



Features

- Suitable for mounting in connection heads per DIN 43729
- Connection Pt 100, 3-wire circuitry
- Measuring range selectable via solder pads
- Output signal: 4...20 mA, 2-wire circuitry, temperature linear
- Adjustable Pt 100 sensor break alarm
- Power supply: 6.5...32 V DC
- Large ambient temperature range
- Compact low profile for easy installations

Application area

- Food/pharmaceuticals/biotechnology
- Chemicals/petrochemicals
- Maschinen- und Anlagenbau

Application

The transmitter for Pt 100 converts a temperature dependent change of resistance into a standard load-independent current signal of the type commonly used in process control systems. It is designed for mounting in the connection head model B, DIN 43729. Measuring ranges are adjusted easily with solder pads.

Techn. Data

Mechanical design

housing material zinc alloy and ABS/VO
protection:
housing with cover IP 20
terminals IP 10

Mounting

screw holes for in-head mounting
according to DIN B-head or larger

Connections

terminal screws for wire or flexible lead
≤ 2.5 mm²

Housing temperature

operation: -40...+85 °C
storage: -40...+100 °C

Auxiliary energy supply

connection polarity safe
function range: 6.5...32 V DC
residual ripple 4 V_{SS} at 50/60 Hz

EMC

noise immunity as per EN 50082, section 2
emitted interference as per EN 50081,
section 2

Influence of the supply voltage on the output signal

± 0.02 % of span/V
supply ripple influence, 50/60 Hz, 4 V_{SS}:
± 0.05 % of span

Signal input

Pt 100, 3-wire circuitry. 2-wire connection possible with wire jumper. The wire jumper has to be connected during installation.
Sensor feed I approx. 1.1 mA
max. sensor wire resistance: 15 Ohm/wire
terminal assignment as per connection diagram

Measuring ranges

adjustable according to table "Zero point configuration"
Zero point between -50...+50 °C

Measuring spans

see page 3, ± 10 % changeable

Output signal

temperature linear 4...20 mA

Break alarm

if the Pt 100 sensor is fractured, the output signal optionally takes values approx. 25 mA or approx. 3 mA

Current limitation in output signal

max. output current approx. 25 mA

Load

for U = 24 V DC, 25 mA
R = 700 Ohm

Load diagram

see page 2

Linearity error

± 0.1 % of span

Temperature influence

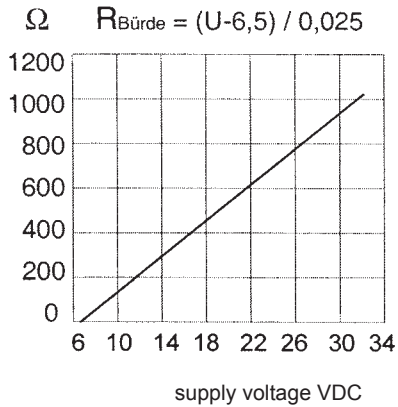
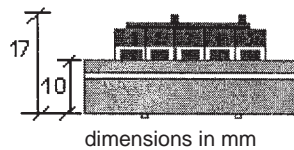
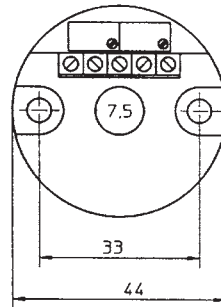
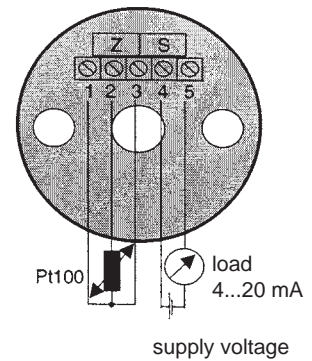
± 0.6 % of span/25 °C

Adjusting range

zero point: between -50...+50 °C
measuring span: ± 10 % f.s.

Weight

approx. 40 g

Load diagram**Dimensions****Connections**

Note: Connect a wire jumper from terminal 1 to 3 for a 2-wire connection. The line resistance of the sensor will thus be included as a measuring error in the measurement.

Mounting and operating instructions**Installation**

Always use the cover when the transmitter is not in the configuration phase. The cover prevents the transmitter from getting dirt on the soldering pads as well as getting ESD (Electro Static Discharge) by accidental touch of the soldering pads.

A convenient way to install the transmitter is to use the mounting kit.

In order to minimize measuring errors make sure the connecting screws are tightened enough.

General information

It is suggested that the calibration is checked at least once a year. Recommended calibration equipment is a resistance source and a mA-meter. For a calibration accuracy of 0.1 % we recommend calibration instruments with an accuracy of at least 0.02 %. The transmitter is polarity protected and will not be damaged by connecting the power supply with the wrong polarity, but the output will be 0 mA. The maximum load in the output loop depends on the supply voltage (see load diagram). As all transmitters with potentiometer adjustments, this transmitter must not be exposed to heavy shocks or vibrations which may cause the transmitter to get out of calibration.

To avoid ESD (Electro Static Discharge) to the transmitter, which may cause permanent damage, always ground yourself by touching some grounded equipment before configuring the transmitter.

Configuration

(To be carried out before calibration)

Setting is done with solder jumpers. These are 9 positions and each position consists of 3 solder pads (see figure).

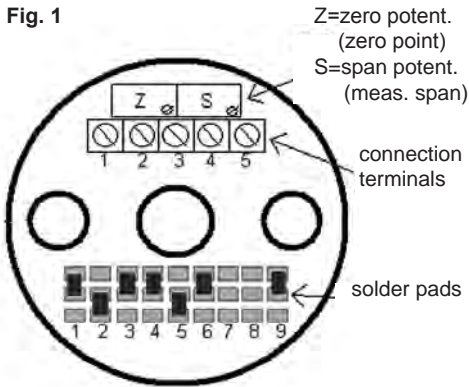
1. Select zero point according to figure. The solder jumper for position 9 is given for each interval in the figure.
2. Select span according to the table.
3. Select burn-out detection according to table.
4. Carry out the soldering of the jumpers according to tables.

Calibration

(To be carried out after configuration)

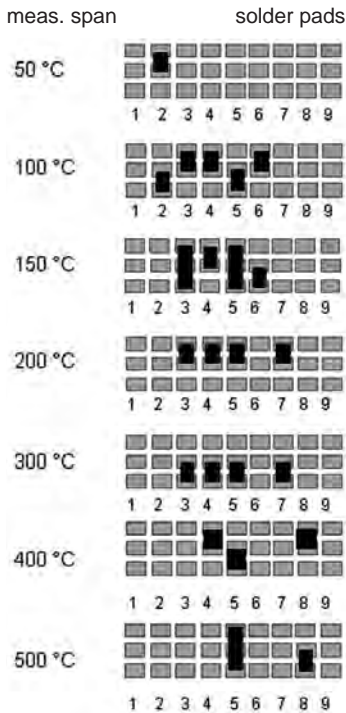
1. Connect the transmitter to a supply voltage, wire the terminals according to the wiring diagram and replace the Pt 100 with a precision decade resistor.
2. Apply an input signal to give an output of approximately 12 mA and leave the unit for 15 minutes, if possible in the ambient temperature it is intended to work in.
3. Apply I_{Nmin} corresponding to desired minimum input signal, e.g. 0°C at Pt100 = 100.00 Ohm.
4. Adjust the Z-potentiometer to get $I_{out} = 4.00$ mA.
5. Apply I_{Nmax} corresponding to desired maximum input signal.
6. Adjust the S-potentiometer to get $I_{out} = 20.00$ mA
7. Repeat 3-6 until readings converge.
8. Secure the potentiometer with lacquer.
9. Calibration is completed.

Fig. 1

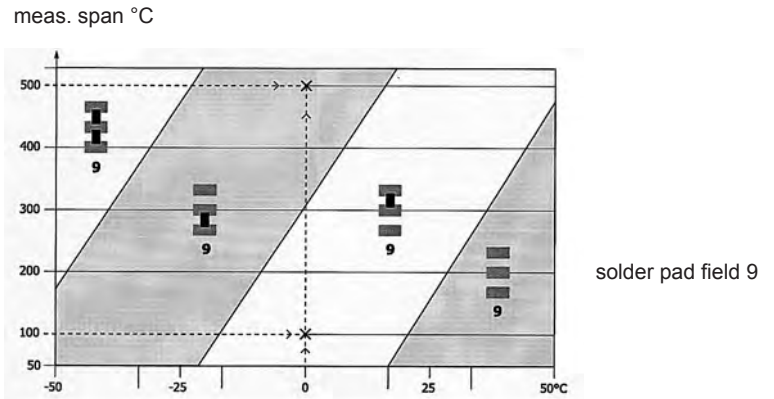


Position of the connection terminals, solder pads, potentiometers and a configuration example:
meas. range: 0...100 °C
sensor break signal: >23 mA

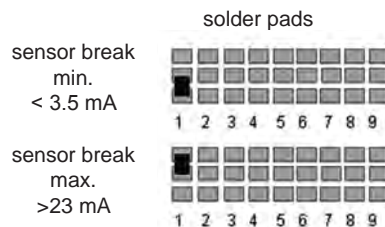
adjustment of measuring ranges °C



Zero point configuration



Sensor break configuration



Order Details - please give additional specifications for models not listed -

Transmitter for temperature		PA2240
meas. range	without configuration	F11001
meas. range adjusted at factory	-50...50 °C	F12160
	-10...40 °C	F12345
	0...50 °C	F12420
	0...100 °C	F12426
	0...150 °C	F12430
	0...200 °C	F12434
	0...300 °C	F12438
	0...400 °C	F12440
0...500 °C	F12441	
	per customer choice	F12999
break alarm	without configuration	K1
	· signal approx. 25 mA, standard ¹	K2
	· signal approx. 3 mA ¹	K3
Order code (example):		PA2240 F12426 K2

¹ configured only when measuring range is adjusted at factory, otherwise not configured