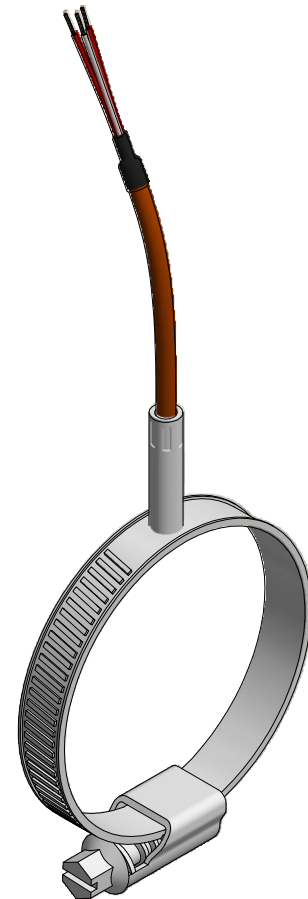


## Applications

- Temperature measurement of pipelines and other cylindrical elements
- General industrial services

## Features

- Single or double RTD
- Connection line 2-, 3-, 4-wire
- Single or double RTD: Pt100, Pt500, Pt1000 (IEC751), Ni100, Ni500, Ni1000 (DIN43760), Cu50, Cu100 (GOST 6651-2009)
- Non-standard sensor versions available upon customer's request:
  - cable type according to client's specification
  - thermowell spring protection against excessive cable bending



**TOPE50244P**  
TSL cable insulation  
(teflon®FEP/silicone)

Resistance thermometers TOPE50244P are designed for assembling directly onto pipelines or other cylindrical elements.

Hose-clip allows to mount sensor on pipeline. Sensors designed for pipeline diameter greater than  $\varnothing 100$  mm are equipped with two or more hose-clips.

TOPE50244 consists of thermometric resistor, protection tube made out of stainless steel, hose-clip and connection cable.

Number of sensors, accuracy, cable length and insulation can be selected individually for the respective application.

## Temperature transmitter (Option)

There is possibility of using standard temperature transmitter (4÷20mA, 0÷10V) or temperature transmitter with HART®, Profibus® PA, Foundation Fieldbus communication protocol, mounted inside electrical control cabinet.

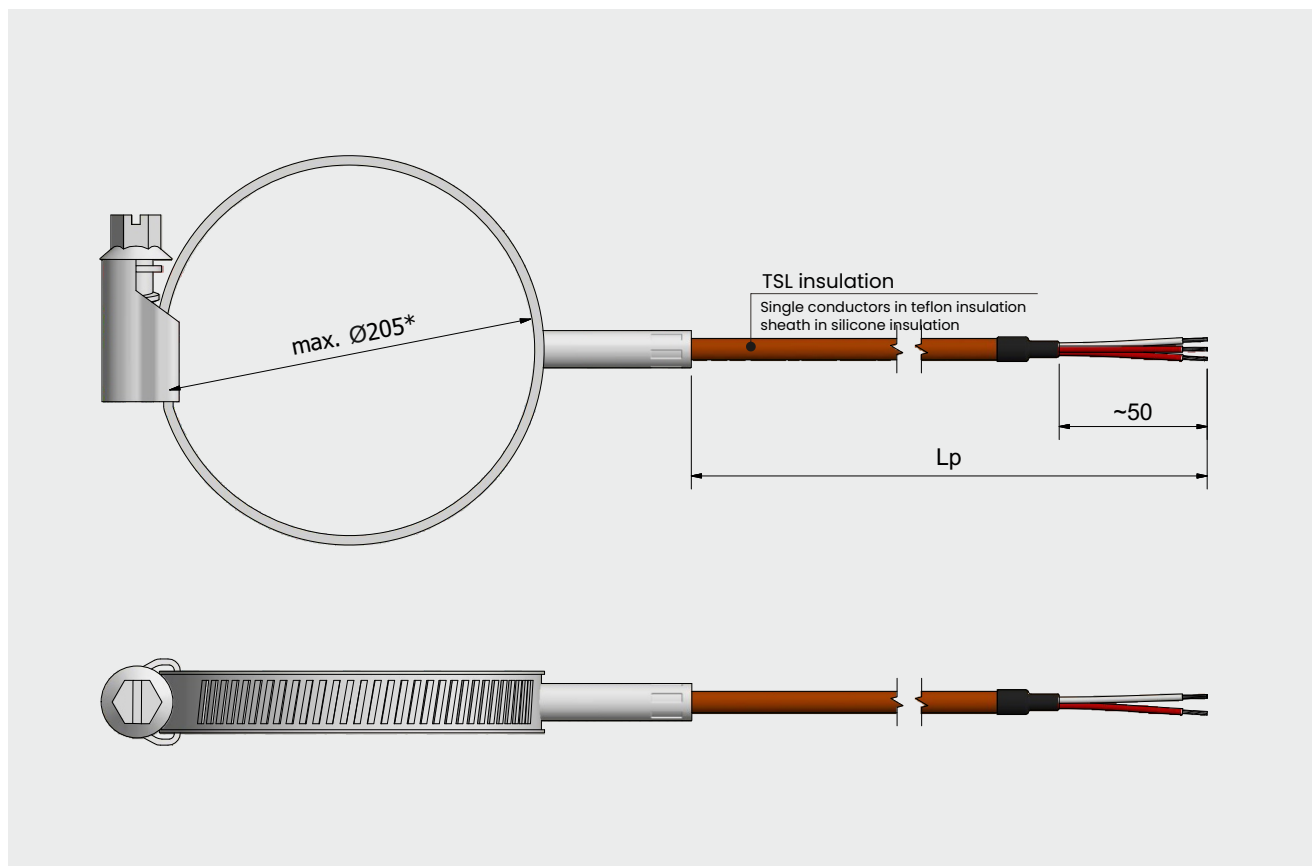
## ATEX, IECEx, EAC Ex versions

Intrinsically safe designs are available for applications in hazardous areas. These models are provided with certificate for „intrinsically safe“ type of protection according to Directive 2014/34/UE (ATEX), IECEx scheme and EAC Ex TR-CU 012/2011 (Eurasian Economic Union).

Intrinsically safe (Exi)

XI-TOPE50244P

## Designs



\* Diameter > Ø205 are available for special client's request

### Measuring range

from -50°C to +400°C (depends on cable insulation type)

### Sensing element

Single or double

Pt100, Pt500, Pt1000	(IEC 751, $\alpha=0.00385$ )
Ni100, Ni500, Ni1000	(DIN43760, $\alpha=0.00618$ )
Cu50, Cu100	(GOST 6651-94, $\alpha=0.00426$ )

### Tolerance class

Platinum	Class A ( $\pm 0.15^\circ\text{C}$ in temp. $0^\circ\text{C}$ ) Class B ( $\pm 0.30^\circ\text{C}$ in temp. $0^\circ\text{C}$ )
Nickel	( $\pm 0.40^\circ\text{C}$ in temp. $0^\circ\text{C}$ )
Copper	( $\pm 0.30^\circ\text{C}$ in temp. $0^\circ\text{C}$ )

PN-EN 60751 standard defines the formulas for calculating acceptable measure tolerance.

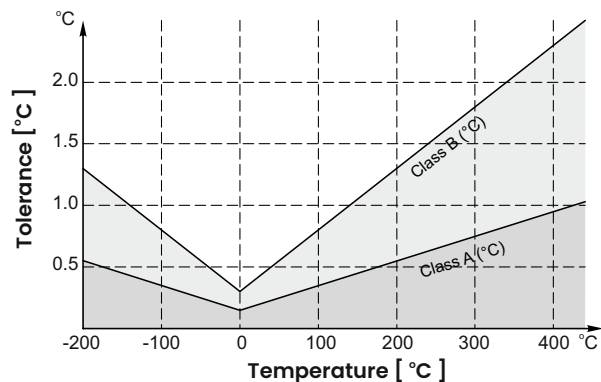
Class of tolerance	Tolerance $^\circ\text{C}$
A	$\pm 0.15 + (0.002 \times  t )$
B	$\pm 0.30 + (0.005 \times  t )$

### Electrical parameters

Measuring current	nom. 0,1 mA to 1 mA
Isolation resistance	> 10 G $\Omega$ (test 500 VDC)

### Housing material

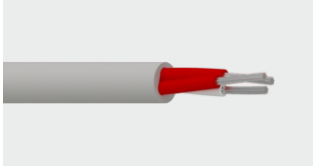
Stainless steel 1H18N9T ( 1.4541 / AISI321 )



**Insulation types of connection cable**

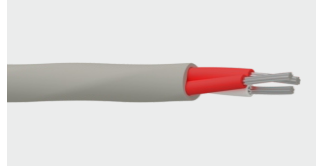
**JJ insulation**

Conductor: PVC  
Sheath: PVC



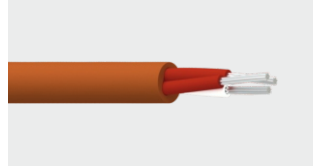
**SLSL insulation**

Conductor: Silikon  
Sheath: Silikon



**TSL insulation**

Conductor: Teflon® FEP  
Sheath: Silikon



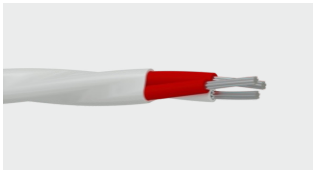
**TPSL insulation**

Conductor: Teflon®FEP  
Screen: Copper braid  
Sheath: Silicone



**TT insulation**

Conductor: Teflon® PFA  
Sheath: Teflon® PFA



**TP insulation**

Conductor: Teflon® PFA  
Sheath: Stainless steel braid



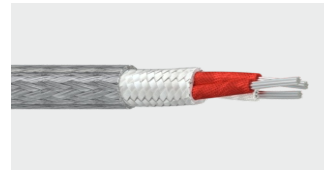
**TCuT insulation**

Conductor: Teflon® PFA  
Screen: Copper braid  
Sheath: Teflon® PFA



**GLGLP insulation**

Conductor: Fiberglass  
Screen: Fiberglass  
Sheath: Stainless steel braid

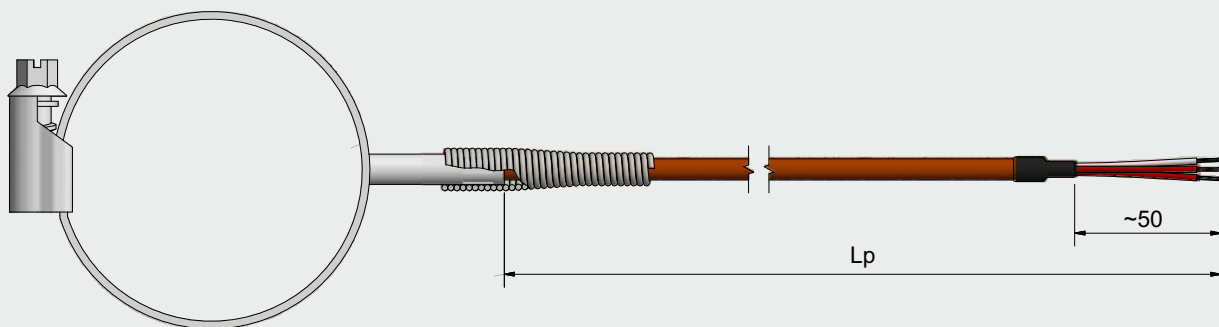


**Available measuring range**

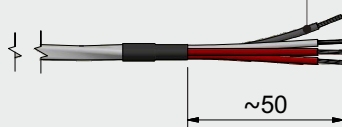
Measuring range	Insulation type	
-10 .. +105°C	JJ	PVC
-50 .. +180°C	SLSL, TSL, TPSL	silicone
-50 .. +260°C	TT, TP, TCuT	teflon® PFA
-50 .. +400°C	GLGLP	fiberglass

**Non-standard sensor versions**

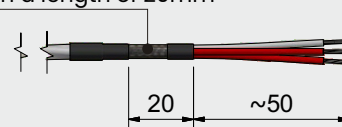
(thermowell spring protection against excessive cable bending)



Additional strand made out of copper braid \*



Copper braid exposed on a length of 20mm \*



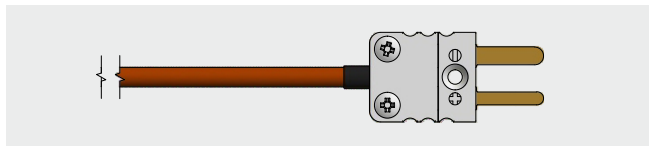
\* Available only for TCuT and TPSL cable insulation

## Connectors (optional)

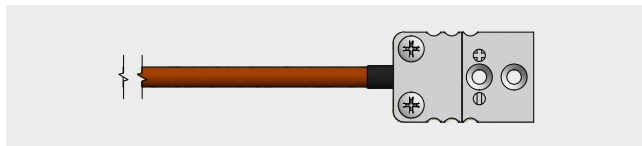
Sensors with connection cable can be equipped with connector.

Available options:

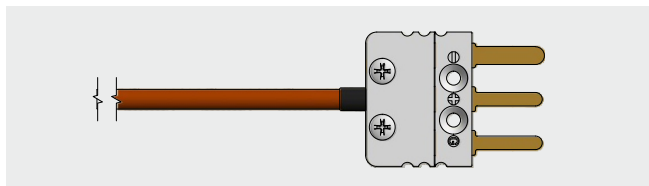
**Connector S-010-Cu-W**  
Miniature plug, 2-pin.



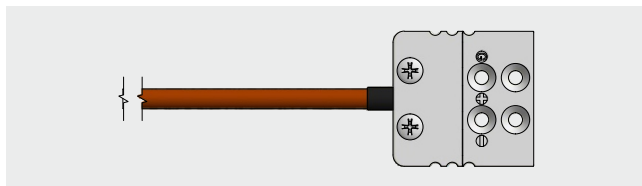
**Connector S-010-Cu-G**  
Miniature socket, 2-pin.



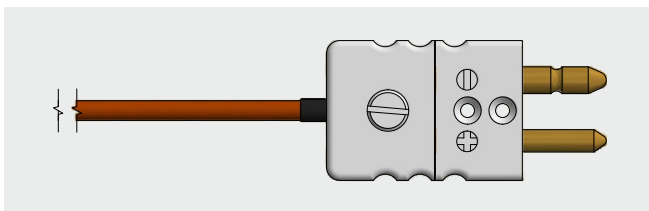
**Connector S-013-Cu-W**  
Miniature plug, 3-pin.



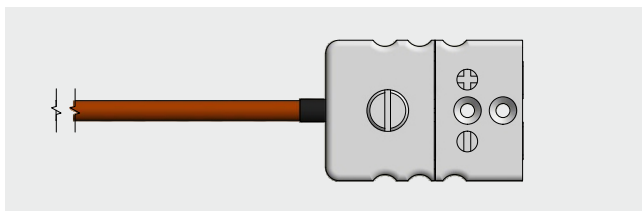
**Connector S-013-Cu-G**  
Miniature socket, 3-pin.



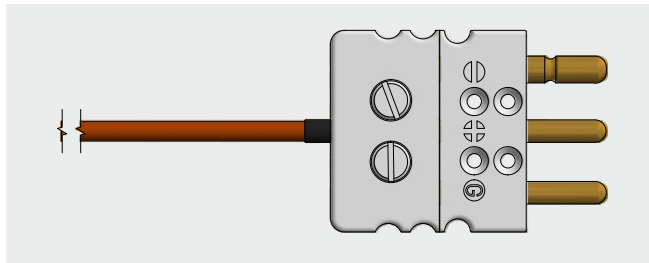
**Connector S-020-Cu-W**  
Standard plug, 2-pin.



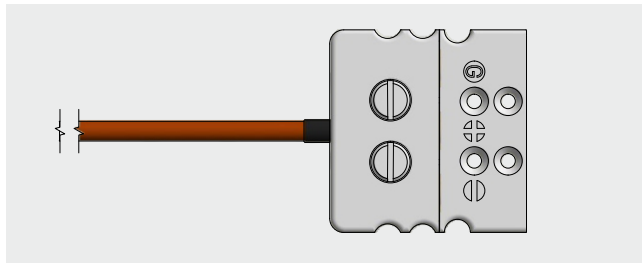
**Connector S-020-Cu-G**  
Standard socket, 2-pin.



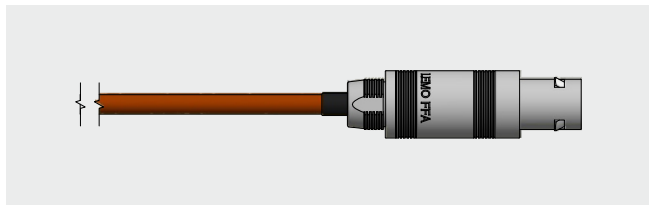
**Connector S-023-Cu-W**  
Standard plug, 3-pin.



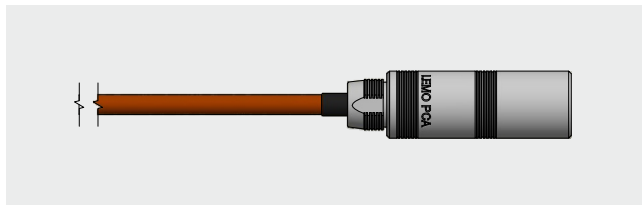
**Connector S-023-Cu-G**  
Standard socket, 3-pin.



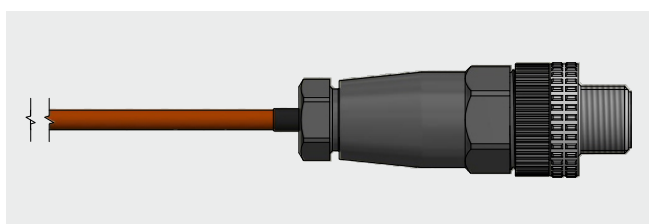
**Connector LEMO® FFA**  
Plug size from 0S to 3S. 2-, 3-, 4-, 6-pin.



**Connector LEMO® PCA**  
Plug size from 0S to 3S. 2-, 3-, 4-, 6-pin.



**Hirschmann M12 series**  
4-pin.



## Ordering code

TOPE50244P -  -  -  -  -  -  -

1	<input type="text"/>	<b>Type of sensing element</b>			
		1xPt100	Single Pt100 IEC 751, $\alpha=0.00385$		
		2xPt100	Double Pt100 IEC 751, $\alpha=0.00385$		
		1xNi100	Single Ni100 DIN43760, $\alpha=0.00618$		
		2xNi100	Double Ni100 DIN43760, $\alpha=0.00618$		
	xxx	other, please specify			
2	<input type="text"/>	<b>Pipeline diameter ØD</b>			
		100	Ø100 mm		
		150	Ø150 mm		
		200	Ø200 mm		
	xxx	other, please specify			
3	<input type="text"/>	<b>Connecting cable length Lp</b>			
		1000	1000 mm		
		2500	2500 mm		
	xxx	other, please specify			
4	<input type="text"/>	<b>Tolerance class</b>			
		A	Class A wg PN-EN 60751 / IEC 751 (available only for platinum sensing elements)		
	B	Class B wg PN-EN 60751 / IEC 751 / DIN43760 / GOST 6651-94			
5	<input type="text"/>	<b>Measuring circuit</b>			
		2	2-wire (available only in B tolerance class)		
		3	3-wire		
	4	4-wire			
6	<input type="text"/>	<b>Connecting cable type</b>		Temperature range of sensor	
		JJ	PVC / PVC	-10 .. +105°C	
		SLSL	Silicone / Silicone	-50 .. +180°C	
		TSL	Teflon® FEP / Silicone	-50 .. +180°C	
		TPSL	Teflon® FEP / Cu braid / Silicone	-50 .. +180°C	
		TT	Teflon® PFA / Teflon® PFA	-50 .. +260°C	
		TP	Teflon® PFA / Stainless steel	-50 .. +260°C	
		TCuT	Teflon® PFA / Cu braid / Teflon® PFA	-50 .. +260°C	
GLGLP	Fiberglass / Fiber glass / Stainless steel	-50 .. +400°C			
7	<input type="text"/>	<b>Connector (optional)</b>			
			without connector, free end conductors of connection cable		
		S-013-Cu-W	Miniature plug, 3-pin		
		FFA.IS	Connector LEMO® FFA size IS		
	xxx	other, please specify			

## Example

TOPE50244P-1xPt100-150-2000-A-3-TSL

RTD sensor 1xPt100, hose-clip match to Ø150 mm, connection cable length Lp=2000 mm, A tolerance class, 3-wire measuring circuit, single conductors in teflon insulation, sheath in silicone insulation.

TOPE50244P-1xPt100-100-2500-B-2-TT-FFA.IS

RTD sensor 1xPt100, hose-clip match to Ø100 mm, connection cable length Lp=2500 mm, B tolerance class, 2-wire measuring circuit, single conductors in teflon insulation, sheath in teflon insulation, connection cable equipped with LEMO® FFA plug size IS.