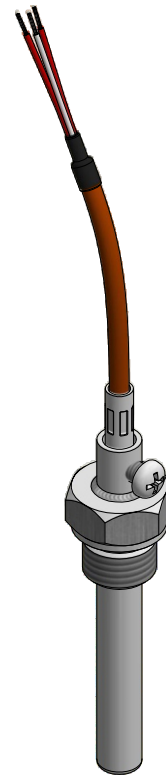


Applications

- Fine chemical industry
- Light energy industry
- 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



TOPE150 version with additional
external thermowell
TSL cable insulation
(teflon®FEP/silicone)

Resistance thermometers TOPE150 are designed for screw-fitting directly into process, mainly in vessels and pipelines.

Additional external thermowell allows for easy sensor disassembly without unsealing process installation. These thermometers are suitable for liquid and gaseous media under moderate mechanical load and normal chemical conditions.

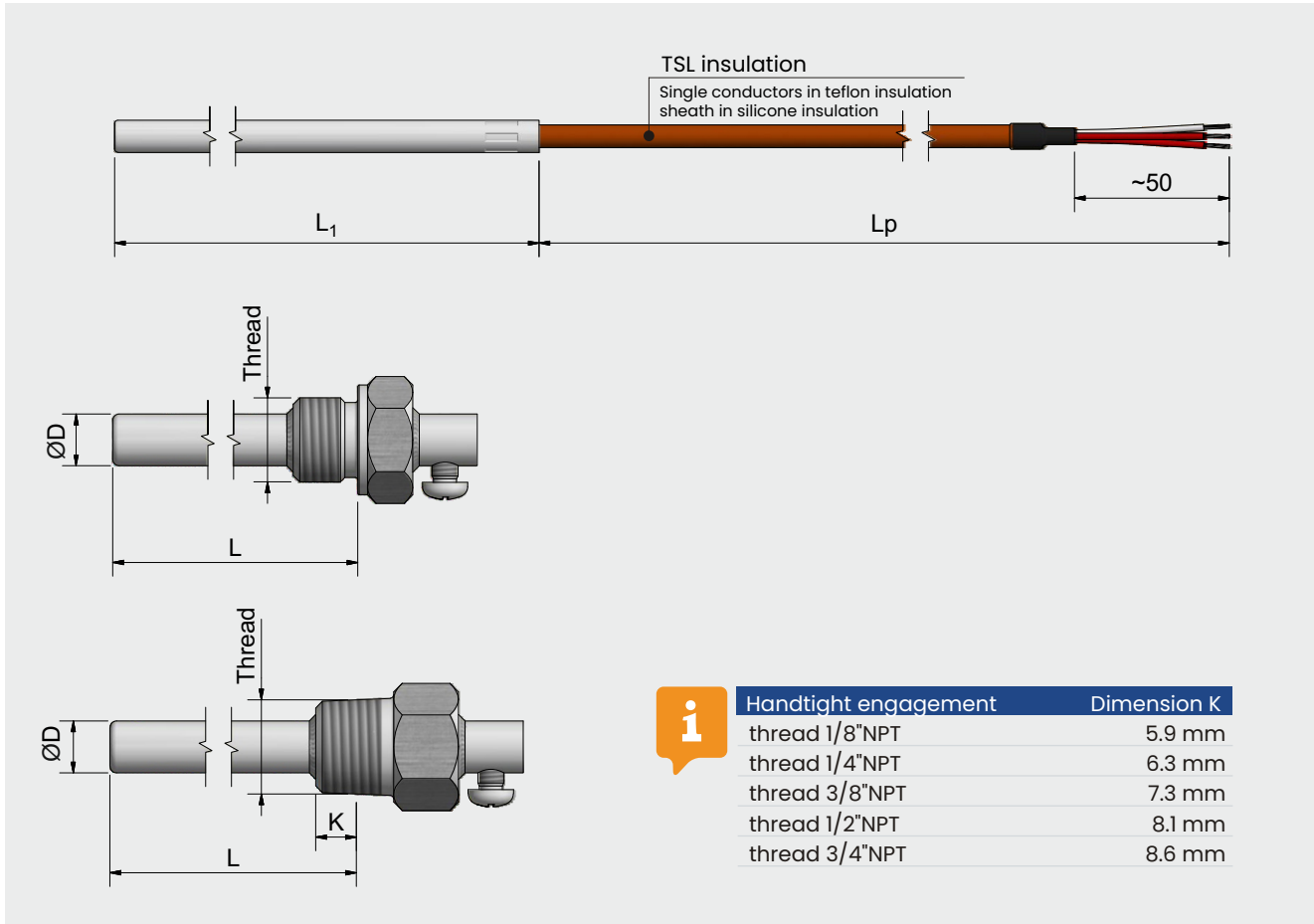
The sensor consists of thermometric resistor, protection tube made out of stainless steel, connection cable and additional external thermowell with threaded process connection.

Insertion length L, process connection thread and diameter, 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.

Designs



Handtight engagement	Dimension K
thread 1/8"NPT	5.9 mm
thread 1/4"NPT	6.3 mm
thread 3/8"NPT	7.3 mm
thread 1/2"NPT	8.1 mm
thread 3/4"NPT	8.6 mm

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

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

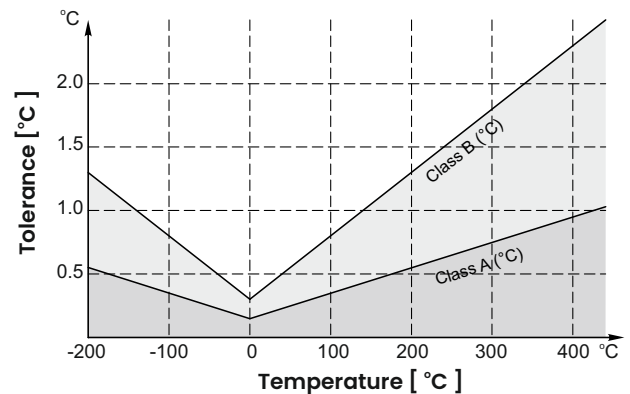
Class of tolerance	Tolerance $^\circ\text{C}$
A	$\pm 0.15 + (0.002 \times t)$
B	$\pm 0.30 + (0.005 \times t)$

Electrical parameters

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

Housing material

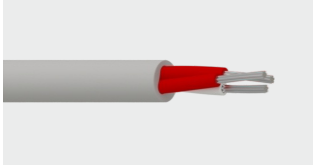
Stainless steel 1H18N9T (1.4541 / AISI321)



Insulation types of connection cable

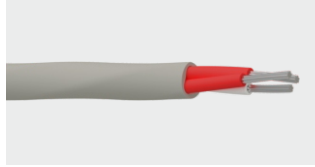
JJ insulation

Conductor: PVC
Sheath: PVC



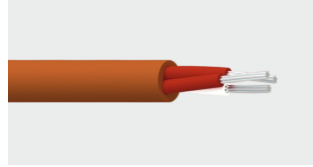
SLSL insulation

Conductor: Silikon
Sheath: Silikon



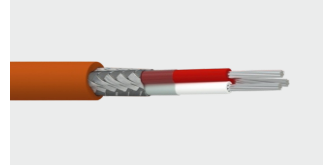
TSL insulation

Conductor: Teflon® FEP
Sheath: Silicone



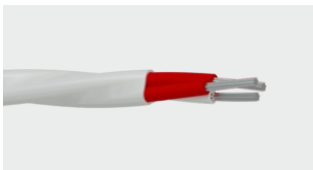
TPSL insulation

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



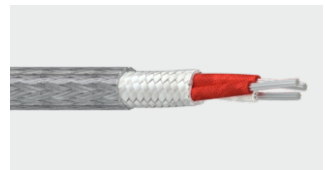
TCuT insulation

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



GLGLP insulation

Conductor: Fiberglass
Screen: Fiberglass
Sheath: Stainless steel braid

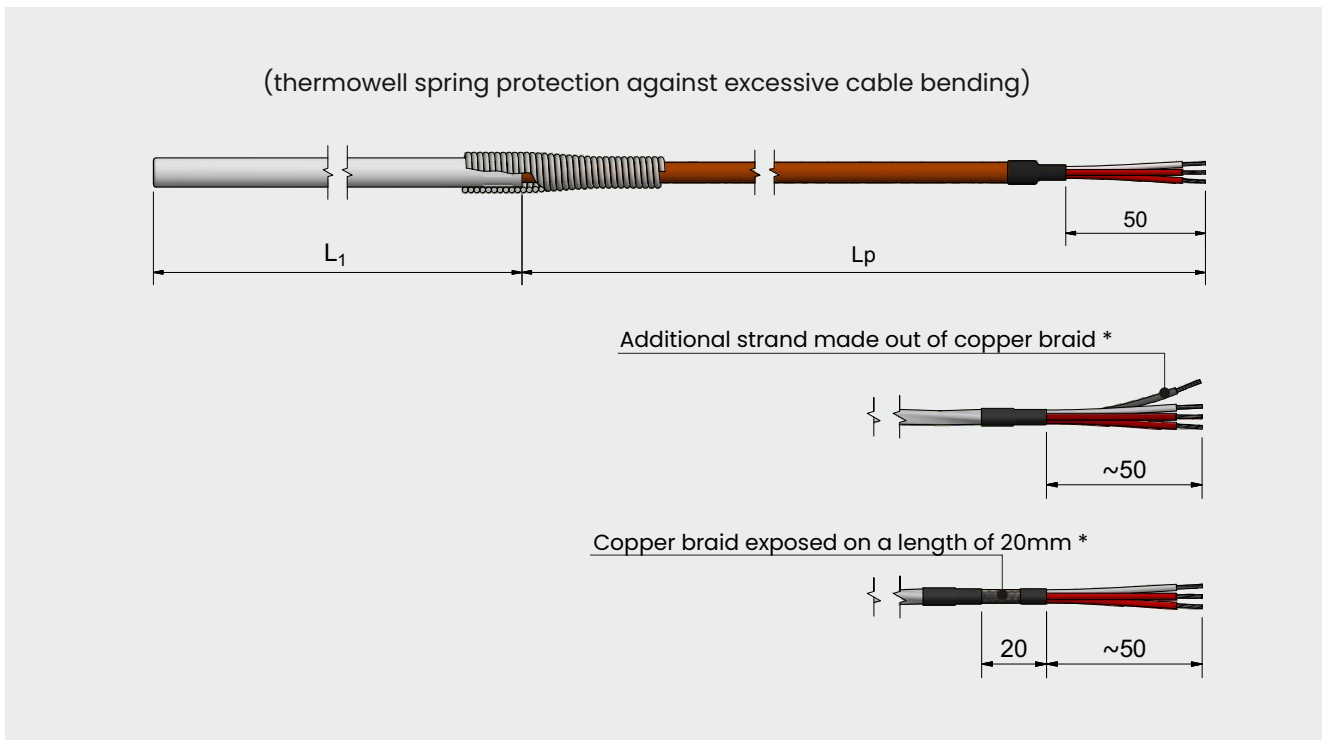


Available measuring range and thermowell diameter

Measuring range	Thermowell dia. D [mm]	Insulation type	
-10 .. +105°C	Ø8, Ø9, Ø10	JJ	PVC
-50 .. +180°C	Ø8, Ø9, Ø10	SLSL, TSL, TPSL	silicone
-50 .. +260°C	Ø5*, Ø6*, Ø8, Ø9, Ø10	TT, TP, TCuT	teflon® PFA
-50 .. +400°C	Ø8, Ø9	GLGLP	fiberglass

* Available only for TT cable insulation

Non-standard sensor versions



* Available only for TCuT and TPSL cable insulation

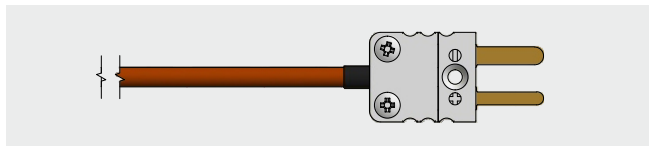
Connectors (optional)

Sensors with connection cable can be equipped with connector.

Available options:

Connector S-010-Cu-W

Miniature plug, 2-pin.



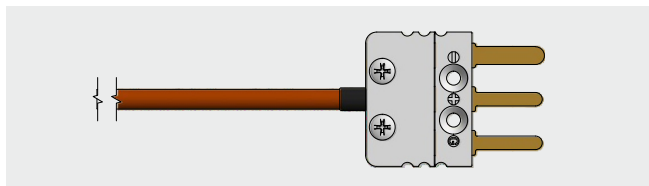
Connector S-010-Cu-G

Miniature socket, 2-pin.



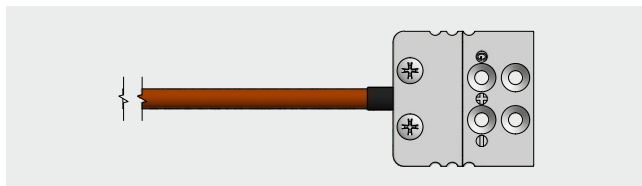
Connector S-013-Cu-W

Miniature plug, 3-pin.



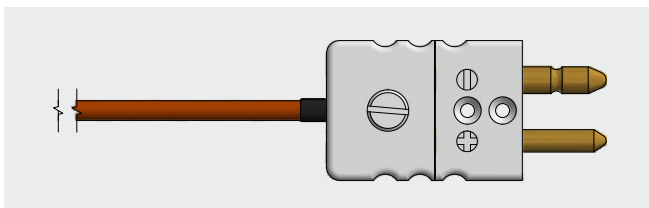
Connector S-013-Cu-G

Miniature socket, 3-pin.



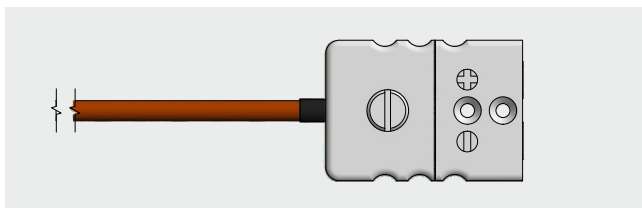
Connector S-020-Cu-W

Standard plug, 2-pin.



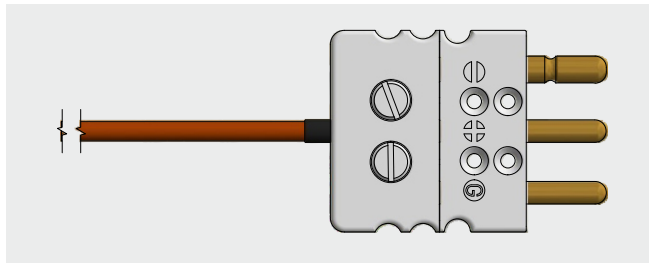
Connector S-020-Cu-G

Standard socket, 2-pin.



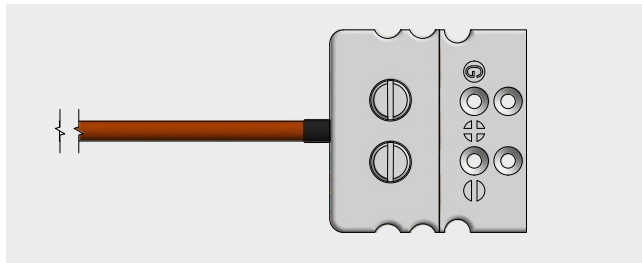
Connector S-023-Cu-W

Standard plug, 3-pin.



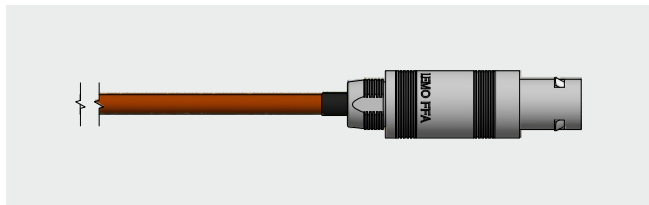
Connector S-023-Cu-G

Standard socket, 3-pin.



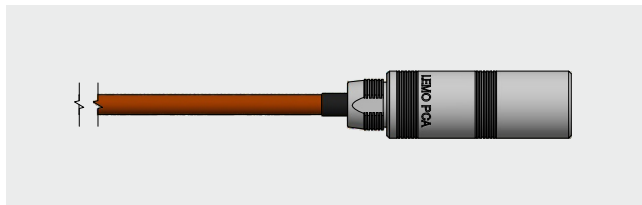
Connector LEMO® FFA

Plug size from 0S to 3S. 2-, 3-, 4-, 6-pin.



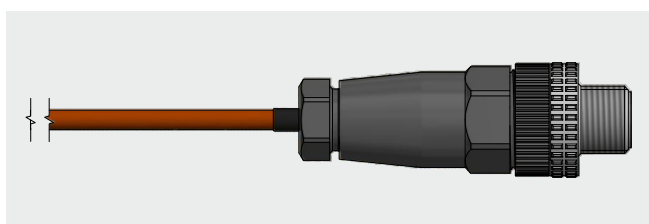
Connector LEMO® PCA

Plug size from 0S to 3S. 2-, 3-, 4-, 6-pin.



Hirschmann M12 series

4-pin.



Ordering code

TOPE150 - - - - - - - - -

1	<input type="text"/>	Type of sensing element			
		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"/>	Thermowell diameter ØD			
		6	Ø6 mm		
		8	Ø8 mm		
		9	Ø9 mm		
	xxx	other, please specify			
3	<input type="text"/>	Thermowell length L			
		50	50 mm		
		100	100 mm		
		150	150 mm		
	xxx	other, please specify			
4	<input type="text"/>	Connecting cable length Lp			
		1000	1000 mm		
		2500	2500 mm		
	xxx	other, please specify			
5	<input type="text"/>	Tolerance class			
		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		
6	<input type="text"/>	Measuring circuit			
		2	2-wire (available only in B tolerance class)		
		3	3-wire		
		4	4-wire		
7	<input type="text"/>	Process connection thread			
		M10x1	M10x1		
		M12x1	M12x1		
		G1/4"	G1/4"		
		G1/2"	G1/2"		
		1/2"NPT	1/2"NPT		
	xxx	other, please specify			
8	<input type="text"/>	Connecting cable type		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 / Fiberglass / Stainless steel	-50 .. +400°C			
9	<input type="text"/>	Connector (optional)			
			without connector, free end conductors of connection cable		
		S-013-Cu-W	Miniature plug, 3-pin		
		FFA.1S	Connector LEMO® FFA size 1S		
		xxx other, please specify			

Example

TOPE150-1xPt100-8-150-2000-A-3-G1/4"-TSL

RTD sensor 1xPt100, thermowell diameter Ø8 mm, thermowell length L=150 mm, connection cable length Lp=2000 mm, A tolerance class, 3-wire measuring circuit, threaded thermowell connection G1/4", single conductors in teflon insulation, sheath in silicone insulation.

TOPE150-1xPt100-6-100-2500-B-2-M10x1-TT-FFA.1S

RTD sensor 1xPt100, thermowell diameter Ø6 mm, thermowell length L=100 mm, connection cable length Lp=2500 mm, B tolerance class, 2-wire measuring circuit, threaded thermowell connection M10x1, single conductors in teflon insulation, sheath in teflon insulation, connection cable equipped with LEMO® FFA plug size 1S.