



EuroSensors

Ambient RTDs

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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 RTDs ?

Our ambient RTDs 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 sensing element with ambient temperature.

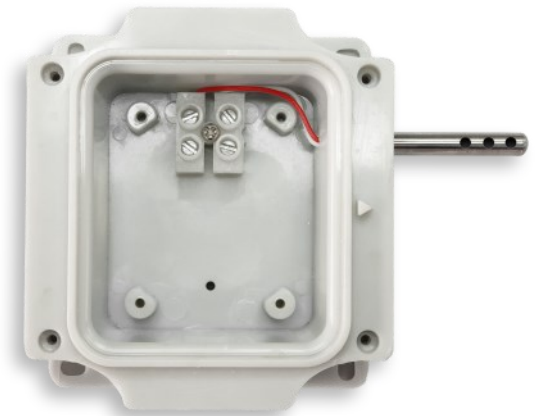
Application areas:

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

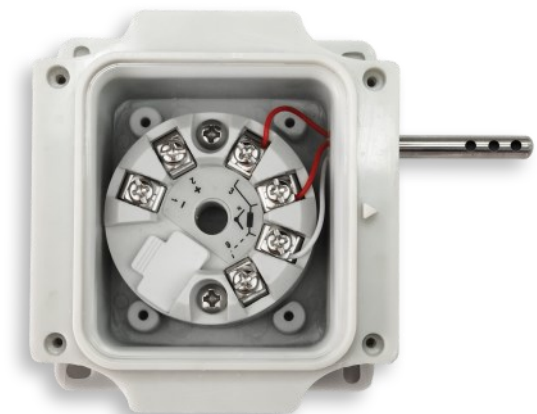
Inside housing

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





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.

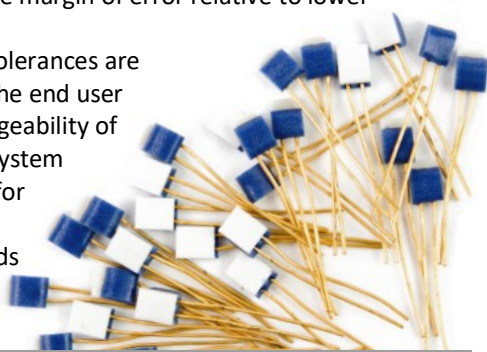
Low ohmic resistance

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

Pt-s classes

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

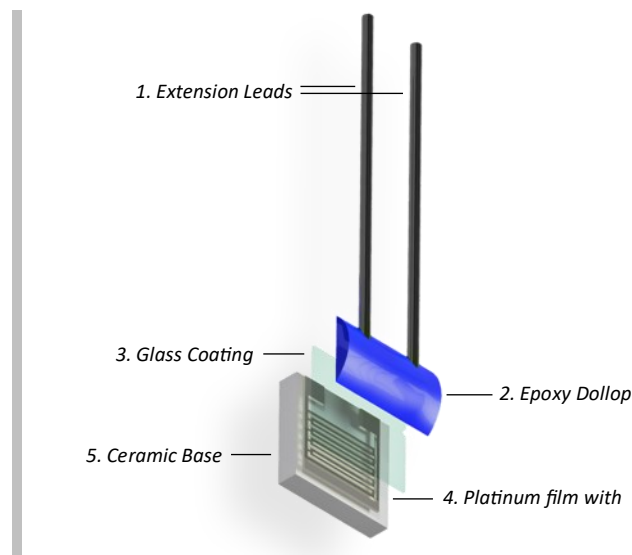
A system where these tolerances are classified is helpful for the end user and helps the interchangeability of these sensors. The IEC system is seen as the standard for the industry although there are other standards and other tolerance classes.



IEC 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

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.

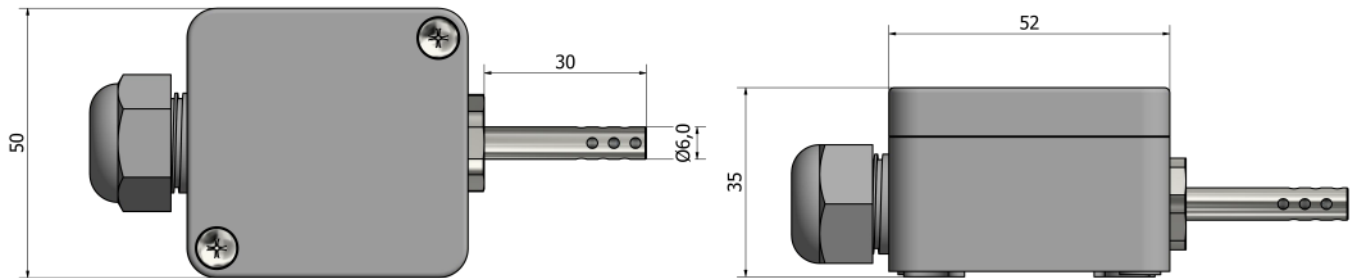
The naming conventions of P100, PT500, and PT1000 sensors are closely tied to the nominal resistance values they exhibit at 0°C. P100 sensor has a nominal resistance of 100 Ω at 0°C, Pt500 sensor has a nominal resistance of 500 Ω at 0°C and Pt1000 sensor has a nominal resistance of 1000 Ω at 0°C. Understanding 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.

PA01 – Ambient RTDs Miniature plastic housing



*Tube material *Stainless steel 316L*

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

4. Termination:

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

5. 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:

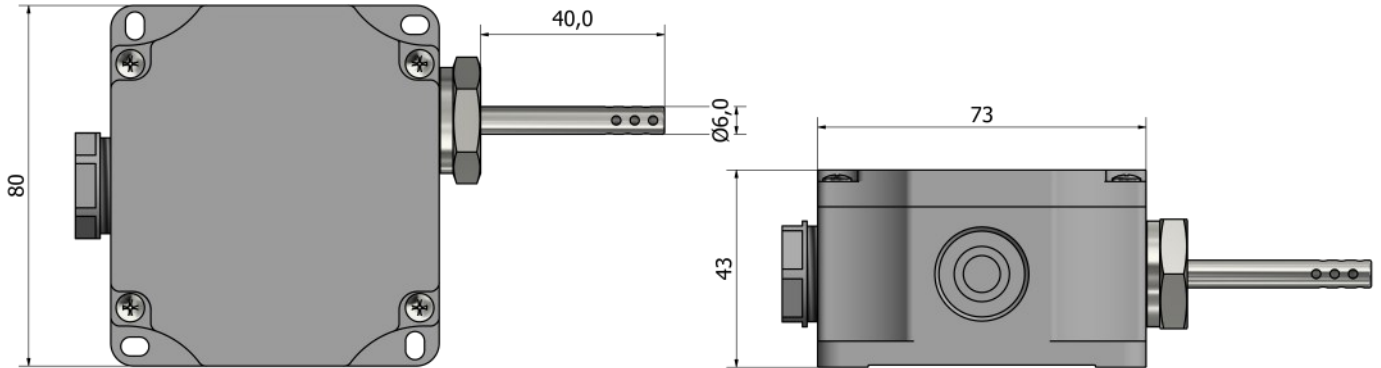
Note:

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.

PA02 – Ambient RTDs Standard plastic housing



*Tube material **Stainless steel 316L**

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

4. Termination:

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

5. 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"

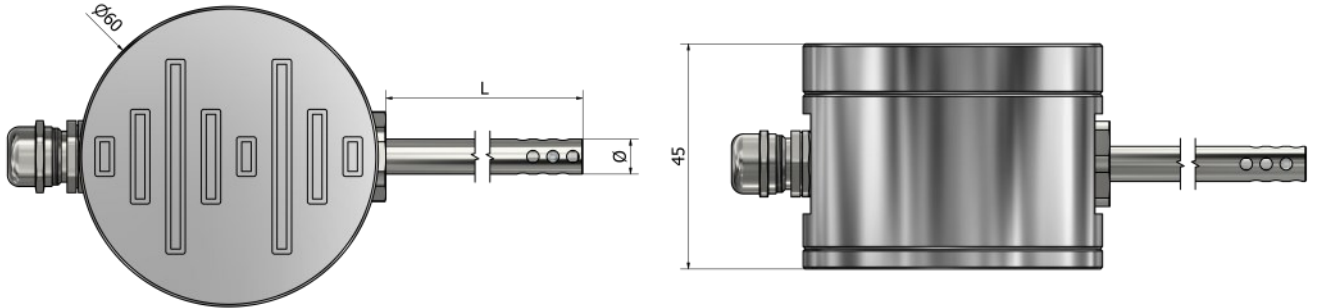
Quantity:

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.

PA11 – Ambient RTDs Round aluminum housing



*Tube material *Stainless steel 316L*

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

4. Termination:

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

5. Tube type:

- Standard tube
- Perforated tube
- Standard tube with perforated protection

6. Housing surface:

- Black anodized aluminum
 Silver anodized aluminum

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

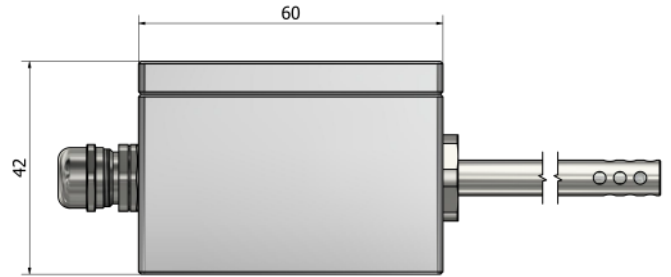
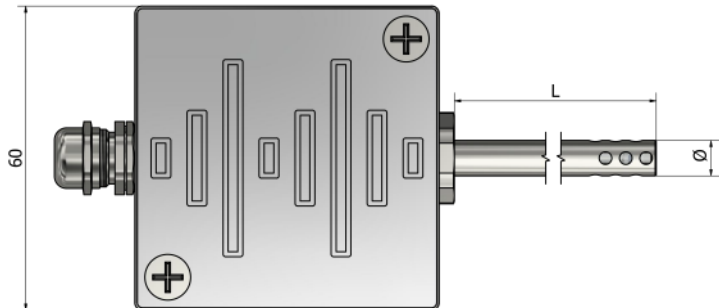
Quantity:

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.

PA12 – Ambient RTDs Square aluminum housing



*Tube material *Stainless steel 316L*

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

4. Termination:

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

5. Tube type:

- Standard tube
 Perforated tube
 Standard tube with perforated protection

6. Housing surface:

- Black anodized aluminum Silver anodized aluminum

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

Note:

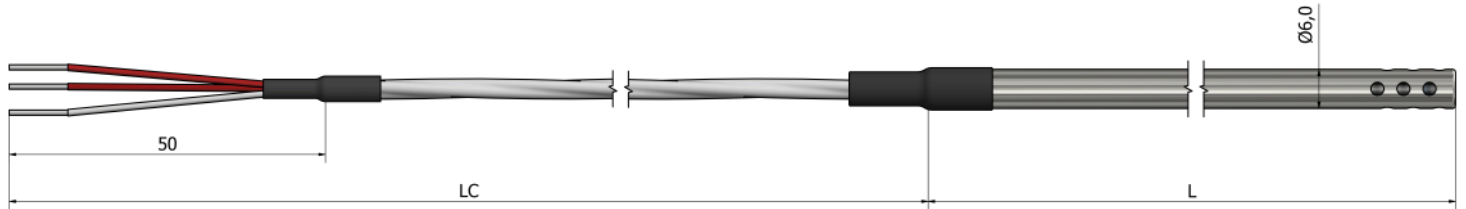
How to order?



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.

PT25 – Ambient RTDs

Open air (protection tube)



*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:

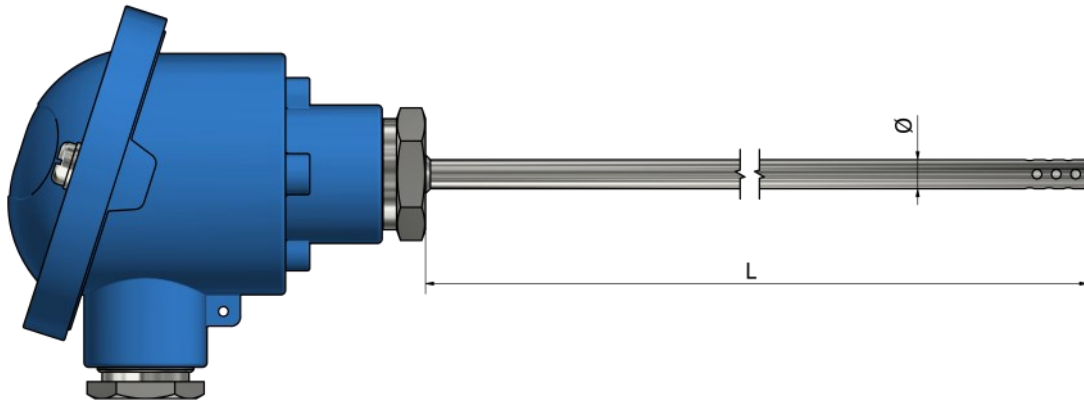
Note:

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.

PH22 – Ambient RTDs

Open air (terminal head)



*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. Length L (mm):

6. Diameter Ø (mm):

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

- Type B Type DAN Type M Type N
 Type Ex Type NS Other:

8. Mounting:

- Wires Terminal block Transmitter (°C):
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

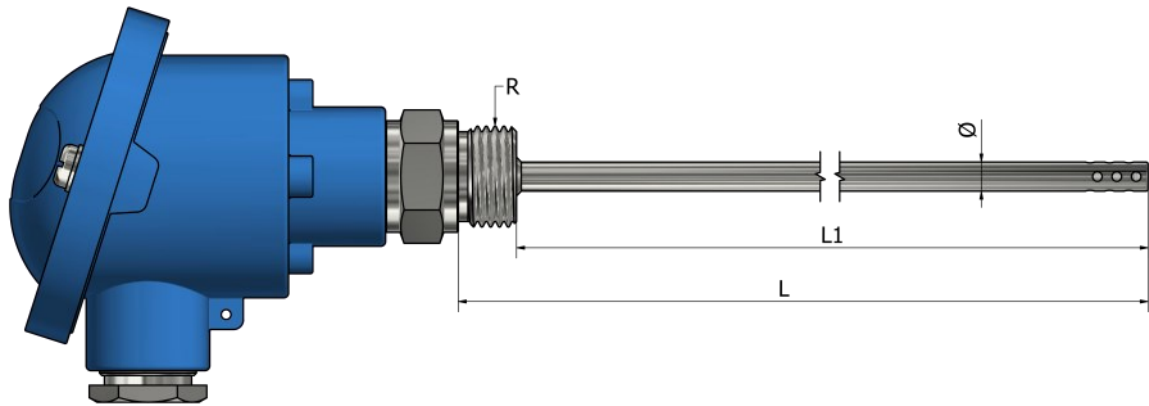
Note:

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.

PH23 – Ambient RTDs

Open air with fixed thread



*Tube and thread 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. Length L or L1 (mm):

L _____ L1 _____

6. Diameter Ø (mm):

7. Thread:

- 1/2" BSPP
 1/4" BSPP
 1/4" BSPT
 M10
 1/2" NPT
 Other:

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

- Type B
 Type DAN
 Type M
 Type N
 Type Ex
 Type NS
 Other:

9. Mounting:

- Wires
 Terminal block
 Transmitter (°C):
Specify temperature range

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

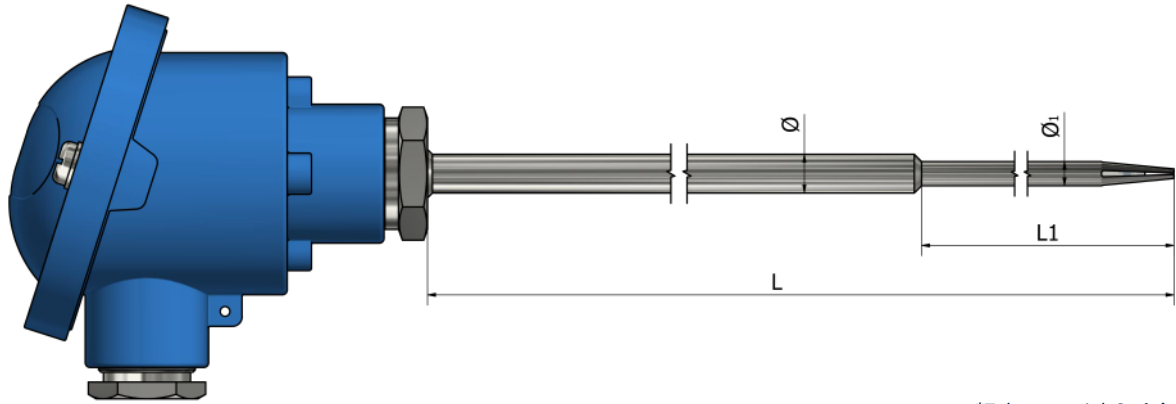
Quantity:

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.



*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. Dimensions L and \varnothing (mm):

L _____ \varnothing _____

6. Dimensions L1 and \varnothing_1 (mm):

L1 _____ \varnothing_1 _____

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.