

OPERATION MANUAL

Temperature Measuring transducer module 0...10 V or 4...20 mA output

Description



Features

- Standard signal 0...10 V or 4...20 mA
- For Pt1000 sensors, two-wire connection
- 3 Point calibrated and linearized
- Three different scales ex stock
- High long term stability, innovative technology
- Type 0...10 V with AC/DC supply
- Generous connection chamber
- Isolating cover with labeling

Areas of application

- Building automation
- Industrial measuring and control technique
- Temperature recording

Technical data

| Measuring transducer module PTPK-MOD | |
|--------------------------------------|--|
| Sensor | Pt1000 in 2-wire circuit (not in delivery included) |
| Resistance characteristic | DIN IEC 60751 |
| Pt1000 measuring current | < 0,26 mA |
| Output signal | 4...20 mA, two-wire or 0...10 V, three-wire |
| Sensor break | 20 mA / 10 V |
| Sensor short-circuit | 4 mA / 0 V |
| Resolution | 14 bit |
| Linearization accuracy | < 0,5 % FS (at 23 °C) |
| Operating voltage type -10 V | 12...30 V DC 12...25 V AC |
| Operating voltage type -20 mA | 10...30 V DC |
| Operating temperature | -20...+80 °C |
| Dimensions | 50 x 48 x 23 mm |
| CE-Conformance | 2014/30/EU |
| EMC-noise emission | EN 61000-6-3:2011 |
| EMC-noise immunity | EN 61000-6-2:2011 |
| Overvoltage protection | Varistor and RC-Filter |
| Connection | Screw-type terminal, RM 3,5 Clamping range: 0,2...1,5 mm ² |

Application area

Platinum measuring resistances are standard elements for precision temperature measurement in the industry and building automation. For connection of such sensors to an SPS or a PC card, a transducer is required, which can convert the resistance variation of the sensor into a standard voltage or current signal.

The B+B transducer has been developed for these requirements and offers high measuring accuracy and long term stability at optimum price performance ratio through innovative construction by means of an ASIC. The connection of Pt1000 sensor is done in 2-wire circuit. The processing of resistance curve is linearised over a second order polynomial as per DIN 47115. The temperature value is converted into a standard signal of 0...10 V or 4...20 mA through electronic signal processing.

The electronics is suitable for industrial application and is protected against overvoltage and transients.

The voltage supply is with 12...24 VDC, because of which the model with voltage output can also be fed with AC supply. The electronics is meant for assembly into our housing PK101, however it also fits into different other housings available in the market.

Three different types of scaling are available ex-stock, and in addition the electronics can also be supplied with customised settings. Models for other resistance sensors, for potentiometers or with other connection terminals (e.g. spring loaded terminals) are also available on enquiry.

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Power supply

For the 4...20 mA model, only DC supply is possible. The 0...10 V model can be alternatively fed with either DC or AC voltage and also with unfiltered rectified voltage.

In case of AC supply, the neutral point of the transformer must be connected to signal ground and the connection of further probes must be absolutely done with phase balance. In case of supply with rectified unfiltered voltage, the minus must be connected to reference ground and plus to be connected to +DC/AC 24 V. Wrong connection leads to malfunctioning or can cause damage to the electronics!

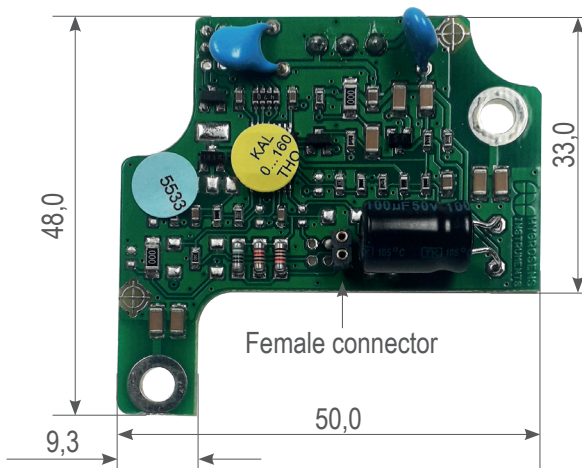
Calibration

The measuring probe is calibrated at works as per Pt1000 resistance characteristics (DIN/IEC 60751), as a result of which full interchangeability of the sensor element is guaranteed in the corresponding accuracy class. Because of the platinum sensor element, the probes are long term stable and maintenance free, therefore a recalibration is not necessary.

The calibration connection is only useful for internal production purposes and should not be connected.

Module drawing

Bottom view!



Connection of sensor

As shown above, the Pt1000 sensor element is soldered or plugged into the female connector. The other pins may not be connected!

Any Pt1000 sensors like thin film chip-resistances, wound sensors and even metal sheath thermometers can be used as far as the characteristics as per DIN/IEC 60751. The connection lead length to the sensor should be as short as possible, in order to avoid measuring error through distortion of resistance characteristics.

Note: The sensor element is not included in scope of delivery (please separately include the desired model along with your order).

Connection

Important hint: the four pole pin connector provided on the module is for calibration of ASIC and should not be connected!

Because of the large connection space, free cable entry and insulated and labelled electronics cover, the mounting is very simple and easy.

The model with voltage output required operating voltage. In order to avoid measuring error through the lead resistance and current supply through the ground wire, a separate ground wire for the signal voltage should be provided in the 0...10 V model (four pole connection, see scetch).

The model with current output is fed by the loop current and therefore connected with two wire. The pin SHIELD is optional and can be used for connecting the shielding of connection cable with the device shielding.

Preferably shielded connection cables should be used for the connection. First of all, it is to be noted, that in EMI disturbed environment the shielding should be grounded. Check before connection whether the supply voltage is as per operating voltage specification mentioned in the data sheet.

Guarantee

On our products you get a guarantee of 24 months. Tampering into electronics makes the product devoid of guarantee claims. Calibration services are not covered in the guarantee.

Ordering number format

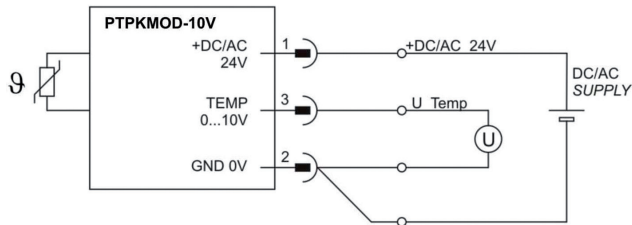
| PTPK-MOD | -10 V/ -20 MA | -T1 / -T2 / -T3 |
|------------------------------|---------------------------------------|-------------------|
| | | Output-Scaling |
| | | - T1 -30...+70 °C |
| | | - T2 0...160 °C |
| | | - T3 0...300 °C |
| | | - T4 customised |
| | - 10 V with voltage output 0...10 V | |
| | - 20 mA with current output 4...20 mA | |
| Transducer module for Pt1000 | | |
| Accessories | | Ordering no. |
| Pt1000 Sensor element | | SHOP 0364 0102-10 |

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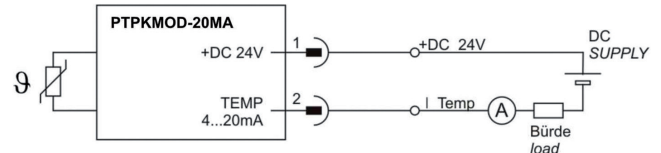
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Plug configuration

Temperature measuring 0...10 V, Type –10 V



Temperature measuring 4...20 mA, Typ –20 mA



| Pin | Function | Description |
|-----|---------------|-----------------------------|
| 1 | +DC / AC 24 V | Operating voltage |
| 2 | GND 0 V | Reference potential |
| 3 | TEMP 0...10 V | Temperature signal 0...10 V |

| Pin | Function | Description |
|-----|----------------|------------------------------|
| 1 | +DC 24 V | Operating voltage |
| 3 | TEMP 4...20 mA | Temperature signal 4...20 mA |



The measurement of the output signal should be done with separate signal ground in order to avoid measuring error due to voltage drop at the supply ground.

The shielding (SHIELD) is to be optionally covered. Connection through shielded lines is recommended.

Attention

Please avoid extreme mechanical and inappropriate exposure.

The device/product is not suitable for potential explosive areas and medical-technical applications.