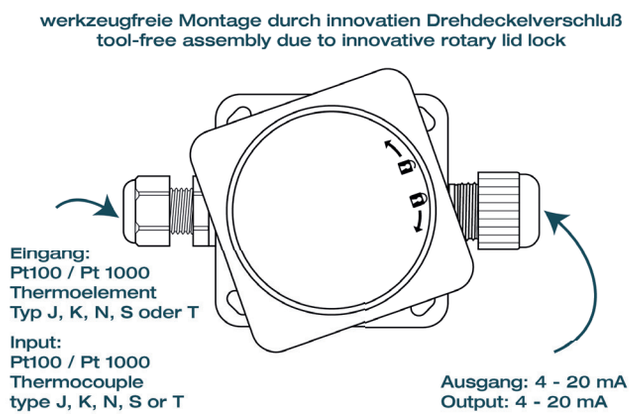
Be sure. testo

Housing temperature transmitter 4-20 mA

Article number: 807001 0012

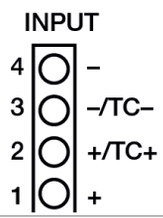
The Testo Sensor housing transmitter is suitable for universal connection of resistance sensors and thermocouples. Resistance-based temperature probes (Pt100 / Pt1000) in two-, three- and four-wire technology as well as thermocouples can be connected. The transmitter provides an output signal of 4 to 20 mA. It is the ideal link between the temperature probe and your control system. Thanks to the innovative plastic housing with a tool-free rotary cover lock and the good use of space inside the transmitter, installation is quick and easy. Whether for a retrofit or new installation, our housing transmitter is optimally designed for use in plant and machine construction and features high accuracy, reliability, long-term stability and its robust product design.

Special features
Inputs and outputs
Input: various resistance sensors and thermocouples Output: 4 to 20 mA
Accuracy and Long-term stability
Accuracy: high measuring accuracy Long-term stability: long service life with flexible application possibilities
Alarm function
Sensor break monitoring Sensor short-circuit monitoring Measuring range monitoring
Design
compact, robust, vibration and shock resistant design
Parametrization
Simple and super-fast parameterization thanks to preset dip switches



Input			
You can connect different temperature probes to the input of the transmitter and then configure them via DIP switches. Please order the probes separately, we feel free to advise you if you have any questions.			
Resistance sensors			
Measuring element	**Norm**	**Configurable measuring range**	**Accuracy *1**
Pt100	IEC 60751	-200 °C to +850 °C | -328 °F to +1562 °F	±0.3 °C + 0.1 %
Pt1000	IEC 60751	-200 °C to +850 °C | -328 °F to +1562 °F	±0.3 °C + 0.1 %
Connection type	2-wire, 3-wire and 4-wire | *1 of the measuring span		
Input Thermocouple			
Measuring element	**Norm**	**Configurable measuring range**	**Accuracy *1**
Type K (NiCr-Ni)	IEC 60584	-200 °C to +1350 °C | -328 °F to +2462 °F	±0.3 °C + 0.1 %
Type J (Fe-CuNi)	IEC 60584	-200 °C to +1000 °C | -328 °F to +1832 °F	±0.3 °C + 0.1 %
Type T (Cu-CuNi)	IEC 60584	-200 °C to +400 °C | -328 °F to +752 °F	±0.3 °C + 0.1 %
Type N (NiCrSi-NiSi)	IEC 60584	-100 °C to +1300 °C | -148 °F to +2372 °F	±0.3 °C + 0.1 %
Type S (Pt10Rh-Pt)	IEC 60584	-50 °C to +1750 °C | -58 °F to +3182 °F	±0.3 °C + 0.1 %

Circuit diagram Output



Input impedance: >10 MΩ | Max. wire loop resistance: 500 Ω (incl. thermocouple) | Cold Junction Compensation: Internal by means of NTC 5K (-40 °C - 85 °C ±0.2 °C) | *1 of the measuring span

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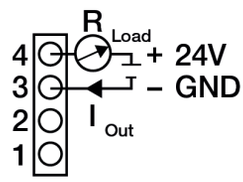
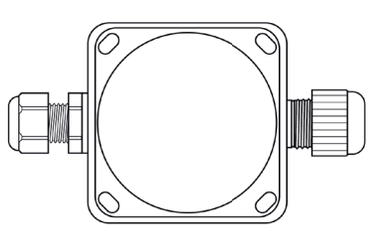
Testo Sensor GmbH
Testo-Straße 1
D-79853 Lenzkirch
+49 7653 96597-0
+49 7653 96597-99
info@testo-sensor.de
www.testo-sensor.de

Output		Circuit diagram Output	
Output type	analog, temperature linear for RTD & TC		
Output signal	4 to 20 mA		
Parametrization / Scaling	Configurable via DIP-Switch		
Resolution	16 bit dac		
Accuracy (°C)	0,1		
Load	500 Ω at 24 VDC		
Connection type	2-wire		

Sensor monitoring & sensor error		Measured values outside the measuring range	
Sensor failure effects	according to NAMUR NE43	Sensor Status	4 - 20 mA
Alarms		Min. measured value	4 mA
Sensor error	4 - 20 mA	Max. measured value	20 mA
Sensor Status	3,6 mA	Underrange	3,8 mA
Sensor short circuit	21 mA	Overrange	20,5 mA
Time response		**Accuracy and stability**	
Closing time (s)	≤ 5	**Cold junction compensation**	
Signal attenuation (s)	0 – 30	Cold Junction Compensation	±0,3 – 0,5 °C (NTC 5K)
Measuring cycle (s)	<0,25 (<4 Hz)	Temperature influence	±0,01 °C per °C
Response time	Depending on sensor type		

Influence of the sensor cable	
RTD and resistance (2-wire)	In two-wire circuits, the inherent resistance of the connecting lead adds to the resistance value of the measuring resistor (thermistor or Pt) and thus falsifies the measurement result. For this reason, we recommend the two-wire technique in conjunction with small-resistance measuring resistors only if you can use comparatively short connecting leads, i.e. small-resistance connecting leads.
RTD and resistance (3-wire)	Negligible, with equal wire resistance
RTD and resistance (4-wire)	Negligible
Thermocouples and Voltage	Negligible
Further data	
Supply voltage influence	Within specified limits

Ambient conditions		
Ambient Temperatur	Storage: -20 °C to +70 °C (housing) Operating: -20 °C to +70 °C (housing)	
Humidity (%rH)	0 to 98 (non-condensing)	
Protection	Housing IP65	
EMC		
Standard	Directive: 2014/30/EU | Harmonized standards: EN 61326-1:2013	
Type		
Dimensions (mm)	105 x 60 x 34 (see drawing)	
Material | Flammability	ABS white RAL 9010 UV resistant, RoHS compliant	
Mounting	Enclosed mounting kit (housing)	
Connection	Single wires, max. 1,5 mm²), AWG 16	
Weight (g)	68	

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D-79853 Lenzkirch

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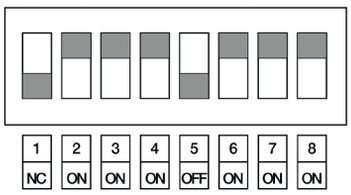
info@testo-sensor.de
www.testo-sensor.de

Factory settings

Temperaturtransmitter für Kabelfühler (RTD Sensoren)
Werkseinstellungen: Sensor Pt100 Skalierung: 0 .. 100 °C
Temperature transmitter for cable probes (RTD sensors)
Factory settings: Sensor Pt100 Scaling: 0 ... 100 °C



Factory configuration

Input	Pt100
Scaling	0 °C to +100 °C

General data

Isolation	none
Supply Voltage (VDC)	12 to 36, polarity protected
Delivery	
Transmitter, Instruction manual, individually packed in PE bag	

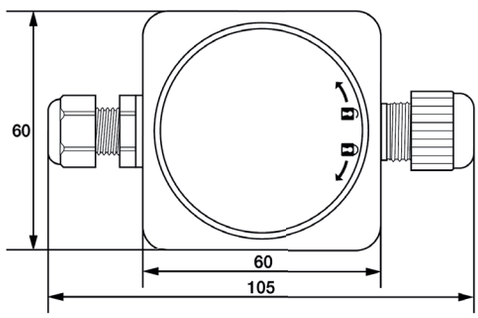
Matching accessories

Designation	Order no.
DIN rail power supply	On request
Table power supply	On request
Matching cable probe	in the Webshop: testo-sensor.shop
Matching Screw-in probes	in the Webshop: testo-sensor.shop
Suitable contact probes	in the Webshop: testo-sensor.shop
Matching connection cables	in the Webshop: testo-sensor.shop

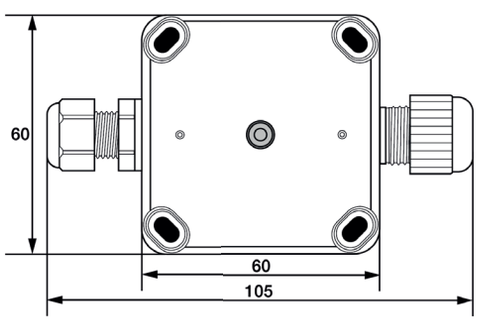
Technical drawing

All dimensions in mm

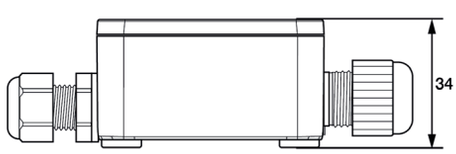
Front view



Rear view



Side view



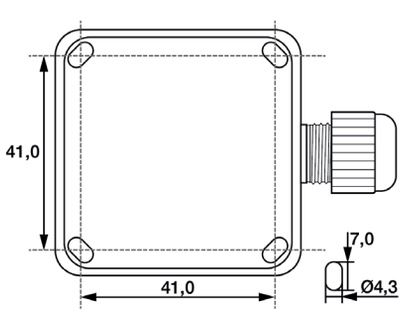
Mounting

Thanks to the four slotted holes, the housing can be easily mounted to the wall. The openings for the screws are located outside the protective space for the electronics, so there is no need for sealing. With the cable compression glands, sealing to the probe or data cable is guaranteed even for different diameters.

Mounting material for the installation of the transmitter (screws and dowels) are included with the transmitter as free accessories. A large assortment of temperature probes and connecting cables is also available as an option.

Important: To prevent measuring errors, the connecting screws for fastening the connecting cable must be firmly tightened.

Bohrschablone



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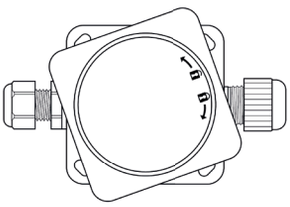
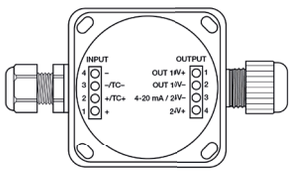
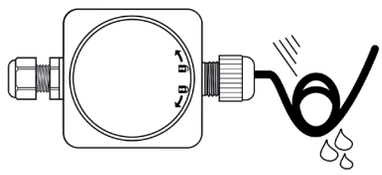
Mounting



Open the rotary cover.



Connect the required measuring element to the input according to the assignment plan. (Suitable measuring element NOT included in the scope of delivery, can be found in our store.) You can then parameterize input and output via the DIP switches.

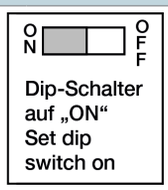


Please lay cables with reserve loop and in such a way that no water can penetrate into the sensor head. This allows you to extend the probe without disconnecting the electrical connection.

Pin assignment input and output

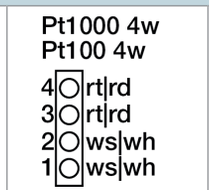
Input RTD sensors

Pt1000 2w / Pt100 2w



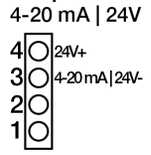
Pt1000 3w / Pt100 3w

Pt1000 4w / Pt100 4w



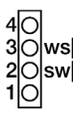
Output

Output 4-20 mA | 24V



Input thermocouples

TC Type J



TC Type K

TC Type N

TC Type S

TC Type T

Setting the input signal

With the DIP switches of the transmitter you can configure the transmitter according to your needs. DIP switch 1 is not assigned. Just leave it in the position. With DIP switches 2-4 you can define which measuring element you have connected to the input. Switches 5-8 are used to set the scaling and the measuring range. For the exact configuration please refer to the adjacent table.

off	on	on	on	
Bit 1	Bit 2	Bit 3	Bit 4	Sensor
nc	on	on	on	Pt100
	off	on	on	Pt1000
	on	off	on	TE Type K
	off	off	on	TE Type J
	on	on	off	TE Type T
	off	on	off	TE Type N
	on	off	off	TE Type S
	off	off	off	Pt100

Setting the measuring range (0 .. 250 °C)

Einstellen der Skalierung via DIP-Schalter
Setting the scaling range via DIP switch

on	on	on	on	
Bit 5	Bit 6	Bit 7	Bit 8	Scaling Range
on	on	on	on	0 .. +50°C
off	on	on	on	0 .. +100°C
on	off	on	on	0 .. +150°C
off	off	on	on	0 .. +200°C
on	on	off	on	0 .. +250°C
off	on	off	on	0 .. +400°C
on	off	off	on	0 .. +600°C
off	off	off	on	0 .. +800°C
on	on	on	off	0 .. +1.000°C
off	on	on	off	0 .. +1.200°C
on	off	on	off	-20 .. +50°C
off	off	on	off	-20 .. +120°C
on	on	off	off	-30 .. +70°C
off	on	off	off	-50 .. +50°C
on	off	off	off	-50 .. +150°C
off	off	off	off	-200 .. +50°C

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