Threaded resistance thermometer
Model TR10-D, miniature design

for further approvals
see page 5

Applications

- Machine building, plant and vessel construction
- Propulsion technology
- Air-conditioning and refrigeration systems

Special features

- Application ranges from -200 ... +500 °C (-328 ... +932 °F)
- Compact design
- Universal application
- Direct installation into the process
- Explosion-protected versions

Threaded resistance thermometer, miniature design, model TR10-D

Description

Resistance thermometers of this series are used for the measurement of liquid or gaseous media at low and medium pressures.

The resistance thermometer is screwed directly into the process. The electrical connection is made via connection terminals in the connection head (splash-proof). The measuring inserts are available in two variants, depending upon the application. The choice is between a replaceable, spring-loaded miniature measuring insert and a non-replaceable, permanently screwed-in design.

Insertion length, process connection and sensor can each be selected for the respective application.

Data sheets showing similar products:
Thermocouple for additional thermowell; model TC10-B; see data sheet TE 65.02
Cable resistance thermometer; model TR40; see data sheet TE 60.40

Sensor

The sensor is located in the tip of the thermometer or measuring insert, respectively.

Sensor connection method
- 2-wire
- 3-wire
- 4-wire

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.

Measuring insert

Removable design
Using two screws and springs, the measuring insert can be mounted into a connection head (form J), replaceable and mounted spring-loaded into the thermowell.

Fixed design
The measuring insert is manufactured as a unit (as a tube assembly in a thermowell) and thus cannot be replaced.

With this design, the temperature range is limited to max. 250 °C.

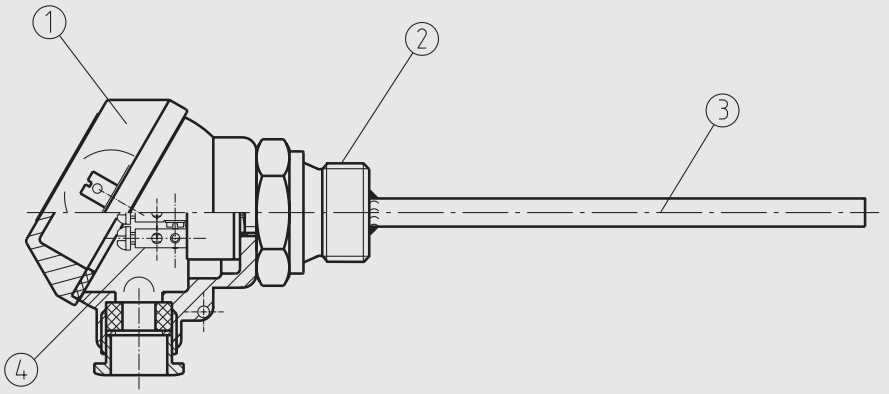
Transmitter (option)

Within the model JS connection head a model T91.20 analogue temperature transmitter can be factory-fitted. It is mounted in place of the terminal block.

The version with temperature transmitter is not suitable for use in hazardous areas.

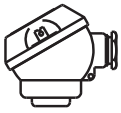
For further specifications on the model T91.20 temperature transmitter please refer to WIKA data sheet TE 91.01.

Components model TR10-D



Legend:
① Connection head
② Process connection
③ Thermowell
④ Terminal block

Connection head



JS

Model	Material	Cable outlet	Ingress protection	Cap	Surface
JS	Aluminium	M16 x 1.5 [1]	IP65	Cap with 2 screws	Blue, lacquered [2]

1) Standard
2) RAL 5022

Thermowell

Material: stainless steel

Thermowell Ø in mm	Insertion length U_1 in mm						
	50	75	100	150	160	250	400
6	x	x	x	x	x	x	x
8	-	-	x	x	x	x	x

Permissible temperature ranges

Class	Sensor construction	
	Wire-wound	Thin-film
Class B	-200 ... +500 °C	-50 ... +500 °C
Class A [1)]	-100 ... +450 °C	-30 ... +300 °C
Class AA [1)]	-50 ... +250 °C	0 ... 150 °C

1) Not with 2-wire connection method

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

- At the head: -40 ... +80 °C
- Storage: -40 ... +80 °C

Process connections

All process connections are manufactured from stainless steel. Other materials are available on request.

The insertion length A (U_1 or U_2) can be customised.

The neck length, N (M_H), depends on the type of the process connection selected.

Extended process connection

Connection heads, connecting leads/wires and the optional transmitter must only be used within the above-mentioned temperature ranges.

If the thermometer will operate at temperatures outside of the temperature limits, the clearance between the connection head and the hot or cold surfaces must be increased.

This neck length is dependent upon the intended application and generally serves as isolation or as a cooling element between the process and the connection head.

Permanent threaded connection

The connection is permanently fixed to the thermowell. The standard neck length is N (M_H) = 55 mm

Compression fitting

The compression fitting enables simple, on-site adjustment to the required insertion length.

The self-extending nature of the compression fitting results in the smallest possible neck length, N (M_H), of approx. 55 mm.

Since the compression fitting is adjustable on the thermowell, the size of the insertion length, A, and the neck length, N (M_H), are stated as the values for the delivered item.

- Ferrule material: stainless steel or PTFE

Ferrules from stainless steel are only adjustable once; once the fitting has been loosened, sliding along the thermowell is no longer possible.

Ferrules from PTFE can be adjusted numerous times; once the fitting has been loosened it can again be tightened onto the thermowell.

- Max. temperature at process connection: 150 °C

Double nipple

Using a double-sided threaded nipple, the thermometer can be screwed directly into the process. In this case the permissible temperature ranges must be observed.

The neck length, N (M_H), for parallel threads depends on the height of the hexagon. This is 10 mm.

The neck length N (M_H) of NPT threads not only includes the hexagon height but also half of the thread height. This gives us a neck length, N (M_H), of approx. 19 mm.

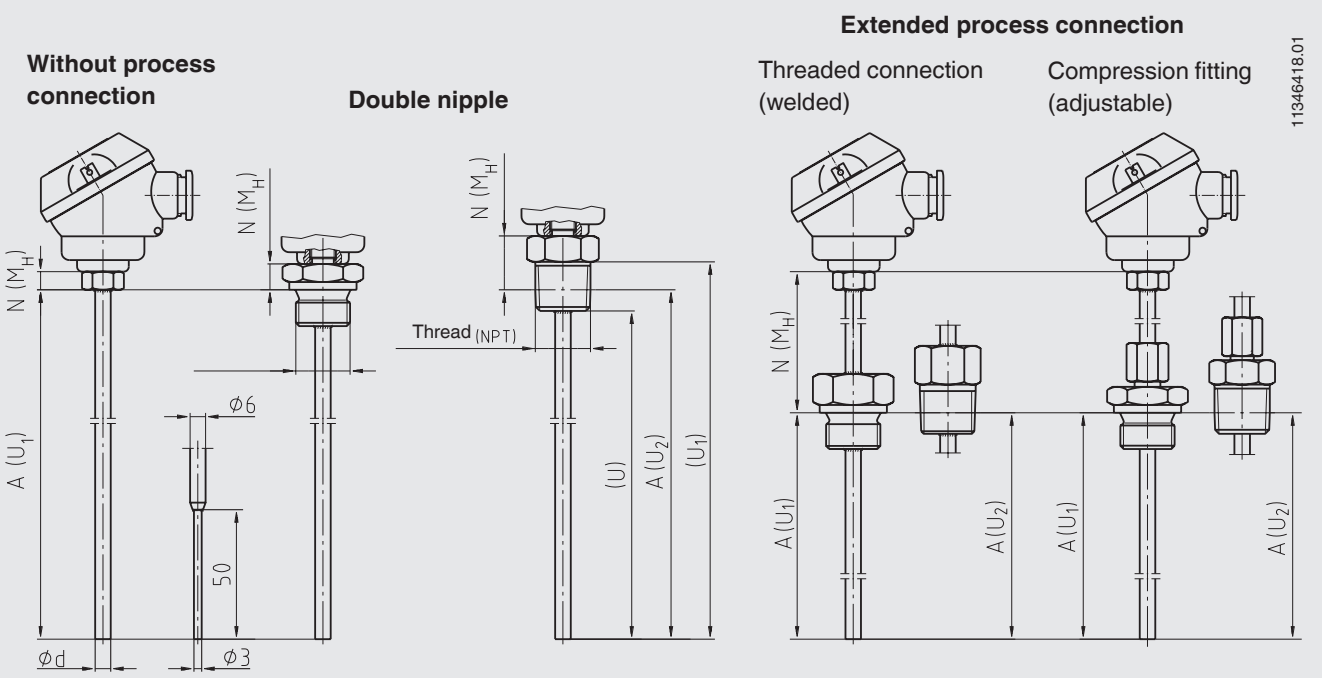
Without process connection

This version is designed mainly for mounting in one of the available compression fittings.

The neck length, N (M_H), in this case only specifies the height of the hexagon on the head of the thermowell. N (M_H) is always 7 mm.

The resistance thermometers of the TR10-D series are designed for direct installation into the process. Using it in an additional thermowell only makes sense in exceptional cases.

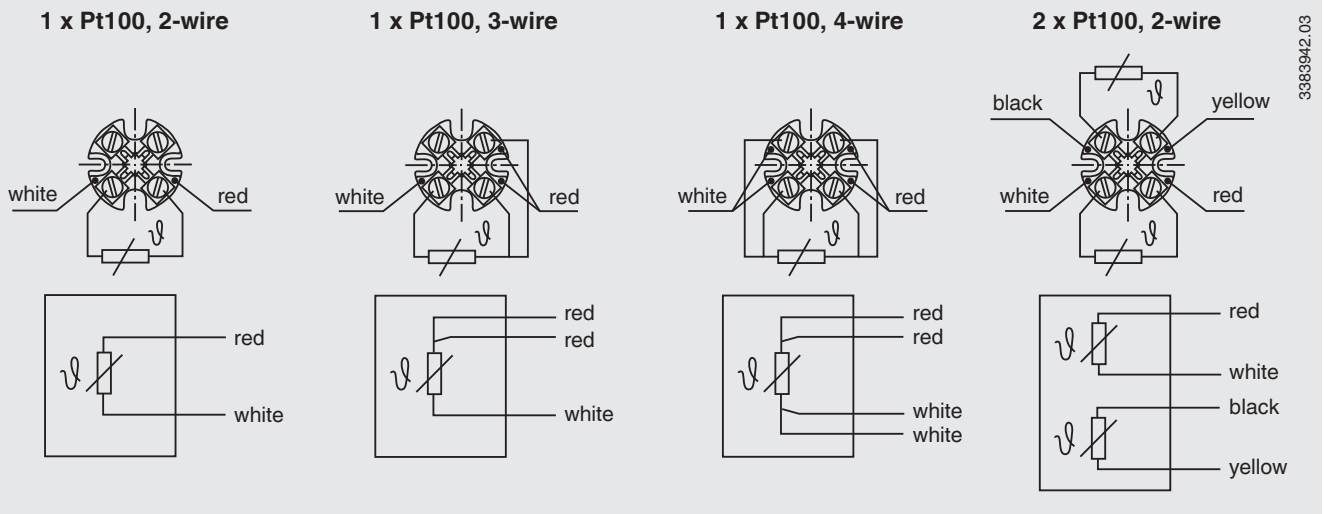
Dimensions in mm



Legend:

A (U_1)	Insertion length (with parallel threads)	N (M_H)	Neck length
		(U)	Insertion length per DIN 43772
A (U_2)	Insertion length (with tapered threads)	(U_1)	Insertion length in accordance with international standards
		Ø d	Measuring insert diameter

Electrical connection



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

Explosion protection (option)

Resistance thermometers of the TR10-D series are available with an EC-type examination certificate for “intrinsically safe”, Ex i, ignition protection.
These instruments comply with the requirements of the ATEX directive for gases and dusts.

The permissible power P_{max} as well as the permissible ambient temperature for the respective category can be seen on the EC-type examination certificate and in the operating instructions.

Certificates (option)

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

The different certifications can be combined with each other.

Approvals

Logo	Description	Country
CE Ex	**EC declaration of conformity** ■ EMC directive [1] EN 61326 emission (group 1, class B) and interference immunity (industrial application) ■ ATEX directive (option)	European Community
IEC IECEx	**IECEx (option)** Hazardous areas	IECEx member states
EAC Ex	**EAC (option)** ■ Import certificate ■ Hazardous areas	Eurasian Economic Community
	GOST (option) Metrology, measurement technology	Russia
INMETRO	**INMETRO (option)** ■ Metrology, measurement technology ■ Hazardous areas	Brasil
Ex NEPSI	**NEPSI (option)** Hazardous areas	China
KCS	**KOSHA (option)** Hazardous areas	South Korea
-	**PESO (option)** Hazardous areas	India

1) Only for built-in transmitter

Approvals and certificates, see website

Ordering information
Model / Version / Measuring insert / Explosion protection / Process connection / Version and material of threaded connection / Thread size / Measuring element / Connection method / Temperature range / Design of the sensor tip / Sensor diameter / Insertion length A / Neck length N (M_H) / Certificates / Options

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