EuroSensors

Wired thermocouples

Contents

Address: 8 chemin des Grandes Combes 69360 Ternay, France
Telephone: 04-72-66-92-34

email: contact@eurosensors.eu
www.eurosensors.eu

EuroSensors

Wired thermocouples - Technical information

What are the characteristics of the wired thermocouples ?

Wired thermocouples are simple and inexpensive temperature sensors. Some of the common features of wire thermocouples include:

Simplicity: Wired thermocouples are very simple temperature sensors made of bare metal wires that are soldered together at one end.
Low cost: Wired thermocouples are generally less expensive to manufacture than jacketed thermocouples because of their simple design.
Accuracy: Wired thermocouples are generally more accurate than jacketed thermocouples because they do not have a protective coating that could affect their accuracy.
Flexibility: Wired thermocouples are more flexible than jacketed thermocouples, making them easier to install in confined spaces or in hard-to-reach positions.
Fragility: Wired thermocouples are more fragile than jacketed thermocouples and can be damaged by mechanical impacts, high temperatures and chemical agents.

Thermocouple classes

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

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

Types of thermocouples

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

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

Note that connector colors vary by standard and country. Check the ***"International Color Codes applied to temperature measuring engineering".***

Wired thermocouples - Technical information

Types of thermocouple cables

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

Fiberglass

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

Shielded teflon

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

Shielded PVC

Description: PVC/shield/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

Twisted teflon

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

Flat teflon

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

Flat fiberglass

Description: fiberglass/fiberglass
Operating T°: -60°C / +400°C
Cross section shape: flat

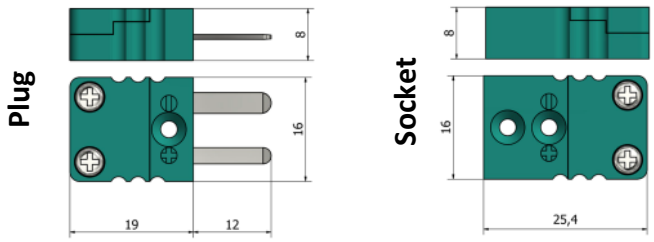
Types of connectors

Thermocouple connectors plugs and sockets are available in two sizes (miniature and standard).

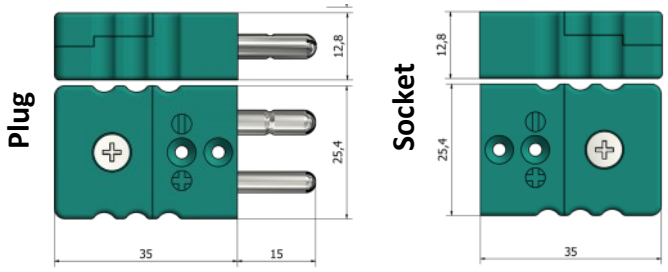
Miniature thermocouple connectors are smaller and have flat pins, these are usually found on small diameter thermocouples or fitted to the end of cables for connection to hand held and panel instruments.

Standard connectors have larger round pins and tend to be used for more industrial applications.

Miniature connector



Standard connector

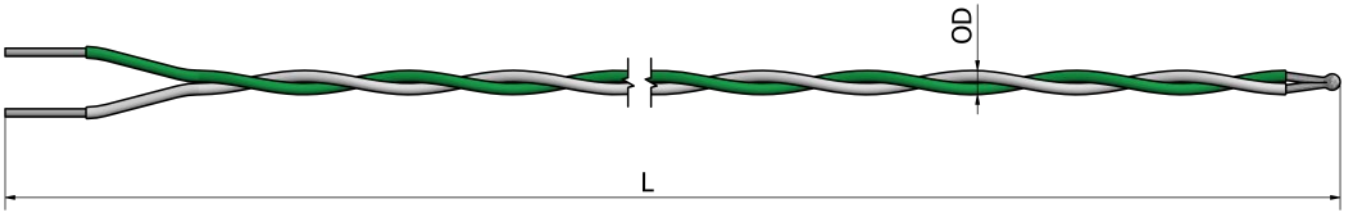


Global cable insulation characteristics

	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

TC00 – Wired thermocouples
Twisted teflon

-190°C / +260°C
Short term +280°C



Ordering information

1. Thermocouple:

☐ Type K ☐ Type J ☐ Type T

☐ Other:

2. Class:

☐ Class 1 ☐ Class 2

3. Wire and cable size:

☐ 1 x 0,2 (0,03 mm²) OD ≈ 1mm ☐ 7 x 0,2 (0,22 mm²) OD ≈ 2mm

☐ Other:

4. Cable length L (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

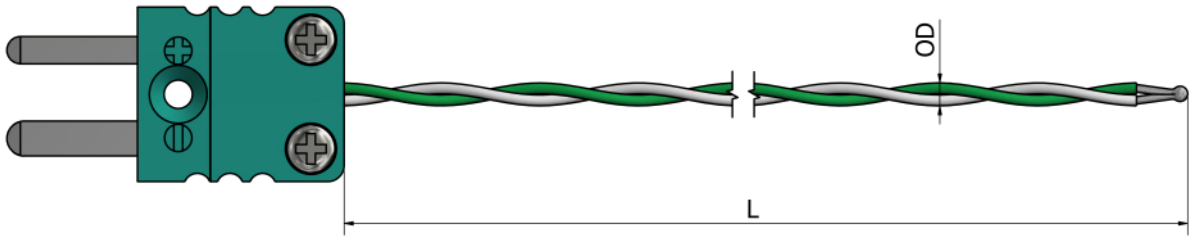
Note:

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.

TC01 – Wired thermocouples
Twisted teflon with connector

-190°C / +260°C
Short term +280°C



Ordering information

1. Thermocouple:
☐ Type K ☐ Type J ☐ Type T
☐ Other:

2. Class:
☐ Class 1 ☐ Class 2

3. Wire and cable size:
☐ 1 x 0,2 (0,03 mm²) OD ≈ 1mm ☐ 7 x 0,2 (0,22 mm²) OD ≈ 2mm
☐ Other:

4. Cable length L (mm):

5. Connector:
☐ Miniature Plug ☐ Miniature Socket ☐ Standard Plug ☐ Standard Socket

6. Connector temperature: ☐ 200°C ☐ 350°C ☐ 650°C

7. Option:
☐ Cable clamp ☐ Custom ID label ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

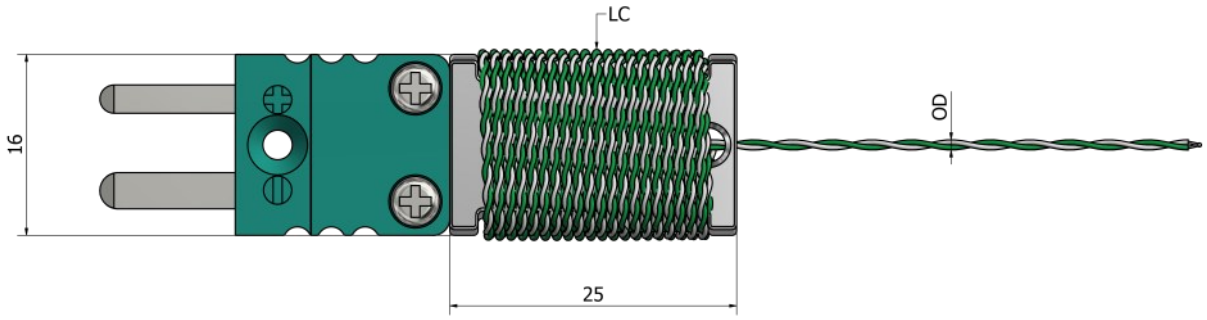
Note:

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.

TC02 – Wired thermocouples
Handheld (aluminum)

-190°C / +260°C
Short term +280°C



Cable holder material* ***Aluminum*

Ordering information

1. Thermocouple:
☐ Type K ☐ Type J ☐ Type T
☐ Other:

2. Class:
☐ Class 1 ☐ Class 2

3. Wire and cable size:
☐ 1 x 0,2 (0,03 mm²) OD ≈ 1mm ☐ 7 x 0,2 (0,22 mm²) OD ≈ 2mm
☐ Other:

4. Cable length LC (mm):

5. Miniature connector:
☐ Plug ☐ Socket

6. Connector temperature: ☐ 200°C

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

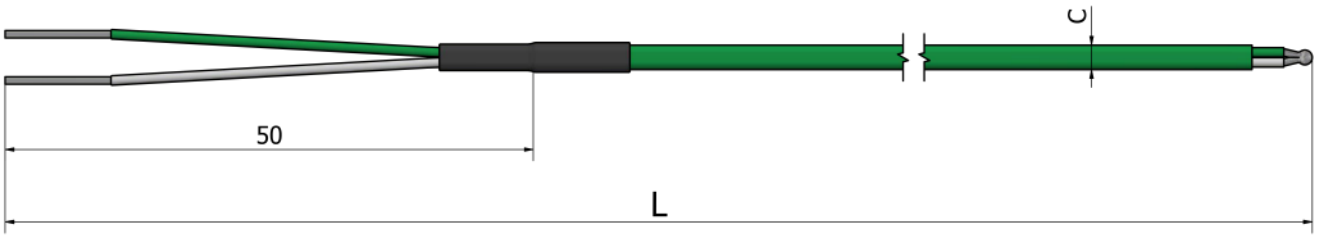
Note:

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.

TC10 – Wired thermocouples
Flat teflon (teflon/teflon)

-190°C / +260°C
Short term +280°C



Ordering information

1. Thermocouple:

☐ Type K ☐ Type J ☐ Type T

☐ Other:

2. Class:

☐ Class 1 ☐ Class 2

3. Wire and cable size:

☐ 1 x 0,08 (0,005 mm²)
C ≈ 0,9mm x 1,3mm

☐ 7 x 0,2 (0,22 mm²)
C ≈ 1,5mm x 2,4mm

☐ Other:

4. Cable length L (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

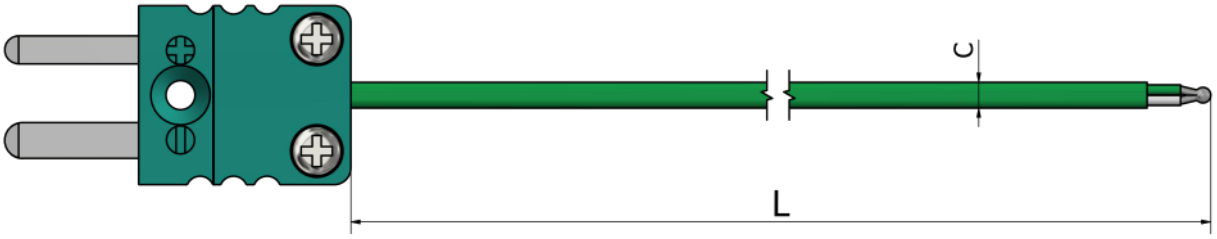
Note:

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.

TC11 – Wired thermocouples
Flat teflon (teflon/teflon) with connector

-190°C / +260°C
Short term +280°C



Ordering information

1. Thermocouple:
☐ Type K ☐ Type J ☐ Type T
☐ Other:

2. Class:
☐ Class 1 ☐ Class 2

3. Wire and cable size:
☐ 1 x 0,08 (0,005 mm²) C ≈ 0,9mm x 1,3mm
☐ 7 x 0,2 (0,22 mm²) C ≈ 1,5mm x 2,4mm
☐ Other:

4. Cable length L (mm):

5. Connector:
☐ Miniature Plug ☐ Miniature Socket ☐ Standard Plug ☐ Standard Socket

6. Connector temperature: ☐ 200°C ☐ 350°C ☐ 650°C

7. Option:
☐ Cable clamp ☐ Custom ID label ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

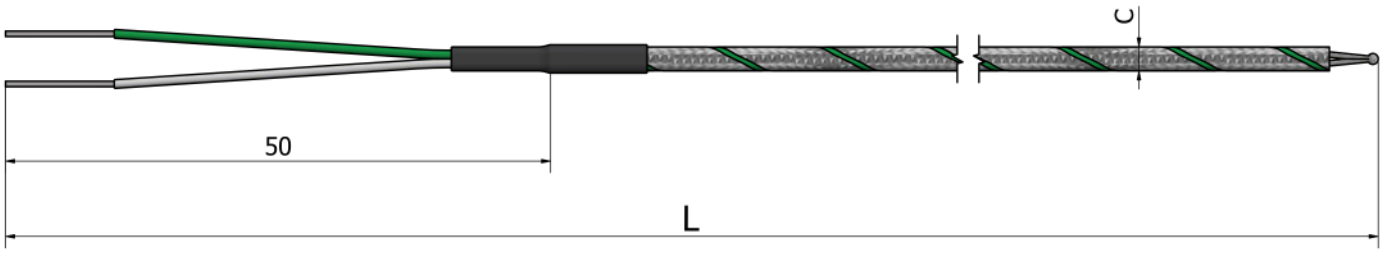
Note:

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.

TC20 – Wired thermocouples
Flat fiberglass (fiberglass/fiberglass)

-60°C / +400°C
Short term +600°C



Ordering information

1. Thermocouple:

☐ Type K ☐ Type J

☐ Other:

2. Class:

☐ Class 1 ☐ Class 2

3. Wire and cable size:

☐ 1 x 0,5 (0,20 mm²)
C ≈ 1,3mm x 1,8mm

☐ 1 x 0,3 (0,07 mm²)
C ≈ 1,4mm x 2,2mm

☐ Other:

4. Cable length L (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

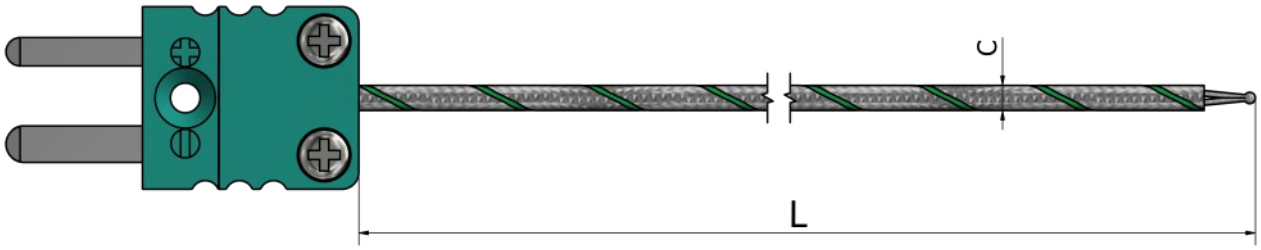
Note:

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.

TC21 – Wired thermocouples
Flat fiberglass (fiberglass/fiberglass) with connector

-60°C / +400°C
Short term +600°C



Ordering information

1. Thermocouple:
☐ Type K ☐ Type J
☐ Other:

2. Class:
☐ Class 1 ☐ Class 2

3. Wire and cable size:
☐ 1 x 0,5 (0,20 mm²) C ≈ 1,3mm x 1,8mm
☐ 1 x 0,3 (0,07 mm²) C ≈ 1,4mm x 2,2mm
☐ Other:

4. Cable length L (mm):

5. Connector:
☐ Miniature Plug ☐ Miniature Socket ☐ Standard Plug ☐ Standard Socket

6. Connector temperature: ☐ 200°C ☐ 350°C ☐ 650°C

7. Option:
☐ Cable clamp ☐ Custom ID label ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

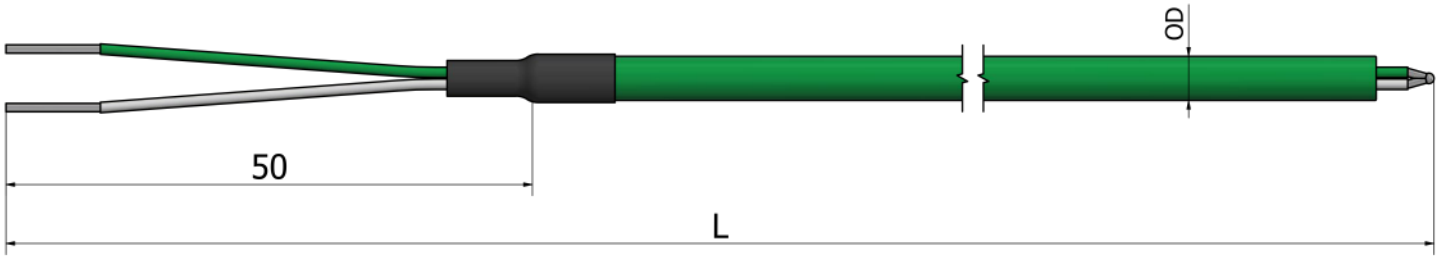
Note:

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.

TC30 – Wired thermocouples
PVC (pvc/braid/pvc)

-30°C / +105°C
Short term +135°C



Ordering information

1. Thermocouple:

☐ Type K ☐ Type J ☐ Type N ☐ Type T

☐ Other:

2. Class:

☐ Class 1 ☐ Class 2

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø4,0 mm

☐ Other:

4. Cable length L (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

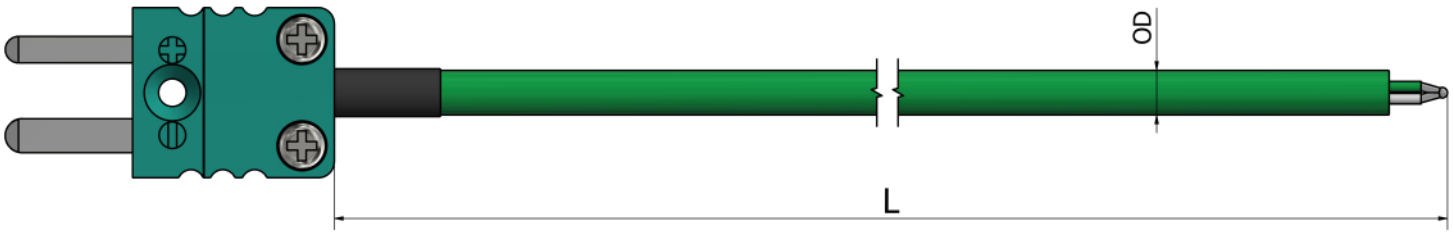
Note:

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.

TC31 – Wired thermocouples
PVC (pvc/braid/pvc) with connector

-30°C / +105°C
Short term +135°C



Ordering information

1. Thermocouple:
☐ Type K ☐ Type J ☐ Type N ☐ Type T
☐ Other:

2. Class:
☐ Class 1 ☐ Class 2

3. Wire and cable size:
☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø4,0 mm
☐ Other:

4. Cable length L (mm):

5. Connector:
☐ Miniature Plug ☐ Miniature Socket ☐ Standard Plug ☐ Standard Socket

6. Connector temperature: ☐ 200°C ☐ 350°C ☐ 650°C

7. Option:
☐ Cable clamp ☐ Custom ID label ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

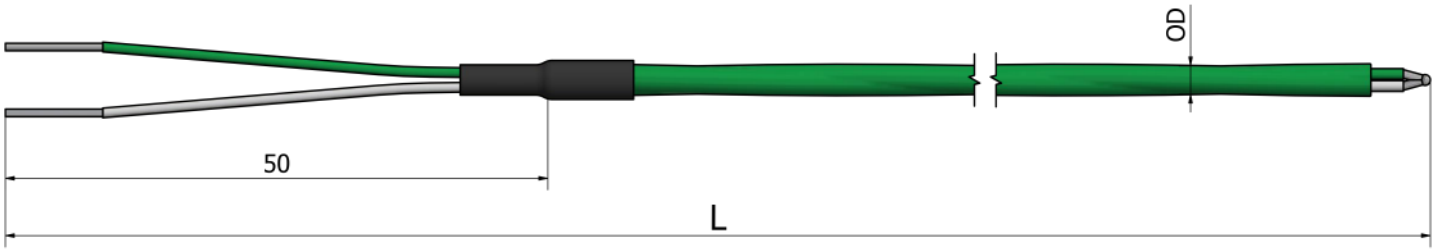
Note:

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.

TC40 – Wired thermocouples
Teflon (teflon/braid/teflon)

-190°C / +260°C
Short term +280°C



Ordering information

1. Thermocouple:

☐ Type K ☐ Type J ☐ Type N ☐ Type T

☐ Other:

2. Class:

☐ Class 1 ☐ Class 2

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø3,0 mm

☐ Other:

4. Cable length L (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

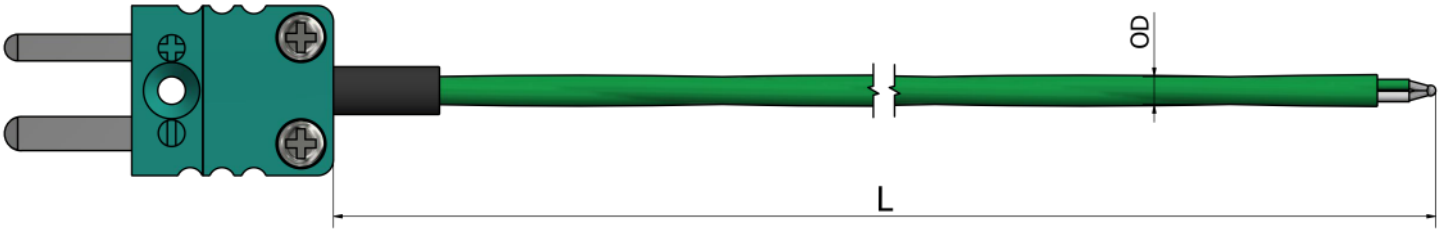
Note:

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.

TC41 – Wired thermocouples
Teflon (teflon/braid/teflon) with connector

-190°C / +260°C
Short term +280°C



Ordering information

1. Thermocouple:
☐ Type K ☐ Type J ☐ Type N ☐ Type T
☐ Other:

2. Class:
☐ Class 1 ☐ Class 2

3. Wire and cable size:
☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø3,0 mm
☐ Other:

4. Cable length L (mm):

5. Connector:
☐ Miniature Plug ☐ Miniature Socket ☐ Standard Plug ☐ Standard Socket

6. Connector temperature: ☐ 200°C ☐ 350°C ☐ 650°C

7. Option:
☐ Cable clamp ☐ Custom ID label ☐ Without

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

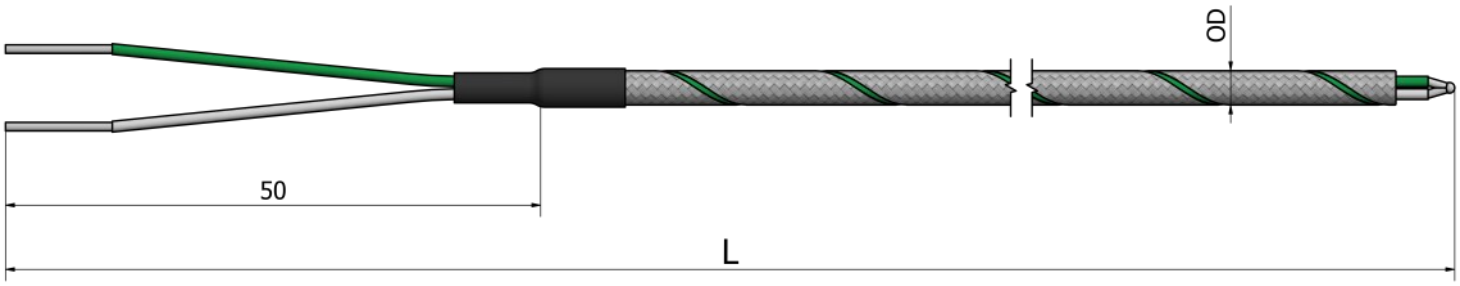
Note:

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.

TC50 – Wired thermocouples
Fiberglass (fiberglass/fiberglass/braid)

-60°C / +400°C
Short term +600°C



Ordering information

1. Thermocouple:

☐ Type K ☐ Type J ☐ Type N ☐ Type T

☐ Other:

2. Class:

☐ Class 1 ☐ Class 2

3. Wire and cable size:

☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø3,0 mm

☐ Other:

4. Cable length L (mm):

Additional:

Application:

Operating temperature (min/max):

Type of environment:

Accessories:
See the part "Accessories"

Quantity:

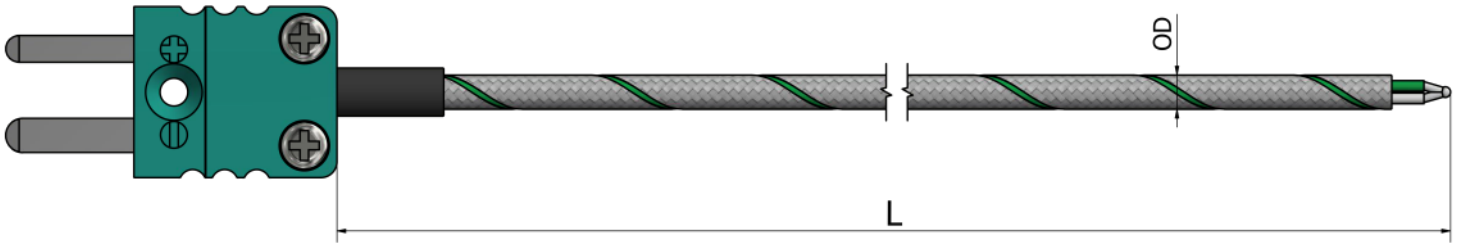
Note:

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.

TC51 – Wired thermocouples
Fiberglass with connector (fiberglass/fiberglass/braid)

-60°C / +400°C
Short term +600°C



Ordering information

1. Thermocouple:
☐ Type K ☐ Type J ☐ Type N ☐ Type T
☐ Other:

2. Class:
☐ Class 1 ☐ Class 2

3. Wire and cable size:
☐ 7 x 0,2 (0,22 mm²) OD ≈ Ø3,0 mm
☐ Other:

4. Cable length L (mm):

5. Connector:
☐ Miniature Plug ☐ Miniature Socket ☐ Standard Plug ☐ Standard Socket

6. Connector temperature: ☐ 200°C ☐ 350°C ☐ 650°C

7. Option:
☐ Cable clamp ☐ Custom ID label ☐ 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.