



# Instruction manual

P6181

P6191

Temperature transducer for Pt100 sensor  
with 4 - 20 mA output

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## General description

The transducers without own temperature sensor are designed for signal conversion from RTD sensor Pt100 (3850ppm/°C) to current 4 to 20mA. Connection of Pt100 sensor: two-wire, three-wire and two-wire with compensation loop. Transducer is connected to other circuitry by means of current loop (two-wire connection, power from current loop).

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## Device installation

Transducer is supplied from external power source by a cable. The cable is used for transmission of measurement temperature to sensing device too. It is recommended to use shielded copper cable (e.g. SYKFY) and the shielding connect to ground terminal of sensing side. Outside diameter of the cable must be from 3.5 to 8 mm, maximal cross-section area 2.5 mm<sup>2</sup> and maximal length 1200m. The cable must be located at indoor rooms (probe is not protected for outdoor use). The cable should not be led in parallel along power cabling. Safety distance is up to 0.5 m otherwise undesirable induction of interference signals can appear.

Transducer is designed for wall mounting. It is equipped with a pair of holes at the bottom part of the case. For connection of the cable is necessary to unscrew four screws at case corners and remove lid. Lace the cable through a gland at the case wall. Connect the cable to terminals with respecting the signal polarity (see figure). Terminals are self-clamping and can be opened by a suitable screwdriver. For the opening, insert the screwdriver to upper terminal hole and lever by him.

Do not remember to tighten glands and case lid after cables are connected. It is necessary for warranting of protection IP65.

Connection of external temperature probe is enabled by three ways:

- **Two-wire connection** – suitable for short probes (approximately to 1m). With longer probes measurement error increases essentially caused by non-zero resistance of probe leads probes. Optionally temperature dependence of parasite lead resistance can appear.
- **Three-wire connection** – used for longer probe leads. This wiring compensates parasite resistance of connected probe leads and its temperature dependence. Necessary condition is - parameters of all three leads are identical. It is necessary to use multi-wire (three-wire) cable.
- **Two-wire connection with compensation loop** – similar to two-wire connection but there are 4 wires connected to the cable. Two of them are connected to sensor and other two are connected to each other and are not connected to the sensor. In case both branches have the same parasite resistance, its effect is compensated and also effect of temperature dependence. Necessary condition is - parameters of all four leads are identical. It is necessary to use multi-wire (four-wire) cable.

The probe cable should not be led in parallel along power cabling. Safety distance is up to 0.5 m otherwise undesirable induction of interference signals can appear. Shielding of the probe cable is connected to proper terminal and should not be connected to any other circuitry or earthing. If connected probes are equipped with a metal part, it is recommended to use probes, where metal part is not electrically connected to shielding of the cable. In other cases it is necessary to ensure metal part is not electrically connected to any other circuitry.

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## Technical data

**Temperature measuring range:**

-100 °C to +200 °C      **P9181**

-50 °C to +50 °C      **P6191**

**Temperature probe:**

Pt100/3850 ppm, connected by shielded cable

**Accuracy of the device without probe:**

±0.3 °C up to +100 °C at ambient temperature 23 °C

±0.4 °C over +100 °C at ambient temperature 23 °C

**Output range:**

4 to 20 mA

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## General

**Power supply voltage:**

9 to 30 Vdc, maximum ripple 0.5%

**Protection of housing with electronics:**

IP65 (tighten glands, tighten case lid with inserted packing of lid)

**Current output in case of error:**

< 3.5 mA or > 24 mA

**Parasite resistance of probe leads:**

It is possible to compensate resistance up to 15 Ω for each cable wire (each wire should have identical resistance).

**Recommended calibration interval:**

Interval of metrological verification depends on concrete application. Recommended period is about 2 years.

**Working position:**

any position

**Storage temperature range:**

-30 to +80 °C

**Storage relative humidity range:**

0 to 100 %RH (no condensation)

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**Electromagnetic compatibility:**  
EN 61326-1

**Not allowed manipulations:**  
Devices are not designed for installation in potentially explosive atmospheres and for use at aggressive environment.

**Weight:**  
approximately 125 g

**Housing material:**  
ABS

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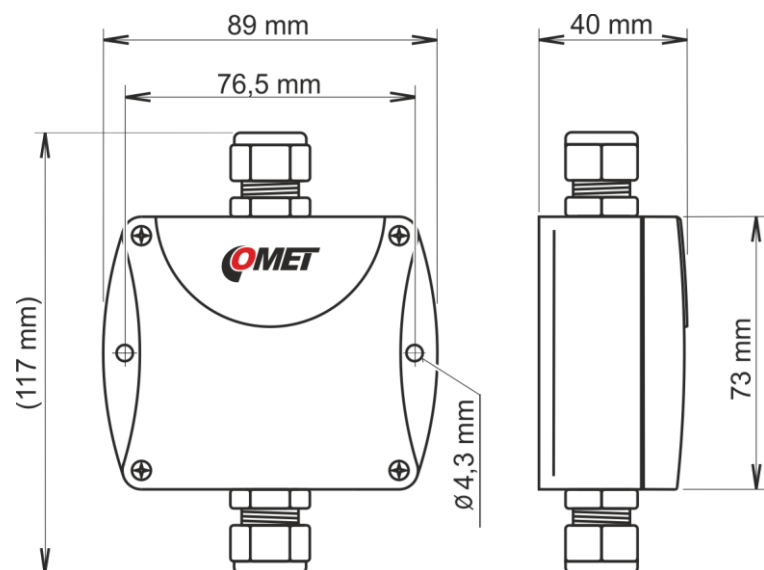
## Operating conditions

**Temperature operating range:**  
-30 to +80 °C

**Relative humidity operating range:**  
0 to 100 %RH without condensation

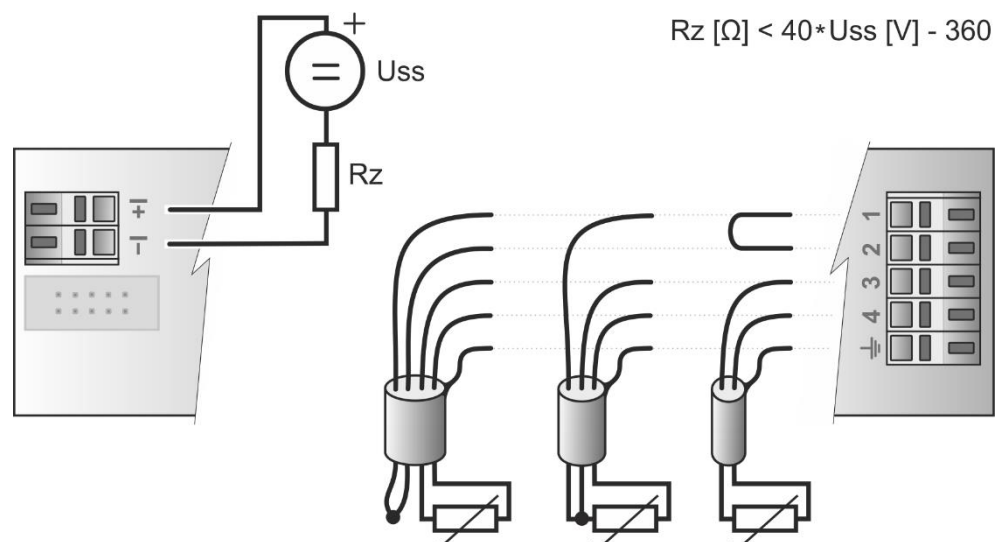
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## Dimensions



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## Typical application wiring



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## End of operation

Dispose of the device according to statutory regulations.

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## Technical support and service

Technical support and service is provided by distributor. For contact see warranty certificate.