

# Technical Information

## TLR2 RTD measuring sensor

Assembly with flexible tails



### Fixed insert, adjustable compression fitting

#### Application

RTD sensor for industrial applications. The thermometer comprises of various diameter fixed inserts with flexible tails.

To be installed into a thermowell or directly into the process by means of an adjustable compression fitting or alternatively a free insertion without fitting. They can also be used in all applications where small immersion lengths are needed.

These assemblies is specially suited to temperature measurement in machinery, laboratory equipment and experimental plants in gaseous or liquid media like air, water, oils and others.

#### Your benefits

- Pt100 measuring element according to IEC 60751 with an accuracy Class A according to IEC 60751 and Band 5 (1/10 DIN)
- Customized immersion length
- Sheath material SS316/L

## Performance characteristics

### Measuring range

Input	Max. measuring range limits
Pt100 (RTD) as per IEC 60751	-200 to +600 °C (-328 to +1112 °F)

### Accuracy

RTD corresponding to IEC 60751

Class	max. Tolerances (°C)	Temperature range
<b>RTD max. error type TF - range: -50 to +400 °C</b>		
Cl. A	$\pm(0.15 + 0.002 \cdot  t ^{1})$	-50 °C to +250 °C
Band 5	$\pm 0.01\%$ of R0 (R0 = resistance at 0 °C)	-50 °C to +200 °C
<b>RTD max. error type WW - range: -200 to +600 °C</b>		
Cl. A	$\pm(0.15 + 0.002 \cdot  t ^{1})$	-200 °C to +600 °C
Band 5	$\pm 0.01\%$ of R0 (R0 = resistance at 0 °C)	-50 °C to +200 °C

1) |t| = absolute value °C



For measurement errors in °F, calculate using equations above in °C, then multiply the outcome by 1.8.

### Operating conditions

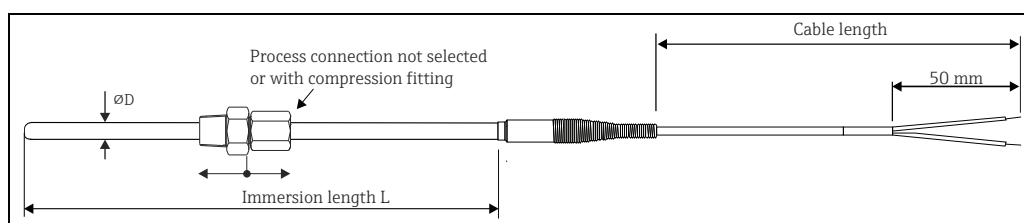
#### Ambient temperature

depends on the used cable type and connector type

Cable type	Temperature in °C (°F)
PVC	max. 80 °C (176 °F)
Silicone	max. 180 °C (356 °F)
Teflon or teflon/braid	max. 204 °C (400 °F)

### Design, dimensions

Immersion length L in mm	Cable length in mm	Sheath diameter ØD in mm	Sheath Material	Process connection
100, 150, 200, 250, 300 or free selectable	free selectable	3, 4.5, 6	SS316/L	<b>Compression fitting:</b> ¼" NPT, ½" NPT, G½" BSPP Material: SS316 or brass

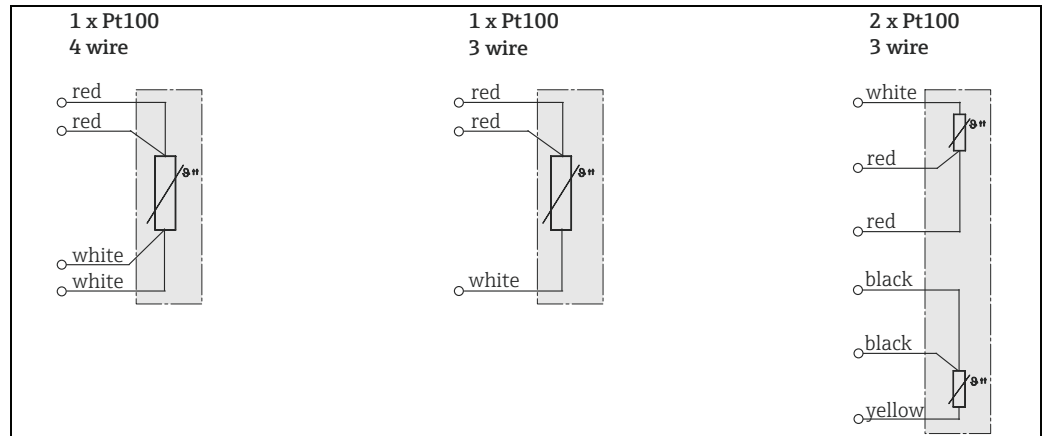


Design of the thermometer

A0013915

**Wiring diagrams**

The thermometer is wired with the free cores of the connecting cable. The thermometer can be connected to a separate temperature transmitter, for example.  
 Core cross-section  $\leq 0.2 \text{ mm}^2$  (24 AWG) with end sleeves, length = 5 mm (0.2 in).



Wiring diagram flying leads

**Certificates and approvals**

**Material certification**

The material certificate 3.1 (according to EN 10204) can be selected separately in the product configuration.

**Test report and calibration**

The "Factory calibration" is carried out according to an internal procedure in a laboratory of Endress+Hauser accredited by SANAS (South African National Accreditation System). All temperature calibrations, upon selection in the product configuration, are done according to the following standards: IEC 751, 2; IEC 60751, ASTM E220, ASTM E644 and ITS90.  
 In the case of thermometers without a replaceable insert, the entire thermometer - from the process connection to the tip of the thermometer - is calibrated.

**PER (Pressure Equipment Regulation)**

The assembly has no pressurised volumes and thus is not subject to the conformity assessment requirements of the Pressure Equipment Regulation when operating within the published product specifications.

Reasons: The definitions of pressure-bearing equipment as per sections 4.1.1 and 4.3.2 of the directive SANS 347:2012 determine that:

- The products are classified as pressure accessories and are designed and manufactured in accordance with sound engineering practice (SEP) in order to ensure safe use.
- This declaration does not apply if the product is used as a critical component in a safety system. In this case, the product must be assessed in line with the same category or higher than the equipment they protect (section 4.3.3).

## Ordering information

Detailed ordering information is available from the following sources:

- In the Product Configurator on the Endress+Hauser website:  
www.endress.com → Select country → Instruments → Select device → Product page function:  
Configure this product
- From your Endress+Hauser Sales Center:  
www.endress.com/worldwide



### **Product Configurator - the tool for individual product configuration**

- Up-to-the-minute configuration data
- Depending on the device: Direct input of information specific to measuring point, such as measuring range or operating language
- Automatic verification of exclusion criteria
- Automatic creation of the order code and its breakdown in PDF or Excel output format
- Ability to order directly in the Endress+Hauser Online Shop

[www.addresses.endress.com](http://www.addresses.endress.com)

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