

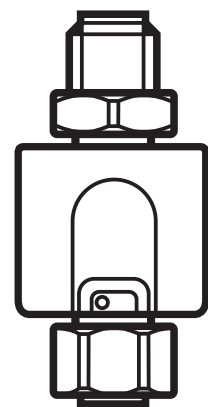


Operating instructions  
Measured signal converter  
for temperature sensors

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**TP9237**

704975 / 00 07 / 2019



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## 1 Preliminary note

### 1.1 Symbols used

▶ Instruction

> Reaction, result

→ 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).
- 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.

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## 3 Functions and features

In connection with a temperature probe the unit monitors the system temperature in machines and plants.

### **Connectable temperature probes:**

- Temperature sensors TM, TS, TT.
- Resistance thermometer RTD (Pt 100 or Pt 1000).

The unit detects the connected sensor type and configures itself accordingly.

## 4 Function

- The unit converts the measured signal into a temperature-proportional analogue signal: 0...10 V at [OU2] = [U] / 10...0 V at [OU2] = [Uneg]).
- The analogue signal can be scaled. Factory setting → 10.  
Minimum distance between ASP (analogue start point) and AEP (analogue end point) = 5 °C or 9 °F.
- The unit supports IO-Link.

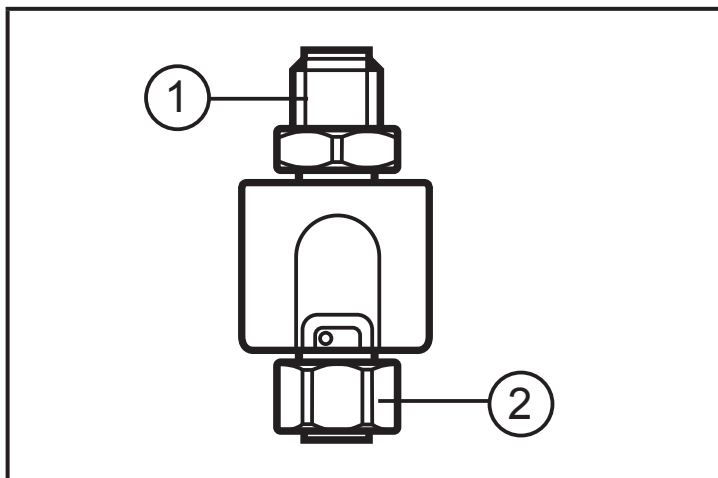
### 4.1 IO-Link

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 an IO-Link interface requires an IO-Link master.

With a PC, suitable IO-Link software and an IO-Link adapter cable communication is possible when 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](http://www.ifm.com).

## 5 Installation



- ▶ Connect the unit to a temperature probe.

- 1: Connection for voltage supply and output signals
- 2: Connection for temperature probe

## 6 Electrical connection

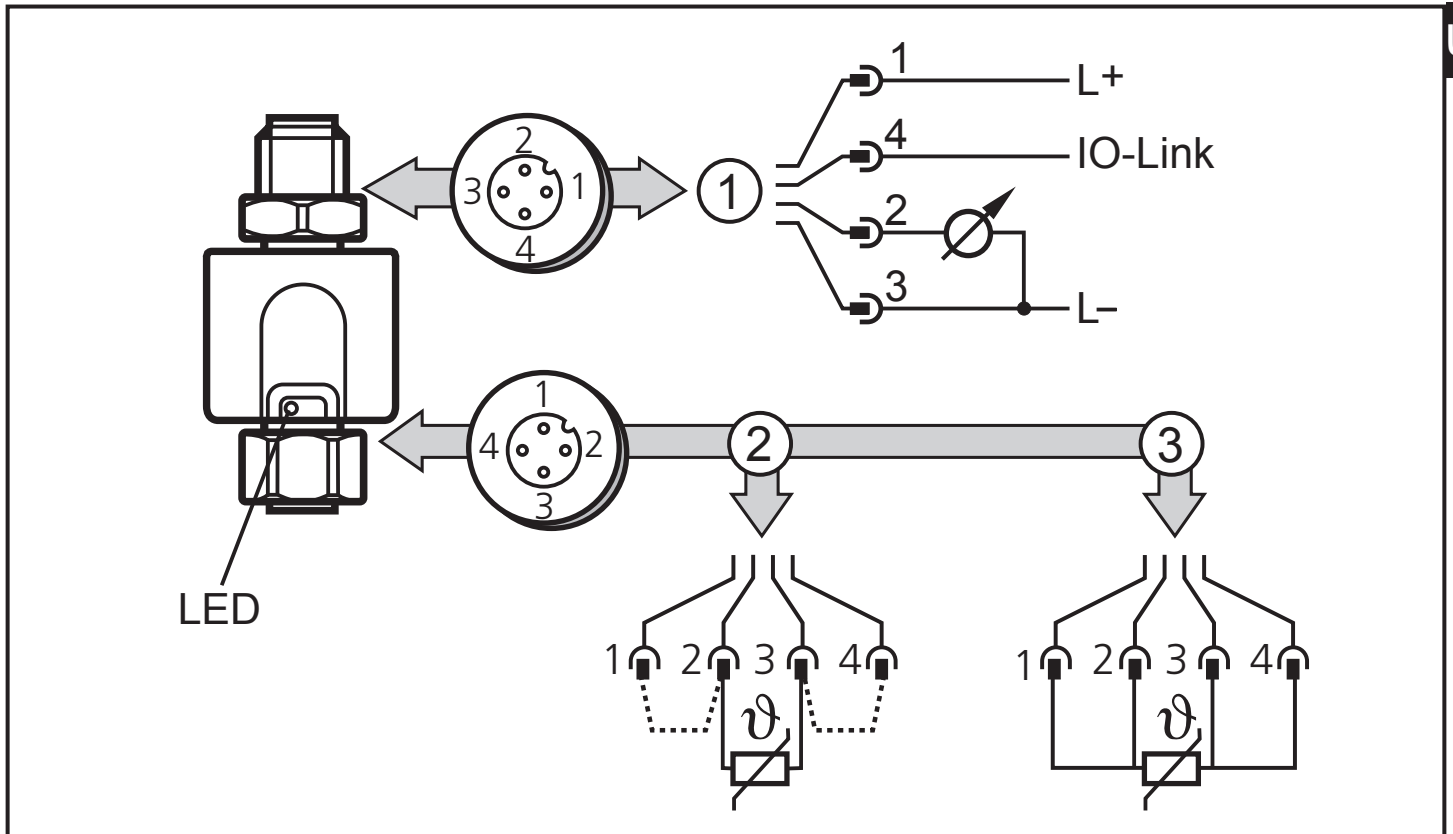


The unit must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

Voltage supply to EN 50178, SELV, PELV.

- ▶ Disconnect power.
- ▶ Connect the unit as follows:



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1	Connection Ub and output signals	
	Pin 1	L+
	Pin 3	L-
	Pin 4 (OUT1)	IO-Link
	Pin 2 (OUT2)	Analogue signal for temperature
2	Connection of a 2-wire measuring probe; links between 1 / 2 and 3 / 4. A wire fault can be corrected in the menu COF	
3	Connection of a 4-wire measuring probe	

LED green lit = the unit is ready for operation

## 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.

### 7.1 Adjustable parameters

OU2	Output function for OUT2: Analogue signal: 0...10 V [U] or 10...0 V [Uneg].
ASP	Analogue start value for temperature. Measured value at which the output signal is 0 V (10 V at [OU2] = [Uneg]).
AEP	Analogue end value for temperature. Measured value at which the output signal is 10 V (0 V at [OU2] = [Uneg]). Minimum distance between ASP (analogue start point) and AEP (analogue end point) = 5 °C or 9 °F.
COF	Zero-point calibration. Setting range: ±10 °C in steps of 0.1 °C. The internal measured value "0" is shifted by this value.
FOU2	Behaviour of output 2 in case of an internal fault. - [On] = the analogue signal goes to the upper end stop value (10.6 V). - [OFF] = the analogue signal goes to the lower end stop value (0 V).

## 8 Operation

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

Response of the analogue output in case of a fault:

Value below the set measuring range	- The output signal falls to 0 V (at [OU2] = [U]), - rises to max. 10.3 V (at [OU2] = [Uneg]).
Value above the set measuring range	- The output signal rises to max. 10.3 V (at [OU2] = [U]), - falls to 0 V (at [OU2] = [Uneg]).
Value below or above the detection zone of the sensor	Analogue signal acc. to setting [FOU2].

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## 9 Technical data and scale drawing

Technical data and scale drawing at [www.ifm.com](http://www.ifm.com).

## 10 Factory setting

	Factory setting	User setting
<b>OU2</b>	<b>U</b>	
<b>ASP</b>	<b>0</b>	
<b>AEP</b>	<b>100</b>	
<b>COF</b>	<b>0.0</b>	
<b>FOU2</b>	<b>OFF</b>	

More information at [www.ifm.com](http://www.ifm.com)