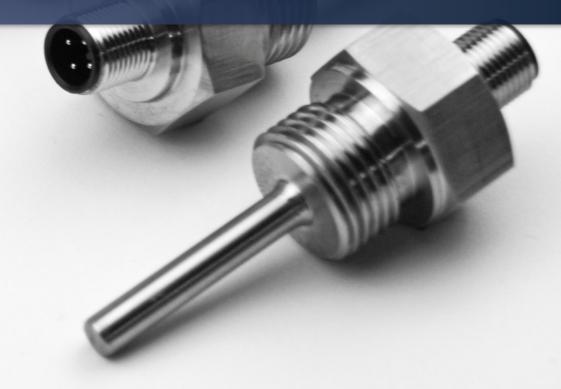


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اارانا EuroSensors

Thermistors with thread connection





Thermistors with thread connection - Technical information



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.

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.

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.

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.

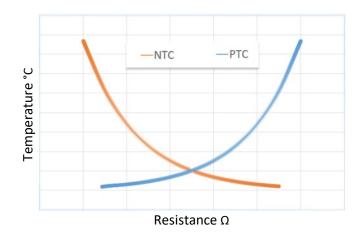
However, there is a major difference between these two types of thermistors:

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.





Thermistors with thread connection - 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:

Rt1 = Resistance at Temperature 1

The beta value of an NTC Thermistor is calculated using

Rt2 = Resistance at Temperature 2

T1 = Temperature 1 (K)

T2= Temperature 2 in (K)

$$\beta = \frac{\ln(\frac{R_{T1}}{R_{T2}})}{(\frac{1}{T_1} - \frac{1}{T_2})}$$

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 given range.

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)

Thermistor connectors

Due to the lack of standardization in RTD connectors, our company takes pride in its ability to produce a wide range of RTD connectors. We understand that different industries and applications have unique requirements when it comes to temperature measurement, and that includes the connectors used. With our expertise and advanced manufacturing capabilities, we have the flexibility to design and produce various types of RTD connectors.



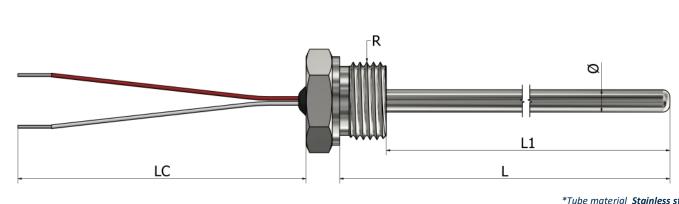
Global cable insulation characteristics

	PVC	Silicone	Teflon	Fiberglass	
Abrasion resistance	Very good	Fair	Good	Fair	
Chemical resistance	Very good	Poor	Excellent	Good	
Moisture resistance	Good	Good	Excellent	Poor	
Fire resistance	Good	Good	Excellent	Excellent	



HR01 – Thermistors with thread connection Fixed thread with free leads (type 1)





*Tube material Stainless steel 316L *Thread material Stainless steel (304 / 304L / 316 / 316L)

Ordering information

1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C) ☐ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
□ NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
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. Free leads length LC (mm):	

How to order?

6. Thread:

☐ 1/2" NPT

446

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.

☐ 1/4" BSPP

Other:

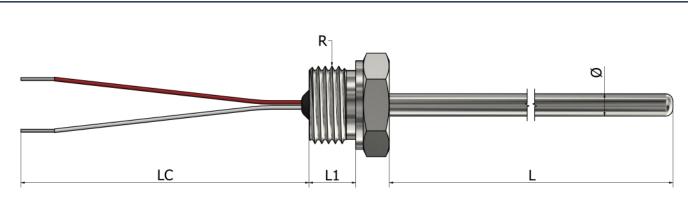
☐ 1/4" BSPT

☐ M10



HR02 – Thermistors with thread connection Fixed thread with free leads (type 2)





*Tube material Stainless steel 316L
*Thread material Stainless steel (304 / 304L / 316 / 316L)

Ordering information

1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C) ☐ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
☐ NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
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 (mm):	
4. Diameter Ø (mm):	
5. Free leads length LC (mm):	

How to order?

6. Thread length L1 (mm):

☐ 1/4" BSPP

Other:

☐ 1/4" BSPT

☐ M10

7. Thread:___ 1/2" BSPP

☐ 1/2" NPT

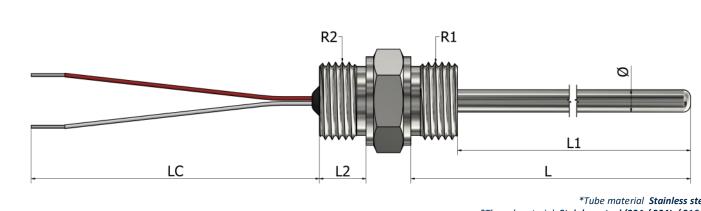
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Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free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



HR03 - Thermistors with thread connection Fixed thread with free leads (type 3)





*Tube material Stainless steel 316L *Thread material Stainless steel (304 / 304L / 316 / 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)	Additional: Application: Operating temperature (min/max): Type of environment:
Other: (NTC / PTC , T* (min / max) , β value, tolerance)	Accessories: See the part "Accessories" Quantity:
2. Wiring configuration: (number of wires)	Note:
3. Diameter Ø (mm): 4. Free leads length LC (mm):	
5. Length L or L1 (mm):	
6. Thread R1:	
7. Thread length L2 (mm):	

☐ M10

How to order?

8. Thread R2: ☐ 1/2" BSPP

☐ 1/2" NPT

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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.

☐ 1/4" BSPP

Other:

☐ 1/4" BSPT



HR10 – Thermistors with thread connection Fixed thread with cable prolongation

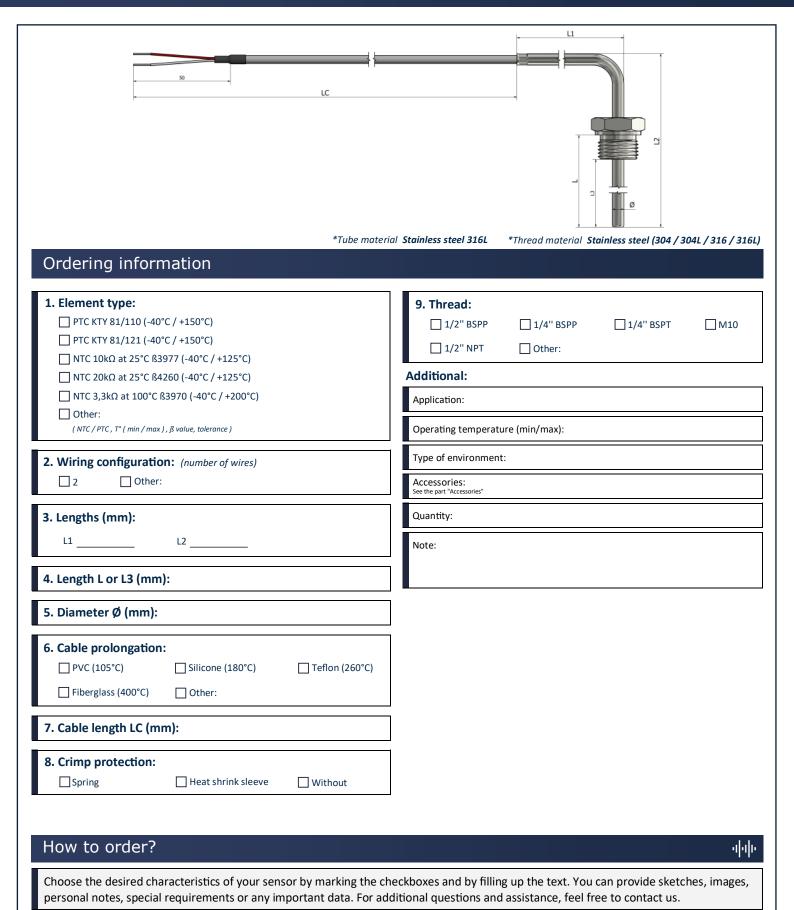


50 LC	
Ordering information	*Tube material Stainless steel 3 *Thread material Stainless steel (304 / 304L / 316 / 3 1
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C)	Additional: Application: Operating temperature (min/max):
 NTC 10kΩ at 25°C ß3977 (-40°C / +125°C) NTC 20kΩ at 25°C ß4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C ß3970 (-40°C / +200°C) Other: (NTC / PTC , T* (min / max) , β value, tolerance) 	Type of environment: Accessories: See the part "Accessories"
2. Wiring configuration: (number of wires) 2 Other:	Quantity: Note:
3. Length L or L1 (mm): 4. Diameter Ø (mm):] -
5. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	
6. Cable length LC (mm): 7. Crimp protection: Spring Heat shrink sleeve Without	
8. Thread: 1/2" BSPP 1/4" BSPP 1/4" BSPT M10 1/2" NPT Other:	



HR13 – Thermistors with thread connection Fixed thread (90° bend) (type 1)







HR14 – Thermistors with thread connection Fixed thread (90° bend) (type 2)



	material Stainless steel 316L *Thread material Stainless steel (304 / 304L / 316 / 316L)
Ordering information	
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C)	9. Thread: 1/2" BSPP
\square NTC 10kΩ at 25°C β3977 (-40°C / +125°C) \square NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Additional:
□ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)	Application:
☐ Other: (NTC/PTC, T° (min/max), ß value, tolerance)	Operating temperature (min/max):
2. Wiring configuration: (number of wires)	Type of environment:
2 Other:	Accessories: See the part "Accessories"
3. Lengths (mm):	Quantity:
L1 L2	Note:
4. Length L or L3 (mm):	
5. Diameter Ø (mm):	
6. Cable prolongation:	
☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°c)	C)
Fiberglass (400°C) Other:	
7. Cable length LC (mm):	
8. Crimp protection: Spring Heat shrink sleeve Without	
How to order?	راباله he checkboxes and by filling up the text. You can provide sketches, images,



HR15 – Thermistors with thread connection Fixed thread with 90° cable prolongation



LC *Tube mate	erial Stainless steel 316L *Thread material Stainless steel (304/304L/316/31
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)	8. Thread: 1/2" BSPP
NTC 20kΩ at 25°C β4260 (-40°C / +125°C)NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)	Additional: Application:
☐ Other: (NTC/PTC, T° (min/max), ß value, tolerance)	Operating temperature (min/max):
2. Wiring configuration: (number of wires)	Type of environment:
2 Other:	Accessories: See the part "Accessories"
3. Length L or L1 (mm):	Quantity:
4. Diameter Ø (mm):	Note:
5. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other: 6. Cable length LC (mm):	
7. Crimp protection: Spring Heat shrink sleeve Without	
How to order?	- विव



HR20 – Thermistors with thread connection Nozzle



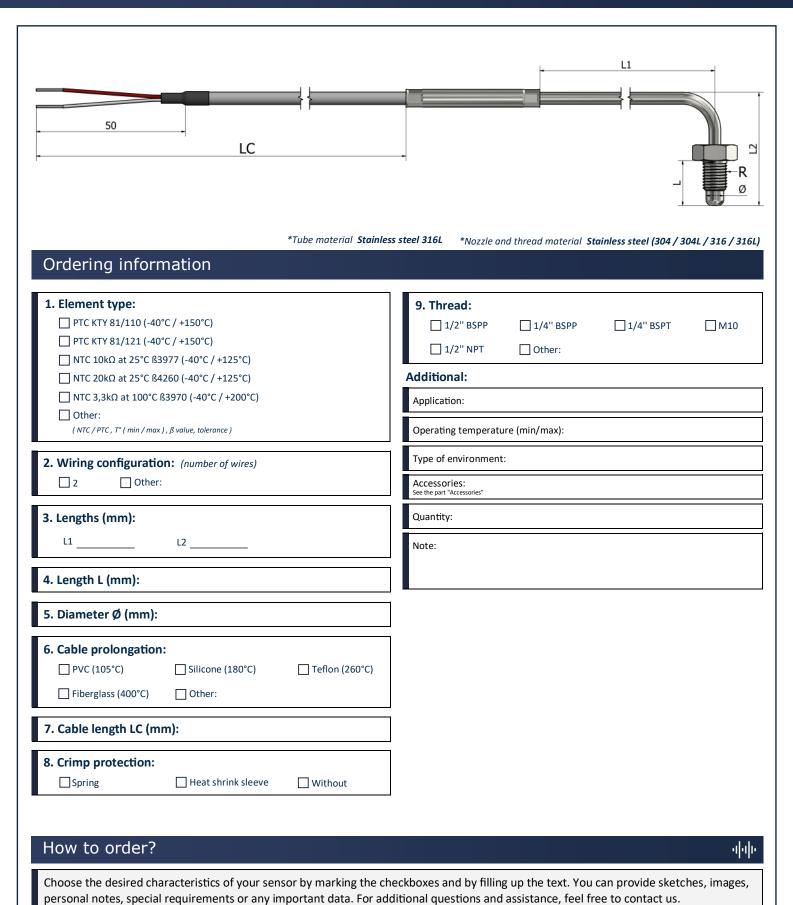
50	LC	
Ordering information		*Nozzle and thread material Stainless steel (304 / 304L / 316 / 31
. Element type: □ PTC KTY 81/110 (-40°C / +150°C) □ PTC KTY 81/121 (-40°C / +150°C) □ NTC 10kΩ at 25°C β3977 (-40°C / +125°C) □ NTC 20kΩ at 25°C β4260 (-40°C / +125°C) □ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) □ Other: (NTC /PTC, T* (min / max), β value, tolerance)		8. Thread: 1/2" BSPP
. Wiring configuration: (number of wires)		Type of environment: Accessories: See the part "Accessories"
. Length L (mm):		Quantity:
. Diameter Ø (mm):		Note:
. Cable prolongation: PVC (105°C) Silicone (180°C) Fiberglass (400°C) Other:	Teflon (260°C)	
. Cable length LC (mm):		
. Crimp protection: Spring Heat shrink sleeve [Without	

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images,



HR21 – Thermistors with thread connection Nozzle (90° bend)







HR22 – Thermistors with thread connection Bolt



50	LC	
Ordering information		*Bolt material Stainless steel (304 / 304L / 316 / 3
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 ß4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C ß3970 (-40°C / +200°C) Other: (NTC/PTC, T* (min/max), β value, tolerance) 2. Wiring configuration: (number of wires) 2		Additional: Application: Operating temperature (min/max): Type of environment: Accessories: See the part "Accessories" Quantity: Note:
3. Length L (mm):		<u> </u>
4. Cable prolongation: PVC (105°C) Silicone (180°C) Fiberglass (400°C) Other: 5. Cable length LC (mm):	Teflon (260°C)	
	Without	

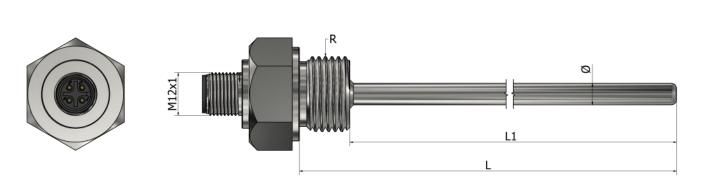
8 chemin des Grandes Combes 69360 Ternay, France +33 472 669 234

Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images,



HR30 – Thermistors with thread connection Integrated M12 connector





*Tube material Stainless steel 316L

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	· · · · · · · · · · · · · · ·		

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):
\Box NTC 10kΩ at 25°C β3977 (-40°C / +125°C) \Box NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
☐ 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) 2 Other:	Note:
3. Length L or L1 (mm):	
4. Diameter Ø (mm):	

☐ M10

How to order?

5. Thread:☐ 1/2" BSPP

☐ 1/2" NPT

444

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.

☐ 1/4" BSPP

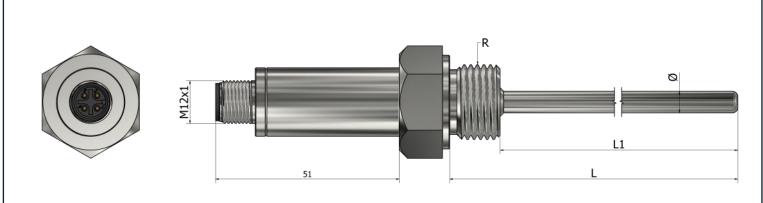
Other:

☐ 1/4" BSPT



HR31 – Thermistors with thread connection Integrated M12 connector with transmitter





*Tube material Stainless steel 316L

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OIU	еши	inform	Iauon

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):
	Type of environment:
□ 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):	
E Throad:	

☐ M10

How to order?

☐ 1/2" BSPP

☐ 1/2" NPT

6. Transmitter (°C):

Specify temperature range

☐ 1/4" BSPP

Other:

☐ 1/4" BSPT

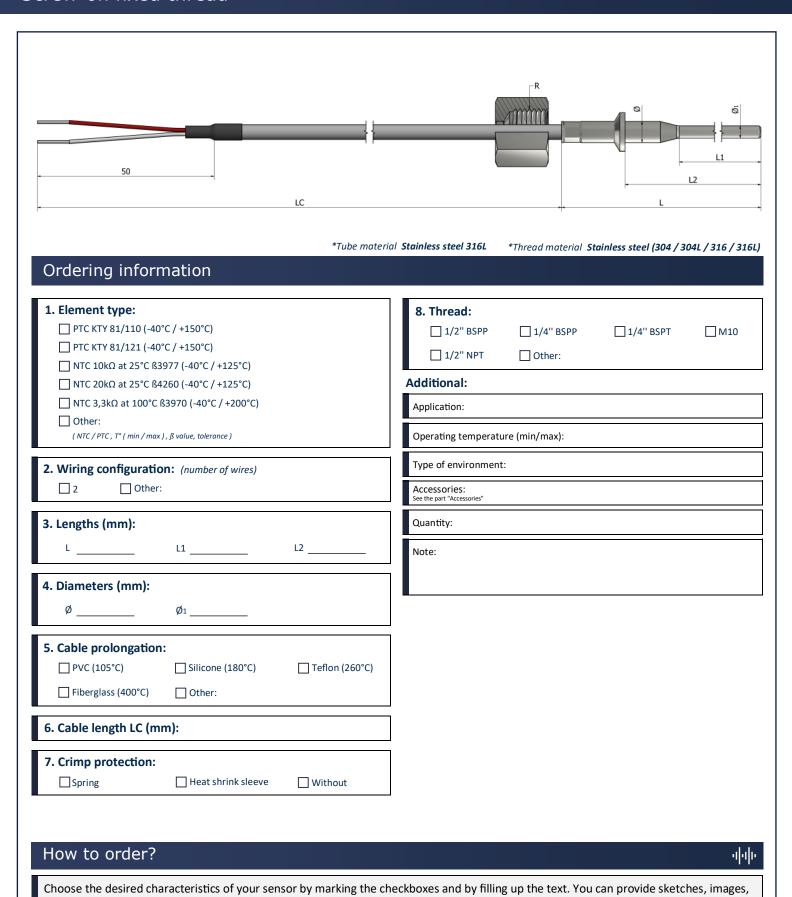
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Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free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



HR40 – Thermistors with thread connection Screw-on fixed thread

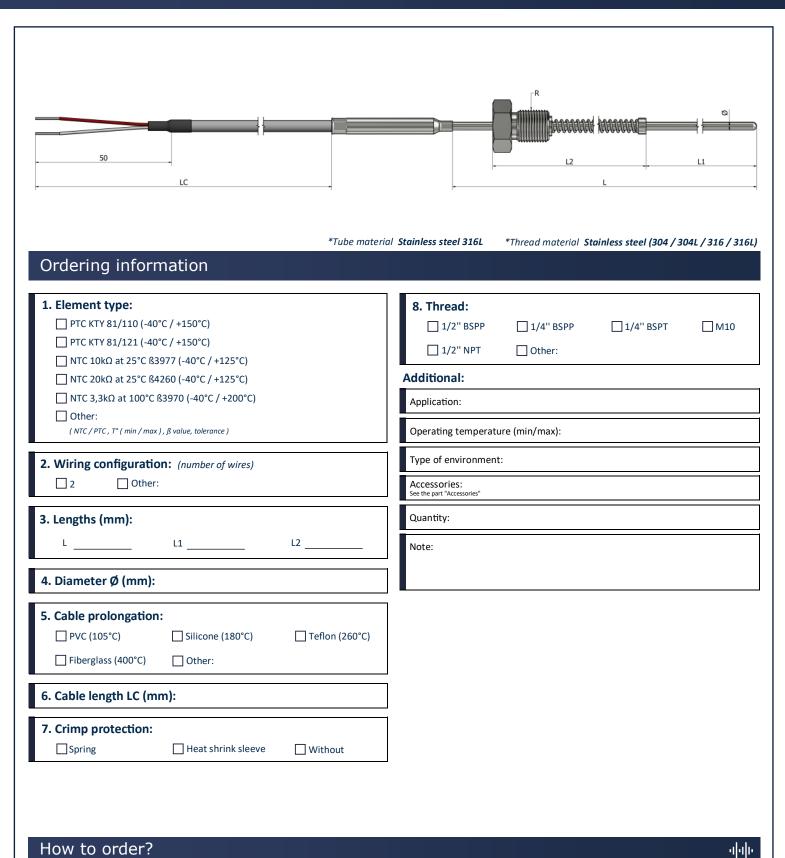






HR50 – Thermistors with thread connection Thread connection (spring loaded)



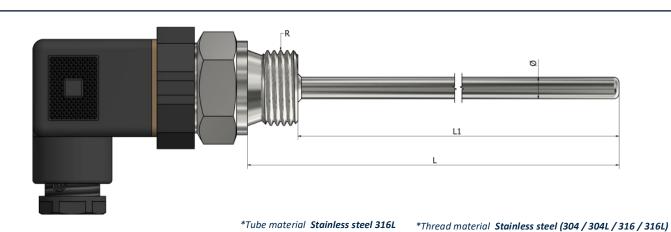


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images,



HR60 – Thermistors with thread connection DIN43650 connector





Ordering information

1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C) ☐ NTC 10kΩ at 25°C ß3977 (-40°C / +125°C)	Operating temperature (min/max):
□ NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
☐ 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):	

☐ M10

How to order?

5. Thread:

☐ 1/2" NPT

4446

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.

☐ 1/4" BSPP

Other:

☐ 1/4" BSPT



HR61 – Thermistors with thread connection DIN43650 connector with transmitter





How to order?

- 4|4|6

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.