

Measuring insert for process resistance thermometer Model TR12-A

WIKA data sheet TE 60.16



Applications

- Replacement measuring insert for servicing

Special features

- Application ranges from -200 ... +600 °C
- Made of mineral-insulated sheathed cable
- Explosion-protected versions



Measuring insert for process resistance thermometer,
model TR12-A

Description

The measuring inserts described here are designed for installation in a process resistance thermometer models TR12-B or TR12-M (see figure right). Operation without thermowell is only recommended in certain applications.





These measuring inserts are made from flexible, mineral insulated sheathed cable. The sensor is located in the tip of the measuring insert.

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



Model TR12-B Model TR12-M

Explosion protection

Explosion protection	Ignition protection type	Zone
ATEX 	Ex i	Zone 1, gas [2G Ex ia ... Gb] Zone 1 mounting to zone 0, gas [1/2G Ex ia ... Ga/Gb] Zone 0, gas [1G Ex ia ... Ga]
ATEX 	Ex d	Zone 1, gas [2G Ex d ... Gb] Zone 1 mounting to zone 0, gas [1/2G Ex d ... Ga/Gb]
IECEX (in conjunction with ATEX) 	Ex i	Zone 1, gas [2G Ex ia ... Gb] Zone 1 mounting to zone 0, gas [1/2G Ex ia ... Ga/Gb] Zone 0, gas [1G Ex ia ... Ga]
IECEX (in conjunction with ATEX) 	Ex d	Zone 1, gas [2G Ex d ... Gb] Zone 1 mounting to zone 0, gas [1/2G Ex d ... Ga/Gb]

The classification/suitability of the instrument (permissible power P_{max} as well as the permissible ambient temperature) for the respective category can be seen on the EC-type examination certificate, the IECEx certificate or in the operating instructions.

Attention:

Built into a model TR12-B process resistance thermometer - depending on the application - a measuring insert with "intrinsically-safe Ex i" or "flameproof enclosure Ex d" ignition protection type can be used. One such measuring insert suitable for Ex d is marked Ex i.

The use of a model TR12-A measuring insert in hazardous areas, without a suitable protective housing, is not permitted!



Example: Model TR12-B

Sensor

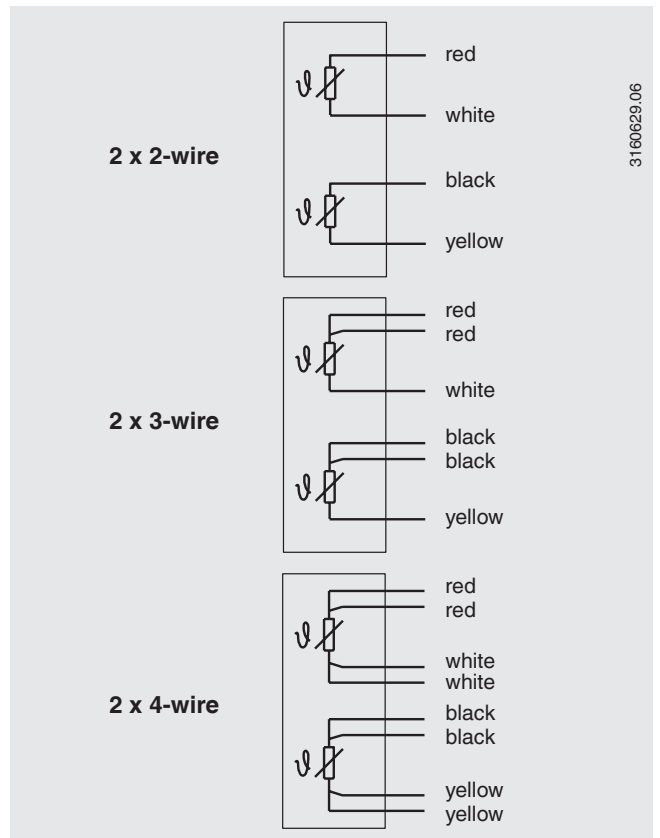
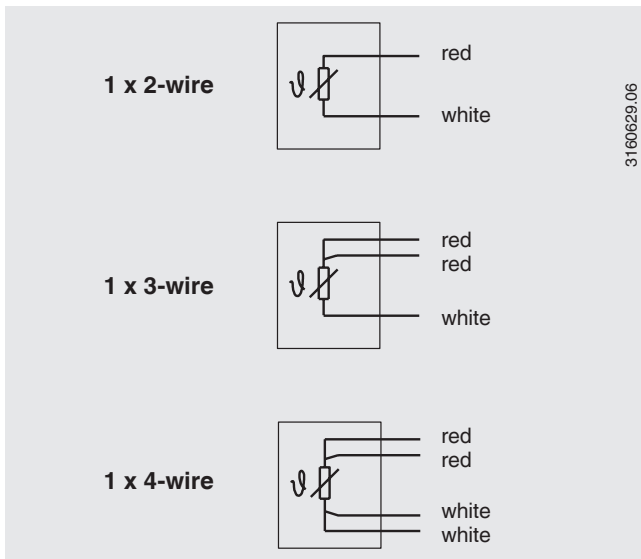
Measuring element

Pt100 (measuring current: 0.1 ... 1.0 mA) ¹⁾

Connection method	
Single element	1 x 2-wire
	1 x 3-wire
	1 x 4-wire
Dual element	2 x 2-wire
	2 x 3-wire
	2 x 4-wire ²⁾

Electrical connection

(Colour code per EN/IEC 60751)



Class	Tolerance value of the measuring element per EN 60751	
	wire-wound	Thin-film
Class B	-200 ... +600 °C	-50 ... +500 °C
Class A ³⁾	-100 ... +450 °C ⁴⁾	-30 ... +300 °C ⁵⁾
Class AA ³⁾	-50 ... +250 °C	0 ... +150 °C

1) For detailed specifications for Pt100 sensors, see Technical information IN 00.17 at www.wika.com.

2) Not with 3 mm diameter

3) Not at 2-wire connection method

4) -200 ... -100 °C, +450 ... +600 °C: Class B

5) -50 ... -30 °C, +300 ... +500 °C: Class B

Dimensions in mm

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

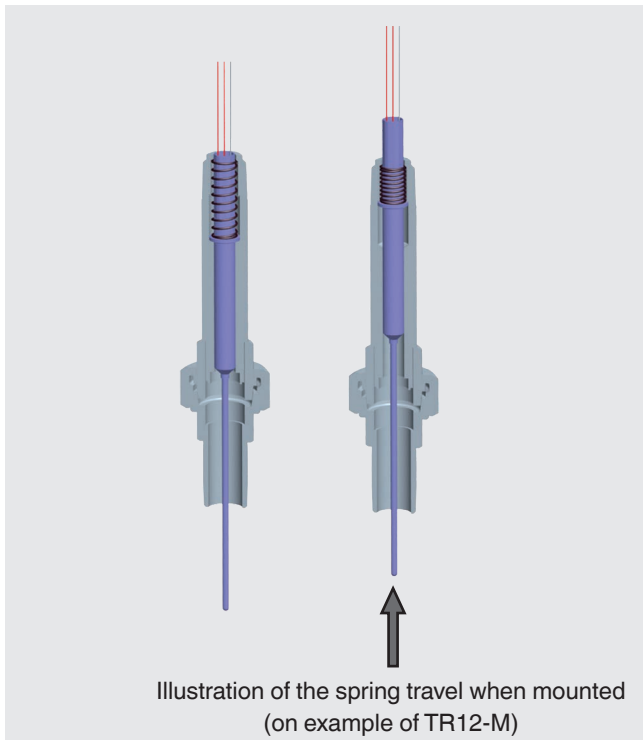
Dimensions

Measuring insert length l_5	≥ 300 mm
Measuring insert diameter $\varnothing d$	
Standard:	3 mm ⁶⁾ 6 mm 8 mm (with sleeve)
Option (on request):	1/8 inch ⁶⁾ (3.17 mm) 1/4 inch (6.35 mm) 3/8 inch (9.53 mm)

6) \varnothing 3 mm not possible with 2 x Pt100, 4-wire

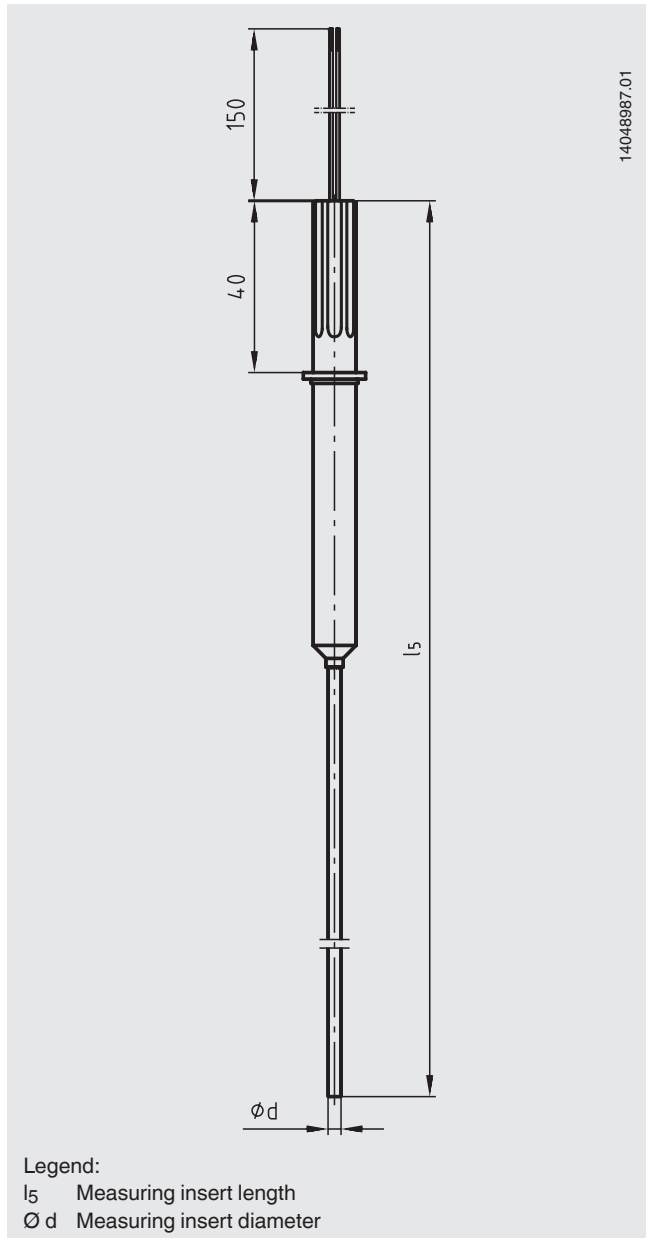
The diameter of the measuring insert should be approx. 1 mm smaller than the bore diameter of the thermowell. Gaps of more than 0.5 mm between thermowell and the measuring insert will have a negative effect on the heat transfer, and they will result in unfavourable response behaviour from the thermometer.

When fitting the measuring insert into a thermowell, it is very important to determine the correct insertion length (= thermowell length for bottom thicknesses of ≤ 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 20 mm).



Attention:

The use of a model TR12-A measuring insert is exclusively allowed with a resistance thermometer model TR12-B or TR12-M!



Materials

Material	
Sheath material	Stainless steel 1.4571
	CrNi-Stahl 316
	Stainless steel 316L

Operating conditions

Mechanical requirements

Design	
Standard	6 g peak-to-peak, wire-wound or thin film measuring resistor
Option	Vibration resistant sensor tip max. 20 g peak-to-peak, thin film measuring resistor High-vibration resistant sensor tips, max 50 g peak-to-peak, thin film measuring resistor

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

Response time (in water, per EN 60751)

$t_{50} < 10$ s

$t_{90} < 20$ s

Specifications for measuring insert diameter 6 mm

The thermowell required for operation increases the response time dependent upon the actual parameters for the thermowell and the process.

Ambient and storage temperature

{-50} -40 ... +80 °C

{ } Items in curved brackets are optional extras

Ingress protection

IP 00 per IEC/EN 60529

The measuring inserts for the model TR12-A are designed for mounting into a model TR12-B resistance thermometer.

These resistance thermometers feature connection housings/cable glands/protective casings which ensure a high IP protection (see data sheet TE 60.17).

Approvals

- ATEX
- IECEX

Approvals, see local website

Certificates

Certification type	Measuring accuracy	Material certificate
Test procedure	x	x
2.2 Test certificate	x	x
3.1 Acceptance test certificate	x	-
DKD/DAkkS calibration certificate	x	-

The different certifications can be combined with each other.

Ordering information

Model / Explosion protection / Ignition protection type / Sensor / Sensor specification / Application range of the thermometer / Insertion length / Measuring insert diameter / Sheath material / Mechanical requirements / Certificates / Options

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