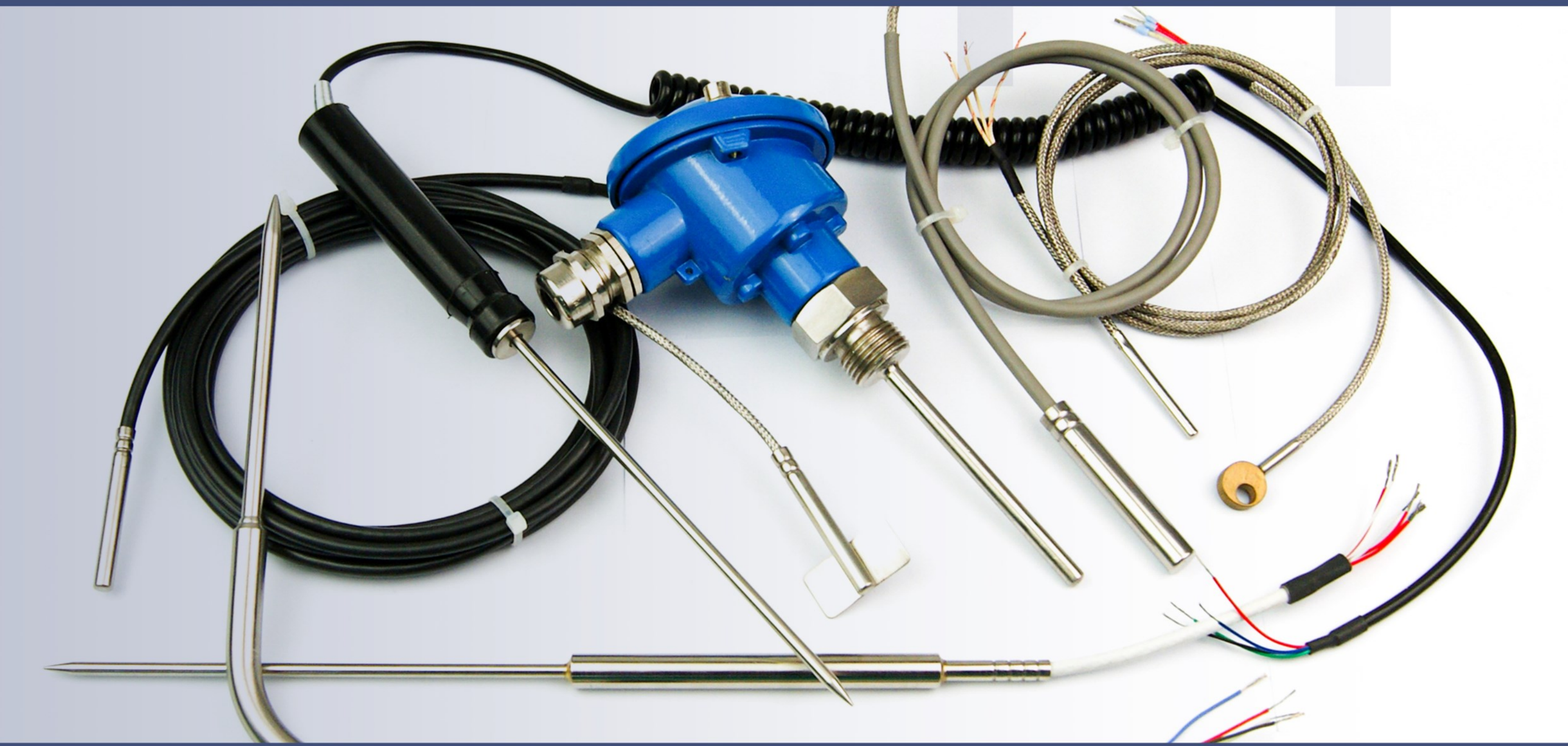
EuroSensors

Thermistors



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Wired thermistors

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Wired thermistors - 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.

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.

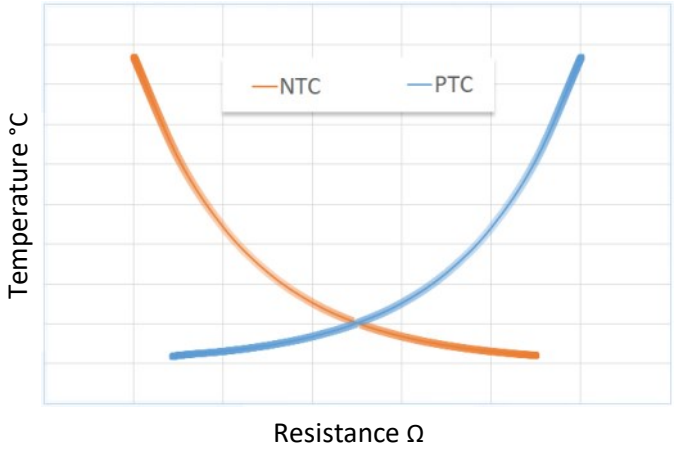
However, there is a major difference between these two types of thermistors:

NTC thermistors

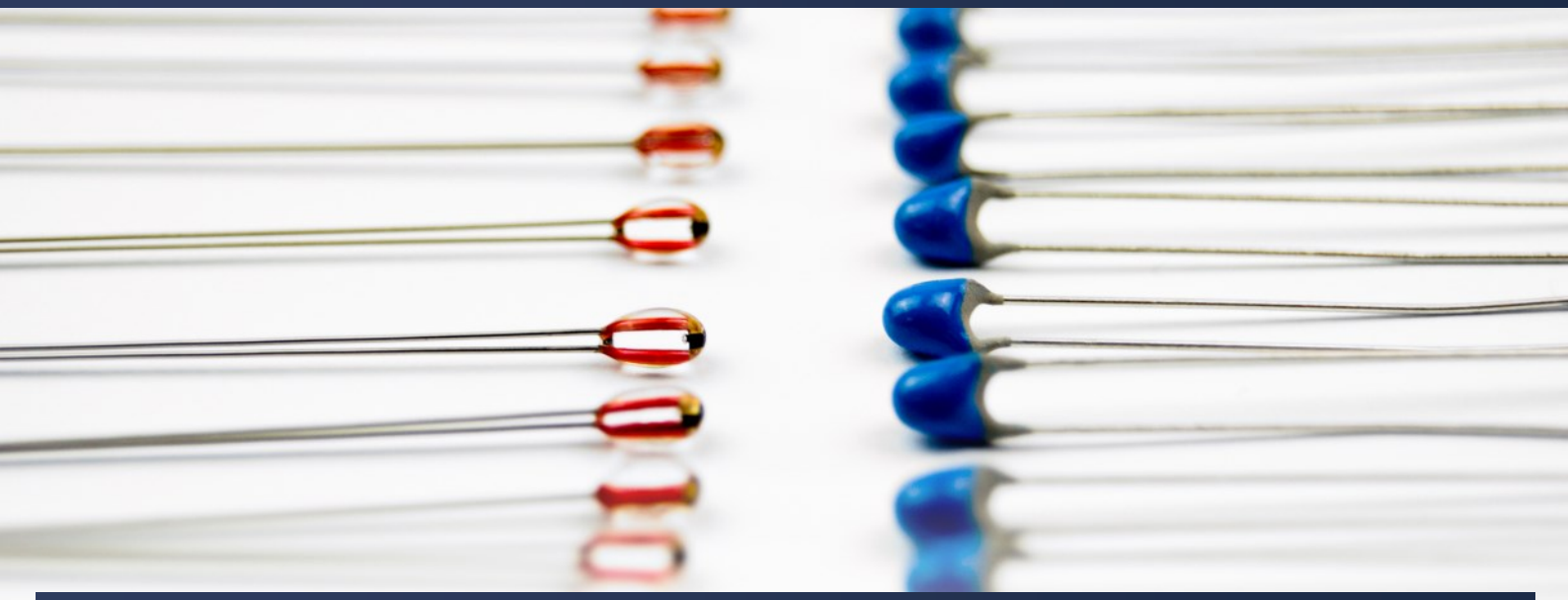
NTCs have a resistance that decreases as the temperature increases. They are commonly used in thermostats and temperature control devices to measure room temperature.

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.

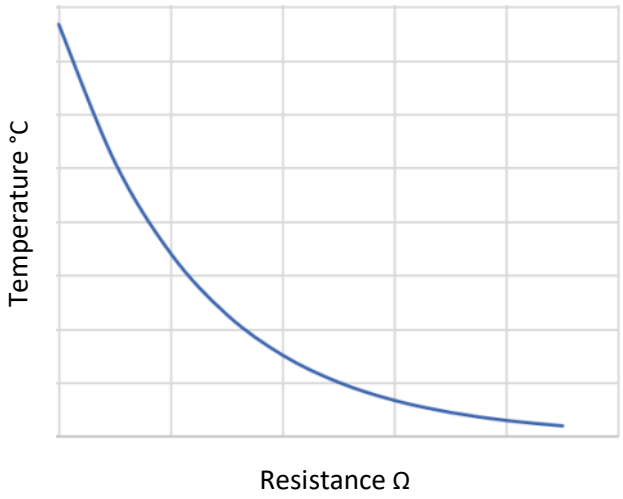


Wired thermistors - Technical information



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.



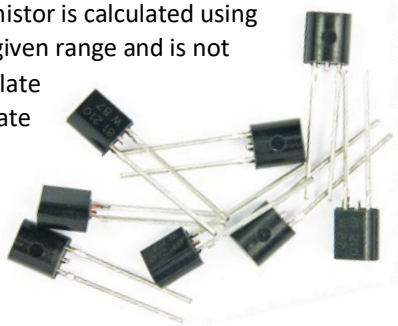
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

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

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

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 given range.



Types of thermistors

Type	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)

Wired thermistors - Technical information

Types of thermistor cables

For additional information about thermistor cables see ***"Accessories - Cables".***

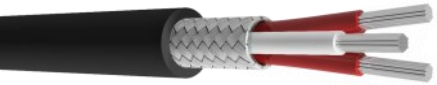
Fiberglass

Description: fiberglass/fiberglass/braid
Operating T°: -60°C / 400°C
Cross section shape: round

Teflon braided

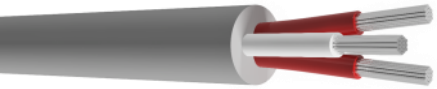
Description: teflon/braid/teflon
Operating T°: -190°C / +260°C
Cross section shape: round

PVC braided



Description: PVC/braid/PVC
Operating T°: -30°C / +105°C
Cross section shape: round

Silicone

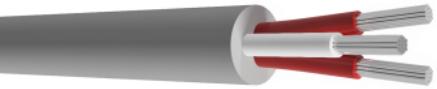


Description: silicone/silicone
Operating T°: -60°C / +180°C
Cross section shape: round

Teflon

Description: teflon/teflon
Operating T°: -190°C / +260°C
Cross section shape: round

Teflon/Silicone



Description: teflon/silicone
Operating T°: -60°C / +180°C
Cross section shape: round

PVC

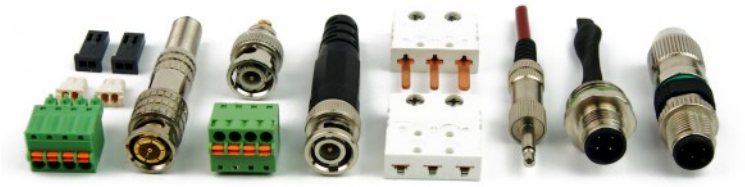
Description: PVC/PVC
Operating T°: -30°C / +105°C
Cross section shape: round

Thermistor 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.

Thermistor connectors

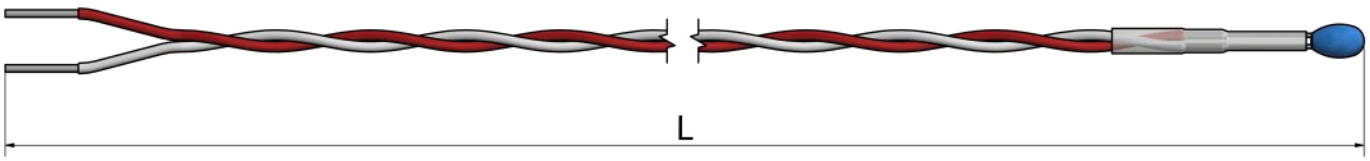
Due to the lack of standardization in RTD connectors, our company takes pride in its ability to produce a wide range of RTD connectors. We understand that different industries and applications have unique requirements when it comes to temperature measurement, and that includes the connectors used. With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

HC00 – Wired thermistors
Twisted teflon



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²)

☐ Other:

4. Cable length L (mm):

5. Insulation material:

☐ Fiberglass ☐ Teflon heat shrink sleeve ☐ Other:

6. Insulation method:

☐ To the measuring element

☐ Over the measuring element

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

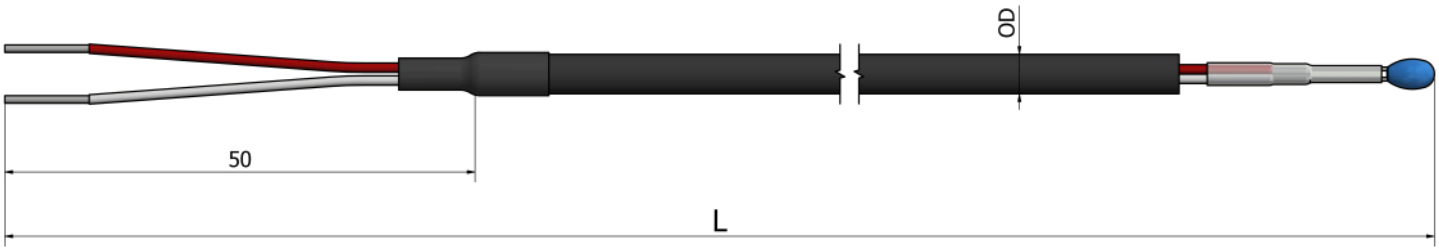
Quantity:

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.

HC30 – Wired thermistors
PVC braided (pvc/braid/pvc)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø4,2 mm

☐ Other:

4. Cable length L (mm):

5. Insulation material:

☐ Fiberglass ☐ Polyolefin heat shrink sleeve ☐ Other:

6. Insulation method:

☐ To the measuring element

☐ Over the measuring element

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

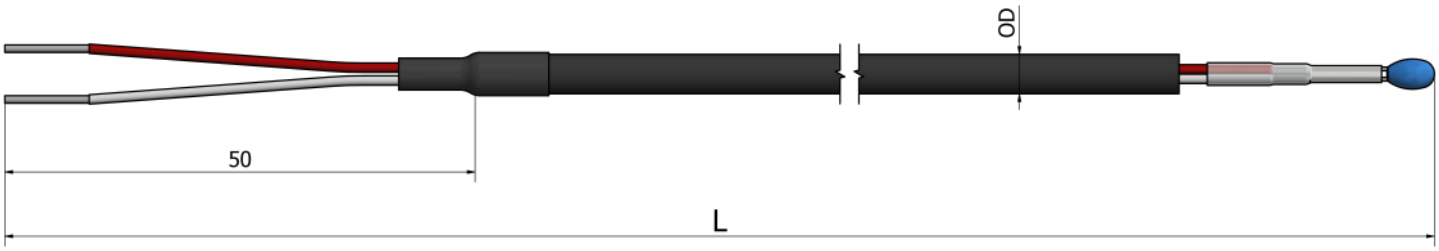
Quantity:

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.

HC35 – Wired thermistors
PVC (pvc/pvc)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø3,2 mm

☐ 21 x 0,2 (0,60 mm²) OD ≈ Ø4,9 mm

☐ Other:

4. Cable length L (mm):

5. Insulation material:

☐ Fiberglass ☐ Polyolefin heat shrink sleeve ☐ Other:

6. Insulation method:

☐ To the measuring element

☐ Over the measuring element

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

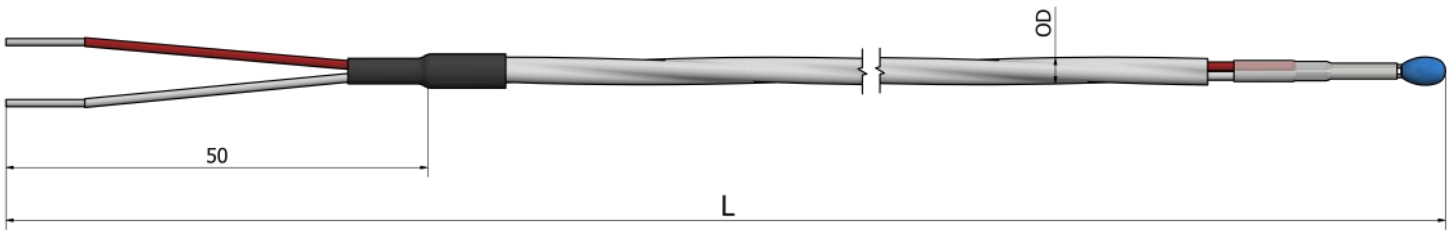
Quantity:

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.

HC40 – Wired thermistors
Teflon (teflon/braid/teflon)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø3,2 mm ☐ 7 x 0,1 (0,05 mm²) OD ≈ Ø2,6 mm

☐ Other:

4. Cable length L (mm):

5. Insulation material:

☐ Fiberglass ☐ Teflon heat shrink sleeve ☐ Other:

6. Insulation method:

☐ To the measuring element

☐ Over the measuring element

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

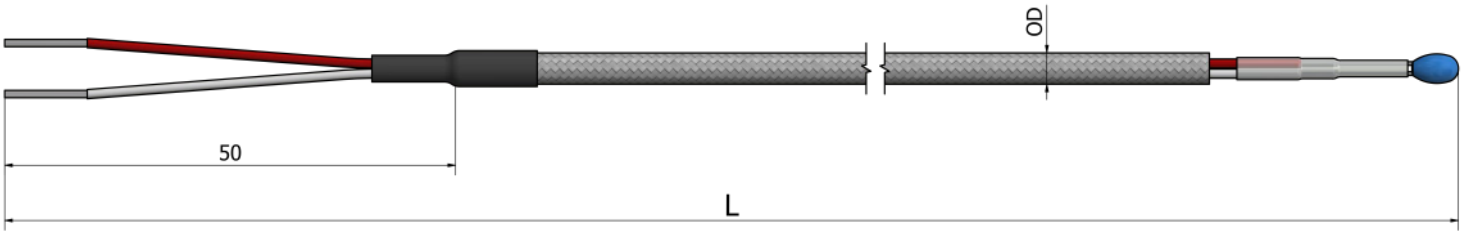
Quantity:

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.

HC50 – Wired thermistors
Fiberglass (fiberglass/fiberglass/braid)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø3,0 mm

☐ Other:

4. Cable length L (mm):

5. Insulation material:

☐ Fiberglass ☐ Other:

6. Insulation method:

☐ To the measuring element

☐ Over the measuring element

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

Note:

How to order?

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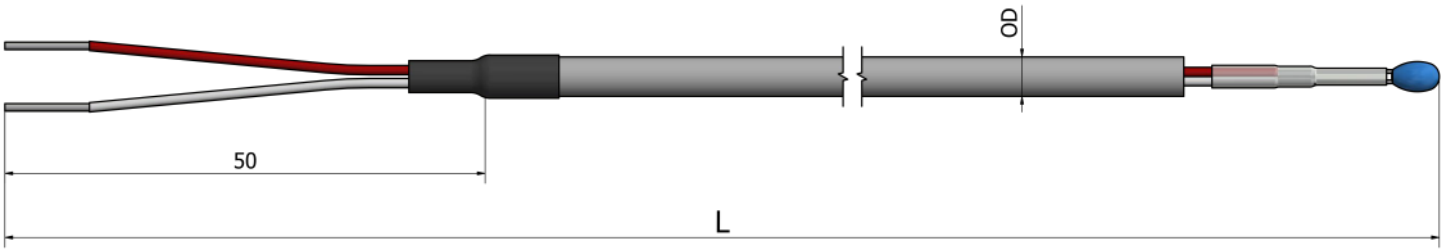
HC60 – Wired thermistors
Silicone (silicone/silicone)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø5 mm

☐ Other:

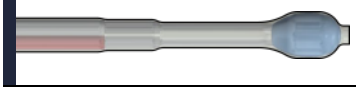
4. Cable length L (mm):

5. Insulation material:

☐ Fiberglass ☐ Teflon heat shrink sleeve ☐ Other:

6. Insulation method:

☐ To the measuring element



☐ Over the measuring element

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

Note:

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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.

EuroSensors

Thermistors with protection tube

Contents

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Thermistors with protection tube - Technical information

What are the characteristics of RTDs with protection tube ?

Protection tubes play a crucial role by providing a robust shield for the RTD sensor, safeguarding it from potential mechanical damage, corrosive substances, high-pressure environments, and other adverse conditions that may compromise its accuracy or integrity. The primary purpose of the protection tube is to act as a physical barrier between the external environment and the delicate RTD sensor. It serves as a protective sheath, shielding the sensor from impacts, vibrations, abrasion, and other mechanical stresses that can occur during operation. This ensures the longevity and reliability of the sensors in rugged industrial settings.
We have several sizes and types of tubes.
See ***"Technical data -***

Protection tube materials

For the production of tubes, stainless steel, copper and brass are often used. Due to its good characteristics such as corrosion resistance, strength (abrasion resistance) and good thermal conductivity, stainless steel (SS316) stands out as the most common material from which tubes are produced.

Tube materials:

- Stainless steel (SS316)
- Stainless steel (SS316L)
- Stainless steel (SS316Ti)
- Brass
- Aluminum
- Copper

What is an RTD sensor ?

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RTDs advantages

RTDs have several advantages over other types of temperature sensors:

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Long term stability
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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 (variable temperature resistor) 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.

EuroSensors

Thermistors with protection tube - Technical information

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

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PTC thermistors

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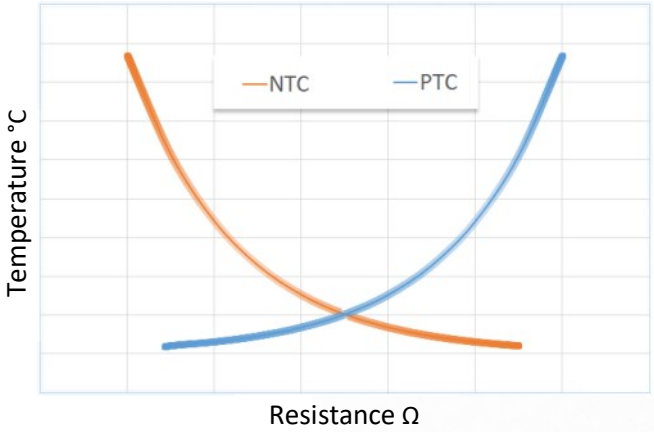

Wiring configurations

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.

Thermistor connectors

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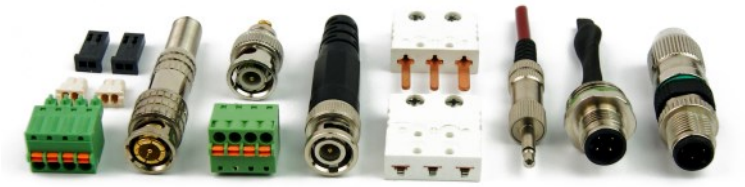
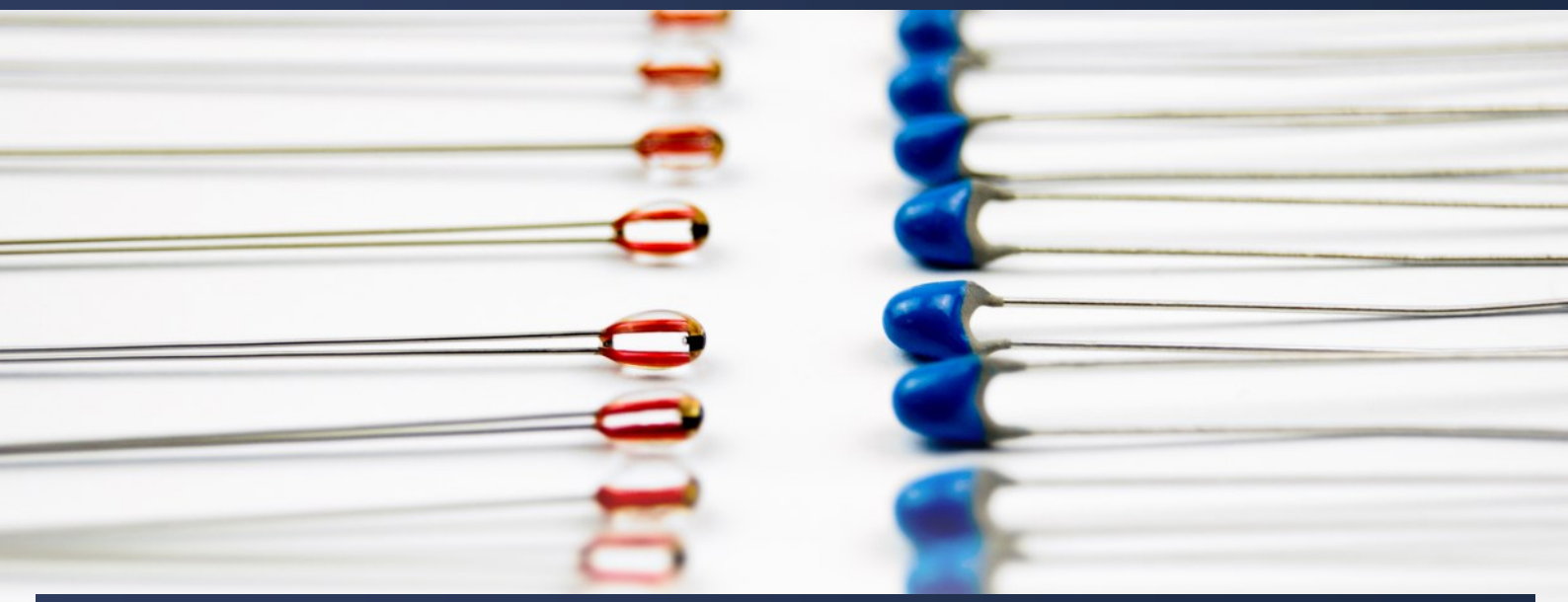


Global cable insulation characteristics

	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

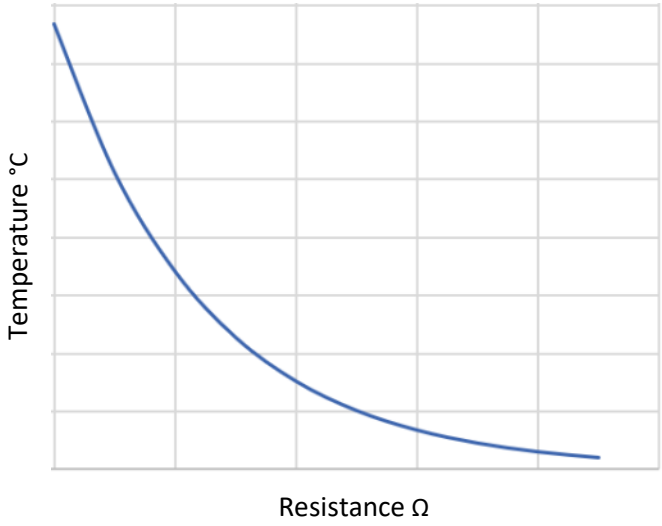
Thermistors with protection tube - Technical information



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.



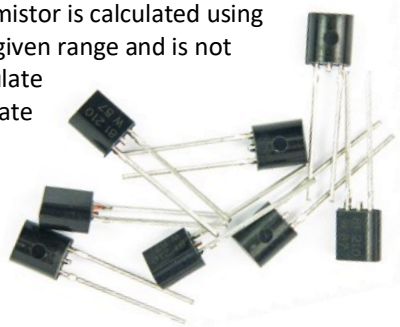
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

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

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

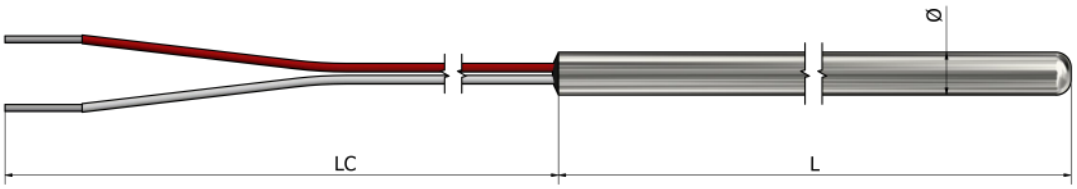
The beta value of an NTC Thermistor is calculated using only two temperatures over a given range and is not the most accurate way to calculate the R vs. T curve. A more accurate method is to use the Steinhart and Hart method, which uses three temperatures over a given range.



Types of thermistors

Type	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)

HT00 – Thermistors with protection tube
Free leads



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **Stainless steel 316L**)*

L _____ Ø _____

4. Free leads length LC (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

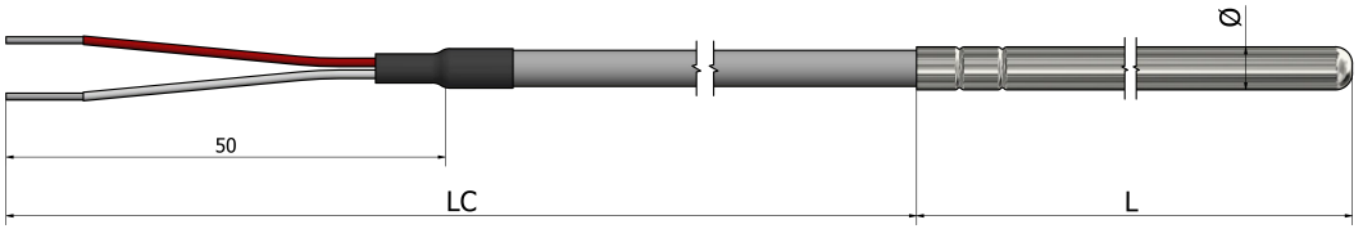
Quantity:

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.

HT10 – Thermistors with protection tube
Standard tube



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions: *(material **Stainless steel 316L**)*

☐ Ø3 x 50 mm ☐ Ø4 x 40 mm ☐ Ø5 x 50 mm

☐ Ø6 x 50 mm ☐ Other:

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

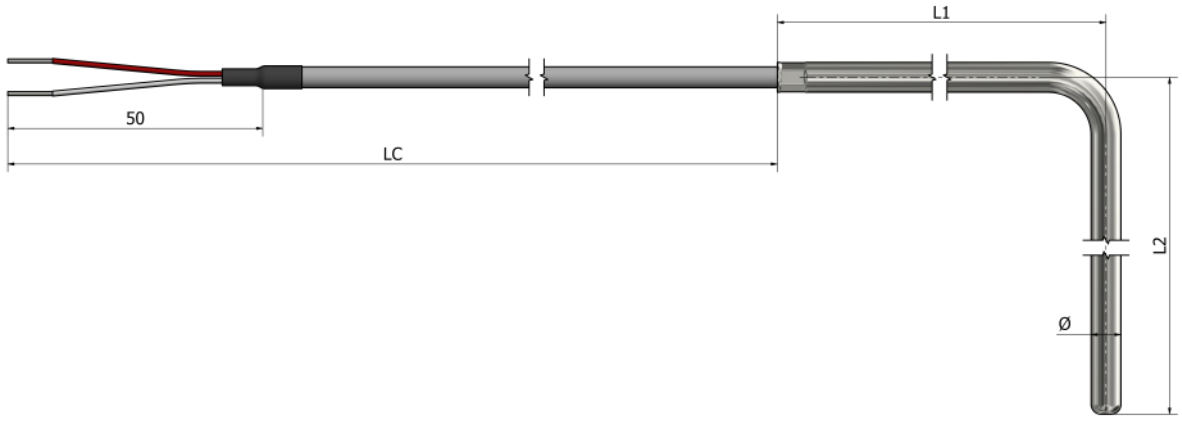
Quantity:

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.

HT12 – Thermistors with protection tube
Standard tube (90° bend)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **Stainless steel 316L**)*

L1 _____ L2 _____ Ø _____

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

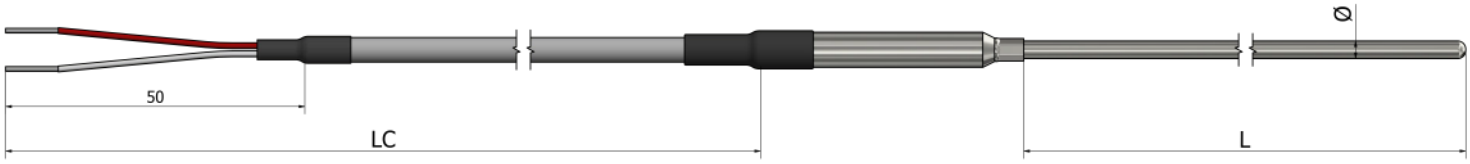
Quantity:

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.

HT20 – Thermistors with protection tube
Pot seal



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **Stainless steel 316L**)*

L _____ Ø _____

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

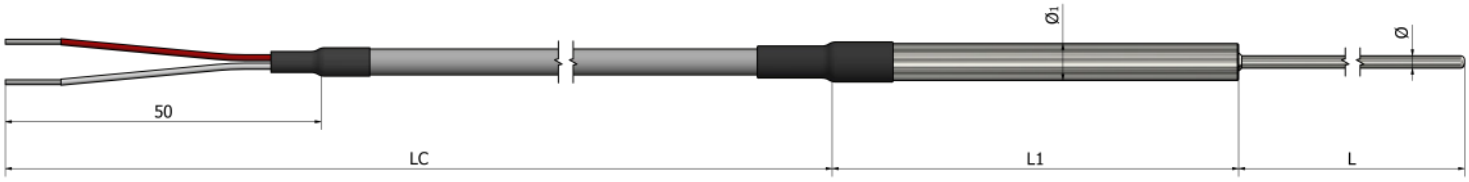
Quantity:

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.

HT21 – Thermistors with protection tube
Pot seal with reduced tip



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions L and Ø (mm): *(material **Stainless steel 316L**)*

L _____ Ø _____

4. Tube dimensions L1 and Ø1 (mm): *(material **Stainless steel 316L**)*

L1 _____ Ø1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

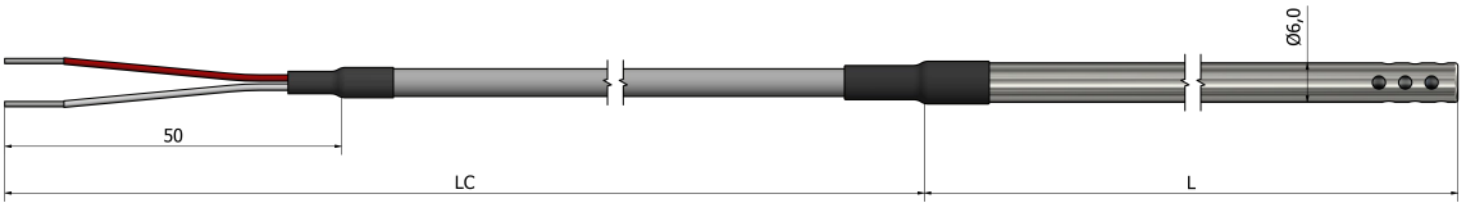
Quantity:

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.

HT25 – Thermistors with protection tube
Open air



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube length L (mm):

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

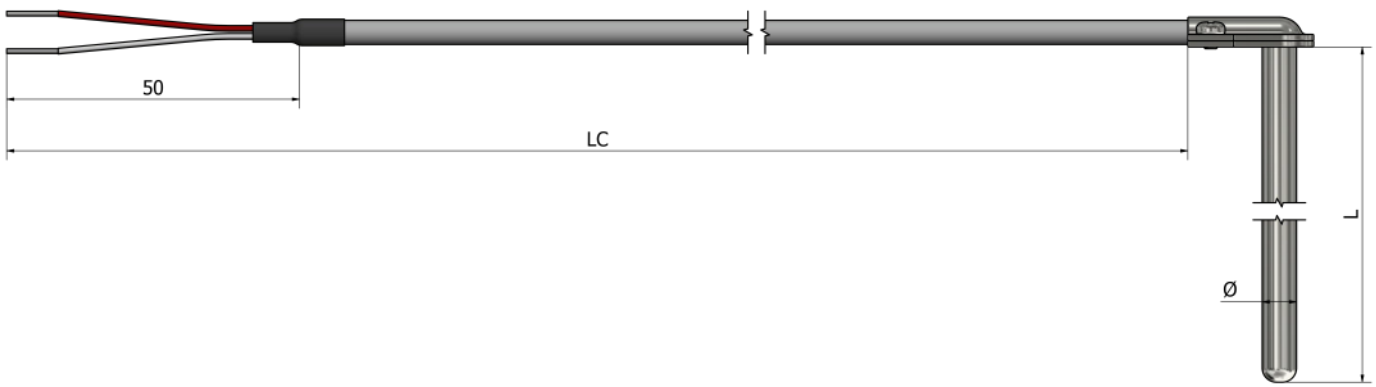
Quantity:

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.

HT30 – Thermistors with protection tube
Plug-in (clamp)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **Stainless steel 316L**)*

L _____ Ø _____

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

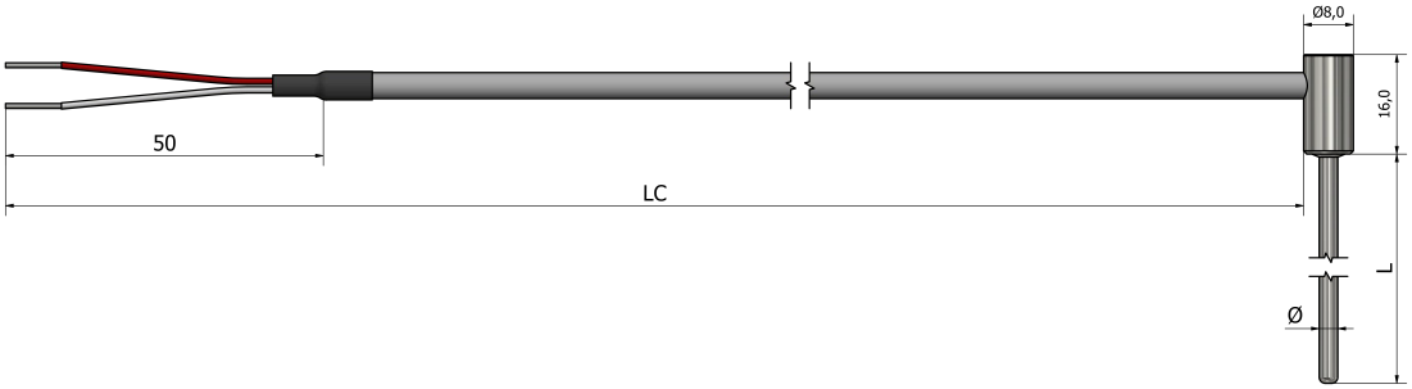
Quantity:

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.

HT35 – Thermistors with protection tube
Plug-in (miniature)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **Stainless steel 316L**)*

L _____ Ø _____

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

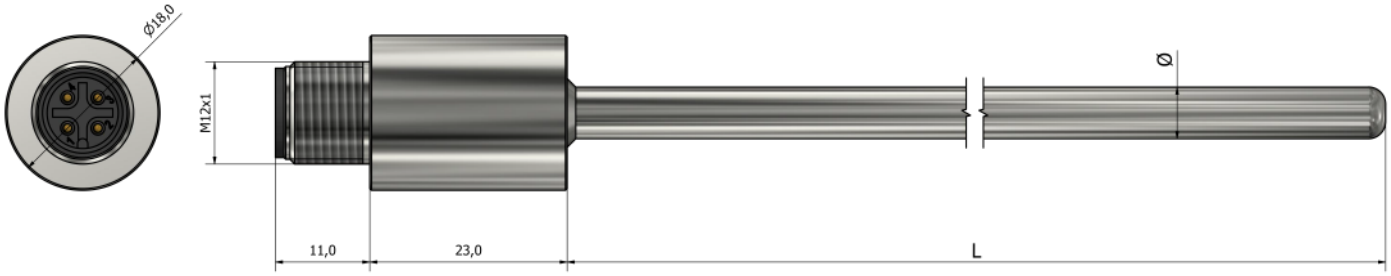
Quantity:

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.

HT40 – Thermistors with protection tube
Integrated M12 connector



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **Stainless steel 316L**)*

L _____ Ø _____

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

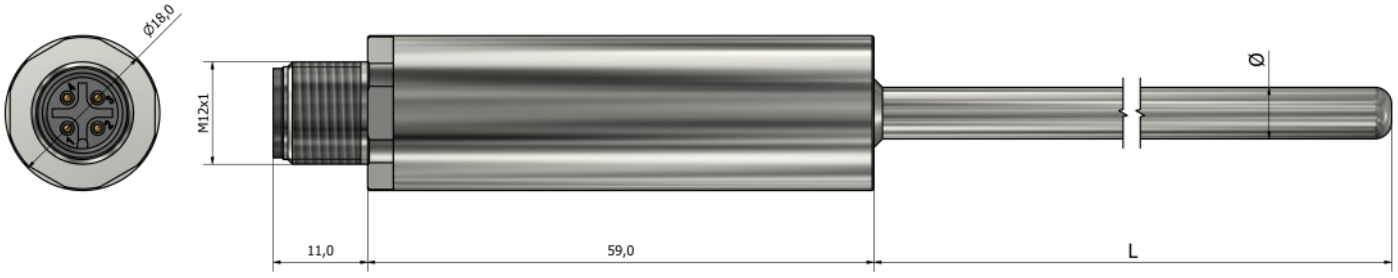
Quantity:

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.

HT41 – Thermistors with protection tube
Integrated M12 connector with transmitter



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **Stainless steel 316L**)*

L _____ Ø _____

4. Transmitter (°C):

Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

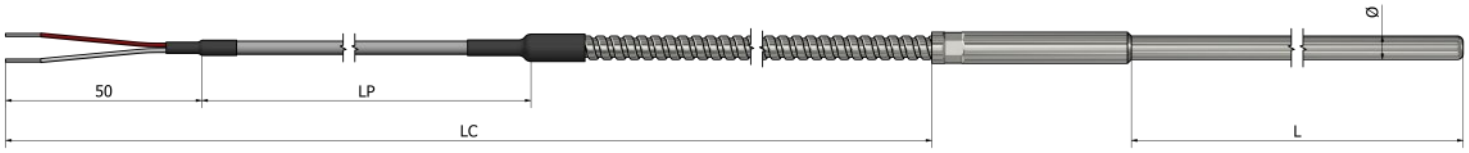
Note:

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.

EuroSensors

HT50 – Thermistors with protection tube
Armored cable prolongation



Armored cable material* ***Stainless steel 304*

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material* ***Stainless steel 316L****)*

L _____ Ø _____

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Bare cable length LP (mm):

7. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

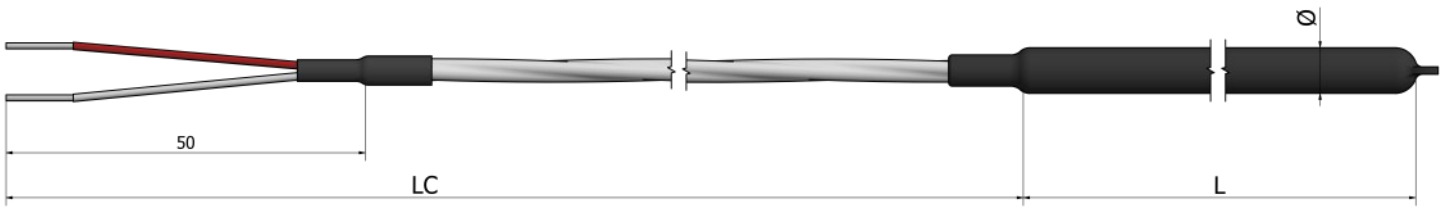
Quantity:

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.

HT60 – Thermistors with protection tube
For aggressive environments (with PTFE protection up to 250°C)



Protection material **PTFE*

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube dimensions (mm): *(material **SS 316L** with **PTFE** protection)*

L _____ Ø _____

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

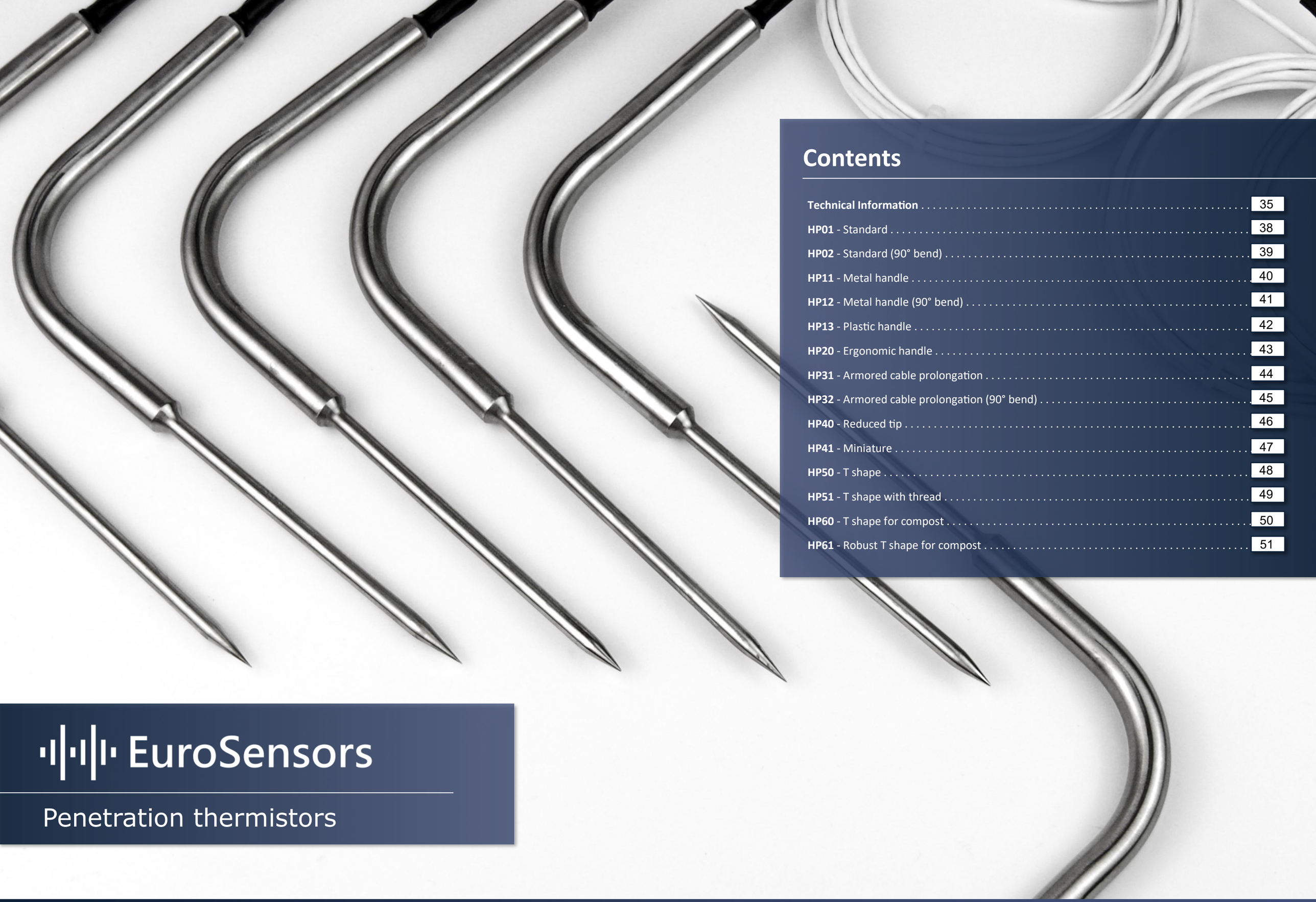
Accessories:
See the part "Accessories"

Quantity:

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.



Contents

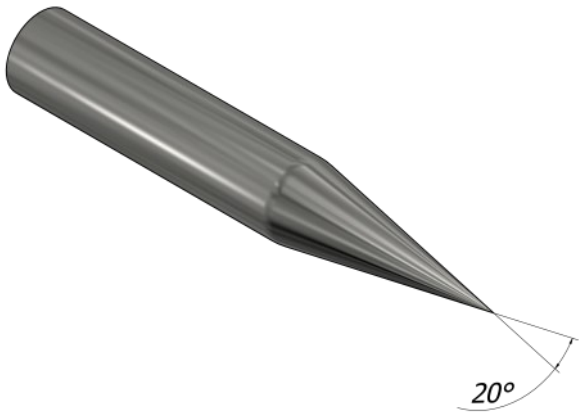
EuroSensors

Penetration thermistors

Penetration thermistors - Technical information

What are the characteristics of penetration thermistors ?

What sets penetration thermistors apart is their ability to measure the internal temperature of objects with pinpoint accuracy. Penetration probes are slender, pointed sensors designed for insertion into materials such as food, liquids, or even soil.



Here are some key applications where they prove invaluable:

Food safety and culinary arts: In the culinary world, achieving the perfect level of doneness and ensuring food safety go hand in hand. Penetration probes allow chefs and food inspectors to measure the core temperature of dishes, ensuring they are both delicious and safe to eat.

Industrial processes: From chemical reactions to metallurgical processes, knowing the temperature within materials or substances is crucial. Penetration probes provide real-time insights into the temperature profiles of these processes, aiding in quality control and optimization.

Medical applications: In the healthcare sector, penetration probes are used for patient monitoring, particularly during surgeries where monitoring body temperature accurately is vital for patient safety.

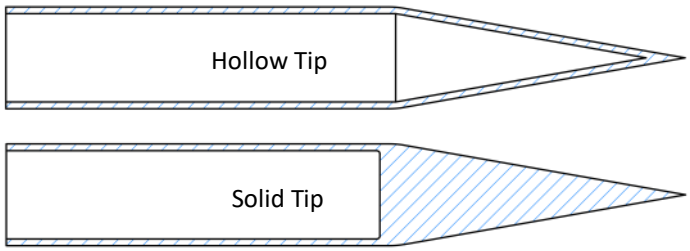
Environmental research: Environmental scientists utilize penetration probes to measure soil temperature accurately, helping them understand the impact of temperature variations on ecosystems.

Curly cable

Due to the frequent movement of the cable while using penetration probes, there is a option to put a curly cable that will ensure a easier and more comfortable way of use.

Types of penetration probes

There are two types of penetration probes with hollow tip and solid tip. Hollow tip probes provides a faster response while solid tip probe is used in places where it is required to break through harder materials



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.

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.

Penetration thermistors - Technical information

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?

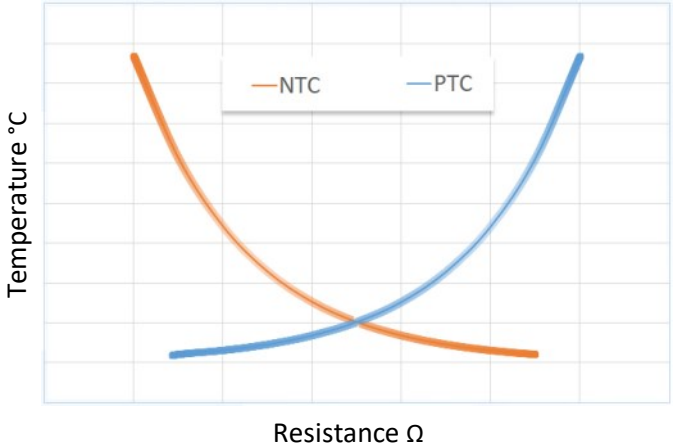
NTCs and PTCs are both thermistors, i.e. temperature sensors that change resistance depending on the temperature.
However, there is a major difference between these two types of thermistors:

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.



Thermistor 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.

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.

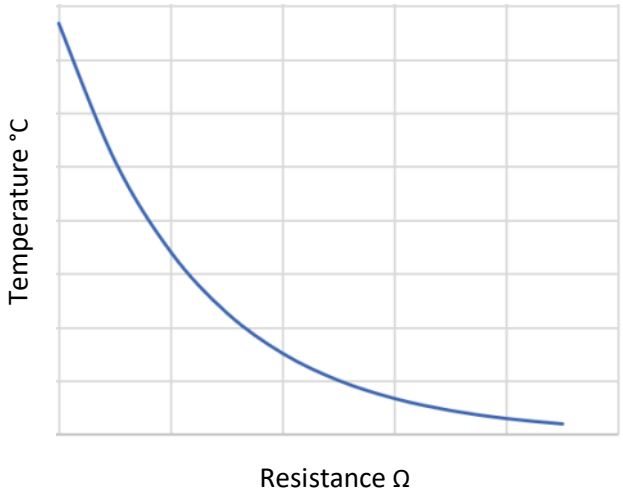
Global cable insulation characteristics

	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

Penetration thermistors - 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.



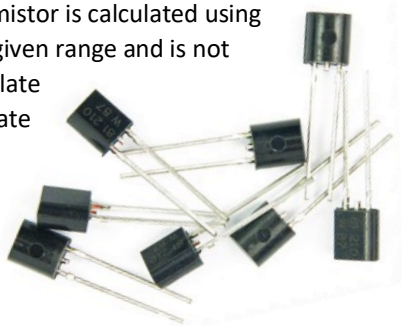
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

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

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

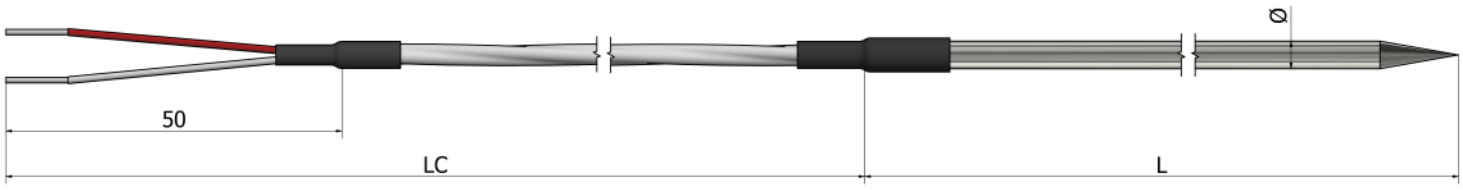
The beta value of an NTC Thermistor is calculated using only two temperatures over a given range and is not the most accurate way to calculate the R vs. T curve. A more accurate method is to use the Steinhart and Hart method, which uses three temperatures over a given range.



Types of thermistors

Type	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)

HP01 – Penetration thermistors
Standard



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

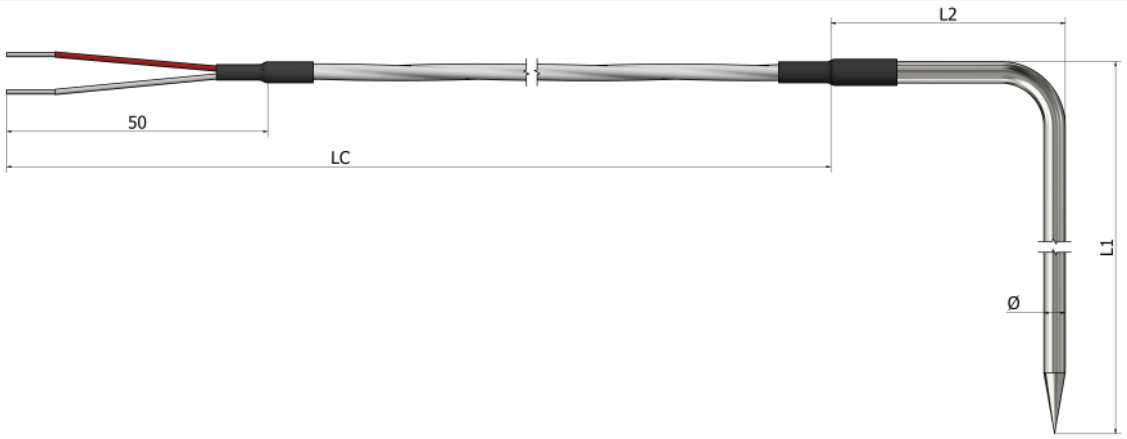
Quantity:

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.

HP02 – Penetration thermistors
Standard (90° bend)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle lengths (mm):

L1 _____ L2 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

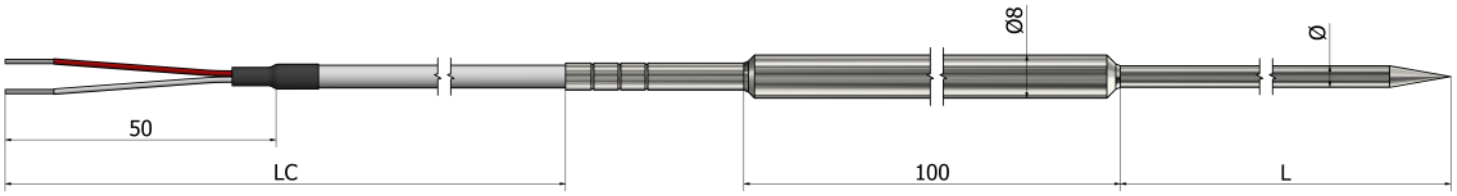
Quantity:

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.

HP11 – Penetration thermistors
Metal handle



*Handle 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

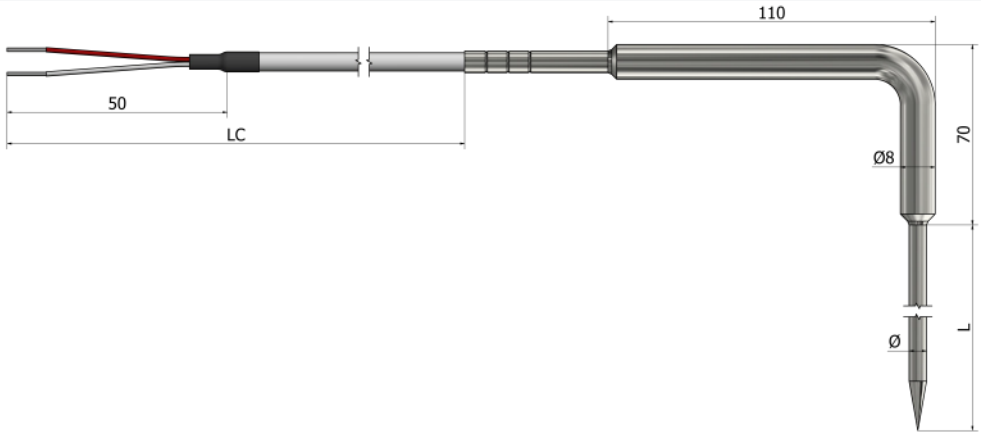
Quantity:

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.

HP12 – Penetration thermistors
Metal handle (90° bend)



*Handle 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

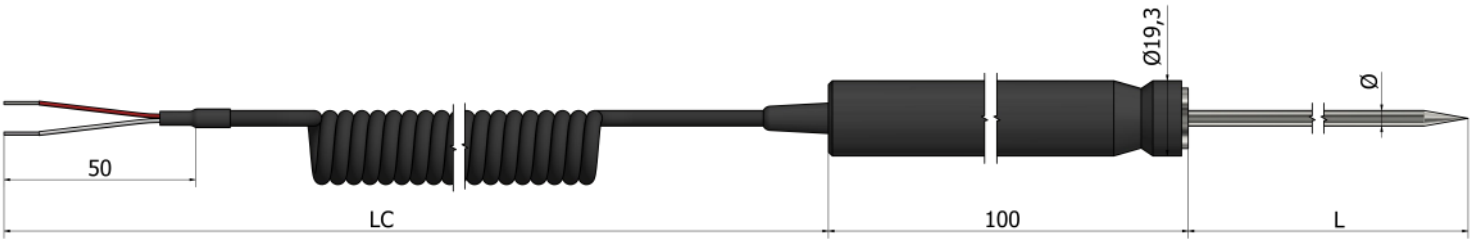
Quantity:

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.

HP13 – Penetration thermistors
Plastic handle



*Handle material **Plastic***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (mm):

5. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Curly polyurethane (105°C)

☐ Other:

6. Cable length LC (mm):

7. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

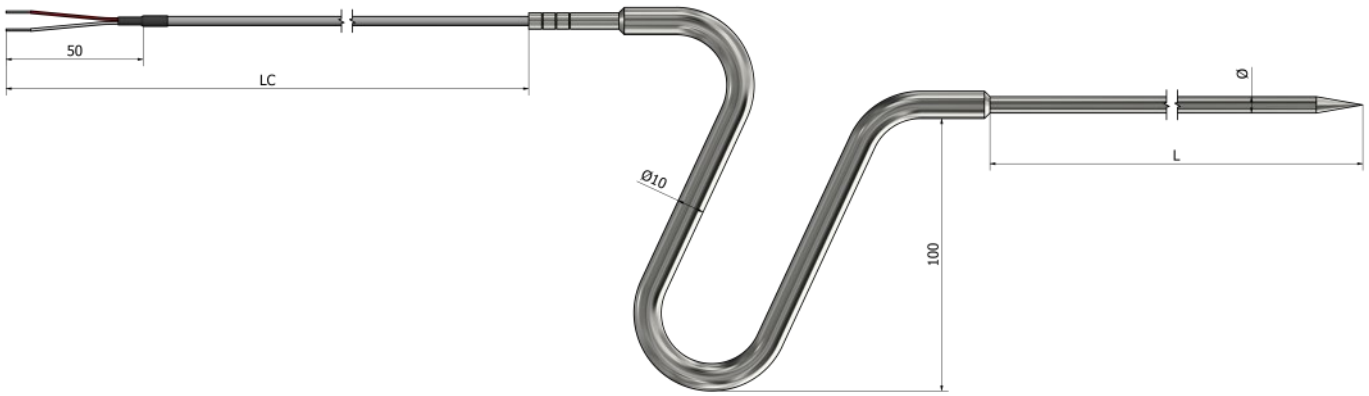
Quantity:

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.

HP20 – Penetration thermistors
Ergonomic handle



*Handle 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

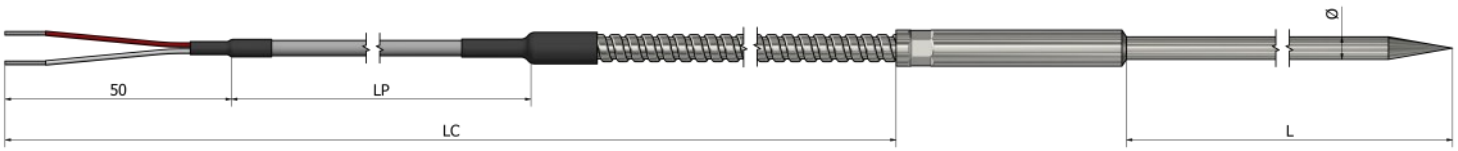
Quantity:

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.

HP31 – Penetration thermistors
Armored cable prolongation



*Handle material ***Stainless steel 316L***
*Armored cable material ***Stainless steel 304***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm
☐ Ø6 mm ☐ Other:

4. Needle length L (mm):

5. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)
☐ Fiberglass (400°C) ☐ Other:

8. Cable lengths (mm):

LC _____ LP _____

9. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

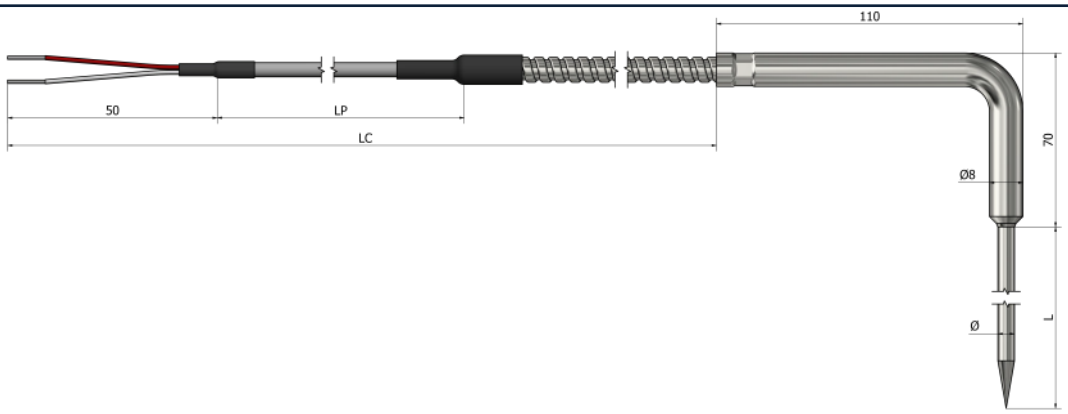
Quantity:

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.

HP32 – Penetration thermistors
Armored cable prolongation



*Handle material ***Stainless steel 316L***
*Armored cable material ***Stainless steel 304***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm
☐ Ø6 mm ☐ Other:

4. Needle length L (mm):

5. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)
☐ Fiberglass (400°C) ☐ Other:

6. Cable lengths (mm):

LC _____ LP _____

7. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

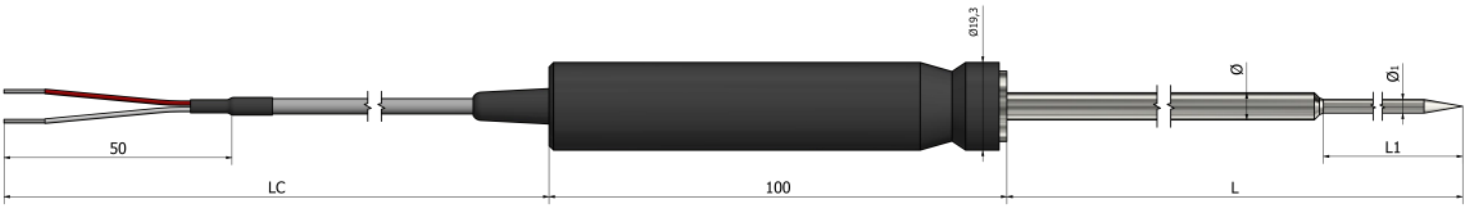
Quantity:

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.

HP40 – Penetration thermistors
Reduced tip



*Handle material ***Plastic***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle tip diameter Ø1: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle diameter Ø (mm):

5. Needle lengths (mm):

L _____ L1 _____

6. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

7. Cable length LC (mm):

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

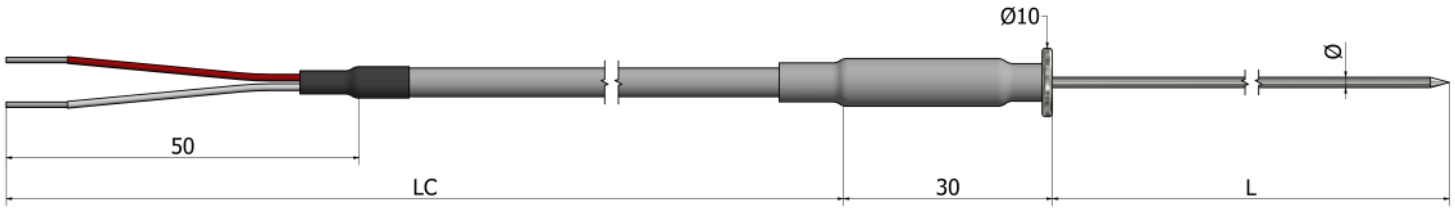
Quantity:

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.

HP41 – Penetration thermistors
Miniature



*Handle material ***Stainless steel 316L with rubber***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø1,5 mm ☐ Ø2 mm

☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

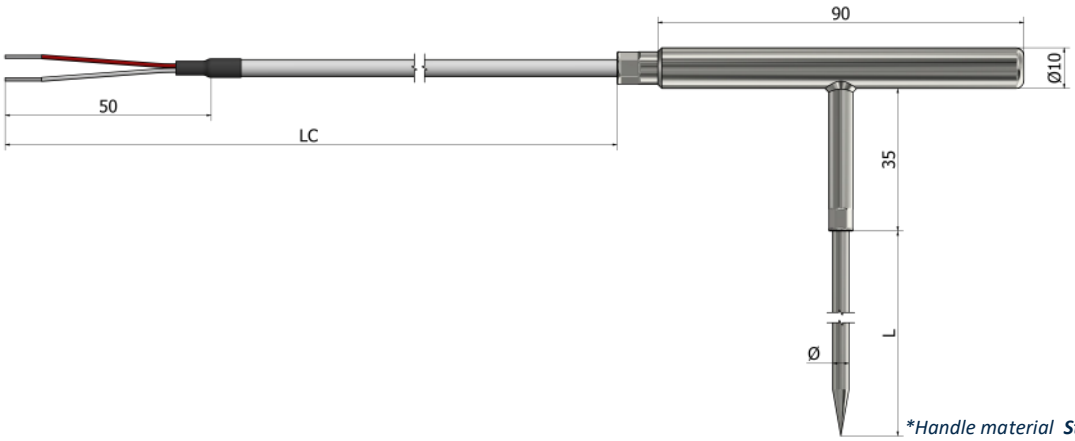
Quantity:

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.

HP50 – Penetration thermistors
T shape



*Handle 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

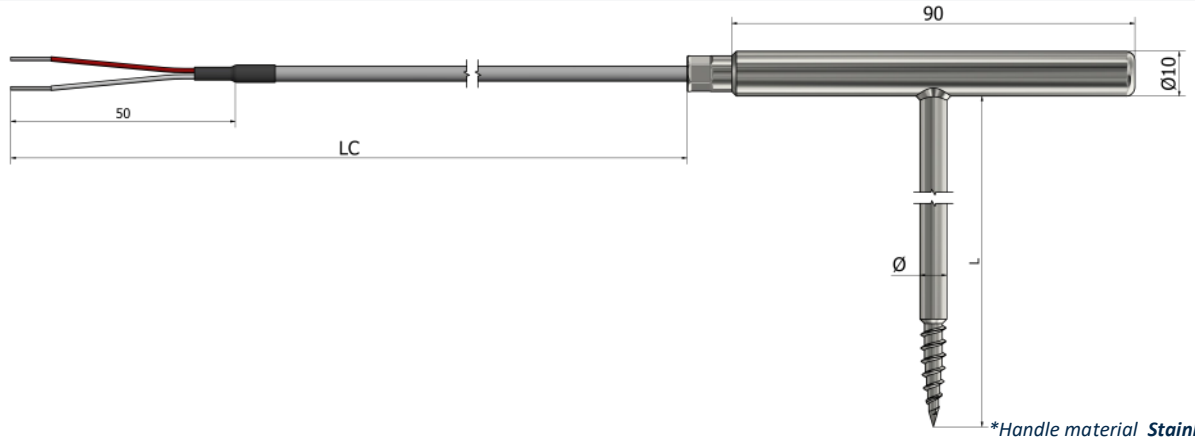
Quantity:

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.

HP51 – Penetration thermistors
T shape with thread



*Handle 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

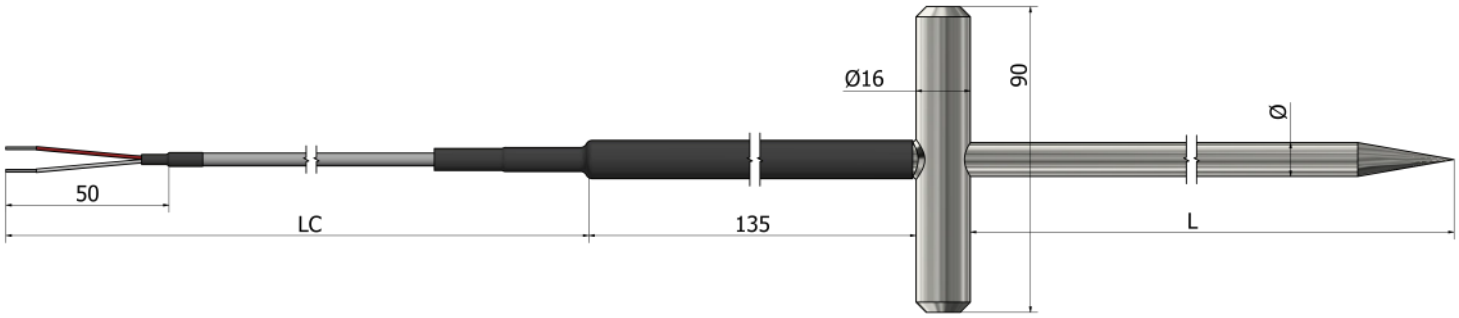
Quantity:

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.

HP60 – Penetration thermistors
T shape for compost



*Handle material ***Stainless steel 316L with rubber***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

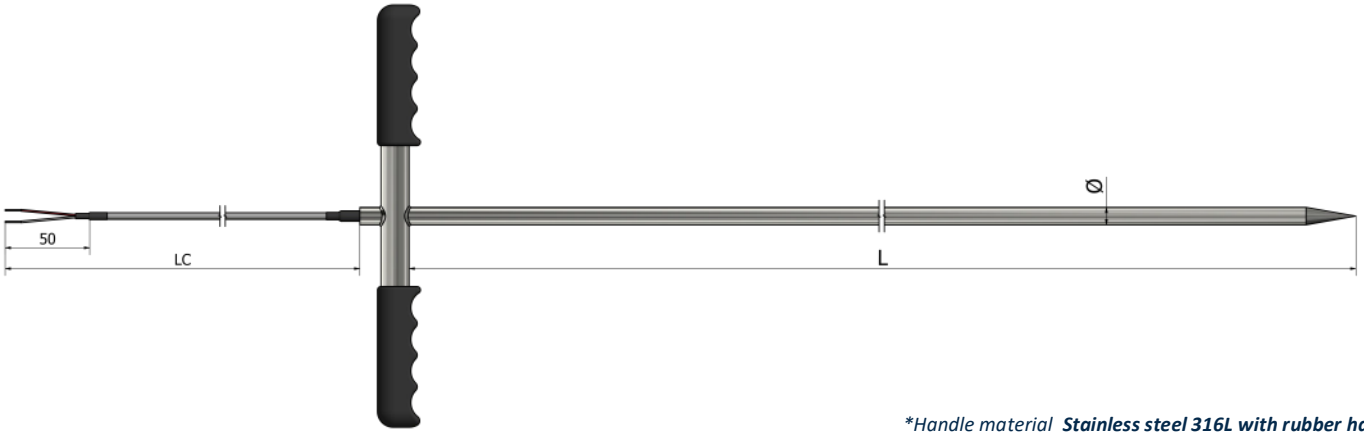
Quantity:

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.

HP61 – Penetration thermistors
Robust T shape for compost



*Handle material ***Stainless steel 316L with rubber hand***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Needle diameter Ø: *(material **Stainless steel 316L**)*

☐ Ø3 mm ☐ Ø4 mm ☐ Ø5 mm

☐ Ø6 mm ☐ Other:

4. Needle length L (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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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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Thermistors with thread connection - 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.

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 ?

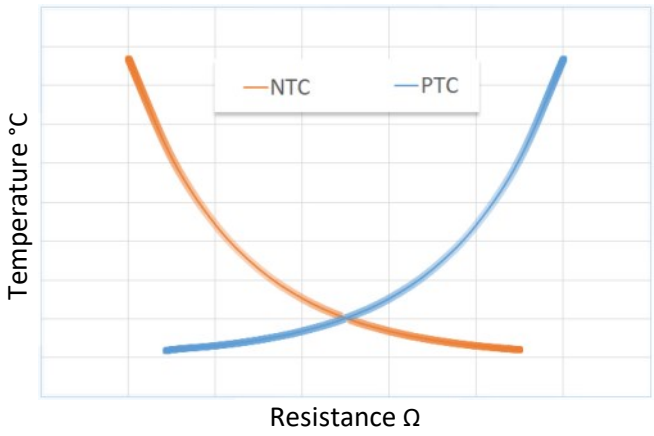
NTCs and PTCs are both thermistors, i.e. temperature sensors that change resistance depending on the temperature.
However, there is a major difference between these two types of thermistors:

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.

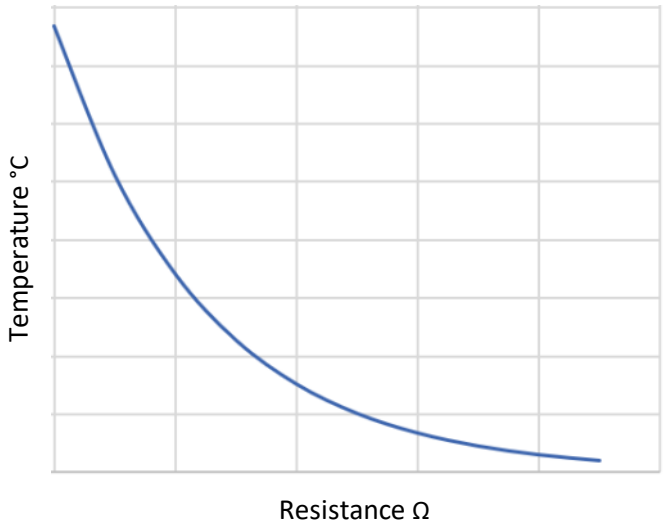


Thermistors with thread connection - Technical information

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.



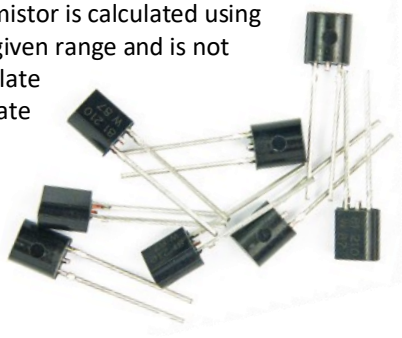
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

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

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

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 given range.



Types of thermistors

Type	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)

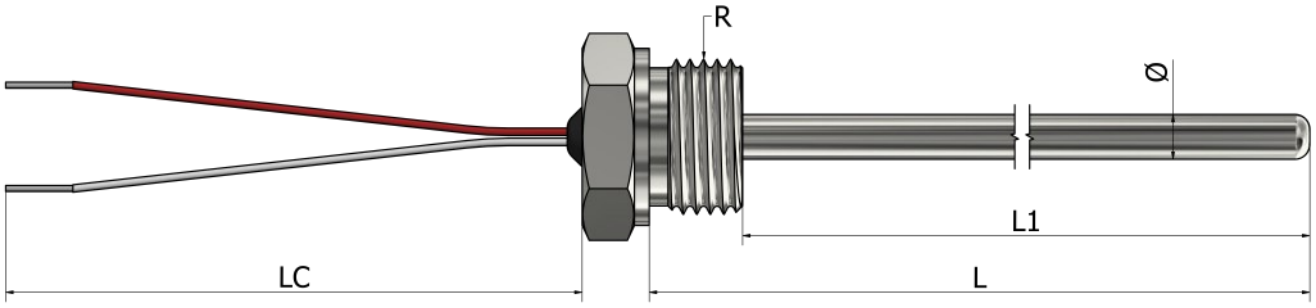
Thermistor connectors

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:

- ☐ 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L or L1 (mm):

4. Diameter Ø (mm):

5. Free leads length LC (mm):

6. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

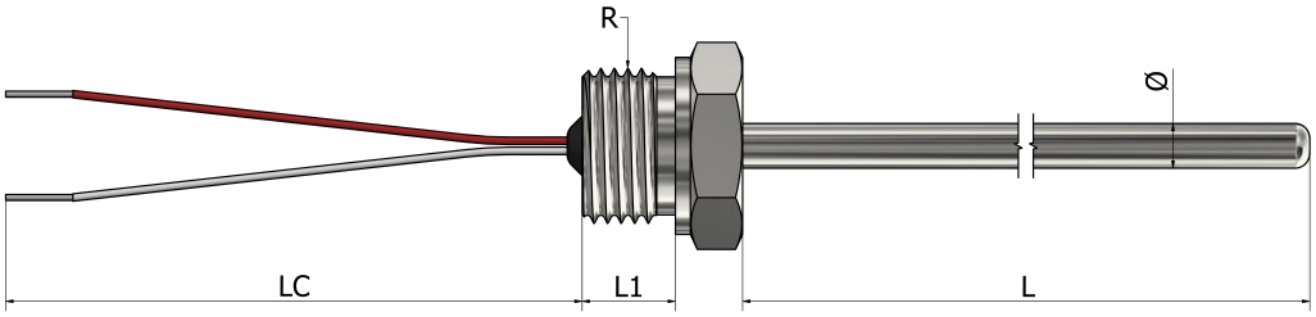
Quantity:

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.

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:

- ☐ 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L (mm):

4. Diameter Ø (mm):

5. Free leads length LC (mm):

6. Thread length L1 (mm):

7. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10
☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

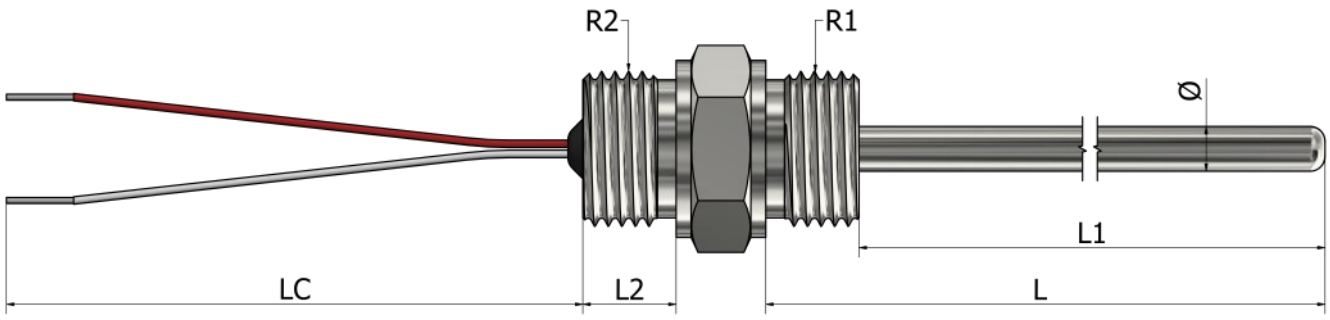
Quantity:

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.

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Diameter Ø (mm):

4. Free leads length LC (mm):

5. Length L or L1 (mm):

6. Thread R1:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10
☐ 1/2'' NPT ☐ Other:

7. Thread length L2 (mm):

8. Thread R2:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10
☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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.

HR10 – Thermistors with thread connection
Fixed thread with cable prolongation

*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

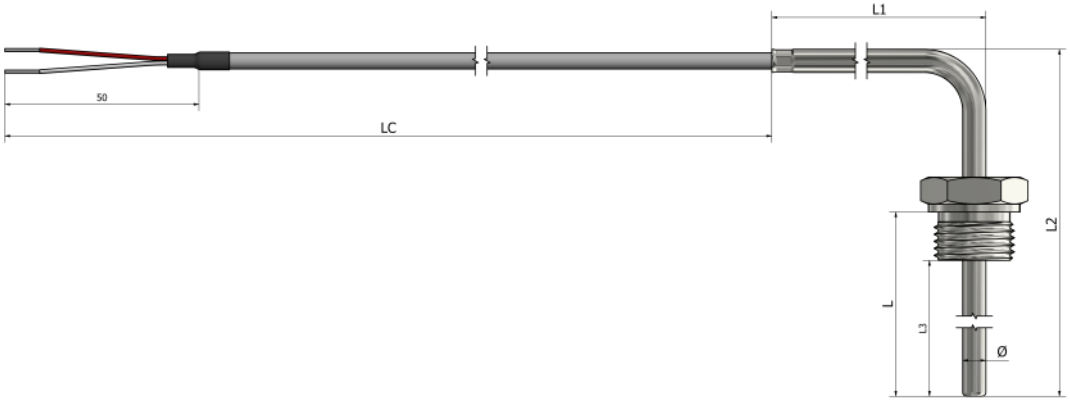
Note:

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.

EuroSensors

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



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths (mm):

L1 _____ L2 _____

4. Length L or L3 (mm):

5. Diameter Ø (mm):

6. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

7. Cable length LC (mm):

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

9. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

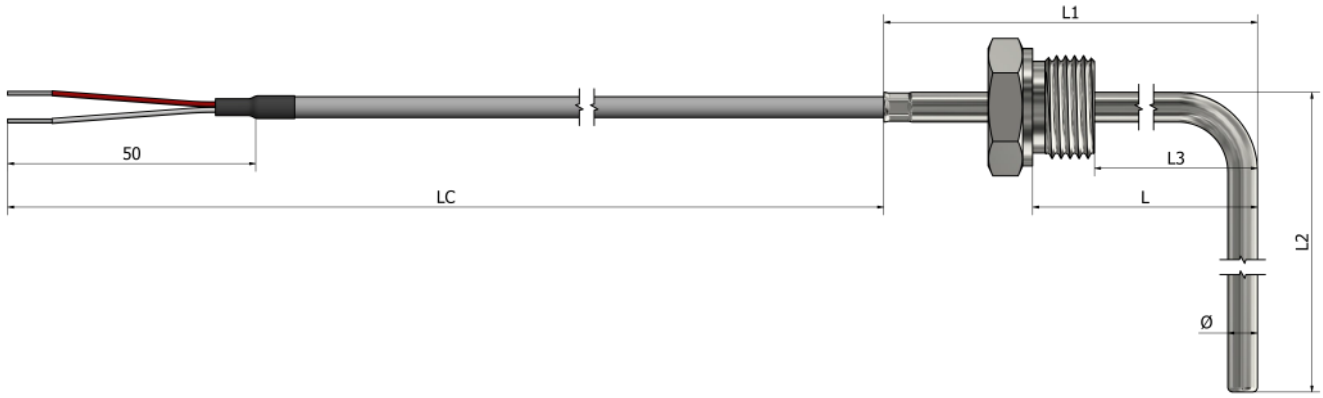
Quantity:

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.

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



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths (mm):

L1 _____ L2 _____

4. Length L or L3 (mm):

5. Diameter Ø (mm):

6. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

7. Cable length LC (mm):

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

9. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

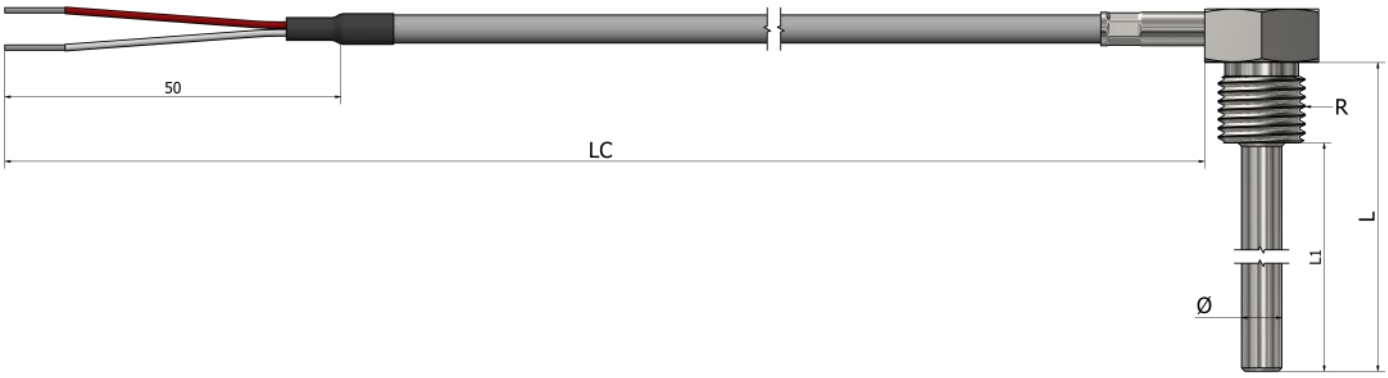
Quantity:

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.

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



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

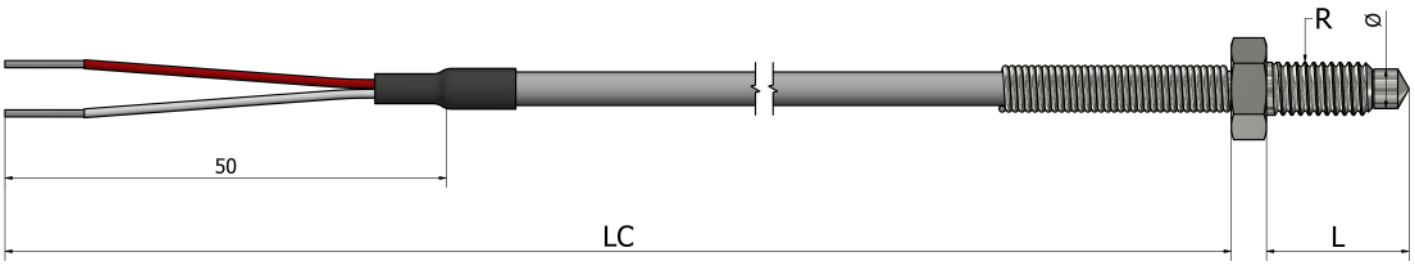
Quantity:

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.

HR20 – Thermistors with thread connection
Nozzle



*Nozzle and 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L (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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

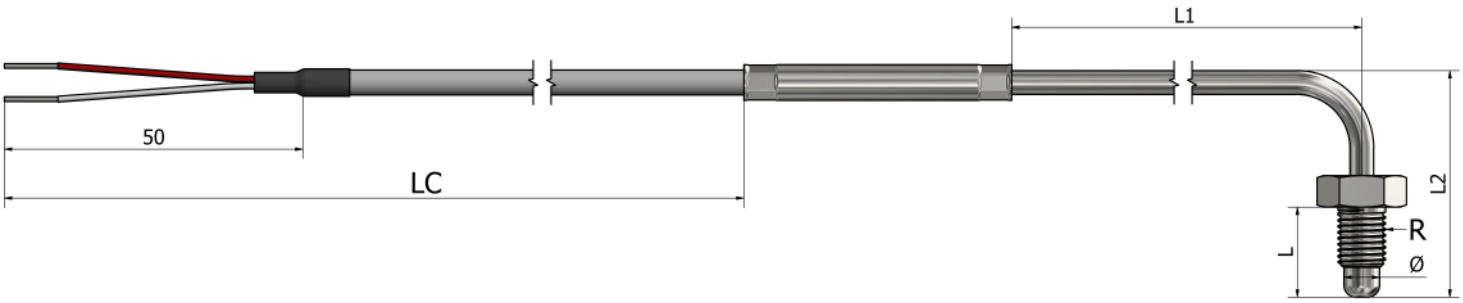
Quantity:

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.

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



*Tube material **Stainless steel 316L*** *Nozzle and 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths (mm):

L1 _____ L2 _____

4. Length L (mm):

5. Diameter Ø (mm):

6. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

7. Cable length LC (mm):

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

9. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

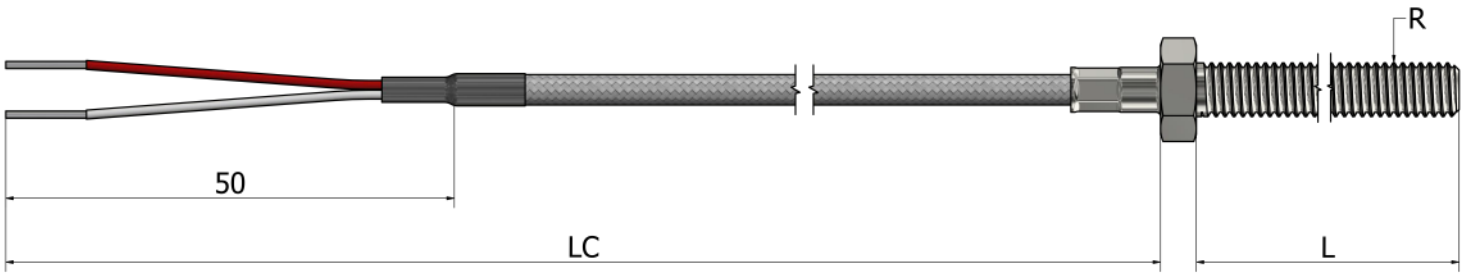
Quantity:

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.

HR22 – Thermistors with thread connection
Bolt



*Bolt 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L (mm):

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)
☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

7. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10
☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

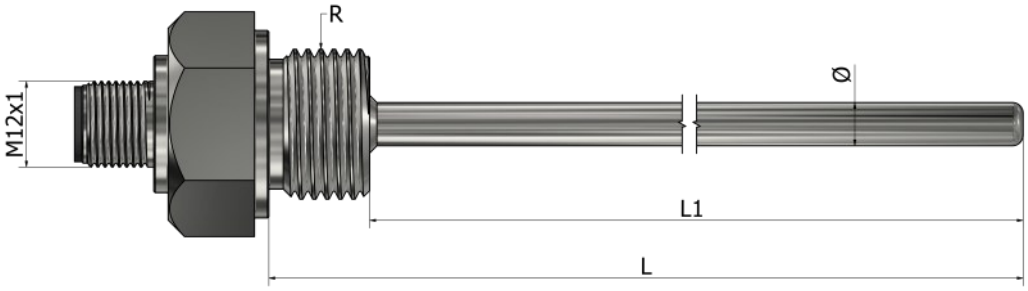
Quantity:

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.

HR30 – Thermistors with thread connection
Integrated M12 connector



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

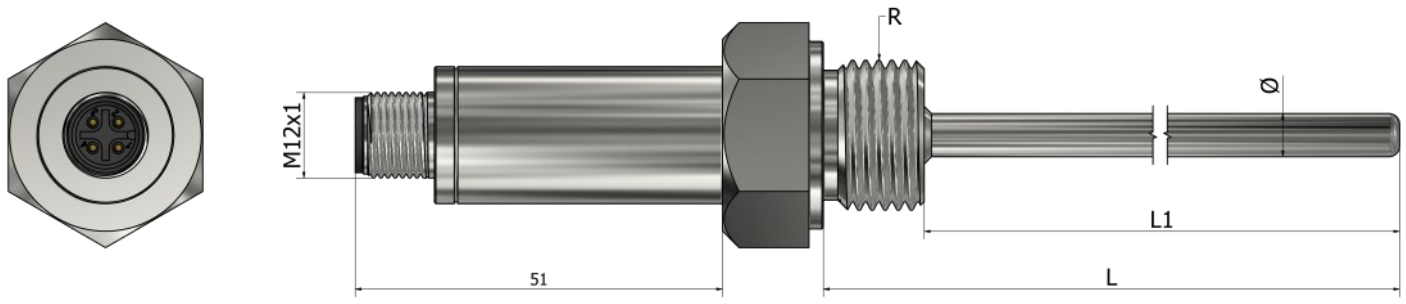
Quantity:

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.

HR31 – Thermistors with thread connection
Integrated M12 connector with transmitter



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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. Transmitter (°C):
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

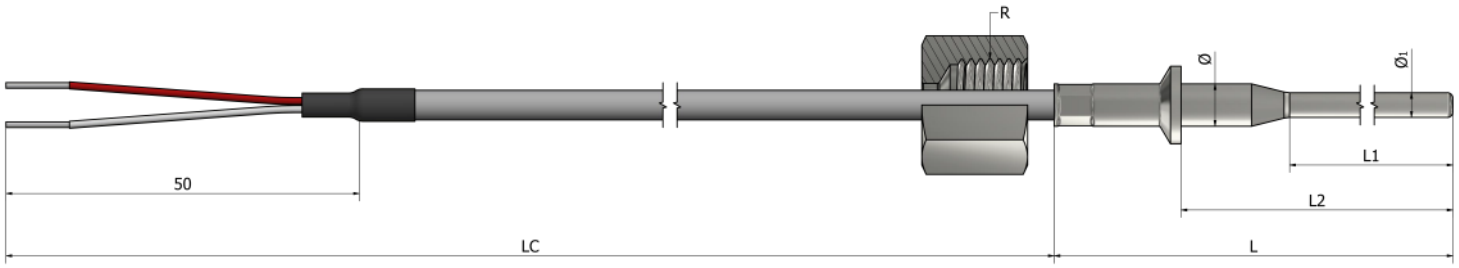
Quantity:

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.

HR40 – Thermistors with thread connection
Screw-on fixed thread



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths (mm):

L _____ L1 _____ L2 _____

4. Diameters (mm):

Ø _____ Ø1 _____

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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

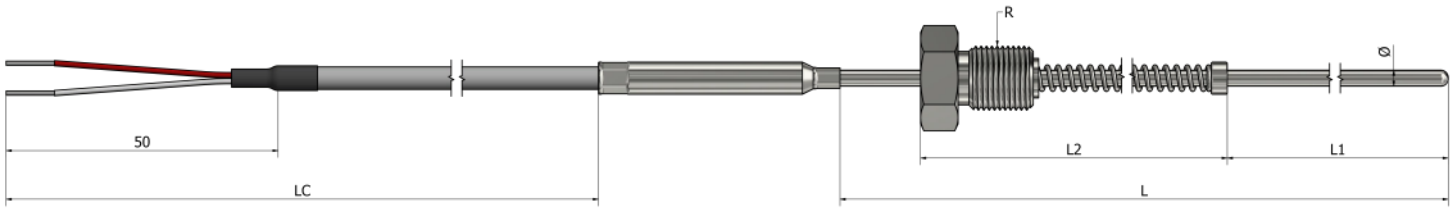
Quantity:

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.

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



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths (mm):

L _____ L1 _____ L2 _____

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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

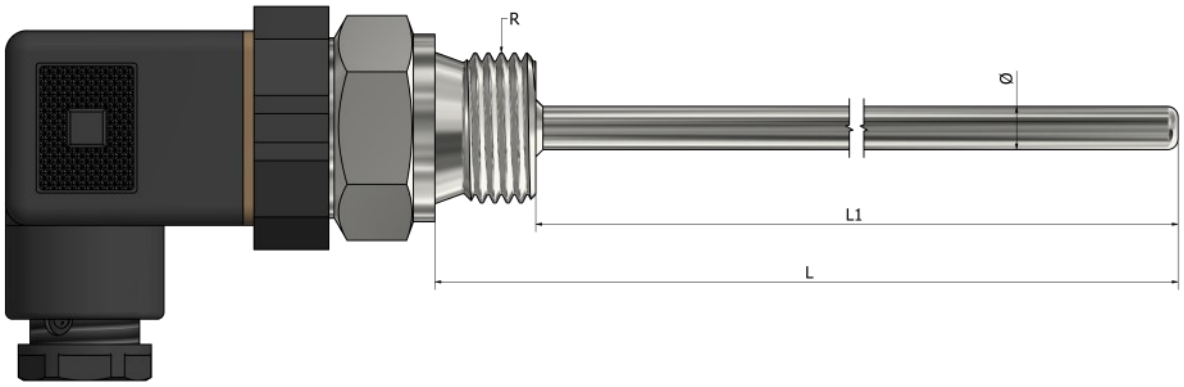
Quantity:

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.

HR60 – Thermistors with thread connection
DIN43650 connector



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

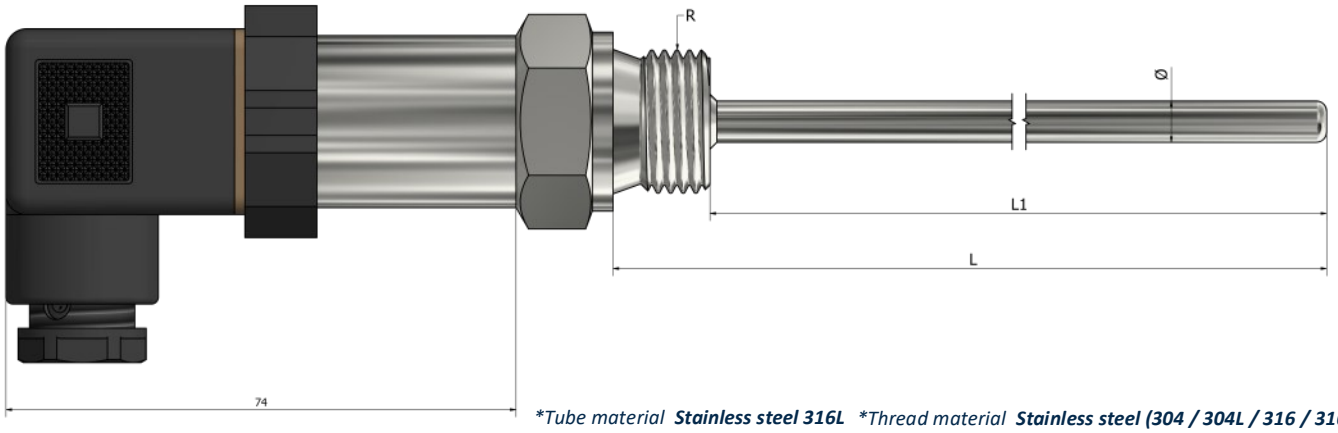
Quantity:

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.

HR61 – Thermistors with thread connection
DIN43650 connector with transmitter



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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. Transmitter (°C):
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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.

EuroSensors

Thermistors with terminal head

Contents

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.

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

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 ?

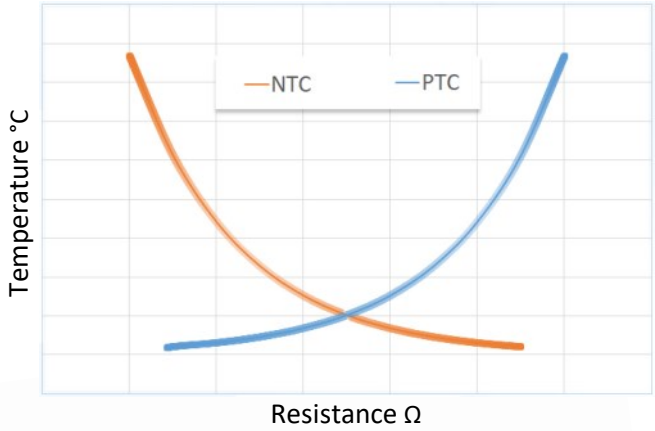
NTCs and PTCs are both thermistors, i.e. temperature sensors that change resistance depending on the temperature.
However, there is a major difference between these two types of thermistors:

NTC thermistors

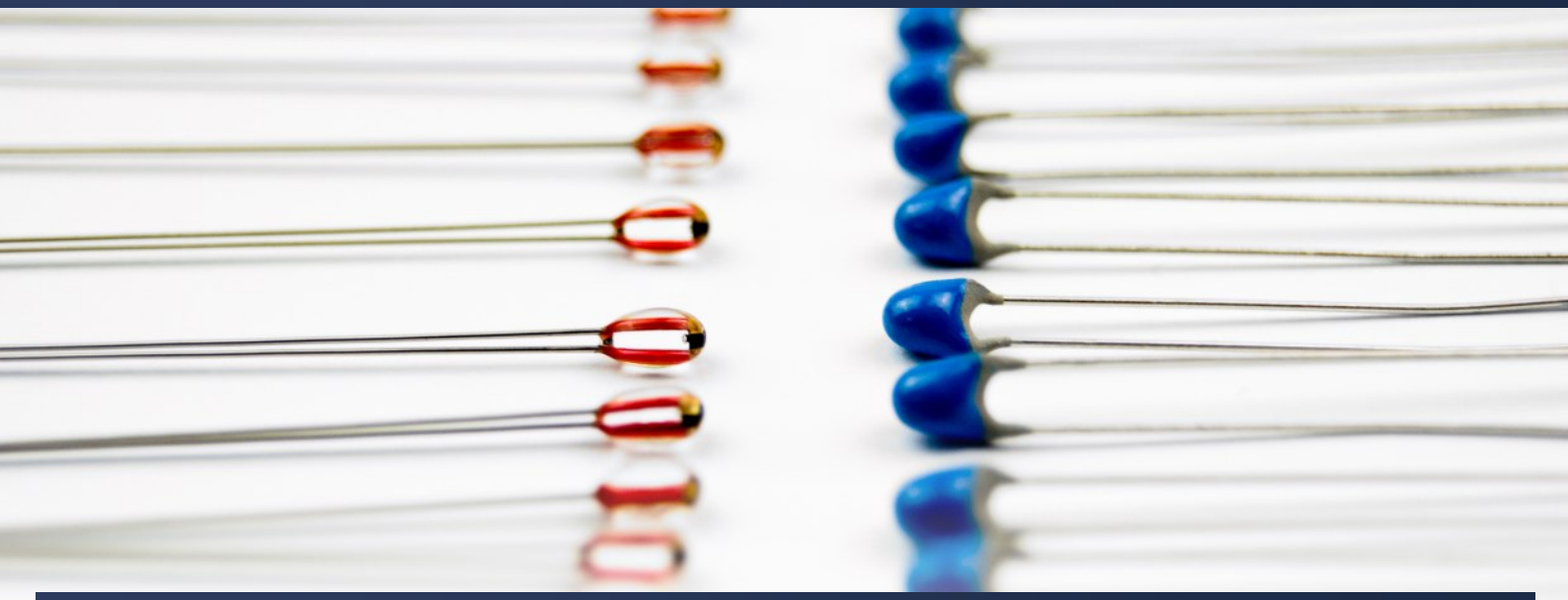
NTCs have a resistance that decreases as the temperature increases. They are commonly used in thermostats and temperature control devices to measure room temperature.

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.



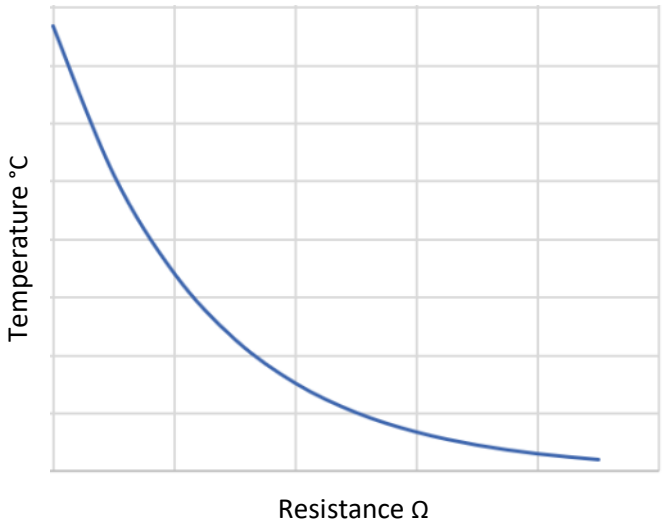
Thermistors with terminal head - Technical information



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.



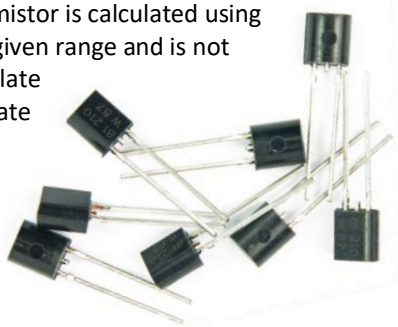
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

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

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

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 given range.

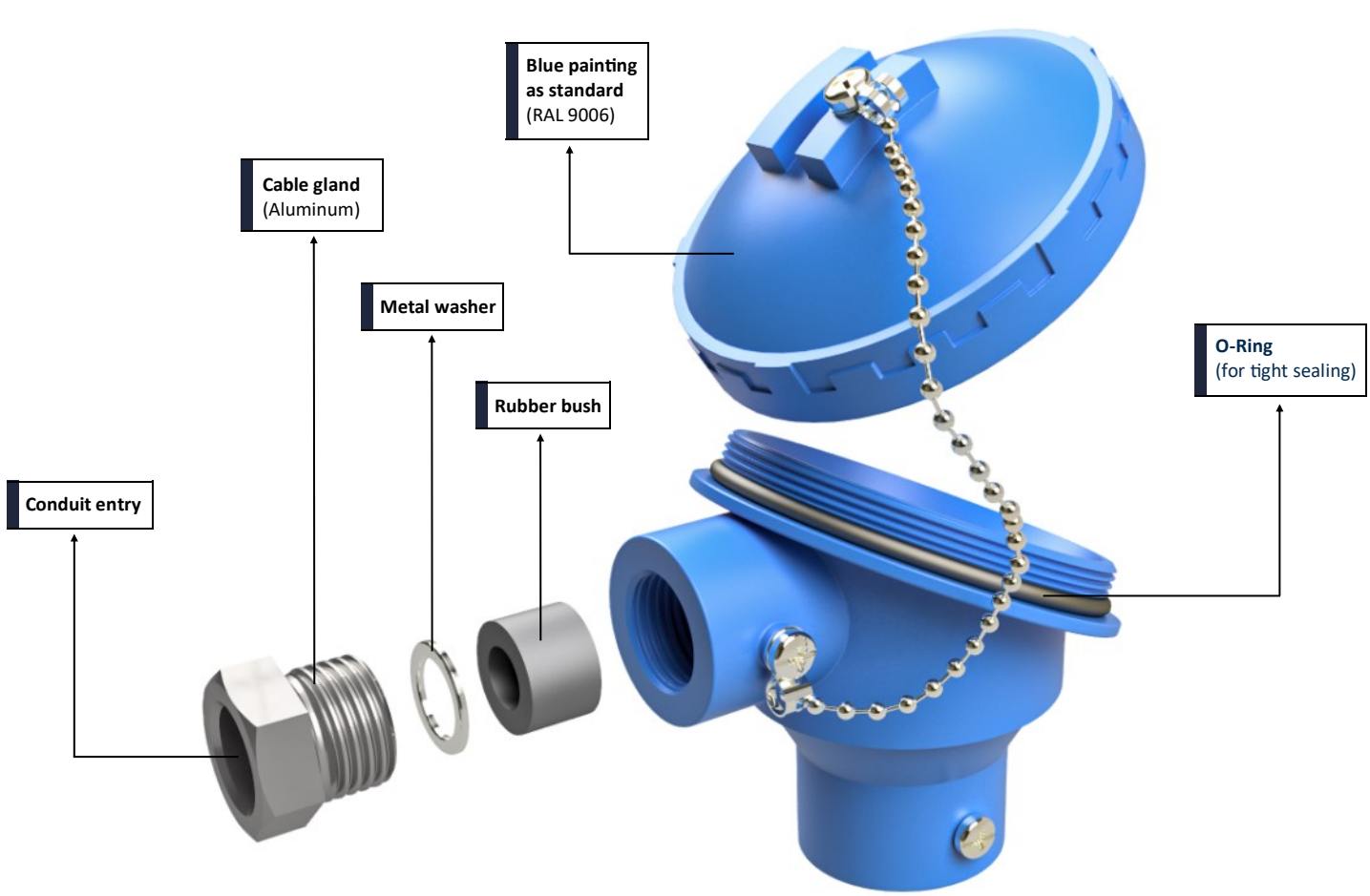


Types of thermistors

Type	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)

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).

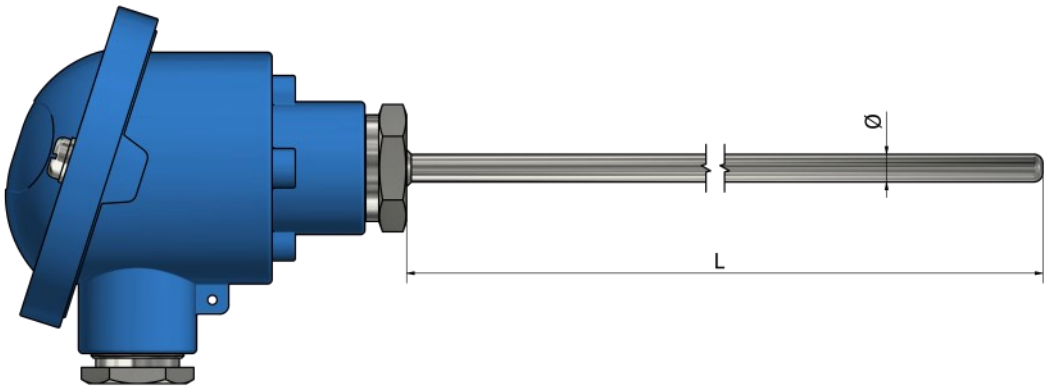
What is a temperature transmitter ?

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



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

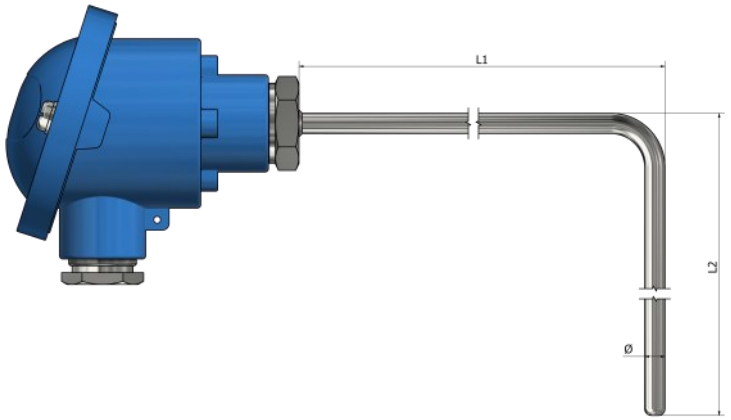
Note:

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.

EuroSensors

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



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L1 and L2 (mm):

L1 _____ L2 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

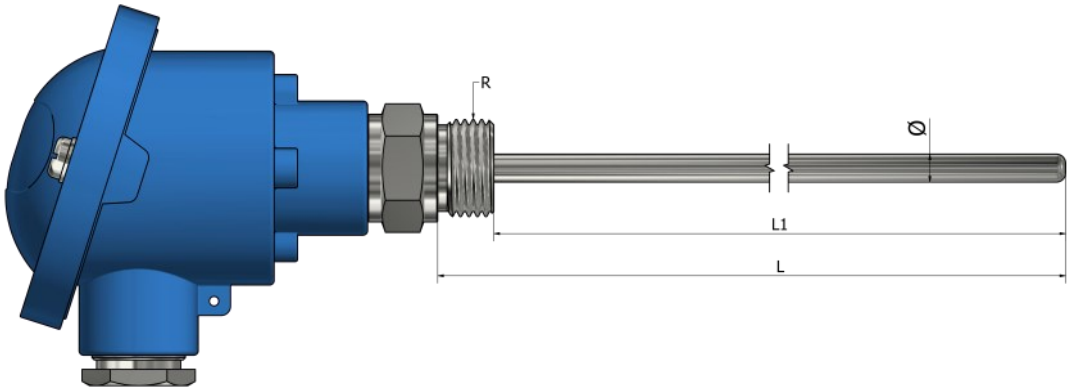
Quantity:

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.

HH10 – Thermistors with terminal head
Standard 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L or L1 (mm):

L _____ L1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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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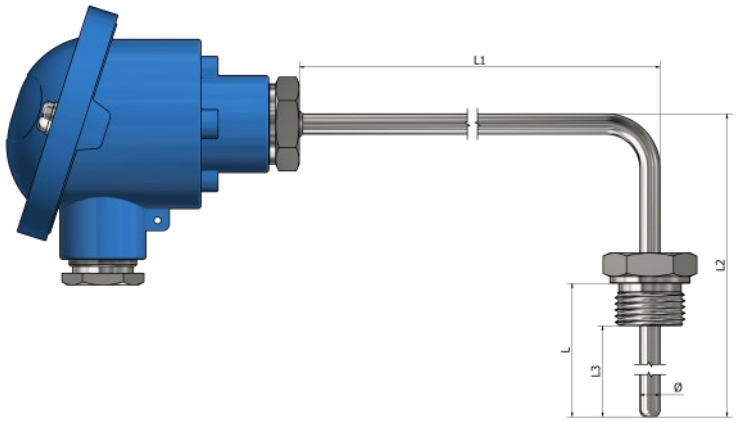
HH11 – Thermistors with terminal head
Standard with fixed thread (90° bend) (type 1)



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L1 and L2 (mm):

L1 _____ L2 _____

4. Length L or L3 (mm):

L _____ L3 _____

5. Diameter Ø (mm):

6. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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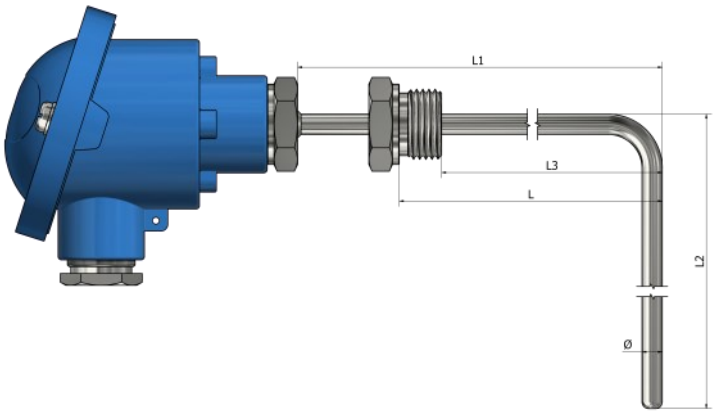
HH12 – Thermistors with terminal head
Standard with fixed thread (90° bend) (type 2)



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L1 and L2 (mm):

L1 _____ L2 _____

4. Length L or L3 (mm):

L _____ L3 _____

5. Diameter Ø (mm):

6. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

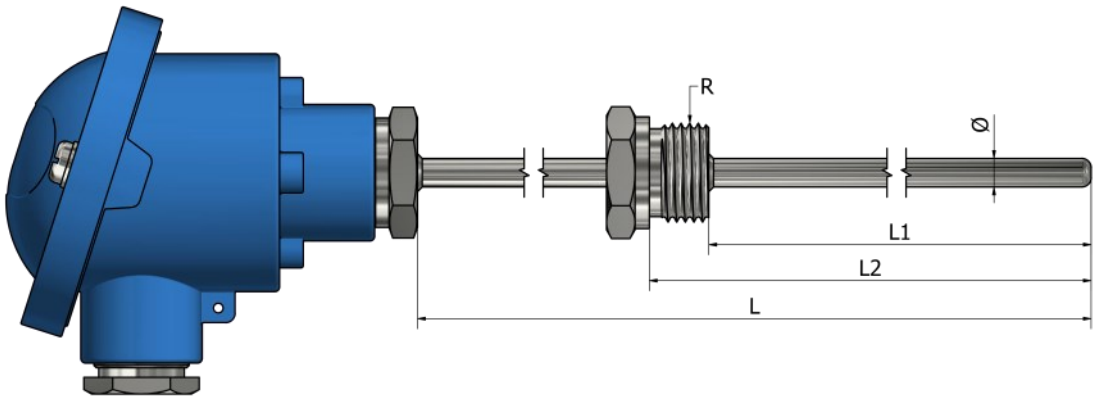
Quantity:

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.

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



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L and L1 or L2 (mm):

L _____ L1 _____ L2 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

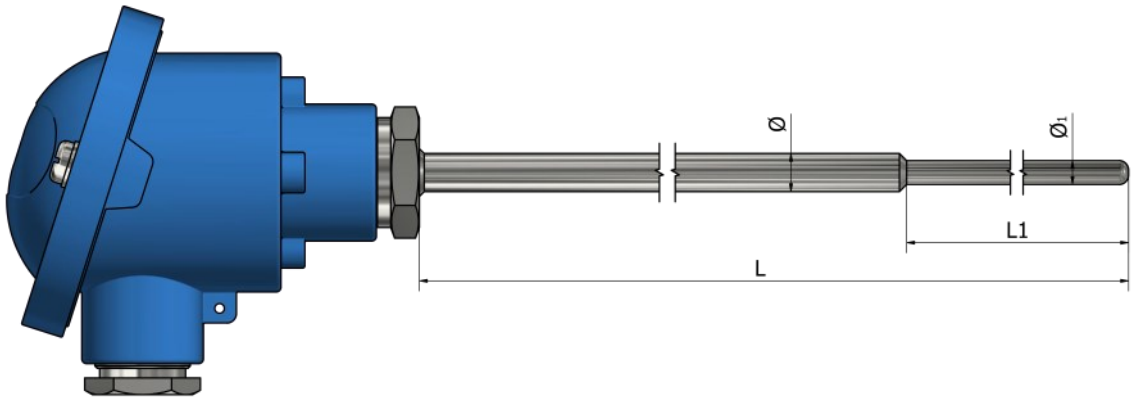
Quantity:

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.

HH20 – Thermistors with terminal head
Reduced tip



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Dimensions L and Ø (mm):

L _____ Ø _____

4. Dimensions L1 and Ø1 (mm):

L1 _____ Ø1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

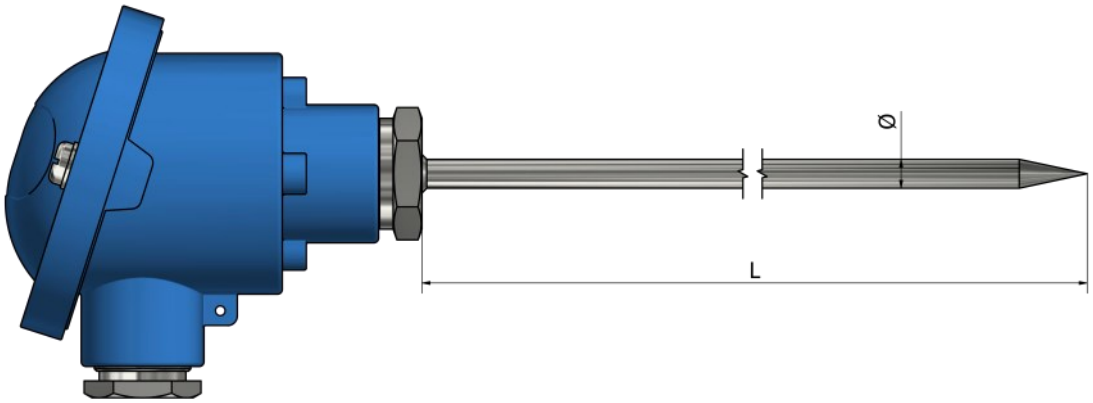
Quantity:

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.

HH21 – Thermistors with terminal head
Pointed tip



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

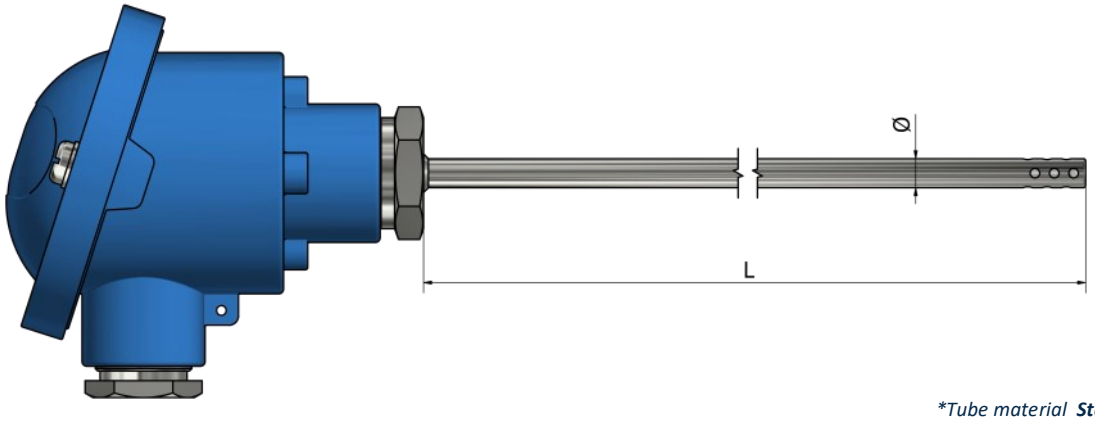
Quantity:

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.

HH22 – Thermistors with terminal head
Open air



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

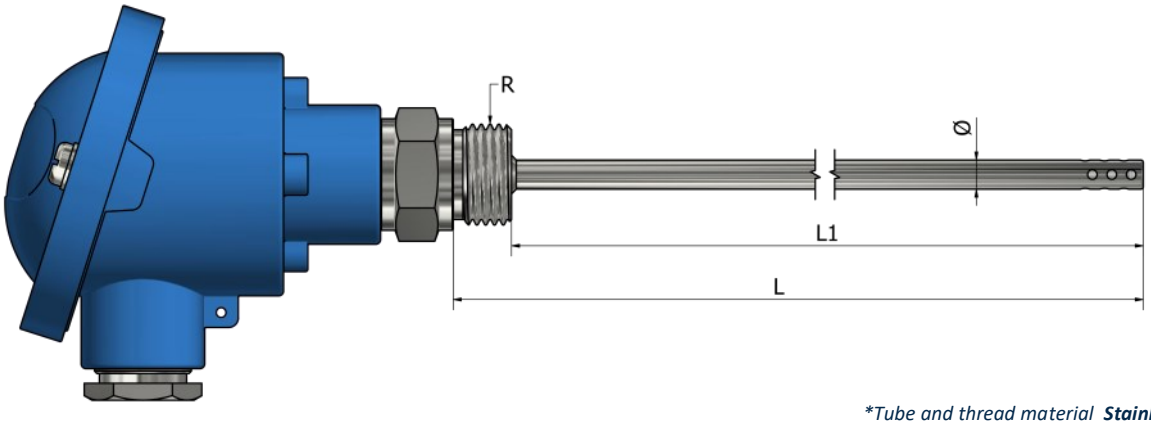
Quantity:

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.

HH23 – Thermistors with terminal head
Open air 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L or L1 (mm):

L _____ L1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

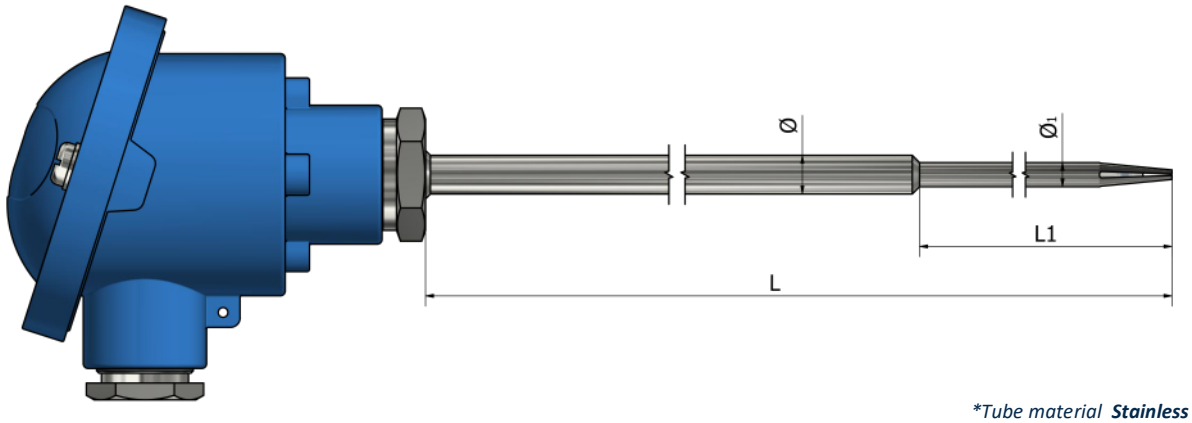
Quantity:

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.

HH24 – Thermistors with terminal head
Open air with reduced tip



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Dimensions L and Ø (mm):

L _____ Ø _____

4. Dimensions L1 and Ø1 (mm):

L1 _____ Ø1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

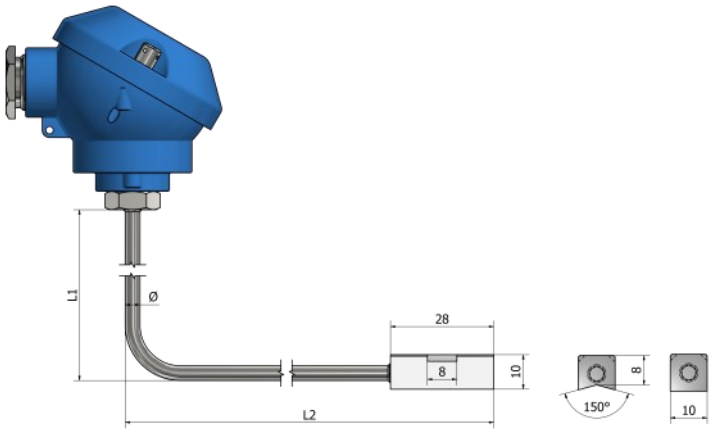
Quantity:

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.

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



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L1 and L2 (mm):

L1 _____ L2 _____

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

7. Contact block material:

☐ Brass ☐ Aluminum ☐ Other:

8. Contact block shape:


☐ V-shape


☐ Flat

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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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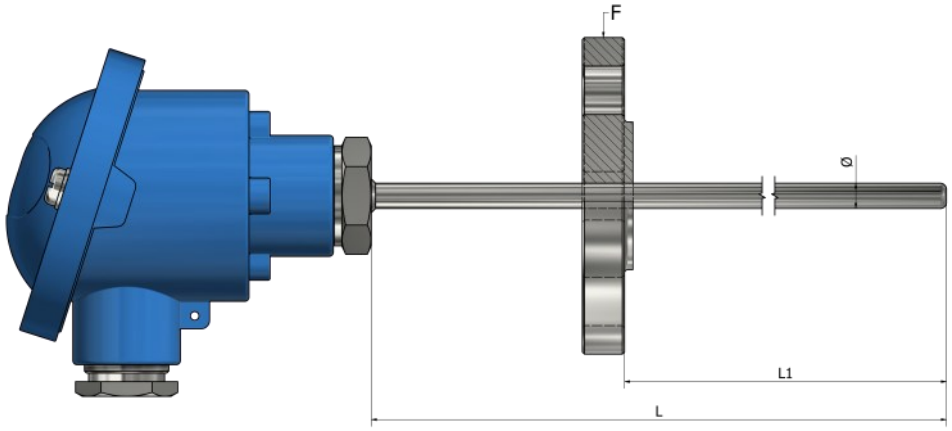
HH30 – Thermistors with terminal head
Flange sanitary mounting



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Dimensions L and L1 (mm):

L _____ L1 _____

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

7. Flange sanitary mounting:

☐ DIN2527 (DN10 – PN6) ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

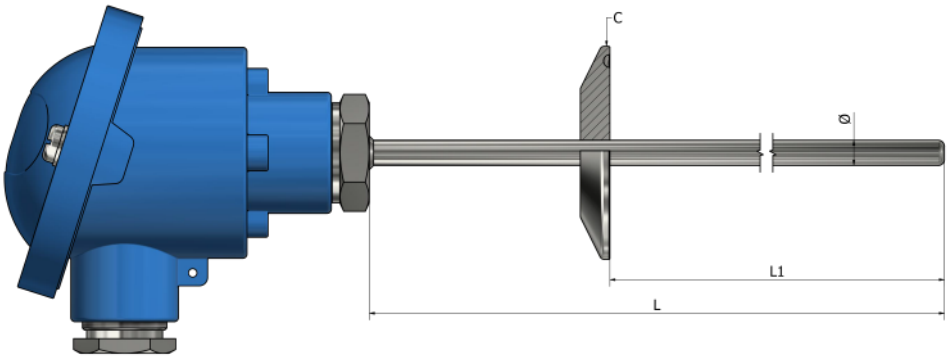
Note:

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.

EuroSensors

HH31 – Thermistors with terminal head
Tri-clamp sanitary mounting



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Dimensions L and L1 (mm):

L _____ L1 _____

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

7. Flange sanitary mounting:

☐ DIN2527 (DN10 – PN6) ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

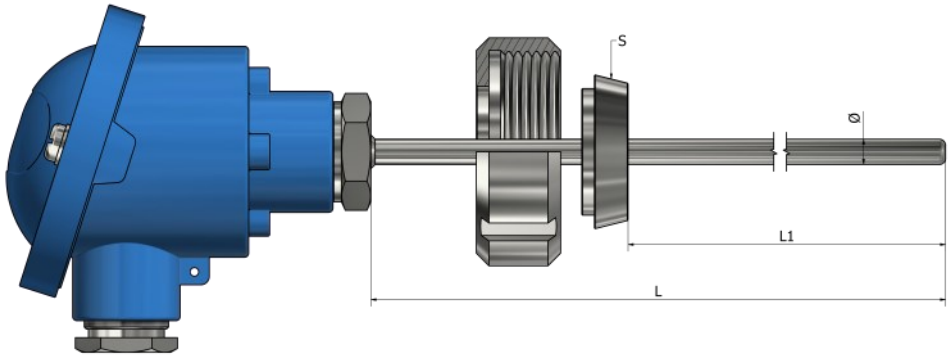
Note:

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.

EuroSensors

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



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Dimensions L and L1 (mm):

L _____ L1 _____

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

7. Flange sanitary mounting:

☐ DIN2527 (DN10 – PN6) ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

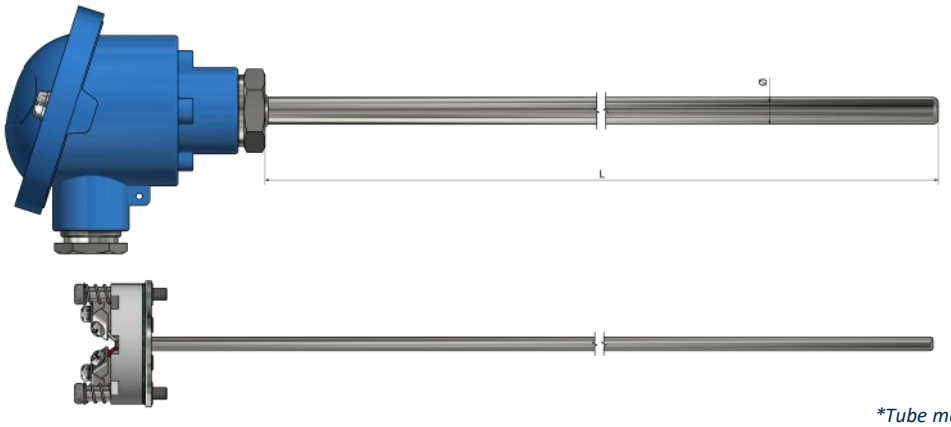
Note:

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.

EuroSensors

HH40 – Thermistors with terminal head
Exchangeable insert



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L (mm):

4. Diameter Ø (mm):

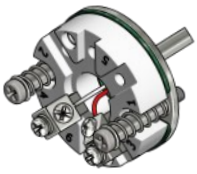
5. Connection head: *(see the part "Accessories")*

☐ Type B ☐ Type DAN ☐ Type M ☐ Type N

☐ Type Ex ☐ Type NS ☐ Other:

6. Type of exchangeable insert:

☐ Wires



☐ Terminal block

☐ Transmitter (°C):

T _____
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

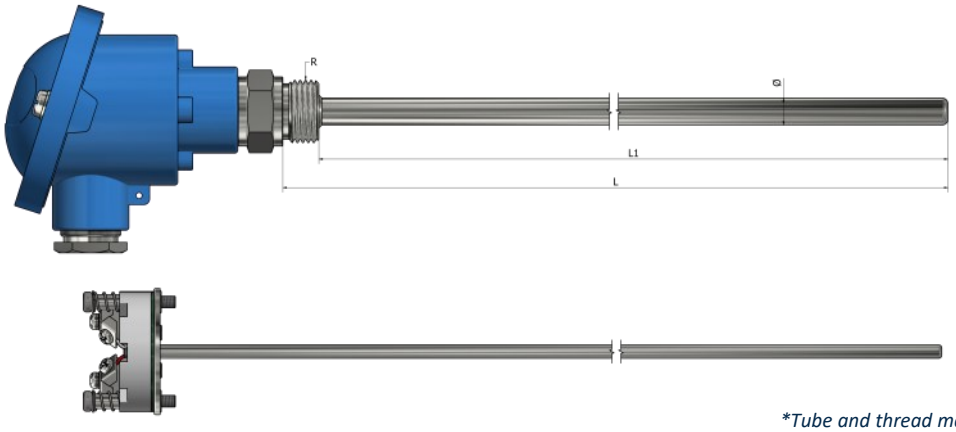
Note:

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.

EuroSensors

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L or L1 (mm):

L _____ L1 _____

4. Diameter Ø (mm):

5. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

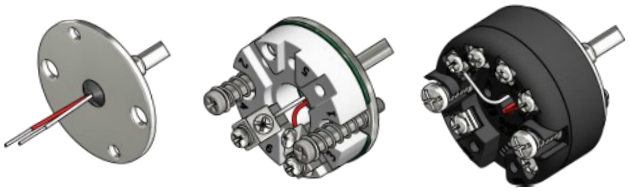
☐ 1/2'' NPT ☐ Other:

6. Connection head: *(see the part "Accessories")*

☐ Type B ☐ Type DAN ☐ Type M ☐ Type N

☐ Type Ex ☐ Type NS ☐ Other:

7. Type of exchangeable insert:



☐ Wires ☐ Terminal block ☐ Transmitter (°C):

T _____
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

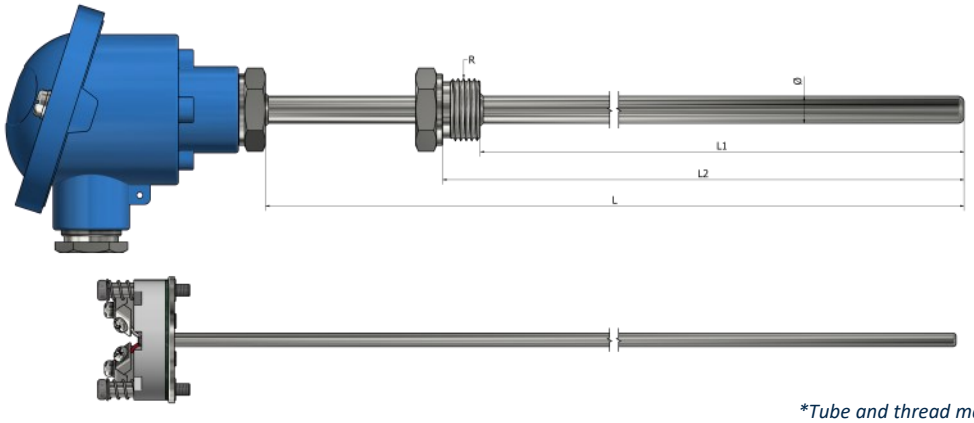
Quantity:

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.

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



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L, L1, L2 (mm):

L _____ L1 _____ L2 _____

4. Diameter Ø (mm):

5. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

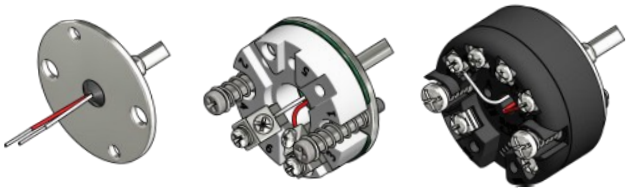
☐ 1/2'' NPT ☐ Other:

6. Connection head: *(see the part "Accessories")*

☐ Type B ☐ Type DAN ☐ Type M ☐ Type N

☐ Type Ex ☐ Type NS ☐ Other:

7. Type of exchangeable insert:



☐ Wires ☐ Terminal block ☐ Transmitter (°C):

T _____
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

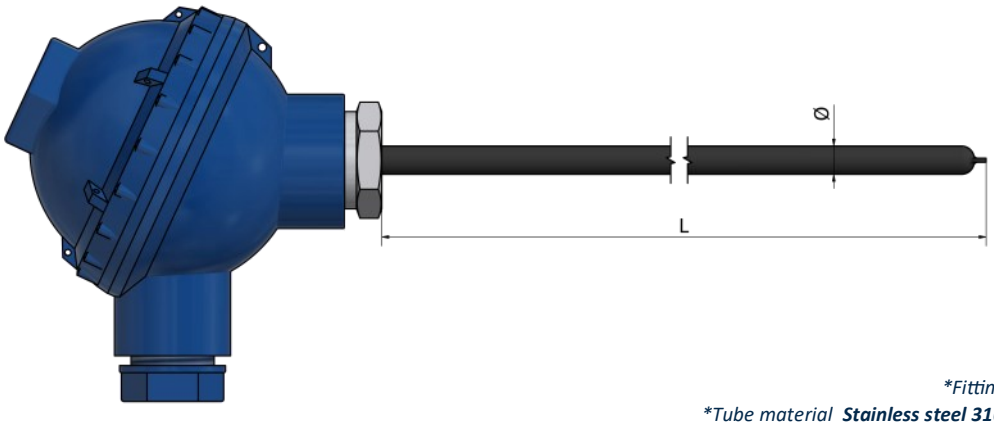
Quantity:

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.

HH50 – Thermistors with terminal head
For aggressive environments



Fitting material* ***PTFE* *(260°C)*
Tube material* ***Stainless steel 316L* *with* ***PTFE*** *protection*

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

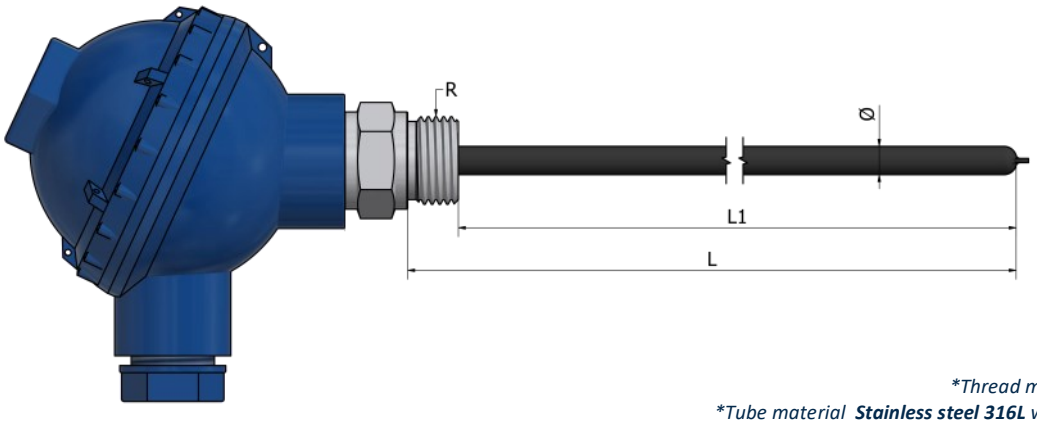
Quantity:

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.

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



*Thread material **PTFE** (260°C)*
*Tube material **Stainless steel 316L** with **PTFE** protection*

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L or L1 (mm):

L _____ L1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

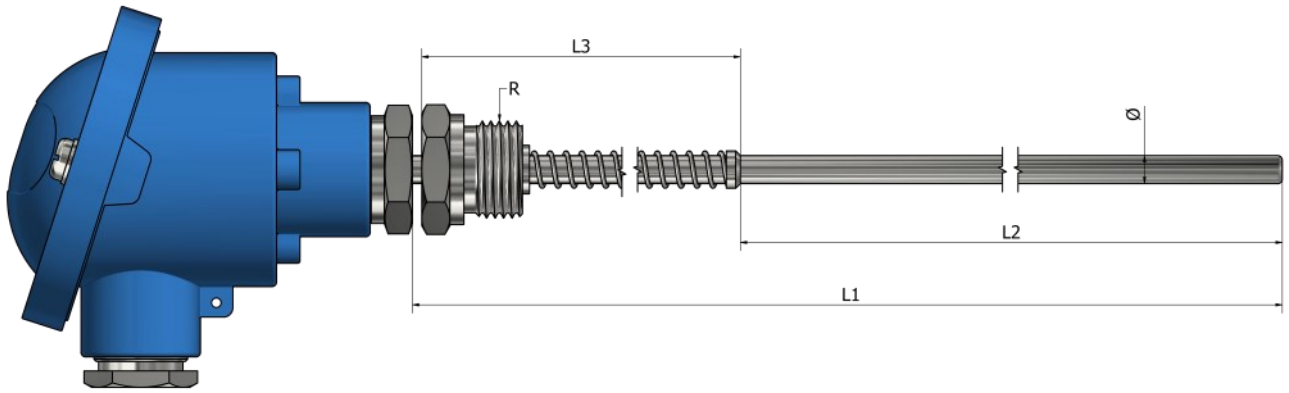
Quantity:

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.

HH60 – Thermistors with terminal head
Spring loaded



*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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L1, L2, L3 (mm):

L1 _____ L2 _____ L3 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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.

HI00 – Thermistors with terminal head
Disc plate insert

*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Sheath length L (mm):

4. Diameter Ø (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

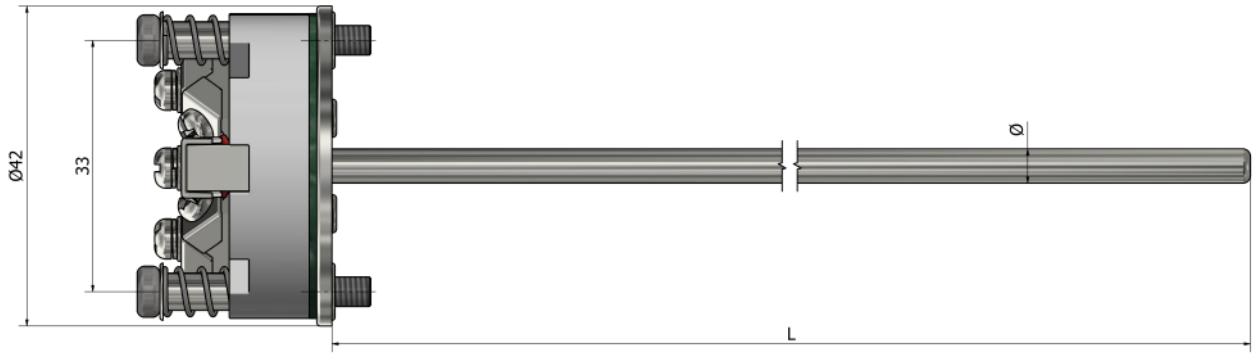
Quantity:

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.

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



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Sheath length L (mm):

4. Diameter Ø (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

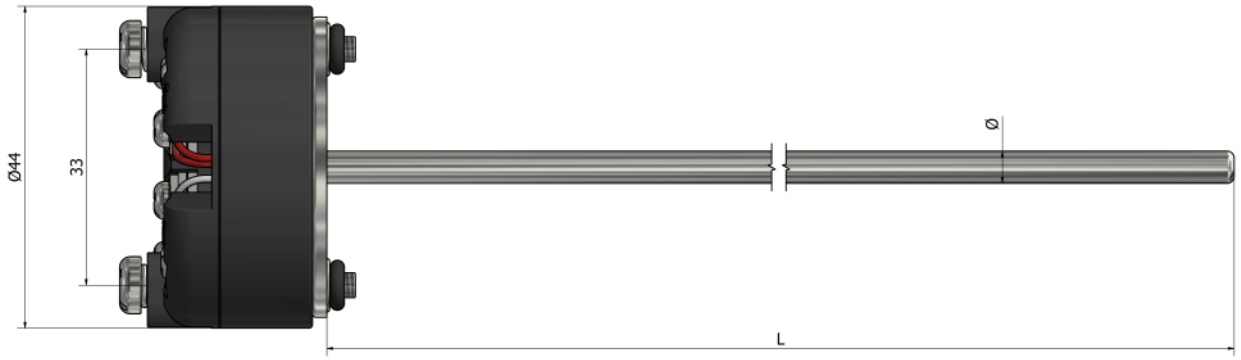
Quantity:

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.

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



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Sheath length L (mm):

4. Diameter Ø (mm):

5. Transmitter (°C):
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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.

EuroSensors

Surface thermistors

Contents

Surface thermistors - Technical information

What are the characteristics of surface thermistors ?

Surface thermistors detect surface temperature. The most important issue in surface temperature measurement is to keep measurement errors as small as possible. This is achieved by an appropriate design of the measuring head, so that only very little heat is extracted from the measuring point and the measurement error is negligible.
The perfectly adapted geometry increases the contact surface. At the same time, the low thermal mass of the measuring head ensures that comparatively fast response times can be achieved when measuring the surface temperature.

Different types of surface thermistors

Attaching a thermistor to a surface for an accurate reading can be difficult. The sensor must respond quickly to avoid heat dissipation and remain attached under vibration or other stress.

We offer a number of constructions to suit every surface application.

Washer and ring thermistors can be attached to a stud welded to the surface or to an existing bolt on a section of machinery.

Bayonets are simply inserted through a drilled opening to a desired depth of a surface. The opening is then tapped to accept a number of mounting adapters. These adapters feature a locking pin allowing the thermistors cap to be installed with a twist.

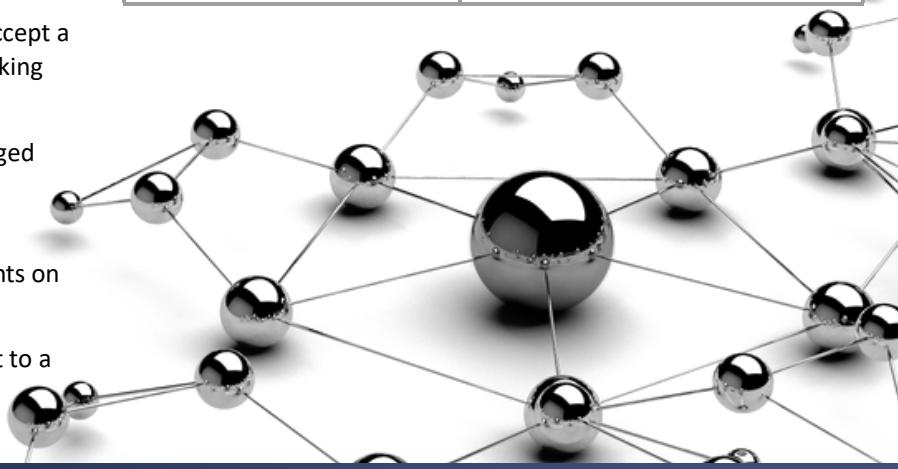
Weld pad thermistors which need not require the more rugged industrial construction can be tig welded or soldered and held with a number of clamping devices.

Pipe-clamp thermistor is ideal for temperature measurements on pipes in laboratories and industrial applications.

Magnet thermistors are ideal for a temporary measurement to a magnetic surface or magnetic surface which doesn't allow any alteration.

Material conductivity

Material	Thermal conductivity W/(m.K)
Air	≈ 0,25
Stainless steel	≈ 14
Brass	≈ 109
Aluminum	≈ 205
Copper	≈ 385
Silver	≈ 406



Surface thermistors - 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.

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 ?

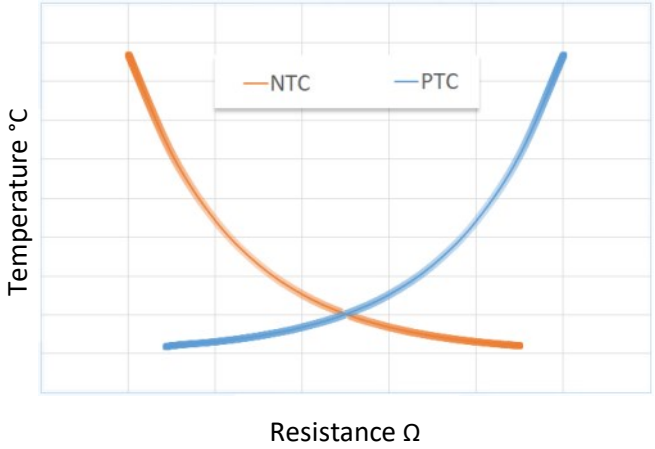
NTCs and PTCs are both thermistors, i.e. temperature sensors that change resistance depending on the temperature.
However, there is a major difference between these two types of thermistors:

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.

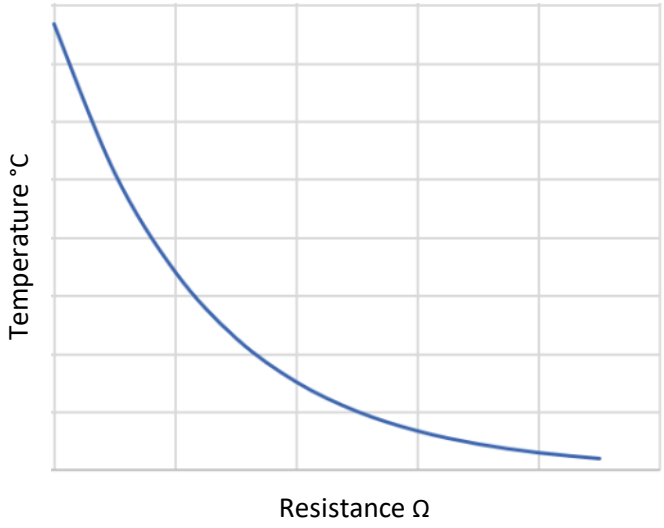


Surface thermistors - Technical information

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.



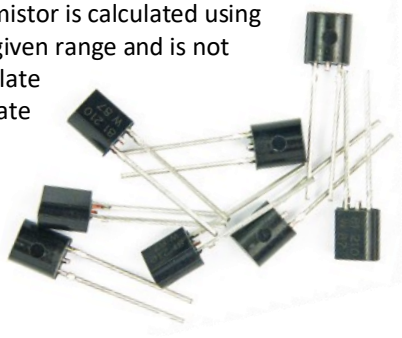
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

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

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

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 given range.



Types of thermistors

Type	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)

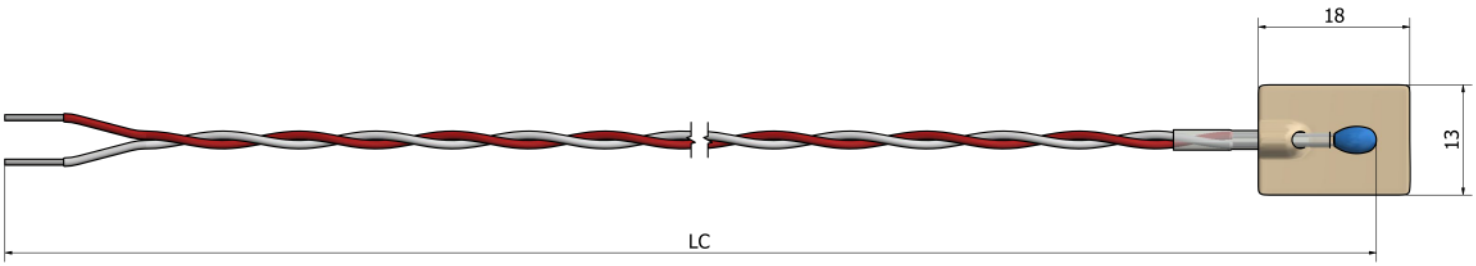
Thermistor connectors

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

HS00 – Surface thermistors
Adhesive tape



*Adhesive tape material **Fiberglass/PTFE***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ Teflon (260°C) ☐ Other:

4. Cable length LC (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

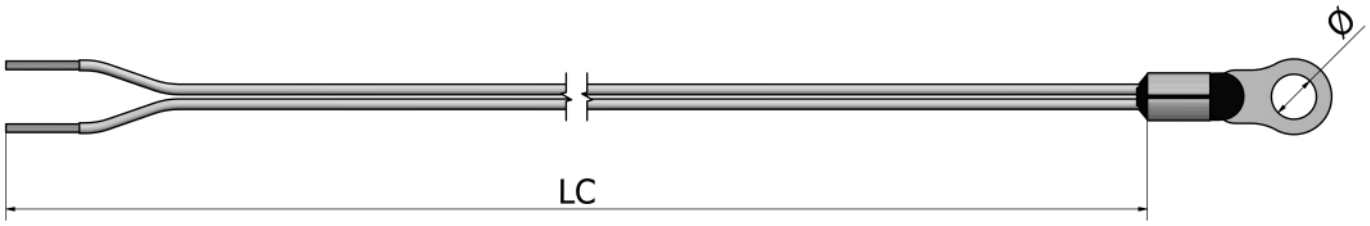
Quantity:

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.

HS01 – Surface thermistors
Washer mount



*Washer mount material **Tinned copper***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ Teflon (260°C) ☐ Other:

4. Cable length LC (mm):

5. Hole size Ø (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

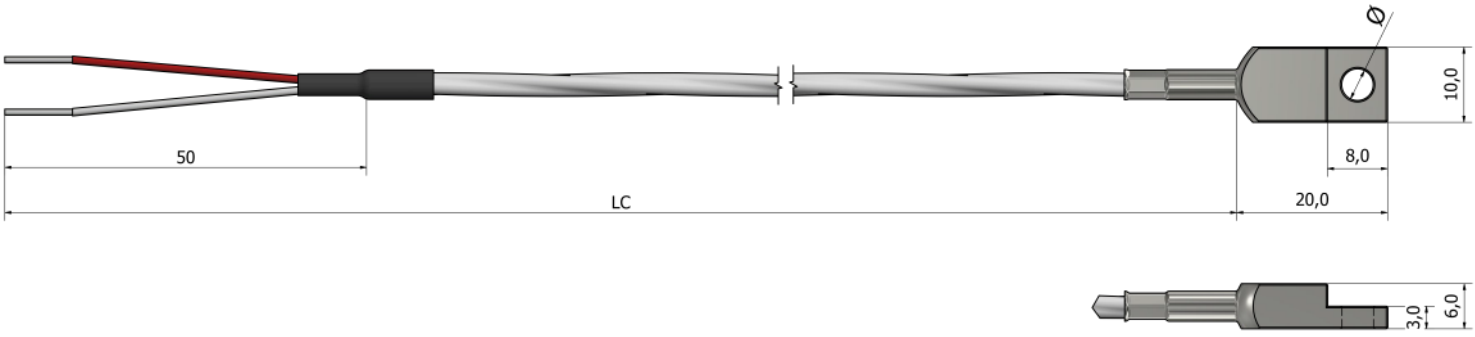
Quantity:

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.

HS02 – Surface thermistors
Reinforced washer mount



*Washer mount 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Hole diameter Ø (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

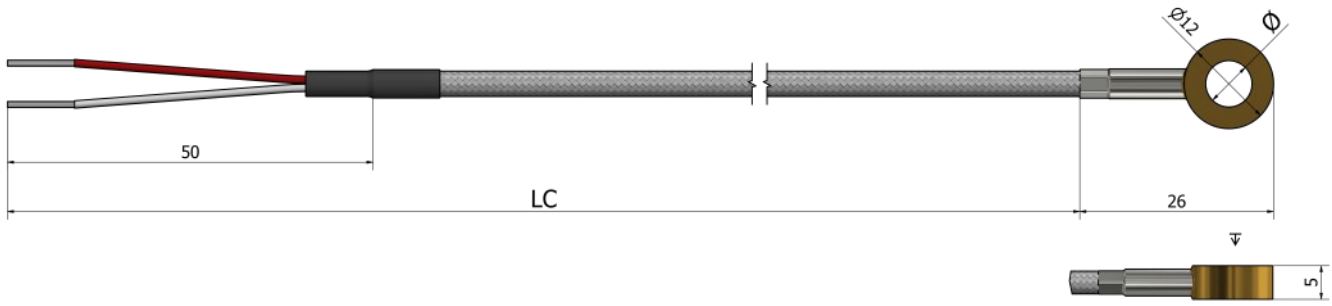
Quantity:

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.

HS03 – Surface thermistors
Ring mount



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Ring material:

☐ Brass ☐ AISI 316L ☐ Other:

7. Ring size:

☐ M5 ☐ M6 ☐ Other:

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

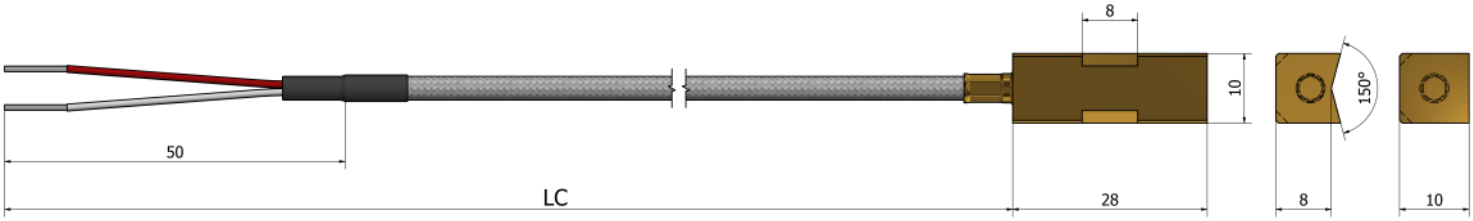
Quantity:

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.

HS05 – Surface thermistors
Contact block



*Contact block material **Brass or aluminum***

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Contact block material:

☐ Brass ☐ Aluminum ☐ Other:

6. Contact block shape:

☐ V-shape

☐ Flat

7. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

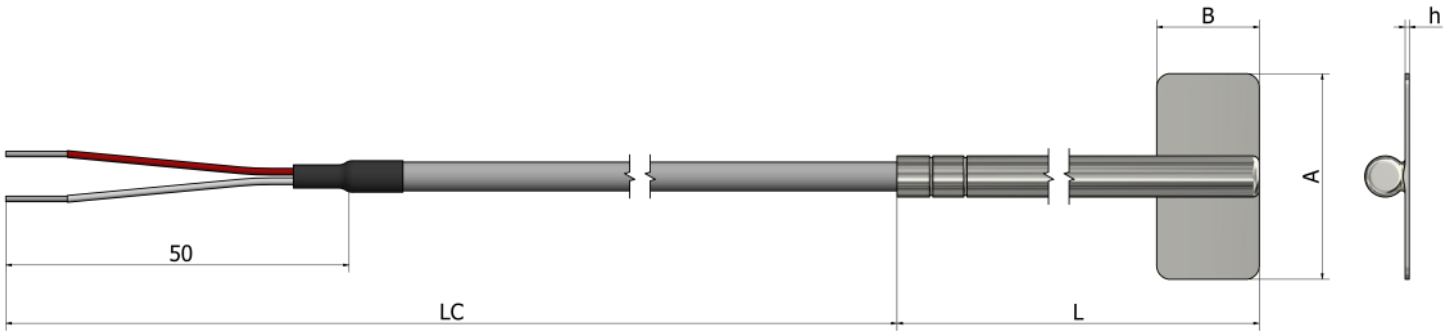
Quantity:

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.

HS10 – Surface thermistors
Weld pad



Weld pad and tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Tube length L (mm):

6. Pad material: ☐ AISI 316L ☐ Other:

7. Pad dimensions A x B (mm):

☐ 15 x 10 ☐ 25 x 10 ☐ 30 x 10

☐ Other:

8. Pad thickness h (mm): ☐ 0,5 ☐ Other:

9. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

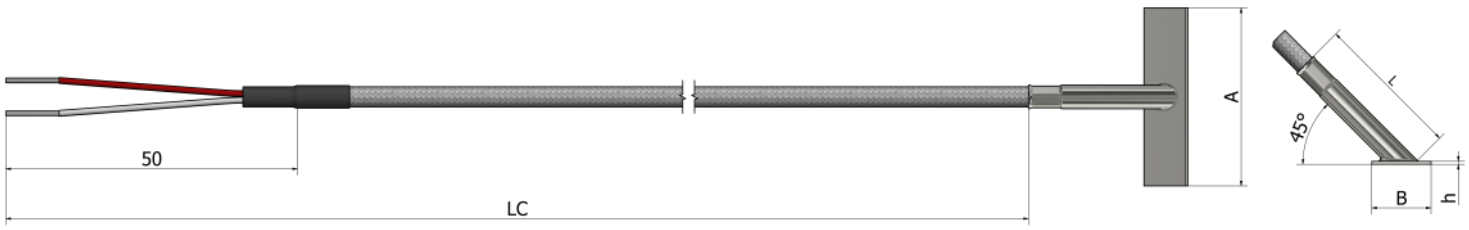
Quantity:

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.

HS11 – Surface thermistors
Weld pad (45° angle)



Weld pad and tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Tube length L (mm):

6. Pad material: ☐ AISI 316L ☐ Other:

7. Pad dimensions A x B (mm):

☐ 15 x 10 ☐ 25 x 10 ☐ 30 x 10

☐ Other:

8. Pad thickness h (mm): ☐ 0,5 ☐ Other:

9. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

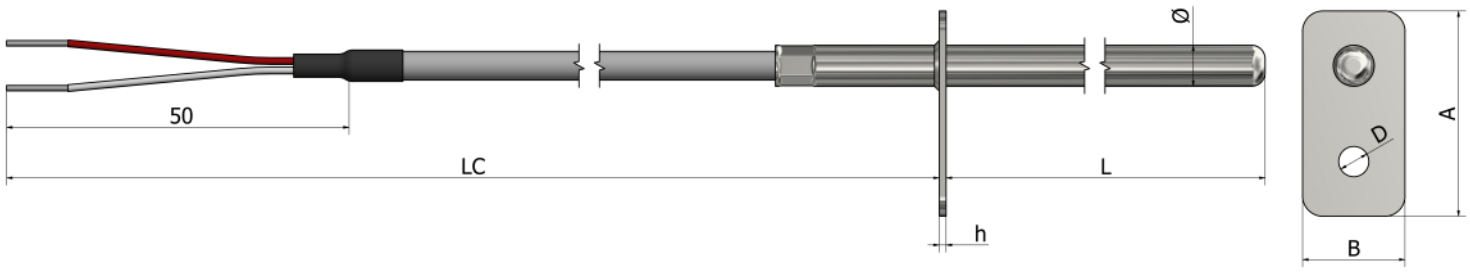
Quantity:

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.

HS12 – Surface thermistors
Weld pad (plug-in)



Weld pad and tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Pad material: ☐ AISI 316L ☐ Other:

6. Pad dimensions A x B (mm):

☐ 15 x 10 ☐ 25 x 10 ☐ 30 x 10

☐ Other:

7. Pad thickness h (mm): ☐ 0,5 ☐ Other:

8. Hole size Ø D (mm):

9. Insertion diameter Ø (mm):

☐ 4 ☐ 5 ☐ 6 ☐ Other:

10. Insertion depth L (mm):

11. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

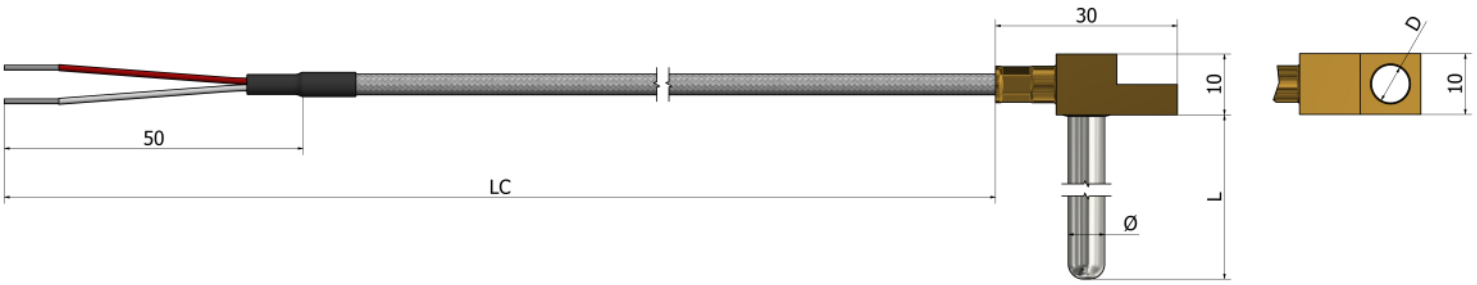
Quantity:

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.

HS20 – Surface thermistors
Angle / plug-in



*Mounting block material **Brass** *Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Hole size Ø D (mm):

6. Insertion diameter Ø (mm):

☐ 4 ☐ 5 ☐ 6 ☐ Other:

7. Insertion depth L (mm):

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

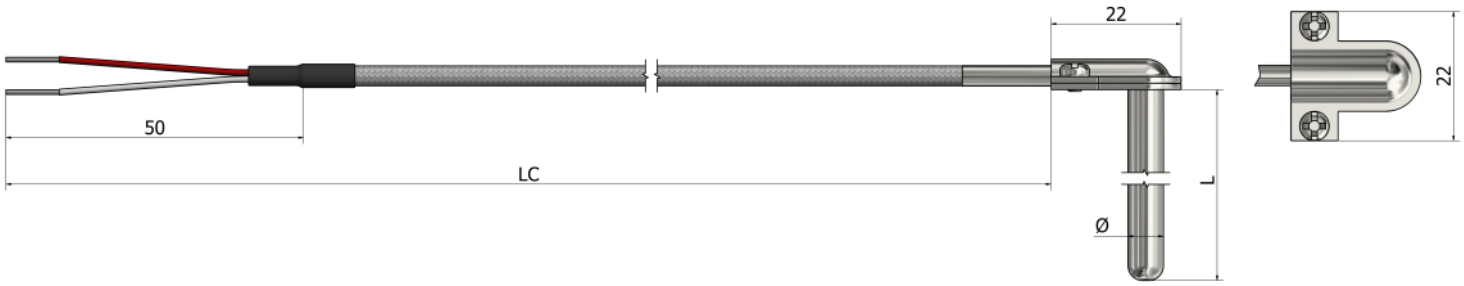
Quantity:

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.

HS21 – Surface thermistors
Angle / plug-in (clamp)



*Clamp material **Stainless steel 316L** *Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Insertion diameter Ø (mm):

☐ 4 ☐ 5 ☐ 6 ☐ Other:

6. Insertion depth L (mm):

7. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

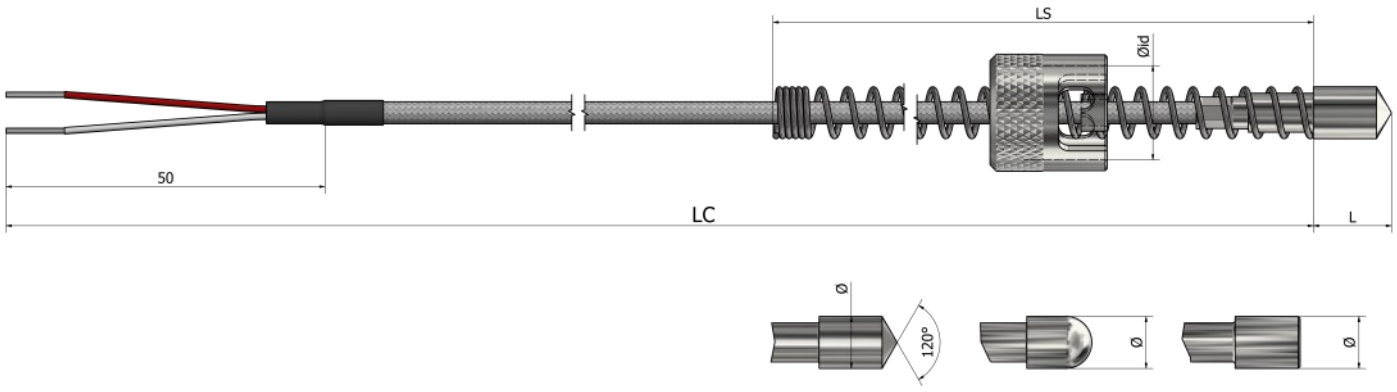
Quantity:

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.

HS30 – Surface thermistors
Bayonet



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Dimensions Ø x L (mm):

☐ 5 x 12 ☐ 6 x 10 ☐ 8 x 10 ☐ Other:

6. Sheath tip: *(material **Stainless steel 316L**)*

☐ Round ☐ Conical ☐ Flat

7. Bayonet cap Øid (mm): *(material **Nickel-plated brass**)*

☐ 10,5 ☐ 12,5 ☐ 14,5 ☐ Other:

8. Spring length LS (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

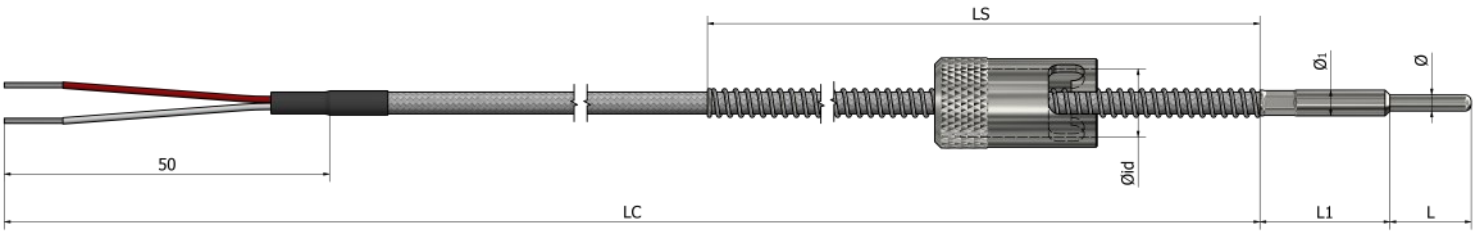
Quantity:

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.

HS31 – Surface thermistors
Bayonet with reduced tip



*Tube and tip 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Dimensions L and Ø (mm):

L _____ Ø _____

6. Dimensions L1 and Ø1 (mm):

L1 _____ Ø1 _____

7. Bayonet cap Øid (mm): *(material **Nickel-plated brass**)*

☐ 10,5 ☐ 12,5 ☐ 14,5 ☐ Other:

8. Spring length LS (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

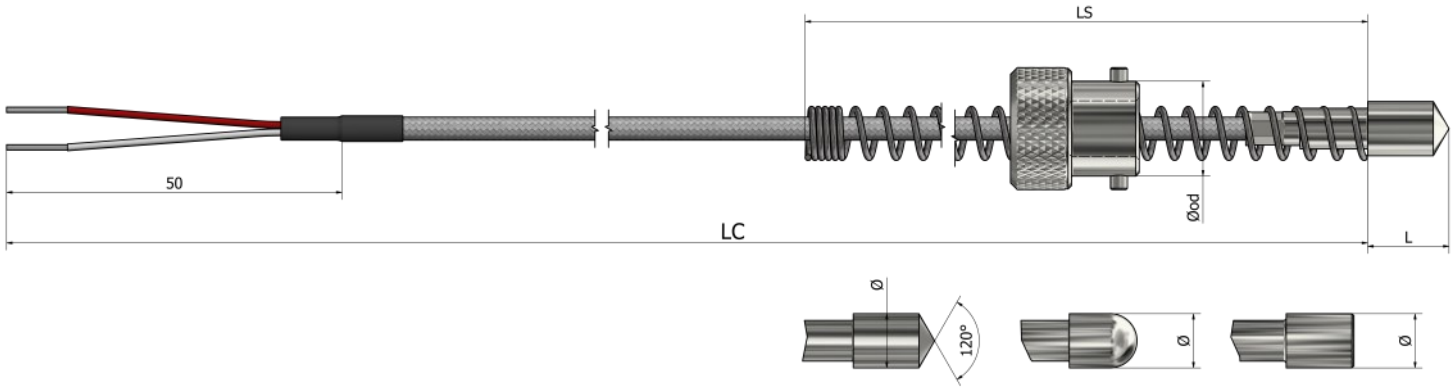
Quantity:

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.

HS33 – Surface thermistors
Bayonet (reverse)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Dimensions Ø x L (mm):

☐ 5 x 12 ☐ 6 x 10 ☐ 8 x 10 ☐ Other:

6. Sheath tip: *(material **Stainless steel 316L**)*

☐ Round ☐ Conical ☐ Flat

7. Bayonet adapter Ød (mm): *(material **Nickel-plated brass**)*

☐ 10,5 ☐ 12,5 ☐ 14,5 ☐ Other:

8. Spring length LS (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

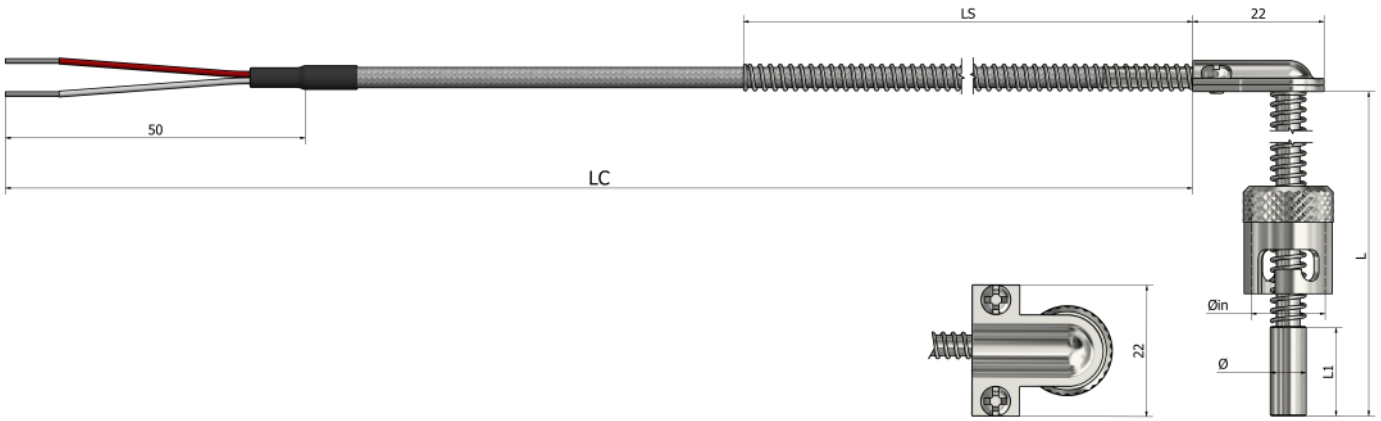
Quantity:

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.

HS34 – Surface thermistors
Bayonet with clamp (90° angle)



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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Cable length L (mm):

6. Dimensions Ø x L1 (mm):

☐ 5 x 12 ☐ 6 x 10 ☐ 8 x 10 ☐ Other:

7. Sheath tip: *(material **Stainless steel 316L**)*

☐ Round ☐ Conical ☐ Flat

8. Bayonet cap Øid (mm): *(material **Nickel-plated brass**)*

☐ 10,5 ☐ 12,5 ☐ 14,5 ☐ Other:

9. Spring length LS (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

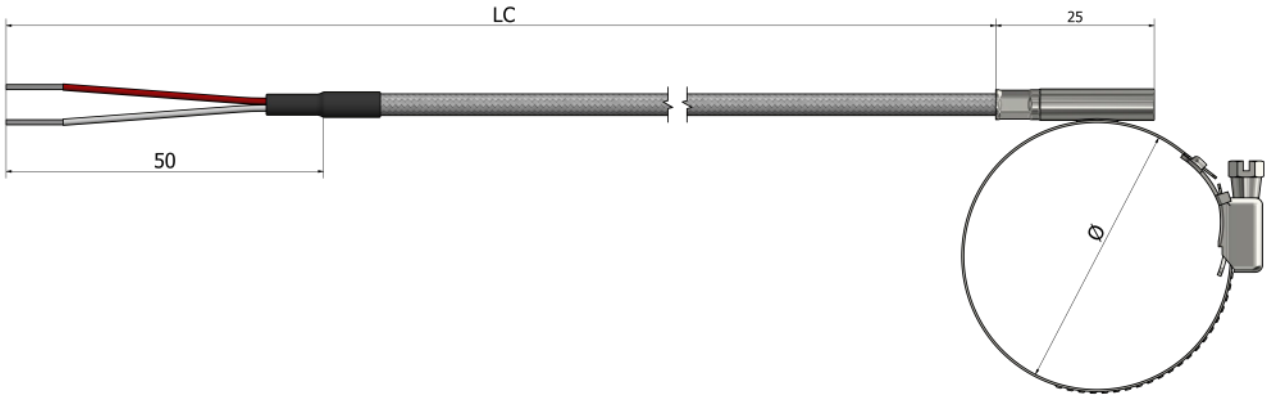
Quantity:

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.

HS41 – Surface thermistors
Pipe-Clamp (type 1)



*Tube and clamp 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Clamp size Ø (mm):

6. Clamp direction:

☐ V1

☐ V2

7. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

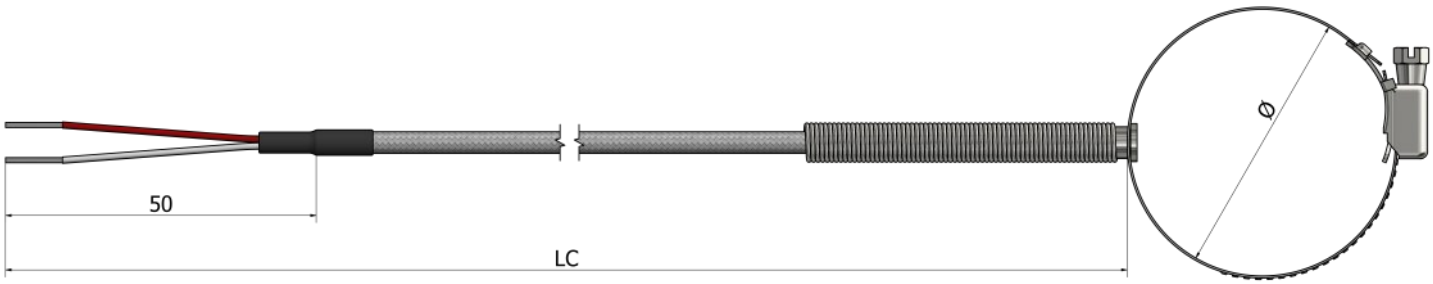
Quantity:

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.

HS42 – Surface thermistors
Pipe-Clamp (type 2)



*Tube and clamp 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Clamp size Ø (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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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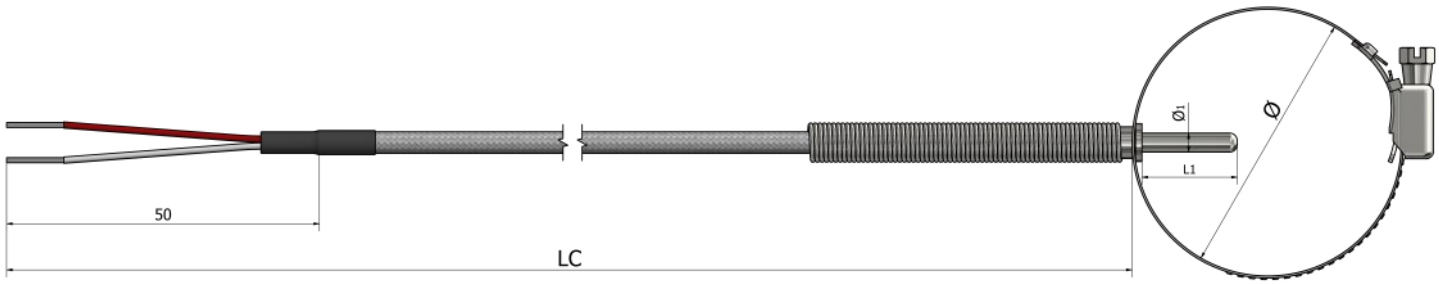
HS43 – Surface thermistors
Pipe-Clamp (type 3)



*Clamp material **Stainless steel 316L** *Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Clamp size Ø (mm):

6. Insertion diameter Ø1 (mm):

☐ 4 ☐ 5 ☐ 6 ☐ Other:

7. Insertion depth L1 (mm):

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

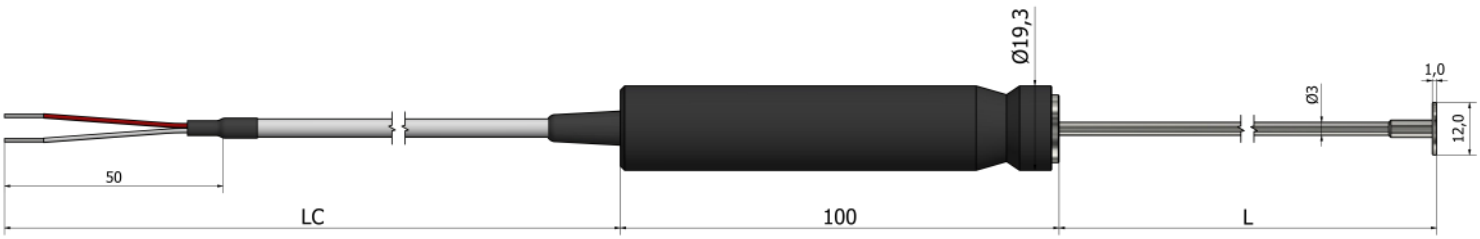
Quantity:

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.

HS50 – Surface thermistors
Handheld



*Handle material **Plastic** *Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Length L (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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.

HS60 – Surface thermistors
Spring loaded magnet

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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

4. Cable length LC (mm):

5. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

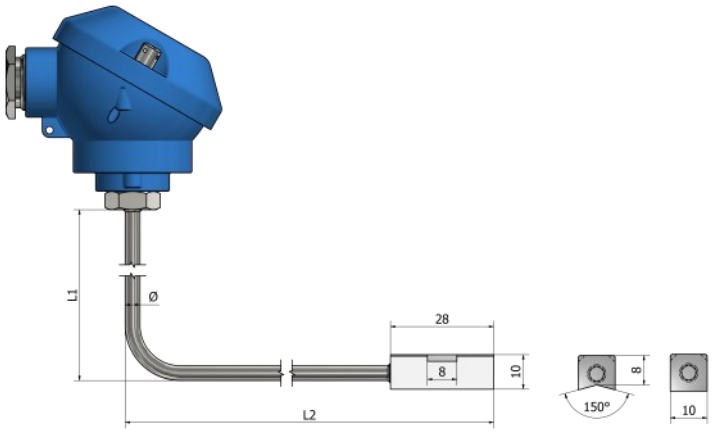
Quantity:

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.

HH25 – Surface thermistors
Contact block (surface mount) with therminal head



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths L1 and L2 (mm):

L1 _____ L2 _____

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

7. Contact block material:

☐ Brass ☐ Aluminum ☐ Other:

8. Contact block shape:


☐ V-shape


☐ Flat

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

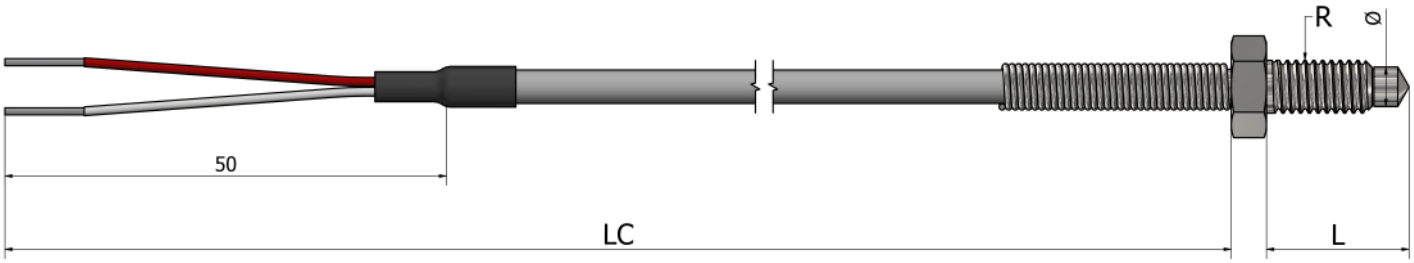
Quantity:

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.

HR20 – Surface thermistors
Nozzle



*Nozzle and 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L (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:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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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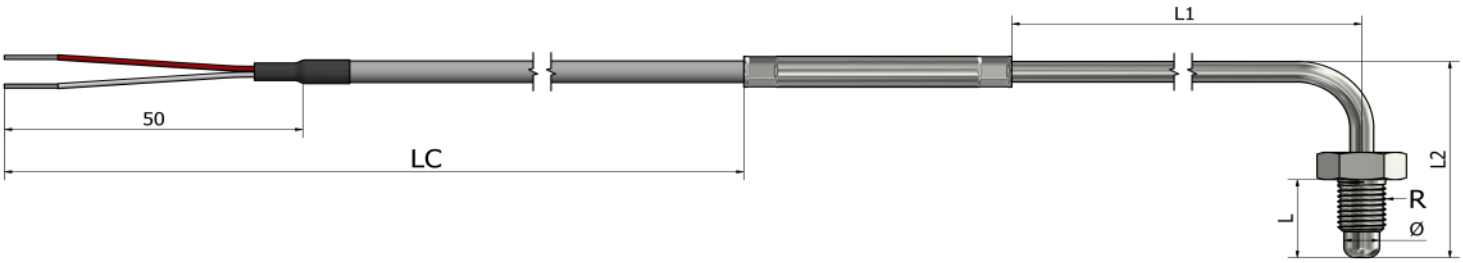
HR21 – Surface thermistors
Nozzle (90° bend)



*Tube material **Stainless steel 316L***

*Nozzle and 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Lengths (mm):

L1 _____ L2 _____

4. Length L (mm):

5. Diameter Ø (mm):

6. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

7. Cable length LC (mm):

8. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

10. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

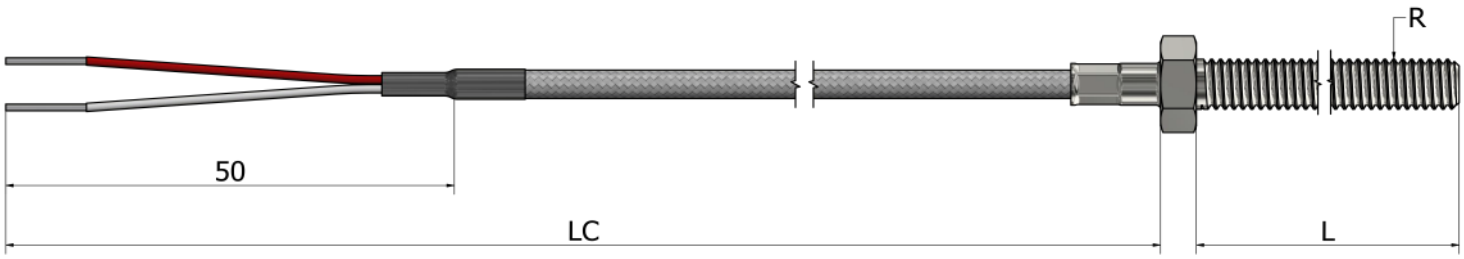
Quantity:

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.

HR22 – Surface thermistors
Bolt



*Bolt 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L (mm):

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

7. Thread:

☐ 1/2'' BSPP ☐ 1/4'' BSPP ☐ 1/4'' BSPT ☐ M10

☐ 1/2'' NPT ☐ Other:

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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.

Contents

EuroSensors

Ambient thermistors

Ambient thermistors - 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.

What are the characteristics of ambient thermistors ?

Our ambient thermistors are designed for ambient temperature measurement inside and outside residential, office and industrial spaces.
There is a possibility of assembling a programmable temperature transmitter with a 4...20 mA output signal into the housing. The protection tube with perforation allows for quick and precise temperature measurement, thanks to direct contact of the thermistor sensing element with ambient temperature.

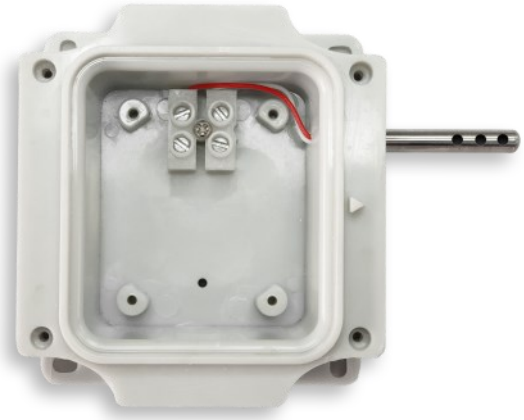
Application areas:

- Ambient temperature measurement in rooms and outside
- Warehouses and cold stores
- Offices
- Air-conditioning and ventilation installations

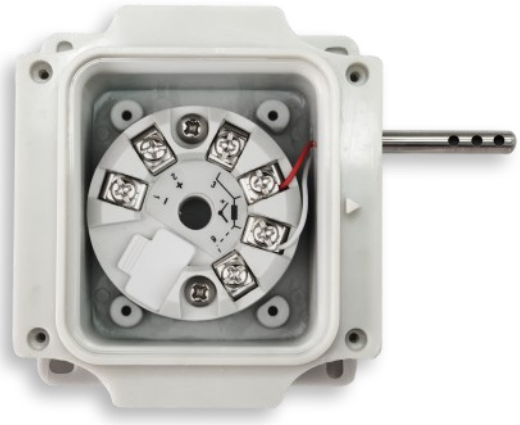
Inside housing

We have four types of housing for ambient sensors.
Made of plastic or aluminum and in many different sizes. Inside the ambient temperature sensor can be a programmable temperature transmitter or serial terminals.

Serial terminals



Transmitter



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.

EuroSensors

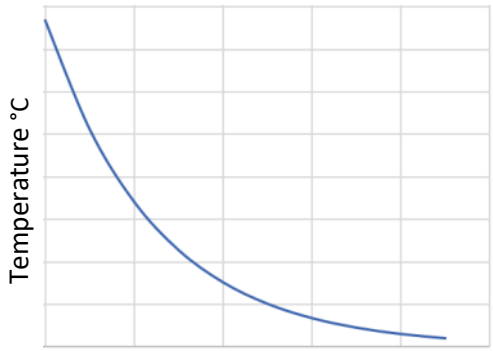
Ambient thermistors - Technical information

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.

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.



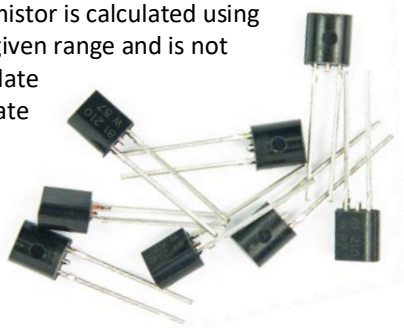
NTC thermistors are non-linear resistors that alter their resistance characteristics with temperature. Simply put, as temperature increases the thermistor's resistance decreases.

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

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

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 given range.



Types of thermistors

Type	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)

What is the difference between an NTC and a PTC ?

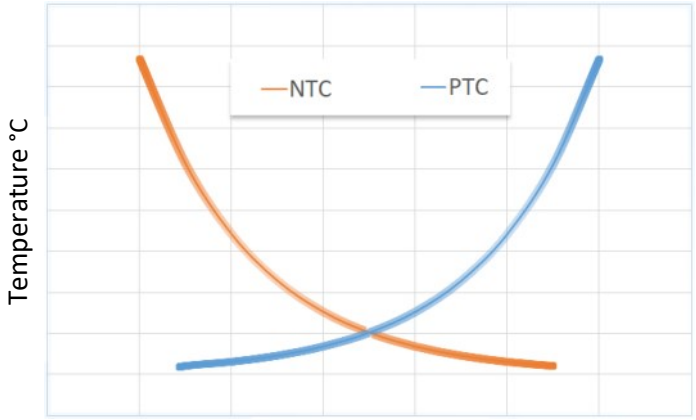
NTCs and PTCs are both thermistors, i.e. temperature sensors that change resistance depending on the temperature.
However, there is a major difference between these two types of thermistors:

NTC thermistors

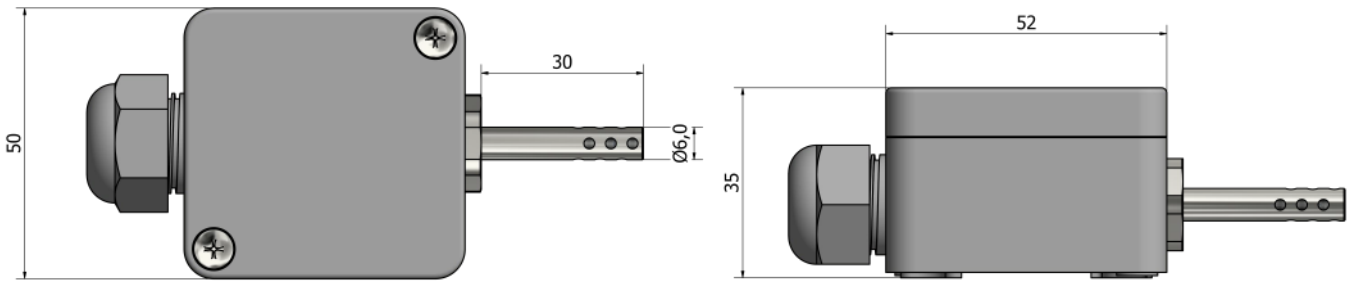
NTCs have a resistance that decreases as the temperature increases. They are commonly used in thermostats and temperature control devices to measure room temperature.

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.



HA01 – Ambient thermistors
Miniature plastic housing



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Termination:

☐ Serial terminals ☐ Transmitter (°C):
Specify temperature range

4. Tube type:

☐ Standard tube

☐ Perforated tube

☐ Standard tube with perforated protection

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

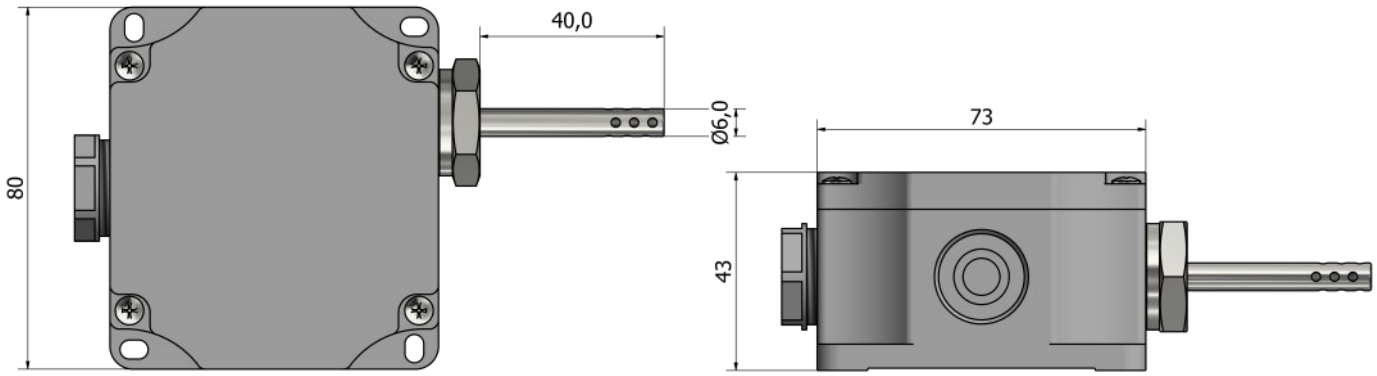
Quantity:

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.

HA02 – Ambient thermistors
Standard plastic housing



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Termination:

☐ Serial terminals ☐ Transmitter (°C):
Specify temperature range

4. Tube type:

☐ Standard tube

☐ Perforated tube

☐ Standard tube with perforated protection

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

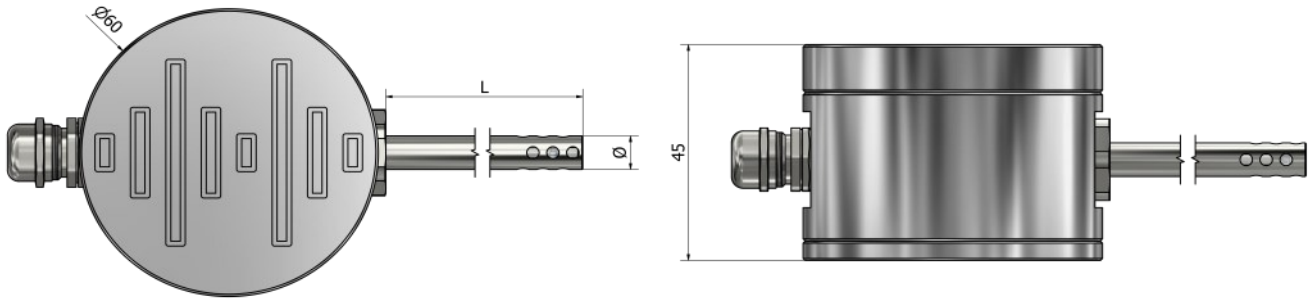
Quantity:

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.

HA11 – Ambient thermistors
Round aluminum housing



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Termination:

☐ Serial terminals ☐ Transmitter (°C):
Specify temperature range

4. Tube type:

☐ Standard tube

☐ Perforated tube

☐ Standard tube with perforated protection

5. Housing surface:

☐ Black anodized aluminum

☐ Silver anodized aluminum

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

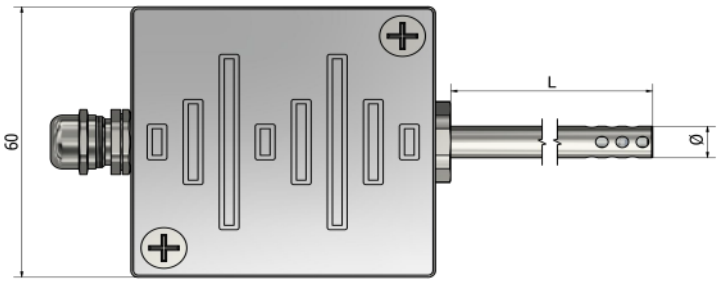
Quantity:

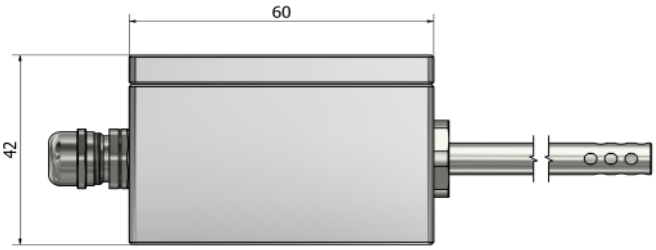
Note:

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.

HA12 – Ambient thermistors
Square aluminum housing





*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Termination:

☐ Serial terminals ☐ Transmitter (°C):
Specify temperature range

4. Tube type:

☐ Standard tube

☐ Perforated tube

☐ Standard tube with perforated protection

5. Housing surface:

☐ Black anodized aluminum

☐ Silver anodized aluminum

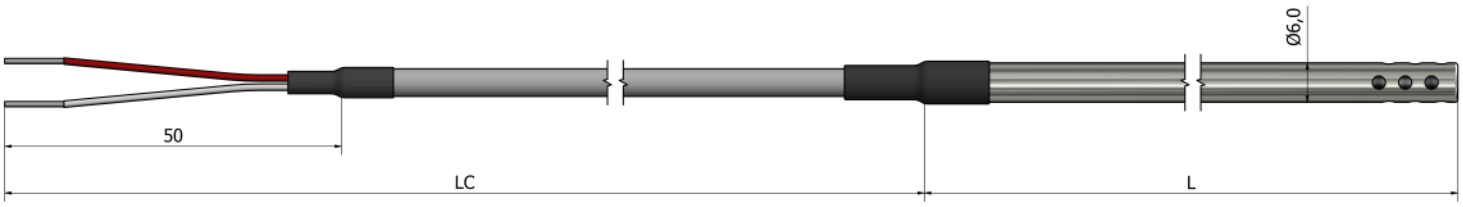
Additional:

Application:
Operating temperature (min/max):
Type of environment:
Accessories: See the part "Accessories"
Quantity:
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.

HT25 – Ambient thermistors
Open air (protection tube)



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Tube length L (mm):

4. Cable prolongation:

☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)

☐ Fiberglass (400°C) ☐ Other:

5. Cable length LC (mm):

6. Crimp protection:

☐ Spring ☐ Heat shrink sleeve ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

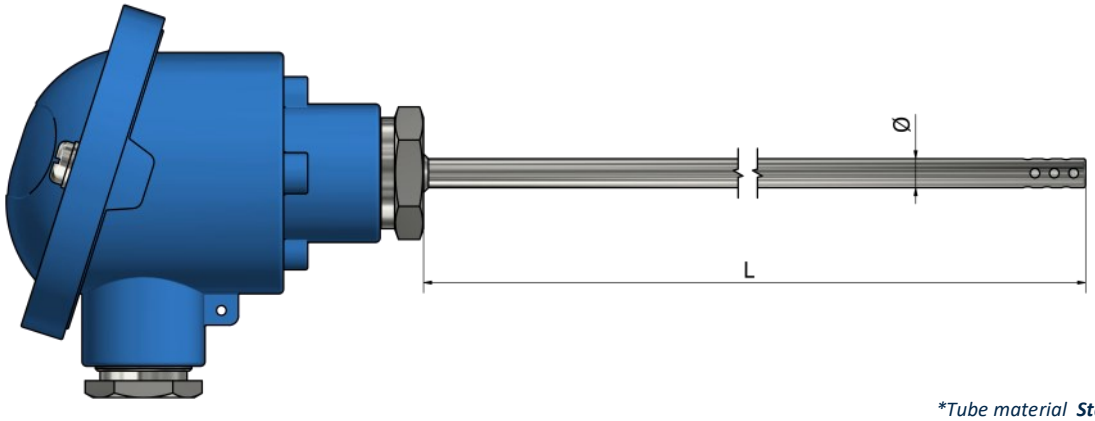
Quantity:

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.

HH22 – Ambient thermistors
Open air (terminal head)



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

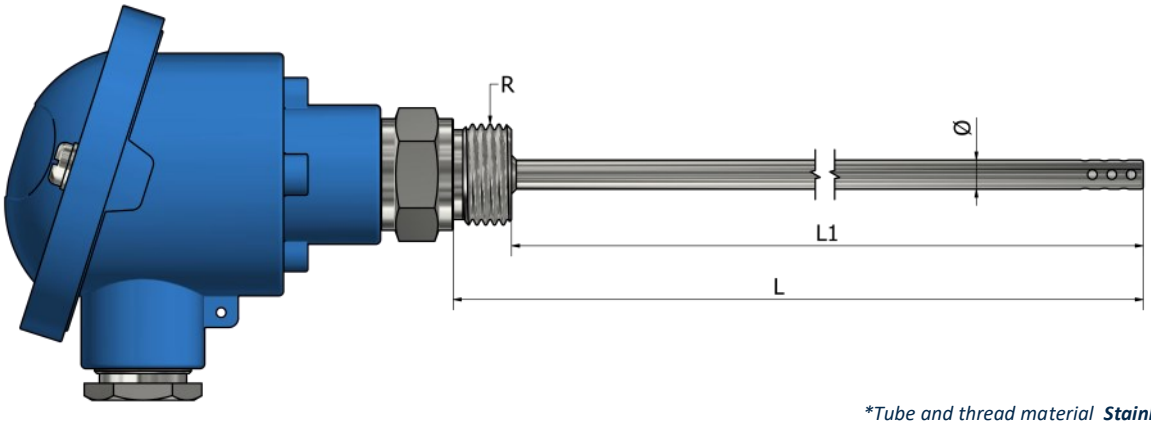
Note:

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.

EuroSensors

HH23 – Ambient thermistors
Open air 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Length L or L1 (mm):

L _____ L1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

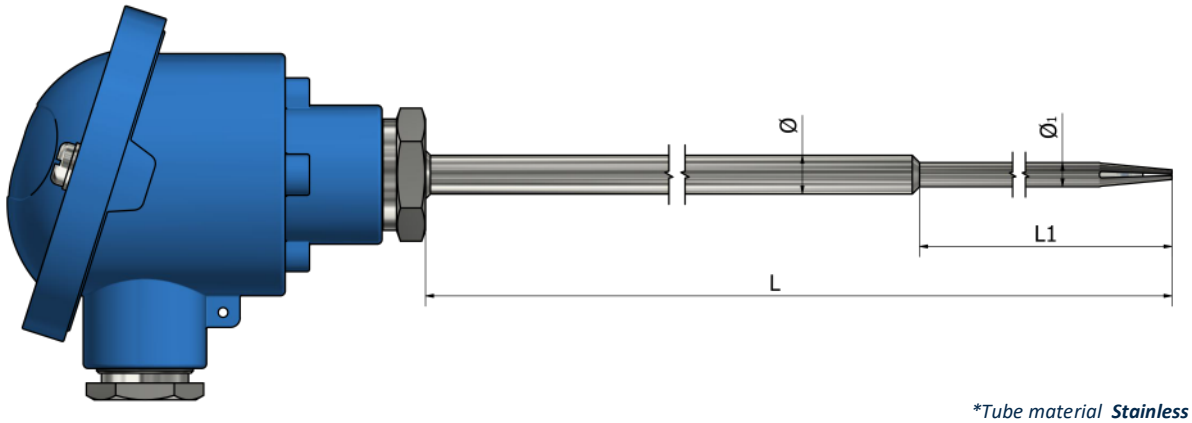
Quantity:

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.

HH24 – Ambient thermistors
Open air with reduced tip



*Tube 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 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) , ß value, tolerance)

2. Wiring configuration: *(number of wires)*

☐ 2 ☐ Other:

3. Dimensions L and Ø (mm):

L _____ Ø _____

4. Dimensions L1 and Ø1 (mm):

L1 _____ Ø1 _____

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

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

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.