CE

Operating instructions
Temperature transmitters

TA1xxx
TA2xxx

UK

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Contents

1 Remark

1.1 Explanation of symbols

- ▶ Instructions
- > Reaction, result
- […] Designation of keys, buttons or indications
- → Cross-reference

Important note
Non-compliance can result in malfunction or interference.

2 Safety instructions

- The device described is a subcomponent for integration into a system.
  - The manufacturer of the system is responsible for the safety of the system.
  - The system manufacturer undertakes to perform a risk assessment and to create a documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the manufacturer of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Functions and features).
- Only use the product for permissible media (→ Technical data).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the unit must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.

3 Functions and features

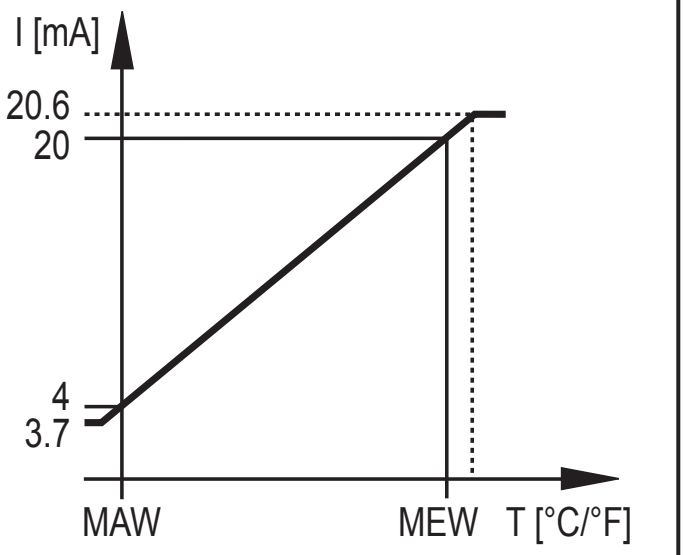
The unit detects the medium temperature and converts it into an analogue output signal (4 ... 20 mA).

4 Function

4.1 Analogue output

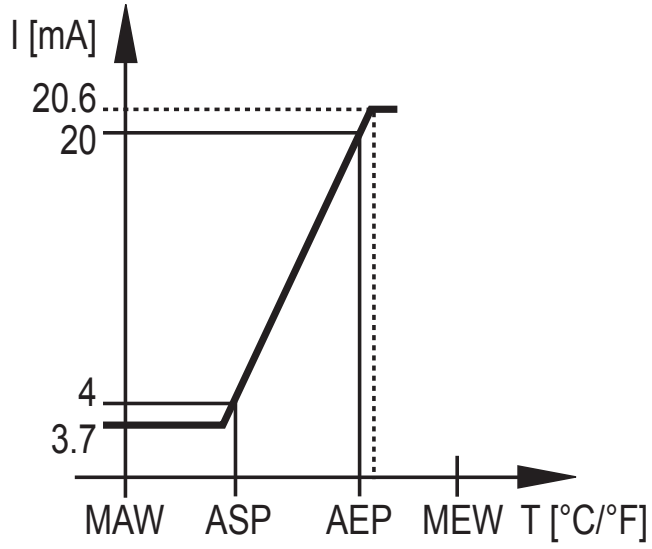
- The unit converts the measured signal into a temperature-proportional analogue signal. Depending on the parameter setting (→ 7) the output signal is at:
  4...20 mA with setting [OU] = [I] or
  20...4 mA with setting [OU] = [Ineg].
- The analogue signal can be scaled.

Maximum measuring range at [OU] = [I]



MAW = initial value of the measuring range
MEW = final value of the measuring range

Measuring range scaled at [OU] = [I]



ASP = analogue start point
AEP = analogue end point

Within the measuring range the output signal is between 4 and 20 mA. If the temperature value is outside the limits of the measuring range, the following output signal is displayed:

	Output signal at [OU] = [I]	**Output signal at [OU] = (Ineg]**
Temperature > AEP	20...20.6 mA	4...3.7 mA
Temperature > MEW		
Temperature < ASP	3.7...4 mA	20.6...20 mA
Temperature < MAW		

In case of internal fault, the output signal behaves according to the parameter set in [FOU] (3.5 mA or 21.1 mA) → 7 Parameter setting.

4.2 IO-Link

This unit has an IO-Link communication interface which enables direct access to process and diagnostic data. In addition it is possible to set the parameters of the unit while it is in operation. Operation of the unit via the IO-Link interface requires an IO-Link master.

With a PC, suitable IO-Link software and an IO-Link adapter cable communication is possible while the system is not in operation.

The IODDs necessary for the configuration of the unit, detailed information about process data structure, diagnostic information, parameter addresses and the necessary information about the required IO-Link hardware and software can be found at www.ifm.com.

The IO-Link interface offers the following functions:

- Noise-immune signal transmission without loss of measured values.
- Remote parameter setting of the unit.
- Transmission of the set parameter values when sensors are replaced or to other sensors in the plant.
- Comprehensive display of error and event messages.
- Indication of minimum and maximum flow and temperature values.
- Evaluation of the process values and diagnostic data by IT and ERP systems via IO-Link master.
- Paperless reporting by memorising the parameter sets and process values.

5 Installation

▶ We recommend horizontal installation for high medium temperatures.

▶ Connect the unit to the process using a fixing element (adapter, clamp).

Information about the available adapters at www.ifm.com.

▶ Observe the instructions of the adapter.

▶ Use a lubricating paste which is suitable and approved for the application.

Use in hygienic areas according to 3A requirements:

▶ Ensure that the sensors are used in the system in accordance with the 3A requirements.

▶ Tighten the seals to the defined torque and ensure that the seals are centred.

5.1 Units with sealing cone

- TA25xx type: sealing cone G ½
- TA11xx type: sealing cone M12

Note on 3A and EHEDG compliant installation of the sensor:

▶ Use PEEK sealing ring E43911 for TA25xx units.

▶ Use PEEK sealing ring E43915 for TA11xx units.

▶ Carry out the installation according to the separate installation instructions of the sealing ring.

The PEEK sealing is not supplied with the unit. It must be ordered separately.

5.2 Use in hygienic areas to 3A

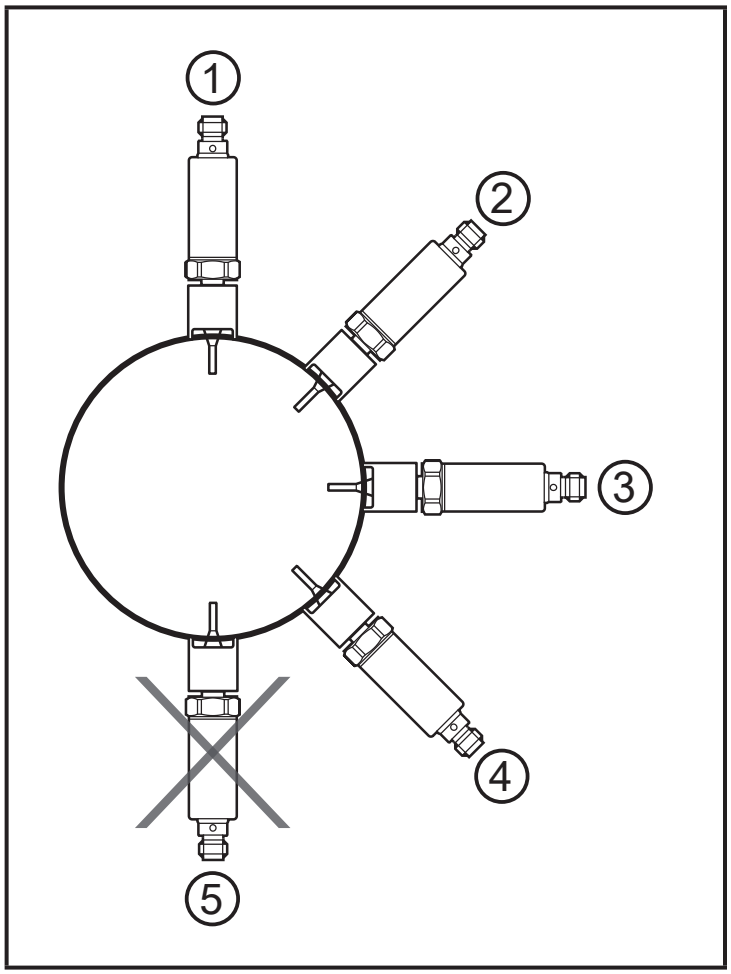


Fig. 1: Installation position for use according to 3A

The following applies to units with 3-A certification:

- ▶ Only use adapters with A-3 qualification for the process connection.
- ▶ Do not install the unit at the lowest point of the pipe or tank (→ position 5) in order that the medium can run off the area of the measuring element.

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5.3 Use in hygienic areas to EHEDG

The sensor is suited for CIP (cleaning in process) when installed correspondingly.

- ▶ Observe the application limits (temperature and material resistance) according to the data sheet.

- ▶ Make sure that the sensor is integrated into the system according to EHEDG.
- ▶ Use self-draining installation.
- ▶ Only use process adapters permitted according to EHEDG with special seals required by the EHEDG position paper.

The gasket of the system interface must not be in contact with the sealing point of the sensor.

- ▶ In case of structures in a tank, the installation must be flush mount. If not possible then direct water jet cleaning and cleaning of dead spaces must be possible.

- Leakage ports must be clearly visible and must be installed facing downwards for vertical pipes.
- Adhere to the dimensions in fig. 2 to prevent dead space: L < (D - d).

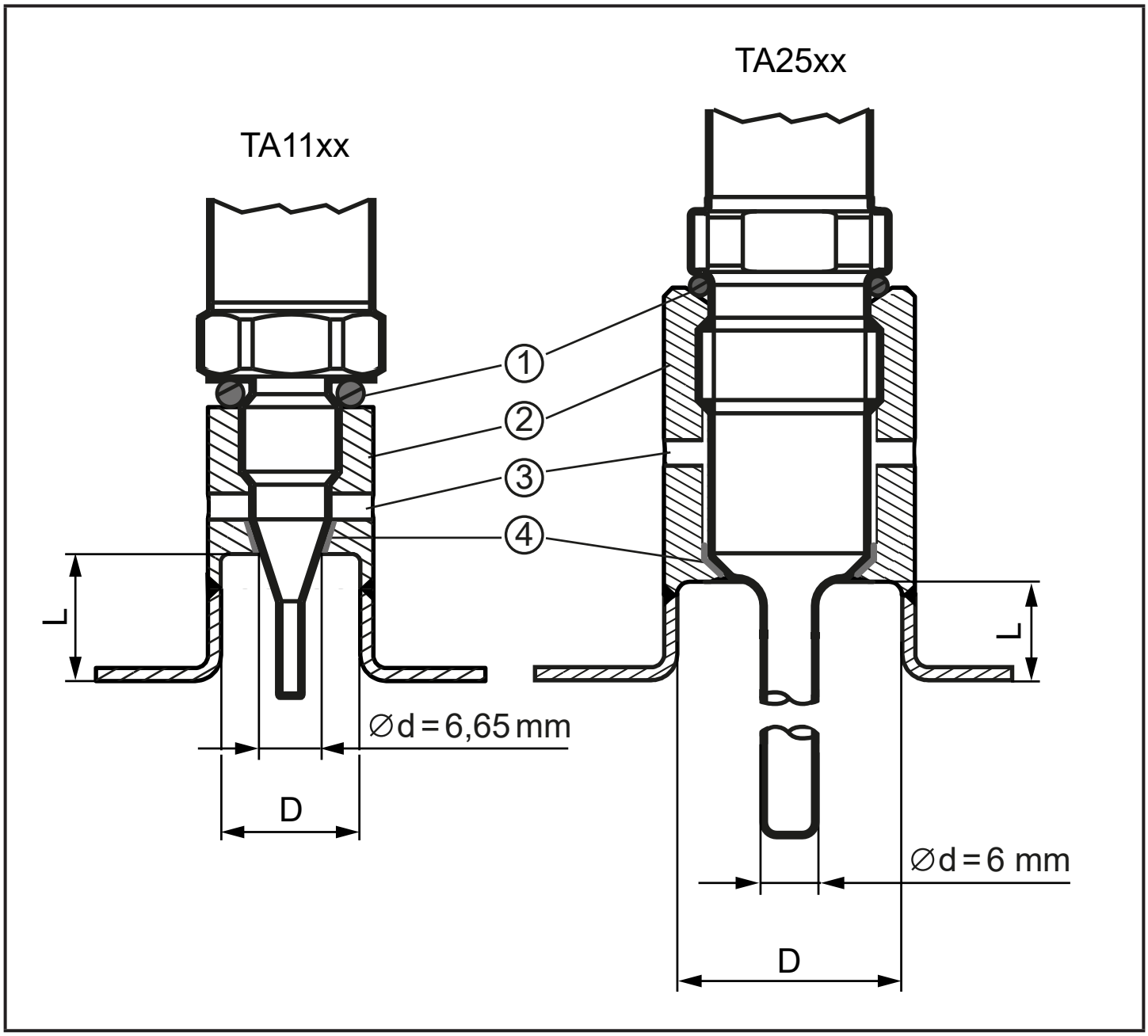


Fig. 2: Mounting dimensions for use according to EHEDG

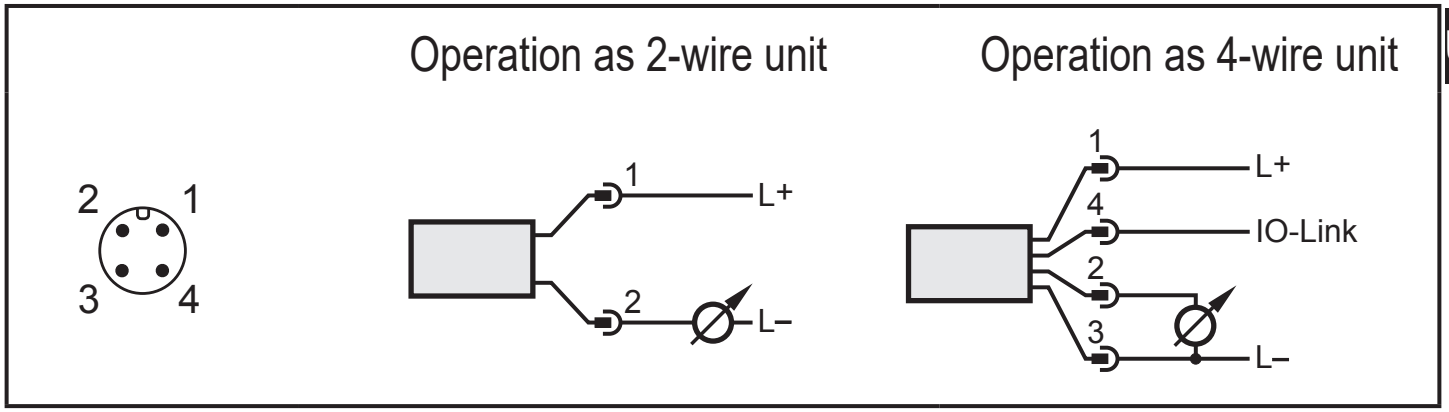
1: Sealing ring
2: Adapters
3: leakage port
4: PEEK sealing ring

6 Electrical connection

The unit must be connected by a qualified electrician.
The national and international regulations for the installation of electrical equipment must be adhered to.
Voltage supply according to EN 50178, SELV, PELV.

▶ Disconnect power.

▶ Connect the unit as follows:



	Operation as 2-wire unit	Operation as 4-wire unit
Pin 1	L+	L+
Pin 2	Analogue signal for temperature	Analogue signal for temperature
Pin 3		L-
Pin 4		IO-Link

7 Parameter setting

Using an IO-Link capable parameter setting tool, the following options are available:

- Reading current process values.
- Reading, changing and saving current parameter settings and transmitting them to other units of the same type.

▶ Connect the unit via the IO-Link interface to a PC or PLC with suitable parameter setting software.

ifm offers an IO-Link interface for the connection of the sensor via USB port.

7.1 Adjustable parameters

Parameter	Description	Settings
OU	Output function	Analogue output signal: [I]: 4...20 mA [Ineg]: 20...4 mA
ASP	Analogue start point for temperature	With setting [OU] = [I]: Measured value at which the output signal is 4 mA. With setting [OU] = [Ineg]: Measured value at which the output signal is 20 mA.
AEP	Analogue end point for temperature	With setting [OU] = [I]: Measured value at which the output signal is 20 mA. With setting [OU] = [Ineg]: Measured value at which the output signal is 4 mA. Minimum distance between ASP and AEP = 5 °C or 9 °F.
COF	Zero-point calibration	Setting range: ± 10 K in steps of 0.1 K. The internal measured value "0" is shifted by this value.
FOU	Response of the output in case of an internal fault	[On]: The analogue signal goes to the upper end stop value (21.1 mA). [OFF]: The analogue signal goes to the lower end stop value (3.5 mA).
Uni	Unit of measurement for the system temperature	°C or °F

8 Operation

After power on, the unit is in the Run mode (= normal operating mode).

9 Technical data

Technical data and scale drawing at www.ifm.com.

10 Maintenance, repair and disposal

If used correctly, no maintenance and repair measures are necessary.

Only the manufacturer is allowed to repair the unit.

▶ After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.

11 Factory setting

Parameter	Factory setting	User setting
OU	I	
COF	0,0	
FOU	OFF	

Factory setting (ASP and AEP) and the units (Uni)
→ Technical data at www.ifm.com.