

## Applications

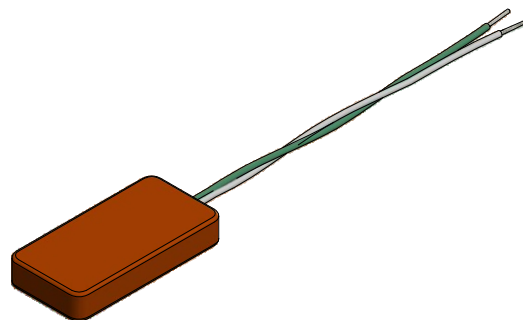
- Temperature measurement of pipeline surface
- General industrial services
- Laboratories

## Features

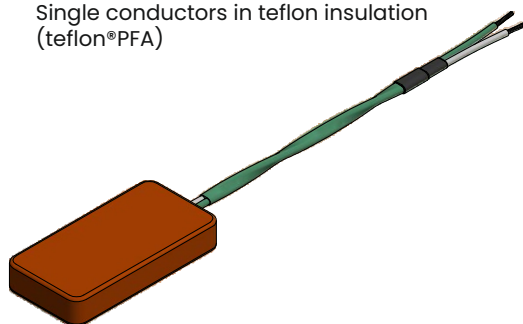
- Single thermocouple
- Sensing element according to (PN-EN 60584-1):

Type K (NiCr-NiAl),  
Type J (Fe-CuNi),  
Type N (NiCrSi-NiSi),  
Type E (NiCr-CuNi),  
Type T (Cu-CuNi)

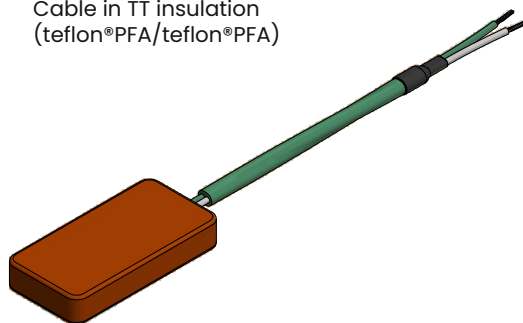
- For sticking with self-adhesive tape



**TTE501**  
Single conductors in teflon insulation  
(teflon®PFA)



**TTE501**  
Cable in TT insulation  
(teflon®PFA/teflon®PFA)



**TTE501**  
Cable in TCuT insulation  
(teflon®FEP/Cu braid/teflon®FEP)

Thermocouples of this series are designed for surface temperature measurement.

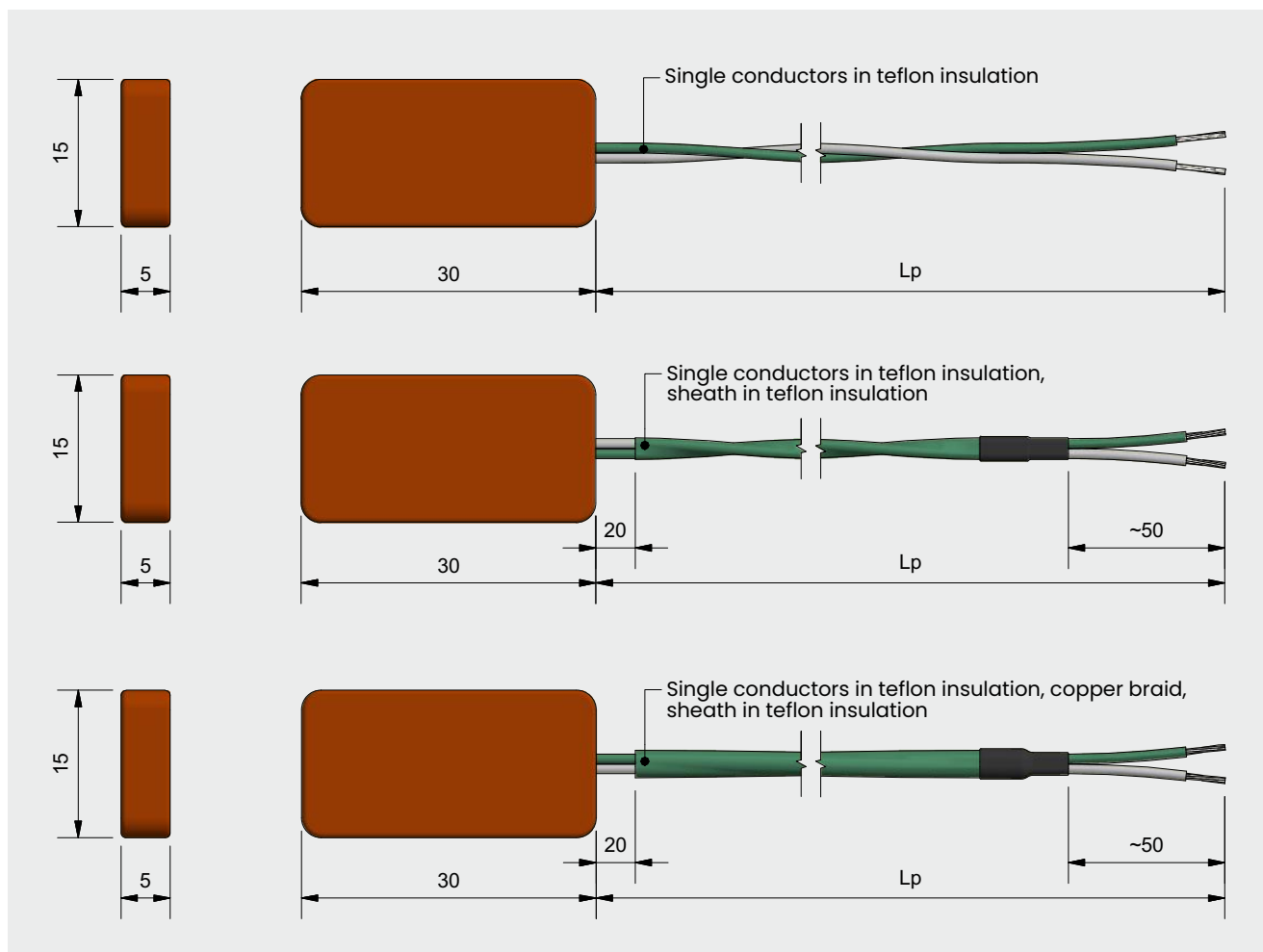
The sensor consists of silicone case, self-adhesive tape and thermocouple cable.

Length, accuracy, cable insulation and method of connection 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



## Basic values of Thermocouples type J, K, N according to PN-EN 60584 / IEC 584

Temperature		°C	100	200
Basic value	Type J	mV	5.27	10.78
	Type K	mV	4.10	8.14
	Type N	mV	2.77	5.91
Tolerance	Class 1	°C	±1.5	±1.5
	Class 2	°C	±2.5	±2.5

### Tolerance

The PN-EN 60584 Standard defines the formulas for calculating acceptable measure tolerance. More information available in the general thermoelectric thermometer sheet.

### Electrical parameters

Isolation resistance > 10 GΩ (test 500 VDC)

### Housing material

Silicone

### Type J ( Fe-CuNi )

Class	Temperature range	Tolerance
1	-40 °C .. +375 °C	± 1.5 °C
	+375 °C .. +750 °C	± 0.0040 x   t
2	-40 °C .. +333 °C	± 2.5 °C
	+333 °C .. +750 °C	± 0.0075 x   t

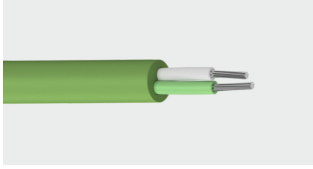
### Type K ( NiCr-Ni ), Type N ( NiCrSi-NiSi )

Class	Temperature range	Tolerance
1	-40 °C .. +375 °C	± 1.5 °C
	+375 °C .. +1000 °C	± 0.0040 x   t
2	-40 °C .. +333 °C	± 2.5 °C
	+333 °C .. +1200 °C	± 0.0075 x   t

**Insulation types of connection cable**

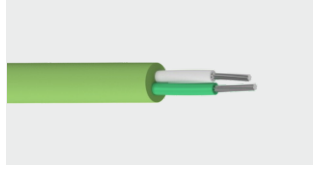
**JJ insulation**

Conductor: PVC  
Sheath: PVC



**TSL insulation**

Conductor: Teflon® FEP  
Sheath: Silicone



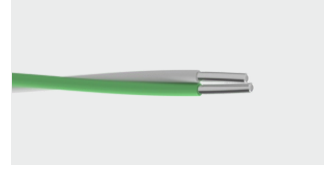
**TCuT insulation**

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



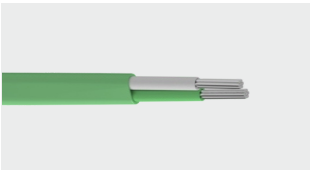
**TW insulation**

Conductor: Teflon® PFA



**TT insulation**

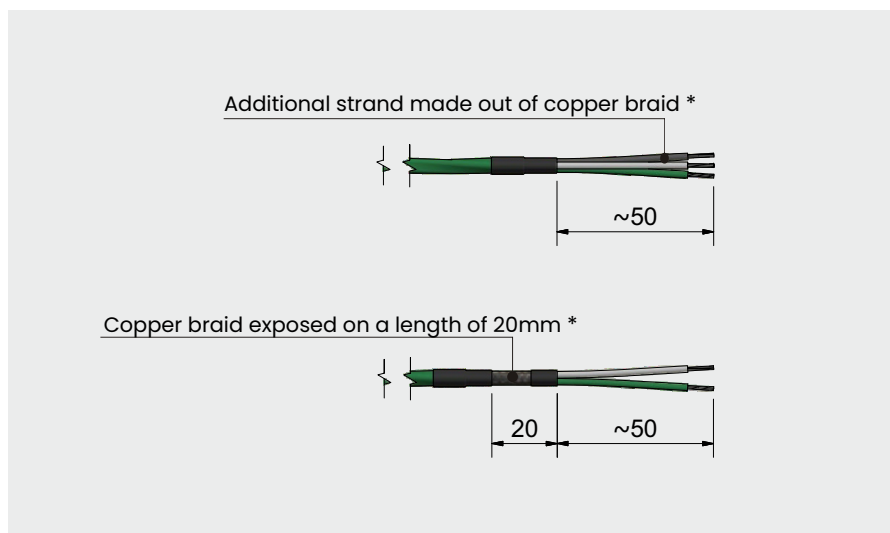
Conductor: Teflon® PFA  
Sheath: Teflon® PFA



**Available measuring range**

Measuring range	Insulation type	
-10 .. +105°C	JJ	PVC
-50 .. +180°C	TSL	silicone
-50 .. +180°C	TCuT	teflon® FEP
-50 .. +180°C	TW, TT	teflon® PFA

**Non-standard sensor versions**



\* Available only for TCuT cable insulation

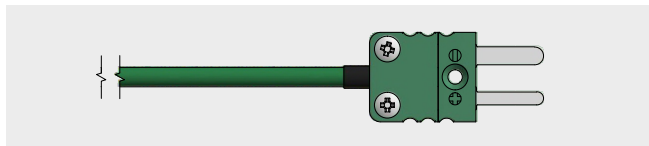
## Connectors (optional)

Sensors with connection cable can be equipped with connector.

Available options:

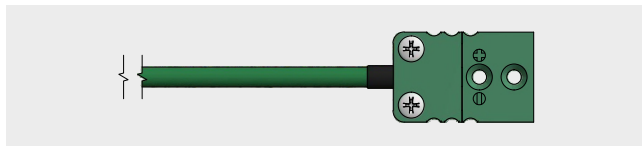
### Connector S-010-(thermocouple type)-W

Miniature plug, 2-pin.



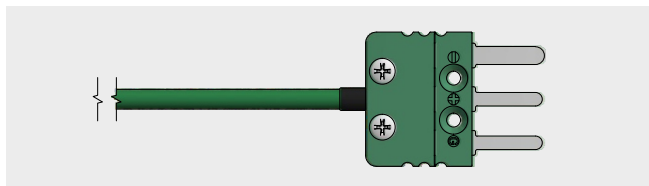
### Connector S-010-(thermocouple type)-G

Miniature socket, 2-pin.



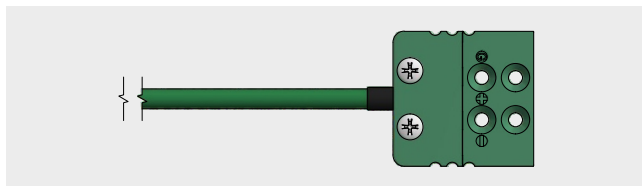
### Connector S-013-(thermocouple type)-W

Miniature plug, 3-pin.



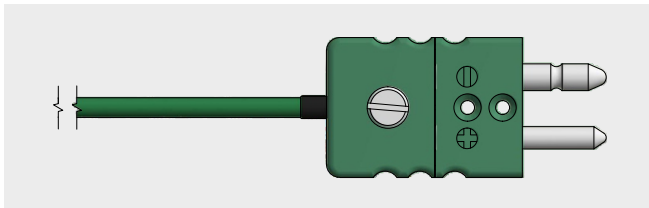
### Connector S-013-(thermocouple type)-G

Miniature socket, 3-pin.



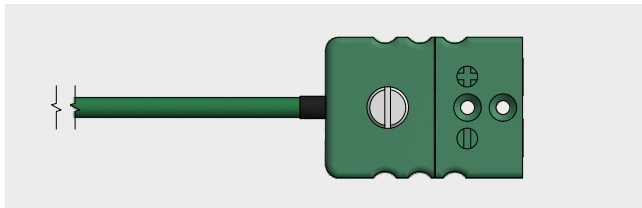
### Connector S-020-(thermocouple type)-W

Standard plug, 2-pin.



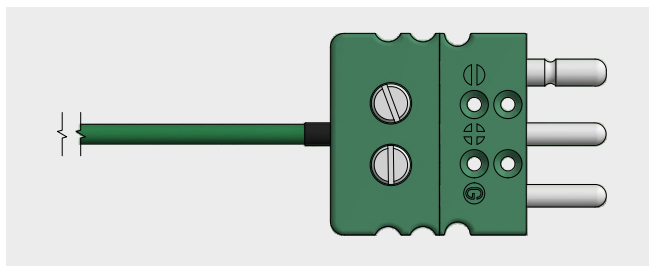
### Connector S-020-(thermocouple type)-G

Standard socket, 2-pin.



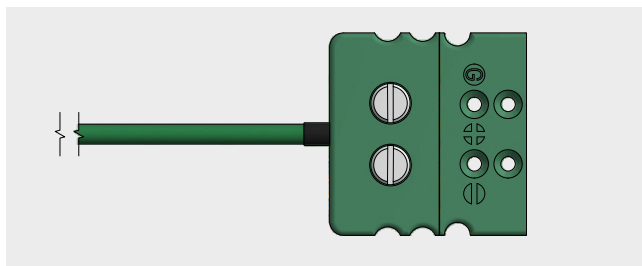
### Connector S-023-(thermocouple type)-W

Standard plug, 3-pin.



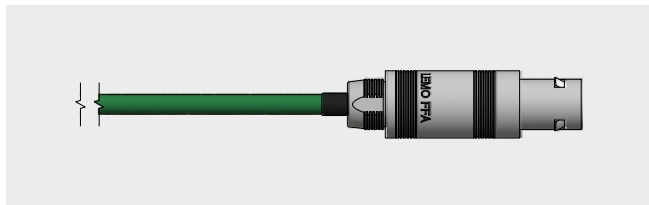
### Connector S-023-(thermocouple type)-G

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.



**Ordering code**

TTE501 - <sup>1</sup> - <sup>2</sup> - <sup>3</sup> - <sup>4</sup> - <sup>5</sup>

1	<input type="text"/>	<b>Thermocouple type</b>			
		J	Type J ( Fe-CuNi)		
		K	Type K ( NiCr-Ni)		
		xxx	other, please specify		
2	<input type="text"/>	<b>Connecting cable length Lp</b>			
		1000	1000 mm		
		2500	2500 mm		
		xxx	other, please specify		
3	<input type="text"/>	<b>Tolerance class</b>			
		1	Class 1 acc. to PN-EN 60584-1		
		2	Class 2 acc. to PN-EN 60584-1		
4	<input type="text"/>	<b>Connecting cable type</b>		<b>Temperature range of sensor</b>	
		JJ	PVC / PVC	-10 .. +105°C	
		TSL	Teflon® FEP / Silicone	-50 .. +180°C	
		TCuT	Teflon® FEP / Cu braid / Teflon® FEP	-50 .. +180°C	
		TW	Teflon® PFA	-50 .. +180°C	
		TT	Teflon® PFA / Teflon® PFA	-50 .. +180°C	
5	<input type="text"/>	<b>Connector (optional)</b>			
			without connector, free end conductors of connection cable		
		S-010-K-W	Miniature plug, 2-pin, type K		
		FFA.1S	Connector LEMO® FFA size 1S		
		xxx	other, please specify		

**Example**

TTE501-K-5000-1-TCuT

Thermocouple 1xK, cable length Lp=5000 mm, tolerance class 1, cable in TCuT insulation type.

TTE501-1xK-1000-SO-TT-LEMO® FFA.1S

Thermocouple 1xK, cable length Lp=1000 mm, tolerance class 1, cable in TT insulation type, equipped with LEMO® FFA plug size 1S.