

# Transponder for sensor signals

## Safety warnings



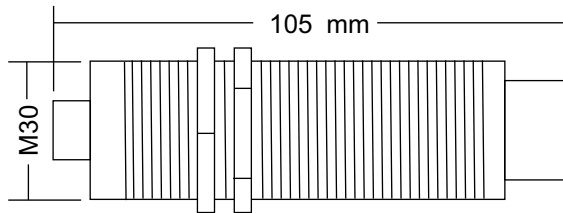
When mounting, initiating and operating this transponder the safety precautions and regulations have to be observed. Only staff with a corresponding qualification should work with the transponder. A non-observance of the safety regulations may cause serious injuries and/or damages. Check before initial operation the suitability of the transponder for this area of application. The technical data of this manual have to be followed.

## Characteristics

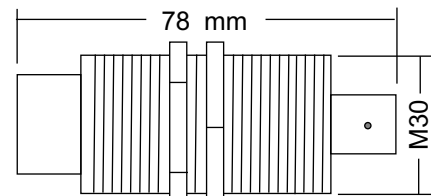


Input: semiconductor temperature sensor -10...+120°C (in area of stainless steel tube)  
 Output: 0(4)...20 mA at 0...100 °C  
 Supply: sensor: 2,5...5,5 V / 10 µA      base station: 24 VDC/ 100 mA  
 Transmission distance: 5...8 mm  
 Differential velocity: 0...4 m/s  
 Tolerance base station: 1% of end scale value  
 Degree of protection: IP67  
 Freedom of wear and maintenance  
 Voltage supply for base station only

## Dimensions



Base station



Interface

## Connection

### Connection base station analogue (digital)

VDD	Pin 1	colour: red	voltage supply	+24 V
NC (SCK)	Pin 2	colour: brown	clock	
NC (MISO)	Pin 3	colour: green	digital output	
NC (MOSI)	Pin 4	colour: yellow	digital output	
NC (Reset)	Pin 5	colour: grey	reset	
<b>GND</b>	<b>Pin 6</b>	<b>colour: black</b>	<b>ground</b>	<b>0 V</b>
<b>IOUT</b>	<b>Pin 7</b>	<b>colour: brown</b>	<b>output current</b>	<b>0(4)...20 mA</b>

### Connection Interface

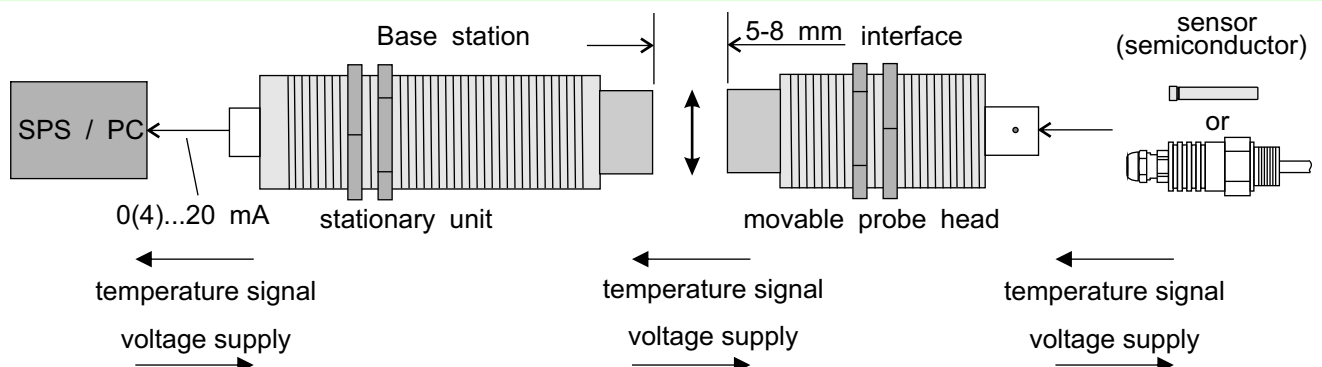
<b>VDD SENS</b>	<b>Pin 1</b>	<b>supply sensor (+)</b>
NC	Pin 2	
<b>GND</b>	<b>Pin 3</b>	<b>ground</b>
<b>VI</b>	<b>Pin 4</b>	<b>input sensor signal</b>

### Connection sensor

<b>VDD SENS</b>	<b>Pin 1</b>	<b>supply sensor (+)</b>
NC	Pin 2	
<b>GND</b>	<b>Pin 3</b>	<b>ground</b>
<b>VI</b>	<b>Pin 4</b>	<b>output sensor signal</b>

NC= not used with analogue type

## Principle of function



## Technical data

### Input

Interface: 0...2,048 V (signal of sensor)  
input capacity 42...52 nF  
input resistance >1 Mohms  
Distance transmission: base station-interface 5...8 mm  
Differential velocity: 0...4 m/s

### Output

Base station: 0(4)...20 mA  
load resistance: <750 Ohm (supply >20 V)  
Interface: 2,5...2,9 V / 0,7 mA  
(sensor supply)  
Temperature sensor: 0,43...2,0 V (-10...+120°C)  
load resistance >2,2 MOhm  
short circuit proof

### Accuracy

Temp. sensor: error due to load resistance <0,1%  
Valid output signal: 600  $\mu$ s ( $t_3$ )  
(when voltage supply is available)  
temperature to voltage error  
-10°C < $\pm$ 2,1°C  
0°C < $\pm$ 1,9°C  
+25°C < $\pm$ 1,5°C  
+85°C < $\pm$ 2,1°C  
+100°C < $\pm$ 2,2°C  
+120°C < $\pm$ 2,5°C  
Transponder: measuring cycle time: 6 ms ( $t_1$ )  
recover time: >2 ms ( $t_2$ )  
Base station: 1% of end scale value

### Voltage supply

Supply: base station 24 VDC (12...36 V)  
(pole protection, no overvoltage protection)  
temperature sensor 2,4...5,5 V  
(no overvoltage and pole protection)  
Current: base station 45...100 mA  
temperature sensor 10  $\mu$ A  
power consumption at I=0, U=<4 V

### Temperature conditions

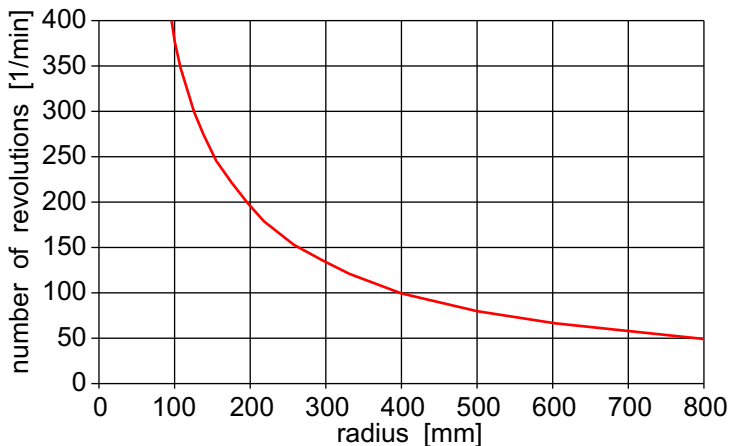
Operation: base station/interface -10...+60°C  
temperature sensor -10...+120 °C (tube)  
Storage.: base station/interface -25...+60°C  
temperature sensor -25...+85°C

### Mechanics

Case: base station: tube M30x1,5 with plastic cap  
interface: tube M30x1,5 with plastic cap  
sensor: stainless steel tube  $\varnothing$  6 mm  
Dimension: base station: length 105 mm (175 mm)  
interface: length 78 mm (106 mm)  
temperature sensor: length 40 mm  
Weight: base station: approx. 150 g  
interface: approx. 110 g  
temperature sensor: approx. 50 g  
Connection: base station: plug (jack) 8-pole, M12x1  
interface: plug 4-pole, M12x1, PG7  
temp. sensor: silicon cable  $\varnothing$  4,8 mm  
(oil resistant) angled connector M12x1,  
4-pole, type Bender series 713  
Protection: degree IP67

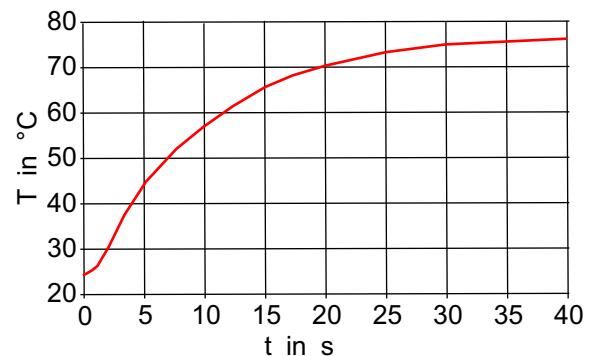
## Characteristic curves

### Area of application



the operating conditions are underneath the curve

### Reaction time of sensor



Measurement conditions: Immerse the 23°C warm sensor into 80°C warm water with a submerge of 15 mm.

### Behaviour power on of the sensor

