Pt100 temperature sensors
for special applications in humid conditions up to 150 / 250 °C

High-grade Pt100 resistance sensor
For measuring operations in very humid atmospheric conditions
Operative over a wide range of temperatures

Pt100 temperature sensors
for applications in laboratories and medical engineering

Especially suitable for measuring temperatures in autoclaves, sterilizing units,, high-temperature steam applications, vacuum applications, and freeze drying units

Technical data
Accuracy: Pt100 film resistor, class A*
Protective tube Stainless steel, diameter 3 mm, length 20 mm
Operative range -30 to +150 °C
Cable PFA, length 5 m
Working pressure maximum 3.0 bar
Protective class IP69K
ALMEMO® plug Pt100 with resolution 0.01 K.

Variants
Pt100 sensor, cable length = 5 m, ALMEMO® plug   **Order no. FPA30K20L0020**

Pt100 temperature sensors
for industrial applications in air-conditioning / heat cabinets

Especially suitable for measuring temperatures in air-conditioning / heat cabinets with high atmospheric humidity
Operative over a wide range of temperatures

Technical data
Accuracy: Pt100 film resistor, class B*
Protective tube Stainless steel, diameter 4 mm, length 50 mm
Operative range -100 to +250 °C
Cable PFA
Protective class IP68
ALMEMO® plug Pt100 with resolution 0.01 K.

Variants
Pt100 sensor, cable length = 5 m, ALMEMO® plug   **Order no. FPA40ST0050S01KL0050**
Pt100 sensor, cable length = 10 m, ALMEMO® plug   **Order no. FPA40ST0050S01KL0100**

Digital Pt100 temperature sensor with ALMEMO® D7 connector   *new*   ALMEMO® D7

- The digital ALMEMO® D7 measuring plug works with its own built-in AD converter. The linearization of the Pt100 - characteristic curve is calculated according to DIN IEC 751 (no approximation method).
- The overall accuracy of the measurement is independent of the ALMEMO® V7 display unit/data logger. The complete measuring chain, consisting of the Pt100 - sensor and the connected ALMEMO® D7 measuring plug,

can be calibrated. Increased accuracy is achieved during calibration by a multi-point adjustment of the temperature sensor.
- For all ALMEMO® V7 measuring instruments / data loggers

Technical data for the sensor: see above
Technical data for the ALMEMO® D7 measuring plug: see chapter 2

Variants
Digital Pt100 sensor, cable length = 5 m, with ALMEMO® D7 connector   **Order no. FPD740ST0050S01KL0050**

Digital double Pt100 sensor: 2 Digital Pt100 sensors, cable length 5 m each, mounted on 1 ALMEMO® D7 double connector   **Order no. FPD740ST0050S21KL0050**

Accessories:
PTFE tube (high emissivity), open on both sides, length approx. 70 mm, for probe diameter 4 mm.   **Order no. ZT9000TS41**

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

Temperature

new

Digital precision resistance sensor Pt100 up to 400 °C with resolution of 0.001 K as reference sensor, with ALMEMO® D7 connector for ALMEMO® V7 measuring devices / data logger

Digital precision resistance sensor Pt100 FPD723L0250A3D
For immersion measurements in air, gases and liquids

Technical data and functions

Digital precision resistance sensor with highest accuracy and linearity for temperature measurements in a wide temperature range.

Highest resolution 0.001 K over the entire measuring range.

Application as reference probe for comparison measurements in research, development, quality assurance and production processes.

For all ALMEMO® V7 measuring instruments/data loggers, including ALMEMO® 710, 809, 500.

The digital ALMEMO® D7 measuring plug operates with its own built-in AD converter. The linearization of the Pt100 characteristic is calculated according to DIN IEC 751 (no approximation method).

The overall accuracy of the measurement is independent of the ALMEMO® V7 display unit/data logger. The complete measuring chain, consisting of the Pt100 - sensor and the connected ALMEMO® D7 measuring plug, can be calibrated.

Highest accuracy is achieved during calibration by a multi-point adjustment of the temperature sensor.

The digital sensor is supplied with a DAkkS calibration certificate incl. multi-point adjustment.

Technical data

Measuring element:	Pt100 wire wound
Class:	1/10 B (DIN EN 60751) at 0°C
Measuring tip:	Application range: -50°C...+400°C
response time T90:	5 s
Nominal length:	250 mm
Sensor tube:	stainless steel, diameter 3 mm
Connection cable:	2 m FEP/silicone
ALMEMO® D7 measuring connector	
Measuring range:	see sensor range
Resolution:	0.001 K

|	
AD converter:	Delta-Sigma
Conversion time	3.4 seconds
Measuring current:	approx. 1 mA
Linearization:	Calculation method (no approximation method)
Accuracy:	± 0.015K ± 2 digits
Nominal temperature:	22°C ± 2 K
Temperature drift:	0.003 %/K (30ppm)
Supply voltage:	starting at 6 V from ALMEMO® device
Current consumption:	approx. 9 mA

Accessory

	Order no.
Aluminum profile case for 1 probe (up to 500 mm length)	**ZB9000TK1**

Standard delivery

	Order no.
Digital precision resistance sensor Pt100 as reference sensor, with cable and ALMEMO® D7 connector. Incl. DAkkS calibration certificate (2 temperature points at 0°C and 100°C incl. multi-point adjustment).	**FPD723L0250A3D**

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

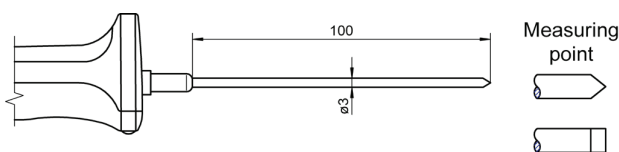## Pt100 sensor with handle FPA 106 LxxxxH
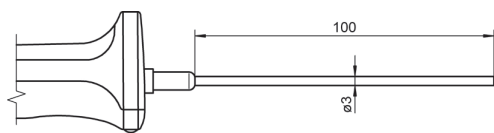
Accuracy:	Pt100 film resistor, class B*	
Measuring tip:	Operative range -40...+400 °C	
	Sheath element, stainless steel	
T_{90}: *	8 s	
Handle: *	127 mm	
Cable:	1.5 m FEP/silicone	

L = 100 mm   **Order no. FPA106L0100H**

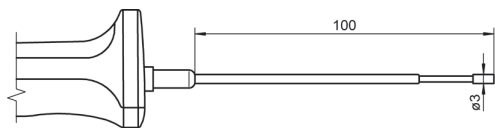For immersion measurement

Pt100 sensor with handle FPA 123 LxxxxH

Measuring point

Accuracy:	Pt100 film resistor, class B*	
Measuring tip:	Operative range -40...+400 °C	
	Penetrating tip	
T_{90}: *	8 s	
Handle: *	127 mm	
Cable:	1.5 m FEP/silicone	

L = 100 mm   **Order no. FPA123L0100H**

For immersion measurement in plastic and pasty substances
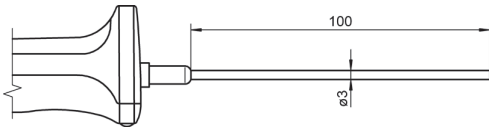
Pt100 sensor with handle FPA 124 LxxxxH

Accuracy:	Pt100 film resistor, class B*	
Measuring tip:	Operative range -40...+300 °C	
	Silver rivet, level	
T_{90}: *	10 s	
Handle: *	127 mm	
Cable:	1.5 m FEP/silicone	

L = 100 mm   **Order no. FPA124L0100H**

For surface measurement and immersion measurement

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

10/2021 • We reserve the right to make technical changes.

Temperature

NTC sensor with handle FNA 106 LxxxxH

Accuracy:	NTC, see page 07.04
Measuring tip:	Operative range -20...+100 °C
	Sheath element, stainless steel
T_{90}: *	8 s
Handle: *	127 mm
Cable:	1.5 m PVC

L = 100 mm   **Order no. FNA106L0100H**

For immersion measurement

NTC sensor with handle FNA 123 LxxxxH
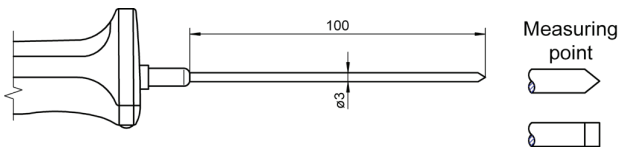
Measuring point

Accuracy:	NTC, see page 07.04
Measuring tip:	Operative range -20...+100 °C
	Penetrating tip
T_{90}: *	8 s
Handle: *	127 mm
Cable:	1.5 m PVC

L = 100 mm   **Order no. FNA123L0100H**

For immersion measurement in plastic and pasty substances

NTC sensor with handle FNA 124 LxxxxH
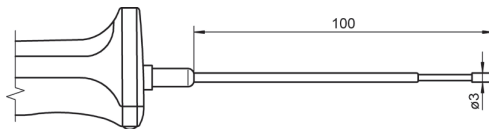
Accuracy:	NTC, see page 07.04
Measuring tip:	Operative range -20...+100 °C
	Silver rivet, level
T_{90}: *	10 s
Handle: *	127 mm
Cable:	1.5 m PVC

L = 100 mm   **Order no. FNA124L0100H**

For surface measurement and immersion measurement
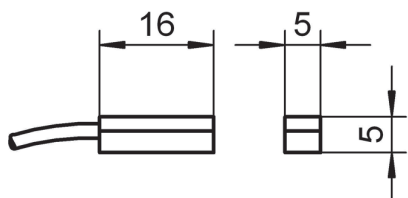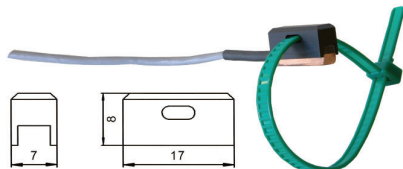
NTC sensor FNA 305

Accuracy:	NTC, see page 07.04
Measuring tip:	Operative range -10...+60°C
	(non-condensing), Protective tube
	in stainless steel
	diameter = 3.0mm, length = 50mm
	mounted directly on ALMEMO® connector
T_{90}:	8 s

L = 50 mm   **Order no. FNA305**
(No variants available)

For room air measurement

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

Pt100 sensor FPA 611 x

For surface measurement

Accuracy:	Pt100 film resistor, class B*
Measuring tip:	Operative range see below
	Copper, level
	Improved thermal transfer thanks to innovative
	sensor element and new contact technology
T_{90}: *	20 s
Cable:	see below

Surface sensor
-10...+90°C, Cable PVC, 2 m   **Order no. FPA611**

-10...+110°C, Cable, PFA, 3m for more demanding mechanical stress ALMEMO® connector, resolution 0.01 K
          Order no. FPA611S01

Accessories
Fixture for fastening
with cable ties   **Best-Nr. ZB9611RM**
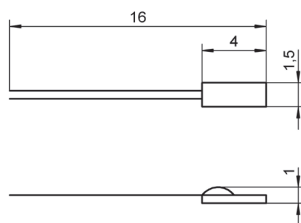
Pt100 film sensor FPA 686
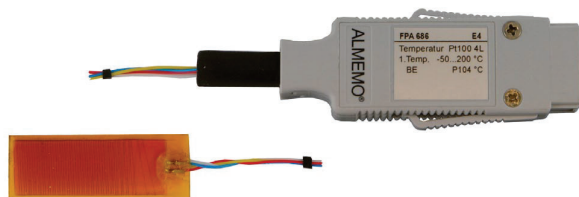
For surface measurement

Accuracy:	Pt100 wire-wound, class B*
Messfläche:	Operative range -50...+200 °C,
	temperature-resistant foil,
	15 x 40 mm, approx. 0.5 mm thick
T_{90} *:	2 s
Cable:	Stranded wire PFA, 4-wire twisted

Length 2 m	**Order no. FPA686**
Length 10 m	**Order no. FPA686L10**

Pt100 ceramic chip sensor element FP 0802

Accuracy:	Pt100 film resistor, class B*
Measuring tip:	Operative range -40...+400 °C
	Ceramic chip sensor
Connection wires:	10 mm, bare

Ceramic chip sensor   **Order no. FP0802**

Unprotected sensor element for constructing your own sensors

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

10/2021 • We reserve the right to make technical changes.

Temperature
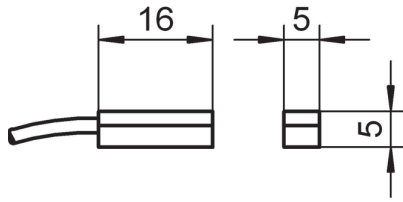
NTC sensor FNA 611

For surface measurement
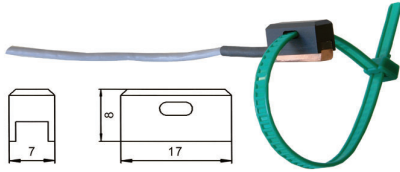
Accuracy:	NTC, see page 07.04
Measuring tip:	Operative range -10...+90 °C
	Copper, level
T_{90}: *	20 s
Cable:	2 m PVC

Surface sensor   **Order no. FNA611**

Accessories
Fixture for fastening
with cable ties   **Best-Nr. ZB9611RM**

NTC sensor FN 0001 K

Unprotected sensor element with cable

Accuracy:	NTC, see page 07.04
Measuring tip:	Sensor element, unprotected
	Operative range: -20...+100°C

Connection wires: appr. 180 mm, fluoropolymer insulation
Connecting cable: 2 meters, PVC, thin stranded pick-up
wire, Operative range -10 to +90 °C
Cable juncture, in shrink-fit

NTC sensor with cable,
free ends   **Order no. FN0001K**
Option:
ALMEMO® connector including assembly
Single connectors for 1 sensor   Order no. OT9040AS
Double connector for 2 sensors   Order no. OT9040AS2

NTC sensor element FN 0001

Accuracy:	NTC, see page 07.04
Measuring tip:	Operative range -20...+100 °C
	Sensor
Connection wires	180 mm, fluoropolymer insulation

Sensor   **Order no. FN0001**

Unprotected sensor element for constructing your own sensors

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

Pt100 Plug-in laboratory sensor FPA 416

Accuracy: Pt100 film resistor, class B*
Measuring tip: Operative range -40...+150 °C
T_{90}:*   15 s
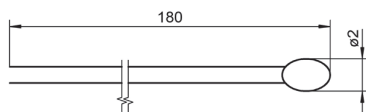Cable: Silicone/FEP 3m
ALMEMO® connector: resolution 0.01 K

Plug-in laboratory sensor   **Order no. FPA416**
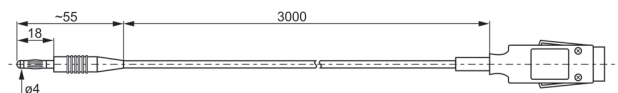
Measuring element integrated in the socket of a 6 mm
laboratory connector made of brass (nickel-plated).

Pt100 Plug-in laboratory sensor FPA 414

Accuracy: Pt100 film resistor, class B*
Measuring tip: Operative range -40...+150 °C
T_{90}:*   15 s
Cable: Silicone/FEP 3m
ALMEMO® connector: resolution 0.01 K

Plug-in laboratory sensor   **Order no. FPA414**

Measuring element integrated in the socket of a 4 mm
laboratory connector made of brass (gold-plated).
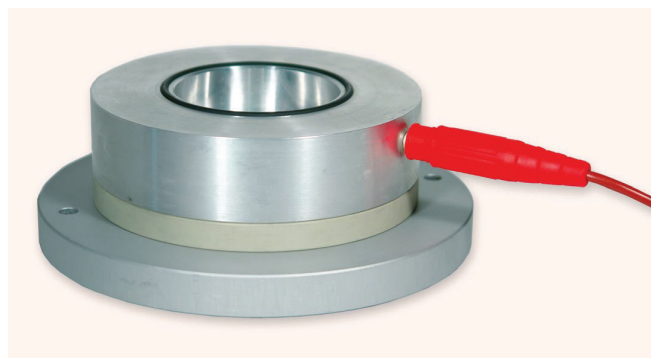
Plug-in laboratory sensor, examples of use
Measuring object with hole for inserted PT100 plug-in
laboratory sensor.

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

Temperature

Pt100 cable sensor

Inexpensive resistance-based temperature sensors.
For immersion measurements in air and gases.
Rigid protective tube made from stainless steel
A wide variety of cable variants.
Operating temperature (depending on variant) -40 to +400°C.

Technical data

Accuracy:	Pt100 film resistor, class B* (no other variants in stock)
Protective tube:	Diameter, length see Variants, stainless steel 1.4301
Junction of protective tube / connecting cable: 	Direct, hard-crimped for dry uses
Cables:	Length = 1.5 meters, Other lengths are available as options. Cable diameter is never larger than the diameter of the protective tube.
Operating temperature: 	see variants, Always for whole sensor (i.e. sensor tip and cable)
ALMEMO® connector:	resolution 0.01 K.

! **Please note:**
Only for usage in a dry environment

Note:
For temperature sensors suitable for usage in humid environments (e.g. climatic chamber) see page 07.21

Variants

With FEP / FEP cable (black),

Operative range -40...+250°C:

Diameter	Length	Order no.
3.0 mm	50 mm	**FPA30K03L0050**
3.0 mm	100 mm	**FPA30K03L0100**
4.0 mm	50 mm	**FPA40K03L0050**
4.0 mm	100 mm	**FPA40K03L0100**

A longer cable is available as an option

Total length 5 m	OPK03L0050
Total length 10 m	OPK03L0100

With FEP / silicone cable (red),

Operative range -40...+200°C:

Diameter	Length	Order no.
5.0 mm	50 mm	**FPA50K01L0050**
5.0 mm	100 mm	**FPA50K01L0100**
6.0 mm	50 mm	**FPA60K01L0050**
6.0 mm	100 mm	**FPA60K01L0100**

A longer cable is available as an option

Total length 5 m	OPK01L0050
Total length 10 m	OPK01L0100

Cable with glass-fiber / glass-fiber / VA wire shielding,

Operative range -40...+400°C:

Diameter	Length	Order no.
5.0 mm	50 mm	**FPA50K06L0050**
5.0 mm	100 mm	**FPA50K06L0100**
6.0 mm	50 mm	**FPA60K06L0050**
6.0 mm	100 mm	**FPA60K06L0100**

A longer cable is available as an option

Total length 5 m	OPK06L0050
Total length 10 m	OPK06L0100

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

Pt100 glass thermometer with immersion depths as per ASTM

Operative range:

For immersion measurement in liquid media at low immersion depths.

Technical data

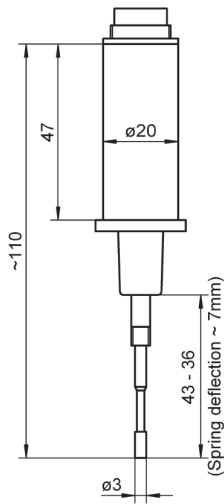|	
Accuracy:	Pt100 wire-wound, class A*
Measuring tip	Operative range -50 to +310 °C
	Glass, tapered
	Diameter = 3 mm, length = 15 mm
Shaft	Glass, Diameter = 6 mm
	NL= 250 mm (total nominal length)
	Labeling codes for immersion depths :
	identification rings on the shaft as per
	ASTM specifications (American Society
	for Testing and Materials)
T_{90}	2.5 seconds
Cable junction sleeve	
	Stainless steel, 8 x 40 mm
	Cable exit secured with shrink-fit sleeve
Cable	2 meters, FEP / silicone
ALMEMO® connector	
	Resolution 0.01 K

Variants	Order no.
Pt100 glass thermometer with immersion depths as per ASTM specifications, with ALMEMO® connector (including 2-meter FEP / silicone cable)	**FPA910**

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

10/2021 • We reserve the right to make technical changes.

Temperature

Insertable sensor NiCr-Ni with round mounting plug T 820-6

Operative range:

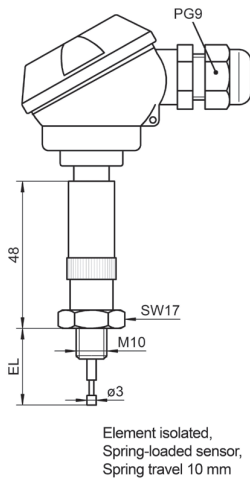Measuring tip, spring-loaded, for surface and immersion measurement.

Technical data

Accuracy:	NiCr-Ni class 2*
Measuring tip	Operative range -40 to +400 °C Silver rivet, level, spring-loaded not electrically isolated
T_{90}*	3 s
Insert length	60 mm (see layout drawing)
Fixture	Plastic, Ø 20 mm, resistant up to +120 °C
Connection	Round mounting plug

Accessories:

ALMEMO® connecting cable, 2 meters Order no. ZA9020BK2

Types	Order no.
Insertable sensor NiCr-Ni with round mounting plug	**FT98206**

Insertable sensor NiCr-Ni with terminal head FT 0477

Operative range:

Spring-loaded measuring tip, for surface and immersion measurement

Technical data:

Accuracy:	NiCr-Ni class 2*
Measuring tip:	Operative range -40 to +400°C Silver rivet, level, spring-loaded, electronically isolated
Thread:	M10
Insert length:	25 mm (see layout drawing)
Terminal head:	Clamp connector

Options:

3-meter compensation line PVC, mounted, free ends:
Order no. OT9020K02L0030

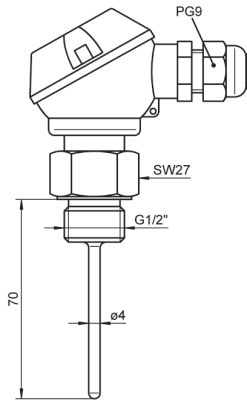ALMEMO® plug including assembly for NiCr-Ni-sensor
Order no. OT9020AS

Types	Order no.
Screw-in sensor NiCr-Ni with terminal head	**FT0477**

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

Insertable sensor Pt100 with terminal head FP 0463

Operative range:

For immersion measurements, pressure-sealed up to 15 bar.

Options:

3 meters cable PVC, assembled, free ends
OT9030K02L0030

ALMEMO® connector including assembly for Pt100 sensor
OT9030AS

Technical data

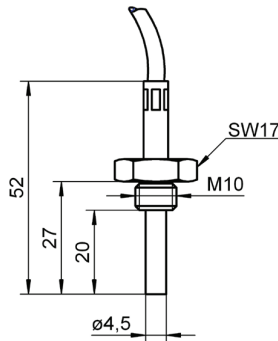|	
Accuracy:	Pt100 film resistor, class B*
Sensor tube	Stainless steel
Operative range:	-40...+350°C
Thread	1/2", with copper ring seal, pressure-sealed up to 15 bar
Insert length	70 mm (see layout drawing)
Terminal head	Clamp connector

Variants	Order no.
Insertable sensor with terminal head	**FP0463**

Screw-in sensor Pt100, NiCr-Ni with fitted cable Fx 0710 L27M10

Operative range:

For immersion measurement

Option:

ALMEMO® connector
including assembly
for Pt100 sensors:
Order no. OT9030AS

Technical data FP0710L27M10

Accuracy:	Pt100 film resistor, class B*
Sensor material:	stainless steel
Operative range:	-40 to +200 °C
Thread:	M10
Insert length:	27 mm (see layout drawing)
Cable:	3 meters, FEP / wire shielding, / FEP free ends

Variants	Order no.
Screw-in sensor Pt100 with cable, free ends	**FP0710L27M10**
Option cable length 5 meters	**OPK04L0050**

Technical data FT0710L27M10

Accuracy:	NiCr-Ni class 2*
Sensor material:	stainless steel
Operative range:	-100 to +400 °C
Thread:	M10
Insert length:	27 mm (see layout drawing)
Cable:	3 meters, thermal line glass filament / glass filament / VA wire shielding, free ends

Option:

ALMEMO® connector
including assembly
NiCr-Ni sensor:
Order no. OT9020AS

| Variants	Order no.
Screw-in sensor NiCr-Ni with cable, free ends	**FT0710L27M10**
Option cable length 5 meters	**OTK06L0050**

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.

10/2021 • We reserve the right to make technical changes.

Temperature

Insertable sensor PtRh-Pt (S) with terminal head FT 0426x
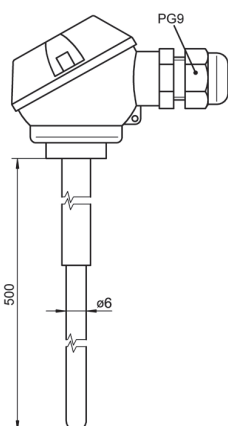
Operative range:

For immersion measurements, up to 1400 or 1600 °C.

Accessories

Aluminum profile case for 1 sensor with connection head (up to 700 mm length)
Order no. ZB9000TK2

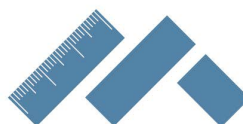Replacement ceramic protection tube d= 6 mm, for FT0426x
Order no. ZB9006SR0500

Options

ALMEMO® connector with assembly Order no. OT9020AS

Technical data

Accuracy:	Thermowire PtRh-Pt (S) class 1*
Measuring tip	Ceramic protection tube
Operative range	see under variants
Insert length	500 mm
Protective tube	Ceramic, C799, d= 6 mm, replaceable
Cable	2-meter compensation line FEP/Silikon, free ends

Variants	Order no.
Insertable sensor PtRh-Pt type S with terminal head and compensation lines, free ends)	
T_{max} = 1400°C, thermowire Ø = 0.35 mm,	**FT04261**
T_{max} = 1600°C, thermowire Ø = 0.5 mm,	**FT04262**

* Range of validity see page 07.03

DAkkS or factory calibration KT90xx temperature for sensor or measuring chain (sensor + device) (see chapter Calibration certificates)
DAkkS calibration meets all the requirements regarding test resources laid down in DIN EN ISO/IEC 17025.