

Insertion thermometer

For refrigeration technology

Model TF43

WIKA data sheet TE 67.13



for further approvals
see page 4

Applications

- Refrigeration technology
- Cooling systems
- Air-conditioning equipment

Special features

- Measuring ranges from $-50 \dots +105 \text{ }^{\circ}\text{C}$
(briefly up to $+120 \text{ }^{\circ}\text{C}$)
- Plastic-moulded measuring element
- Dust- and waterproof (IP68)



Insertion thermometer model TF43

Description

The model TF43 insertion thermometer is mainly used to measure the temperature of gaseous and liquid media in the range of $-50 \dots +105 \text{ }^{\circ}\text{C}$ ($-58 \dots +221 \text{ }^{\circ}\text{F}$).

The measuring element is connected to a connection lead. The measuring element and connection point are then completely encapsulated with plastic, making the insertion thermometer dustproof and waterproof (IP68). This makes the TF43 ideal for applications with regular freeze-thaw cycles.

For mechanical stabilisation, the thermometer can optionally be reinforced with a probe sleeve made of stainless steel.

As a distinct OEM product, it has been designed for medium to large quantities. For small quantities for testing purposes, please consult your WIKA contact.

Measuring element

As standard, WIKA uses the following measuring elements for the model TF43 insertion thermometer:

- Pt1000, class F 0.3 per IEC/EN 60751
- Pt100, class F 0.3 per IEC/EN 60751
- NTC, $R_{25} = 10 \text{ k}\Omega$, $B(25/85) = 3977$
- NTC, $R_{25} = 10 \text{ k}\Omega$, $B(25/85) = 3435$

Others on request

Platinum elements offer the advantage of meeting international standards (IEC/EN 60751).

Due to material- and production-specific criteria, a standardisation of semiconductor elements, e.g. NTCs and KTY, is not possible. For this reason their interchangeability is limited.

Further advantages of platinum elements are: better long-term stability and better behaviour over temperature cycles, a wider temperature range as well as a high measurement accuracy and linearity.

High measurement accuracy and linearity are also possible with NTCs, but only in a very limited temperature range.

Strengths and weaknesses of the different measuring elements

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

Connection method

For all versions of the model TF43 insertion thermometer, WIKA offers a 2-wire connection as standard.

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

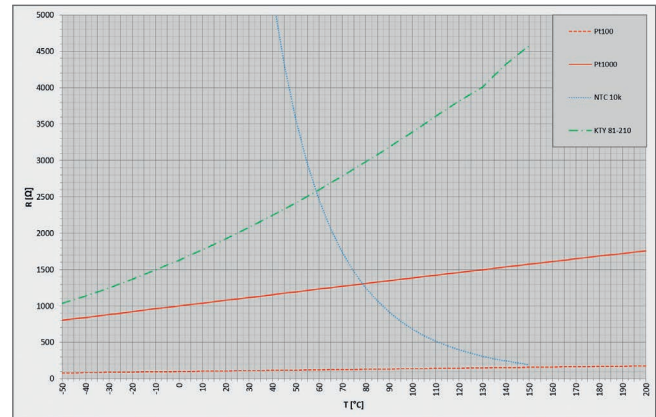
For copper cable with cross-section 0.22 mm^2 the following standard value applies: $0.162 \text{ }\Omega/\text{m} \rightarrow 0.42 \text{ }^\circ\text{C}/\text{m}$ for Pt100

With a Pt1000 measuring element, the influence of the connection lead of $0.04 \text{ }^\circ\text{C}/\text{m}$ is a factor of 10 lower. The lead resistance becomes still less significant in relation to the basic resistance R_{25} with a NTC or KTY element.

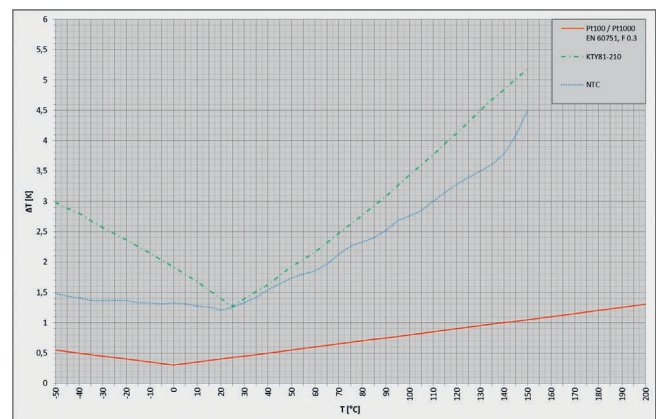
Characteristic curves

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)

-50 ... +105 °C, briefly up to +120 °C

Ambient temperature

-50 ... +105 °C

Probe sleeve

The measuring element and connection lead are hot-coated. As a result, the model TF43 insertion thermometer is waterproof (IP68), even without a probe sleeve.

For mechanical stabilisation and mounting, the model TF43 insertion thermometer can be delivered with an additional probe sleeve made of stainless steel.

Diameter: 6 mm

Length: 50 or 100 mm

Connection lead

The connection lead and the measuring element are moulded together as one single unit.

The connection lead is halogen-free and has been designed as a double-insulated round cable.

Electrical connection

The model TF43 insertion thermometer is delivered with bare-end wires as standard.

If required, fitting with customer-specific plug connectors is possible.

Probe length L

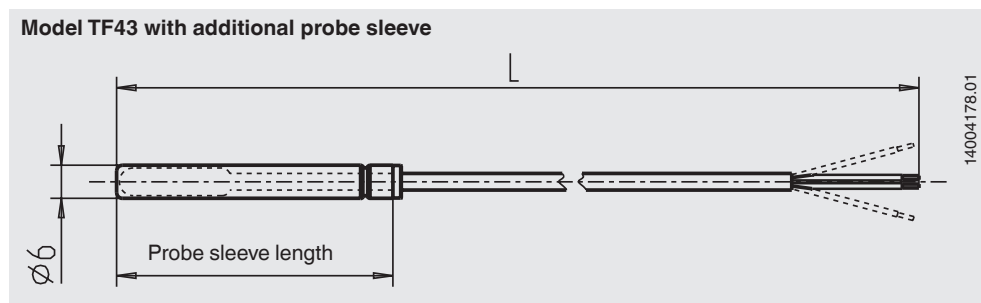
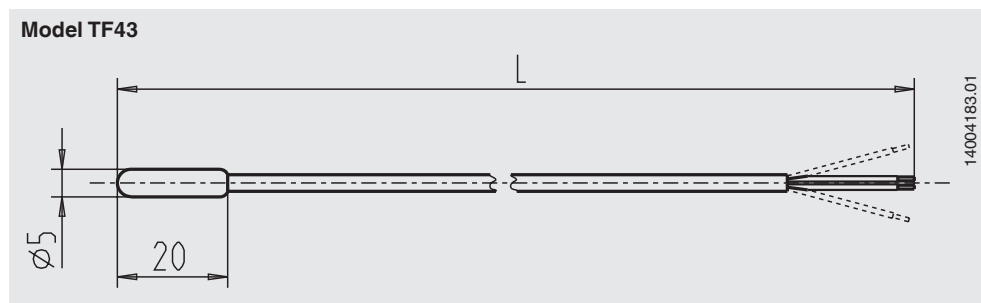
The standard probe length is 3000 mm.

For other lengths, please consult your WIKA contact.

Ingress protection






IP68

Dimensions in mm



Legend:
L Probe length

Approvals

Logo	Description	Country
	EU declaration of conformity RoHS directive	European Union
	EAC Import certificate	Eurasian Economic Community
	GOST Metrology, measurement technology	Russia
	KazInMetr Metrology, measurement technology	Kazakhstan
	UkrSEPRO Metrology, measurement technology	Ukraine

Manufacturer's information and certificates

Logo	Description
-	China RoHS directive

Approvals and certificates, see website

Ordering information

Model / Probe design / Measuring element / Probe length L

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