

# Temperature sensor type TP23, Construction type 2, plug-in sensor for protection tube with straight cable outlet



|                                       |  |
|---------------------------------------|--|
| Measuring element/Measuring principle | Pt100  |
| Temperature range                     | Measuring tip: 0...200 °C<br>Cable outlet: -20 °C...220 °C<br>Connection cable: on request |
| Protection class                      | Sensor tube IP68   |
| Mounting                              | Protection tube  |
| Material                              | Sensor tube: Brass<br>Adapter: Brass   |
| Length                                | Immersion depth 55 mm  |



Temperature sensor TP23

## Application range

Temperature sensors of the TP23 series are especially designed for use in Shipbuilding industry, machinery and equipment for temperature measurement in traction motors, gear boxes, wheelset bearings and compressor- and air conditioning systems.

## Measuring principle

Temperature sensors of the TP23 series operate according to the measurement principle / with the measuring element Pt100.

## Functioning of platinum measuring elements

With this measuring principle the temperature-sensitive resistance value of the measuring element is acquired. For platinum measuring elements the electrical resistance increases with increasing temperature and decreases with decreasing temperature (temperature linear). Advantages of platinum measuring elements are:

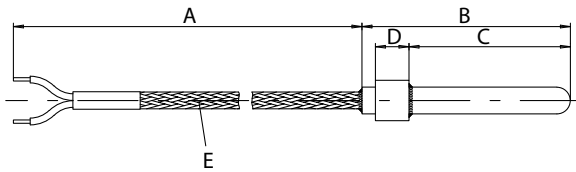
- accurate and reproducible thermoelectric characteristics
- nearly linear temperature characteristic
- easy to replace (no calibration necessary, corresponding to international standards, e. g. IEC 751 / DIN EN 60751)
- measurement is faster and more precise than with thermocouples

## Specific features

- Compact, robust design
- Easy installation via protection tube
- Connection with fixed cable, straight cable outlet
- Temperature linear transmission behaviour
- As 2-wire or 4-wire type available
- Suitable measuring transducers, limit value switches and analogue indicators available
- Sensor as Pt100 or as NTC available

# Dimensions, connections and drawings

## Dimensions temperature sensor

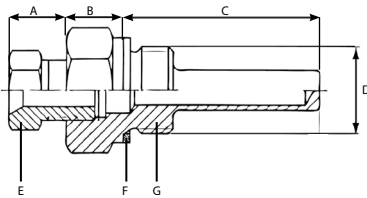


### Explanation to the illustration

- A: Length 2300 mm
- B: Length 62 mm
- C: Length 48 mm
- D: Length 10 mm
- E: Teflon cable with steel wire mesh, 2 x 0.75<sup>2</sup>

Protection tubes are used for temperature measurement in fluids. If protection tubes are used, temperature sensors can be replaced during operation.

## Dimensions protection tube MX1 (brass)

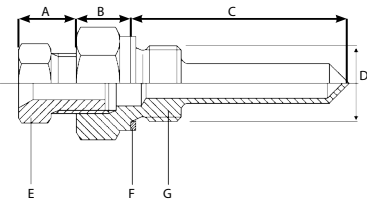


### Explanation to the illustration

- A: Length 16 mm
- B: Length 16 mm
- C: Length 55 mm
- D: Diameter see next table
- E: Screw connection
- F: Sealing ring
- G: Protection tube

Max. insertion depths T=120 mm  
Material protection tube: CuZn39Pb3

## Dimensions protection tube MX6 (stainless steel)



### Explanation to the illustration

- A: Length 16 mm
- B: Length 15 mm
- C: Length 55 mm
- D: Diameter see next table
- E: Screw connection
- F: Sealing ring
- G: Protection tube

Material protection tube: 1.4305  
Threaded tube acc. ISO 228/1-G1/2A, tolerance class A  
Metric fine thread DIN 13 T5, 6 und 7

## Technical Data

| Signal acquisition                    |   |
|---------------------------------------|---|
| Measuring element/Measuring principle | Pt100   |
| Temperature range                     | Mesasuring tip: 0...200 °C<br>Cable outlet: -20 °C...220 °C<br>Connection cable: on request |
| Accuracy / Tolerance class            | DIN EN 60571: class B (other classes on request)  |
| Transmission behaviour                | Temperature linear  |
| Response time                         | In water t 0.5 = 12 s / t 0.9 = 42 s; In oil: t 0.5 = 33 s / t 0.9 = 105 s                  |

| Environmental influences |                                  |
|--------------------------|----------------------------------|
| Storage temperature      | -40...+105 °C                    |
| Protection class         | Sensor tube IP68                 |
| Vibration resistance     | DIN89011: Characteristic curve 2 |
| Shock resistance         | On request                       |
| Insulation voltage       | 500 V/AC, 50 Hz @ 1 min          |
| Isolation resistance     | >10MΩ @ 500V/DC                  |
| Fire protection class    | On request                       |
| Approvals / Standards    | None                             |

| Mechanical quantities |  |
|-----------------------|--|
| Material              | Measuring tip: N. a.<br>Sensor tube: Brass<br>Adapter: Brass |
| Mounting              | Protection tube  |
| Length                | Immersion depth 55 mm  |
| Installation position | Any  |
| Weight                | Depending on connector: approx. 100 g with 2 m cable         |

| Other     |         |
|-----------|---------|
| Approvals | CE; DNV |

### Technical data of protection tube MX1 and MX6

|                            | MX1                  | MX6   |
|----------------------------|----------------------|---|
| Weight                     | Approx. 100 g        | Approx. 125 g   |
| Material                   | Brass (CU Zn 39 Pb3) | Stainless steel (1.4305)                                |
| Maximum flow velocity      | 5 m/s (in water)     | 5 m/s (in water)  |
| Maximum operating pressure | 10 bar               | 40 bar (from 15 bar or higher Cu sealing ring required) |

## Type code

### Type code structure

|             |              |                            |
|-------------|--------------|----------------------------|
| <b>TP23</b> | <b>-2500</b> | <b>Example: TP23-2500</b>  |
|             |              | Length of connection cable |

### Type code

|                                   |              |                                |   |
|-----------------------------------|--------------|--------------------------------|---|
| <b>Length of connection cable</b> | <b>-500</b>  | 0,5 m                          |   |
|                                   | - ___        | Without index 2,3 m            | * |
|                                   | <b>-2500</b> | 2,5 m                          |   |
|                                   | <b>-6000</b> | 6 m                            |   |
|                                   | <b>-7500</b> | 7,5 m                          |   |
|                                   | <b>-8000</b> | 8,0 m                          |   |
|                                   | - ___        | Other cable lengths on request |   |
| <b>TP23</b>                       | <b>-2500</b> | <b>Example: TP23-2500</b>      |   |

### Order no. for protection tubes

| Thread     | Brass order no. | Stainless steel order no. |
|------------|-----------------|---------------------------|
| R1/2"      | MX1-R12         | MX6-R12                   |
| MX18 x 1.5 | MX1-M18         | --                        |
| MX20 x 1.5 | MX1-M20         | MX6-M20                   |

### Preferred types

Features marked with a \* symbol at the end of the line are preferred features. If you select a preferred feature for each placeholder, the device is specified as preferred type. Preferred types are available quickly from stock. Other types will be delivered according to scheduled appointments.

### Special types

If our standard types do not correspond with your expectation, we are pleased to develop a special solution together with you.