

# Threaded thermocouple Model TC10-D, miniature design

WIKA data sheet TE 65.04



for further approvals  
see page 4

## Applications

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

## Special features

- Application ranges from -40 ... +600 °C
- Compact design
- Universal application
- Direct installation into the process
- Explosion-protected version Ex i

## Description

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

The thermocouple 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.



Threaded thermocouple, miniature design,  
model TC10-D

## Sensor

### Sensor types

Model	Recommended max. operating temperature
K (NiCr-Ni)	600 °C
J (Fe-CuNi)	600 °C
N (NiCrSi-NiSi)	600 °C
E (NiCr-CuNi)	600 °C
T (Cu-CuNi)	350 °C

Thermocouple Model	Class	DIN EN 60584 part 2	ISA MC96.1
K	1 and 2		Standard, special
J	1 and 2		Standard, special
N	1 and 2		-
E	1 and 2		-
T	1 and 2		-

### Tolerance value

For the tolerance value of thermocouples, a cold junction temperature of 0 °C has been taken as the basis.

For detailed specifications for thermocouples, see Technical information IN 00.23 at [www.wika.com](http://www.wika.com).

Listed models are available both as single or dual thermocouples. The thermocouple will be delivered with an ungrounded measuring point, unless explicitly specified otherwise.

The actual application range of the thermometer is limited both by the permissible maximum working temperature of the thermocouple and the sheath material as well as by the permissible maximum working temperature of the thermowell material.

## 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.

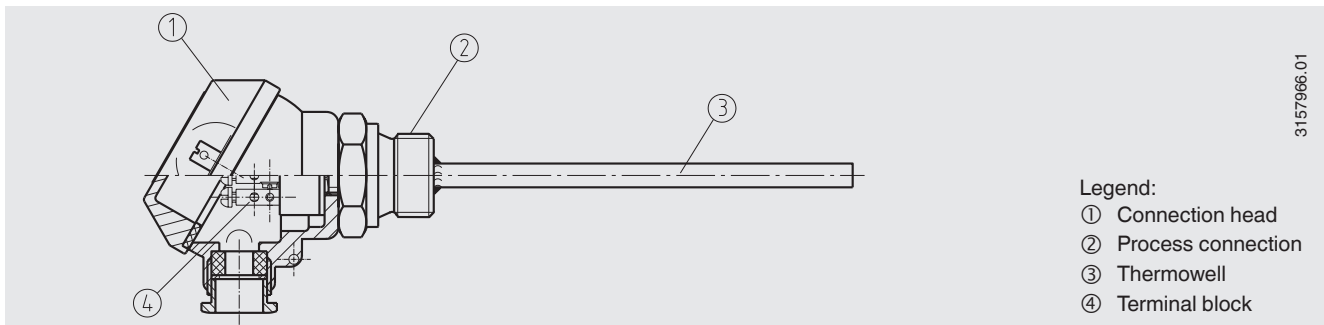
### Transmitter (option)

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.

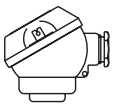
## Components model TC10-D



### 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 <sup>1)</sup>	IP 65	Cap with 2 screws	Blue, lacquered <sup>2)</sup>

1) Standard  
2) RAL 5022

## Thermowell

- Material: stainless steel

Thermowell Ø in mm	Insertion length U <sub>1</sub> 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

- Fields of application -40 ... +600 °C <sup>1)</sup>
- At the head -40 ... +80 °C
- Storage -40 ... +80 °C

1) Sensor type T: application range -40 ... +350 °C

## Process connections

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

The insertion length A (U<sub>1</sub> or U<sub>2</sub>) can be customised.

The neck length, N (M<sub>H</sub>), 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<sub>H</sub>) = 55 mm.

Thermocouples of the series TC10-D are designed for direct installation into the process. Using it in an additional thermowell only makes sense in exceptional cases.

## 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<sub>H</sub>), of around 55 mm.

Since the compression fitting is adjustable on the thermowell, the size of the insertion length, A, and the neck length, N (M<sub>H</sub>), are stated as the values for the delivered item.

- Ferrule material: stainless steel

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

## 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<sub>H</sub>), for parallel threads depends on the height of the hexagon. This is 10 mm.

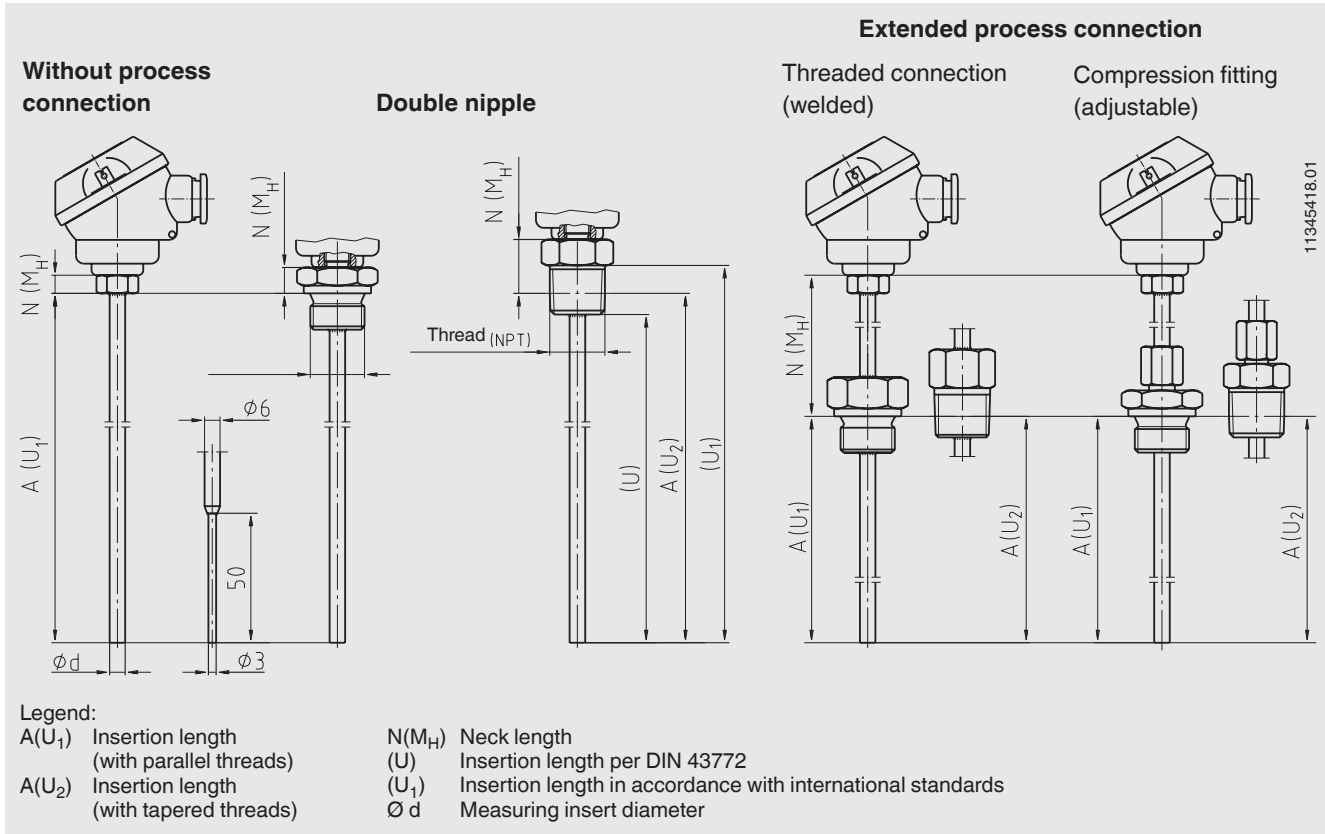
The neck length N (M<sub>H</sub>) of NPT threads not only includes the hexagon height but also half of the thread height. This gives us a neck length, N (M<sub>H</sub>), of approx. 19 mm.

## Without process connection

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

The neck length N (M<sub>H</sub>) in this case only specifies the height of the hexagon on the head of the thermowell. N (M<sub>H</sub>) is always 7 mm.

## Dimensions in mm



## CE conformity

### EMC directive <sup>1)</sup>

2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)

### ATEX directive (option)

94/9/EC, EN 60079-0, EN 60079-11

<sup>1)</sup> Only for built-in transmitter

## 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 and certificates, see website

## Approvals (option)

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

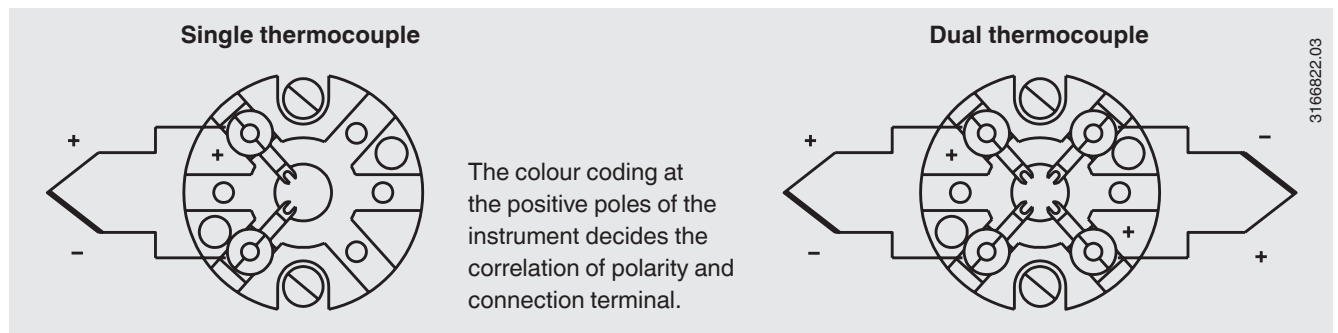
## Explosion protection (option)

Thermocouples of the TC10-D series are available with an EC-type examination certificate for "intrinsically safe", Ex i, ignition protection.

These instruments comply with the requirements of 94/9/EC (ATEX) directive for gases and dusts.

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 and in the operating instructions.

## Electrical connection



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

## Ordering information

Model / Version / Measuring insert / Explosion protection / Process connection / Version and material of threaded connection / Thread size / Measuring element / Temperature range / Design of the sensor tip / Sensor diameter / Insertion length A / Neck length N (M<sub>H</sub>) / Certificates / Options

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