

TURCK

Industrial
Automation

INTELLIGENT
TEMPERATURE
SENSORS



TURCK – THE FIRST ADDRESS FOR INDUSTRIAL AUTOMATION

TURCK is one of the leading global company groups in the field of industrial automation. The company has consistently utilized its origins as a pioneer and trendsetter in the field of sensor technology and has continuously developed new, holistic solutions for the most varied of automation tasks. TURCK today provides a unique product range for the entire field of industrial automation as a full-range supplier for IP67 components, which range from the I/O levels and extend to the interface to the control.

The TURCK group was founded in 1965. Today it has more than 2,300 employees in Germany as well as in subsidiaries located in 22 countries. Exclusive representatives in a further 53 countries also support world-wide sales and service. The main focus of the activities concentrates on the optimization of manufacturing processes. Close cooperation with the customers is decisive for the success of the company.

TURCK products guarantee the efficiency and cost effectiveness of industrial systems world-wide through well-directed application engineering and effective consultation with competent employees.

TURCK utilizes the opportunities posed by globalisation. TURCK is in a position at any time to adapt world-wide to the conditions which are prevalent on the local markets with its manufacturing facilities in Germany, Switzerland, the USA, Mexico and China.



System partner with a guarantee for the future

The TURCK philosophy is just as simple as it is sophisticated:
We always want to provide the very best for our customers – quickly, flexibly and reliably! We apply this principle on a daily basis to guarantee the efficiency, quality and safety of industrial systems world-wide.

We do not rest on our laurels and prove this fact with continuous development of innovative products and solutions, from which our customers and partners will continue to benefit from in the future.

THE PERFECT SOLUTION FOR YOUR APPLICATION

TURCK

Industrial
Automation

The detection of temperature is one of the most important tasks in the processing and manufacturing industries. In addition to known factors such as accuracy or repeatability, the interfaces to the process and to the operator are also very important criteria. The new TS400 and TS500 series temperature sensors from TURCK set new standards in this area.

Highest levels of operating comfort

In addition to the two buttons for quick menu scrolling, the new generation also provides a recessed button for saving changed and modified values.

Highest levels of flexibility with mounting

A rotating sensor body with a tilted display which can be rotated by 180° using software, provides all the installation options.

Highest levels of precision

0.2 K with the temperature sensor enables a very large spectrum of applications with just a few variants.

Highest levels of system reliability

The robust design with a stainless steel housing and the high level of EMC immunity and IP67 degree of protection assure the highest levels of operational safety.



Error free operation

The Enter button has been recessed in order to avoid unintentional modification of the data stored in the sensor. The button can only be pressed using a pointed object (e.g. a ballpoint pen).



A MATCH FOR THE HIGHEST OPERATIONAL SAFETY DEMANDS



The new temperature sensors of the TS400/500 provide a formidable level of operational safety even in harsh manufacturing environments due to their robust stainless steel housings, the high level of EMC immunity and IP67 degree of protection.

High system availability

- High immunity to interference due to a high level of EMC
- The robust stainless steel housing prevents damage due to harsh mechanical influences
- The IP67 degree of protection provides safety even under extreme operating conditions
- Minimum maintenance due to optimised exposure to temperature

High levels of service-friendliness

The sensors offer decisive calculable benefits owing to their extremely flexible mounting options, user-friendliness and the high degrees of accuracy:

- Upper sensor section can be rotated by 320° with the TS500 variant
- Minimum maintenance due to reduced number of types
- Simple programming using two finger operated buttons
- Avoidance of unintentional operating errors by recessed button for saving parameters



HIGHEST LEVEL OF FLEXIBILITY WITH FEW VARIANTS

TURCK

Industrial
Automation

Efficient standardisation

Good news, that several conventional sensors can be replaced with a single sensor. Streamlining the product range pays off.

Your benefits:

- Very large range of applications with just a few sensor variants
- Reduced training requirements due to simple and reliable operating features
- High level of system reliability due to a robust design
- 4-pin standard M12 connector to sensor and processor unit



Maximum degree of freedom

The new temperature sensor has a whole range of application possibilities due to its high level of flexibility. Almost all demands can be covered with just a few devices. This provides a maximum of planning flexibility with a minimum of mounting effort and expense.

- Rotation of the upper sensor section by 320°
- Display can be rotated by 180°
- Display angle 45°
- The display is clearly visible at extended distances due to the large, bright LED display
- Highest accuracy with 0.2 K
- Versions with two switching outputs or one programmable combination of switching and analogue output

Rotatable display

Horizontal installation is also possible. The display can be rotated by 180° using software and is thus clearly visible in every installation situation.



TEMPERATURE SENSORS TS400/TS500 –
HIGHEST LEVEL OF FLEXIBILITY FOR EVERY
APPLICATION

EVALUATION



Connecting cable



Compact probe



Special probe



Cable probe

SENSOR

Compression
fitting



PROCESSING

PROCESS

Temperature sensor
TS400/500



Standard probe



Stabilizer



Compression
fitting



Standard
thermowell



Special
thermowell



TEGRA TION



TYPE CODE

The TURCK type code leaves no questions unanswered in the definition of the required stock item.
All variants are specified simply and clearly.

Temperature sensor – 2 switching outputs

TS - 400 - 2U P 8 X - H1141

Temperature sensor		Connection H1141 4-pin M12 connector
Housing design 400 adjustable, with display, non-rotatable 500 adjustable, with display, rotatable		with LED display
		Operational voltage 8 15...30 VDC
Switching output 2U 2 × programmable NO/NC mode		Output logic P pnp transistor switching output N npn transistor switching output

Temperature sensor – 1 switching and 1 analogue output

TS - 400 - LI U P 8 X - H1141

Temperature sensor		Connection H1141 4-pin M12 connector
Housing design 400 adjustable, with display, non-rotatable 500 adjustable, with display, rotatable		with LED display
		Operational voltage 8 18...30 VDC
Analogue output LI Current analogue output LU Voltage analogue output		Output logic P pnp transistor switching output N npn transistor switching output
		Switching output U 1 × programmable NO/NC mode



Temperature sensor – 1 switching output and 1 multiselect output (programmable)

TS - 400 - LI 2U PN 8 X - H1141

Temperature sensor

Housing design

400 adjustable, with display, non-rotatable
500 adjustable, with display, rotatable

Analogue output

LI Current analogue output
LU Voltage analogue output

Switching output

2U 2 × programmable NO/NC mode

Connection

H1141 4-pin M12 connector

with LED display

Operational voltage

8 18...30 VDC

Output logic

PN pnp/npn configurable transistor switching output

Temperature probe

TP - 1 - 03A - G1/8 - H1141 - L013

Temperature probe

Probe type

1 probe with process connection
2 probe for compression fitting or thermowell
3 cable sensor

Probe diameter

03A 3 mm
04A 4 mm
06A 6 mm

Insertion depth

Connection

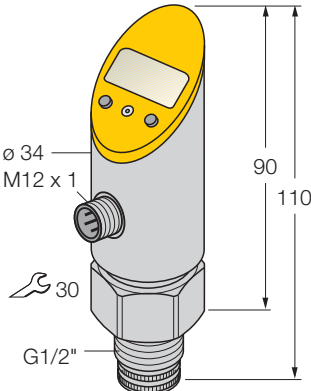
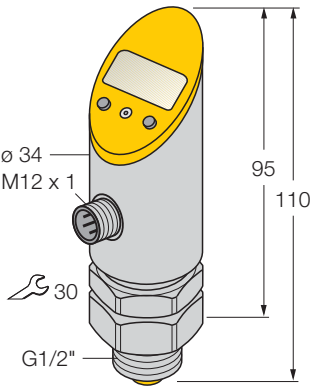
H1141 4-pin M12 connector

Process connection

G1/8 G1/8" male thread
TRI3/4 3/4" Tri-Clamp
DN25K DN25 hygienic fitting DIN11851
CF Compression fitting



TEMPERATURE SENSOR TS400/500

Dimensional drawing	Type	Temperature range	
		remote	direct
 Technical drawing of the TS-400 temperature sensor. It shows a yellow oval display at the top with a diameter of 34 mm. Below the display is a threaded port labeled M12 x 1. The main body is cylindrical with a hexagonal base. A dimension line indicates a height of 90 mm from the top of the display to the top of the hex base, and 110 mm from the top of the display to the bottom of the hex base. A small detail shows a 30-degree chamfer on the side of the hex base. The bottom connection is labeled G1/2".	TS-400-2UP8X-H1141	-50...500 °C	-50...150 °C
	TS-400-LIUP8X-H1141	-50...500 °C	-50...150 °C
	TS-400-LUUP8X-H1141	-50...500 °C	-50...150 °C
	TS-400-2UN8X-H1141	-50...500 °C	-50...150 °C
	TS-400-LIUN8X-H1141	-50...500 °C	-50...150 °C
	TS-400-LUUN8X-H1141	-50...500 °C	-50...150 °C
	TS-400-LI2UPN8X-H1141	-50...500 °C	-50...150 °C
	TS-400-LUUPN8X-H1141	-50...500 °C	-50...150 °C
 Technical drawing of the TS-500 temperature sensor. It is similar to the TS-400 but has a slightly different body profile. The yellow display has a diameter of 34 mm. The height from the top of the display to the top of the hex base is 95 mm, and the total height to the bottom of the hex base is 110 mm. It also features an M12 x 1 port, a 30-degree chamfer, and a G1/2" bottom connection.	TS-500-2UP8X-H1141	-50...500 °C	-50...150 °C
	TS-500-LIUP8X-H1141	-50...500 °C	-50...150 °C
	TS-500-LUUP8X-H1141	-50...500 °C	-50...150 °C
	TS-500-2UN8X-H1141	-50...500 °C	-50...150 °C
	TS-500-LIUN8X-H1141	-50...500 °C	-50...150 °C
	TS-500-LUUN8X-H1141	-50...500 °C	-50...150 °C
	TS-500-LI2UPN8X-H1141	-50...500 °C	-50...150 °C
	TS-500-LUUPN8X-H1141	-50...500 °C	-50...150 °C



	Description	Material	Ident-No.
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 2 switching outputs PNP	AISI 316L/1.4404	6840001 ▶
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 1 switching output PNP, 1 analogue output (mA)	AISI 316L/1.4404	6840002 ▶
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 1 switching output PNP, 1 analogue output (V)	AISI 316L/1.4404	6840003
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 2 switching outputs NPN	AISI 316L/1.4404	6840004
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 1 switching output NPN, 1 analogue output (mA)	AISI 316L/1.4404	6840005
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 1 switching output NPN, 1 analogue output (V)	AISI 316L/1.4404	6840006
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 2 programmable outputs in function and logic	AISI 316L/1.4404	6840007 ▶
	Fixed processor unit for Pt100 in 2 and 4-wire technology, 2 programmable outputs in function and logic	AISI 316L/1.4404	6840008 ▶
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 2 switching outputs PNP	AISI 316L/1.4404	6840009 ▶
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 1 switching output PNP, 1 analogue output (mA)	AISI 316L/1.4404	6840010 ▶
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 1 switching output PNP, 1 analogue output (V)	AISI 316L/1.4404	6840011
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 2 switching outputs NPN	AISI 316L/1.4404	6840012
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 1 switching output NPN, 1 analogue output (mA)	AISI 316L/1.4404	6840013
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 1 switching output NPN, 1 analogue output (V)	AISI 316L/1.4404	6840014
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 2 programmable outputs in function and logic	AISI 316L/1.4404	6840015 ▶
	Rotatable processor unit for Pt100 in 2 and 4-wire technology, 2 programmable outputs in function and logic	AISI 316L/1.4404	6840016 ▶

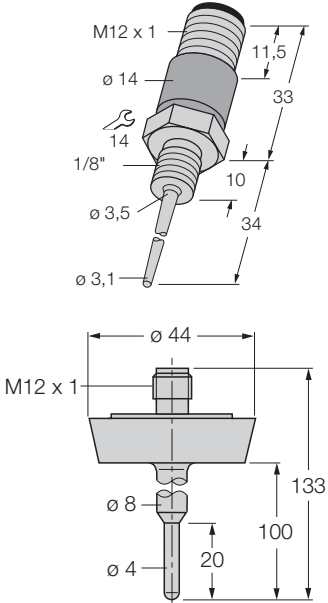
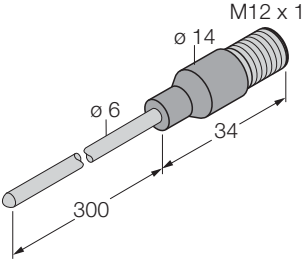
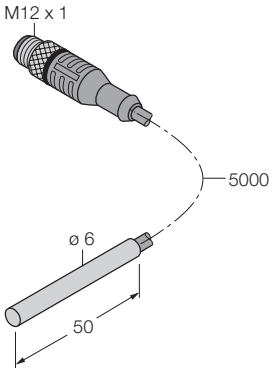
▶ Preferred Types

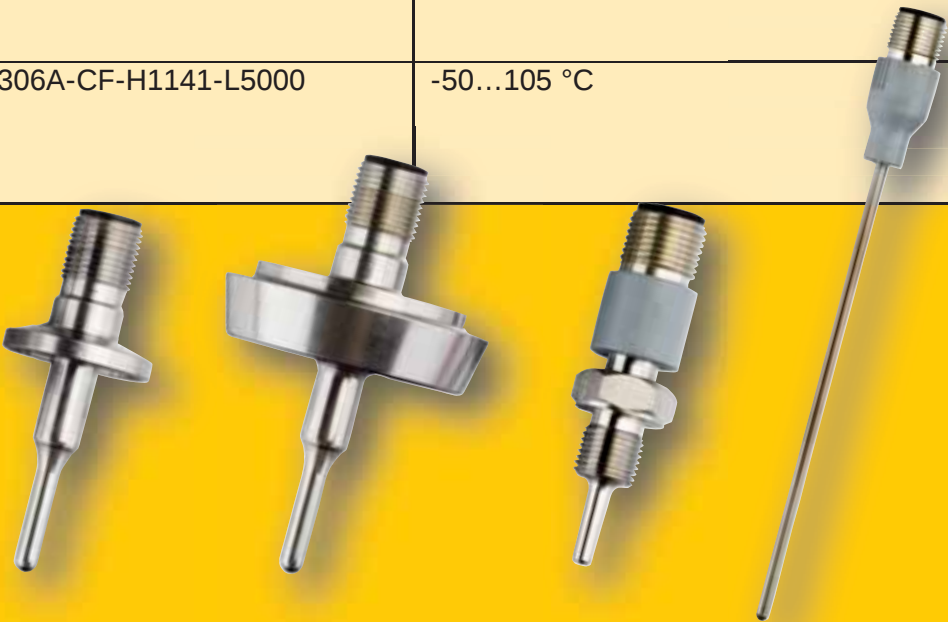
Simple mounting

After the sensor is mounted the actual processor unit is attached and fixed using a coupling nut. The sensor can still be rotated and aligned in all directions here.



TEMPERATURE PROBES

Dimensional drawing	Type	Temperature range
	TP-103A-G1/8-H1141-L013	-50...120 °C
	TP-103A-G1/8-H1141-L024	-50...120 °C
	TP-104A-TRI3/4-H1141-L035	-50...120 °C
	TP-104A-TRI3/4-H1141-L100	-50...120 °C
	TP-104A-DN25K-H1141-L035	-50...120 °C
	TP-104A-DN25K-H1141-L100	-50...120 °C
	TP-203A-CF-H1141-L100	-30...350 °C
	TP-203A-CF-H1141-L150	-30...350 °C
	TP-203A-CF-H1141-L200	-30...350 °C
	TP-203A-CF-H1141-L250	-30...350 °C
	TP-203A-CF-H1141-L300	-30...350 °C
	TP-206A-CF-H1141-L100	-30...350 °C
	TP-206A-CF-H1141-L150	-30...350 °C
	TP-206A-CF-H1141-L200	-30...350 °C
	TP-306A-CF-H1141-L1000	-50...105 °C
	TP-306A-CF-H1141-L2000	-50...105 °C
	TP-306A-CF-H1141-L5000	-50...105 °C



	Description	Material	Ident-No.
	Temperature probe Pt100 Class A, Ø conical 3.5 to 3.1 mm, process connection G1/8" male thread, insertion depth 13 mm	Nylon/AISI 316L/1.4404	9910400 ▶
	Temperature probe Pt100 Class A, Ø conical 3.5 to 3.1 mm, process connection G1/8" male thread, insertion depth 24 mm	Nylon/AISI 316L/1.4404	9910401 ▶
	Temperature probe Pt100 Class A, Ø 8 mm with 4 mm probe tip, process connection 3/4" Tri-Clamp flange, insertion depth 35 mm	Nylon/AISI 316L/1.4404	9910429 ▶
	Temperature probe Pt100 Class A, Ø 8 mm with 4 mm probe tip, process connection 3/4" Tri-Clamp flange, insertion depth 100 mm	Nylon/AISI 316L/1.4404	9910430 ▶
	Temperature probe Pt100 Class A, Ø 8 mm with 4 mm probe tip, process connection DN25 to DIN 11851 (hygienic fitting), insertion depth 35 mm	Nylon/AISI 316L/1.4404	9910431 ▶
	Temperature probe Pt100 Class A, Ø 8 mm with 4 mm probe tip, process connection DN25 to DIN 11851 (hygienic fitting), insertion depth 100 mm	Nylon/AISI 316L/1.4404	9910432 ▶
	Temperature probe Pt100 Class A, Ø 3 mm/length 100 mm	Nylon/AISI 316L/1.4404	9910402 ▶
	Temperature probe Pt100 Class A, Ø 3 mm/length 150 mm	Nylon/AISI 316L/1.4404	9910403 ▶
	Temperature probe Pt100 Class A, Ø 3 mm/length 200 mm	Nylon/AISI 316L/1.4404	9910482 ▶
	Temperature probe Pt100 Class A, Ø 3 mm/length 250 mm	Nylon/AISI 316L/1.4404	9910404 ▶
	Temperature probe Pt100 Class A, Ø 3 mm/length 300 mm	Nylon/AISI 316L/1.4404	9910474 ▶
	Temperature probe Pt100 Class A, Ø 6 mm/length 100 mm	Nylon/AISI 316L/1.4404	9910475 ▶
	Temperature probe Pt100 Class A, Ø 6 mm/length 150 mm	Nylon/AISI 316L/1.4404	9910476 ▶
	Temperature probe Pt100 Class A, Ø 6 mm/length 200 mm	Nylon/AISI 316L/1.4404	9910477 ▶
	Temperature probe Pt100 Class A, Ø 6 mm/length 300 mm	Nylon/AISI 316L/1.4404	9910478 ▶
	Cable sensor Pt100 Class A, (4-wire) with stainless steel jacket 6 x 50 mm, 1 m cable with connector, 4-pin M12 x 1, hot moulded and water-tight	Nylon/AISI 316L/1.4404	9910479 ▶
	Cable sensor Pt100 Class A, (4-wire) with stainless steel jacket 6 x 50 mm, 2 m cable with connector, 4-pin M12 x 1, hot moulded and water-tight	Nylon/AISI 316L/1.4404	9910480 ▶
	Cable sensor Pt100 Class A, (4-wire) with stainless steel jacket 6 x 50 mm, 5 m cable with connector, 4-pin M12 x 1, hot moulded and water-tight	Nylon/AISI 316L/1.4404	9910481 ▶

▶ Preferred Types

High degree of protection

The TS400/TS500 temperature sensors feature IP67 degree of protection in order to comply with the high demands of machine engineering.



TYPE CODE

The TURCK type code leaves no questions unanswered in the definition of the required item.
All variants are specified simply and clearly.

Thermowell

THW - 3 - G1/8 - A4 - L013

Thermowell

For sensor diameter

3 3 mm outer diameter
6 6 mm outer diameter

Insertion depth

Material
A4 stainless steel AISI316L

Process connection

G1/8 G1/8" male thread
N1/8 1/8" NPT male thread
G1/4 G1/4" male thread
N1/4 1/4" NPT male thread
G1/2 G1/2" male thread
N1/2 1/2" NPT male thread
TRI3/4 3/4" Tri-Clamp
DN25K DN25 hygienic fitting
thread DIN 11851

CABLES

Dimensional drawing	Type	Material
	WAK4-2-WAS4/S74	Connector: CuZn, TPU, Gold-plated contacts Seal: FPM (Viton) Cable: PUR
	FB-WAK4-2-FB-WAS4/S2300	Connector: Stainless steel, PPH GF20, Gold-plated contacts Seal: FPM (Viton) Cable: PP
	WAK4-1-WAS4/S366/S367	Connector: CuZn, TPU, Gold-plated contacts Seal: FPM (Viton) Cable: PUR

Compressing Fitting

CF

-

M

-

3

-

G1/8

-

A4

Compression fitting

Material of the compression ring

M

AISI316L

P

PTFE

For probe diameter

3

3 mm

6

6 mm

Material

A4

stainless steel AISI 316L

Process connection

G1/8

G1/8" male thread

N1/8

1/8" NPT male thread

G1/4

G1/4" male thread

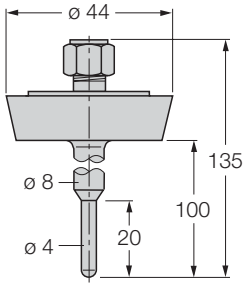
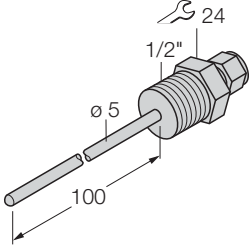
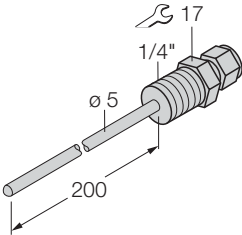
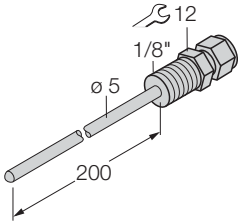
N1/4

1/4" NPT male thread

	Description	Temperature range	Ident-No.
	2 m connecting cable, IP67, robust, connector M12 x 1, PVC and halogen-free, top-quality PUR cable for the automotive industry	Connector: -30...90 °C Cable: -50...105 °C	8006744 ▶
	2 m connecting cable, IP67 and IP69K, connector M12 x 1, PP cable, flame-retardant acc. to DIN VDE 0472, part 804, type B	Connector: -30...90 °C Cable: -40...105 °C	8034685 ▶
	1 m connecting cable, IP67, robust, connector M12 x 1, PVC and halogen-free top-quality PUR cable, flame-retardant acc. to DIN VDE 0472 part 804, type B	Connector: 30...90 °C Cable: -40...90 °C	8013782 ▶

▶ Preferred Types

THERMOWELLS

Dimensional drawing	Type	Material
	THW-3-DN25K-A4-L050	AISI 316L/1.4404
	THW-3-DN25K-A4-L100	AISI 316L/1.4404
	THW-3-DN25K-A4-L150	AISI 316L/1.4404
	THW-3-DN25K-A4-L250	AISI 316L/1.4404
	THW-3-G1/2-A4-L050	AISI 316L/1.4404
	THW-3-G1/2-A4-L100	AISI 316L/1.4404
	THW-3-G1/2-A4-L150	AISI 316L/1.4404
	THW-3-G1/2-A4-L250	AISI 316L/1.4404
	THW-3-G1/4-A4-L050	AISI 316L/1.4404
	THW-3-G1/4-A4-L100	AISI 316L/1.4404
	THW-3-G1/4-A4-L150	AISI 316L/1.4404
	THW-3-G1/4-A4-L200	AISI 316L/1.4404
	THW-3-G1/8-A4-L050	AISI 316L/1.4404
	THW-3-G1/8-A4-L100	AISI 316L/1.4404
	THW-3-G1/8-A4-L150	AISI 316L/1.4404
	THW-3-G1/8-A4-L200	AISI 316L/1.4404



	Description	Ident-No
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 3 mm probe, insertion depth 50 mm	9910455
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 3 mm probe, insertion depth 100 mm	9910456 ▶
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 3 mm probe, insertion depth 150 mm	9910457 ▶
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 3 mm probe, insertion depth 250 mm	9910458 ▶
	Thermowell, length 50 mm with G1/2" male thread and compression fitting, for 3 mm probe	9910443
	Thermowell, length 100 mm with G1/2" male thread and compression fitting, for 3 mm probe	9910444 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 150 mm with G1/2" male thread and compression fitting, for 3 mm probe	9910445 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 250 mm with G1/2" male thread and compression fitting, for 3 mm probe	9910446
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 50 mm with G1/4" male thread and compression fitting, for 3 mm probe	9910415 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 100 mm with G1/4" male thread and compression fitting, for 3 mm probe	9910419
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 150 mm with G1/4" male thread and compression fitting (AISI316L), for 3 mm probe	9910423 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 200 mm with G1/4" male thread and compression fitting, for 3 mm probe	9910427 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 50 mm with G1/8" male thread and compression fitting, for 3 mm probe	9910413
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 100 mm with G1/8" male thread and compression fitting (AISI316L), for 3 mm probe	9910417
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 150 mm with G1/8" male thread and compression fitting, for 3 mm probe	9910421 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 200 mm with G1/8" male thread and compression fitting, for 3 mm probe	9910425 ▶

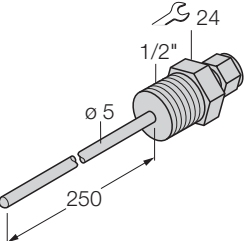
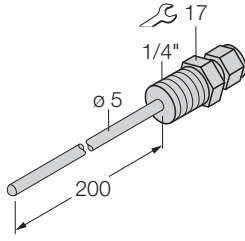
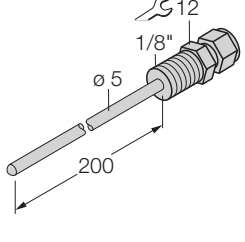
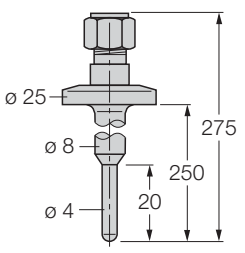
▶ Preferred Types

Clearly readable display

The display with a large and easily visible 4-digit 7-segment display is tilted by an angle of 45°. Thus the display can be read from every position, even from a large distance. The unit of temperature is displayed permanently. All of these features guarantee a high degree of operational safety.



THERMOWELLS

Dimensional drawing	Type	Material
	THW-3-N1/2-A4-L050	AISI 316L/1.4404
	THW-3-N1/2-A4-L100	AISI 316L/1.4404
	THW-3-N1/2-A4-L150	AISI 316L/1.4404
	THW-3-N1/2-A4-L250	AISI 316L/1.4404
	THW-3-N1/4-A4-L050	AISI 316L/1.4404
	THW-3-N1/4-A4-L100	AISI 316L/1.4404
	THW-3-N1/4-A4-L150	AISI 316L/1.4404
	THW-3-N1/4-A4-L200	AISI 316L/1.4404
	THW-3-N1/8-A4-L050	AISI 316L/1.4404
	THW-3-N1/8-A4-L100	AISI 316L/1.4404
	THW-3-N1/8-A4-L150	AISI 316L/1.4404
	THW-3-N1/8-A4-L200	AISI 316L/1.4404
	THW-3-TRI3/4-A4-L035	AISI 316L/1.4404
	THW-3-TRI3/4-A4-L050	AISI 316L/1.4404
	THW-3-TRI3/4-A4-L100	AISI 316L/1.4404
	THW-3-TRI3/4-A4-L150	AISI 316L/1.4404
	THW-3-TRI3/4-A4-L250	AISI 316L/1.4404



	Description	Ident-No.
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 50 mm with 1/2" NPT male thread and compression fitting, für 3 mm probe	9910447 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 100 mm with 1/2" NPT male thread and compression fitting, für 3 mm probe	9910448 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 150 mm with 1/2" NPT male thread and compression fitting, für 3 mm probe	9910449
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 250 mm with 1/2" NPT male thread and compression fitting, für 3 mm probe	9910450 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 50 mm with 1/4" NPT male thread and compression fitting, für 3 mm probe	9910416 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 100 mm with 1/4" NPT male thread and compression fitting (AISI316L), for 3 mm probe	9910420 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 150 mm with 1/4" NPT male thread and compression fitting, für 3 mm probe	9910424 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 200 mm with 1/4" NPT male thread and compression fitting, für 3 mm probe	9910428 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 50 mm with 1/8" NPT male thread and compression fitting, für 3 mm probe	9910414 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 100 mm with 1/8" NPT male thread and compression fitting, für 3 mm probe	9910418 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 150 mm with 1/8" NPT male thread and compression fitting, für 3 mm probe	9910422 ▶
	Thermowell (external Ø 5 mm, internal Ø 3.5 mm) length 200 mm with 1/8" NPT male thread and compression fitting, für 3 mm probe	9910426 ▶
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), 3/4" Tri-Clamp with compression fitting, for 3 mm probe, insertion depth 35 mm	9910433 ▶
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), 3/4" Tri-Clamp process connection with compression fitting, for 3 mm probe, insertion depth 50 mm	9910451 ▶
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), 3/4" Tri-Clamp process connection with compression fitting, for 3 mm probe, insertion depth 100 mm	9910452 ▶
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), 3/4" Tri-Clamp process connection with compression fitting, for 3 mm probe, insertion depth 150 mm	9910453
	Thermowell (external Ø 8 mm, probe tip Ø 4 mm), 3/4" Tri-Clamp process connection with compression fitting, for 3 mm probe, insertion depth 250 mm	9910454 ▶

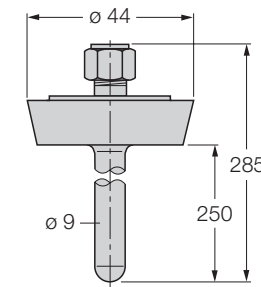
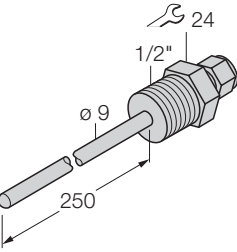
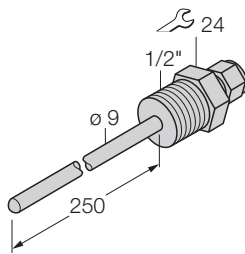
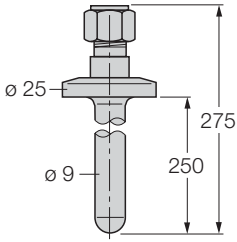
▶ Preferred Types

Highest levels of operating comfort

The "Mode" and "Set" buttons can be operated by a finger. No special additional tools are required in order to view the parameter values. Both buttons are used as the Up and Down keys in the user friendly programming menu. They are used to precisely set the required parameter values.



THERMOWELLS

Dimensional drawing	Type	Material
	THW-6-DN25K-A4-L050	AISI 316L/1.4404
	THW-6-DN25K-A4-L100	AISI 316L/1.4404
	THW-6-DN25K-A4-L150	AISI 316L/1.4404
	THW-6-DN25K-A4-L250	AISI 316L/1.4404
	THW-6-G1/2-A4-L050	AISI 316L/1.4404
	THW-6-G1/2-A4-L100	AISI 316L/1.4404
	THW-6-G1/2-A4-L150	AISI 316L/1.4404
	THW-6-G1/2-A4-L250	AISI 316L/1.4404
	THW-6-N1/2-A4-L050	AISI 316L/1.4404
	THW-6-N1/2-A4-L100	AISI 316L/1.4404
	THW-6-N1/2-A4-L150	AISI 316L/1.4404
	THW-6-N1/2-A4-L250	AISI 316L/1.4404
	THW-6-TRI3/4-A4-L050	AISI 316L/1.4404
	THW-6-TRI3/4-A4-L100	AISI 316L/1.4404
	THW-6-TRI3/4-A4-L150	AISI 316L/1.4404
	THW-6-TRI3/4-A4-L250	AISI 316L/1.4404



	Description	Ident-No.
	Thermowell, (external Ø 9 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 6 mm probe, insertion depth 50 mm	9910471 ▶
	Thermowell, (external Ø 9 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 6 mm probe, insertion depth 100 mm	9910436 ▶
	Thermowell, (external Ø 9 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 6 mm probe, insertion depth 150 mm	9910472 ▶
	Thermowell, (external Ø 9 mm), hygienic fitting DN25 acc. to DIN 11851 with compression fitting, for 6 mm probe, insertion depth 250 mm	9910473 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 50 mm with G1/2" male thread and compression ferrule fitting, for 6 mm probe	9910459 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 100 mm with G1/2" male thread and compression ferrule fitting, for 6 mm probe	9910460 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 150 mm with G1/2" male thread and compression ferrule fitting, for 6 mm probe	9910461 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 250 mm with G1/2" male thread and compression ferrule fitting, for 6 mm probe	9910462 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 50 mm with 1/2" NPT male thread and compression ferrule fitting, for 6 mm probe	9910463 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 100 mm with 1/2" NPT male thread and compression ferrule fitting, for 6 mm probe	9910464 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 150 mm with G1/2" male thread and compression ferrule fitting, for 6 mm probe	9910465 ▶
	Thermowell, (external Ø 9 mm, internal Ø 7 mm), length 250 mm with 1/2" NPT male thread and compression ferrule fitting, for 6 mm probe	9910466 ▶
	Thermowell, (external Ø 9 mm), 3/4" Tri-Clamp with compression fitting, for 6 mm probe, insertion depth 50 mm	9910467 ▶
	Thermowell, (external Ø 9 mm), 3/4" Tri-Clamp with compression fitting, for 6 mm probe, insertion depth 100 mm	9910468 ▶
	Thermowell, (external Ø 9 mm), 3/4" Tri-Clamp with compression fitting, for 6 mm probe, insertion depth 150 mm	9910469 ▶
	Thermowell, (external Ø 9 mm), 3/4" Tri-Clamp with compression fitting, for 6 mm probe, insertion depth 250 mm	9910470 ▶

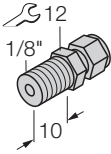
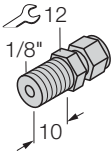
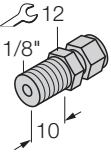
▶ Preferred Types

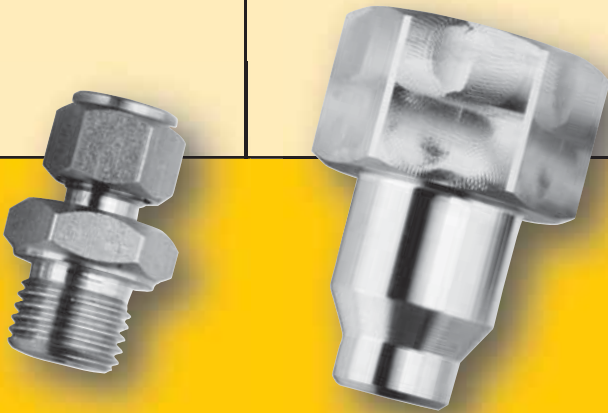
Maximum operational safety

Mineral insulated sensors feature a very high flexional elasticity.



COMPRESSION FITTINGS

Dimensional drawing	Type	Material
	CF-M-3-G1/4-A4	AISI 316L/1.4404
	CF-M-3-G1/8-A4	AISI 316L/1.4404
	CF-M-3-N1/4-A4	AISI 316L/1.4404
	CF-M-3-N1/8-A4	AISI 316L/1.4404
	CF-P-3-G1/4-A4	AISI 316L/1.4404
	CF-P-3-G1/8-A4	AISI 316L/1.4404
	CF-P-3-N1/4-A4	AISI 316L/1.4404
	CF-P-3-N1/8-A4	AISI 316L/1.4404
	CF-M-6-G1/4-A4	AISI 316L/1.4404
	CF-M-6-N1/4-A4	AISI 316L/1.4404
	CF-P-6-G1/4-A4	AISI 316L/1.4404
	CF-P-6-N1/4-A4	AISI 316L/1.4404



	Description	Ident-No.
	Threaded adapter G1/4" with metal compression fitting for direct mounting of 3 mm probes, max. temp. 350 °C, max. pressure 100 bar	9910407 ▶
	Threaded adapter G1/8" with metal compression fitting for direct mounting of 3 mm probes, max. temp. 350 °C, max. pressure 100 bar	9910405 ▶
	Threaded adapter 1/4" NPT with metal compression fitting for direct mounting of 3 mm probes, max. temp. 350 °C, max. pressure 100 bar	9910408 ▶
	Threaded adapter 1/8" NPT with metal compression fitting for direct mounting of 3 mm probes, max. temp. 350 °C, max. pressure 100 bar	9910406 ▶
	Threaded adapter G1/4" NPT with PTFE compression fitting for direct mounting of 3 mm probes, max. temp. 100 °C, max. pressure 20 bar	9910411
	Threaded adapter G1/8" NPT with PTFE compression fitting for direct mounting of 3 mm probes, max. temp. 100 °C, max. pressure 20 bar	9910409 ▶
	Threaded adapter 1/4" NPT with PTFE compression fitting for direct mounting of 3 mm probes, max. temp. 100 °C, max. pressure 20 bar	9910412 ▶
	Threaded adapter 1/8" NPT with PTFE compression fitting for direct mounting of 3 mm probes, max. temp. 100 °C, max. pressure 20 bar	9910410 ▶
	Threaded adapter G1/4" with metal compression fitting for direct mounting of 6 mm probes, max. temp. 350 °C, max. pressure 100 bar	9910483 ▶
	Threaded adapter 1/4" NPT with metal compression fitting for direct mounting of 6 mm probes, max. temp. 350 °C, max. pressure 100 bar	9910484 ▶
	Threaded adapter G1/4" with PTFE compression fitting for direct mounting of 6 mm probes, max. temp. 100 °C, max. pressure 20 bar	9910485 ▶
	Threaded adapter 1/4" NPT with PTFE compression fitting for direct mounting of 6 mm probes, max. temp. 100 °C, max. pressure 20 bar	9910486 ▶

▶ Preferred Types

Mounting in 40 mm grid dimensions in compact space

With a housing diameter of just 34 mm multiple temperature sensors can be fitted in tight spaces.



MAXIMUM OPERATING COMFORT WITH PROGRAMMING

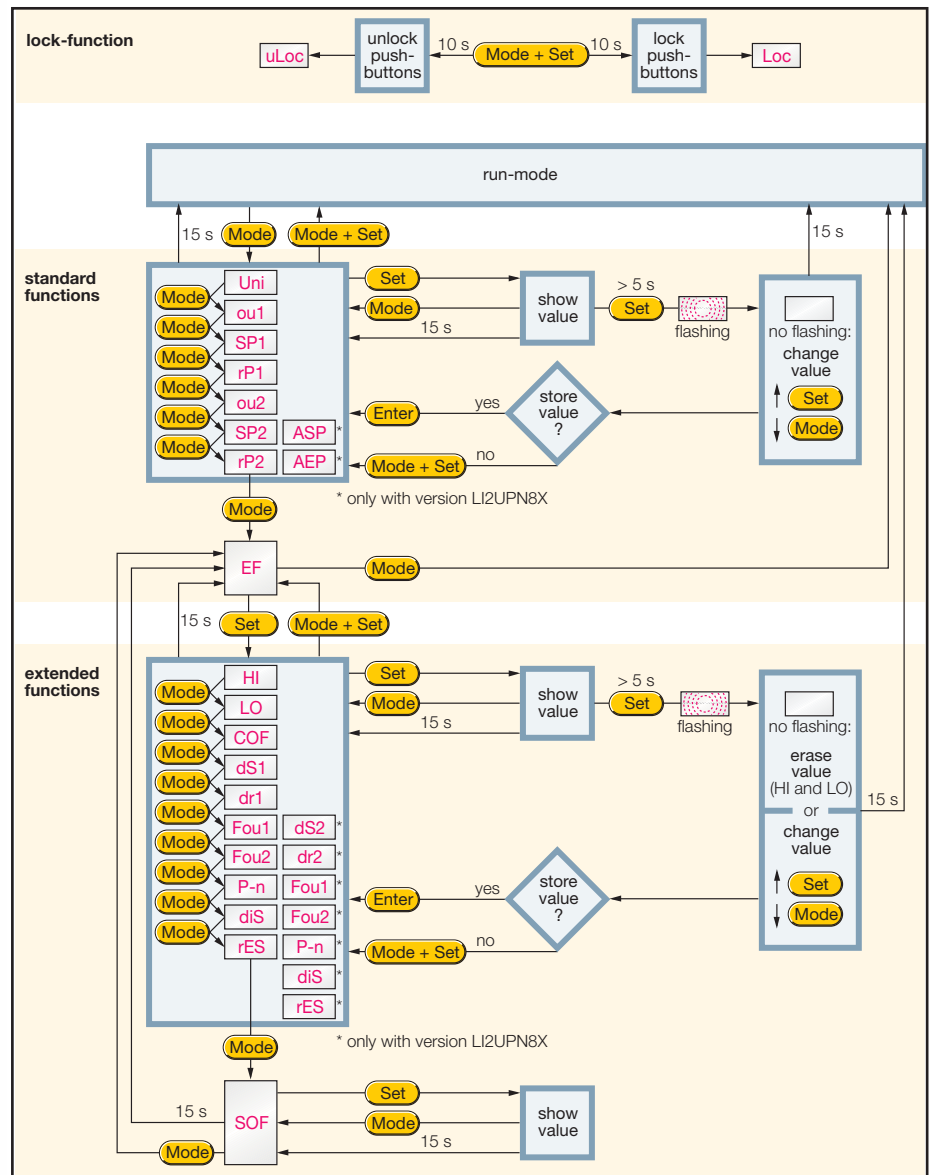
One of the most important aspects with the selection of an intelligent temperature sensor is the level of user friendliness during programming. With the clear menu structure it is possible to set the values for the setting points, output function, analogue ranges and a whole range of special functions such as switch delays, rotation and display direction or peak temperature memory. Additional external devices such as a laptop or a special programming device are not required.

The temperature sensors of the TS400/500 series can be easily programmed with three push buttons. Both the "Mode" and "Set" buttons which can be used to select and set different parameters, can be operated with fingers without tools.

It is possible to scroll up and down through the values for improved operation. If the set value is to be saved and the programming is to be changed, the "Enter" button must be pressed. This button is recessed and can only be operated using a simple tool such as a ballpoint pen.

As long as the operator does not use a tool he can comfortably view all values and change them after a time lock has been overcome. Unintentional changes to the program are not a danger. Only after a tool is used can the operator permanently modify the sensor setting.





Schematic representation of the menu interface using a temperature sensor with 2 switching outputs as an example

Robust design

The housing, the temperature connection and the electrical connection are made of stainless steel. The sensor features excellent electromagnetic compatibility (EMC).



TECHNICAL DATA

Power supply	
Operating voltage	15...30 VDC (switching outputs) 18...30 VDC (switching and analogue output)
No-load current	≤ 50 mA
SELV, PELV	according to EN 50178
Short-circuit protection	yes
Reverse polarity protection	yes
Insulation class	III
Switching output	
Switching frequency	≤ 180 Hz
Output function	2 x PNP or NPN, NC/NO programmable
Voltage drop at I _e	≤ 2 V
Rated operational current	0.2 A
Switching point distance	0.2 K
Switching point distance	-49.8...+500 °C
Release points	-50...+499.8 °C
Analogue current output	
Current output	4...20 mA, 0...20 mA, 20...4 mA, 20...0 mA programmable
Response time	< 100 ms
Load	≤ 0.5 kΩ
Analogue voltage output	
Voltage output	0...10 V, 0...5 V, 1...6 V, 10...0 V, 5...0 V, 6...1 V programmable
Response time	< 100 ms
Load	≥ 2 kΩ
Temperature sensor accuracy	
Switching output	
Switching point accuracy	≤ ± 0.2 K
Repetition accuracy	≤ ± 0.1 K
Analogue output	
Accuracy (Lin.+Hys.+Rep.)	≤ ± 0.2 K

Temperature sensor housing	
Housing material	Stainless-steel/plastic 1.4404 (AISI 316L)/PC
Electrical connection	Connector M12 x 1, 4-pin with integrated high-speed connection technology
Sensor connection	Connector M12 x 1, 4-pin
Coupling nut size (with tightening torque)	SW 30 (max. 35 Nm)
Display	
Temperature display	4-digit 7-segment display can be rotated by 180° and switched off
Switch state display	2 x LED yellow
Measured value/Programming	Switch/release points; hysteresis/window mode; N.O./N.C.; unit of display; peak value memory
Display of temperature unit	4 x LED green (°C, °F, K, Ω)
EMC	
EN 61000-4-2	ESD 4 kV CD / 8 kV AD
EN 61000-4-3	HF radiated: 15 V/m ²
EN 61000-4-4	Burst 2 kV
EN 61000-4-5	Surge 1 kV, 42 Ω
EN 61000-4-6	HF conducted: 10 V
Ambient conditions	
Medium temperature	directly connected -50...+150 °C (otherwise see type code/ temperature sensor)
Ambient temperature	-40...+80 °C
Storage temperature	-40...+80 °C
Degree of protection	IP67
Vibration resistance	20 g (10...2000 Hz) according to IEC 68-2-6
Shock resistance	50 x g (11 ms) according to IEC 68-2-27

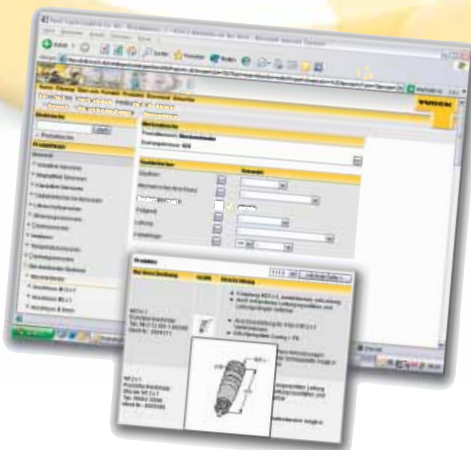
Standard probe	
Temperature operating range	-30...+500 °C ≤ 350 °C accuracy class A ≥ 350 °C accuracy class B
Ambient temperature	-20...+90 °C
Measuring element	Pt100, DIN EN 60751, Class A
Response time	t _{0,5} = 1.5 s; t _{0,9} = 6.0 s in water at 0.2 m/s
Output function	4-wire
Reverse polarity protection	Yes
Degree of protection	IP67
Housing material	Stainless-steel/plastic
Housing quality	1.4404 (AISI 316L) mineral insulated
Sensor material	Stainless steel
Sensor quality	1.4404 (AISI 316L)
Pressure resistance	100 bar
Connection	Connector, M12 x 1
Mechanical connection	for compression fittings or thermowells
Compact probe	
Temperature operating range	-50...120 °C
Ambient temperature	-20...+90 °C
Measuring element	Pt100, DIN EN 60751, Class A
Response time	t _{0,5} = 1.5 s; t _{0,9} = 6.0 s in water at 0.2 m/s
Output function	4-wire
Reverse polarity protection	Yes
Degree of protection	IP67
Housing material	Stainless-steel/plastic
Housing quality	1.4404 (AISI 316L) mineral insulated
Sensor material	Stainless steel
Sensor quality	1.4404 (AISI 316L)
Pressure resistance	100 bar
Connection	Connector, M12 x 1
Mechanical connection	G1/8"
Special probe	
Temperature operating range	-50...120 °C
Ambient temperature	-20...+90 °C
Measuring element	Pt100, DIN EN 60751, Class A
Response time	t _{0,5} = 1.5 s; t _{0,9} = 6.0 s in water at 0.2 m/s
Output function	4-wire
Reverse polarity protection	Yes
Degree of protection	IP67
Housing material	Stainless-steel/plastic
Housing quality	1.4404 (AISI 316L)
Sensor material	Stainless-steel
Sensor quality	1.4404 (AISI 316L)
Pressure resistance	100 bar
Connection	Connector, M12 x 1
Mechanical connection	Tri-Clamp 3/4"; DN25 hygienic fitting according to DIN11851
Cable probe	
Temperature operating range	-50...+105 °C
Ambient temperature	-20...+90 °C
Measuring element	Pt100, DIN EN 60751, Class A
Response time	t _{0,5} = 1.5 s; t _{0,9} = 6.0 s in water at 0.2 m/s
Output function	4-wire
Reverse polarity protection	Yes
Degree of protection	IP67
Housing material	Plastic
Housing quality	TPE (thermoplastic elastomer)
Sensor material	Stainless steel
Sensor quality	1.4404 (AISI 316L)
Pressure resistance	100 bar
Connection	Connector, M12 x 1
Mechanical connection	for compression fittings, thermowells or for direct mounting

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