

# Resistance Thermometers

## Compact Design

- Model TR221
- with Transmitter • Model TR223

## Electronic Temperature Measurement

### Applications

- Machine Industry
- Processing Machinery
- Plant Engineering (pipes and ducting)
- Building Automation
- Air Conditioning and Refrigeration Systems
- Power Transmission Engineering
- etc.

### Description

This series of resistance thermometers is designed for measurement of liquid or gaseous media in applications where the pressure is relatively low. They are not intended for use in high pressure applications.

### Model TR221

This model is complete with a thermowell (welded connection) suitable for max. pressure of 36 bar. The resistance thermometer is screwed directly into the process and standard DIN plug is used for electrical connection.

### Model TR223

This model is complete with a integrated transmitter that amplifies the resistance thermometer signal into the industry standard 4...20 mA signal. This guarantees an easy and reliable transmission of the temperature values measured.

Insertion length, process connection and sensor can be selected for the respective application from the order information text.



Model TR221

Model TR223



Optional: Quick connection gland/plug.

## Specification

## Model TR221, Model TR223

### Sensor

Pt 100 number/method of connection model TR221: 1 x Pt 100 2 wire, 1 x Pt 100 3 wire  
model TR223: 1 x Pt 100 2 wire

application range: -50 ... +250 °C

The range of the thermometer is limited by the ambient temperature capabilities of the DIN plug and of the transmitter.

### Process connection

male thread: G 1/2 B, G 1/4 B  
material: stainless steel 1.4571

### Thermowell

insertion length: 25 mm, 50 mm, 100 mm, 150 mm, 200 mm, 250 mm  
diameter: 6 mm, 8 mm  
material: stainless steel 1.4571

### Ambient temperature

model TR221: max. 125 °C at the connector  
model TR223: -40 ... +85 °C for the transmitter, max. 125 °C at the connector

### Ingress protection

IP 65 per EN 60 529 / IEC 529

### Transmitter

(only with model TR223)

measuring range: 0 °C ... 100 °C, 0 °C ... 120 °C, 0 °C ... 150 °C, -50 °C ... 150 °C

output: 4 ... 20 mA, 2 wire design

measuring deviation: typical < 0.1 %

signalling: sensor burnout: 33 mA  
sensor short circuiting: 3.6 mA

power supply: DC 12 ... 36 V  
permissible residual ripple: < 10 %

Power supply input is protected against reverse polarity connection and voltage spikes.

permissible ambient temperature: -40 ... +85 °C for transmitter

electromagnetic compatibility (EMC): interference emission: EN 50 081-2  
interference immunity: EN 50 082-2

### Connector

L-plug per DIN EN 175301-803 (DIN 43650),  
silicone sealing between plug and socket

Optional: Quick connection gland/plug

### Weight

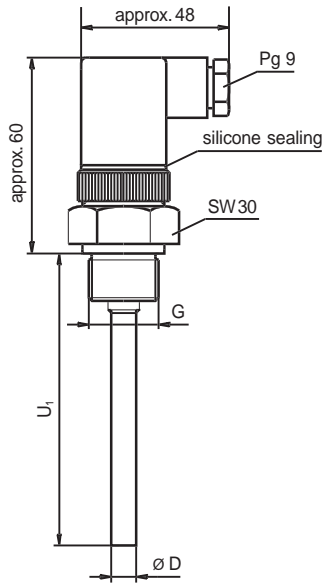
approx. 0.15 kg up to 0.28 kg (subject to design)

### Dimensions

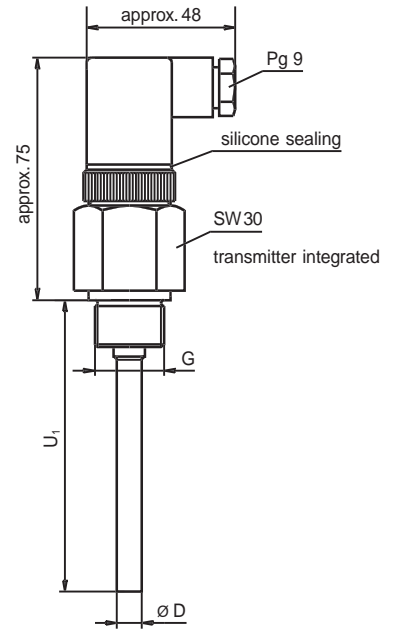
see drawings

Dimensions in mm

Model TR221



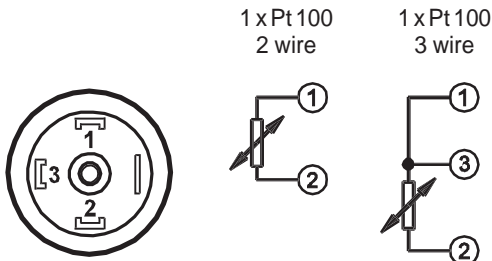
Model TR223



Legend:  
 ø D Thermowell diameter  
 G Male thread  
 U<sub>1</sub> Insertion length

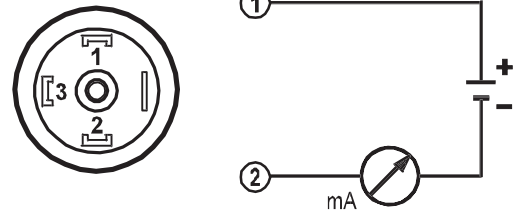
Electrical connection

Model TR221



Model TR223

4 ... 20 mA-loop



Option

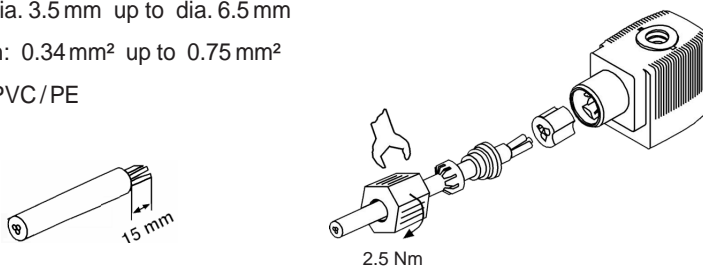
L-plug with quick connection gland/plug

Fast and efficient connection of round cables. No special tools needed – only a pair of wire cutters.

Cable diameter: dia. 3.5 mm up to dia. 6.5 mm

Core cross section: 0.34 mm<sup>2</sup> up to 0.75 mm<sup>2</sup>

Core insulation: PVC/PE



- cut off cable
- strip the cable sheath approx. 15 mm, do **not** remove the core insulation
- insert the cable into the connector
- tighten the union nut

## Order information for resistance thermometer with compact design

Type and number of sensors	1 x Pt 100 application -50 ... +250 °C
Sensor limiting error	class B to DIN EN 60 751
Design of process connection	male thread
Thermowell material	stainless steel 1.4571
Electrical connection	L-plug DIN EN 175301-803 (DIN 43 650), IP 65

Field No.	Code	Features
1	<b>TR221</b>	<b>Model</b> TR221
	<b>TR223</b>	TR223 with integrated transmitter
2		<b>Sensor method of connection</b>
	<b>2</b>	2 wire
3	<b>3</b>	3 wire <i>not with model TR223</i>
		<b>Process connection</b>
3	<b>GD</b>	G 1/2 B
	<b>GB</b>	G 1/4 B
4		<b>Thermowell diameter</b>
	<b>3</b>	6 mm
4	<b>E</b>	8 mm
		<b>Insertion length</b>
5	<b>0025</b>	25 mm
	<b>0050</b>	50 mm
	<b>0100</b>	100 mm
	<b>0150</b>	150 mm
	<b>0200</b>	200 mm
	<b>0250</b>	250 mm
6		<b>Connector</b>
	<b>W</b>	standard design
6	<b>S</b>	with quick connection (plug attached additionally)
		<b>Transmitter measuring range</b>
7	<b>ZZ</b>	without <i>not with model TR223</i>
	<b>1E</b>	0 °C ... 100 °C <i>not with model TR221</i>
	<b>1F</b>	0 °C ... 120 °C <i>not with model TR221</i>
	<b>1H</b>	0 °C ... 150 °C <i>not with model TR221</i>
	<b>EH</b>	-50 °C ... +150 °C <i>not with model TR221</i>
8		<b>Additional order info</b>
	<b>YES</b>	<b>NO</b>
	<b>T</b>	<b>Z</b>

### Order code:

1	2	3	4	5	6	7	8
[ ]	- Z - 1 [ ]	B - [ ]	- 1 [ ]	[ ] [ ] [ ]	W [ ] [ ]	- [ ]	[ ]

Additional text: \_\_\_\_\_

Specifications and dimensions given in this leaflet are correct at the time of printing.  
Modifications may take place and materials specified may be replaced by others without prior notice.



INGENIEROS ASOCIADOS DE CONTROL S.L.

Tel.: 913831390  
comercial@iac-sl.es