

TSA30

Electronic Temperature Switch and Transmitter

- Pt100 measuring system
- up to 2 switch points
- analogue output 4...20 mA or 0...10 V
- rotatable 320° display and electrical connection
- menu navigation refers to VDMA standard
- IO-Link communication interface
- Measuring ranges: 0...100 °C or -30...+130 °C
- max. pressure: 200 bar



Description:

Integrated in a stainless steel protection tube is a temperature-dependent electrical resistor (Pt100). This changes its ohmic resistance depending on the media temperature. Up to two transistor outputs are available as limit value control.

In the version with built-in transmitter, the resistance change is converted into a 4...20 mA analogue current signal or a 0...10 V voltage signal and made available electrically. Different measuring ranges, process connections, sealing materials and probe lengths can be selected.

Typical applications:

The resistance thermometers are very well suited for use in general mechanical engineering, apparatus engineering, plant engineering, container and pipeline construction, as well the chemical industry, process engineering and the food industry, where they are preferably used for recording the temperature in liquid and gaseous media.

Due to their on-site display, they are also ideally suited for installation at process-relevant points for visual control.

Technical Data:

| | |
|---------------------------------------|--|
| Sensor element: | Pt100 class A DIN/IEC 60751 |
| Materials: | |
| Wetted parts: | stainless steel 1.4571 |
| Electronics housing: | stainless steel, PBT, PA6.6 GF30 |
| Seals: | FKM, EPDM |
| Operating elements: | 3 easy-response pushbuttons |
| System of protection: | IP65, IP67 |
| Protection class: | III |
| Electrical connection: | Plug M12 x 1, 4-pin / 5-pin (depending on output code) |
| Process connection: | see order code |
| Dimensions: | 110 x 41 mm (without plug connector and probe) |
| Weight: | approx. 200 g |
| A/D converter: | |
| Resolution: | 12 bit (4096 steps per measuring span) |
| Scanning rate: | 1000 / s |
| Linearity error: | < ± 0,5 % v. f. s. at +25 °C |
| Temperature influence: | < ± 0,2 % FSO / 10 K |
| Compensation range: | -10 °C... +70 °C |
| Repeatability: | ± 0,1 % v. f. s. |
| Time constant T_{0,9}: | 40 sec |
| Max. pressure: | 200 bar |
| Temperature range: | |
| Electronics: | -10 °C... +60 °C |
| Storage: | -30 °C... +80 °C |
| Power supply: | 15... 28 V _{DC} , reversed polarity protected (SELV, PELV) |
| Digital display: | 4-digit 14-segment LED display, red, digit height 9 mm |
| Error display: | LED red and alphanumeric display |
| Power consumption: | ca. 50 mA (ohne Last) |
| Analogue output: | |
| Current output: | 4...20 mA |
| Load: | max. R _I = (U _b -12V) / 20 mA R _I = 600 Ohm at U _b = 24 V _{DC} |
| Scanning rate: | 2 ms |
| Voltage output: | 0...10 V _{DC} |
| Rating: | max. 10 mA |
| Adjustment range: | 25 %...100 % f. s. |

Transistor-switching outputs / IO-Link:

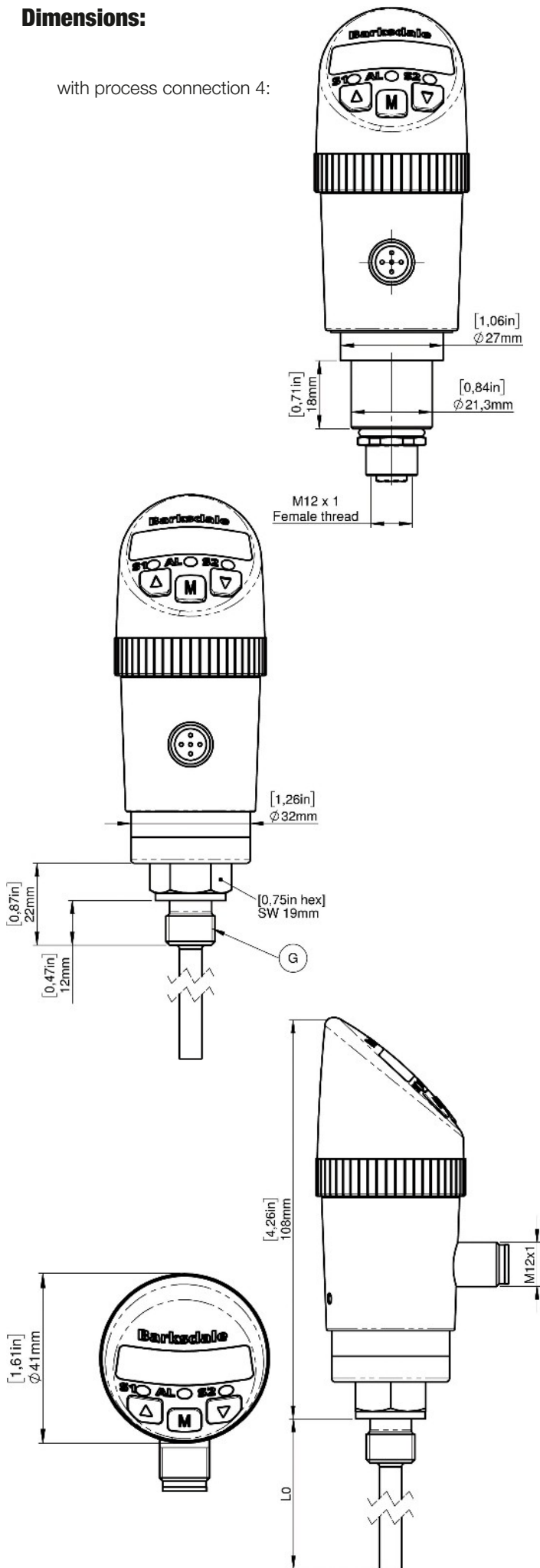
| | |
|---|---|
| Switching function: | Normally open/normally closed, standard / window mode and diagnosis function adjustable |
| Adjustment range for switching point and hysteresis: | 0 %... 125 % f. s. |
| Switching frequency: | max. 100 Hz |
| Load: | max. 500 mA, short-circuit proof, IO-Link: max. 250 mA |
| Delay: | 0,0 s ... 50 s adjustable |
| Status display(s): | LED(s) red |

Interfaces:

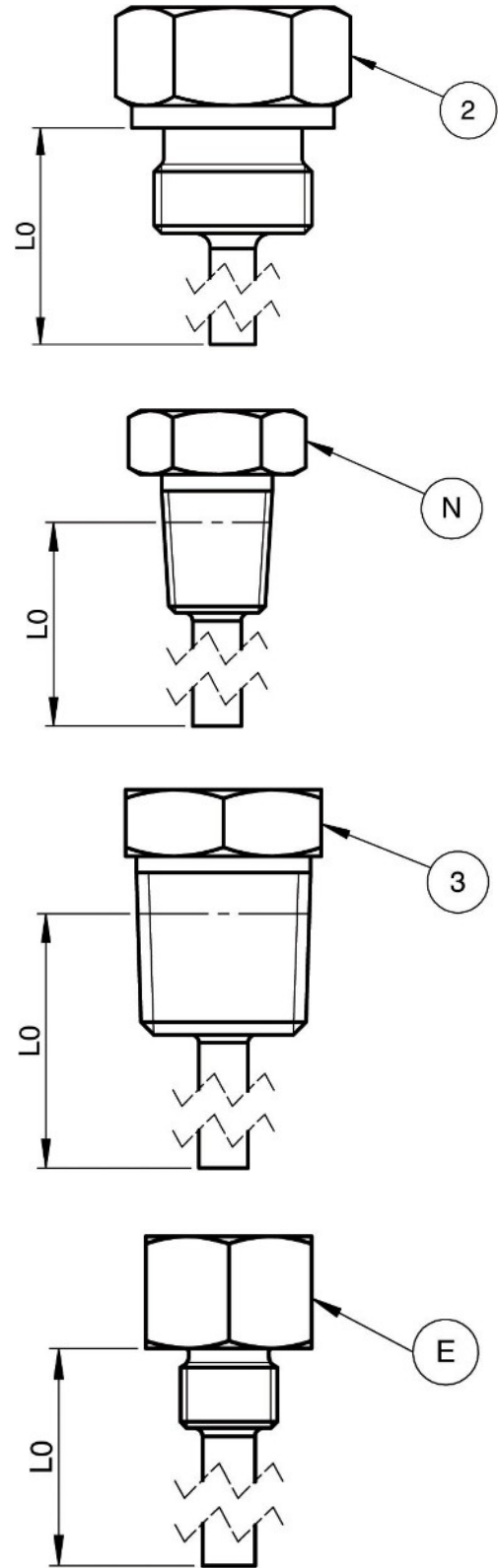
| | |
|-------------------------------------|--|
| Communication interface: | IO-Link |
| Transmission type: | COM2 (38,4 kBaud) |
| IO-Link Revision: | 1.1 |
| SCDI standard | IEC 61131-9 |
| Profiles: | Smart Sensor |
| SIO modules: | yes |
| Device type: | Class A |
| Process data variable: | 1 |
| Binary data channel: | 2 |
| Min. process cycle time: | 2,5 ms |
| Device ID: | 0x031... |
| EMV / ESD: | EN 61000-4-2 ESD 4 kV CD / 8 kV AD EN 61000-4-3 HF 10 V/m radiated EN 61000-4-4 Burst 2 kV EN 61000-4-5- Surge 1/2 kV EN 61000-4-6 HF, conducted 10 V |
| Shock resistance: | DIN EN 60028-2-27 50 g (11 ms) |
| Vibrations resistance: | DIN EN 60028-2-26 20 g (10...2000 Hz) |
| Approvals: | cULus 1) - E302981 |

Dimensions:

with process connection 4:

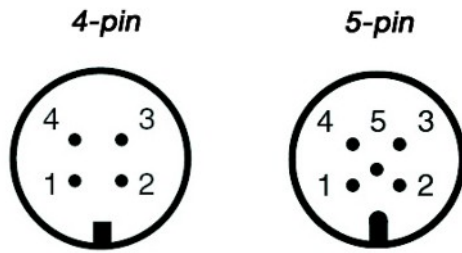


Process Connections:



| | |
|----------|-------------------|
| G | G 1/4" |
| 2 | G 1/2" |
| N | 1/4" NPT |
| 3 | 1/2" NPT |
| E | 7/16-20 UNF (SAE) |

Electrical Connection:



| Pin | Signal output code 1, 7 | Signal output code 2, 3 | Signal output code 4, 5, 8 |
|-----|-------------------------|-------------------------|----------------------------|
| 1 | +Ub | +Ub | +Ub |
| 2 | SP2 | Signal | Signal |
| 3 | 0 V | 0 V | 0 V |
| 4 | SP1 / IO-Link* | SP1 | SP1 / IO-Link* |
| 5 | - | - | SP2 |

* nur Code 7 und 8

Order Code:

BTS3000

Order number: TSA30-BTS3 1 G V M 0017M 1

Electronic temperature switch and transmitter

Output:

1 = 2 switch points
2 = 4...20 mA - 1 switch point
3 = 0...10 V - 1 switch point
4 = 4...20 mA - 2 switch points
5 = 0...10 V - 2 switch points
7 = IO-Link / 2 switch points (PNP, NPN, PP)
8 = IO-Link / 2 switch points (PNP, NPN, PP)
/ analogue output

Process Connection:

G = G 1/4" male thread (sealing V, E or F)
2 = G 1/2" male thread (sealing V, E or F)
N = 1/4" NPT male thread (sealing X)
3 = 1/2" NPT male thread (sealing X)
E = 7/16-20 UNF male thread (sealing V, E or F)

Sealing:

V = FKM
E = EPDM
F = FFKM (on request)
X = no sealing

Electrical Connection:

M = M12 Plug

Probe length*:

0017M = 17 mm (Process connection G and 2)
0025M = 25 mm (Process connection G and 2)
0050M = 50 mm (Process connection G and 2)
0100M = 100 mm (Process connection G and 2)
0300M = 300 mm (Process connection G and 2)
0650M = 650 mm (Process connection G and 2)
0.70Z = 0,7 inch (Process connection N, 3 and E)
2.00Z = 2 inch (Process connection N, 3 and E)
4.00Z = 4 inch (Process connection N, 3 and E)
6.00Z = 6 inch (Process connection N, 3 and E)
12.0Z = 12 inch (Process connection N, 3 and E)

Temperature range:

1 = 0...100 °C
2 = -30...+130 °C
3 = 32...210 °F
4 = -22...+280 °F

* If probe length >100 mm shock and vibration values can deviate - depending on application.
If probe length >300 mm kepp away the flow from the probe.
If probe length < 25 mm linearity error and time constant values can deviate - depending on application.

Accessories:

Plug connector M12 x 1, 4-pin, with screw terminals, angled (IP65)

Plug connector M12 x 1, 5-pin, with screw terminals, angled (IP65)

Plug connector M12 x 1, 5-pin, with sharped cable (IP67)