MICROTHERM
sentronic

B

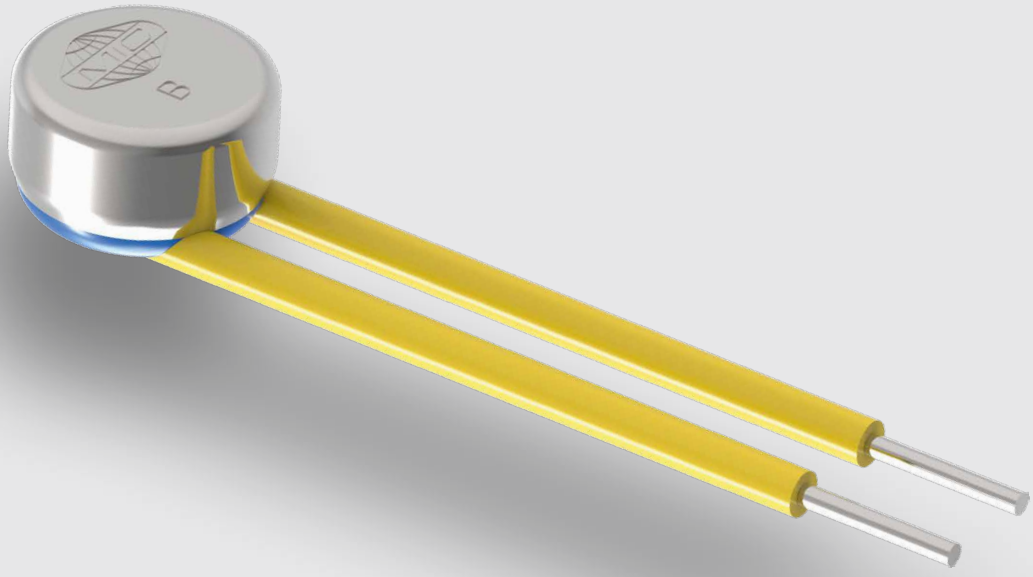
12

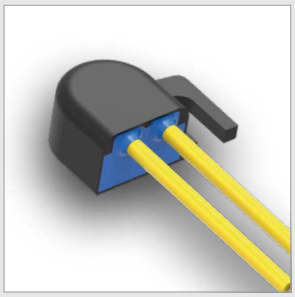
13

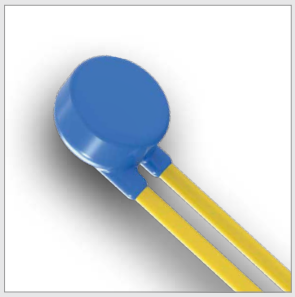
Thermal motor protector

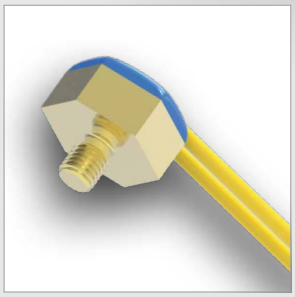
Temperature limiter

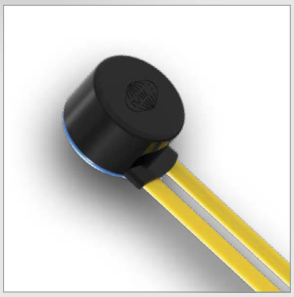
Thermal cut-out











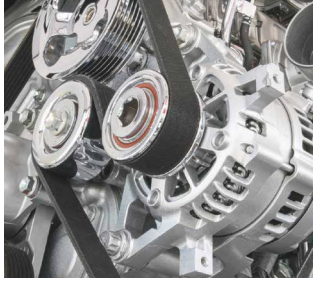
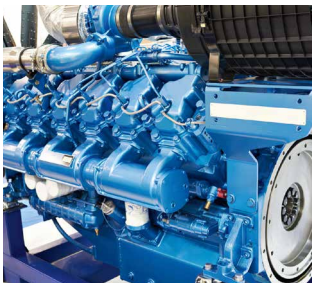
Applications

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

Benefits

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

Description


Type **series B** switches have a thermo-bimetallic snap-disc with a fixed switching temperature as the switching element. In the case of an external temperature input, the **double contact system of the switch**, and thus the circuit of the application is opened or closed. The heat transfer is performed from all sides onto the housing of the switch by means of convection, or direct heat conduction.

B12 switches are universally applicable through their design, their **wide range of performance**, and their diverse range of designs: as a protective switch, sensor, controller.

Especially applications in the area of temperature sensors with low voltage and signal currents require **gold plated contacts** which is available in our B13 series.

Beside the standard counters in single implementation the protectors are also offered in **twin and triplet configuration**.

Technical data

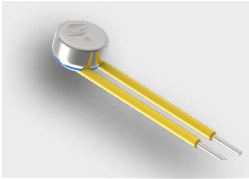
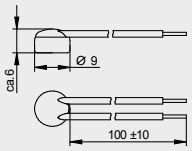
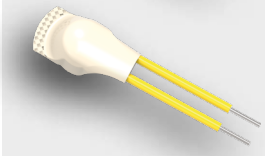
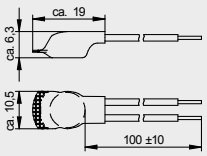
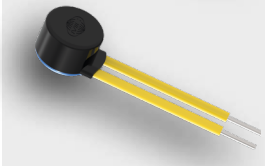
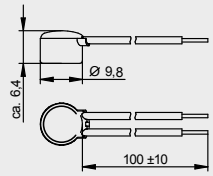
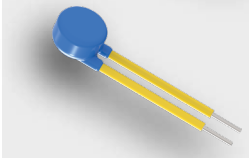
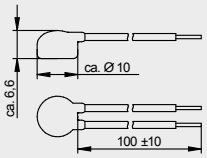
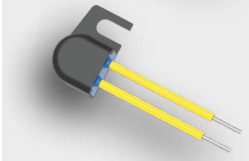
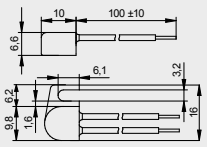
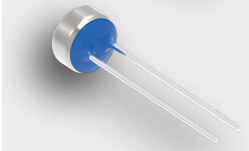
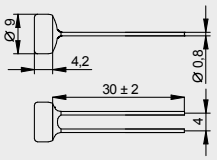
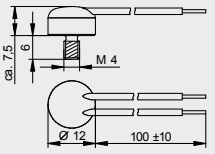
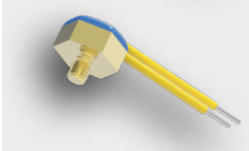
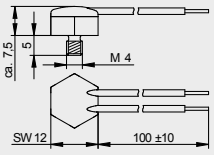
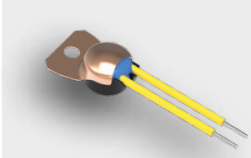
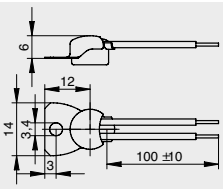
type ratings			control			
			B12A / E		B12B / G	B13N / T
version			normally closed		normally open	normally closed/open
rated current at 250 V 50/60 Hz (power factor 0.95 / 0.6)			10 A / 6 A	13 A (2.1 A)	5 A (1.6 A)	1...100 mA (24 Vdc)
switching cycles under rated current			10,000	1,000	5,000	10,000
max. current under failure conditions at 250 V 50/60 Hz (power factor 0.95)			30 A			-
switching cycles under max. current			100			-
temperature rating T_A (steps in 5 °C)			70 °C ... 190 °C	70 °C ... 160 °C	70°C ... 185 °C	70 °C ... 160 / 155 °C
tolerances			Standard: ± 5 °K			
feature of automatic action			1.B, 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			-
vibration resistance (10 to 60 Hz)			100 m/s²			
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, for T_A > 130°C the hysteresis is 30°K -15°K/+30°K. [2] on request

The variety of our product variations is nearly infinite. Microtherm distinguishes itself by a high expert's know-how in the area of customised developments. We will be pleased to give you specific advice during a personal consultation and present you all the options suitable for your application:

- application of plug connectors
- unique packaging and overmolding variations
- specific cable assemblies and many more

Varianten

control type	n.c.	n.o.	code	illustration	drawing dimensions (mm) *	technical specification	approvals (only for B12)
B12 B13	A N	B T				not insulated potted	VDE, UL, cUL, CSA
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
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
B12 B13	A N	B T	B245			CuBe mounting cap combined with U186 / U112	VDE, UL, cUL

* The overall height depends on the max. outer diameter of the connecting cable used. The actual max. overall height is available on request.

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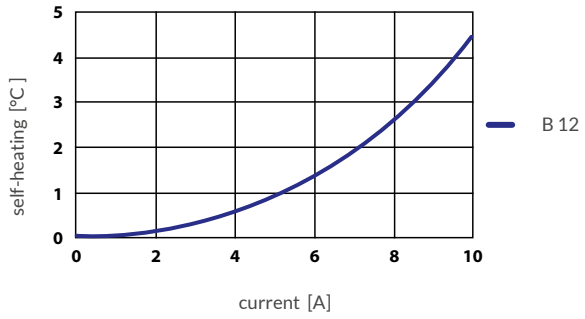
Standard wire

lead	code	temperature max.	operating voltage max.	approx. diameter-insulation	approx. cross section / diameter	UL style
stranded white	L300 [1]	150 °C	300 V	1,50 mm	AWG24 / 0,25 mm²	3398
	L310			1,82 mm	AWG20 / 0,50 mm²	
	L320			2,10 mm	AWG18 / 1,00 mm²	
	L360 [1]	200 °C	600 V	1,10 mm	AWG24 / 0,25 mm²	10086
	L370			1,50 mm	AWG20 / 0,50 mm²	
	L380			1,70 mm	AWG18 / 0,82 mm²	
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

Standard length 100 ± 10 mm, stripped 6 ± 1 mm, AWG20 is recommended [1] B13 only

Heating by current



The characteristic curve in the diagram is measured with a thermal switch without any insulation in an oil bath.

Note:

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

Ordering example

B12 | A | 120 | 05 | L310 | 300 | U186 | B245

- B12 — type
- A — normally closed
- 120 — temperature
- 05 — tolerance
- L310 — lead wire white, AWG20
- 300 — length 300 mm
- U186 — cap of PPS potted
- B245 — mounting cap

Marking

B12A	type (B12 n.c.)
12005	response temperature (120°C), tolerance (± 5°C)
101D	date of manufacture (October 2021), country (D=Germany)

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