

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 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 )                   | 10.0 A / 6.0 A                             | 13.0 A / 6.0 A   | 5.0 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 ) | 30.0 A                                     |                  |  | -                      |   |
| switching cycles under max. current   | 100  |                  |  | -                      |   |
| temperature rating T <sub>A</sub> ( 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 <sup>1)</sup>                |                  |  |                        |   |
| dielectric strength ( standard insulation )                                   | 2 kV                                       |                  |  | -                      |   |
| vibration resistance (10 to 60 Hz)  | 100 m/s <sup>2</sup>                       |                  |  |                        |   |
| 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, for T<sub>A</sub> > 130°C the hysteresis is 30°K - 15°K / +30°K. <sup>2)</sup> 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<br>B13   | A<br>N | B<br>T |      |              |                           | not insulated<br>potted  | VDE, UL, cUL, CSA          |
| B12<br>B13   | A<br>N | B<br>T | U253 |              |                           | shrink cap<br>potted   | VDE, UL, cUL               |
| B12<br>B13   | A<br>N | B<br>T | U186 |              |                           | cap of PPS<br>potted   | VDE, UL, cUL               |
| B12<br>B13   | A<br>N | B<br>T | U112 |              |                           | coated<br>T <sub>A</sub> max. 160°C                                      | VDE, UL, cUL               |
| B12<br>B13   | A<br>N | B<br>T | U294 |              |                           | housing of PPS<br>potted<br>T <sub>A</sub> max. 160°C                    | VDE, UL, cUL               |
| B12<br>B13   | A<br>N | B<br>T | A800 |              |                           | not insulated<br>potted  | VDE, UL, cUL               |
| B12<br>B13   | E<br>N | G<br>T | G402 |              |                           | aluminium housing<br>thread M4x6<br>potted<br>T <sub>A</sub> max. 150 °C | VDE, UL, cUL               |
| B12<br>B13   | E<br>N | G<br>T | G714 |              |                           | brass housing<br>thread M4x5<br>potted<br>T <sub>A</sub> max. 150 °C     | VDE, UL, cUL               |
| B12<br>B13   | A<br>N | B<br>T | B245 |              |                           | CuBe mounting cap<br>combined with<br>U186 / U112                        | VDE, UL, cUL               |