

## Duct thermometer Model TF40

WIKA data sheet TE 67.16



### Applications

- Air-conditioning technology
- Ventilation technology
- Refrigeration technology
- Heating technology

### Special features

- Smallest case design
- Protected against dust and water jets, IP65
- Quick and simple mounting
- Plastic mounting flange
- Temperature ranges from -50 ... +200 °C

### Description

The model TF40 duct thermometers are used for temperature measurement in heating, ventilation and air-conditioning technology. They are primarily used in air ducts. Mounting is performed using a mounting flange. In conjunction with an additional thermowell, they can also be used for temperature measurement in liquids.

The extremely small case even enables mounting in locations where there is very little space available.

By selecting the appropriate measuring elements, the TF40 duct thermometers are compatible with all commonly used control systems.



Duct thermometer, model TF40

## Measuring element

WIKA standardly uses the following measuring elements for the model TF40 duct thermometer:

- Pt1000, class B per DIN EN 60751
- Pt100, class B per DIN EN 60751
- NTC 5 k / B (25/85) = 3976
- NTC 10 k / B (25/85) = 3435

Others on request

Platinum elements offer the advantage of meeting international standards (IEC 751 / DIN EN 60751). Due to material- and production-specific criteria, a standardisation of semiconductor elements such as NTCs is not possible. For this reason their interchangeability is limited.

Further advantages of platinum elements are a better long-term stability, better performance with cyclic temperatures and a wider temperature range. High measurement accuracy and linearity are also possible with NTCs, but only in a very limited temperature range.

This is set against the lower temperature sensitivity of platinum elements.

### Strengths and weaknesses of the different measuring elements

	NTC	Pt100	Pt1000
Temperature range	-	++	++
Accuracy	-	++	++
Linearity	-	++	++
Long-term stability	+	++	++
International standards	-	++	++
Temperature sensitivity [dR/dT]	++	-	+
Impact of the connection lead	++	-	+

### Connection method

The lead resistance of the connection lead affects the measured value of 2-wire connections and must be taken into consideration.

For copper cable with cross-section 0.22 mm<sup>2</sup> the following value applies: 0.162 Ω/m → 0.42 °C/m for Pt100

Duct thermometers are generally used in applications where a high-accuracy temperature measurement is not required. To keep the costs of the measuring point low, we offer our duct thermometers with a 2-wire connection.

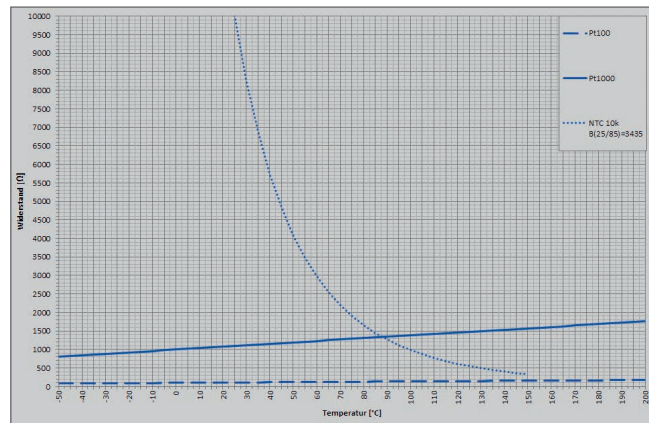
We recommend selecting a design with Pt1000, with which, on the one hand, the influence of the wires, at 0.04 °C/m, is a factor of 10 lower, and on the other, the international standardisation of platinum measuring resistors guarantees a higher market availability. The lead resistance, however, is noticeable just as little with an NTC element.

If the wire from the temperature probe to the controller is designed with a cross-section of 0.5 mm<sup>2</sup>, then the influence of the wires is also reduced here to under 0.04 °C/m with Pt100 and 0.004 °C/m with Pt1000.

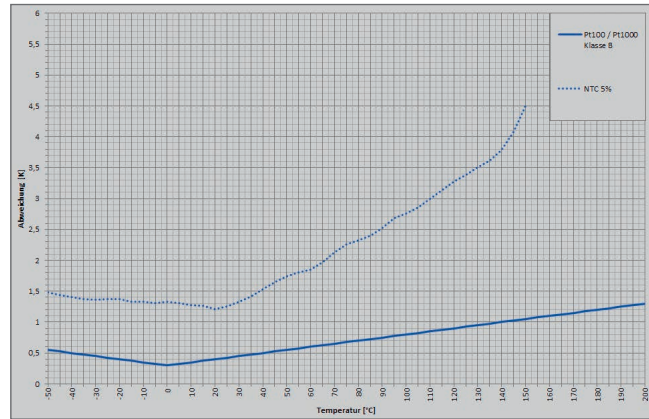
### Characteristic curves

The following characteristic curves show the typical curve shapes for the standard WIKA measuring elements, depending on the temperature and the typical tolerance curves.

#### ■ Typical characteristic curves



#### ■ Typical tolerance curves



## Temperature ranges

### Medium temperature (measuring range)

The measuring range is dependent, essentially, on the measuring element. Depending on the measuring element, the following maximum measuring ranges are available:

Measuring element	Measuring range
NTC	-30 ... +130 °C
Pt100	-50 ... +200 °C
Pt1000	-50 ... +200 °C

### Ambient temperature

The case is designed for a temperature range of -40 ... +100 °C.

## Probe case

To enable the mounting of the TF40 duct thermometer in space-critical locations as well, we have adopted extremely small dimensions for the case.

The case is made from PA66 GK30 UV-resistant plastic.

Colour:	Pure white, RAL 9010
Cable gland:	M16
Electrical connection:	2 screw terminals, max. 1.5 mm <sup>2</sup>
Case ingress protection:	IP65

## Stem

For optimal temperature sensing, the TF40 duct thermometer should be mounted so that the tip of the stem is located approximately in the centre of the air duct. To match the various duct sizes, there are various standard nominal lengths available.

Material:	Stainless steel 1.4571
Diameter:	6 mm
Nominal lengths N:	100, 150, 200, 250 mm
matched to our thermowells with insertion lengths of	50, 100, 150, 200 mm (see "Thermowell")

### Note:

When ordering the TF40 with a WIKA thermowell fitted, the nominal length of the stem N must be selected as 50 mm longer than the insertion length of the thermowell, U<sub>1</sub>.

## Ingress protection

### IP65

The case is protected from dust and water jets.

## Mounting flange

To fix the duct thermometer to the air duct, a PA66 GK30 plastic mounting flange is available. If desired, it can be delivered with the temperature probe.

The mounting flange is also available later as an accessory item. On ordering, please give the order number!

Description	Order number
Plastic mounting flange, Ø 40 mm	14091035

## Thermowell

To use the model TF40 duct thermometer in liquids, thermowells with a G ½ mounting thread (material: brass) are available in four insertion lengths. On ordering, please give the order number!

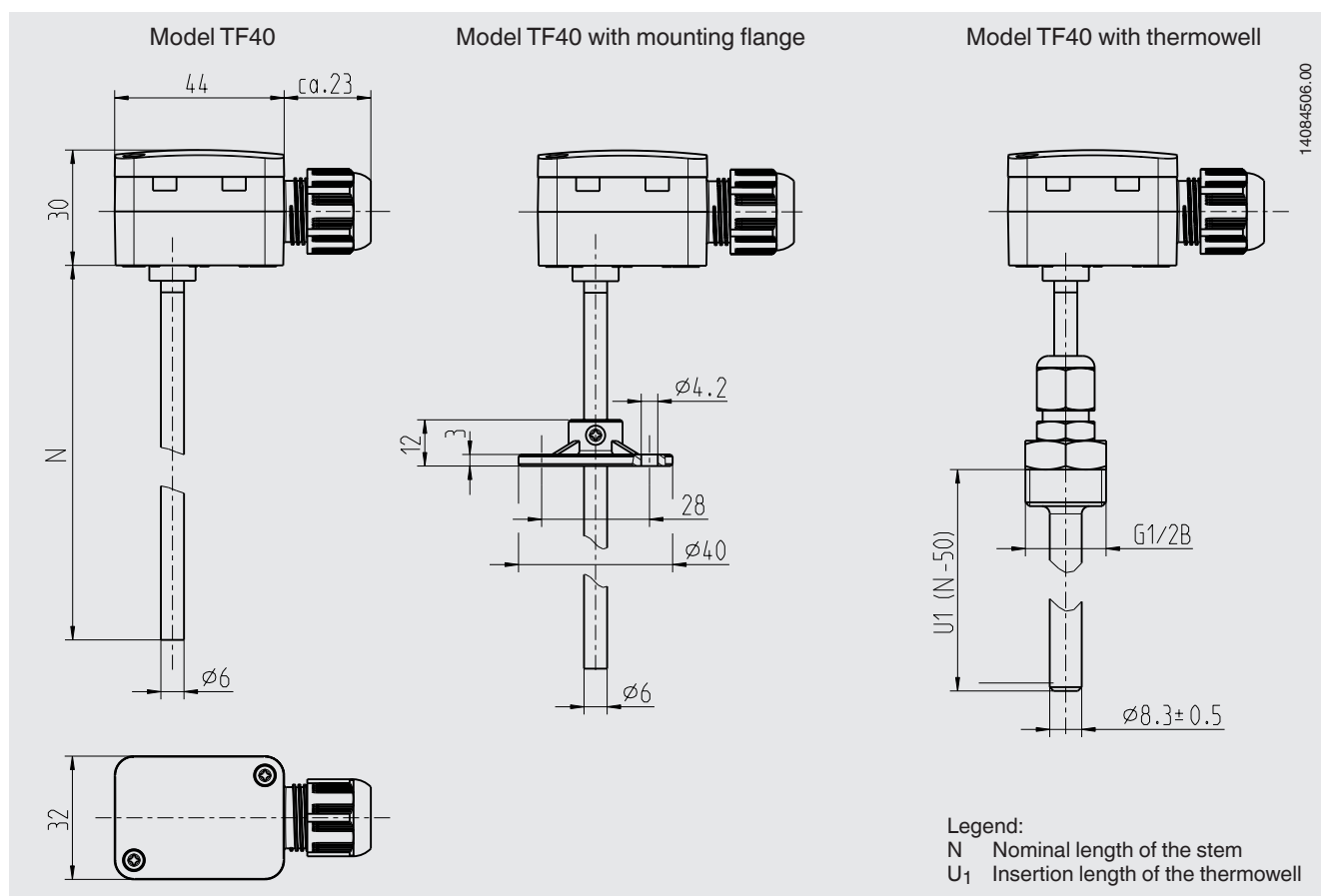
Thermowell	Order number
Insertion length U <sub>1</sub> = 50 mm	14238211
Insertion length U <sub>1</sub> = 100 mm	14238212
Insertion length U <sub>1</sub> = 150 mm	14238213
Insertion length U <sub>1</sub> = 200 mm	14238214

### Note:

When ordering the TF40 with a WIKA thermowell fitted, the insertion length of the thermowell, U<sub>1</sub>, is calculated automatically.

Insertion length of the thermowell U<sub>1</sub> = nominal length of the stem N - 50 mm

## Dimensions in mm



## Approvals

Logo	Description	Country
	<b>GOST</b> Metrology, measurement technology	Russia
	<b>KazInMetr</b> Metrology, measurement technology	Kazakhstan
	<b>UkrSEPRO</b> Metrology, measurement technology	Ukraine
	<b>Uzstandard</b> Metrology, measurement technology	Uzbekistan

## Manufacturer's information and certificates

Logo	Description
-	<b>RoHS conformity</b>
-	<b>China RoHS directive</b>

Approvals and certificates, see website

## Ordering information

When ordering choose one criterion from each category.

### Measuring element

- Pt1000, class B to DIN EN 60751, 2-wire
- Pt100, class B to DIN EN 60751, 2-wire
- NTC 5 k / B (25/85) = 3976, 2-wire
- NTC 10 k / B (25/85) = 3435, 2-wire

Others on request

### Nominal length of the stem N

- 100 mm
- 150 mm
- 200 mm
- 250 mm

Others on request

### Mounting accessories

- Without
- Plastic flange, Ø 40 mm
- Thermowell G ½, brass,  
insertion length  $U_1 = \text{nominal length N} - 50 \text{ mm}$

## Ordering information

Model / Measuring element / Nominal length of the stem N / Mounting accessories

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