



## Contents

Technical Information .....	03
PT00 - Free leads .....	05
PT10 - Standard tube .....	06
PT12 - Standard tube (90° bend) .....	07
PT20 - Pot seal .....	08
PT21 - Pot seal with reduced tip .....	09
PT25 - Open air .....	10
PT30 - Plug-in (clamp) .....	11
PT35 - Plug-in (miniature) .....	12
PT40 - Integrated M12 connector .....	13
PT41 - Integrated M12 connector with transmitter .....	14
PT45 - RTD connector .....	15
PT50 - Armored cable prolongation .....	16
PT60 - For aggressive environments .....	17

 EuroSensors

RTDs with protection tube



## 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 ?

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 (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.



# RTDs with protection tube - Technical information



## What is a PT probe ?

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

## Understanding the naming of Pt100, PT500 and PT1000 sensors

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

Understanding the meaning behind these designations allows us to discern their specific characteristics and applications. Whether you require a standard PT100 sensor or a higher resistance variant like PT500 or PT1000, these RTD sensors provide reliable and accurate temperature measurements in a wide range of industries and applications.

## Pt-s wiring configurations

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

## RTD connectors

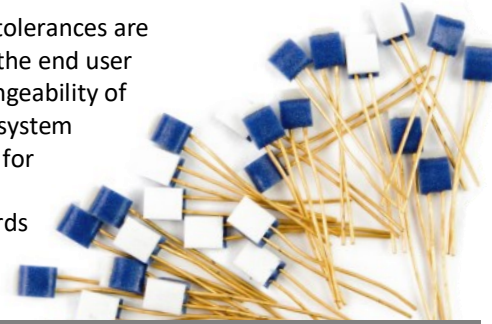
Due to the lack of standardization in RTD connectors, our company takes pride in its ability to produce a wide range of RTD connectors. We understand that different industries and applications have unique requirements when it comes to temperature measurement, and that includes the connectors used. With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



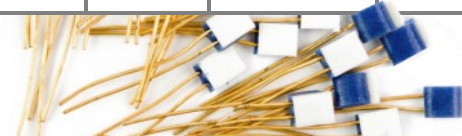
## Pt-s classes

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

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



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



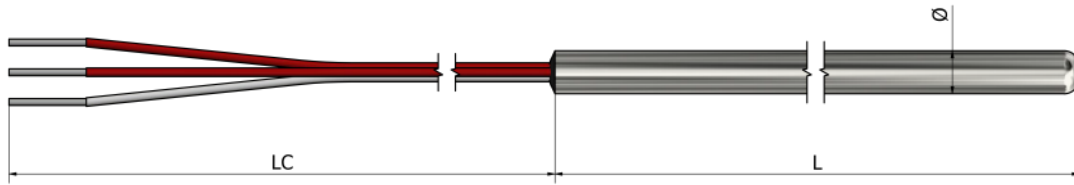
## Global cable insulation characteristics

	PVC	Silicone	Teflon	Fiberglass
<b>Abrasion resistance</b>	Very good	Fair	Good	Fair
<b>Chemical resistance</b>	Very good	Poor	Excellent	Good
<b>Moisture resistance</b>	Good	Good	Excellent	Poor
<b>Fire resistance</b>	Good	Good	Excellent	Excellent



# PT00 – RTDs with protection tube

## Free leads



### Ordering information

#### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

#### 2. Element class:

- A   
  B   
  Other:

#### 3. Number of sensor elements:

- x 1   
  x 2

#### 4. Wiring configuration: *(number of wires per element)*

- 2   
  3   
  4

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

L \_\_\_\_\_    Ø \_\_\_\_\_

#### 6. Free leads length LC (mm):

#### Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:  
*See the part "Accessories"*

Quantity:

Note:

### How to order?

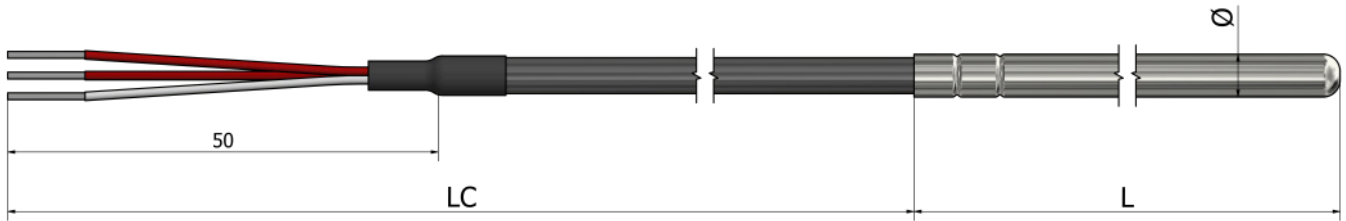


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.



# PT10 – RTDs with protection tube

## Standard tube



### Ordering information

#### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

#### 2. Element class:

- A   
  B   
  Other:

#### 3. Number of sensor elements:

- x 1   
  x 2

#### 4. Wiring configuration: *(number of wires per element)*

- 2   
  3   
  4

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

- Ø3 x 50 mm   
  Ø4 x 40 mm   
  Ø5 x 50 mm  
 Ø6 x 50 mm   
 Other:

#### 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?

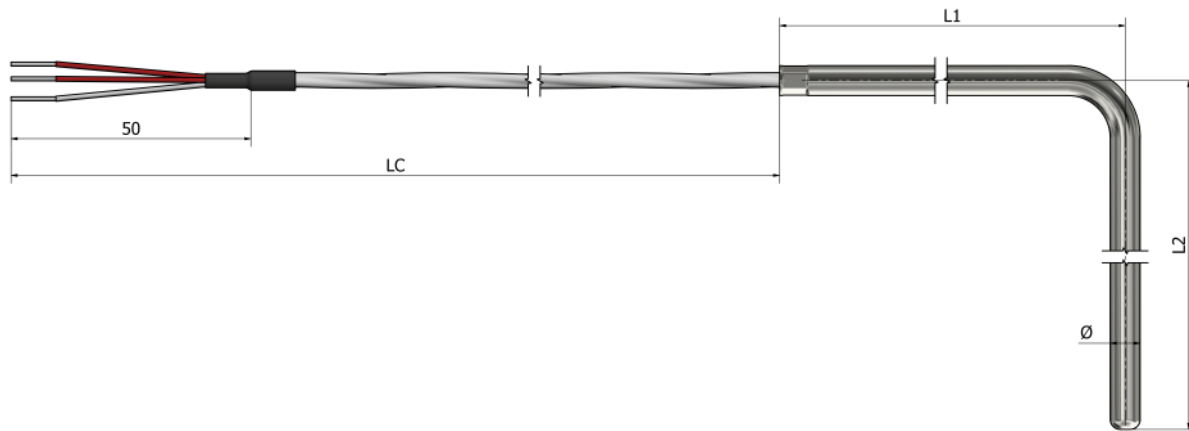
Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.





# PT12 – RTDs with protection tube

## Standard tube (90° bend)



### Ordering information

#### 1. Element type:

- Pt 100     Pt 500     Pt 1000  
 Other:

#### 2. Element class:

- A     B     Other:

#### 3. Number of sensor elements:

- x 1     x 2

#### 4. Wiring configuration: *(number of wires per element)*

- 2     3     4

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

L1 \_\_\_\_\_ L2 \_\_\_\_\_ Ø \_\_\_\_\_

#### 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:

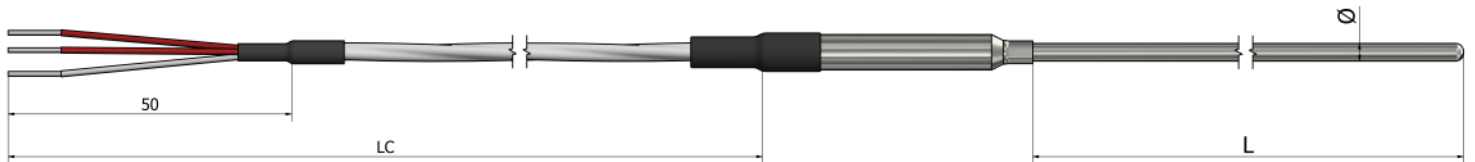
### How to order?

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.



# PT20 – RTDs with protection tube

## Pot seal



### Ordering information

#### 1. Element type:

- Pt 100     Pt 500     Pt 1000  
 Other:

#### 2. Element class:

- A     B     Other:

#### 3. Number of sensor elements:

- x 1     x 2

#### 4. Wiring configuration: (number of wires per element)

- 2     3     4

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

L \_\_\_\_\_    Ø \_\_\_\_\_

#### 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?

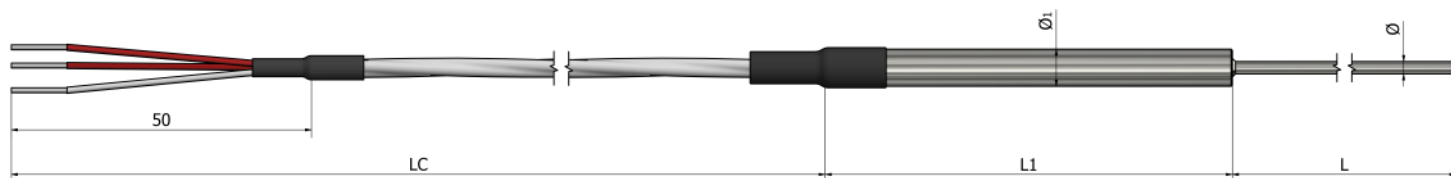
Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.





# PT21 – RTDs with protection tube

## Pot seal with reduced tip



### Ordering information

#### 1. Element type:

- Pt 100     Pt 500     Pt 1000  
 Other:

#### 2. Element class:

- A     B     Other:

#### 3. Number of sensor elements:

- x 1     x 2

#### 4. Wiring configuration: (number of wires per element)

- 2     3     4

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

L \_\_\_\_\_ Ø \_\_\_\_\_

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

L1 \_\_\_\_\_ Ø1 \_\_\_\_\_

#### 7. Cable prolongation:

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

#### 8. Cable length LC (mm):

#### 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?



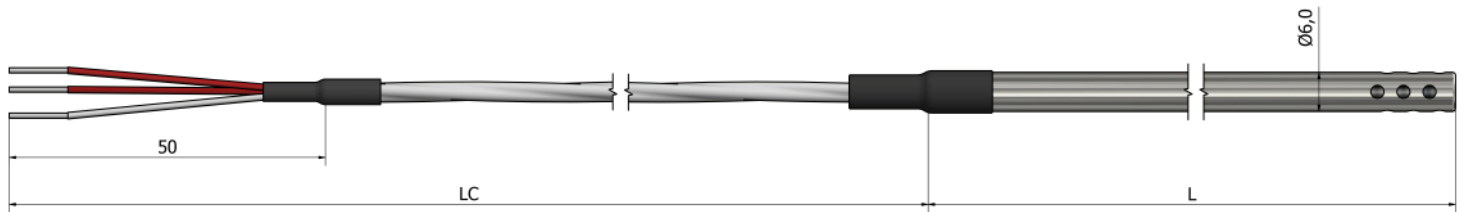
Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.





# PT25 – RTDs with protection tube

## Open air



\*Tube material *Stainless steel 316L*

### Ordering information

#### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

#### 2. Element class:

- A   
  B   
  Other:

#### 3. Number of sensor elements:

- x 1   
  x 2

#### 4. Wiring configuration: *(number of wires per element)*

- 2   
  3   
  4

#### 5. Tube length L (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

#### Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:

See the part "Accessories"

Quantity:

Note:

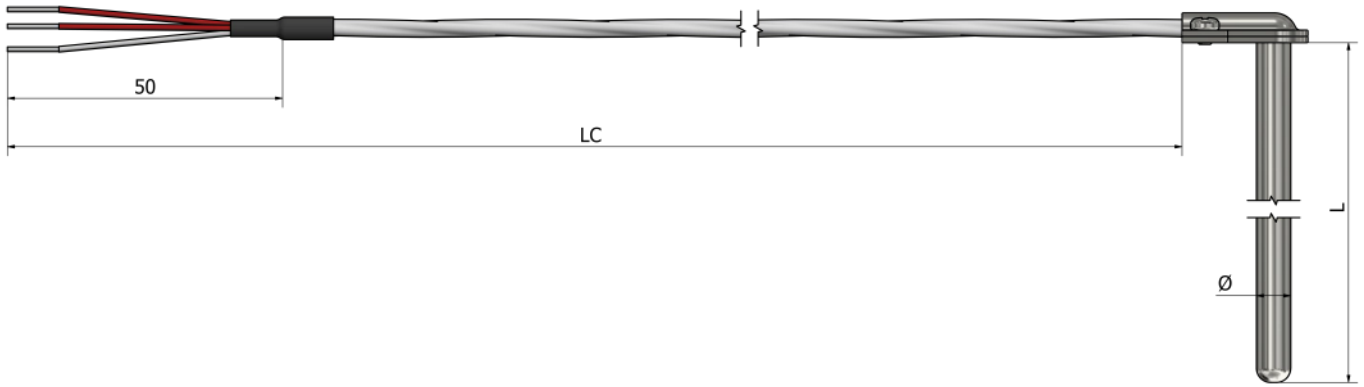
### How to order?



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.



# PT30 – RTDs with protection tube Plug-in (clamp)



## Ordering information

### 1. Element type:

- Pt 100     Pt 500     Pt 1000  
 Other:

### 2. Element class:

- A     B     Other:

### 3. Number of sensor elements:

- x 1     x 2

### 4. Wiring configuration: *(number of wires per element)*

- 2     3     4

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

L \_\_\_\_\_    Ø \_\_\_\_\_

### 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?

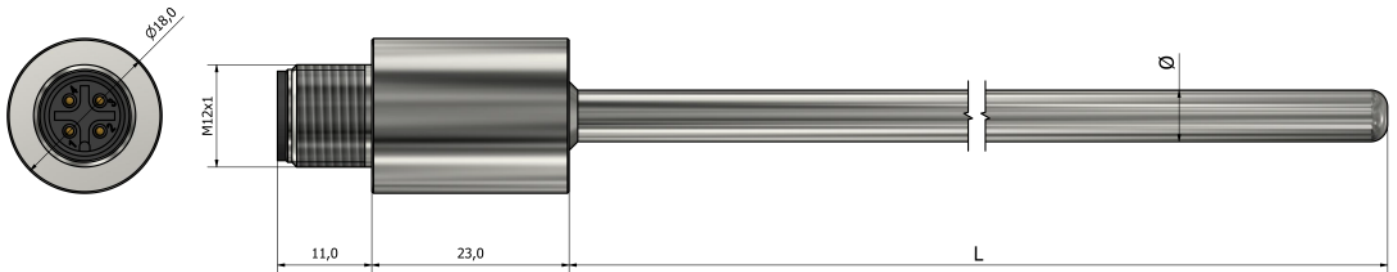
Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.





# PT40 – RTDs with protection tube

## Integrated M12 connector



### Ordering information

#### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

#### 2. Element class:

- A   
  B   
  Other:

#### 3. Number of sensor elements:

- x 1   
  x 2

#### 4. Wiring configuration: *(number of wires per element)*

- 2   
  3   
  4

#### 5. 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:

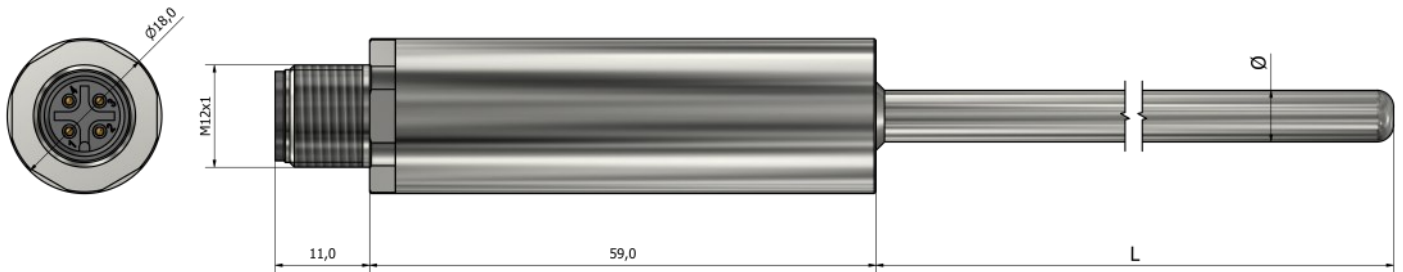
### How to order?

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.



# PT41 – RTDs with protection tube

## Integrated M12 connector with transmitter



### Ordering information

#### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

#### 2. Element class:

- A   
  B   
  Other:

#### 3. Number of sensor elements:

- x 1   
  x 2

#### 4. Wiring configuration: *(number of wires per element)*

- 2   
  3   
  4

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

L \_\_\_\_\_    Ø \_\_\_\_\_

#### 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?

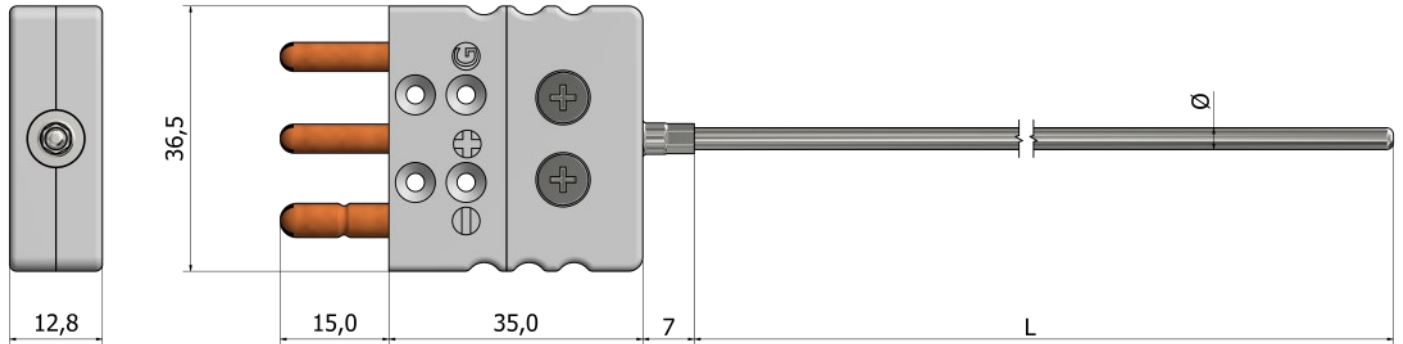


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.



# PT45 – RTDs with protection tube

## RTD connector



### Ordering information

#### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

#### 2. Element class:

- A   
  B   
  Other:

#### 3. Wiring configuration: (number of wires)

- 2   
  3

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

L \_\_\_\_\_    Ø \_\_\_\_\_

#### 5. Connector:

- Miniature Plug   
  Miniature Socket   
  Standard Plug   
  Standard Socket

#### Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:  
See the part "Accessories"

Quantity:

Note:

### How to order?

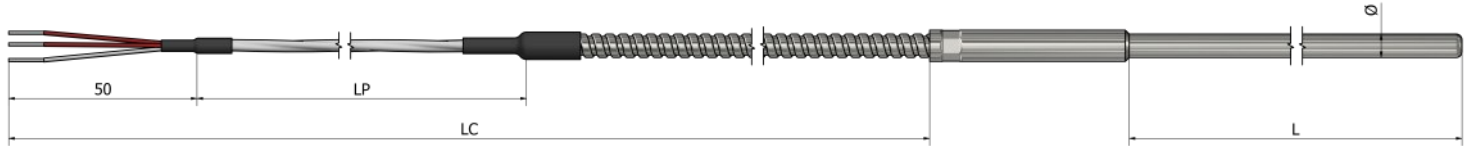


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.



# PT50 – RTDs with protection tube

## Armored cable prolongation



\*Armored cable material **Stainless steel 304**

### Ordering information

#### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

#### 2. Element class:

- A   
  B   
  Other:

#### 3. Number of sensor elements:

- x 1   
  x 2

#### 4. Wiring configuration: (number of wires per element)

- 2   
  3   
  4

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

L \_\_\_\_\_    Ø \_\_\_\_\_

#### 6. Cable prolongation:

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

#### 7. Cable length LC (mm):

#### 8. Bare cable length LP (mm):

#### 9. Crimp protection:

- Spring   
  Heat shrink sleeve   
  Without

#### Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:  
See the part "Accessories"

Quantity:

Note:

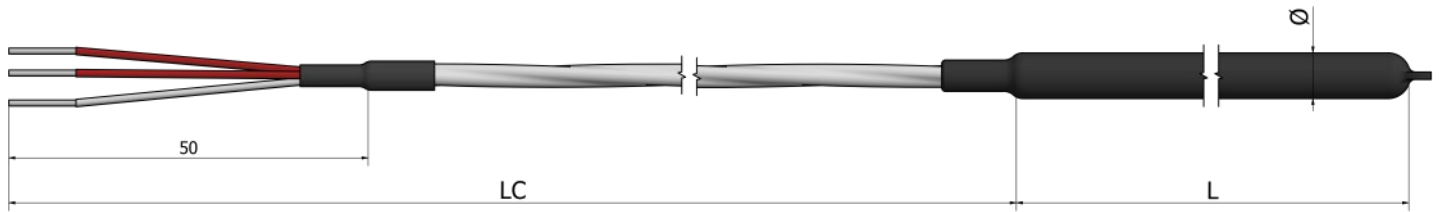
### How to order?

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.



# PT60 – RTDs with protection tube

For aggressive environments (with PTFE protection up to 250°C)



\*Protection material **PTFE**

## Ordering information

### 1. Element type:

- Pt 100   
  Pt 500   
  Pt 1000  
 Other:

### 2. Element class:

- A   
  B   
  Other:

### 3. Number of sensor elements:

- x 1   
  x 2

### 4. Wiring configuration: (number of wires per element)

- 2   
  3   
  4

### 5. Tube dimensions (mm): (material SS 316L with PTFE protection)

L \_\_\_\_\_    Ø \_\_\_\_\_

### 6. Cable prolongation:

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

### 7. 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.