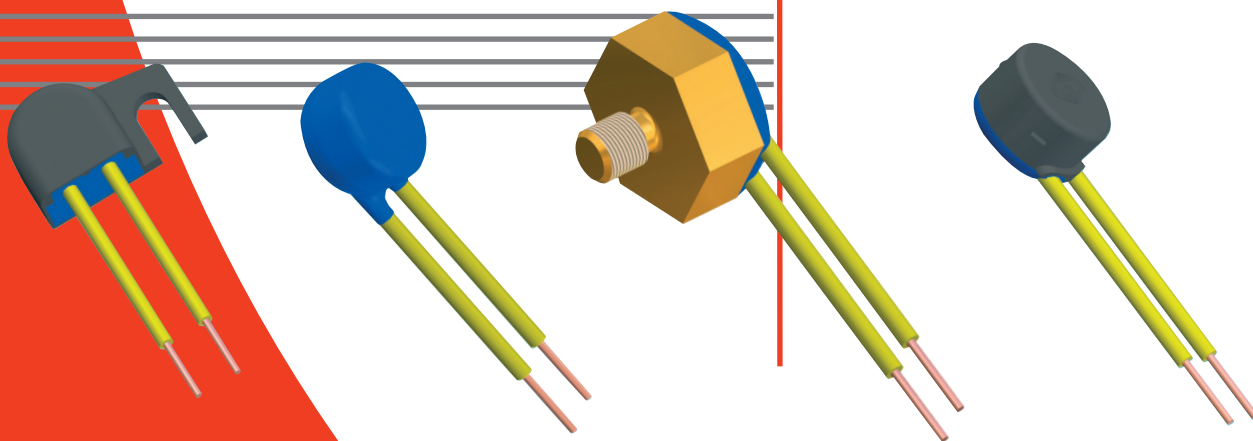
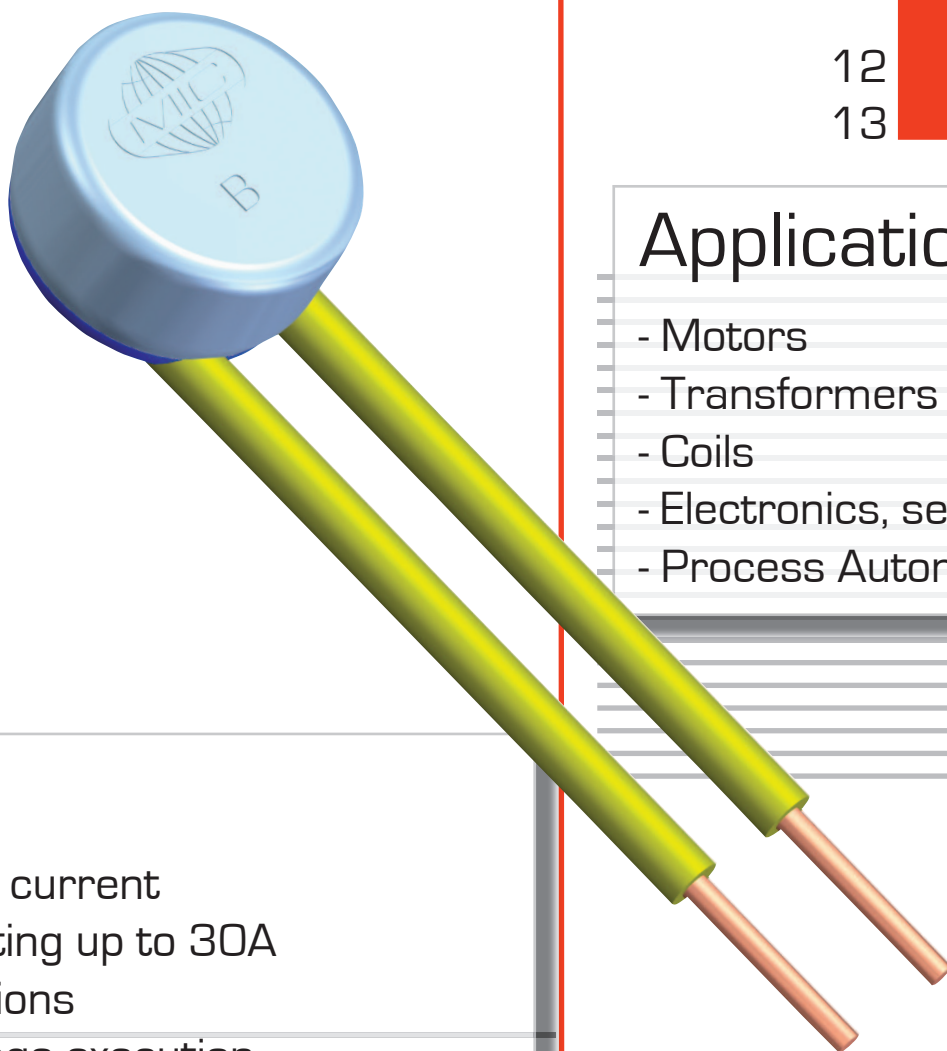
12
13

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

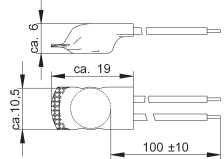
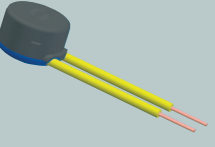
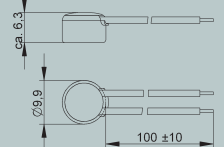
type ratings		control		B12A / E		B12B / G	B13N / T
version				normally closed		normally open	normally closed/ open
rated current at 250 V 50/60 Hz (cos φ 0.95 / 0.6)		6.3 A / 6.0 A		10.0 A / 6.0 A		5.0 A / 1.6 A	1...100 mA (24 Vdc)
switching cycles under rated current		10,000		5,000		5,000	10,000
max. 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 _a (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 ¹⁾			
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 / ENEC			EN 60730-1 / -2-9			no approval required to voltage ratings lower than 42 V
	UL			UL 2111 / UL 873 ²⁾			
	CSA / cUL			C22.2 No. 77 / C22.2 No. 24 ²⁾			
	CQC			GB14536.1-1998 / GB14536.10-1996 ²⁾			

¹⁾ at the T_a (upper and lower) limits the hysteresis could deviate ²⁾ on request

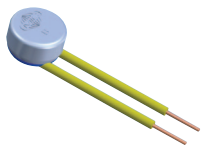
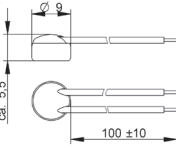
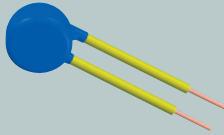
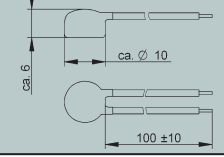
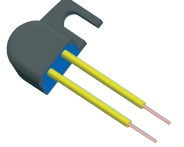
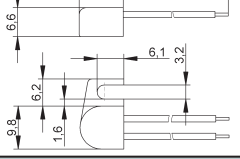
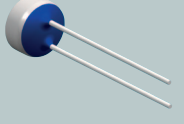
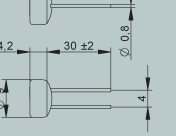
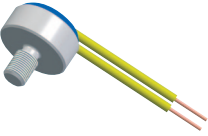
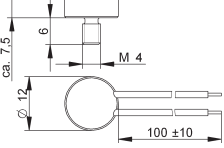
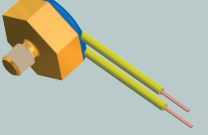
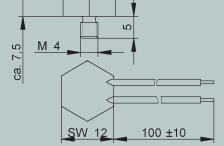
Standard wire (length 100 ± 10 mm, stripped 6 ± 1 mm)

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

¹⁾ B13 only ²⁾ **AWG20 is recommended**

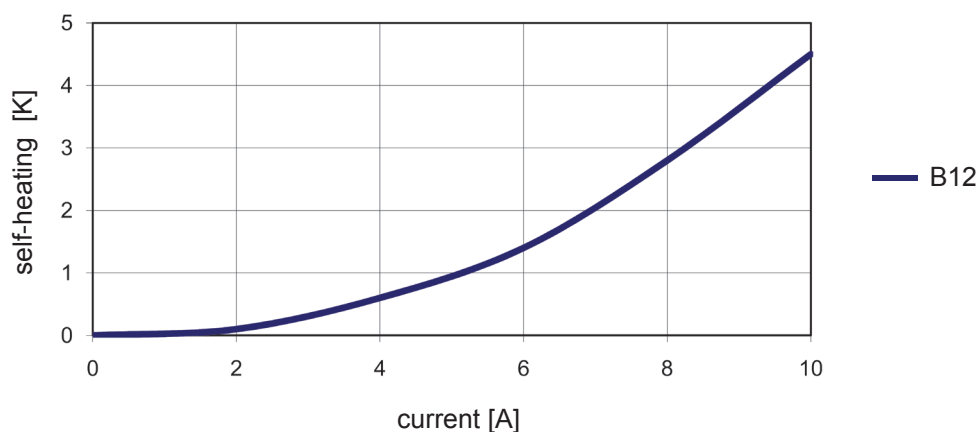
control type	nc	no	code	illustration	drawing dimensions (mm)	technical specification	approvals ¹⁾
B12 B13	A N	B T	U253			shrink cap potted	VDE, UL, cUL
B12 B13	A N	B T	U186			cap of PPS potted	VDE, UL, cUL

Specific variations

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

¹⁾ B12 only

Heating by current



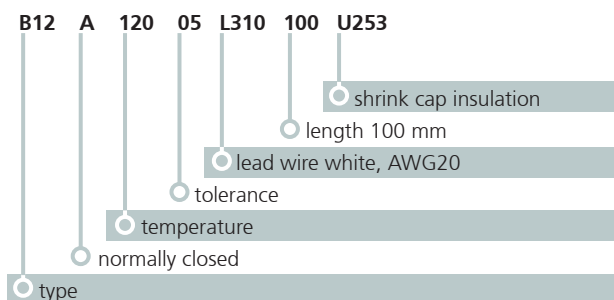
The diagram is measured with a thermal control without any insulation in an oil bath.

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)



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Deviations from standard controls on request.

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