



● Characteristics

1500 - RESISTANCE THERMOMETER - MODULAR - ECONOMIC

| | | |
|---|-------------------------|---|
|   | - Input: | Pt100 (maximum span: -50...+200 °C) |
| | - Output: | 4...20 mA, 2-wire / 0...10 V, 3-wire |
| | - Voltage supply: | 12...30 VDC |
| | - Accuracy: | see technical data |
| | - Process connection: | several options |
| | - Electr. connection: | Lateral / Option: Top |
| | - Electr. connection: | several plugs / cable |
| | - Temperature range: | -20...+75 °C (environment) |
| | - Explosion protection: | ATEX, IECEx |
| | - Material: | Stainless steel 1.4571 (medium contact) |
| - Protection class: | at least IP65 | |

● Technical Data

Input

Sensor Pt100: -50...200 °C (minimum span: 50°C), 2-wire
(Higher measurement ranges up to -50...250 °C available on request)

Output

Current signal: 4...20 mA, 2-wire
 Current range: 3,8...20,5 mA
 Signal on error: 3,6 mA (sensor short circuit, underflow)
 21 mA (sensor break, sensor open circuit, overflow)
 Voltage signal: 0...10 V, 3-wire
 0,5...10 V, 3-wire
 2...10 V, 3-wire

Notes: Functions related to signal on error are not available in versions with voltage output

Performance Parameters

| | | |
|-----------------|---------------------|---|
| Sensor: | Pt100: | Class A / Class B / Class AA (B1/3 DIN) |
| Messverstärker: | Accuracy: | max. 0,1% of range + sensor error |
| | Resolution: | 24 bit |
| | Filter setting: | 5...5000 ms |
| | Configuration: | per Software (TrComm) |
| | Turn-on delay time: | 5 ms |
| | Response time: | 20 ms |

Programmable Features

Measuring amplifier: Nominal measuring range / Measurement range start / Measurement range end
 / Adjustment, simulation of output current / Filter function / 2-point calibration

● Applications

For use in heating installations, ventilating and air-conditioning plants, and the whole range of industrial applications. The sensor is compact and robust. With multiple electrical connections and software configuration possible, the sensor is also suitable for applications with higher requirements.



● Technical Data (Continued)

Supply

Voltage: 12...30 VDC
 Reverse voltage protection: available (no function, no damage)
 Short-circuit resistance: Yes

Environmental Conditions

Temperature: Operating range: -20...+75 °C (2-wire) / -20...+50 °C (3-wire)
 Medium: -50...+200 °C
 Storage: -40...+100 °C
 Condensation: uncritical
 Approval: ATEX:TÜV 21 ATEX 201293 X
 IECEx:IECEx TUN 21.0005X

Mechanics

Dimensions: see page 7
 Process connections: 1/4" / 3/8" / 1/2" / 3/4" / 1" / 1/4NPT / 3/8NPT / 1/2NPT
 Neck pipe: 100 mm (Option)
 Electrical connection: lateral
 Option: top
 Plugs and cable: see page 7
 Material: Schutzrohr: Stainless steel 1.4571 (Standard 6x0,5 mm)
 Neck pipe: Stainless steel 1.4571
 Process connection: Stainless steel 1.4571
 Casing body: PBT GF30
 Cover: PBT GF30
 Weight: approx. 140 g (70 mm, 1/2", M12x1)
 Fitting position: any
 System pressure: PN 25
 Device protection: Protection class: at least IP65 (electronics)
 PCB: potted

● Connection M12x1 Plug (Example)

| Pin Assignment M12x1 Plug (4-, 5-, 8-pole) | | | | | | | | |
|--|---|---|---|---|--|--|--|--|
| 4...20 mA | | | | | | | | |
| <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">+</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">3</td> </tr> </table> | + | - | 1 | 3 | | | | |
| + | - | | | | | | | |
| 1 | 3 | | | | | | | |

Note: For more connection types, see operating manual METS-WTE_x

● Ex Safety Instructions

For Your Safety



Danger

Danger!

Danger to life due to loss of explosion protection.

Failure to comply with these contents and instructions can lead to a loss of explosion protection.



ATEX

European guideline for explosion protection (Atmosphere=AT, Explosion=EX). The product complies with the requirements of the European directive 2014/34/EU (ATEX) on explosion protection.

Installation and start-up may only be carried out by qualified personnel with knowledge of ignition protection types as well as provisions and regulations for explosion protection. The country-specific regulations for installation and operation in hazardous areas must be complied with. The classification of the device must be suitable for the application. (see "ATEX Approvals" and product label marking)

ATEX Approvals

II 1 G Ex ia IIC T6..T1 Ga
II 1/2 G Ex ia IIC T6..T1 Ga/Gb
II 2 G Ex ia IIC T6..T1 Gb

Approval properties: For gases; Installation in zone 0, zone 1 and zone 2.

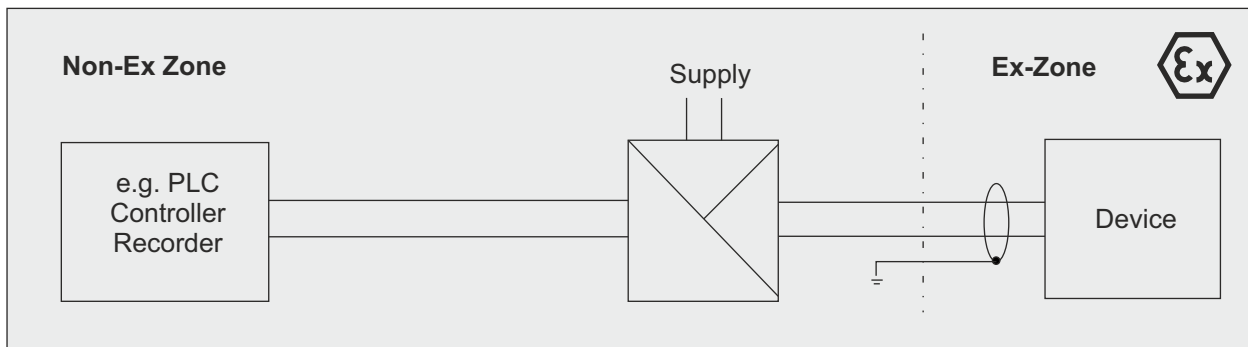
ATEX: IECEx TUN 21.0005X

IECEx: TÜV 21 ATEX 201293 X

The complete certificates are available on request and for download from our website www.mueller-ie.com. Usually, the (printed) certificates will also be part of the scope of delivery.

● Ex Safety Instructions (Continued)

Special Provisions for Operation in Hazardous Areas



- The single wires and the free cable ends have to comply with the requirements of clause 9 of IEC 60079-14.
- For EPL Ga/Gb applications, reverse heat flow from the process exceeding the permissible ambient temperature is not allowed and shall be avoided by suitable thermal insulation or suitable neck length of the tubing.
- For EPL Ga/Gb applications and at risks by pendulum or vibration the respective parts have to be secured effectively against these dangers.
- For EPL Ga/Gb applications any ignition hazards caused by impact or friction has to be excluded..
- The ambient temperature range depending on temperature class is to be taken from the operating manual.
- The medium tangent materials have to be resistant to the media.
- For EPL Ga/Gb applications the whole device shall be mounted in a way that allows an installation that results in a sufficient tight joint (IP66 or IP67) or a flameproof joint (IEC 60079-1) in the direction of the less endangered area.
- The installation in the partition wall between areas with EPL Ga/Gb requirements has to be carried out in such a way that all metal parts are conductively connected to the metallic container wall, or in the case of containers made of plastic, all insulated metal parts have to be included in the potential equalization.
- For EPL Ga, EPL Ga/Gb and EPL Gb applications, the temperature sensor METS-WTE_x has to be installed and used in such a way that electrostatic charges due to operation, maintenance and cleaning are excluded.

● **Ex Safety Instructions (Continued)**

Electrical Characteristics









| Parameter | Current Output (2-Wire) | Voltage Output (3-Wire) |
|--------------------------------------|--|--|
| Connections | $\pm (I_{out})$ | \pm |
| Voltage U_i | 30 VDC | 30 VDC |
| Current I_i | 110 mA | 110 mA |
| Power P_i | 1 W | 1 W |
| Effective internal capacitance C_i | Capacitance of 330m cable = 66 nF | Capacitance of 330m cable = 66 nF |
| Effective internal inductance L_i | Inductance of 330m cable = 330 μ H | Inductance of 330m cable = 330 μ H |
| Connections | ... | U_{out} |
| Voltage U_o | ... | = 12,6 V |
| Current I_o | ... | = 48 mA |
| Power P_o | ... | = 148 mW |
| Characteristic line | ... | linear |
| Effective internal capacitance C_i | ... | Negligibly small |
| Effective internal inductance L_i | ... | Negligibly small |

● **Ex Safety Instructions (Continued)**

Environmental Conditions

| Current Output (2-Wire) | | |
|--------------------------------|---|---------------------------|
| Temperature Class | Environmental Temperature | Medium Temperature |
| T1 | -20 °C ... +75 °C | -50 °C ... +425 °C |
| T2 | -20 °C ... +75 °C | -50 °C ... +275 °C |
| T3 | -20 °C ... +75 °C | -50 °C ... +180 °C |
| T4 | -20 °C ... +75 °C | -50 °C ... +115 °C |
| T5 | -20 °C ... +(95 °C - $P_i \times 45 \text{ K/W}$), max. 75 °C | -50 °C ... +80 °C |
| T6 | -20 °C ... +(80 °C - $P_i \times 45 \text{ K/W}$), max. 75 °C | -50 °C ... +65 °C |
| Voltage Output (3-Wire) | | |
| Temperature Class | Environmental Temperature | Medium Temperature |
| T1 | -20 °C ... +50 °C | -50 °C ... +425 °C |
| T2 | -20 °C ... +50 °C | -50 °C ... +275 °C |
| T3 | -20 °C ... +50 °C | -50 °C ... +180 °C |
| T4 | -20 °C ... +50 °C | -50 °C ... +115 °C |
| T5 | -20 °C ... +(95 °C - $P_i \times 55 \text{ K/W}$), max. 50 °C | -50 °C ... +80 °C |
| T6 | -20 °C ... +(80 °C - $P_i \times 55 \text{ K/W}$), max. 50 °C | -50 °C ... +65 °C |

● Electrical Connection

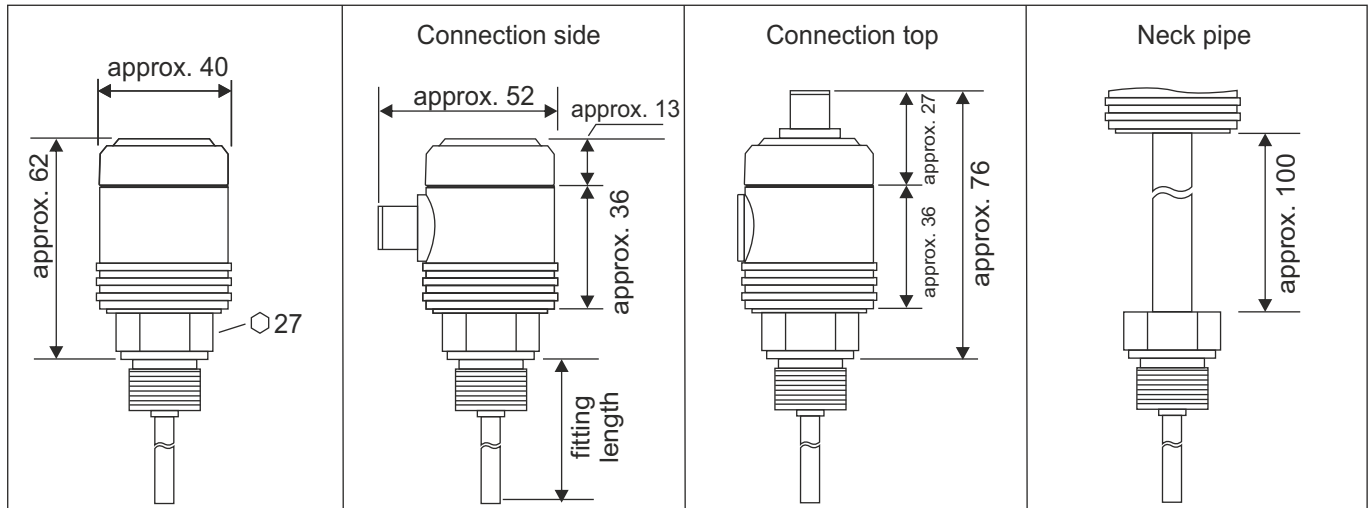
| M12x1 | Super Seal | Deutsch | Deutsch | Bayonet | Valve | MIL | Cable |
|---|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |  |
| 4-, 5-, 8-pole | 3-pole | 3-pole | 4-pole | 4-pole | 4-pole | 6-pole | 4-pole |

● Configuration

The METS-WTE_x can be programmed with the help of the configuration and calibration software *TrComm*. A DEV-KMA configurator is required for programming. The *TrComm*-software is included in the scope of delivery of the DEV-KMA, alternatively the software is also available separately on request.

For further information, see data sheet DEV-KMA on www.mueller-ie.com.

● Dimensions (in mm)



● **Order Code**

G F X X X X X X X X X X X

| | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Input: | Pt100, 2-wire | 0 | | | | | | | | | | | | | | | | | | |
| Output: | 4...20 mA, 2-wire | 0 | | | | | | | | | | | | | | | | | | |
| | 0...10 V, 3-wire | 1 | | | | | | | | | | | | | | | | | | |
| | 0,5...10,5 V, 3-wire | 2 | | | | | | | | | | | | | | | | | | |
| | 2...10 V, 3-wire | 3 | | | | | | | | | | | | | | | | | | |
| Sensor type: | Class A | 0 | | | | | | | | | | | | | | | | | | |
| | Class B | 1 | | | | | | | | | | | | | | | | | | |
| | Class AA (B 1/3 DIN) | 3 | | | | | | | | | | | | | | | | | | |
| Thermowell: | Ø6x0,5 mm | 0 | | | | | | | | | | | | | | | | | | |
| | Other thermowell (please specify) | 1 | | | | | | | | | | | | | | | | | | |
| | Ø6x0,5 mm with neck pipe 100 mm | 2 | | | | | | | | | | | | | | | | | | |
| | Other thermowell with neck pipe 100 mm (please specify) | 3 | | | | | | | | | | | | | | | | | | |
| Fitting length: | 50 mm | 0 | | | | | | | | | | | | | | | | | | |
| | 100 mm | 1 | | | | | | | | | | | | | | | | | | |
| | 200 mm | 2 | | | | | | | | | | | | | | | | | | |
| | 250 mm | 3 | | | | | | | | | | | | | | | | | | |
| | 400 mm | 4 | | | | | | | | | | | | | | | | | | |
| | 600 mm | 5 | | | | | | | | | | | | | | | | | | |
| | 1000 mm | 6 | | | | | | | | | | | | | | | | | | |
| | Other length (please specify) | 7 | | | | | | | | | | | | | | | | | | |
| Process connection: | 1/4" | 0 | | | | | | | | | | | | | | | | | | |
| | 3/8" | 1 | | | | | | | | | | | | | | | | | | |
| | 1/2" | 2 | | | | | | | | | | | | | | | | | | |
| | 3/4" | 3 | | | | | | | | | | | | | | | | | | |
| | 1" | 4 | | | | | | | | | | | | | | | | | | |
| | 1/4NPT | 5 | | | | | | | | | | | | | | | | | | |
| | 3/8" NPT | 6 | | | | | | | | | | | | | | | | | | |
| | 1/2" NPT | 7 | | | | | | | | | | | | | | | | | | |
| Electr. connection: | lateral | 0 | | | | | | | | | | | | | | | | | | |
| | top | 1 | | | | | | | | | | | | | | | | | | |
| Electr. connection: | M12x1, 4-pole | 0 | | | | | | | | | | | | | | | | | | |
| | M12x1, 5-pole | 1 | | | | | | | | | | | | | | | | | | |
| | M12x1, 8-pole | 2 | | | | | | | | | | | | | | | | | | |
| | Deutsch DT04, 3-pole | 3 | | | | | | | | | | | | | | | | | | |
| | Deutsch DT04, 4-pole | 4 | | | | | | | | | | | | | | | | | | |
| | Super Seal 1.5, 3-pole | 5 | | | | | | | | | | | | | | | | | | |
| | Bayonet (DIN), 4-pole | 6 | | | | | | | | | | | | | | | | | | |
| | Valve plug, 4-pole | 7 | | | | | | | | | | | | | | | | | | |
| | Cable, 2 m | 8 | | | | | | | | | | | | | | | | | | |
| | MIL, 6-pole | 9 | | | | | | | | | | | | | | | | | | |
| Configuration: | Factory setting ¹⁾ | 0 | | | | | | | | | | | | | | | | | | |
| | Customized (please specify) ²⁾ | 1 | | | | | | | | | | | | | | | | | | |
| Special model: | No, standard | 0 | | | | | | | | | | | | | | | | | | |
| | Yes (please specify) | 1 | | | | | | | | | | | | | | | | | | |

1) Measurement range: -50...200 °C / Filter setting: 5 ms

2) Please select settings as per technical data. For values not given, factory settings will be used.

Accessories:

DEV-KMA, TrComm-Software

Order-No.: **1310-00564**