

# Measuring insert for resistance thermometer

## For thermometers with flameproof enclosure model TR10-L

### Model TR10-K

WIKA data sheet TE 60.11



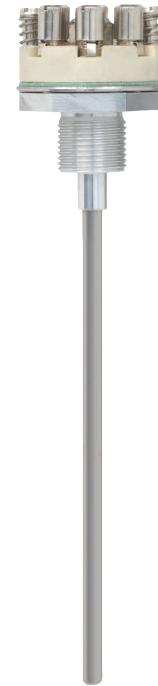
for further approvals  
see page 4

#### Applications

- Replacement measuring insert for servicing

#### Special features

- Application ranges from -200 ... +600 °C  
(-328 ... +1,112 °F)
- Made of mineral-insulated sheathed cable
- For all standard thermowell designs
- Spring-loaded design
- Explosion-protected versions



Measuring insert for resistance thermometer,  
model TR10-K, for Ex d thermometer model TR10-L

#### Description

The measuring inserts for resistance thermometers described here are designed for installation in a thermometer model TR10-L. Operation without thermowell is appropriate only in special cases. The measuring insert is made of flexible, mineral insulated sheathed cable. The sensor is located in the tip of the measuring insert. The measuring inserts are delivered with pressure springs to ensure that the measuring inserts are pressed down to the thermowell bottom.

Following designs are possible:

- with mounted sleeve to suit inner diameter of the thermowell
- without terminal block
- with transmitter

Type and number of sensors, accuracy and method of connection can each be selected to suit the respective application.

Only correct measuring insert length and correct measuring insert diameter ensure sufficient heat transfer from thermowell to the measuring insert.

The range of applications is completed by designs without terminal block for direct transmitter installation. Optionally, analogue or digital transmitters from the WIKA range can be installed.

## Sensor

The sensor is located on the non-twistable tip of the measuring insert.

### Sensor connection method

- 2-wire The lead resistance is recorded as an error in the measurement.
- 3-wire With a cable length of approx. 30 m or longer, measuring errors can occur.
- 4-wire The internal lead resistance of the connecting wires is negligible.

### Sensor tolerance value per DIN EN 60751

- Class B
- Class A
- Class AA

Combinations of 2-wire connection and class A or class AA are not allowed.

For detailed specifications for Pt100 sensors, see Technical information IN 00.17 at [www.wika.com](http://www.wika.com).

## Measuring insert

The measuring insert is made of a vibration-resistant, sheathed, mineral-insulated cable (MI cable).

The diameter of the measuring insert should be approx. 1 mm smaller than the bore diameter of the thermowell.

Gaps of more than 0.5 mm between thermowell and the measuring insert will have a negative effect on the heat transfer, and they will result in unfavourable response behaviour from the thermometer.

Using two screws and springs, the measuring insert can be mounted into a connection head (Form B), replaceable and mounted spring-loaded.

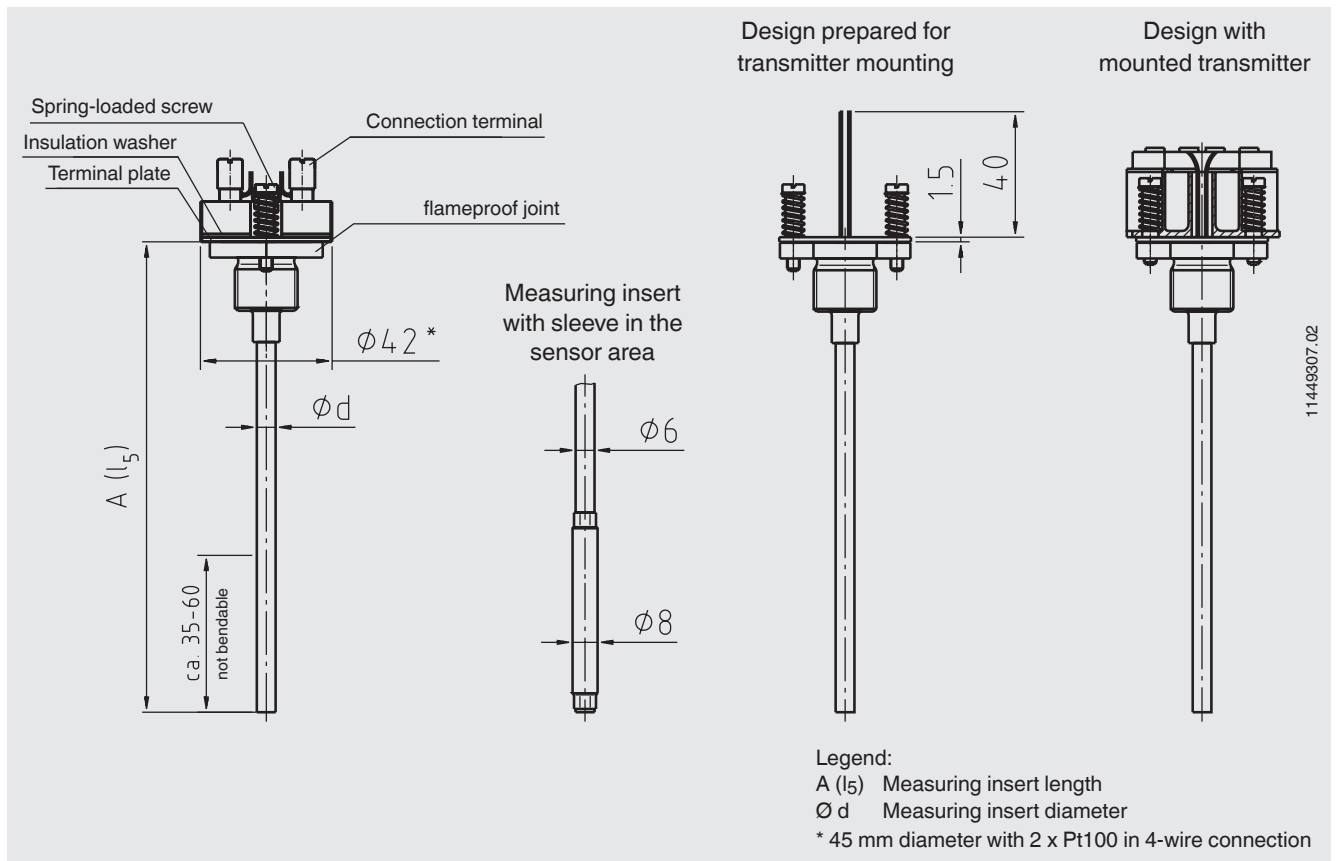
When fitting the measuring insert into a thermowell, it is very important to determine the correct insertion length (= thermowell length for bottom thicknesses of  $\leq 5.5$  mm). In order to ensure that the measuring insert is firmly pressed down onto the bottom of the thermowell, the insert must be spring-loaded (spring travel: max. 10 mm).

The standard material used for the measuring insert sheath is stainless steel. Other materials on request.

Besides twistability, this series is characterised by a high vibration resistance of the probe tip (6 g peak-to-peak <sup>1)</sup>).

<sup>1)</sup> In combination with TR10-L, vibration resistance data of the TR10-L apply.

## Dimensions in mm



### Standard measuring insert lengths

Measuring insert $\phi$ in mm	Standard measuring insert lengths in mm										
3	275	315	375	435							
6	275	315	345	375	405	435	525	555	585	655	735
8	275	315	345	375	405	435	525	555	585	655	735
8 (sleeve) <sup>1)</sup>	275	315	345	375	405	435	525	555	585	655	735

The lengths specified in this table correspond to the standard lengths. Intermediate lengths or greater lengths are possible without any difficulty.

1) MI cable  $\phi$  6 mm with sleeve  $\phi$  8 mm in the sensor area

### Possible combinations of measuring insert diameter, number of sensors and sensor connection method

Measuring insert $\phi$ in mm	Sensor, connection method 1 x Pt100			Sensor, connection method 2 x Pt100		
	2-wire	3-wire	4-wire	2-wire	3-wire	4-wire
3	x	x	x	x	x	-
6	x	x	x	x	x	x
8	x	x	x	x	x	x
8 (sleeve) <sup>1)</sup>	x	x	x	x	x	x

The lengths specified in this table correspond to the standard lengths. Intermediate lengths or greater lengths are possible without any difficulty.

1) MI cable  $\phi$  6 mm with sleeve  $\phi$  8 mm in the sensor area

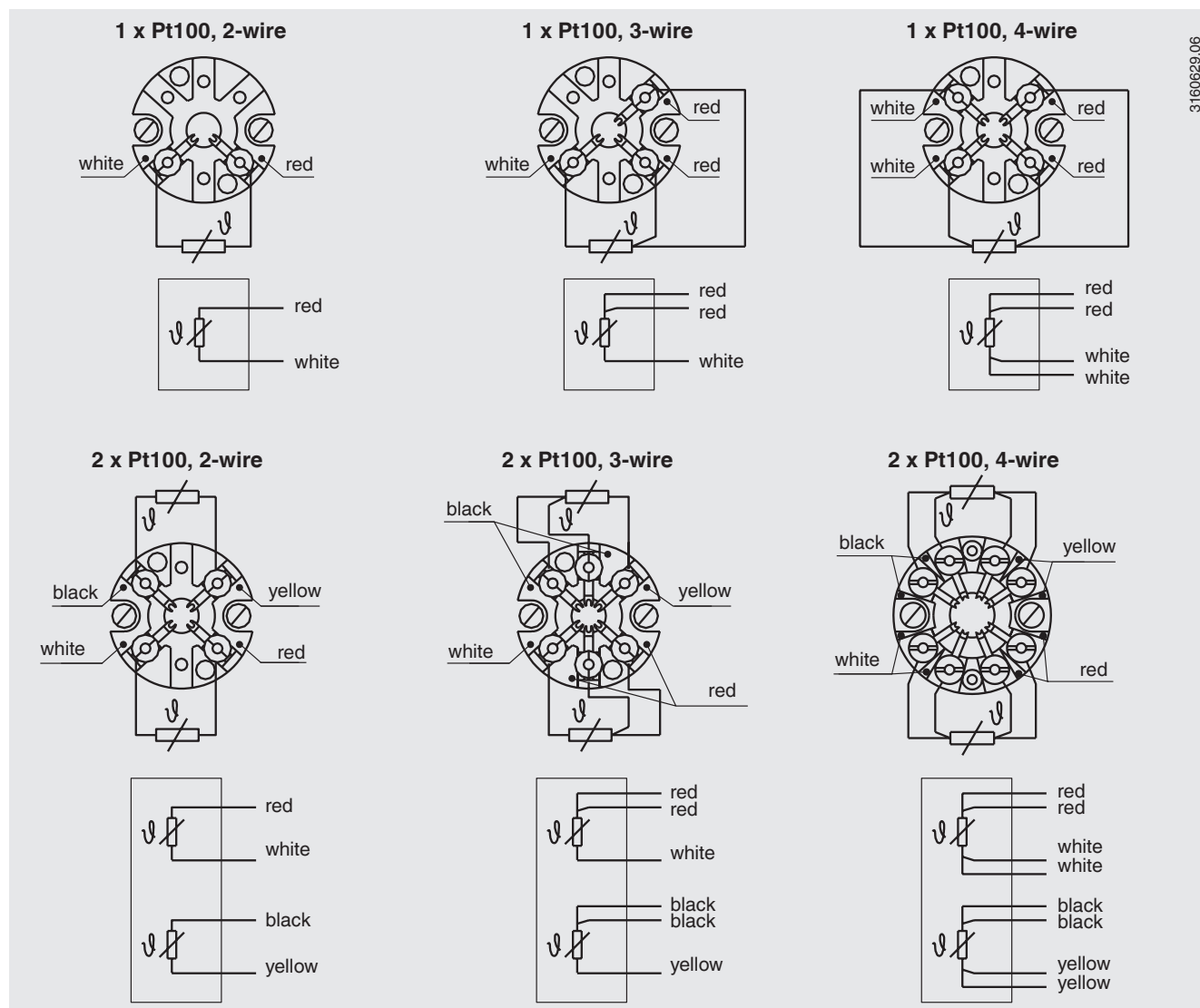
## Transmitter (option)

A transmitter can be built upon the measuring insert. In this case, the transmitter replaces the terminal block and is directly attached to the terminal plate of the measuring insert.

Model	Description	Explosion protection	Data sheet
T19	Analogue transmitter, configurable	Without	TE 19.03
T24	Analogue transmitter, PC configurable	Optional	TE 24.01
T91.10	Analogue transmitter, fixed measuring range	Without	TE 91.01
T12	Digital transmitter, PC configurable	Optional	TE 12.03
T32	Digital transmitter, HART® protocol	Optional	TE 32.04
T53	Digital transmitter FOUNDATION™ Fieldbus and PROFIBUS® PA	Standard	TE 53.01

## Electrical connection

(Colour code per EN/IEC 60751)



For the electrical connections of built-in temperature transmitters see the corresponding data sheets or operating instructions.

## Explosion protection (option)

### Attention:

The measuring insert model TR10-K is designed for use in resistance thermometer model TR10-L only.

The ignition protection type Ex d is guaranteed only if the measuring insert including the supplied threaded sleeve (flameproof joint) is built into the connection head with flameproof enclosure of the resistance thermometer model TR10-L.

## CE conformity

### ATEX directive (option)

94/9/EC

## Approvals (option)

- **IECEX**, ignition protection type "i" - intrinsic safety, international certification for the Ex area
- **NEPSI**, ignition protection type "i" - intrinsic safety, China
- **EAC**, ignition protection type "i" - intrinsic safety, import certificate, customs union Russia/Belarus/Kazakhstan
- **GOST**, metrology/measurement technology, Russia
- **INMETRO**, ignition protection type "i" - intrinsic safety, Institute of Metrology, Brazil
- **KOSHA**, ignition protection type "i" - intrinsic safety, South Korea
- **PESO (CCOE)**, ignition protection type "i" - intrinsic safety, India

## Certificates

Certification type	Measuring accuracy	Material certificate
2.2 test certificate	x	x
3.1 inspection certificate	x	-
DKD/DAkkS calibration certificate	x	-

The different certifications can be combined with each other.

Approvals and certificates, see website

## Ordering information

Model / Explosion protection / Measuring insert design / Terminal block, transmitter / Measuring element / Sensor connection method / Connection head / Temperature range / Probe tip design / Probe diameter / Sheath, raw material / Measuring insert length / Certificates / Options

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