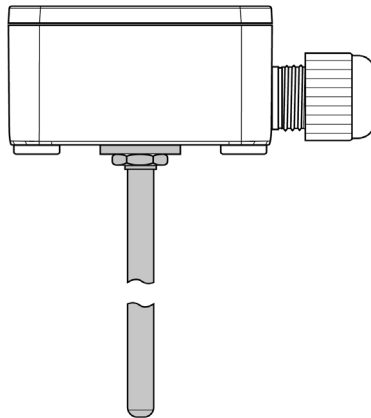


# User Manual

## Plug-in transmitter Basic 4-20 mA

Article number: 807003 0X12



RL / KS / 28.06.2024

All rights reserved. Changes to the documents are not allowed. Please read the operating instructions before starting any work and keep them carefully and to hand.

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Please find our whole temperature probe and transmitter portfolio in our webshop at: [www.testo-sensor.shop](http://www.testo-sensor.shop)

Managing Director: Prof. Burkart Knospe, Martin Arndt, Timo Löffler

Amtsgericht Freiburg HRB 706025 | Umsatzsteuer-ID.: DE274417683

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## 1. General

- The product described in the operating instructions is manufactured according to the current state of the art. All components are subject to strict quality and environmental criteria during manufacture. Our management systems are certified according to ISO 9001 and ISO 14001. The GTC in the sales documents apply.
- These operating instructions are an important part of the product. It must be available to qualified personnel and must be carefully read and understood before starting any work. Please be sure to comply with all the safety and handling instructions given. In particular, observe the local accident prevention regulations and general safety regulations applicable to the area of use of the unit.
- The manufacturer's liability expires in the event of damage caused by improper use, non-observance of the instructions, use of insufficiently qualified personnel and unauthorised modifications to the unit
- Subject to technical changes.

### 1.1. Security

**WARNING! Before installation, commissioning and operation, please make absolutely sure that the correct product has been selected with regard to design and specific measuring conditions. Failure to do so may result in serious personal injury and/or damage to property.**

- The selection of the products and, in particular, the determination of their suitability for a specific purpose are the sole responsibility of the purchaser, who must also ensure that incorrect planning, operation or installation does not cause any further damage and that compliance with the relevant construction and safety guidelines is observed and guaranteed.
- No liability or warranty is expressly accepted for damage caused by incorrect planning, operation, installation or malfunction of the units.
- The technical data and connection conditions in the supplied installation and operating instructions apply exclusively.
- Please contact us if you need to know more about the specification you require.

### 1.2. Intended use

- For the intended use of the product, please refer to the technical data and the commissioning instructions in the operating instructions. The unit is designed and built exclusively for the intended use described there and may only be used accordingly. The technical specifications must be observed. Claims due to improper use are excluded.
- This device must not be used for safety-relevant tasks, such as monitoring or protecting persons against danger or injury, as an emergency stop switch on systems or machines, etc.
- This product has been developed, qualified and manufactured to the highest quality standards. Application-specific environmental or stress conditions can influence the behaviour and lead to deviations from the specifications in the data sheet. To avoid this, we recommend application-specific advice.

**Application-specific environmental or stress conditions can be in particular:**

- Ingress of humidity, which can lead to falsification of measured values
- Vibration, which causes high acceleration forces
- UV irradiation, which can lead to embrittlement of the cable insulation
- Tensile forces acting on the cable, which can damage the probe's internal structure
- Insufficient thermal coupling to the measured medium, with increased response times as a result
- impact with excessively high temperatures, which can change or destroy the built-in measuring resistor or electronic components
- corrosion at the cable ends or the connector contacts, so that measured value falsifications can occur.

### 1.3. Personnel qualification

**WARNING! - Risk of injury due to insufficient professional qualification! Improper handling can lead to considerable personal injury and damage to property.**

- The activities described in these operating instructions may only be carried out by adequately qualified personnel. Special operating conditions may require additional, appropriate knowledge, e.g. about aggressive media, possible dangers or country-specific regulations, standards or guidelines. Please keep unqualified personnel away from the danger areas.

### 1.4. Signage, safety labels, type plate

Our products are marked with a label as follows. (Exemplary representation)



## 2. Transport, packaging and storage

### 2.1. Transport, packaging and storage

- Transport: Please inspect the unit for any transport damage immediately after delivery. Please notify us immediately of any obvious damage.
- Packaging: Please remove the packaging only immediately before assembly and keep it, as the packaging provides optimum protection during transport.
- Storage: Please refer to the data sheet for permissible temperature and ambient humidity conditions.

#### The following influences are to be avoided:

- Direct sunlight or proximity to hot objects.
- Mechanical vibration, mechanical shock (hard impact)
- Exposure to soot, steam, dust or corrosive gases
- Explosive environment, flammable atmospheres

### 2.2. Original packaging

**Please store the unit in the original packaging in a place that meets the conditions listed above. If the original packaging is not available, please pack and store the unit as follows**

- Wrap the unit in an antistatic plastic sheet.
- Place the unit with the insulation material in the packaging.
- For longer storage (more than 30 days), add a bag of desiccant to the packaging.

## 3. Commissioning

### 3.1. Assembly

- The units may only be connected in a de-energised state, only to safety extra-low voltages and only by suitably qualified personnel. The installation instructions in the data sheet must be observed.
- Please observe the safety regulations of the VDE, the federal states, their monitoring bodies, the TÜV and the local EVU.
- Please observe EMC guidelines to prevent damage, faults on the unit or measured value deviations.

### 3.2. Requirements for achieving the protection class (IP 65)

- Only use the cable gland in the specified clamping range (select the cable Ø to match the cable gland).
- Do not use the lower clamping area when using very soft cable types.
- Only use round cables (a slightly oval cross-section may also be suitable).
- Do not twist the cable.
- Multiple opening/closing is possible, but can have a negative effect on the protection class.
- For cables with pronounced cold flow behaviour, please tighten the screw connection if necessary.

### 3.3. Drilling template

You will find the drilling template, if available, in the technical data. .

### 3.4. Pin assignment and configuration of input and output by means of DIP switches

- The units are designed for operation on safety extra-low voltages (SELV). For the electrical connection of the units, the technical data of the units apply. You will find the pin assignment and the configuration of input and output by means of DIP switches in our data sheet on the website.
- The output voltage follows linearly to the temperature signal applied to the input and provides a proportional output signal of 0 -10 V.
- Applying the power supply to the output will destroy the unit.
- With the transmitter with 4...20 mA, display and evaluation elements are connected in series in the current loop.
- The transmitter limits the flowing current depending on the input signal. The 4 mA are used for the transmitter's own power supply.

### 3.5. Maintenance

The product is maintenance-free. Repairs may only be carried out by the manufacturer or by qualified personnel.

### 3.6. Disposal

The product is to be classified as electrical and electronic equipment, so that it must be disposed of as electrical / electronic waste. Alternatively, you can return the product to us for proper disposal. The product should not be disposed of as household waste. Special treatment for special components may be legally mandatory and ecologically sensible. Please also observe the local legislation applicable to disposal.

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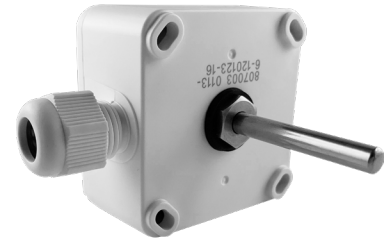
Amtsgericht Freiburg HRB 706025 | Umsatzsteuer-ID.: DE274417683

## 4. Technical data and assembly instructions

### Plug-in transmitter Basic 4-20 mA

Article number: 807003 0X12

The precise Pt1000 plug-in transmitter reliably measures temperatures in ducts and ventilation systems and provides a standardized 4-20 mA output signal. Thus, measured values are transmitted error-free even over long distances. Select the length of the protection sleeve. Measuring range and scaling are easily adjustable via DIP switch. The innovative rotary cover lock enables fast and secure mounting. Due to its robust design, the transmitter is ideal for temperature measurements in gaseous media, e.g. in ducts. Accessories such as immersion sleeves, compression fittings and mounting flanges made of stainless steel, aluminum or plastic are available in our online store.



Special features	
<b>Inputs and outputs</b>	<p>werkzeugfreie Montage durch innovativen Drehdeckelverschluss tool-free assembly due to innovative rotary lid lock</p> <p>Messelement: Pt 1000 Measuring element: Pt 1000</p> <p>Montageflansche als Zubehör verfügbar Mounting flanges as accessories available</p> <p>Ausgang: 4 - 20 mA Output: 4 - 20 mA</p> <p>einfach parametrieren mit DIP-Schaltern easy to parameterise with DIP switches</p>
Input: Pt1000 resistance sensor, permanently installed Output: 4 to 20 mA	
<b>Accuracy and Long-term stability</b>	
Accuracy: high measuring accuracy Long-term stability: long service life with flexible application possibilities	
<b>Alarm function</b>	
Sensor break monitoring Sensor short-circuit monitoring Measuring range monitoring	
<b>Design</b>	
Compact, robust, vibration and shock resistant design	
<b>Parametrization</b>	
Simple and super-fast parameterization thanks to preset dip switches	

Input			
Measuring element	Norm	Configurable measuring range	Accuracy
Pt1000	IEC 60751	-200 °C to +850 °C   -328 °F to +1562 °F	±0.3 °C + 0.1 % of the measuring span
Connection type	2-wire (permanently installed)		

Output		Circuit diagram Output
Output type	analog, temperature linear for RTD	
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
<b>Alarms</b>		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

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Time response		Accuracy and stability	
Closing time (s)	≤ 5	<b>Cold junction compensation</b>	
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		

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

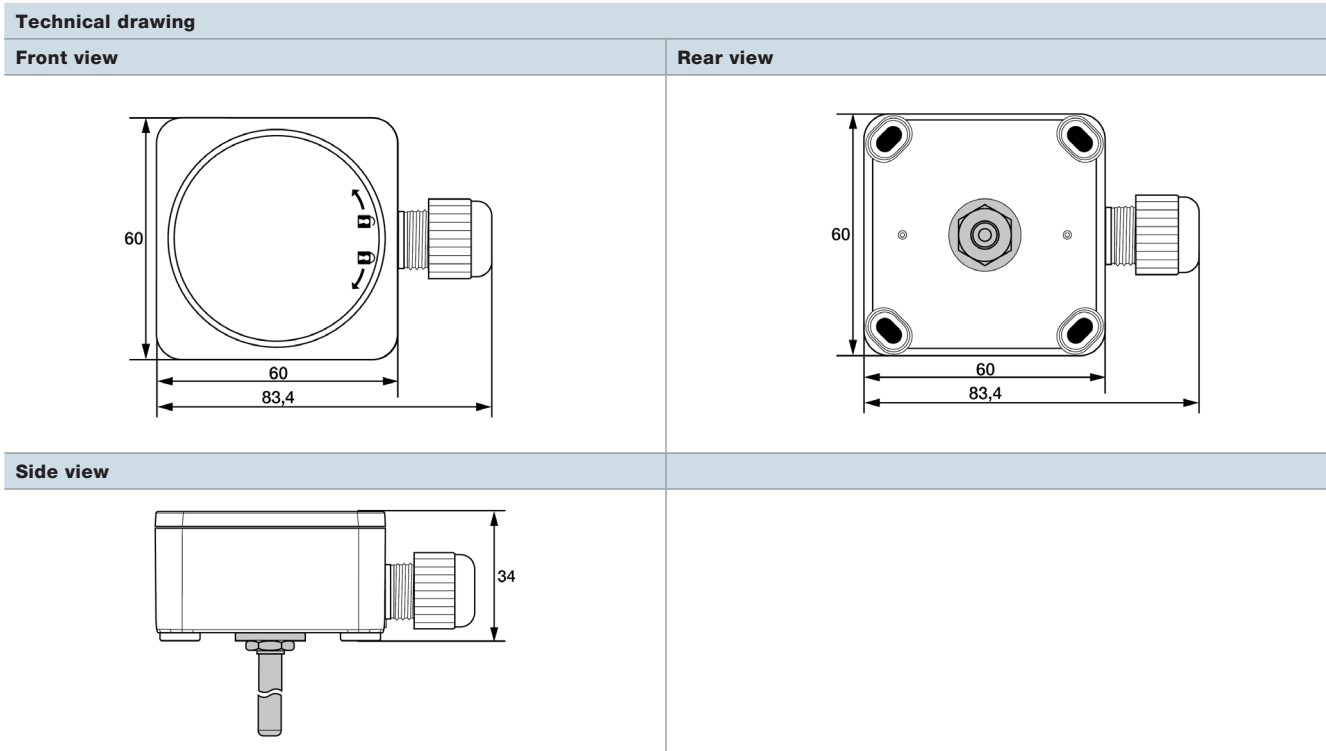
EMC	
Standard	Directive: 2014/30/EU   Harmonized standards: EN 61326-1:2013

Type		Protection sleeve	
Dimensions (mm)	84 x 60 x 34 (see drawing)		
Weight (g)	75		
Material   Flammability	ABS white RAL 9010 UV resistant, RoHS compliant		
Mounting	Enclosed mounting kit (housing)		
Connection	Single wires, max. 1,5 mm <sup>2</sup> , AWG 16		
<b>Protection sleeve</b>			
Material	Stainless steel 1.4404   316L		
Diameter (mm)	6		
<b>Please select the appropriate length of the protection sleeve</b>			
Mounting length (mm)	50	100	200
Article number	807003 0112	807003 0212	807003 0412

Factory configuration		Factory settings	
Input	Pt1000 fixed	Kanaltemperaturtransmitter (RTD Sensoren) Werkseinstellungen: Sensor Pt1000 Skalierung: -20 .. 120°C Plug-in temperature transmitter (RTD sensors) Factory settings: Sensor Pt1000 Scaling: -20 ... 120°C	
Scaling	0 °C to +100 °C		
<b>General data</b>			
Isolation	none		
Supply Voltage (VDC)	12 to 36, polarity protected		
<b>Delivery</b>			
Transmitter, Instruction manual, individually packed in PE bag			

Matching accessories	
DIN rail power supply	On request
Table power supply	On request
Matching connection cables	in the Webshop: <a href="http://testo-sensor.shop">testo-sensor.shop</a>
Suitable mounting flanges	in the Webshop: <a href="http://testo-sensor.shop">testo-sensor.shop</a>
Matching immersion sleeves	in the Webshop: <a href="http://testo-sensor.shop">testo-sensor.shop</a>
Suitable compression fittings	in the Webshop: <a href="http://testo-sensor.shop">testo-sensor.shop</a>

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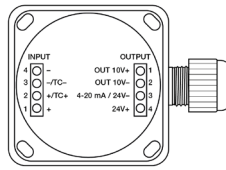
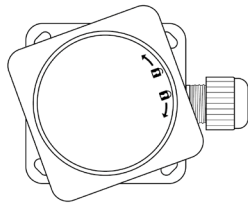


All dimensions in mm

Pin assignment input and output		Parametrization																																																																																					
Input	Pt1000 fest verbaut	<p>Einstellen der Skalierung via DIP-Schalter Setting the scaling range via DIP switch</p> <table border="1"> <thead> <tr> <th>on</th> <th>on</th> <th>on</th> <th>on</th> <th>Scaling Range</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +50°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +100°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +150°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +200°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +250°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +400°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +600°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +800°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +1.000°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>0 .. +1.200°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>-20 .. +50°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>-20 .. +120°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>-30 .. +70°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>-50 .. +50°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>-50 .. +150°C</td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td>-200 .. +50°C</td></tr> </tbody> </table>	on	on	on	on	Scaling Range					0 .. +50°C					0 .. +100°C					0 .. +150°C					0 .. +200°C					0 .. +250°C					0 .. +400°C					0 .. +600°C					0 .. +800°C					0 .. +1.000°C					0 .. +1.200°C					-20 .. +50°C					-20 .. +120°C					-30 .. +70°C					-50 .. +50°C					-50 .. +150°C					-200 .. +50°C
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Pt1000 fixed mounted	<p>Output</p> <p>4-20 mA   24V</p> <p>4 <input type="checkbox"/> 24V+</p> <p>3 <input type="checkbox"/> 4-20 mA   24V-</p> <p>2 <input type="checkbox"/></p> <p>1 <input type="checkbox"/></p>																																																																																						
Setting the input signal	<p>With the DIP switches of the transmitter you can configure the transmitter according to your needs. Please just leave the DIP switches 1-4 in position. Switches 5-8 are used to set the scaling and the measuring range. Please refer to the adjacent table for the exact configuration.</p>	Setting the measuring range (0 .. 250 °C)																																																																																					

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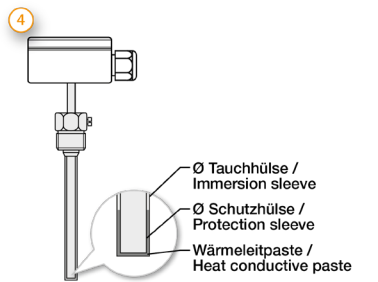
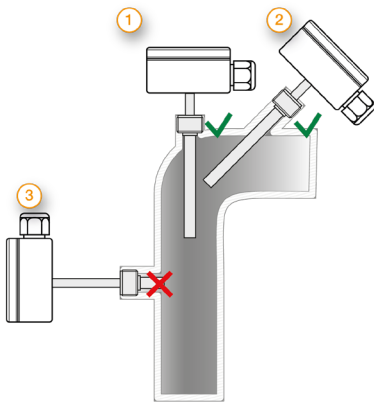
**Mounting**



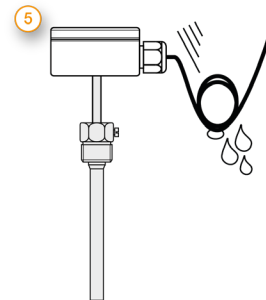
Open the rotary cover.

You can parameterize the output via the DIP switches. Important: To prevent measuring errors, the connecting screws for fastening the connecting cable must be tightened.

**Mounting by using an immersion sleeve**



Tauchhülse und Wärmeleitpaste im Shop separat bestellbar  
Immersion sleeve & heat conductive paste separately available



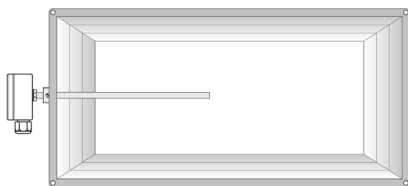
Tauchhülse und Wärmeleitpaste im Shop separat bestellbar  
Immersion sleeve & heat conductive paste separately available

Measurement errors can occur due to heat dissipation to the environment. To keep these as small as possible, we recommend immersing the protection sleeve of your temperature probe as deeply as possible in the medium to be measured during installation. The optimum installation depth should be 10-15 times the  $\varnothing$  of the protection sleeve. Please make sure that you have sufficient space so that you can remove the probe again if necessary.

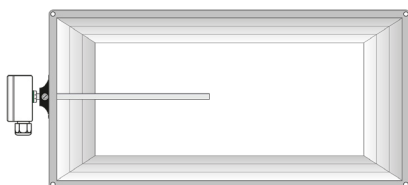
Mounting by using an immersion sleeve (4): Please make sure that the  $\varnothing$  and the length of the immersion sleeve are chosen according to the installation situation, so that the minimum immersion depth can be reached. Since the probe is not inserted directly into the medium, but via the immersion sleeve, the response times are somewhat slower. The probe should be selected in such a way that the protection sleeve touches the bottom of the immersion sleeve and that the air cushion around the protection sleeve is as small as possible. The use of thermal conduction paste can improve the response times.

Please lay the cable with reserve loop (5) and in such a way that no water can penetrate the sensor head. This allows you to extend the probe without disconnecting the electrical connection.

**Mounting in the duct by means of mounting flange**



Passende Montageflansche im Shop separat bestellbar  
Suitable mounting flanges available in shop



Passende Montageflansche im Shop separat bestellbar  
Suitable mounting flanges available in shop

Mounting by means of mounting flange: Please make sure that the  $\varnothing$  of the mounting flange matches the  $\varnothing$  of the protection sleeve. Suitable flanges can be found at [testo-sensor.store](http://testo-sensor.store).

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Please read the operating instructions before starting any work.