

Surface temperature sensors



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Surface RTDs

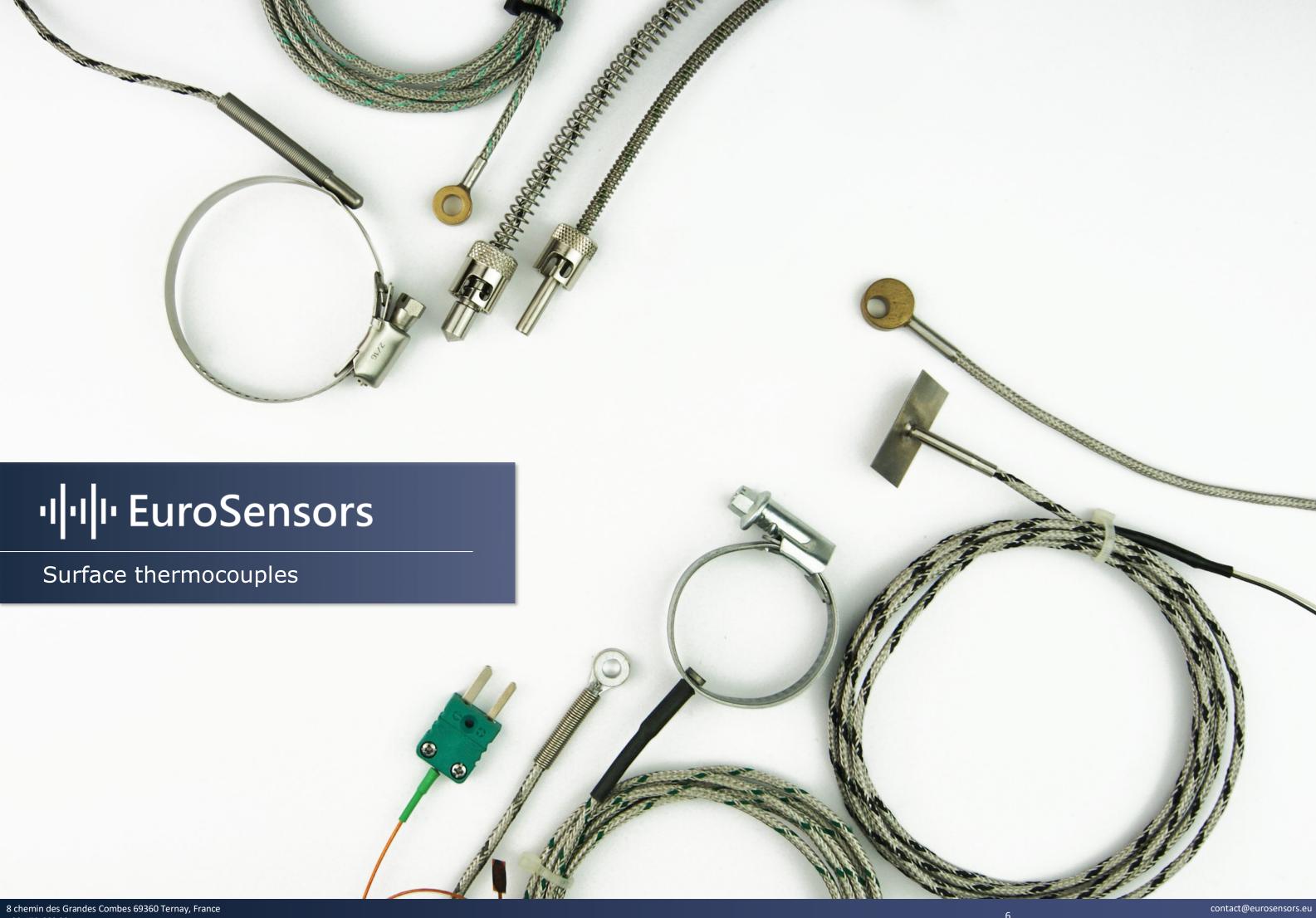
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Surface thermocouples - Technical information





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".

Thermocouple classes

Classes of thermocouples have certain tolerance values and temperature limits of validity. The most common classes are ${\it class}~{\bf 1}$ and ${\it class}~{\bf 2}$.

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

Material conductivity

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

Surface temperature probes 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 thermocouples

Attaching a thermocouple 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 thermocouples 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 thermocouple cap to be installed with a twist.

Weld pad thermocouples 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 thermocouples is ideal for temperature measurements on pipes in laboratories and industrial applications.

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





TS00 – Surface thermocouples Adhesive tape



	LC 18
Ordering information	*Adhesive tape material Fiberglass/PTF
1. Thermocouple:	Additional:
☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	Application:
	Operating temperature (min/max): Type of environment:
2. Number of thermocouples: \(\times \times 1 \) \(\times 2 \)	Accessories:
3. Class: ☐ Class 1 ☐ Class 2	See the part "Accessories" Quantity:
4. Cable prolongation: Teflon (260°C) Other:	Note:
5. Cable length LC (mm):	
6. Junction type: Exposed	
7. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket	
8. Connector temperature: 200°C 350°C 650°C	
9. Option: Cable clamp Custom ID label Without	
How to order?	փի





TS01 – Surface thermocouples Washer mount



-		LC	
			*Washer mount material Tinned co
Ordering information			
1. Thermocouple:	_	_	Additional:
☐ Type K ☐ Type N ☐ Type J ☐ Type R ☐ Type S ☐ Type B	☐ Type T☐ Other:	Type E	Application:
			Operating temperature (min/max):
2. Number of thermocouples:	x 1	□ x 2	Type of environment: Accessories:
3. Class:			See the part "Accessories"
			Quantity:
4. Cable prolongation: ☐ Teflon (260°C) ☐ Other:			Note:
5. Cable length LC (mm):			
6. Junction type: ☐ Ungrounded ☐ Grounded			
7. Hole size Ø (mm):			
8. Connector: Miniature Miniature Stan Plug Socket Plug			
9. Connector temperature: 20	00°C	650°C	





TS02 – Surface thermocouples Reinforced washer mount



50 LC	8,0
Ordering information	*Washer mount material Stainless steel 31
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	9. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Number of thermocouples:	10. Connector temperature: □ 200°C □ 350°C □ 650°C
3. Class: Class 1 Class 2	11. Option: Cable clamp Custom ID label Without
4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Additional: Application: Operating temperature (min/max):
5. Cable length LC (mm):	Type of environment: Accessories:
6. Junction type: Ungrounded Grounded	See the part "Accessories" Quantity:
7. Hole diameter Ø (mm):	Note:
8. Crimp protection: Spring Heat shrink sleeve Without	





TS03 – Surface thermocouples Ring mount



50 LC	22
Ordering information	v. i
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	10. Connector: Miniature Miniature Standard Standard Witho Plug Socket Plug Socket
2. Number of thermocouples: \[\subseteq x1 \] \[\supseteq 2	11. Connector temperature: □ 200°C □ 350°C □ 650°C
3. Class: Class 1 Class 2	12. Option: Cable clamp Custom ID label Without
4. Cable prolongation:	Additional: Application:
☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)	Operating temperature (min/max):
☐ Fiberglass (400°C) ☐ Other:	Type of environment:
5. Cable length LC (mm):	Accessories: See the part "Accessories"
6. Junction type: ☐ Ungrounded ☐ Grounded	Quantity:
7. Ring material: Brass AISI 316L Other:	Note:
8. Ring size: ☐ M5 ☐ M6 ☐ Other:	
9. Crimp protection: Spring Heat shrink sleeve Without	





TS05 – Surface thermocouples Contact block



50 LC	28 8 10
Ordering information	*Contact block material Brass or alumin
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	9. Crimp protection: Spring Heat shrink sleeve Without 10. Connector:
2. Number of thermocouples:	☐ Miniature ☐ Miniature ☐ Standard ☐ Standard ☐ Without Plug Socket
3. Class: Class 1 Class 2	11. Connector temperature: 200°C 350°C 650°C
4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	12. Option: Cable clamp Custom ID label Without Additional: Application:
5. Cable length LC (mm):	Operating temperature (min/max):
6. Junction type: ☐ Ungrounded ☐ Grounded	Type of environment: Accessories:
7. Contact block material:	See the part "Accessories" Quantity:
8. Contact block shape: V-shape Flat	Note:
How to order?	ग्रीन





TS10 – Surface thermocouples Weld pad



50 LC	*Weld pad and tube material Stainless steel 316
Ordering information 1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	11. Crimp protection: Spring Heat shrink sleeve Without 12. Connector:
2. Number of thermocouples: $\square \times 1$ $\square \times 2$ 3. Class:	☐ Miniature ☐ Miniature ☐ Standard ☐ Standard ☐ Without Plug Socket Plug Socket 13. Connector temperature: ☐ 200°C ☐ 350°C ☐ 650°C
Class 1 Class 2 4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	14. Option: Cable clamp Custom ID label Without Additional: Application:
5. Cable length LC (mm): 6. Junction type: □ Ungrounded □ Grounded	Operating temperature (min/max): Type of environment:
7. Tube length L (mm):	Accessories: See the part "Accessories" Quantity:
8. Pad material:	Note:
Other: 10. Pad thickness h (mm):	
☐ 15 x 10 ☐ 25 x 10 ☐ 30 x 10 ☐ Other:	





TS11 – Surface thermocouples Weld pad (45° angle)



50 LC	*Wold and and tube material Staiglan stad 216
Ordering information	*Weld pad and tube material Stainless steel 316
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	11. Crimp protection: Spring Heat shrink sleeve Without 12. Connector: Miniature Miniature Standard Standard Without
2. Number of thermocouples: $\square \times 1$ $\square \times 2$	☐ Miniature ☐ Miniature ☐ Standard ☐ Standard ☐ Without Plug Socket Plug Socket
3. Class: Class 1 Class 2	13. Connector temperature: 200°C 350°C 650°C
4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	14. Option: Cable clamp Custom ID label Without Additional: Application:
5. Cable length LC (mm):	Operating temperature (min/max):
6. Junction type: Ungrounded Grounded	Type of environment: Accessories:
7. Tube length L (mm):	See the part "Accessories"
8. Pad material: AISI 316L Other:	Quantity:
9. Pad dimensions A x B (mm): 15 x 10	Note:
10. Pau tilickness ii (mm): [0,5 Other:	J
How to order?	վվ
Choose the desired characteristics of your sensor by marking the cl personal notes, special requirements or any important data. For ad	heckboxes and by filling up the text. You can provide sketches, images,





TS12 – Surface thermocouples Weld pad (plug-in)



50 LC	h B
Ordering information	*Weld pad and tube material Stainless steel 31 0
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	11. Insertion diameter Ø (mm):
2. Number of thermocouples:	12. Insertion depth L (mm): 13. Crimp protection: Spring Heat shrink sleeve Without
4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	14. Connector: Miniature Miniature Standard Standard Withou Plug Socket 15. Connector temperature: 200°C 350°C 650°C
5. Cable length LC (mm): 6. Junction type:	16. Option: Cable clamp Custom ID label Without
☐ Ungrounded ☐ Grounded	Additional:
7. Pad material: AISI 316L Other:	Application:
8. Pad dimensions A x B (mm): 15 x 10 25 x 10 30 x 10 Other:	Operating temperature (min/max): Type of environment: Accessories: See the part "Accessories"
	Quantity:
9. Pad thickness h (mm): 0,5 Other: 10. Hole size Ø D (mm):	Note:
How to order?	ા <u>-</u>





TS20 – Surface thermocouples Angle / plug-in



50 LC	30 9 Ø
Ordering information	*Mounting block material Brass *Tube material Stainless steel 3 :
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	11. Connector: Miniature
2. Number of thermocouples: $\square \times 1 \qquad \square \times 2$	12. Connector temperature: 200°C 350°C 650°C
3. Class: Class 1 Class 2	13. Option: Cable clamp Custom ID label Without
4. Cable prolongation:	Additional:
PVC (105°C) Silicone (180°C) Teflon (260°C)	Application: Operating temperature (min/max):
☐ Fiberglass (400°C) ☐ Other:	Type of environment:
5. Cable length LC (mm):	Accessories: See the part "Accessories"
6. Junction type:	Quantity:
☐ Ungrounded ☐ Grounded	Note:
7. Hole size Ø D (mm):	
8. Insertion diameter Ø (mm):	
9. Insertion depth L (mm):]
]
10. Crimp protection: ☐ Spring ☐ Heat shrink sleeve ☐ Without	
	.





TS21 – Surface thermocouples Angle / plug-in (clamp)



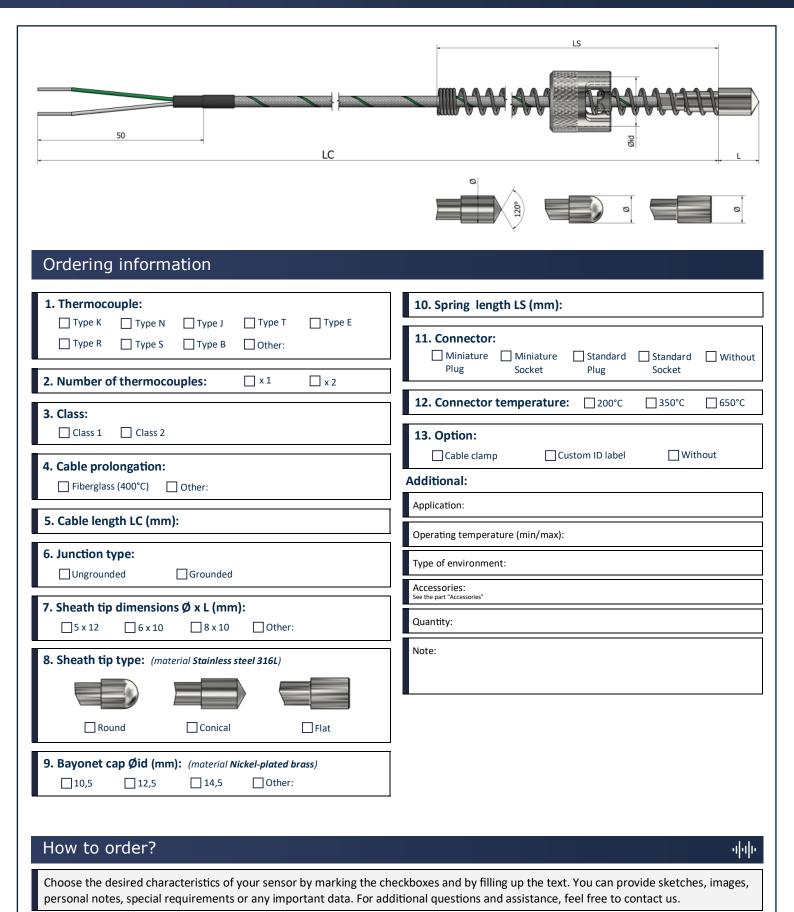
50 LC	22
Ordering information	*Clamp and tube material Stainless steel 316L
Ordering information 1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	10. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Number of thermocouples: $\square \times 1$ $\square \times 2$	11. Connector temperature: 200°C 350°C 650°C
3. Class: Class 1 Class 2	12. Option: Cable clamp Custom ID label Without
4. Cable prolongation:	Additional: Application:
☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)	Operating temperature (min/max):
☐ Fiberglass (400°C) ☐ Other:	Type of environment:
5. Cable length LC (mm):	Accessories: See the part "Accessories"
6. Junction type: Ungrounded Grounded	Quantity:
7. Insertion diameter Ø (mm):	Note:
8. Insertion depth L (mm):	
9. Crimp protection: Spring Heat shrink sleeve Without	
How to order?	गंगा





TS30 – Surface thermocouples Bayonet









TS31 – Surface thermocouples Bayonet with reduced tip



	nannt mannina g o o
50 LC	S L1 L
	*Tube and tip material Stainless steel :
Ordering information	
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	11. Connector: Miniature Miniature Standard Standard With Plug Socket Plug Socket
2. Number of thermocouples: $\square \times 1 \qquad \square \times 2$	12. Connector temperature: 200°C 350°C 650°C
3. Class:	13. Option: Cable clamp Custom ID label Without Additional:
4. Cable prolongation:	Application:
☐ Fiberglass (400°C) ☐ Other:	Operating temperature (min/max):
5. Cable length LC (mm):	Type of environment:
6. Junction type: Ungrounded Grounded	Accessories: See the part "Accessories"
7. Dimensions L and Ø (mm):	Quantity:
L Ø	Note:
3. Dimensions L1 and Ø1 (mm): 11 Ø1	
9. Bayonet cap Øid (mm): (material Nickel-plated brass) 10,5 12,5 14,5 Other:	
10. Spring length LS (mm):	
How to order?	ıl





TS32 – Surface thermocouples Bayonet with ceramic tip



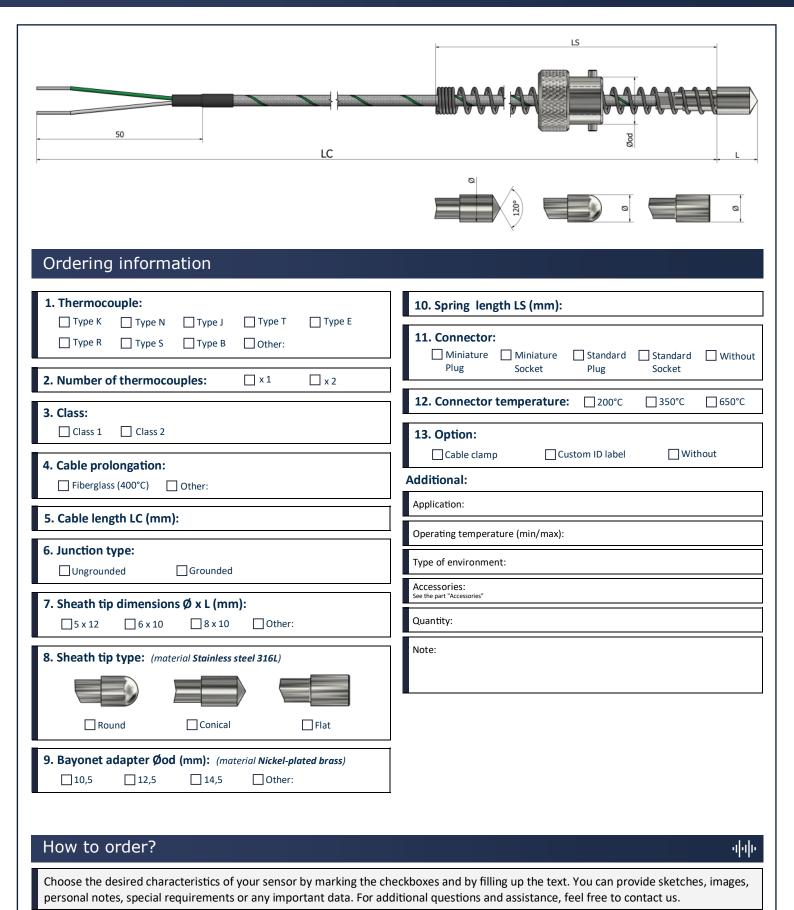
50	LC LS
Ordering information	*Tip material Ceran
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	10. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Number of thermocouples: $\square \times 1 \qquad \square \times 2$	11. Connector temperature: 200°C 350°C 650°C
3. Class: Class 1 Class 2	12. Option: Cable clamp Custom ID label Without Additional:
4. Cable prolongation:	Application:
☐ Fiberglass (400°C) ☐ Other:	Operating temperature (min/max):
5. Cable length LC (mm):	Type of environment:
6. Junction type: ☐ Ungrounded ☐ Grounded	Accessories: See the part "Accessories"
	Quantity:
7. Sheath tip dimensions Ø x L (mm): ☐ 5 x 12 ☐ 6 x 10 ☐ 8 x 10 ☐ Other:	Note:
8. Bayonet cap Øid (mm): (material Nickel-plated brass) 10,5 12,5 14,5 Other:	
9. Spring length LS (mm):	
Have to and and	
How to order?	्रवाच





TS33 – Surface thermocouples Bayonet (reverse)









TS34 – Surface thermocouples Bayonet with clamp (90° angle)



	LS + 22
Ordering information 1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	*Clamp and tube material Stainless steel 31 10. Bayonet cap Øid (mm): (material Nickel-plated brass) 10.5
2. Number of thermocouples: \(\times \tau \) \(\times 2 \) 3. Class: \(\times \text{Class 1} \) \(\times \text{Class 2} \)	12. Connector: Miniature Miniature Standard Standard Without Plug Socket Soc
4. Cable prolongation: Fiberglass (400°C)	13. Connector temperature: 200°C 350°C 650°C 14. Option: Cable clamp Custom ID label Without Additional:
6. Cable length L (mm): 7. Junction type: ☐ Ungrounded ☐ Grounded	Application: Operating temperature (min/max):
8. Sheath tip dimensions Ø x L1 (mm): 5 x 12 6 x 10 8 x 10 Other:	Type of environment: Accessories: See the part "Accessories" Quantity:
9. Sheath tip type: (material Stainless steel 316L) Round Conical Flat	Note:
How to order? Choose the desired characteristics of your consor by marking the consort by the consort by the consort by the consort by m	checkboxes and by filling up the text. You can provide sketches, images





TS41 – Surface thermocouples Pipe-Clamp (type 1)



	L-	LC	., 25
	50		*Tube and clamp material Stainless steel 3:
Orde	ering information		Tube and Clamp material Stanness steel 31
□™	ermocouple: Type K Type N Type J Type R Type S Type B	☐ Type T ☐ Type E ☐ Other:	9. Crimp protection: Spring Heat shrink sleeve Without 10. Connector:
2. Nur	mber of thermocouples:	□ x1 □ x2	☐ Miniature ☐ Miniature ☐ Standard ☐ Standard ☐ Without ☐ Plug Socket
3. Clas	SS: Class 1 Class 2		11. Connector temperature: 200°C 350°C 650°C
☐ P	ple prolongation: PVC (105°C) Silicone (1 Siberglass (400°C) Other:	.80°C) Teflon (260°C)	12. Option: Cable clamp Custom ID label Without Additional:
5. Cab	ole length LC (mm):		Application: Operating temperature (min/max):
6. June	ction type:		Type of environment:
U	Jngrounded Grounded	I	Accessories: See the part "Accessories"
7. Clar	mp size Ø (mm):		Quantity:
8. Clar	mp direction:		Note:
	□V1	□ V2	





TS42 – Surface thermocouples Pipe-Clamp (type 2)



50		LC	
Ordering informa	tion		*Tube and clamp material Stainless steel 316
1. Thermocouple: Type K Type N	☐ Type J ☐ Type T ☐ Type B ☐ Other:	☐ Туре E	9. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Number of thermocou	ples: \[\times 1	□ x 2	10. Connector temperature: 200°C 350°C 650°C
3. Class:			11. Option: Cable clamp Custom ID label Without
4. Cable prolongation:			Additional: Application:
		☐ Teflon (260°C)	Operating temperature (min/max):
Fiberglass (400°C)	Other:		Type of environment:
5. Cable length LC (mm):			Accessories: See the part "Accessories"
6. Junction type:	☐Grounded		Quantity:
7. Clamp size Ø (mm):			Note:
8. Crimp protection:	Heat shrink sleeve	☐ Without	
How to order?			վոր





TS43 – Surface thermocouples Pipe-Clamp (type 3)



50 LC	<u>6</u>
Ordering information	*Tube and clamp material Stainless steel 3
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	11. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Number of thermocouples:	12. Connector temperature: 200°C 350°C 650°C
3. Class: Class 1 Class 2	13. Option: Cable clamp Custom ID label Without Additional:
4. Cable prolongation:	Application:
☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (26 ☐ Fiberglass (400°C) ☐ Other:	Operating temperature (min/max):
5. Cable length LC (mm):	Type of environment:
6. Junction type:	Accessories: See the part "Accessories" Quantity:
□Ungrounded □Grounded	Note:
7. Clamp size Ø (mm):	
B. Insertion diameter Ø1 (mm):	
9. Insertion depth L1 (mm):	
LO. Crimp protection: Spring Heat shrink sleeve Without	





TS50 – Surface thermocouples Handheld



Ordering information	*Handle material Plastic *Tube material Stainless steel 316L
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type J ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	8. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Number of thermocouples: $\square \times 1$ $\square \times 2$	9. Connector temperature: 200°C 350°C 650°C
3. Class: Class 1 Class 2 4. Cable prolongation:	10. Option: Cable clamp Custom ID label Without Additional:
PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Application: Operating temperature (min/max):
5. Cable length LC (mm):	Type of environment: Accessories:
6. Junction type:	Quantity:
Grounded Other: 7. Length L (mm):	Note:
How to order?	- վվե

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





TS60 – Surface thermocouples Spring loaded magnet



50 LC	20 . 20
Ordering information	
1. Thermocouple: ☐ Type K ☐ Type N ☐ Type I ☐ Type T ☐ Type E ☐ Type R ☐ Type S ☐ Type B ☐ Other:	8. Connector: Miniature
2. Number of thermocouples: $\square \times 1$ $\square \times 2$	9. Connector temperature: 200°C 350°C 650°C
3. Class: Class 1 Class 2	10. Option: Cable clamp Custom ID label Without Additional:
4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Application: Operating temperature (min/max):
5. Cable length LC (mm):	Type of environment: Accessories:
6. Junction type:	Quantity:
☐ Ungrounded ☐ Grounded 7. Crimp protection: ☐ Spring ☐ Heat shrink sleeve ☐ Without	Note:

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.





TS61 – Surface thermocouples Crocodile clip magnet



LC	
Ordering information 1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	8. Connector: Miniature
2. Number of thermocouples: $\square \times 1$ $\square \times 2$ 3. Class:	9. Connector temperature: 200°C 350°C 650°C 10. Option: Cable clamp Custom ID label Without
☐ Class 1 ☐ Class 2 4. Cable prolongation: ☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C) ☐ Fiberglass (400°C) ☐ Other:	Additional: Application: Operating temperature (min/max):
5. Cable length LC (mm): 6. Junction type: Ungrounded	Type of environment: Accessories: See the part "Accessories"
7. Crimp protection: Spring Heat shrink sleeve Without	Quantity: Note:
How to order?	

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

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





TH25 – Surface thermocouples Contact block (surface mount) with therminal head



Ordering information	28 8 9 10 0 *Tube material Stainless steel 316L
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	9. Contact block material: Brass Aluminum Other:
2. Number of thermocouples:	10. Contact block shape: V-shape
4. Lengths L1 and L2 (mm): L1 L2	Additional: Application:
5. Diameter Ø (mm): 6. Junction type: Grounded	Operating temperature (min/max): Type of environment: Accessories:
7. Connection head: (see the part "Accessories") Type B Type DAN Type M Type N Type Ex Type NS Other:	See the part "Accessories" Quantity: Note:
8. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order?	ग ग ।

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





TR20 – Thermocouples with thread connection Nozzle



	R ©
Ordering information	*Nozzle and thread material Stainless steel (304 / 304L / 316 / 316L
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	9. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Class: Class 1 Class 2	10. Connector temperature:
3. Length L (mm):	Cable clamp Custom ID label Without Additional:
4. Diameter Ø (mm):	Application:
5. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Operating temperature (min/max): Type of environment:
6. Cable length LC (mm):	Accessories: See the part "Accessories"
7. Crimp protection: Spring Heat shrink sleeve Without	Quantity: Note:
8. Thread: 1/2" BSPP	

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





TR21 – Thermocouples with thread connection Nozzle (90° bend)



50 LC	
*Tube material Stain Ordering information	nless steel 316L *Nozzle and thread material Stainless steel (304 / 304L / 316 / 316L)
1. Thermocouple: □ Type K □ Type N □ Type T □ Type E □ Type R □ Type S □ Type B □ Other:	10. Connector: Miniature
2. Class:	11. Connector temperature: 200°C 350°C 650°C
Class 1 Class 2	12. Option: Cable clamp Custom ID label Without
3. Lengths (mm): L1 L2	Additional:
	Application:
4. Length L (mm):	Operating temperature (min/max):
5. Diameter Ø (mm):	Type of environment:
6. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C)	Accessories: See the part "Accessories"
Fiberglass (400°C) Other:	Quantity:
7. Cable length LC (mm):	Note:
8. Crimp protection: Spring Heat shrink sleeve Without	
9. Thread: 1/2" BSPP1/4" BSPP1/4" BSPTM10 1/2" NPTOther:	
How to order?	اابالا heckboxes and by filling up the text. You can provide sketches, images,





TR22 - Thermocouples with thread connection Bolt

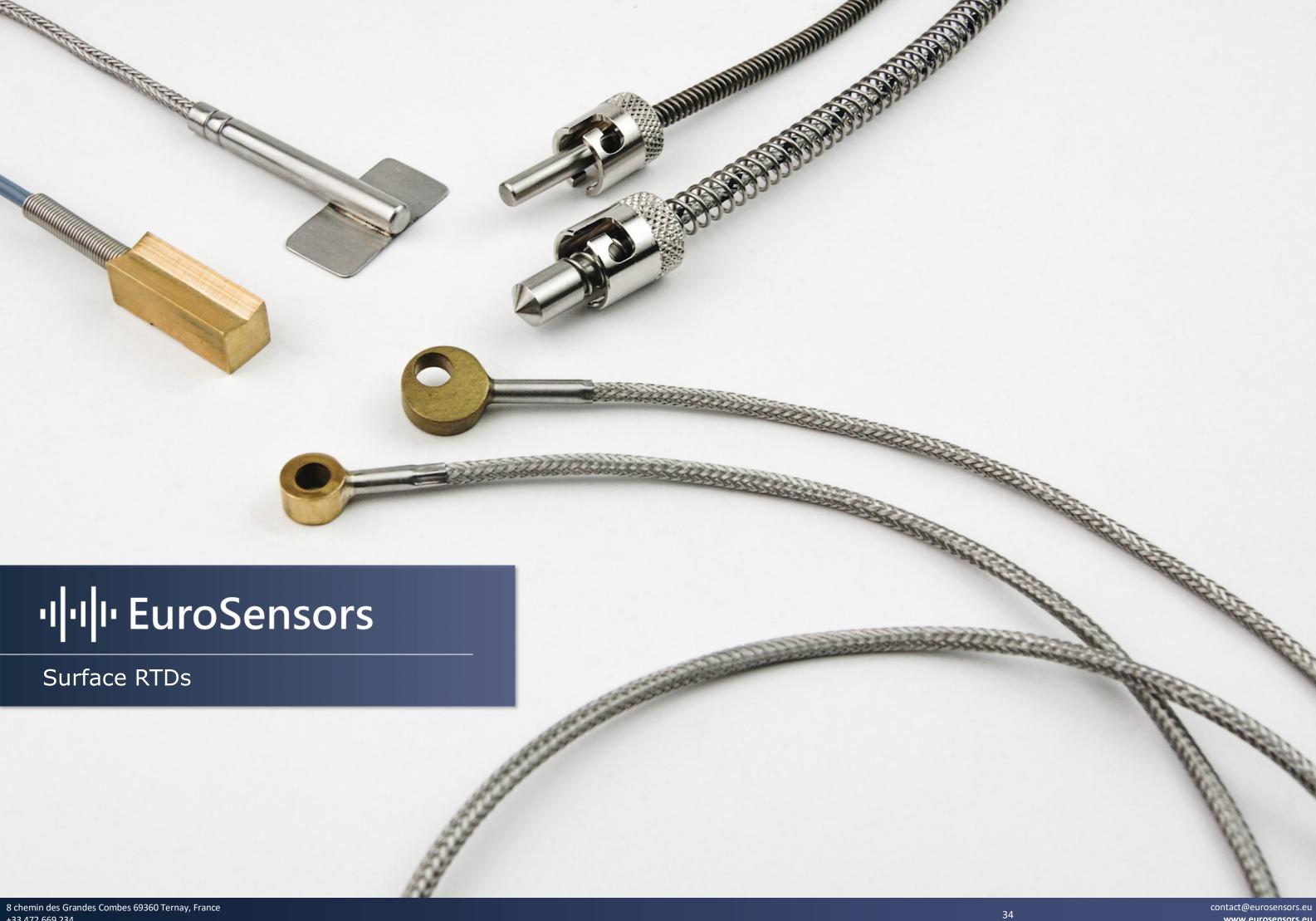


50	
j e	*Bolt material Stainless steel (304/304L/316/316L)
Ordering information	Bolt Material Stammess Steel (304) 30427 3107 31027
1. Thermocouple: Type K Type N Type J Type T Type E Type R Type S Type B Other:	8. Connector: Miniature Miniature Standard Standard Without Plug Socket Plug Socket
2. Class:	9. Connector temperature: 200°C 350°C 650°C
Class 1 Class 2	10. Option: Cable clamp Custom ID label Without
3. Length L (mm):	Additional:
4. Cable prolongation: ☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon (260°C)	Application:
☐ Fiberglass (400°C) ☐ Other:	Operating temperature (min/max):
5. Cable length LC (mm):	Type of environment:
6. Crimp protection:	Accessories: See the part "Accessories"
☐ Spring ☐ Heat shrink sleeve ☐ Without	Quantity:
7. Thread: 1/2" BSPP	Note:
	J

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.



Surface RTDs - Technical information





Different types of surface RTDs

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.

Attaching a RTD 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 RTDs 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 RTDs cap to be installed with a twist.

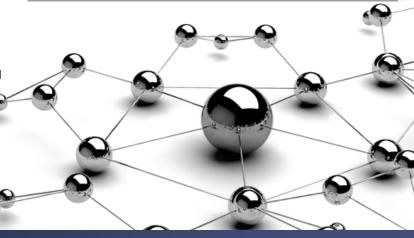
Weld pad RTDs which need not require the more rugged industrial construction can be tig welded or soldered and held with a number of clamping devices.

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

Magnet RTDs 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 RTDs - 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 (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.

differences make them more suitable for different applications.

Construction material

The main difference between thermistors and Pt-s is the material they are made of. Thermistors are typically composed of mixed metal oxides, while Pt-s are made of pure metal such as nickel or platinum. The material difference leads to different properties in temperature measurement. Thermistors are more accurate than Pt-s, even in the wiring of the associated devices.

Wire length

Thermistors have higher resistance values at lower temperatures which gives them higher resolution. Because the wire increases resistance, using very long wires can alter the reading and can cause inaccuracies. Because they have high inherent resistances, thermistors can be used with very long wire strands, while Pt-s are only recommended up to 3m without further measures. This can make a difference when selecting which temperature is best for your application depending on the required wire length.

Temperature range

A thermistor is better for lower temperatures whereas Pt-s are more suitable for higher temperatures. Thermistors can only be used in a temperature range up to +250°C, while Pt-s can be used up to +600°C.

Type of application

Thermistors are typically used in more commonplace devices such as freezers, air conditioners or water heaters. This is because of their high resolution in lower temperature ranges. Because of this, thermistors are also well suited for use in medical devices. Pt-s mainly used in industrial applications where higher temperatures can occur.

What are Pt-s and Thermistors?

Thermistors and Pt-s are both types of temperature sensors that measure temperature by measuring electrical resistance. They are both widely used for temperature measurement in various industries and applications.





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 $1000~\Omega$ 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.

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

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 ºC	Tolerance Ω at 0ºC	Tolerance ºC
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

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.

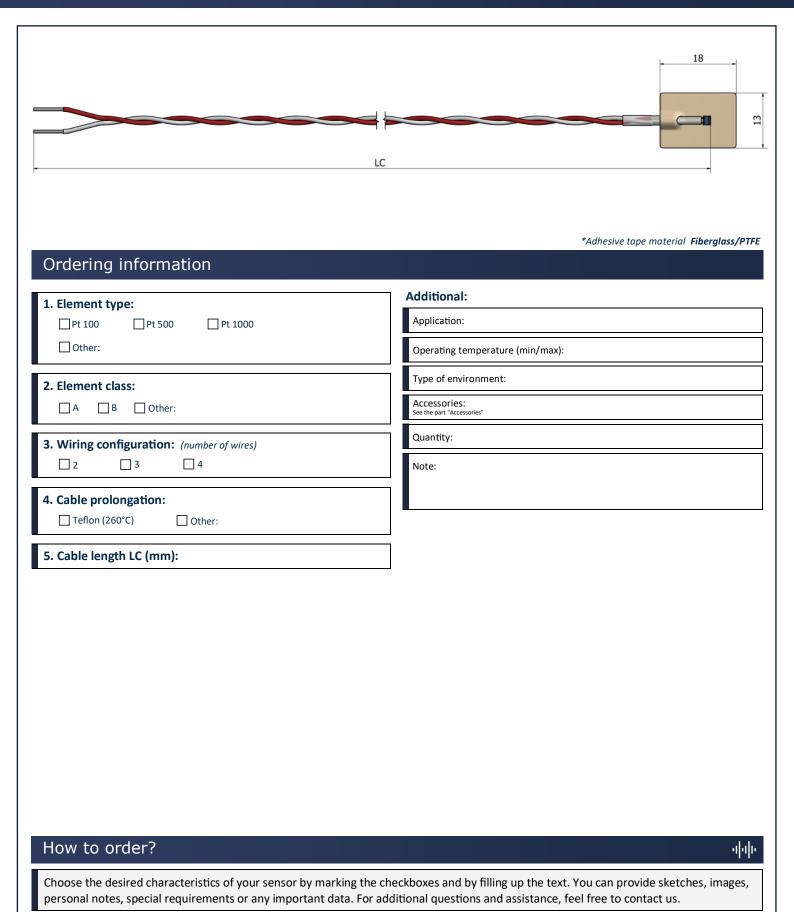


RTD standard connectors plugs and sockets are available in two sizes (miniature and standard).



PS00 – Surface RTDs Adhesive tape

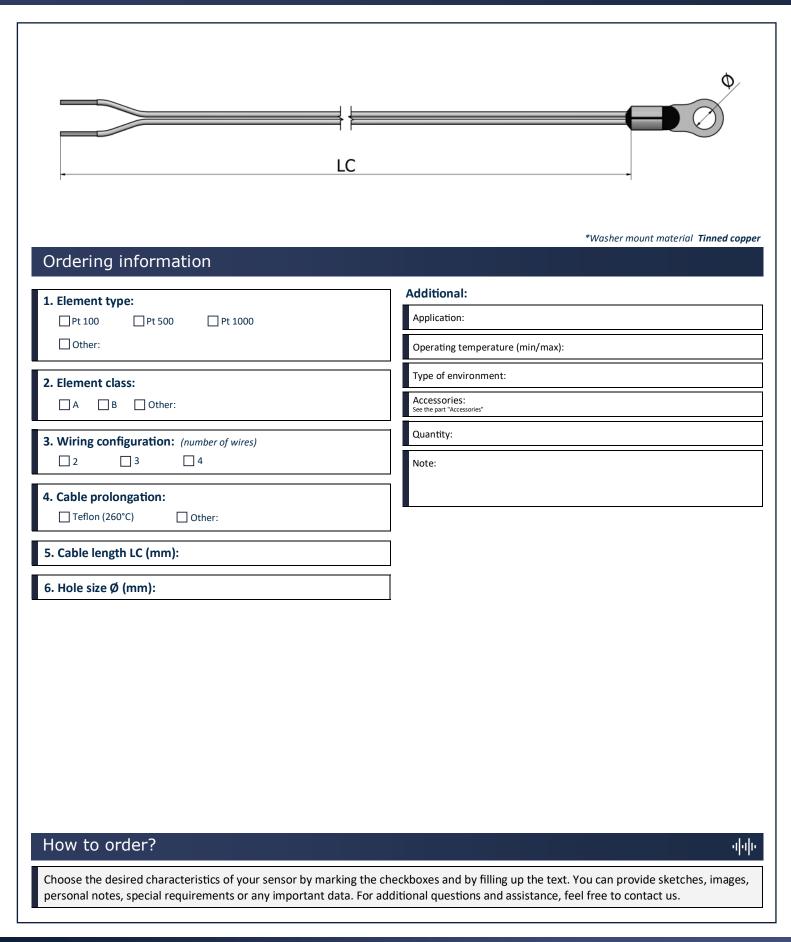






PS01 – Surface RTDs Washer mount

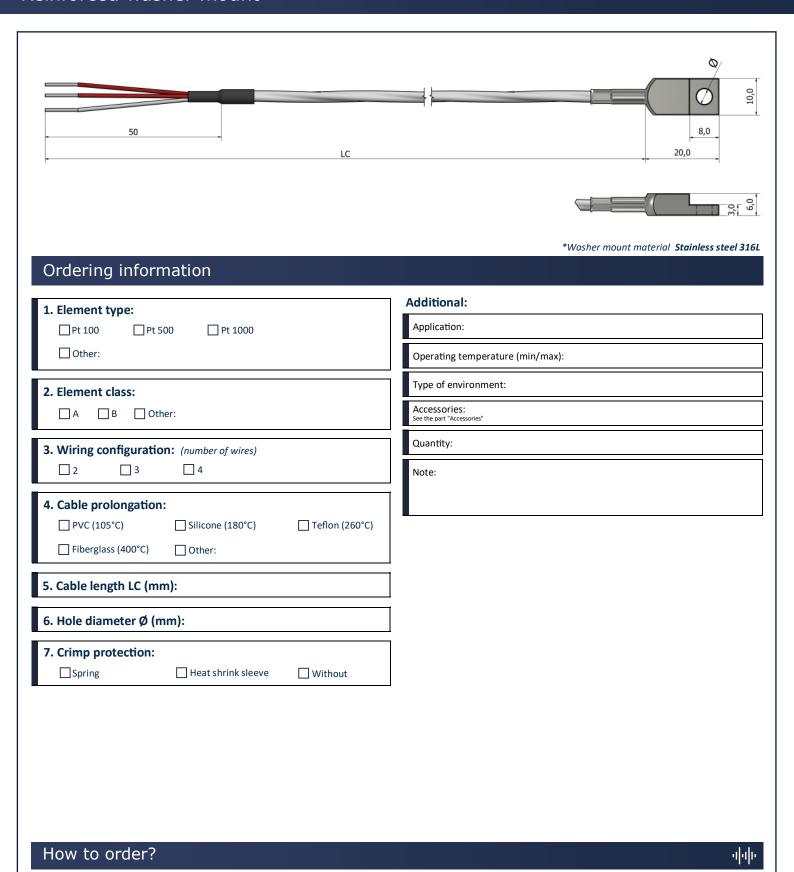






PS02 – Surface RTDs Reinforced washer mount



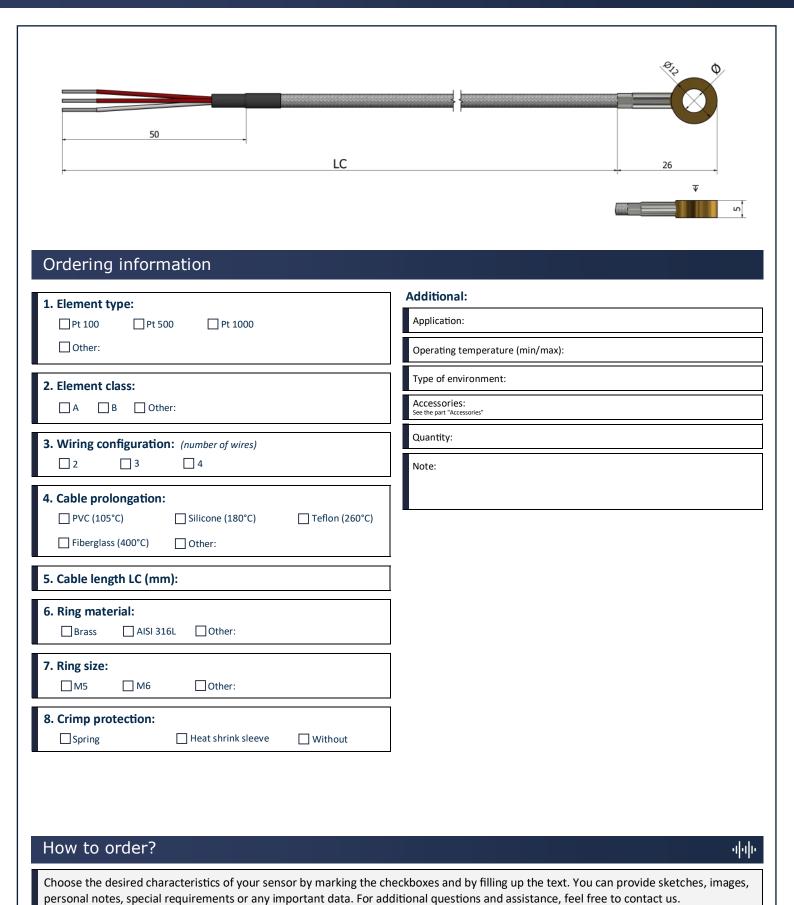


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images,



PS03 – Surface RTDs Ring mount

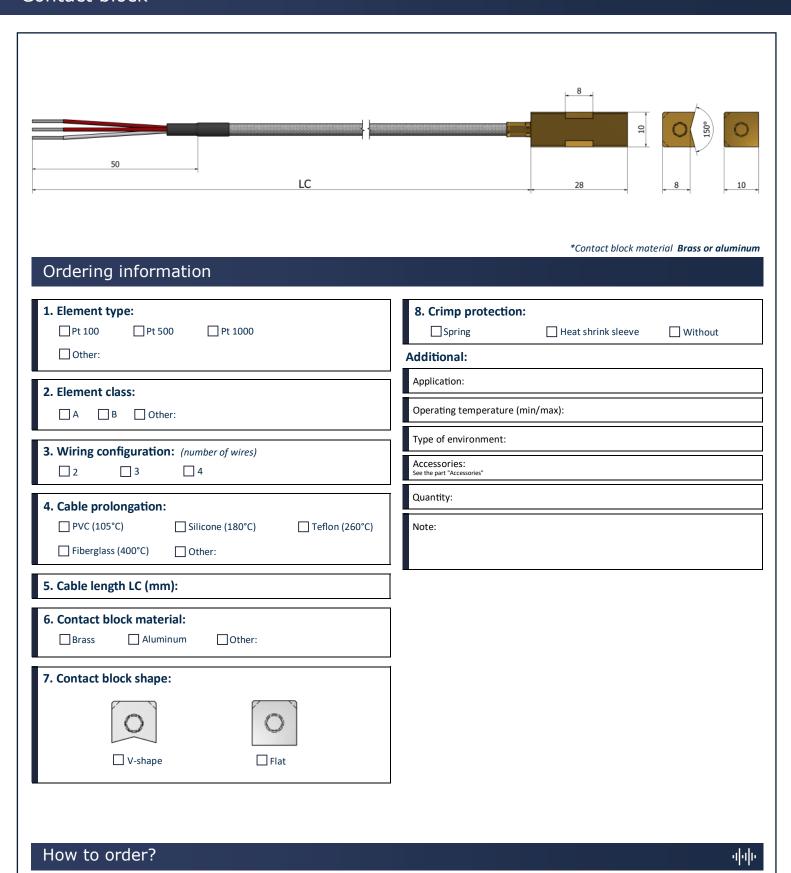






PS05 – Surface RTDs Contact block





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

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



PS10 - Surface RTDs Weld pad



50 LC	*Weld pad and tube material Stainless steel 3161
Ordering information 1. Element type: Pt 100 Pt 500 Pt 1000 Other:	10. Crimp protection: Spring Heat shrink sleeve Without Additional:
2. Element class: A B Other:	Application: Operating temperature (min/max):
3. Wiring configuration: (number of wires) ☐ 2 ☐ 3 ☐ 4	Type of environment: Accessories: See the part "Accessories"
4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Quantity: Note:
5. Cable length LC (mm):	
6. Tube length L (mm): 7. Pad material: AISI 316L Other:	
8. Pad dimensions A x B (mm): 15 x 10 25 x 10 30 x 10 Other:	
9. Pad thickness h (mm): 0,5 Other:	
How to order?	սիսի



PS11 – Surface RTDs Weld pad (45° angle)

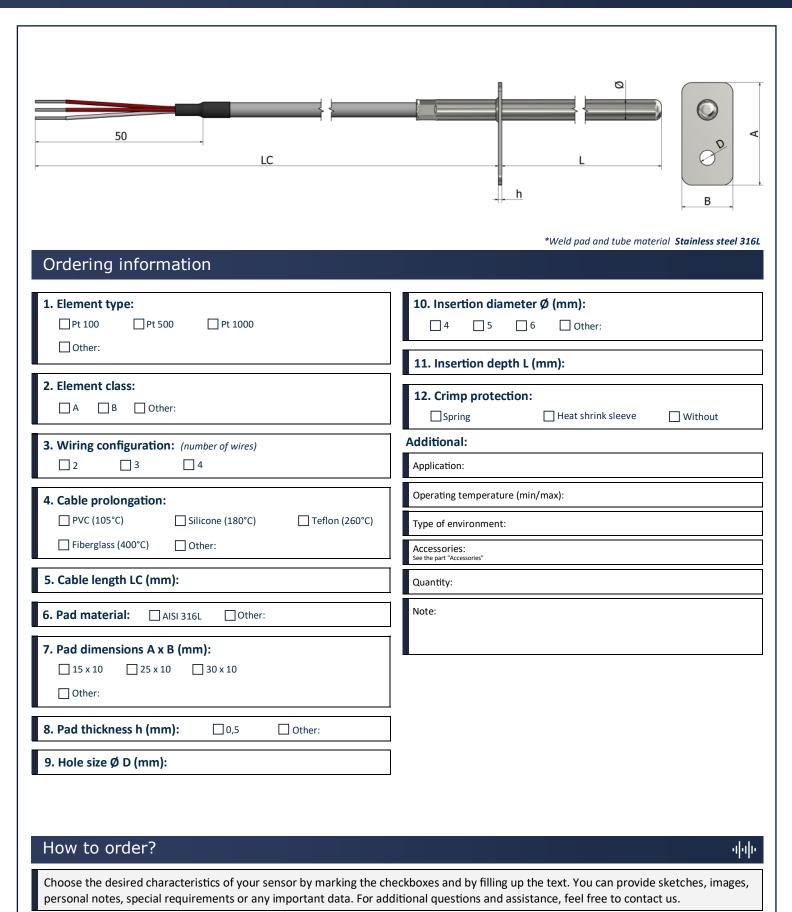


50 LC		4	S. B
Ordering information		*Weld pad and tube mate	erial Stainless steel 3 .
1. Element type: Pt 100	8. Crimp protection: Spring Additional:	☐ Heat shrink sleeve	Without
2. Element class:	Application:		
☐ A ☐ B ☐ Other:	Operating temperature (mir	//max):	
3. Wiring configuration: (number of wires) □ 2 □ 3 □ 4	Accessories: See the part "Accessories"		
4. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Quantity: Note:		
5. Cable length LC (mm):			
6. Tube length L (mm):			
7. Pad material: AISI 316L Other:]		
8. Pad dimensions A x B (mm): 15 x 10 25 x 10 30 x 10 Other:			
9. Pad thickness h (mm): 0,5 Other:			
How to order?			वीव



PS12 – Surface RTDs Weld pad (plug-in)

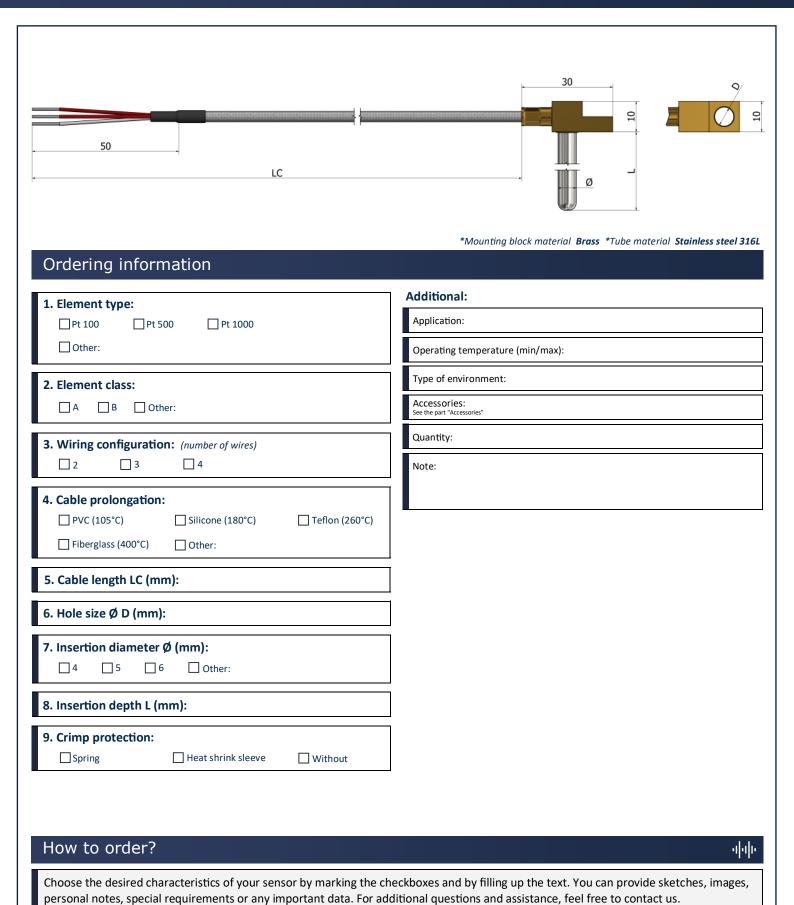






PS20 – Surface RTDs Angle / plug-in

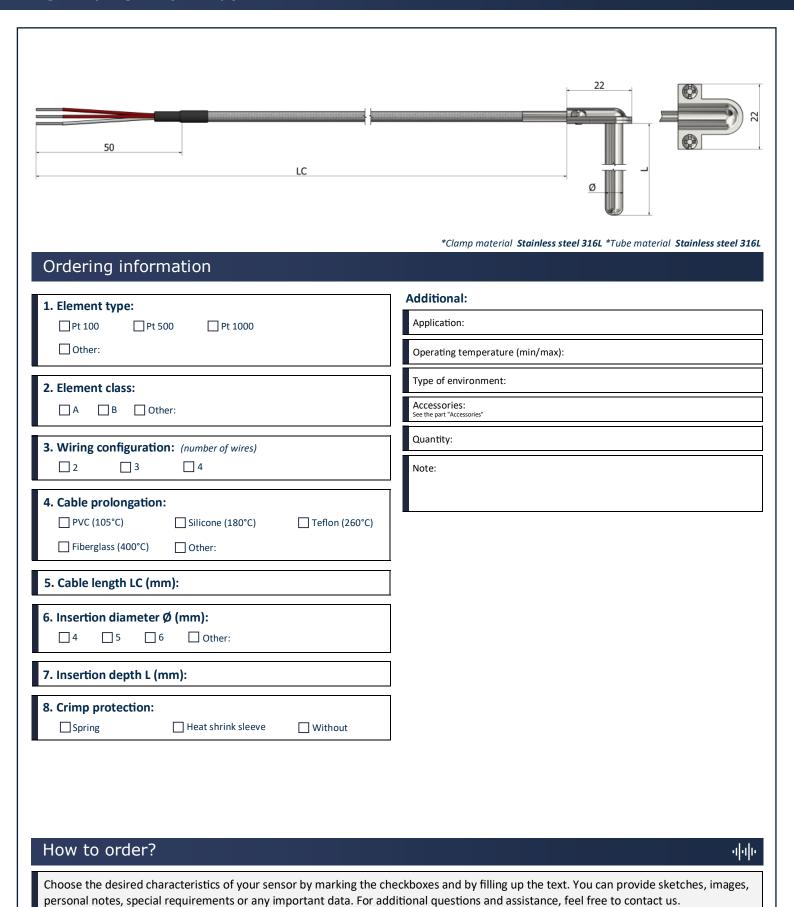






PS21 – Surface RTDs Angle / plug-in (clamp)

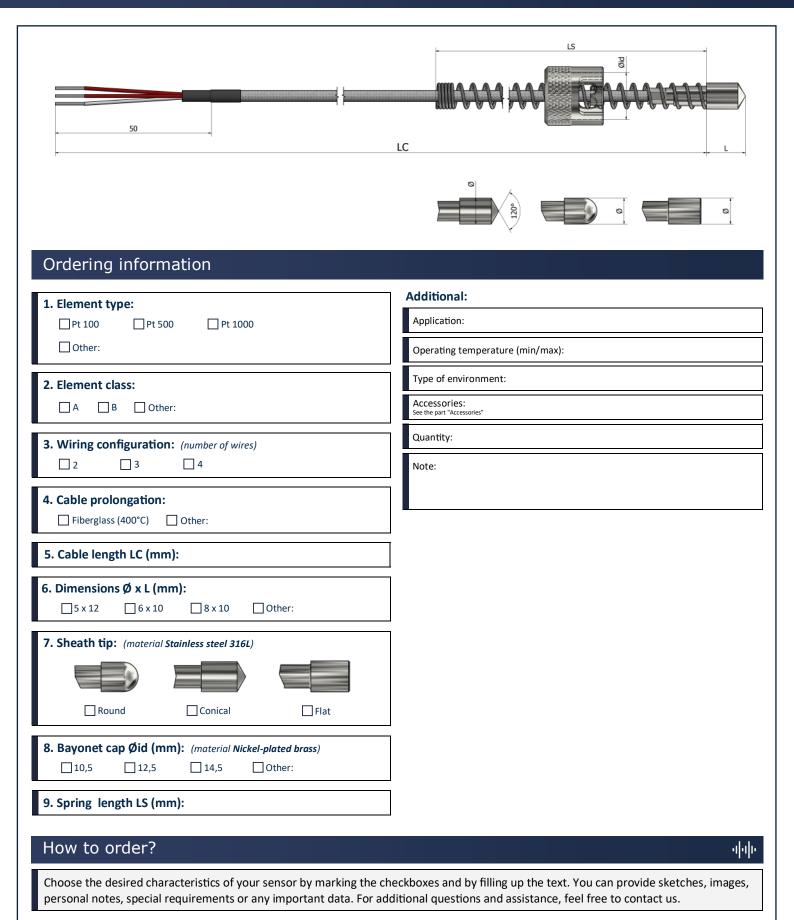






PS30 – Surface RTDs Bayonet

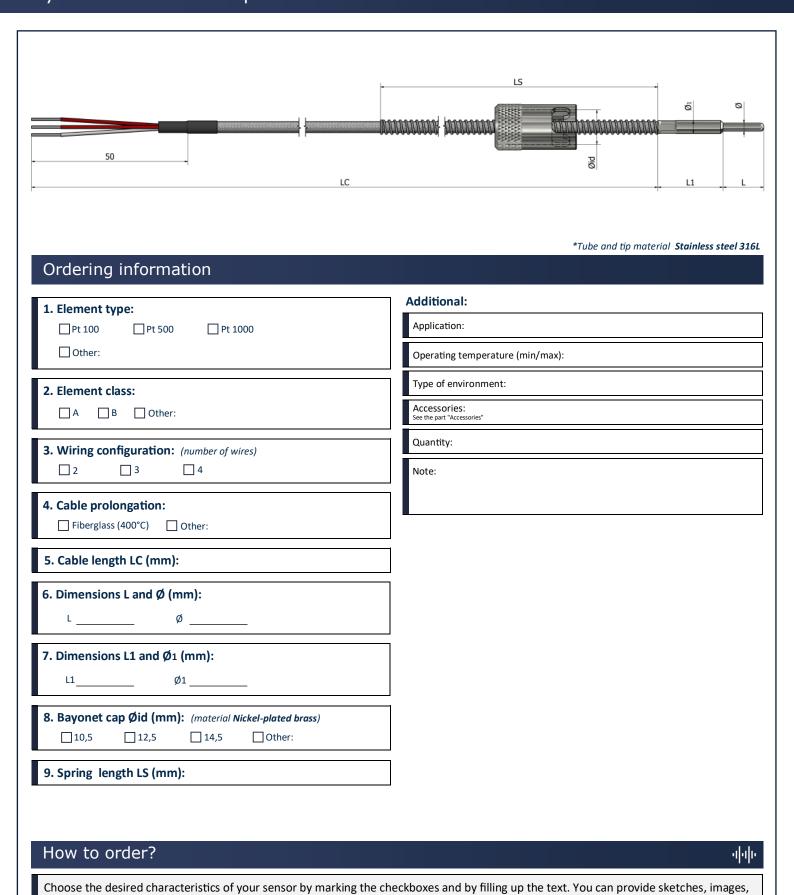






PS31 - Surface RTDs Bayonet with reduced tip

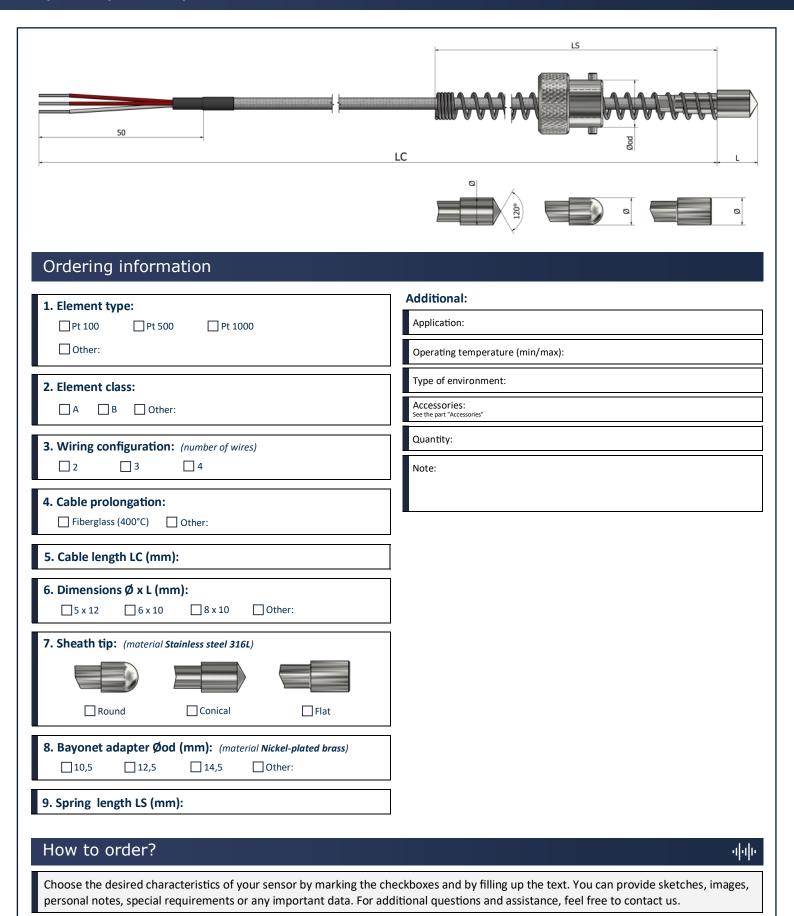






PS33 – Surface RTDs Bayonet (reverse)

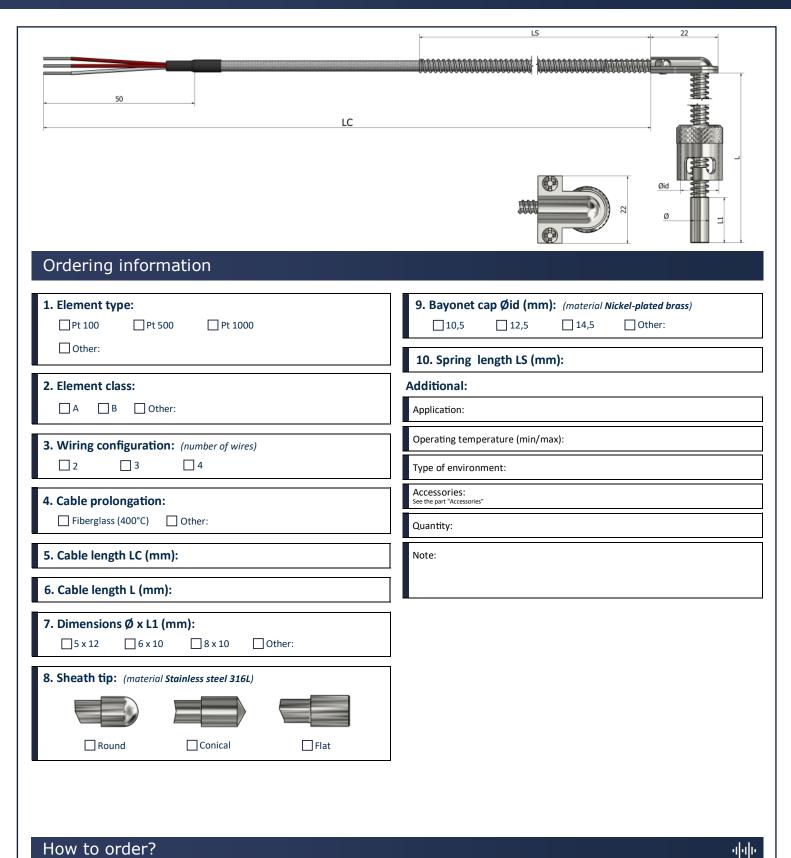






PS34 – Surface RTDs Bayonet with clamp (90° angle)





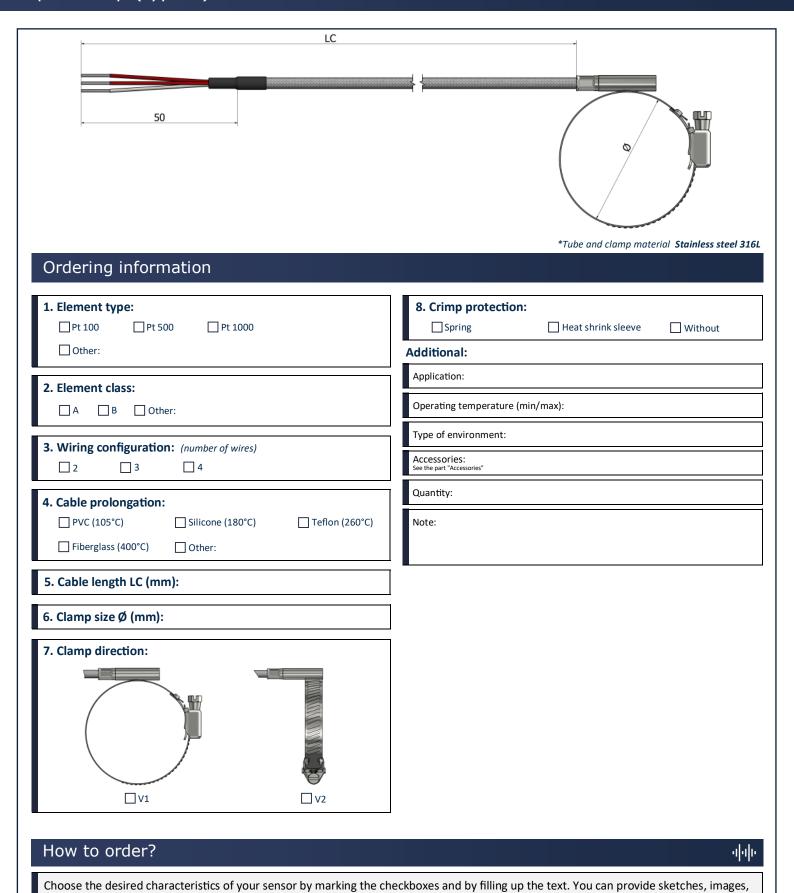
8 chemin des Grandes Combes 69360 Ternay, France +33 472 669 234

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



PS41 – Surface RTDs Pipe-Clamp (type 1)

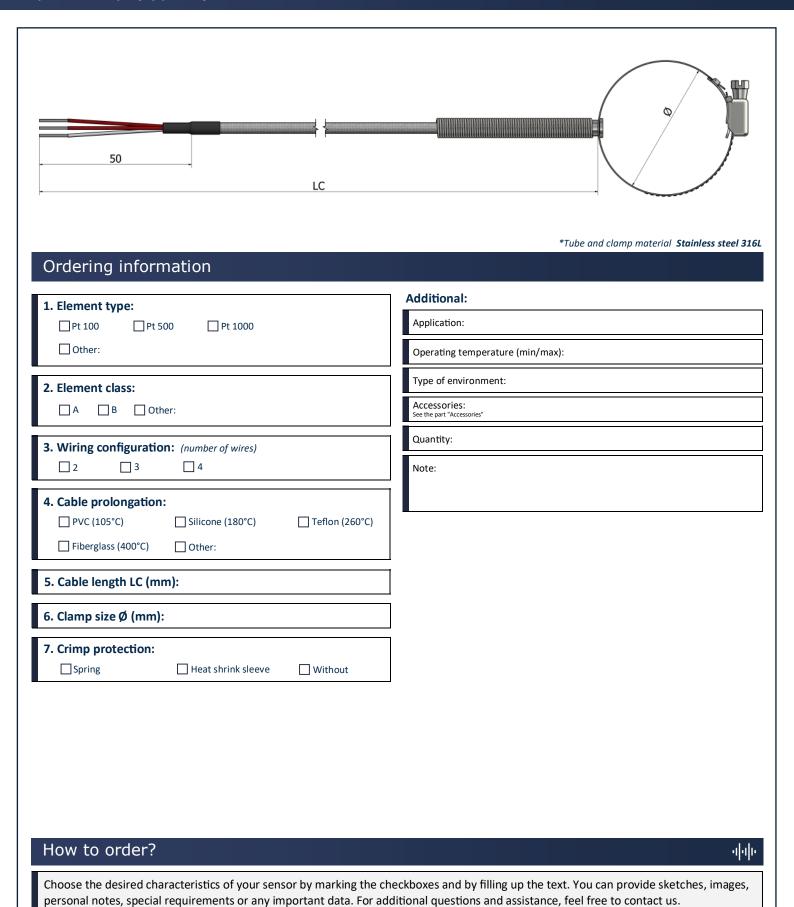






PS42 – Surface RTDs Pipe-Clamp (type 2)

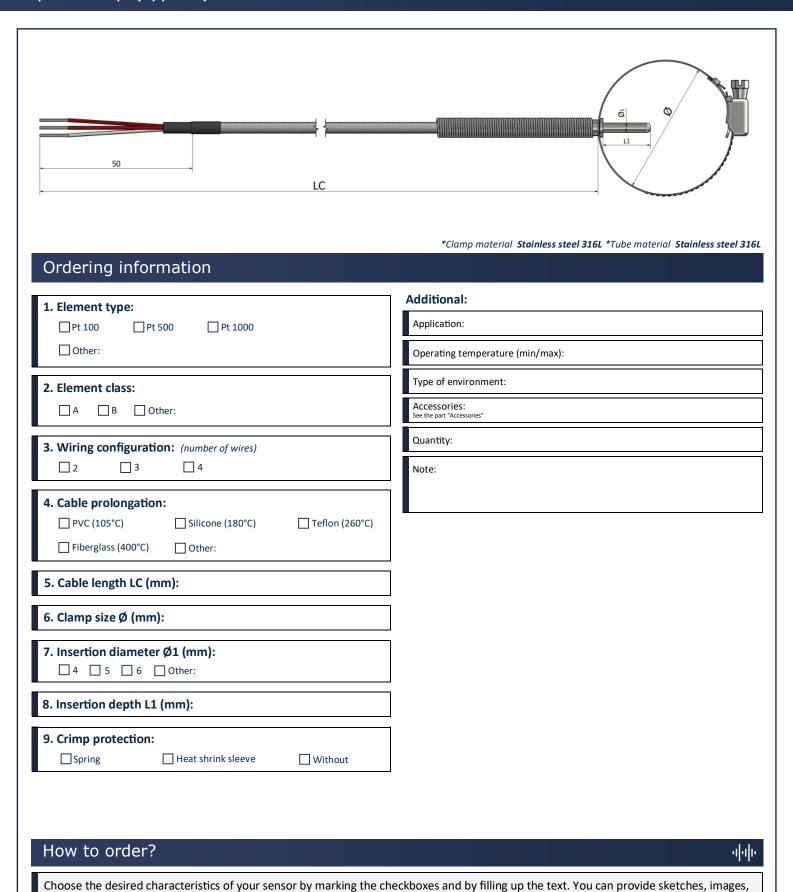






PS43 – Surface RTDs Pipe-Clamp (type 3)

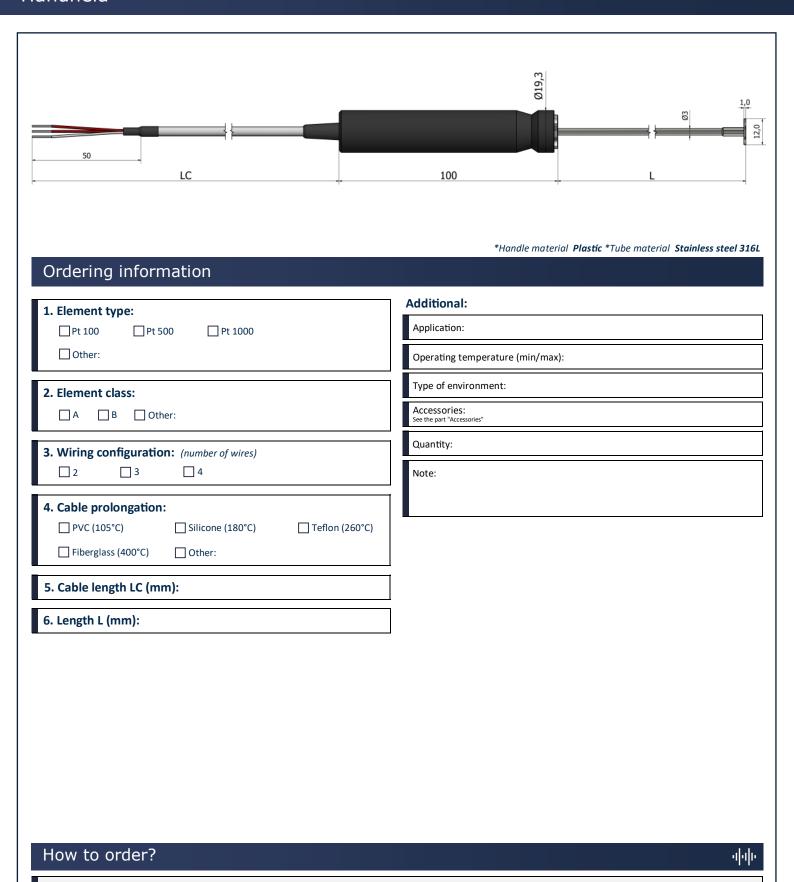






PS50 – Surface RTDs Handheld



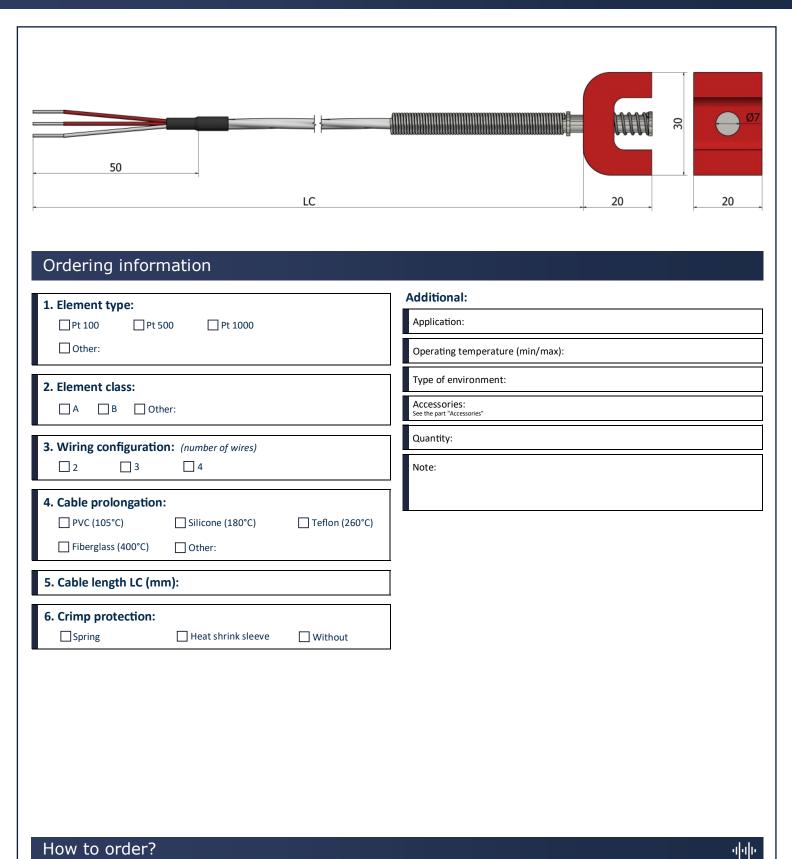


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images,



PS60 – Surface RTDs Spring loaded magnet





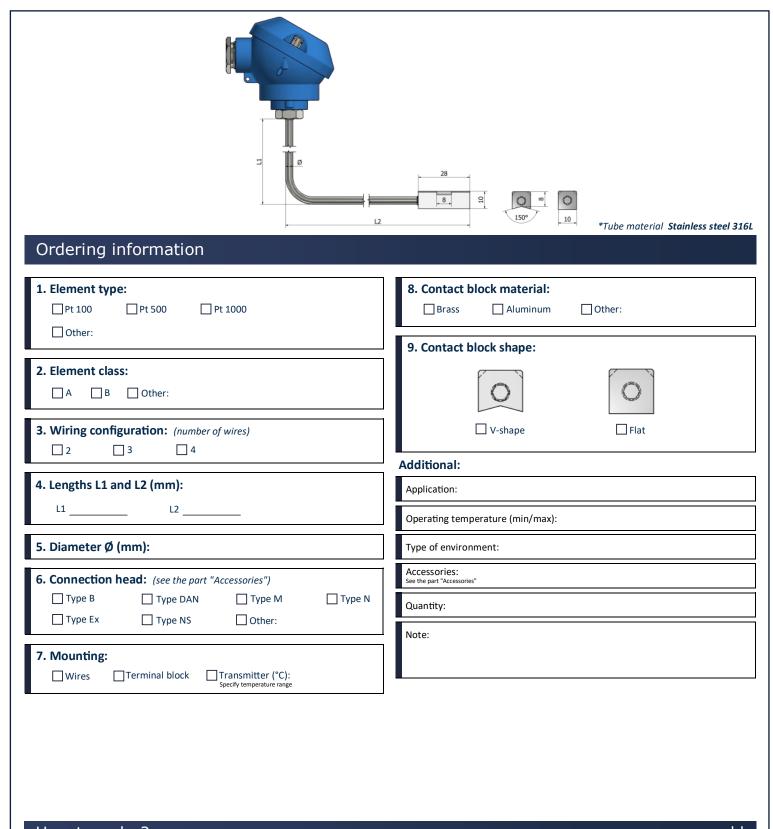
8 chemin des Grandes Combes 69360 Ternay, France +33 472 669 234

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



PH25 – Surface RTDs Contact block (surface mount) with terminal head





How to order?

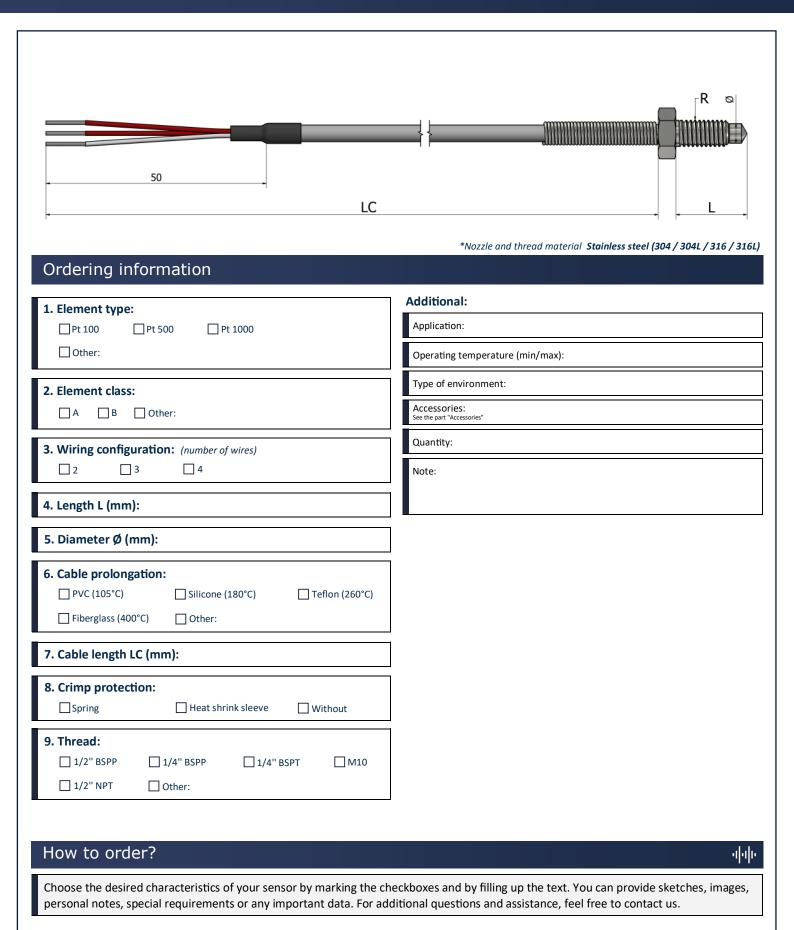
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Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free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



PR20 – Surface RTDs Nozzle

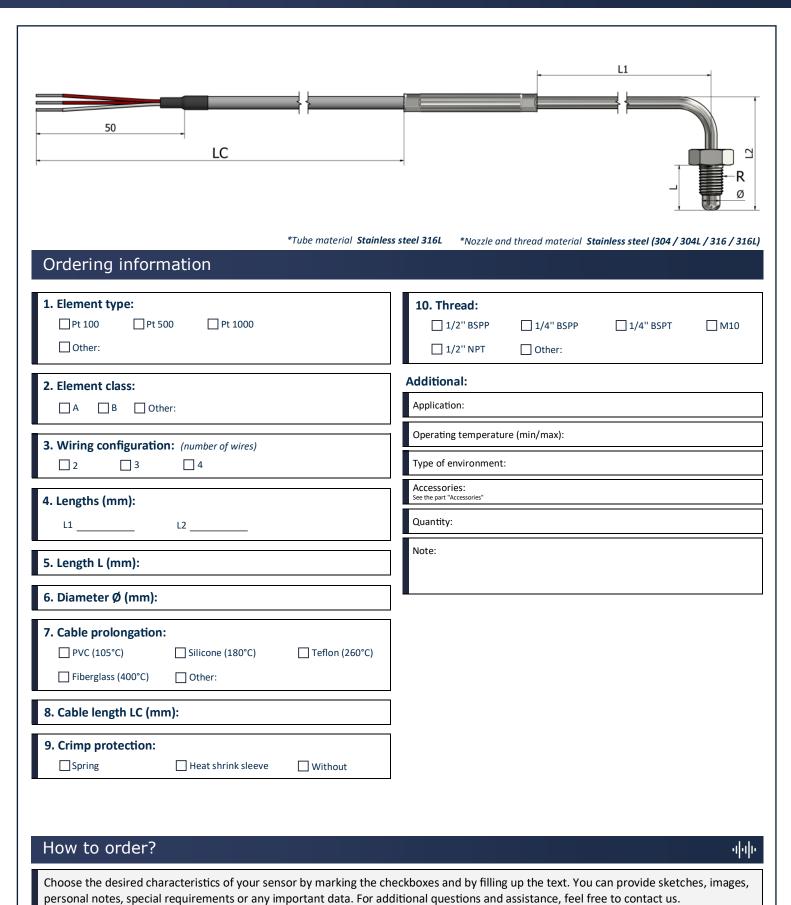






PR21 – Surface RTDs Nozzle (90° bend)

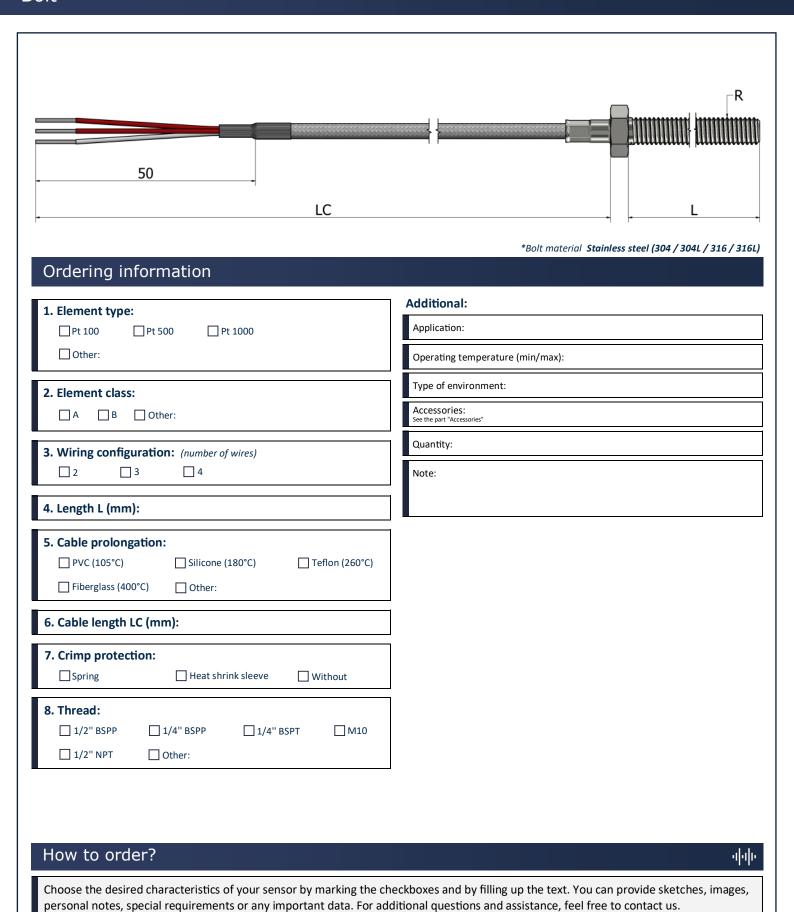






PR22 – Surface RTDs Bolt







Surface thermistors - Technical information





Different types of surface thermistors

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.

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.

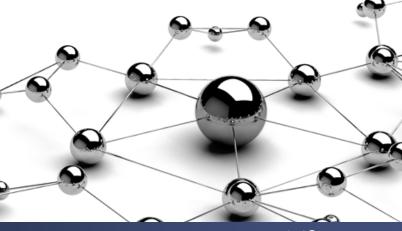
Weld pad thermistors which need not require the more rugged industrial construction can be tig welded or soldered and held with a number of clamping devices.

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.

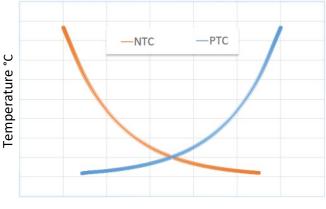
However, there is a major difference between these two types of thermistors:

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.



Resistance Ω



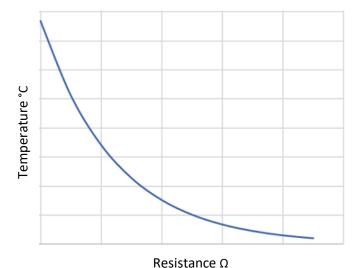
Surface thermistors - Technical information

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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:

given range.

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

Types of thermistors

Туре	Resistance	Beta value	Temperature
PTC KTY81/121	990Ω at 25°C	/	T° (-55/+150°C)
NTC	3,3kΩ at 100°C	β=3970	T° (-40/+200°C)
NTC	10kΩ at 25°C	β=3977	T° (-40/+125°C)
NTC	10kΩ at 25°C	β=3435	T° (-40/+150°C)
NTC	20kΩ at 25°C	β=4260	T° (-40/+125°C)

Thermistor connectors

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



Global cable insulation characteristics

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



HS00 – Surface thermistors Adhesive tape



	LC 18
Ordering information	*Adhesive tape material Fiberglass/
	Additional:
1. Element type:	
☐ PTC KTY 81/110 (-40°C / +150°C) ☐ PTC KTY 81/121 (-40°C / +150°C)	Application:
☐ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
☐ NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
□ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)	Accessories: See the part "Accessories"
☐ Other: (NTC/PTC, T° (min/max), β value, tolerance)	Quantity:
2 Wiring configuration: (configuration)	
2. Wiring configuration: (number of wires) ☐ 2 ☐ Other:	Note:
3. Cable prolongation: ☐ Teflon (260°C) ☐ Other:	
☐ Teflon (260°C) ☐ Other:	
4. Cable length LC (mm):	
How to order?	4





HS01 – Surface thermistors Washer mount



	LC
Ordering information	*Washer mount material Tinned copper
	Additional:
1. Element type: ☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C)	Operating temperature (min/max):
NTC 10kΩ at 25°C β3977 (-40°C / +125°C)NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
\square NTC 3,3k Ω at 100°C \upbeta 3970 (-40°C / +200°C)	Accessories: See the part "Accessories"
Other: (NTC/PTC, T*(min/max), β value, tolerance)	Quantity:
2. Wiring configuration: (number of wires)	Note:
3. Cable prolongation: Teflon (260°C) Other:	
4. Cable length LC (mm):	
5. Hole size Ø (mm):	
	<u></u> _
How to order?	
	गंग
	king the checkboxes and by filling up the text. You can provide sketches, images, ata. For additional questions and assistance, feel free to contact us.



HS02 – Surface thermistors Reinforced washer mount



50 LC	8,0 20,0
	*Washer mount material Stainless steel 316L
Ordering information	
1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C) ☐ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
□ NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
□ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)	Accessories:
☐ Other: (NTC/PTC, T*(min/max), ß value, tolerance)	See the part "Accessories"
2 Wining configurations (configurations)	Quantity:
2. Wiring configuration: (number of wires) 2 Other:	Note:
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	

How to order?

444

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



HS03 – Surface thermistors Ring mount



50 LC	26 V
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), β value, tolerance) 2. Wiring configuration: (number of wires) 2	Additional: Application: Operating temperature (min/max): Type of environment: Accessories: See the part "Accessories" Quantity: Note:
□ 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	
How to order? Choose the desired characteristics of your sensor by marking the c	راباله heckboxes and by filling up the text. You can provide sketches, images,



HS05 – Surface thermistors Contact block



50	LC	-	28	8 10
Ordering information			*Contact block ma	erial Brass or alumin u
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C β3977 (-40°C / + NTC 20kΩ at 25°C β4260 (-40°C / + NTC 3,3kΩ at 100°C β3970 (-40°C / + Other: (NTC/PTC, T° (min/max), β value, toleran	+125°C) / +200°C)	7. Crimp protection: Spring Additional: Application: Operating temperature (minumates) Type of environment:	☐ Heat shrink sleeve	☐ Without
2. Wiring configuration: (number	of wires)	Accessories: See the part "Accessories" Quantity:		
3. Cable prolongation: PVC (105°C) Silicone Fiberglass (400°C) Other:	e (180°C)	Note:		
4. Cable length LC (mm):				
5. Contact block material: Brass Aluminum	Other:			
6. Contact block shape:	☐ Flat			



HS10 – Surface thermistors Weld pad



50 LC	*Weld pad and tube material Stainless steel 3161
Ordering information 1. Element type: □ PTC KTY 81/110 (-40°C / +150°C) □ PTC KTY 81/121 (-40°C / +150°C) □ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	9. Crimp protection: Spring Heat shrink sleeve Without Additional:
NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC, T* (min / max), β value, tolerance)	Application: Operating temperature (min/max): Type of environment:
2. Wiring configuration: (number of wires)	Accessories: See the part "Accessories" Quantity:
3. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Note:
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	
8. Pad thickness h (mm): 0,5 Other:	
How to order? Choose the desired characteristics of your sensor by marking the ch	reckboxes and by filling up the text. You can provide sketches, images,





HS11 – Surface thermistors Weld pad (45° angle)

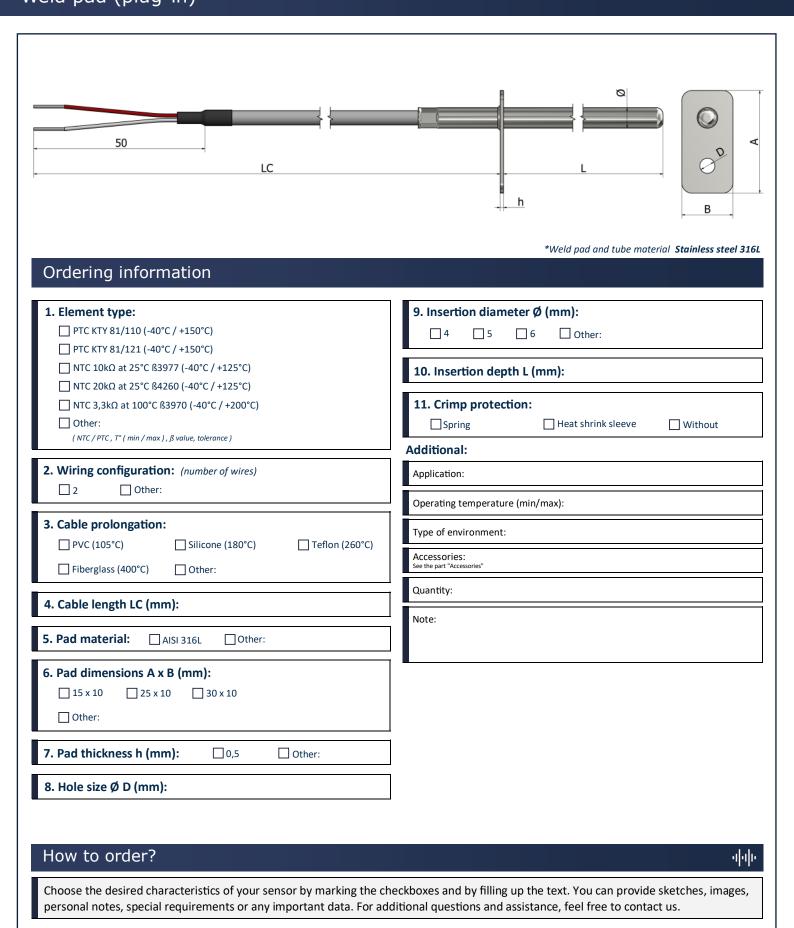


50 LC	\$ B
Ordering information	*Weld pad and tube material Stainless steel
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C ß3977 (-40°C / +125°C) NTC 20kΩ at 25°C ß4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C ß3970 (-40°C / +200°C)	9. Crimp protection: Spring Heat shrink sleeve Without Additional: Application: Operating temperature (min/max):
☐ Other: (NTC/PTC, T*(min/max), β value, tolerance) 2. Wiring configuration: (number of wires) ☐ 2 ☐ Other:	Type of environment: Accessories: See the part "Accessories"
3. Cable prolongation: PVC (105°C) Silicone (180°C) Teflon (260°C) Fiberglass (400°C) Other:	Quantity: Note:
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:	



HS12 - Surface thermistors Weld pad (plug-in)







HS20 – Surface thermistors Angle / plug-in



50 LC	*Mounting block material Brass *Tube material Stainless steel 31
Ordering information	Mountaing Stock Haterial Brass Table Haterial Stanless Steel St
1. Element type:	Additional:
PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C) ☐ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
$\hfill \square$ NTC 3,3k Ω at 100°C ß3970 (-40°C / +200°C)	Accessories:
Other: (NTC/PTC, T* (min/max), β value, tolerance)	See the part "Accessories" Quantity:
2. Wiring configuration: (number of wires)	Note:
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):	
7. Insertion depth L (mm):	
8. Crimp protection:	



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



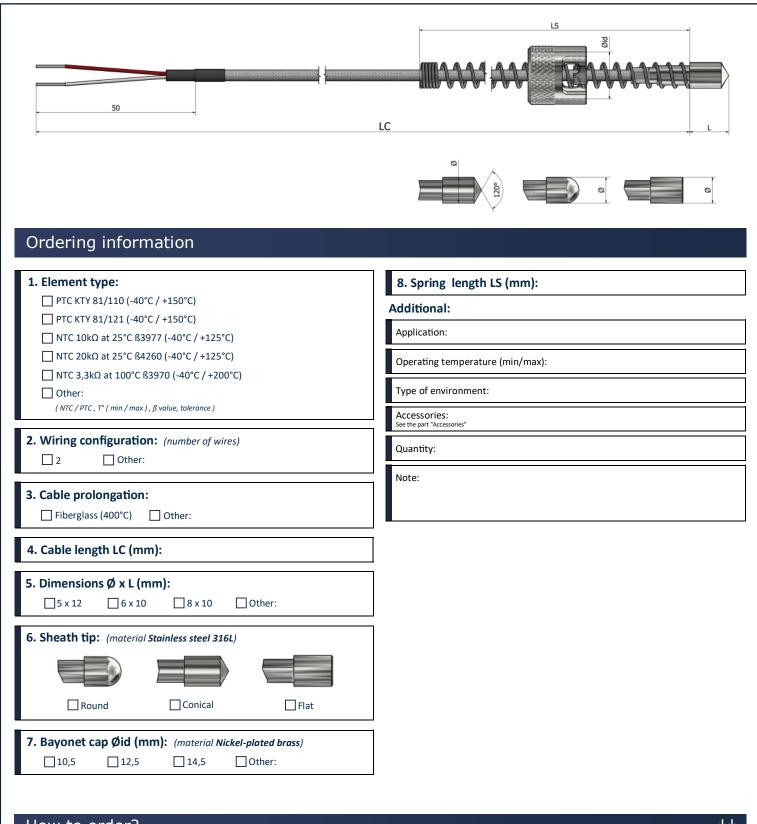
50 LC	22 Ø
Ordering information	*Clamp material Stainless steel 316L *Tube material Stainless steel 31
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C)	Additional: Application:
 NTC 10kΩ at 25°C ß3977 (-40°C / +125°C) NTC 20kΩ at 25°C ß4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C ß3970 (-40°C / +200°C) Other: 	Operating temperature (min/max): Type of environment: Accessories: See the part "Accessories"
(NTC/PTC, T° (min/max), \(\beta\) value, tolerance) 2. Wiring configuration: (number of wires) \[\Boxed{2} \Boxed{0}\] Other:	Quantity: Note:
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):	
6. Insertion depth L (mm):]
7. Crimp protection: Spring Heat shrink sleeve Without	
How to order?	ग्न

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



HS30 – Surface thermistors Bayonet





How to order?

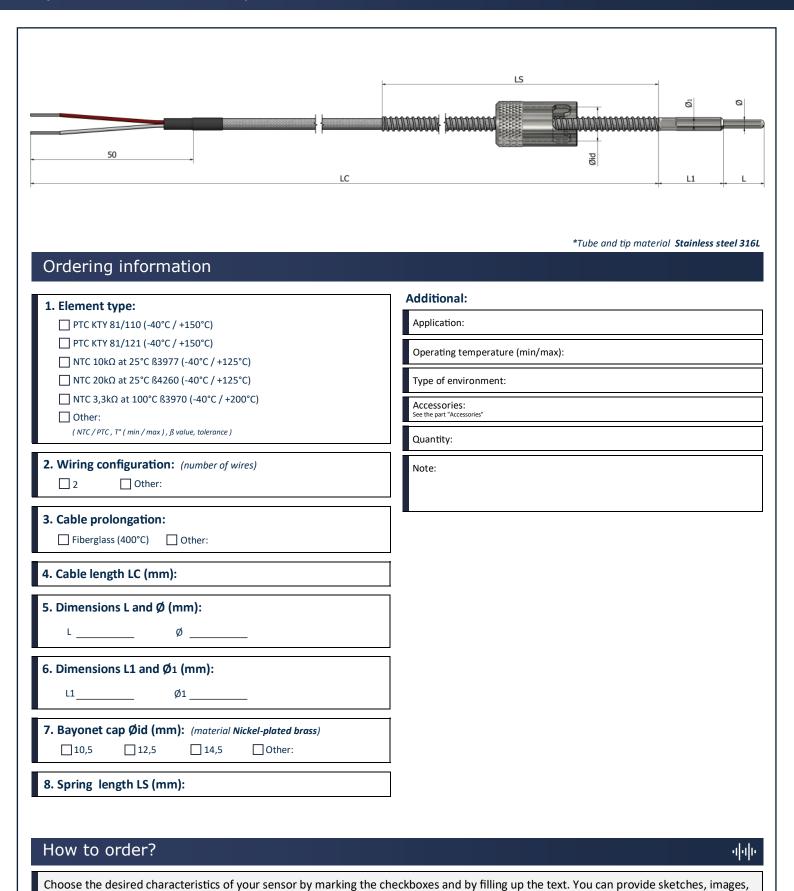


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.



HS31 – Surface thermistors Bayonet with reduced tip



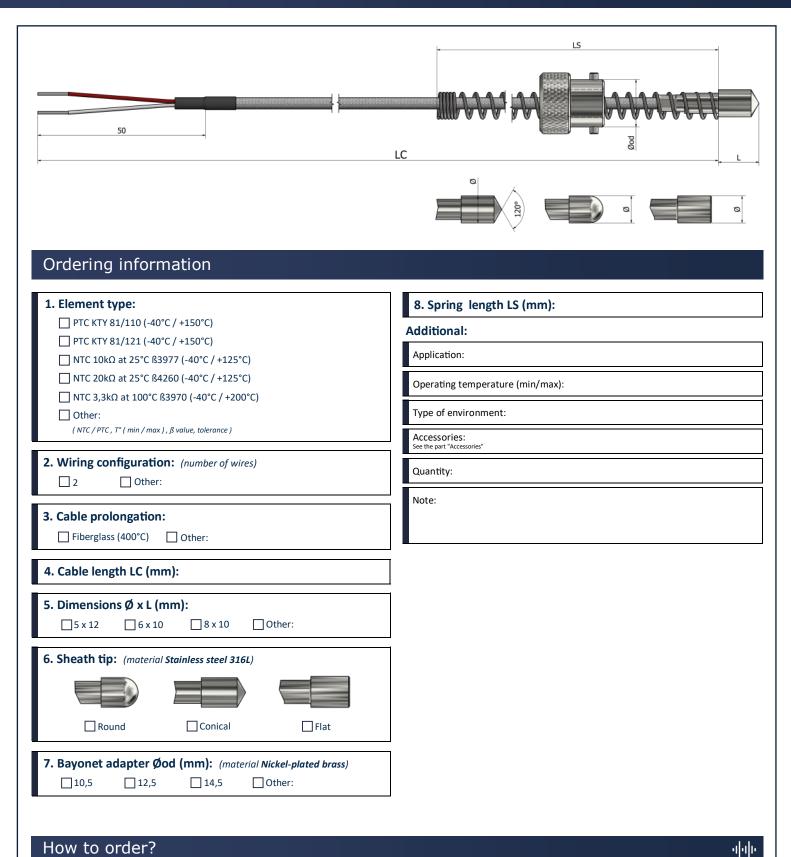






HS33 – Surface thermistors Bayonet (reverse)





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

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



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



	LS + 22
50	
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), β value, tolerance)	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):
2. Wiring configuration: (number of wires) 2	Type of environment: Accessories: See the part "Accessories"
3. Cable prolongation: Fiberglass (400°C) Other:	Quantity:
4. Cable length LC (mm):	Note:
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	

How to order?

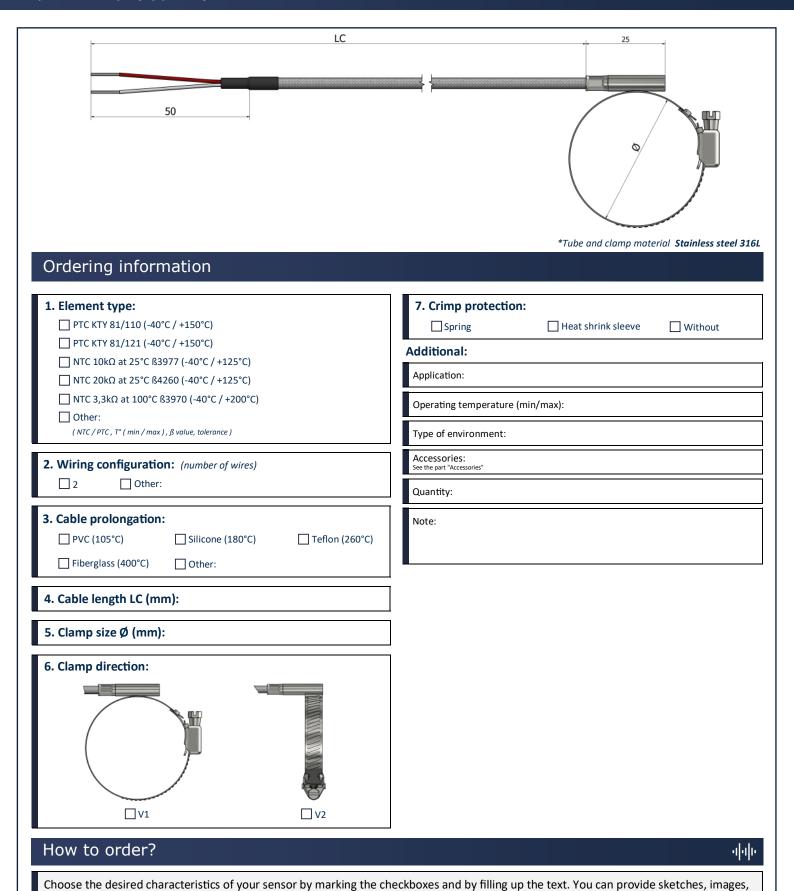
446

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



HS41 – Surface thermistors Pipe-Clamp (type 1)







HS42 – Surface thermistors Pipe-Clamp (type 2)



50 LC	*Tube and clamp material Stainless steel 316L
Ordering information	Additional:
1. Element type: ☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C) ☐ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
 □ NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Type of environment:
☐ NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) ☐ Other:	Accessories: See the part "Accessories"
(NTC / PTC , T° (min / max) , β value, tolerance)	Quantity:
2. Wiring configuration: (number of wires)	Note:
3. Cable prolongation:	
☐ PVC (105°C) ☐ Silicone (180°C) ☐ Teflon ☐ ☐ Fiberglass (400°C) ☐ Other:	(260°C)
4. Cable length LC (mm):	
5. Clamp size Ø (mm):	
6. Crimp protection: ☐ Spring ☐ Heat shrink sleeve ☐ Without	ut
How to order?	بارار.

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



HS43 – Surface thermistors Pipe-Clamp (type 3)



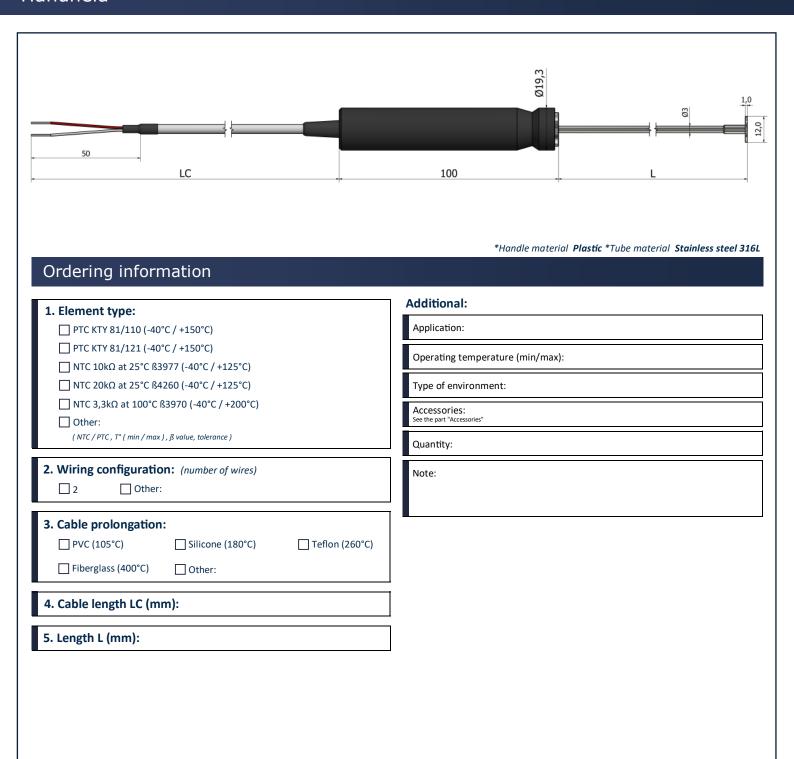
50 LC	*Clamp material Stainless steel 316L *Tube material Stainless steel 316L
Ordering information 1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C) ☐ PTC KTY 81/121 (-40°C / +150°C)	Application: Operating temperature (min/max):
\square NTC 10kΩ at 25°C ß3977 (-40°C / +125°C) \square NTC 20kΩ at 25°C ß4260 (-40°C / +125°C)	Type of environment:
NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C)Other:	Accessories: See the part "Accessories"
(NTC / PTC , T° (min / max) , β value, tolerance)	Quantity:
2. Wiring configuration: (number of wires) 2 Other:	Note:
3. 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	
How to order?	վոր

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



HS50 – Surface thermistors Handheld





How to order?

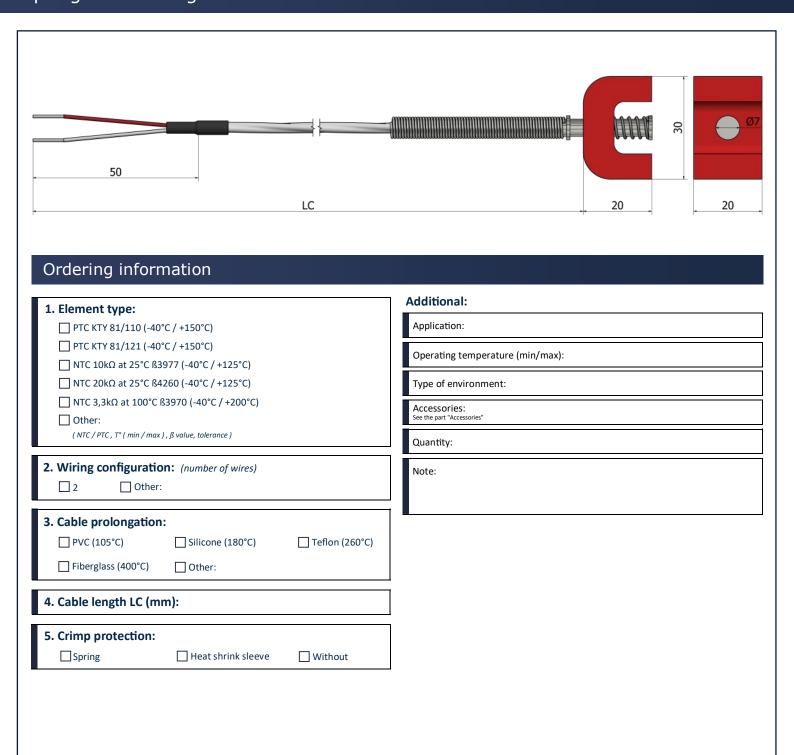


Choose the desired characteristics of your sensor by marking the checkboxes and by filling up the text. You can provide sketches, images, personal notes, special requirements or any important data. For additional questions and assistance, feel free to contact us.



HS60 – Surface thermistors Spring loaded magnet





How to order?

- 4|4|6

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



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



Ordering information *Tube material Stainless steel 3.	
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C β3977 (-40°C / +125°C) NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	7. Contact block material: Brass Aluminum Other: 8. Contact block shape:
NTC 20kΩ at 25°C is 4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C is 3970 (-40°C / +200°C) Other: (NTC / PTC , T° (min / max) , β value, tolerance)	□ V-shape □ Flat
2. Wiring configuration: (number of wires) ☐ 2 ☐ Other:	Additional:
3. Lengths L1 and L2 (mm):	Application:
L1 L2	Operating temperature (min/max):
4. Diameter Ø (mm):	Type of environment: Accessories:
5. Connection head: (see the part "Accessories")	See the part "Accessories" Quantity:
☐ Type B ☐ Type DAN ☐ Type M ☐ Type N☐ ☐ Type Ex ☐ Type NS ☐ Other:	Note:
6. Mounting: Wires Terminal block Transmitter (°C): Specify temperature range	
How to order? Choose the desired characteristics of your sensor by marking the your sensor by marking the your se	راباًاب neckboxes and by filling up the text. You can provide sketches, images,



HR20 – Surface thermistors Nozzle



. 50 . LC	R Q
Ordering information	*Nozzle and thread material Stainless steel (304 / 304L / 316 / 31
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C β3977 (-40°C / +125°C) NTC 20kΩ at 25°C β4260 (-40°C / +125°C)	Additional: Application: Operating temperature (min/max): Type of environment:
 NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC , T* (min / max) , β value, tolerance) 	Accessories: See the part "Accessories" Quantity:
2. Wiring configuration: (number of wires) 2 Other: 3. Length L (mm):	Note:
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	





HR21 – Surface thermistors Nozzle (90° bend)



50 LC	
*Tube material Stainless Ordering information	steel 316L *Nozzle and thread material Stainless steel (304/304L/316/316
1. Element type: PTC KTY 81/110 (-40°C / +150°C) PTC KTY 81/121 (-40°C / +150°C) NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	10. Thread: 1/2" BSPP
NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) Other: (NTC / PTC , T° (min / max) , β value, tolerance)	Additional: Application: Operating temperature (min/max):
2. Wiring configuration: (number of wires)	Type of environment: Accessories: See the part "Accessories"
3. Lengths (mm): L1 L2	Quantity: Note:
4. Length L (mm): 5. Diameter Ø (mm):	<u> </u>
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	
How to order?	्रा <u>।</u>



HR22 – Surface thermistors Bolt



50 LC	
Ordering information	*Bolt material Stainless steel (304 / 304L / 316 / 31
1. Element type:	Additional:
☐ PTC KTY 81/110 (-40°C / +150°C)	Application:
☐ PTC KTY 81/121 (-40°C / +150°C) ☐ NTC 10kΩ at 25°C β3977 (-40°C / +125°C)	Operating temperature (min/max):
 NTC 20kΩ at 25°C β4260 (-40°C / +125°C) NTC 3,3kΩ at 100°C β3970 (-40°C / +200°C) 	Type of environment:
Other:	Accessories: See the part "Accessories"
(NTC/PTC, T° (min/max), β value, tolerance)	Quantity:
2. Wiring configuration: (number of wires) 2	Note:
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	