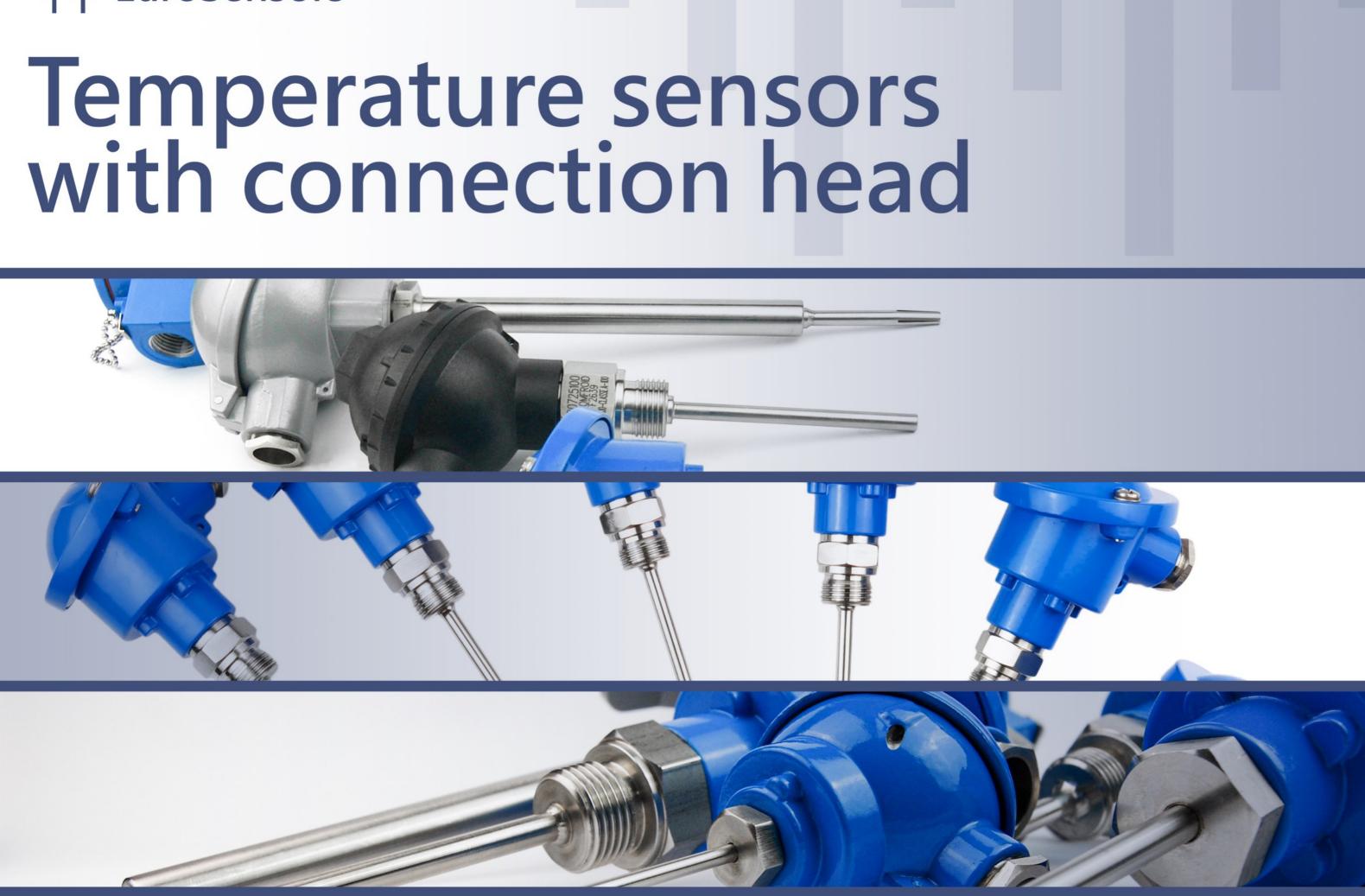
EuroSensors



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RTDs with terminal head

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Thermocouples with terminal head



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Thermocouples with terminal head - Technical information



Types of thermocouples

Thermocouples are adapted to specific applications depending on the temperature range to be measured, the accuracy required and the environment in which they will be used. They are differentiated by letters (Type K, J, N, T, etc....) which correspond to the presence of materials that can measure a certain temperature range.

Type K NiCr-NiAl (NiCr-Ni)

Type J Fe-CuNi

Type N NiCrSi-NiSi

Type T Cu-Cuni

The most commonly used is the type K which is capable of measuring temperatures from - 40°C to + 1200°C. It is made from a chrome and an aluminum wire.

Thermocouple classes

Classes of thermocouples have certain tolerance values and temperature limits of validity. The most common classes are **class 1** and **class 2**.

With **class 1** you get more precise measurement values while **class 2** provides a wider tolerance values.

Types of terminal heads

Many alternative types of terminal head are available to meet the requirements of various applications. Variations exist in size, material, accommodation, resistance to media, resistance to fire or even explosion and in other parameters.

Common types are shown below but there are many special variants available to meet particular requirements.

What are terminal heads ?

Terminal heads are a type of cold end termination which are common on industrial type temperature sensors. A temperature sensor will be encased in a ceramic or metal sheath which will be terminated at the cold end with a terminal head. Inside the head, terminal blocks or temperature transmitters are placed to carry the sensor signal to instrumentation.

These are protected from the external environment as terminal heads often provide good ingress protection (IP) and temperature protection. Most commonly terminal heads are made from aluminum but can be stainless steel, cast iron or plastic depending on the application. There are many standardized designs of head, the most common being KNE, ALA and BUZ.

Inside terminal head



Thermocouples with terminal head - Technical information

Terminal head component breakdown



What is a terminal block ?

Terminal block located in a "head" allow for the connection of extension wires. Various materials are used for screw or solder terminations including copper, plated brass and, for the best performance in the case of thermocouples, thermoelement alloys. The various head styles cater for a wide variety of probe diameters and cable entries.

Terminal blocks provide a secure and organized way to terminate multiple wires. The wires are inserted into a clamping mechanism

that holds them in place, making it easier to manage and connect different wires within a circuit. Terminal blocks provide a convenient and secure way to connect thermocouple wires to the measuring instrument or control system when using thermocouples. Terminal blocks are available in 2, 3, 4, and 6 poles with center hole (spring loading).



What is a temperature transmitter ?

A temperature transmitter is a device that converts the signal produced by a temperature sensor into a standard instrumentation signal representing a process variable temperature being measured and controlled. The most common transmitter instrumentation output signal is 4 to 20 mA. The signal from the temperature transmitter is sent to a controller that determines what action is required and generates an appropriate output signal.

Controllers are either a PLC or a DCS in process control today.

More on temperature transmitters and terminal blocks. See in the part *"Accessories".*



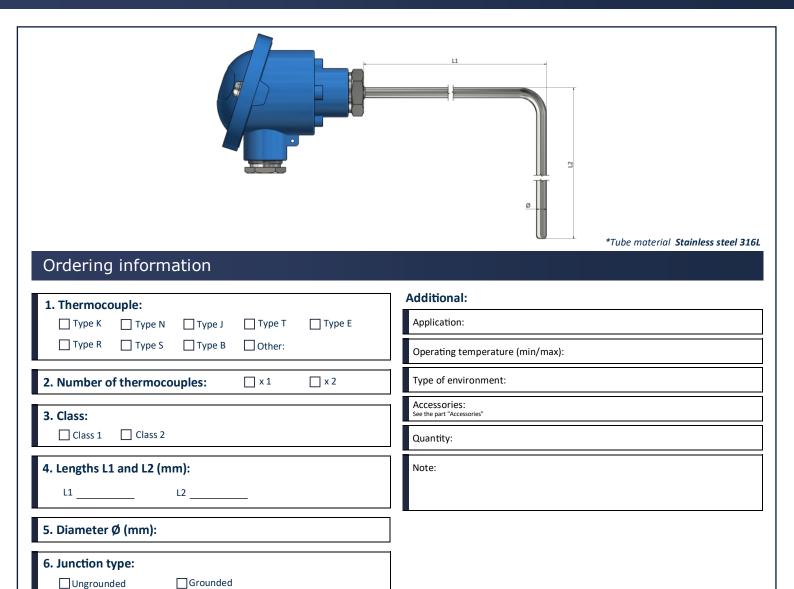
TH00 – Thermocouples with terminal head Standard

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Ordering information		*Tube material Stainless steel 3
1. Thermocouple: Type K Type N Type J Type T	Type E	Additional: Application:
Type R Type S Type B Other:		Operating temperature (min/max):
2. Number of thermocouples:	🗌 x 2	Type of environment:
3. Class:		Accessories: See the part "Accessories"
Class 1 Class 2		Quantity:
4. Length L (mm):		Note:
5. Diameter Ø (mm): 6. Junction type: Ungrounded Grounded]
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS	🗌 Туре N	
8. Mounting: Wires Terminal block Transmitter (°C Specify temperature rai): _{Ige}	
How to order?		

TH01 – Thermocouples with terminal head Standard (90° bend)

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How to order?

Type B

Type Ex

8. Mounting:

Wires

alale.

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

7. Connection head: (see the part "Accessories")

Terminal block

Type DAN

Type NS

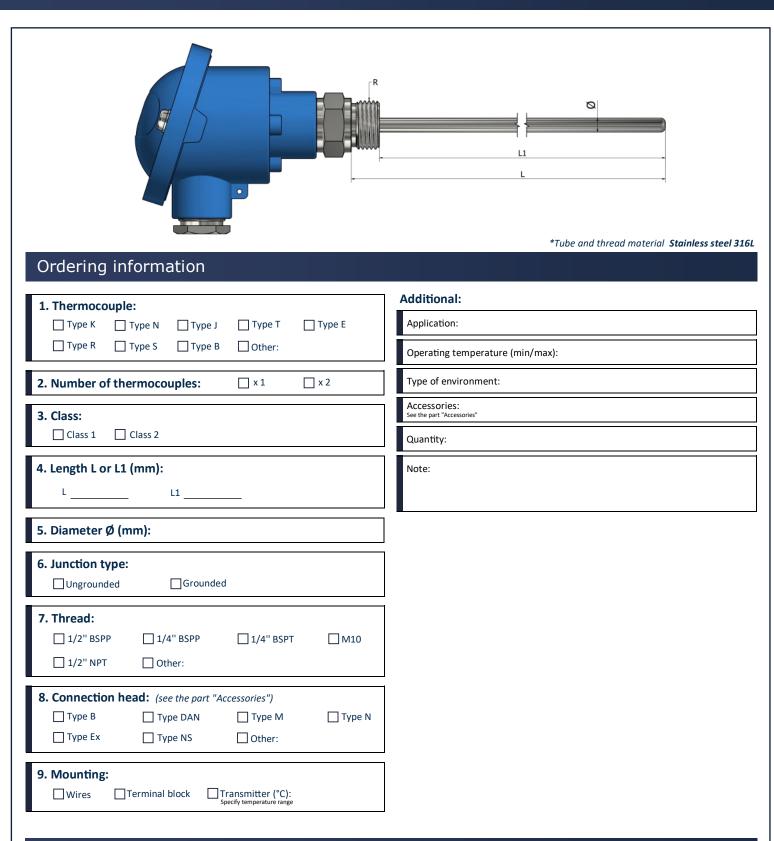
🗌 Туре М

Other:

Transmitter (°C): Specify temperature range Type N

TH10 – Thermocouples with terminal head Standard with fixed thread

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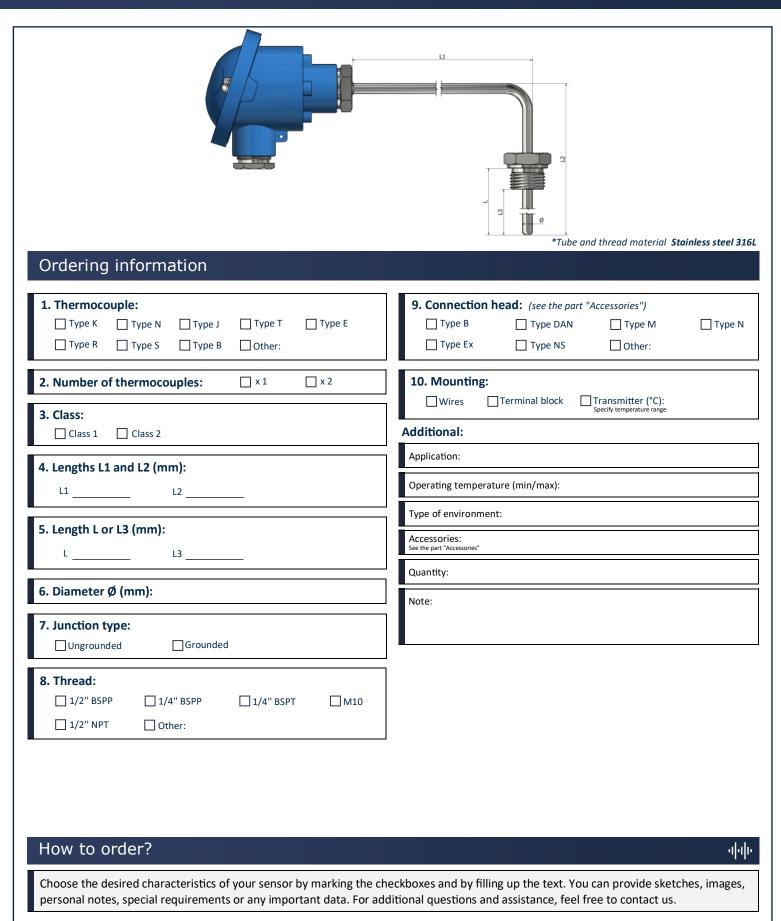


How to order?

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TH11 – Thermocouples with terminal head Standard with fixed thread (90° bend) (type 1)

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TH12 – Thermocouples with terminal head Standard with fixed thread (90° bend) (type 2)

alalie

Ordering information	Tube and thread material Stainless steel 316L
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	9. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:
2. Number of thermocouples: $x 1$ $x 2$ 3. Class:	10. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range
Class 1 Class 2 4. Lengths L1 and L2 (mm): L1 L2	Additional: Application: Operating temperature (min/max):
5. Length L or L3 (mm):	Type of environment: Accessories: See the part "Accessories" Quantity:
6. Diameter Ø (mm): 7. Junction type: Ungrounded Grounded	Note:
8. Thread: 1/2" BSPP 1/2" NPT Other:	
How to order?	ղիր

TH13 – Thermocouples with terminal head Standard with fixed thread (offset)

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Ordering information	Tube and thread material Stainless steel 316L
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	Additional: Application: Operating temperature (min/max):
2. Number of thermocouples: $\Box \times 1 \qquad \Box \times 2$	Type of environment:
3. Class:	Accessories: See the part "Accessories" Quantity:
4. Lengths L and L1 or L2 (mm): L L1 L L2	Note:
5. Diameter Ø (mm):	
6. Junction type:	
7. Thread: 1/2" BSPP 1/4" BSPP 1/2" NPT Other:	
8. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
9. Mounting:	

How to order?

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TH20 – Thermocouples with terminal head Reduced tip

alalle

	*Tube material Stainless steel 316L
Ordering information	
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	Additional: Application: Operating temperature (min/max):
2. Number of thermocouples: $\Box \times 1 \qquad \Box \times 2$	Type of environment:
3. Class:	Accessories: See the part "Accessories" Quantity:
4. Dimensions L and Ø (mm): L Ø	Note:
5. Dimensions L1 and Ø1 (mm): L1 Ø1	
6. Junction type:	
7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

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TH21 – Thermocouples with terminal head Pointed tip

alalle

Ordering information	*Tube material Stainless steel 3 1
1. Thermocouple: Type K Type N Type Z Type T Type R Type S Type B Other:	Additional: Application: Operating temperature (min/max):
2. Number of thermocouples: $\Box \times 1 \qquad \Box \times 2$	Type of environment:
3. Class:	Accessories: See the part "Accessories" Quantity:
4. Length L (mm):	Note:
5. Diameter Ø (mm): 6. Junction type: Ungrounded Grounded 7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N	•
Type Ex Type NS Other: 8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range Specify temperature range	
How to order?	վո

TH22 – Thermocouples with terminal head Open air

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	*Tube material Stainless steel 31
Ordering information 1. Thermocouple: Type K Type N Type R Type S Type R Type S	Additional: Application: Operating temperature (min/max):
2. Number of thermocouples: x 1 x 2 3. Class: Class 1 Class 2	Type of environment: Accessories: See the part "Accessories" Quantity:
4. Length L (mm): 5. Diameter Ø (mm): 6. Junction type: Ungrounded 7. Connection head: (see the part "Accessories") □ Type B □ Type DAN □ Type Ex □ Type NS □ Type Ex □ Type NS	Note:
8. Mounting:	
How to order?	ղիվ

TH23 – Thermocouples with terminal head Open air with fixed thread

սիդի

	L1 L1 L1 L *Tube and thread material Stainless steel 316L
Ordering information	Additional:
1. Thermocouple: Type K Type N Type J Type T Type E	Additional: Application:
Type R Type S Type B Other:	Operating temperature (min/max):
2. Number of thermocouples: $\Box \times 1 \qquad \Box \times 2$	Type of environment:
3. Class:	Accessories: See the part "Accessories"
Class 1 Class 2	Quantity:
4. Length L or L1 (mm): L	Note:
5. Diameter Ø (mm):	
6. Junction type: Ungrounded	
7. Thread: 1/2" BSPP 1/4" BSPP 1/2" NPT Other:	
8. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
9. Mounting:	

How to order?

alale

TH24 – Thermocouples with terminal head Open air with reduced tip

սիսի։

Ordering information		*Tube material Stainless steel 316
1. Thermocouple: Type K Type N Type J Type T Type R Type S Type B Other:	🗌 Туре Е	Additional: Application: Operating temperature (min/max):
2. Number of thermocouples:	🗌 x 2	Type of environment:
3. Class: Class 1 Class 2		Accessories: See the part "Accessories" Quantity:
4. Dimensions L and Ø (mm):		Note:
5. Dimensions L1 and Ø1 (mm): L1 Ø1		
6. Junction type: Ungrounded]
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	🗌 Type N	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range		
How to order?		ւլիլի

TH25 – Thermocouples with terminal head Contact block (surface mount)

սիսիս

	28 8 9 150° 10 *Tube material Stainless steel 316L
Ordering information	
1. Thermocouple: Type K Type N Type K Type N Type R Type S Type B Other:	9. Contact block material:
2. Number of thermocouples: $\Box \times 1 \qquad \Box \times 2$	10. Contact block shape:
3. Class: Class 1	□ V-shape □ Flat
4. Lengths L1 and L2 (mm):	
L1 L2	Additional: Application:
5. Diameter Ø (mm):	
6. Junction type:	Operating temperature (min/max):
Ungrounded Grounded	Type of environment: Accessories:
7. Connection head: (see the part "Accessories")	See the part "Accessories"
Type B Type DAN Type M Type N Type Ex Type NS Other:	Quantity: Note:
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	վոր

TH30 – Thermocouples with terminal head Flange sanitary mounting

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Ordering information		*Tube material Stainless steel 316L
1. Thermocouple:		9. Flange sanitary mounting:
□ Type K □ Type N □ Type J □ Type T □ Type R □ Type S □ Type B □ Other:	🗌 Туре Е	DIN2527 (DN10 – PN6) Other:
		Additional:
2. Number of thermocouples:	🗌 x 2	Application:
3. Class:		Operating temperature (min/max):
Class 1 Class 2		Type of environment:
4. Dimensions L and L1 (mm):		Accessories: See the part "Accessories"
L L1		Quantity:
5. Diameter Ø (mm):		Note:
6. Junction type:		
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	☐ Туре N	
8. Mounting:		
How to order?		վվի

TH31 – Thermocouples with terminal head Tri-clamp sanitary mounting

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	Tube material Stainless steel 316L
Ordering information	
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	9. Tri-clamp sanitary mounting: DIN32676 / ISO 2852 (DN25) Other: Additional:
2. Number of thermocouples: $\Box \times 1$ $\Box \times 2$	Application:
3. Class: Class 1 Class 2 4. Dimensions L and L1 (mm):	Operating temperature (min/max): Type of environment: Accessories: See the part "Accessories"
L L1	Quantity:
5. Diameter Ø (mm):	Note:
6. Junction type: Ungrounded Grounded 7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N	
Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

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TH32 – Thermocouples with terminal head Disc DIN 11851 (screw-on) sanitary mounting

alalle

	Tube material Stainless steel 3164
Ordering information 1. Thermocouple: Type K Type N Type R Type S Type B Other:	9. Disc DIN 11851 sanitary mounting: DIN 11851 (DN20) Other: Additional:
2. Number of thermocouples: \times 1 \times 2 3. Class: \times Class 1 \times Class 2	Application: Operating temperature (min/max): Type of environment:
4. Dimensions L and L1 (mm): L	Accessories: See the part "Accessories" Quantity: Note:
5. Diameter Ø (mm): 6. Junction type: Ungrounded Grounded 7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	Note.
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ոիդի

TH40 – Thermocouples with terminal head Exchangeable insert

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Ordering information	*Tube material Stainless steel 31 0
1. Thermocouple: Type K Type N Type K Type N Type R Type S Type B Other:	8. Type of exchangeable insert:
2. Number of thermocouples: $\Box \times 1 \qquad \Box \times 2$	
3. Class:	Wires Terminal block Transmitter (°C):
4. Length L (mm):	T
5. Diameter Ø (mm):	Additional:
6. Junction type:	Operating temperature (min/max): Type of environment:
7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N	Accessories: See the part "Accessories"
Type Ex Type NS Other:	Quantity: Note:
How to order?	ոիդ
Choose the desired characteristics of your sensor by marking the ch personal notes, special requirements or any important data. For ad	heckboxes and by filling up the text. You can provide sketches, images,

TH41 – Thermocouples with terminal head Exchangeable insert with fixed thread

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			L L	*Tube and thread	material Stainless steel 3 1
Ordering information					
1. Thermocouple: Type K Type N Type K Type N Type R Type S Type B O	_	Туре Е	9. Type of exchange	eable insert:	a.a. 1
2. Number of thermocouples:	1	x 2	0	OF STAT	
3. Class:			Wires	Terminal block	Transmitter (°C):
4. Length L or L1 (mm):					T Specify temperature range
L L1			Additional:		
5. Diameter Ø (mm):			Application:		
6. Junction type:			Operating temperature (min/max):	
			Type of environment:		
7. Thread:			Accessories: See the part "Accessories"		
	/4" BSPT	□ M10	Quantity:		
☐ 1/2" NPT ☐ Other:			Note:		
8. Connection head: (see the part "Accessorie	es")				
	ype M	Type N			
🗌 Туре Ех 🗌 Туре NS 🗌 О	ther:				
L		I			

personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

TH42 – Thermocouples with terminal head Exchangeable insert with fixed thread (offset)

սիսի։

	Lunch and thread material Stainless steel 316L
Ordering information	
1. Thermocouple: Type K Type N Type K Type N Type R Type S Type B Other:	9. Type of exchangeable insert:
2. Number of thermocouples:	
3. Class: Class 1 Class 2	☐ Wires ☐ Terminal block ☐ Transmitter (°C): T
4. Lengths L, L1, L2 (mm): L L1	Specify temperature range Additional:
5. Diameter Ø (mm):	Application: Operating temperature (min/max):
6. Junction type: Ungrounded Grounded	Type of environment: Accessories:
7. Thread: 1/2" BSPP 1/4" BSPP 1/4" BSPT	See the part "Accessories" Quantity:
□ 1/2" NPT □ Other:	Note:
8. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
How to order?	վվի

TH50 – Thermocouples with terminal head For aggressive environments

alalie

	*Fitting material PTFE (260 Tube material Stainless steel 316L with PTFE protection (260
Ordering information	Additional:
1. Thermocouple: Type K Type N Type J Type T Type E	Application:
Type R Type S Type B Other:	Operating temperature (min/max):
2. Number of thermocouples: $\ \ x1$ $\ \ x2$	Type of environment:
3. Class:	Accessories: See the part "Accessories"
Class 1 Class 2	Quantity:
4. Length L (mm):	Note:
5. Diameter Ø (mm):	
6. Junction type: Ungrounded Grounded	
7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	վո

TH51 – Thermocouples with terminal head For aggressive environments with fixed thread

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	LI Thread material PTFE (260°C) *Tube material Stainless steel 316L with PTFE protection
Ordering information	
1. Thermocouple:	Additional:
🗌 Туре К 🔄 Туре N 🔄 Туре J 🔄 Туре Т 🔄 Туре Е	Application:
Type R Type S Type B Other:	Operating temperature (min/max):
2. Number of thermocouples: $\Box \times 1$ $\Box \times 2$	Type of environment:
3. Class:	Accessories: See the part "Accessories"
Class 1 Class 2	Quantity:
4. Length L or L1 (mm): L	Note:
5. Diameter Ø (mm):	
6. Junction type:	
7. Thread: 1/2" BSPP 1/2" BSPP 1/2" NPT Other:	
8. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
9. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

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TH60 – Thermocouples with terminal head Spring loaded

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Ordering information	L1 *Tube and thread material Stainless steel 316L
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	Additional: Application: Operating temperature (min/max):
2. Number of thermocouples: $\Box \times 1$ $\Box \times 2$	Type of environment:
3. Class:	Accessories: See the part "Accessories" Quantity:
4. Lengths L1, L2, L3 (mm): L1 L2 L3	Note:
5. Diameter Ø (mm):	
6. Junction type:	
7. Thread: 1/2" BSPP 1/2" NPT Other:	
8. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
9. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

alale

TI00 – Thermocouples with terminal head Disc plate insert

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		*Tube material Stainless steel 316
Ordering information		
1. Thermocouple: Type K Type N Type J Type T	Type E	Additional: Application:
Type K Type N Type J Type T Type R Type S Type B Other:	туре с	Operating temperature (min/max):
2. Number of thermocouples: 🗌 × 1	_ x 2	Type of environment:
		Accessories: See the part "Accessories"
3. Class: Class 1 Class 2		Quantity:
4. Sheath length L (mm):		Note:
5. Diameter Ø (mm):		
6. Junction type: Ungrounded Grounded		
		गोग eckboxes and by filling up the text. You can provide sketches, images, itional questions and assistance, feel free to contact us.

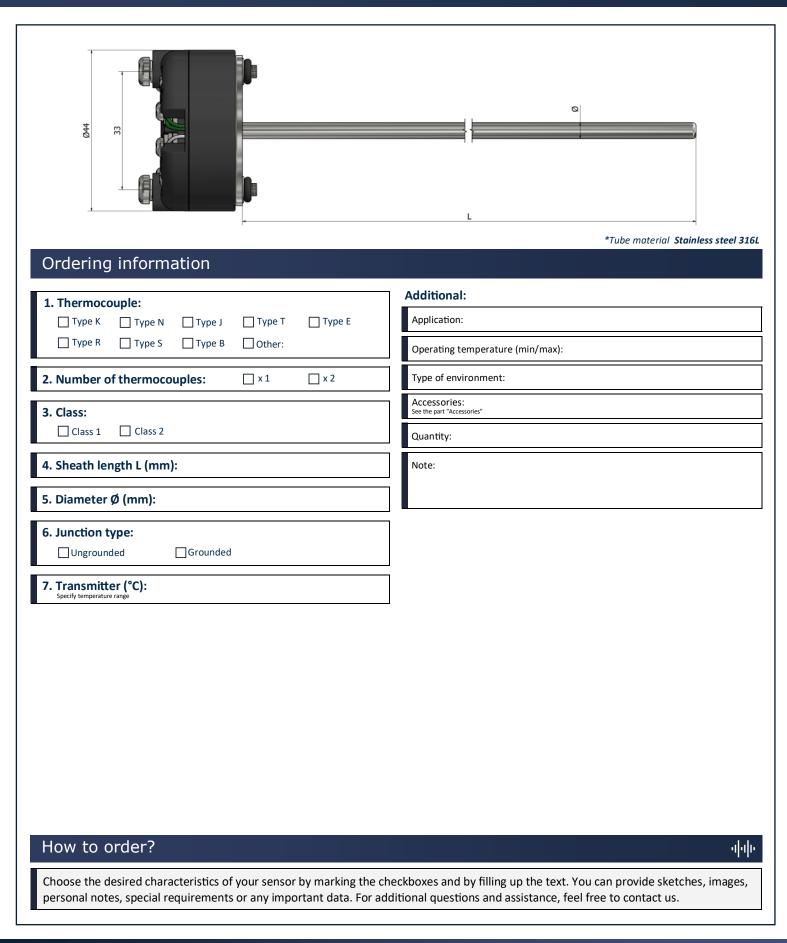
TI01 – Thermocouples with terminal head Insert with terminal block (spring loaded)

alalie

Ordering information	*Tube material Stainless steel 316
Ordering information	
Type K Type N Type J Type T Type E	Additional: Application:
Type K Type N Type J Type T Type E Type R Type S Type B Other:	Operating temperature (min/max):
2. Number of thermocouples: 🗌 x 1 🗌 x 2	Type of environment:
3. Class:	Accessories: See the part "Accessories"
Class 1 Class 2	Quantity:
4. Sheath length L (mm):	Note:
5. Diameter Ø (mm):	
6. Junction type:	
How to order?	باباب
	ղիլ
	checkboxes and by filling up the text. You can provide sketches, images, additional questions and assistance, feel free to contact us.

TI02 – Thermocouples with terminal head Insert with transmitter block (spring loaded)

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RTDs with terminal head



RTDs with terminal head - Technical information



What is an RTD sensor ?

An RTD (Resistance Temperature Detector) is a type of sensor used to measure temperature.

RTDs are used for accurate, stable and reliable temperature measurements in generally high temperature ranges.

How does an RTD work ?

An RTD is a sensor that measures temperature using the variation of the electrical resistance of a conductive material. RTDs are usually made from platinum, gold or nickel. The operating principle of RTDs is based on Ohm's law of electrical resistance, which establishes a relationship between the electrical resistance of a conductor and its temperature.

According to this law, the electrical resistance of a conductor generally increases when its temperature increases.

Types of terminal heads

Many alternative types of terminal head are available to meet the requirements of various applications. Variations exist in size, material, accommodation, resistance to media, resistance to fire or even explosion and in other parameters.

Common types are shown below but there are many special variants available to meet particular requirements.

Terminal heads are a type of cold end termination which are common on industrial type temperature sensors. A temperature sensor will be encased in a ceramic or metal sheath which will be terminated at the cold end with a terminal head. Inside the head, terminal blocks or temperature transmitters are placed to carry the sensor signal to instrumentation.

These are protected from the external environment as terminal heads often provide good ingress protection (IP) and temperature protection. Most commonly terminal heads are made from aluminum but can be stainless steel, cast iron or plastic depending on the application. There are many standardized designs of head, the most common being KNE, ALA and BUZ.

Inside terminal head



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RTDs with terminal head - Technical information

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RTDs advantages

RTDs have several advantages over other types of temperature sensors:

High precision

RTDs have high temperature sensitivity, typically in the range of 0.1 to 0.2% per °C, allowing for accurate temperature measurement.

Long term stability

RTDs have long-term stability and longer life than thermistors, making them more reliable for long-term applications.

Wide operating temperature range

RTDs can operate in a temperature range of -200 to +850°C, making them suitable for many industrial applications.

Low ohmic resistance

RTDs have a low ohmic resistance compared to thermistors, which makes them easier to use with electronic circuits.

What is a PT probe ?

A PT (Platinum Resistance Thermometer) is a type of temperature sensor that uses a temperature deflection resistor (RTD) to measure temperature. It is based on the principle that the electrical resistance of a conductive material increases when its temperature increases.

Pt-s classes

Tolerances of Pt-s sensors can be tailored to customer specifics and thus manufactured to different tolerances. The higher the tolerance the smaller the margin of error relative to lower tolerances.

A system where these tolerances are classified is helpful for the end user and helps the interchangeability of these sensors. The IEC system is seen as the standard for the industry although there are other standards and other tolerance classes.

IEC	DIN4370	Temperature Range ºC	Tolerance	Tolerance ^o C
Standard			Ω at 0ºC	
W0.03	1/10 DIN	-100 to 350	100±0.012 Ω	±0.03 °C
/	1/5 DIN	-100 to 350	100±0.024 Ω	±0.06 °C
W0.1	1/3 DIN	-100 to 350	100±0.04 Ω	±0.10 °C
W0.15	Class A	-100 to 450	100±0.06 Ω	±0.15 °C
W0.3	Class B	-196 to 660	100±0.12 Ω	±0.30 °C

Understanding the naming of Pt100, PT500 and PT1000 sensors

First of all, "Pt" is the chemical symbol for platinum because platinum is the basic material for making the measuring element. The naming conventions of P100, PT500, and PT1000 sensors are closely tied to the nominal resistance values they exhibit at 0°C. P100 sensor has a nominal resistance of 100 Ω at 0°C, Pt500 sensor has a nominal resistance of 500 Ω at 0°C and Pt1000 sensor has a nominal resistance of 1000 Ω at 0°C. Understanding the meaning behind these designations allows us to discern their specific characteristics and applications.

Whether you require a standard PT100 sensor or a higher resistance variant like PT500 or PT1000, these RTD sensors provide reliable and accurate temperature measurements in a wide range of industries and applications.

Pt-s wiring configurations

The cable has certain resistance which adds to the RTD resistance. Thus, the total resistance is the sum of the RTD resistance and the lead wire resistance. This causes more voltage drop across the RTD measurement system and as a result causes inaccuracy in measurement. This is the reason why we use 2 wire, 3 wire, and 4 wire RTD configurations.

RTDs with terminal head - Technical information

Terminal head component breakdown



What is a terminal block ?

Terminal block located in a "head" allow for the connection of extension wires. Various materials are used for screw or solder terminations including copper, plated brass and, for the best performance in the case of thermocouples, thermoelement alloys. The various head styles cater for a wide variety of probe diameters and cable entries.

Terminal blocks provide a secure and organized way to terminate multiple wires. The wires are inserted into a clamping mechanism

that holds them in place, making it easier to manage and connect different wires within a circuit. Terminal blocks provide a convenient and secure way to connect thermocouple wires to the measuring instrument or control system when using thermocouples. Terminal blocks are available in 2, 3, 4, and 6 poles with center hole (spring loading).



What is a temperature transmitter ?

A temperature transmitter is a device that converts the signal produced by a temperature sensor into a standard instrumentation signal representing a process variable temperature being measured and controlled. The most common transmitter instrumentation output signal is 4 to 20 mA. The signal from the temperature transmitter is sent to a controller that determines what action is required and generates an appropriate output signal.

Controllers are either a PLC or a DCS in process control today.

More on temperature transmitters and terminal blocks. See in the part *"Accessories".*



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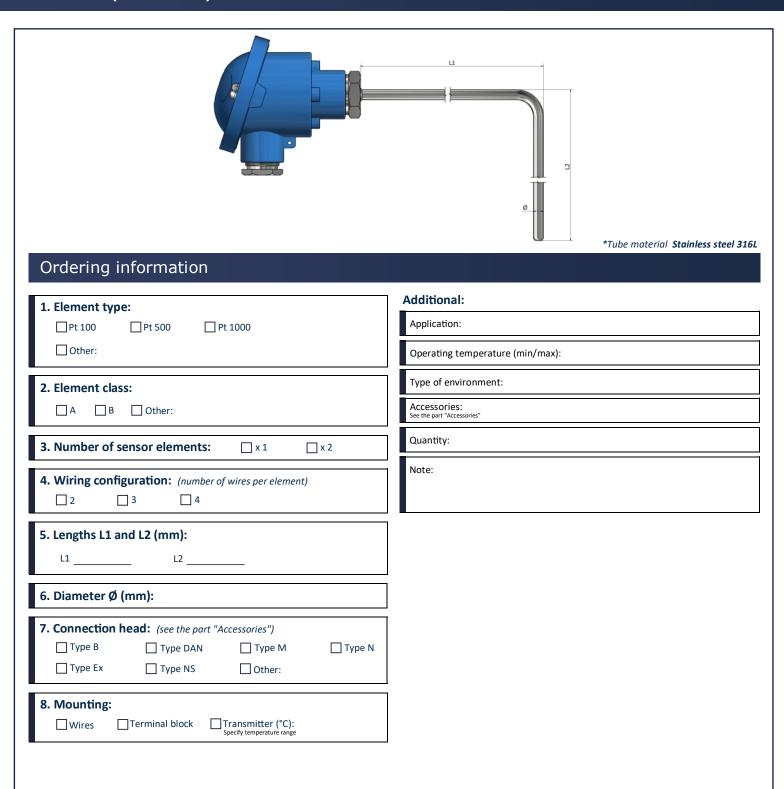
PH00 – RTDs with terminal head Standard

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	*Tube material Stainless steel 316
Ordering information 1. Element type: Pt 100 Pt 500 Pt 1000 Other:	Additional: Application: Operating temperature (min/max):
2. Element class:	Type of environment: Accessories: See the part "Accessories"
 3. Number of sensor elements: X 1 X 2 4. Wiring configuration: (number of wires per element) 2 3 4 5. Length L (mm): 	Quantity: Note:
6. Diameter Ø (mm): 7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ղիթ
How to order? Choose the desired characteristics of your sensor by marking the ch	

PH01 – RTDs with terminal head Standard (90° bend)

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How to order?

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PH10 – RTDs with terminal head Standard with fixed thread

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	LI L *Tube and thread material Stainless steel 316L
Ordering information 1. Element type: Pt 100 Pt 500 Pt 1000 Other:	8. Connection head: (see the part "Accessories") Type B Type DAN Type M Type Ex Type NS Other:
2. Element class: A B Other: 2. Number of concerned amontor D ut D D	9. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range Additional:
3. Number of sensor elements: x 1 x 2 4. Wiring configuration: (number of wires per element) 2 3 4	Application: Operating temperature (min/max): Type of environment:
5. Length L or L1 (mm):	Accessories: See the part "Accessories" Quantity:
6. Diameter Ø (mm): 7. Thread: 1/2" BSPP □ 1/4" BSPP □ 1/4" BSPT □ M10 1/2" NPT □ Other:	Note:

How to order?

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

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PH11 – RTDs with terminal head Standard with fixed thread (90° bend) (type 1)

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	Tube and thread material Stainless steel 3
Ordering information 1. Element type: Pt 100 Pt 500 Other:	9. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:
2. Element class:	10. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range
3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	Additional:
4. Wiring configuration: (number of wires per element)	Operating temperature (min/max):
5. Lengths L1 and L2 (mm):	Type of environment: Accessories: See the part "Accessories"
6. Length L or L3 (mm):	Quantity: Note:
7. Diameter Ø (mm):	
8. Thread: 1/2" BSPP 1/2" NPT Other:	
How to order?	

PH12 – RTDs with terminal head Standard with fixed thread (90° bend) (type 2)

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Ordering information 1. Element type: Pt 100 Pt 500 Pt 1000 Other: 2. Element class: A B Other: 3. Number of sensor elements: x 1 x 2 4. Wiring configuration: yures of sensor elements: x 1 x 2 A. UB S. Lengths L1 and L2 (mm): u u 2 u 2		Tube and thread material Stainless steel 316L
Pt 100 Pt 500 Pt 1000 Other: Cher: Type B Type NN Type NN<	Ordering information	
2 Charlen Class. A B Other: 3. Number of sensor elements: x1 4. Wiring configuration: (number of wires per element) 2 3 4. Wiring configuration: (number of wires per element) 2 3 4. Wiring configuration: (number of wires per element) 2 3 4. Uiring configuration: (number of wires per element) 2 3 4. Uiring configuration: (number of wires per element) 2 3 4. Uiring configuration: (num): Li L2 6. Length L or L3 (mm): L3 L L3 7. Diameter Ø (mm): M10	□ Pt 100 □ Pt 500 □ Pt 1000	Type B Type DAN Type M Type N
3. Number of sensor elements: \triangle x 1 \triangle x 2 4. Wiring configuration: (number of wires per element) \triangle 2 \triangle 3 \triangle 4 2 3 4 \triangle 0 \triangle 0 \triangle 0 5. Lengths L1 and L2 (mm):		Wires Terminal block Transmitter (°C):
4. Wiring configuration: (number of wires per element)	3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	
5. Lengths L1 and L2 (mm):		Operating temperature (min/max):
Image: Construction of the construc		Accessories:
8. Thread: □ 1/2" BSPP □ 1/4" BSPP □ 1/4" BSPT □ M10		1
□ 1/2" BSPP □ 1/4" BSPP □ 1/4" BSPT □ M10	7. Diameter Ø (mm):	
	☐ 1/2" BSPP ☐ 1/4" BSPP ☐ 1/4" BSPT ☐ M10	
How to order?	How to order?	
How to order? Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, im		الالالي بالمرابع بالم

PH13 – RTDs with terminal head Standard with fixed thread (offset)

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	Tube and thread material Stainless steel 31
Ordering information	
1. Element type: Pt 100 Pt 500 Other:	8. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:
2. Element class:	9. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range
3. Number of sensor elements: x1 x2	Additional: Application:
4. Wiring configuration: (number of wires per element)	Operating temperature (min/max):
5. Lengths L and L1 or L2 (mm): L L1	Type of environment: Accessories: See the part "Accessories"
6. Diameter Ø (mm):	Quantity: Note:
7. Thread: 1/2" BSPP 1/2" NPT Other:	
How to order?	վո

PH20 – RTDs with terminal head Reduced tip

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	*Tube material Stainless steel 316L
Ordering information	Tube material Stamess Steel STOL
1. Element type:	Additional:
□ Pt 100 □ Pt 500 □ Pt 1000	Application:
C Other:	Operating temperature (min/max):
2. Element class:	Type of environment:
A B Other:	Accessories: See the part "Accessories"
3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	Quantity:
4. Wiring configuration: (number of wires per element)	Note:
5. Dimensions L and Ø (mm): L Ø	
6. Dimensions L1 and Ø1 (mm):	
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

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PH21 – RTDs with terminal head Pointed tip

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	*Tube material Stainless steel 316
Ordering information	
1. Element type:	Additional: Application:
□ Pt 100 □ Pt 500 □ Pt 1000 □ Other:	Operating temperature (min/max):
2. Element class:	Type of environment:
A B Other:	Accessories: See the part "Accessories"
3. Number of sensor elements: $\Box \times 1 \qquad \Box \times 2$	Quantity:
4. Wiring configuration: (number of wires per element)	Note:
5. Length L (mm):	
6. Diameter Ø (mm):	
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ղիլ

PH22 – RTDs with terminal head Open air

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Ordering information	*Tube material Stainless steel 316
1. Element type:	Additional: Application:
□ Pt 100 □ Pt 500 □ Pt 1000 □ Other:	Application: Operating temperature (min/max):
	Type of environment:
2. Element class:	Accessories: See the part "Accessories"
3. Number of sensor elements: $\square \times 1 $ $\square \times 2$	Quantity:
4. Wiring configuration: (number of wires per element) 2 3 4 5. Length L (mm):	Note:
6. Diameter Ø (mm):	
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ղիլի

PH23 – RTDs with terminal head Open air with fixed thread

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	L Tube and thread material Stainless steel 316L
Ordering information	
1. Element type:	Additional:
□ Pt 100 □ Pt 500 □ Pt 1000	Application:
Other:	Operating temperature (min/max):
2. Element class:	Type of environment:
A B Other:	Accessories: See the part "Accessories"
3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	Quantity:
4. Wiring configuration: (number of wires per element)	Note:
5. Length L or L1 (mm): L L	
6. Diameter Ø (mm):	
7. Thread: 1/2" BSPP 1/4" BSPP 1/2" NPT Other:	
8. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
9. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ااراً، eckboxes and by filling up the text. You can provide sketches, images,

personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

PH24 – RTDs with terminal head Open air with reduced tip

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	Tube material Stainless steel 316L
Ordering information	
1. Element type:	Additional:
□ Pt 100 □ Pt 500 □ Pt 1000	Application:
Other:	Operating temperature (min/max):
2. Element class:	Type of environment:
A B Other:	Accessories: See the part "Accessories"
	Quantity:
3. Number of sensor elements: x 1 x 2	Note:
4. Wiring configuration: (number of wires per element) 2 3 4	Note.
5. Dimensions L and \emptyset (mm):	
L Ø	
]
6. Dimensions L1 and Ø1 (mm):	
L1 Ø1	
7. Connection head: (see the part "Accessories")	
□ Type B □ Type DAN □ Type M □ Type N	
Type Ex Type NS Other:	
8. Mounting:	
Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

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PH25 – RTDs with terminal head Contact block (surface mount)

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	28 8 9 0 0 150° 10 *Tube material Stainless steel 316L
Ordering information	
1. Element type: Pt 100 Pt 500 Other:	9. Contact block material: Brass Aluminum Other: 10. Contact block shape:
2. Element class:	
3. Number of sensor elements: x 1 x 2	□ V-shape □ Flat
4. Wiring configuration: (number of wires per element) 2 3 4	Additional: Application:
5. Lengths L1 and L2 (mm):	Operating temperature (min/max):
L1 L2	Type of environment:
6. Diameter Ø (mm):	Accessories: See the part "Accessories"
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	Quantity: Note:
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	بالداد

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PH30 – RTDs with terminal head Flange sanitary mounting

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	F F C C Tube material Stainless steel 316L
Ordering information	
1. Element type: Pt 100 Pt 500 Other:	9. Flange sanitary mounting: DIN2527 (DN10 – PN6) Other: Additional:
2. Element class:	Application:
A B Other:	Operating temperature (min/max):
3. Number of sensor elements: x1 x2	Type of environment:
4. Wiring configuration: (number of wires per element)	Accessories: See the part "Accessories"
	Quantity:
5. Dimensions L and L1 (mm): L L1	Note:
6. Diameter Ø (mm):	
7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

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PH31 – RTDs with terminal head Tri-clamp sanitary mounting

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	Tube material Stainless steel 316L
Ordering information	
1. Element type: Pt 100 Pt 500 Other:	9. Tri-clamp sanitary mounting: DIN32676 / ISO 2852 (DN25) Other: Additional:
2. Element class:	Application:
$\square A \square B \square Other:$	Operating temperature (min/max):
3. Number of sensor elements: x1 x2	Type of environment:
	Accessories: See the part "Accessories"
4. Wiring configuration: (number of wires per element)	Quantity:
5. Dimensions L and L1 (mm): L L1	Note:
6. Diameter Ø (mm):	
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

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PH32 - RTDs with terminal head Disc DIN11851 (screw-on) sanitary mounting

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*Tube material Stainless steel 31
Disc DIN 11851 sanitary mounting:
plication:
perating temperature (min/max):
pe of environment:
cessories: the part "Accessories" iantity:
ote:

PH40 – RTDs with terminal head Exchangeable insert

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	*Tube material Stainless steel 316
Ordering information 1. Element type: Pt 100 Pt 500 Pt 1000 Other:	8. Type of exchangeable insert:
2. Element class: A B Other: 3. Number of sensor elements: X 1 X 2	Wires Terminal block Transmitter (°C): T
 4. Wiring configuration: (number of wires per element) 2 3 4 5. Length L (mm): 	Additional: Application:
	Operating temperature (min/max): Type of environment:
6. Diameter Ø (mm):	Accessories:
Type B Type DAN Type M Type N	See the part "Accessories" Quantity:
Type Ex Type NS Other:	Note:
How to order? Choose the desired characteristics of your sensor by marking the che personal notes, special requirements or any important data. For add	eckboxes and by filling up the text. You can provide sketches, images, litional questions and assistance, feel free to contact us.

PH41 – RTDs with terminal head Exchangeable insert with fixed thread

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	*Tube and thread material Stainless steel 316L
Ordering information	
1. Element type: Pt 100 Pt 500 Other:	9. Type of exchangeable insert:
2. Element class:	Wires □ Terminal block □ Transmitter (°C):
3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	T Specify temperature range
4. Wiring configuration: (number of wires per element)	Additional:
	Application:
5. Length L or L1 (mm):	Operating temperature (min/max):
L L1	Type of environment:
6. Diameter Ø (mm):	Accessories: See the part "Accessories"
7. Connection head: (see the part "Accessories")	Quantity:
Type B Type DAN Type M Type N Type Ex Type NS Other:	Note:
8. Thread: 1/2" BSPP 1/2" NPT Other:	

How to order?

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PH42 – RTDs with terminal head Exchangeable insert with fixed thread (offset)

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Ordering information	*Tube and thread material Stainless steel 316L
1. Element type: Pt 100 Pt 500 Other: 2. Element class: A B Other:	9. Type of exchangeable insert:
3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	Wires Terminal block Transmitter (°C): T
4. Wiring configuration: (number of wires per element)	Additional: Application:
5. Lengths L and L1 or L2 (mm):	Operating temperature (min/max):
L L1 L2	Type of environment:
6. Diameter Ø (mm):	Accessories: See the part "Accessories"
7. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	Quantity: Note:
8. Thread: 1/2" BSPP 1/2" NPT Other:	

How to order?

alale

PH50 – RTDs with terminal head For aggressive environments

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	*Fitting material PTFE (260°C
Ordering information 1. Element type:	*Tube material Stainless steel 316L with PTFE protection Additional:
□ Pt 100 □ Pt 500 □ Pt 1000 □ Other:	Application: Operating temperature (min/max):
2. Element class:	Type of environment:
A B Other:	Accessories: See the part "Accessories"
3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	Quantity:
4. Wiring configuration: (number of wires per element)	Note:
5. Length L (mm):	
6. Diameter Ø (mm):	
7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	۱۱۰۱۱۰ neckboxes and by filling up the text. You can provide sketches, images,

PH51 – RTDs with terminal head For aggressive environments with fixed thread

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Ordering information 1. Element type:	*Thread material PTFE (260°C) *Tube material Stainless steel 316L with PTFE protection Additional:
□ Pt 100 □ Pt 500 □ Pt 1000	Application:
Other:	Operating temperature (min/max):
2. Element class:	Type of environment: Accessories:
3. Number of sensor elements: $\square \times 1 $ $\square \times 2$	See the part "Accessories" Quantity:
4. Wiring configuration: (number of wires per element) 2 3 4	Note:
5. Length L or L1 (mm): L L1	
6. Diameter Ø (mm):	
7. Thread: 1/2" BSPP 1/2" NPT Other:	
8. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
9. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order? Choose the desired characteristics of your sensor by marking the ch	$ \cdot _{1}$

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personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

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58

1/4" BSPT

contact@eurosensors.eu www.eurosensors.eu

How to order?

1/4" BSPP

Other:

6. Diameter Ø (mm):

7. Thread: 1/2" BSPP

1/2" NPT

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

Quantity:

Note:

L2 L1 *Tube and thread material Stainless steel 316L Ordering information 1. Element type: **8.** Connection head: (see the part "Accessories") Pt 100 Pt 500 🗌 Туре В Type DAN 🗌 Туре М Pt 1000 🗌 Type Ex Other: Type NS Other: 9. Mounting: 2. Element class: Wires Terminal block Transmitter (°C): Specify temperature range B Other: ΔA Additional: 3. Number of sensor elements: 🗌 x 1 🗌 x 2 Application: 4. Wiring configuration: (number of wires per element) Operating temperature (min/max): 2 3 4 Type of environment: 5. Lengths L1, L2, L3 (mm): Accessories: See the part "Accessories L1 _____ L2 L3

M10

L3

EuroSensors بالاال

PH60 – RTDs with terminal head Spring loaded

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Type N

PI00 – RTDs with terminal head Disc plate insert

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Ordering information	*Tube material Stainless steel 31
1. Element type: □ Pt 100 □ Pt 500 □ Other:	Additional: Application: Operating temperature (min/max):
2. Element class:	Type of environment: Accessories: See the part "Accessories"
3. Number of sensor elements: x 1 x 2 4. Wiring configuration: (number of wires per element) 2 3 4	Quantity: Note:
5. Sheath length L (mm): 6. Diameter Ø (mm):	
How to order?	ગોન

R

Ø42

Ordering information

1. Element type:	Additional:
□ Pt 100 □ Pt 500 □ Pt 1000	Application:
Other:	Operating temperature (min/max):
2. Element class:	Type of environment:
A B Other:	Accessories: See the part "Accessories"
3. Number of sensor elements: x1 x2	Quantity:
4. Wiring configuration: (number of wires per element)	Note:
5. Sheath length L (mm):	
6. Diameter Ø (mm):	

How to order?

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

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PI01 – RTDs with terminal head Insert with terminal block (spring loaded)

*Tube material Stainless steel 316L

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PI02 – RTDs with terminal head Insert with transmitter block (spring loaded)

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Ordering information	*Tube material Stainless steel 316L
1. Element type: Pt 100 Pt 500 Other:	Additional: Application: Operating temperature (min/max):
2. Element class:	Type of environment: Accessories: See the part "Accessories"
3. Number of sensor elements: $\Box \times 1$ $\Box \times 2$	Quantity:
4. Wiring configuration: (number of wires per element)	Note:
5. Sheath length L (mm):	
6. Diameter Ø (mm):	
7. Transmitter (°C): Specify temperature range	

How to order?

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Thermistors with terminal head





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Thermistors with terminal head - Technical information



What is an RTD sensor ?

An RTD (Resistance Temperature Detector) is a type of sensor used to measure temperature.

RTDs are used for accurate, stable and reliable temperature measurements in generally high temperature ranges.

How does an RTD work ?

An RTD is a sensor that measures temperature using the variation of the electrical resistance of a conductive material. RTDs are usually made from platinum, gold or nickel. The operating principle of RTDs is based on Ohm's law of electrical resistance, which establishes a relationship between the electrical resistance of a conductor and its temperature.

According to this law, the electrical resistance of a conductor generally increases when its temperature increases.

Types of terminal heads

Many alternative types of terminal head are available to meet the requirements of various applications. Variations exist in size, material, accommodation, resistance to media, resistance to fire or even explosion and in other parameters.

Common types are shown below but there are many special variants available to meet particular requirements.

Terminal heads are a type of cold end termination which are common on industrial type temperature sensors. A temperature sensor will be encased in a ceramic or metal sheath which will be terminated at the cold end with a terminal head. Inside the head, terminal blocks or temperature transmitters are placed to carry the sensor signal to instrumentation.

These are protected from the external environment as terminal heads often provide good ingress protection (IP) and temperature protection. Most commonly terminal heads are made from aluminum but can be stainless steel, cast iron or plastic depending on the application. There are many standardized designs of head, the most common being KNE, ALA and BUZ.

Inside terminal head



Thermistors with terminal head - Technical information

RTDs advantages

RTDs have several advantages over other types of temperature sensors:

High precision

RTDs have high temperature sensitivity, typically in the range of 0.1 to 0.2% per °C, allowing for accurate temperature measurement.

Long term stability

RTDs have long-term stability and longer life than thermistors, making them more reliable for long-term applications.

Wide operating temperature range

RTDs can operate in a temperature range of -200 to +850°C, making them suitable for many industrial applications.

Low ohmic resistance

RTDs have a low ohmic resistance compared to thermistors, which makes them easier to use with electronic circuits.

What is a thermistor ?

A thermistor is an electrical component that changes its resistance according to temperature. It consists of a conductive material that is wrapped in an insulating material. As the temperature increases, the resistance of the conductive material decreases (NTC), or increases (PTC), which can be detected and measured.

What are the two types of thermistor ?

NTC (*Negative Temperature Coefficient*) are made of a conductive material based on transition metals and are used to measure temperatures up to 300 °C.

PTC (*Positive Temperature Coefficient*) are made of a conductive material based on polymer or ceramic and are used to measure temperatures up to 200 °C.

What is the difference between an NTC and a PTC ?

NTCs and PTCs are both thermistors, i.e. temperature sensors that change resistance depending on the temperature.

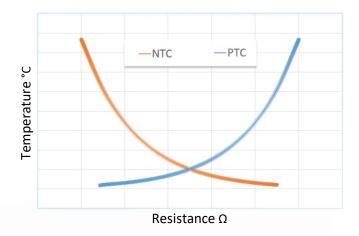
However, there is a major difference between these two types of thermistors:

NTC thermistors

NTCs have a resistance that decreases as the temperature increases. They are commonly used in thermostats and temperature control devices to measure room temperature.

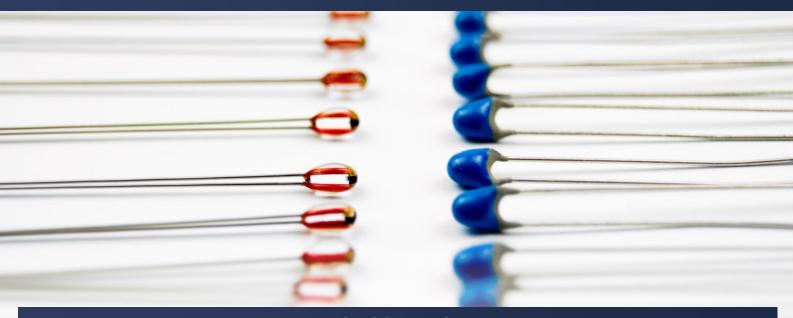
PTC thermistors

PTCs have a resistance that increases as the temperature rises. They are commonly used in thermostatic fuses and overcurrent protection devices to shut off power in the event of overheating.



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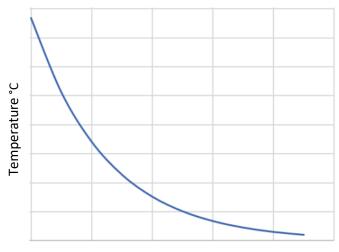
Thermistors with terminal head - Technical information



The β beta value

A thermistor's " β " value, or beta value, is an indication of the shape of the curve representing the relationship between resistance and temperature of an NTC thermistor.

Calculating the beta value is a vital step in the component selection process as it gives the characteristic at a given temperature vs the resistance for a specific application.



Resistance Ω

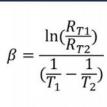
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

The manner in which the resistance of a thermistor decreases is related to a constant known in the thermistor industry as beta (β). Beta is measured in degrees Kelvin (K) and is computed based on the formulation given below.

Where:

given range.

Rt1 = Resistance at Temperature 1 Rt2 = Resistance at Temperature 2 T1 = Temperature 1 (K) T2= Temperature 2 in (K)



The beta value of an NTC Thermistor is calculated using only two temperatures over a given range and is not the most accurate way to calculate the R vs. T curve. A more accurate method is to use the Steinhart and Hart method, which uses three temperatures over a

Types of thermistors

Туре	Resistance	Beta value	Temperature
PTC KTY81/121	990Ω at 25°C	/	T° (-55/+150°C)
NTC	3,3kΩ at 100°C	β=3970	T° (-40/+200°C)
NTC	10kΩ at 25°C	β=3977	T° (-40/+125°C)
NTC	10kΩ at 25°C	β=3435	T° (-40/+150°C)
NTC	20kΩ at 25°C	β=4260	T° (-40/+125°C)

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Thermistors with terminal head - Technical information

Terminal head component breakdown



What is a terminal block ?

Terminal block located in a "head" allow for the connection of extension wires. Various materials are used for screw or solder terminations including copper, plated brass and, for the best performance in the case of thermocouples, thermoelement alloys. The various head styles cater for a wide variety of probe diameters and cable entries.

Terminal blocks provide a secure and organized way to terminate multiple wires. The wires are inserted into a clamping mechanism

that holds them in place, making it easier to manage and connect different wires within a circuit. Terminal blocks provide a convenient and secure way to connect thermocouple wires to the measuring instrument or control system when using thermocouples. Terminal blocks are available in 2, 3, 4, and 6 poles with center hole (spring loading).



What is a temperature transmitter ?

A Temperature transmitter is a device that converts the signal produced by a temperature sensor into a standard instrumentation signal representing a process variable temperature being measured and controlled. The most common transmitter instrumentation output signal is 4 to 20 mA. The signal from the temperature transmitter is sent to a Controller that determines what action is required and generates an appropriate output signal.

Controllers are either a PLC or a DCS in process control today.

More on temperature transmitters and terminal blocks. See in the part *"Accessories".*



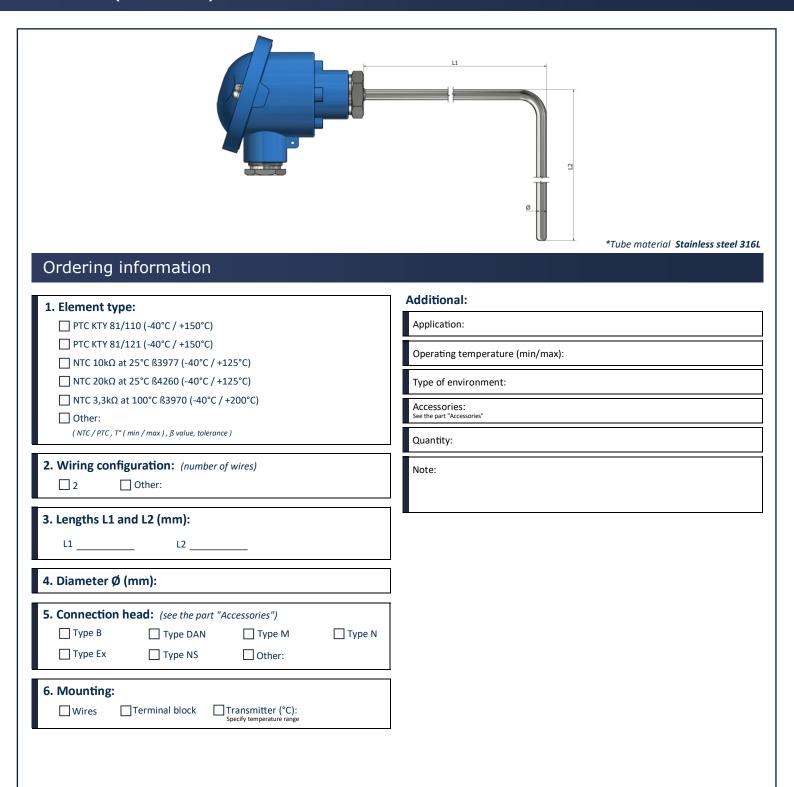
HH00 – Thermistors with terminal head Standard

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	*Tube material Stainless steel 316
Ordering information	Tube material Stanless steel 510
1. Element type:	Additional:
□ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C)	Operating temperature (min/max):
□ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	
 NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) 	Type of environment:
☐ Other:	Accessories: See the part "Accessories"
(NTC / PTC , T° (min / max) , β value, tolerance)	Quantity:
2. Wiring configuration: (number of wires)	Note:
3. Length L (mm):]
4. Diameter Ø (mm):]
5. Connection head: (see the part "Accessories")	7
Type B Type DAN Type M Type N	
Type Ex Type NS Other:	
6. Mounting:	 Т
Wires Terminal block Transmitter (°C):	
Specify temperature range	
How to order?	դիր

HH01 – Thermistors with terminal head Standard (90° bend)

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How to order?

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HH10 – Thermistors with terminal head Standard with fixed thread

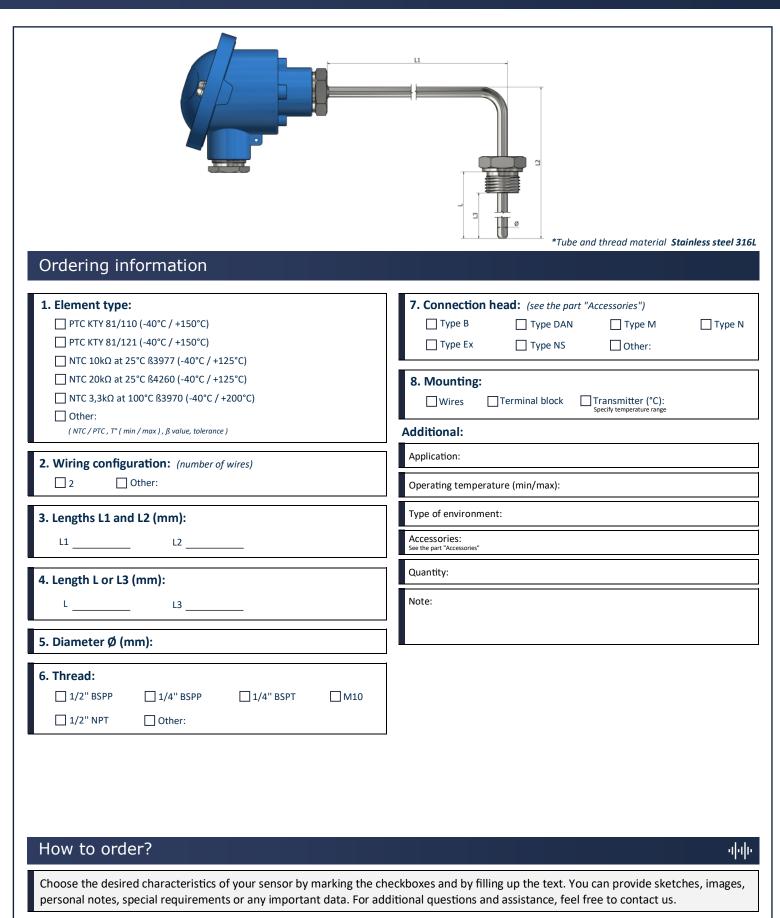
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	LI LI *Tube and thread material Stainless steel 31
Ordering information 1. Element type:	6. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:
 NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC, T* (min / max), β value, tolerance) 	7. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range Additional:
2. Wiring configuration: (number of wires)	Application: Operating temperature (min/max):
3. Length L or L1 (mm): L	Type of environment: Accessories: See the part "Accessories"
4. Diameter Ø (mm):	Quantity:
5. Thread: □ 1/2" BSPP □ 1/4" BSPP □ 1/2" NPT □ Other:	Note:
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HH11 – Thermistors with terminal head Standard with fixed thread (90° bend) (type 1)

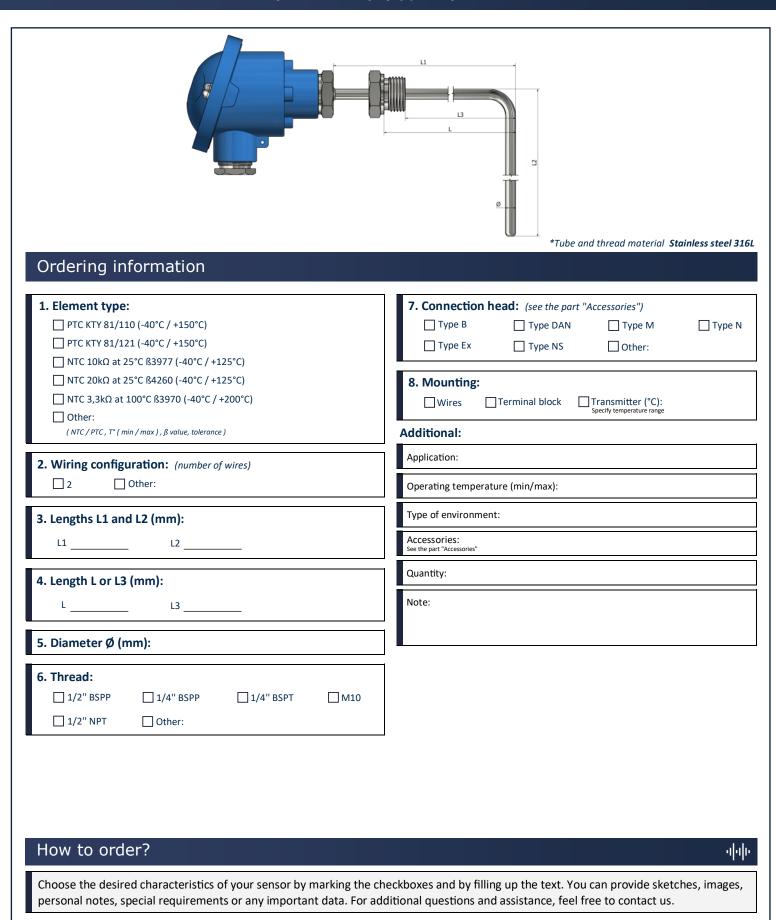
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HH12 – Thermistors with terminal head Standard with fixed thread (90° bend) (type 2)

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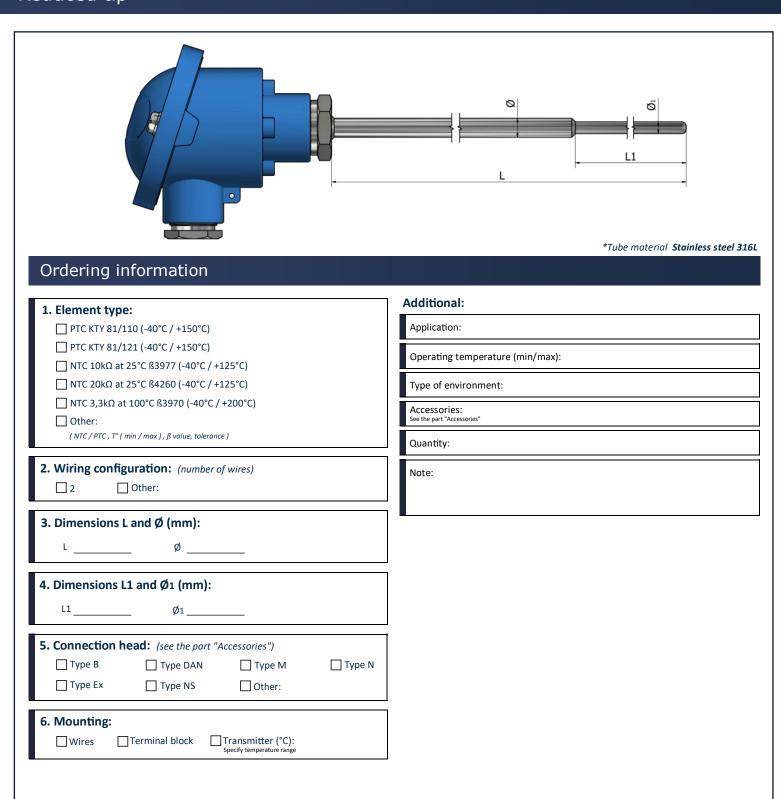
HH13 – Thermistors with terminal head Standard with fixed thread (offset)

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	*Tube and thread material Stainless steel 31
Ordering information	
Element type:	6. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:
 NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC, T° (min / max), β value, tolerance) 	7. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range Additional:
2. Wiring configuration: (number of wires)	Application:
2 Other:	Operating temperature (min/max):
3. Lengths L and L1 or L2 (mm): L L1 L2	Type of environment: Accessories: See the part "Accessories"
4. Diameter Ø (mm):	Quantity:
5. Thread: 1/2" BSPP 1/4" BSPP 1/2" NPT Other:	Note:
How to order?	վո

HH20 – Thermistors with terminal head Reduced tip

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How to order?

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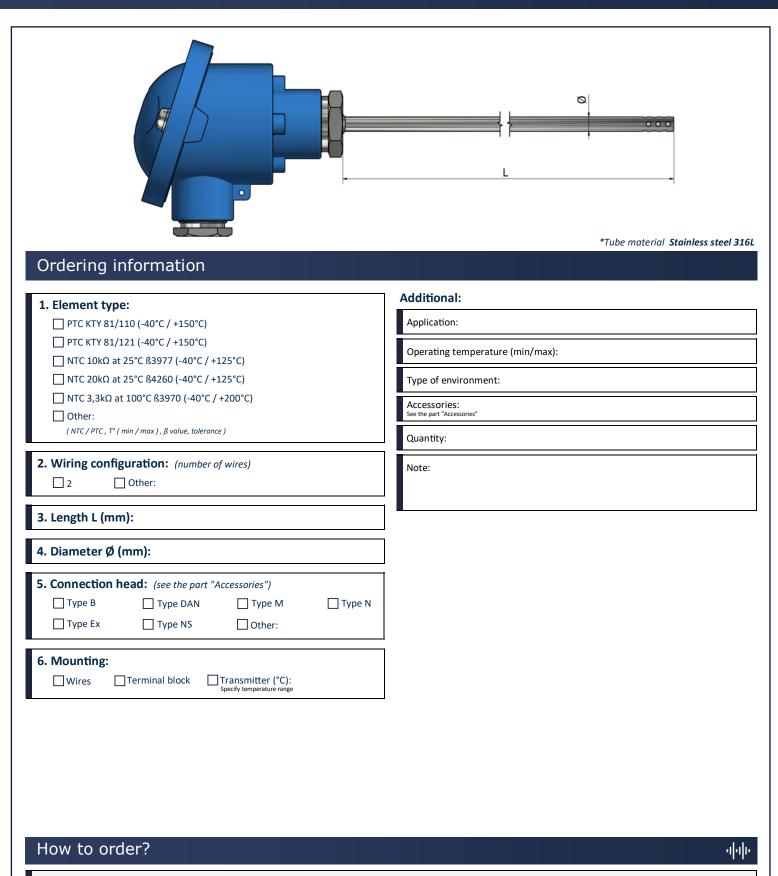
HH21 – Thermistors with terminal head Pointed tip

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	*Tube material Stainless steel 316
Ordering information	
1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C)	Operating temperature (min/max):
\square NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	
 NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) 	Type of environment:
☐ Other:	Accessories: See the part "Accessories"
(NTC / PTC , T° (min / max) , β value, tolerance)	Quantity:
2. Wiring configuration: (number of wires)	Note:
3. Length L (mm):]
4. Diameter Ø (mm):]
5. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
6. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ղիդի

HH22 – Thermistors with terminal head Open air

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HH23 – Thermistors with terminal head Open air with fixed thread

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	L1 L *Tube and thread material Stainless steel 316L
Ordering information	
1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
□ PTC KTY 81/121 (-40°C / +150°C)	Operating temperature (min/max):
 NTC 10kΩ at 25°C β3977 (-40°C / +125°C) NTC 20kΩ at 25°C β4260 (-40°C / +125°C) 	Type of environment:
\square NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)	
☐ Other:	Accessories: See the part "Accessories"
(NTC / PTC , T° (min / max) , β value, tolerance)	Quantity:
2. Wiring configuration: (number of wires)	Note:
3. Length L or L1 (mm):	
4. Diameter Ø (mm):	
5. Thread:	
☐ 1/2" BSPP ☐ 1/4" BSPP ☐ 1/4" BSPT ☐ M10	
☐ 1/2" NPT ☐ Other:	
6. Connection head: (see the part "Accessories")	
Type B Type DAN Type M Type N	
Type Ex Type NS Other:	
7. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

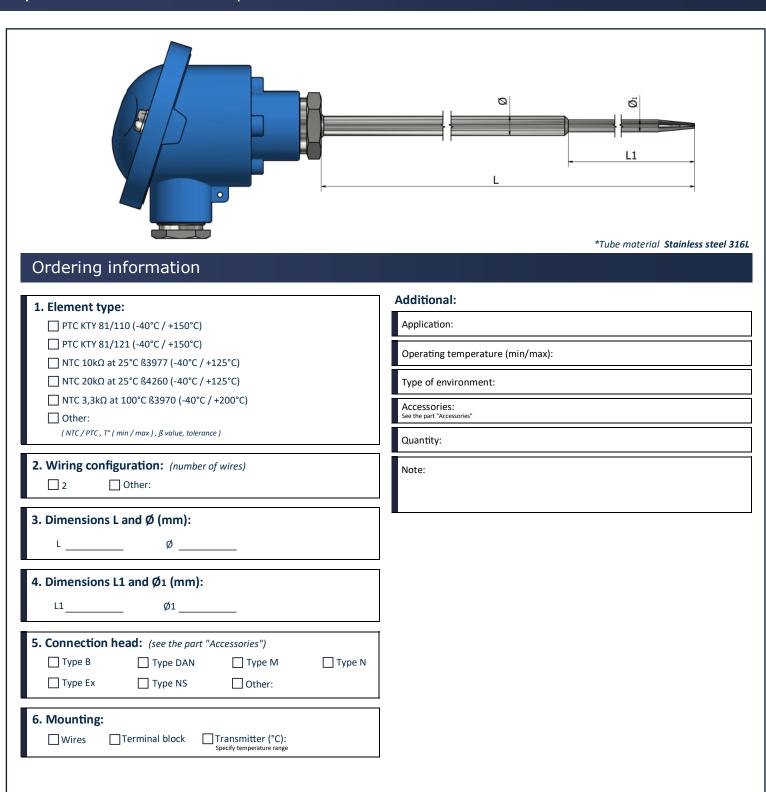
How to order?

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HH24 – Thermistors with terminal head Open air with reduced tip

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How to order?

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HH25 – Thermistors with terminal head Contact block (surface mount)

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Ordering information	*Tube material Stainless steel 316 L
 1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C β3977 (-40°C / +125°C) 	7. Contact block material: Brass Aluminum Other: 8. Contact block shape:
 NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC, T* (min / max), β value, tolerance) 	V-shape
2. Wiring configuration: (number of wires) 2 Other:	Additional:
3. Lengths L1 and L2 (mm):	Application:
	Operating temperature (min/max):
	Type of environment:
4. Diameter Ø (mm):	Accessories: See the part "Accessories"
5. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	Quantity: Note:
6. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	

How to order?

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HH30 – Thermistors with terminal head Flange sanitary mounting

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Ordering information	Tube material Stainless steel 316L
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C ß3977 (-40°C / +125°C) NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC, T* (min / max), β value, tolerance) 2 Other: 2 Other: 3. Dimensions L and L1 (mm):	7. Flange sanitary mounting: DIN2527 (DN10 - PN6) Other: Additional: Application: Operating temperature (min/max): Type of environment: Accessories: See the part "Accessories" Quantity: Note:
L L1 4. Diameter Ø (mm): 5. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N	

How to order?

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HH31 – Thermistors with terminal head Tri-clamp sanitary mounting

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Ordering information	*Tube material Stainless steel 316L
I. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C β3977 (-40°C / +125°C) NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	7. Flange sanitary mounting: DIN2527 (DN10 – PN6) Other: Additional: Application:
 NTC 25KF at 25 C K4200 (-40 C) +125 C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC , T° (min / max), β value, tolerance) 	Operating temperature (min/max): Type of environment:
2. Wiring configuration: (number of wires)	Accessories: See the part "Accessories" Quantity:
Joint L L1 L	Note:
4. Diameter Ø (mm):	
5. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	
6. Mounting:	

How to order?

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

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HH32 – Thermistors with terminal head Disc DIN11851 (screw-on) sanitary mounting

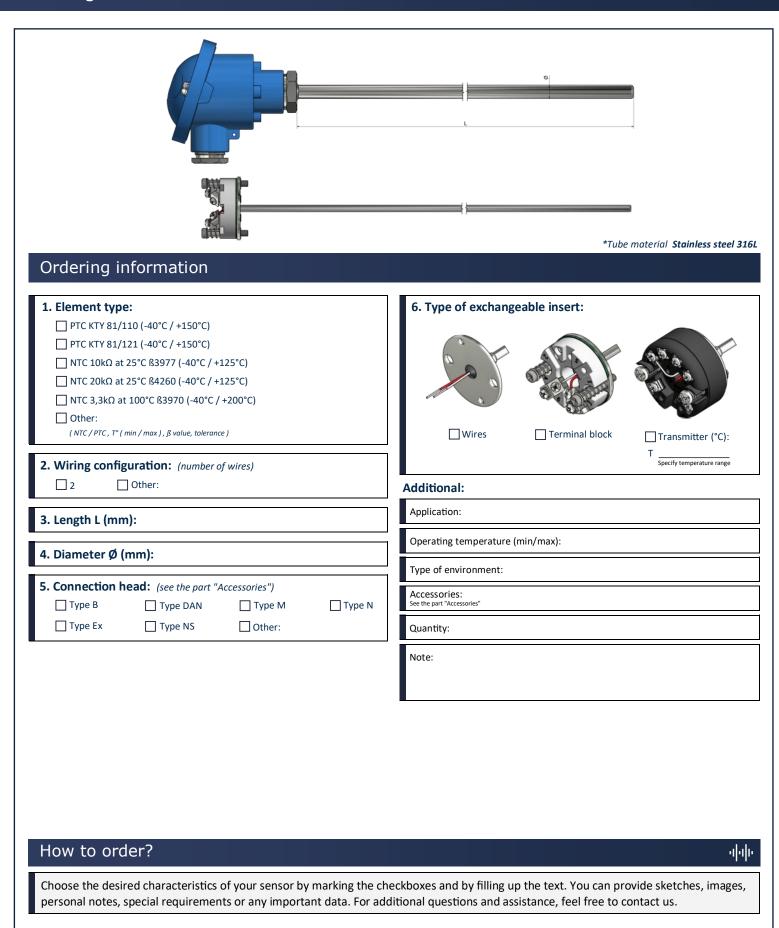
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Ordering information	*Tube material Stainless steel 316L
1. Element type: □ PTC KTY 81/110 (-40°C / +150°C) □ PTC KTY 81/121 (-40°C / +150°C)	7. Flange sanitary mounting: DIN2527 (DN10 – PN6) Other:
NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Additional: Application:
□ NTC 20kΩ at 25°C β4260 (-40°C / +125°C) □ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)	Operating temperature (min/max):
Other: (NTC / PTC, T° (min / max), β value, tolerance)	Type of environment:
2. Wiring configuration: (number of wires)	Accessories: See the part "Accessories"
2 Other:	Quantity:
3. Dimensions L and L1 (mm): L L	Note:
4. Diameter Ø (mm):	
5. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
6. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	սիդի

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HH40 – Thermistors with terminal head Exchangeable insert

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How to order?

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

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HH41 – Thermistors with terminal head Exchangeable insert with fixed thread

	*Tube and thread material Stainless steel 316L
Ordering information	
 1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C β3977 (-40°C / +125°C) NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC, T° (min / max), β value, tolerance) 2. Wiring configuration: (number of wires) 	7. Type of exchangeable insert:
2 Other:	Additional:
3. Length L or L1 (mm):	Application:
L L1	Operating temperature (min/max):
4. Diameter Ø (mm):	Type of environment:
	Accessories: See the part "Accessories"
5. Thread: □ 1/2" BSPP □ 1/4" BSPP □ 1/4" BSPT □ M10	Quantity:
1/2" NPT Other:	Note:
6. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N	
Type B Type DAN Type M Type N Type Ex Type NS Other:	

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HH42 – Thermistors with terminal head Exchangeable insert with fixed thread (offset)

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Ordering information	*Tube and thread material Stainless steel 316
1. Element type: □ PTC KTY 81/110 (-40°C / +150°C) □ PTC KTY 81/121 (-40°C / +150°C) □ NTC 10kΩ at 25°C ß3977 (-40°C / +125°C) □ NTC 20kΩ at 25°C β4260 (-40°C / +125°C) □ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) □ Other: (NTC / PTC, T* (min/max), β value, tolerance)	7. Type of exchangeable insert: Image: Second sec
2. Wiring configuration: (number of wires) 2 Other:	T
3. Lengths L, L1, L2 (mm):	Application: Operating temperature (min/max):
L L1 L2	Type of environment:
4. Diameter Ø (mm):	Accessories: See the part "Accessories"
5. Thread: 1/2" BSPP 1/4" BSPP 1/4" BSPT M10	Quantity:
$\square 1/2 \text{ IVPT} \square 0 \text{ Other:}$	Note:
6. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	

How to order?

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HH50 – Thermistors with terminal head For aggressive environments

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	*Fitting material PTFE (260°C, *Tube material Stainless steel 316L with PTFE protection
Ordering information	
1. Element type:	Additional:
 □ PTC KTY 81/110 (-40°C / +150°C) □ PTC KTY 81/121 (-40°C / +150°C) 	Application:
□ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
□ NTC 20kΩ at 25°C β4260 (-40°C / +125°C) □ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)	Type of environment:
Other: (NTC / PTC, T [*] (min / max), β value, tolerance)	Accessories: See the part "Accessories"
	Quantity:
2. Wiring configuration: (number of wires) 2 Other:	Note:
3. Length L (mm):	
4. Diameter Ø (mm):	
5. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:	
6. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ւլսիս

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personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

HH51 – Thermistors with terminal head For aggressive environments with fixed thread

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Ordering information	*Thread material PTFE (260°C) *Tube material Stainless steel 316L with PTFE protection
1. Element type: \square PTC KTY 81/110 (-40°C / +150°C) \square PTC KTY 81/121 (-40°C / +150°C) \square NTC 10k Ω at 25°C ß3977 (-40°C / +125°C) \square NTC 20k Ω at 25°C ß4260 (-40°C / +125°C) \square NTC 3,3k Ω at 100°C ß3970 (-40°C / +200°C) \square Other: (NTC/PTC, T° (min / max), β value, tolerance) 2 \square Other: 2	Additional: Application: Operating temperature (min/max): Type of environment: Accessories: See the part "Accessories" Quantity: Note:
3. Length L or L1 (mm): L L 4. Diameter Ø (mm): 5. Thread: 1/2" BSPP 1/2" NPT Other: 6. Connection head: (see the part "Accessories")	
Type B Type DAN Type M Type N Type Ex Type NS Other: 7. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range Specify temperature range	

How to order?

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HH60 – Thermistors with terminal head Spring loaded

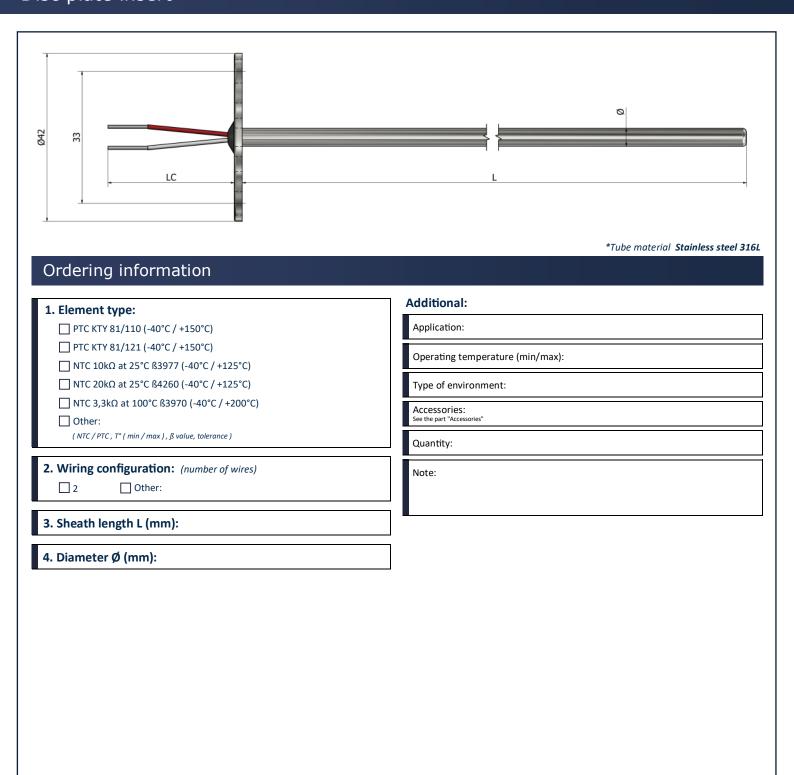
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Ordering information	*Tube and thread material Stainless steel 31
 1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C ß3977 (-40°C / +125°C) 	6. Connection head: (see the part "Accessories") Type B Type DAN Type Ex Type NS Other:
 NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC, T° (min / max), β value, tolerance) 	7. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range Additional:
2. Wiring configuration: (number of wires)	Application:
2 Other:	Operating temperature (min/max):
3. Lengths L1, L2, L3 (mm):	Type of environment:
L1 L2 L3	Accessories: See the part "Accessories"
4. Diameter Ø (mm):	Quantity:
5. Thread: 1/2" BSPP 1/2" NPT Other:	Note:
How to order?	սիս

personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.

HI00 – Thermistors with terminal head Disc plate insert

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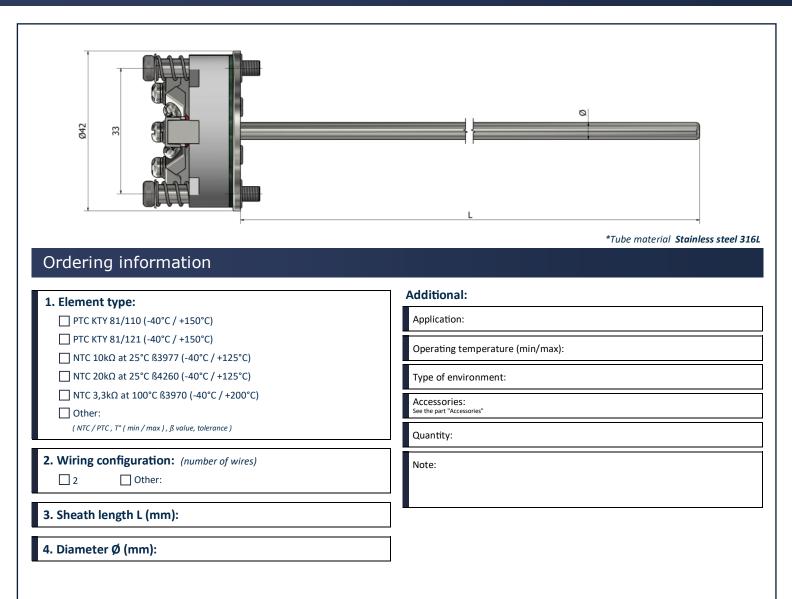


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HI01 – Thermistors with terminal head Insert with terminal block (spring loaded)

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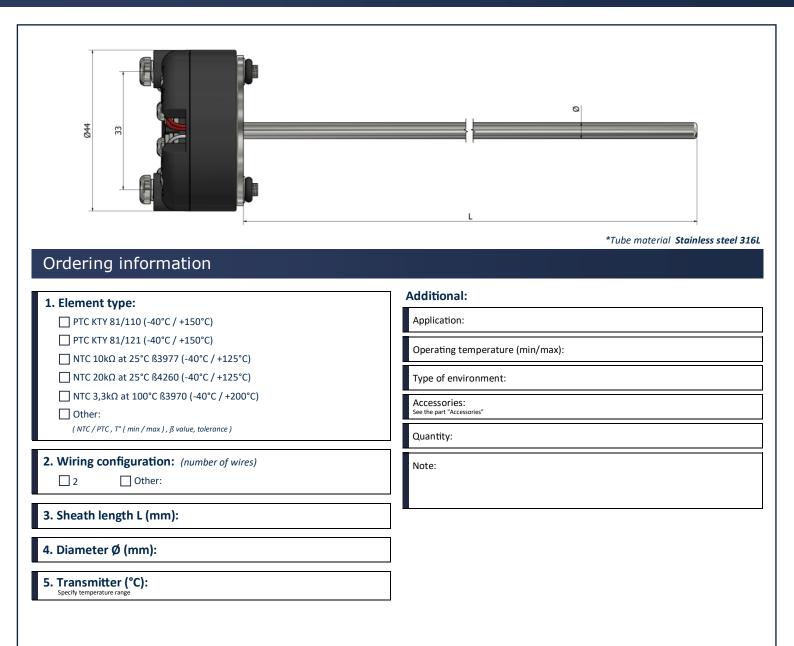


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HI02 – Thermistors with terminal head Insert with transmitter block (spring loaded)

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