

## Applications

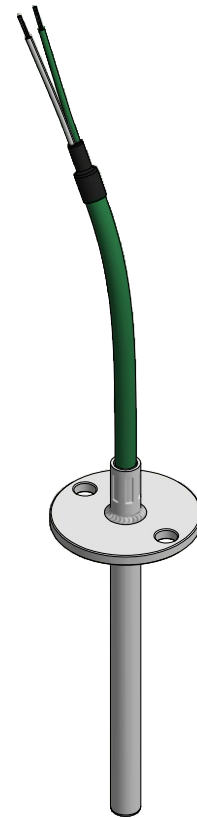
- Machinery industry
- Temperature measurement in air ducts and air conditioning systems

## Features

- Single or double 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)

- Non-standard sensor versions available upon customer's request:
  - cable type according to client's specification
  - thermowell spring protection against excessive cable bending
  - reduced tip of thermowell



**TTE570**  
TSL cable insulation  
(teflon®FEP/silicone)

Resistance thermometers TTE570 are designed for self-tapping screw assembly to air ducts and air conditioning systems.

The sensor consists of thermocouple cable, protection tube made out of stainless steel and mounting flange welded to thermowell.

Insertion length, thermowell diameter, thermocouple type, accuracy, cable length and insulation can be selected individually for the respective application.

## Temperature transmitter (Option)

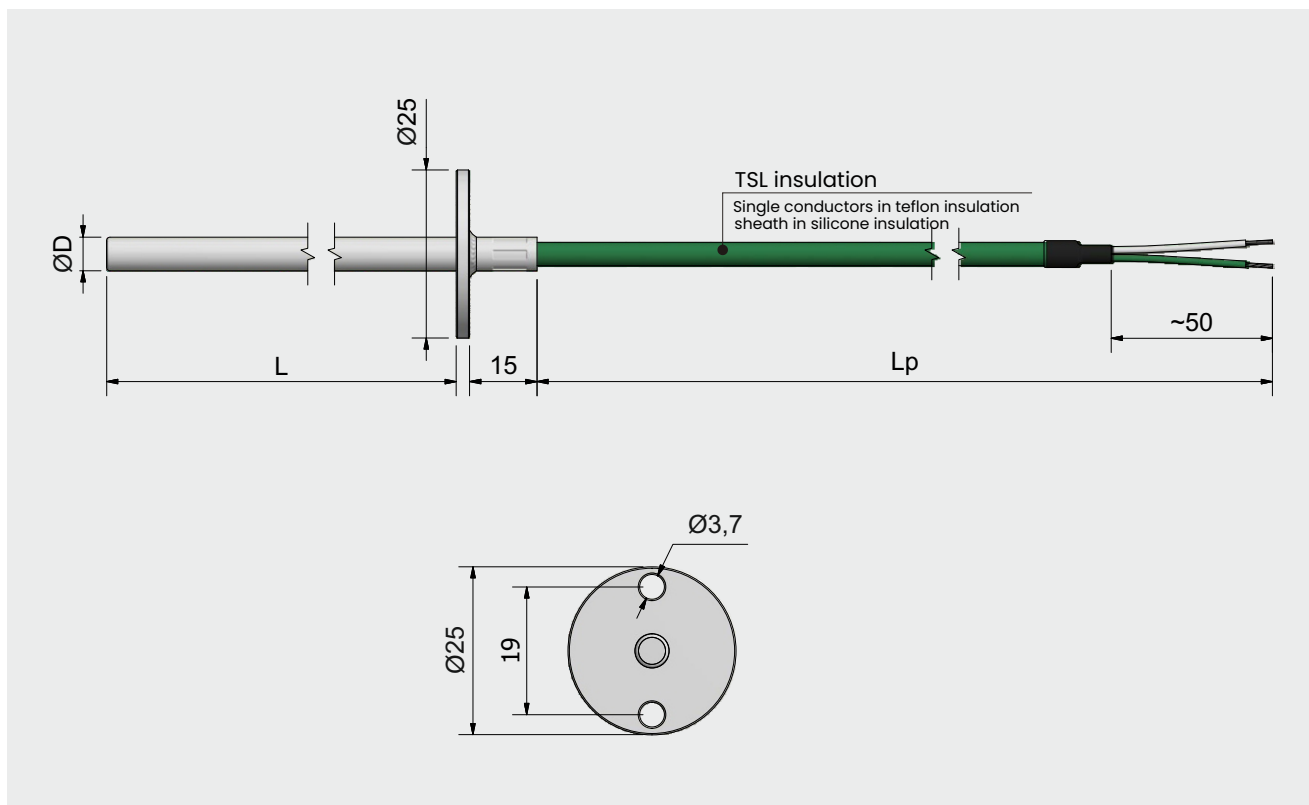
There is possibility of using standard temperature transmitter (4÷20mA, 0÷10V) or temperature transmitter with HART®, Profibus® PA, Foundation Fieldbus communication protocol, mounted inside electrical control cabinet.

## 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-TTE570

## Designs



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

Temperature		°C	100	200	300	400
Basic value	Type J	mV	5.27	10.78	16.33	21.85
	Type K	mV	4.10	8.14	12.21	16.40
	Type N	mV	2.77	5.91	9.34	12.97
Tolerance	Class 1	°C	±1.5	±1.5	±1.5	±1.6
	Class 2	°C	±2.5	±2.5	±2.5	±3.0

### 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

Stainless steel 1H18N9T (1.4541 / AISI321)

### 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

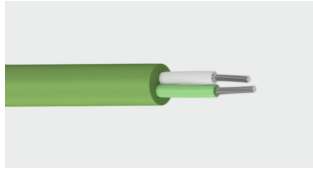
### Type K ( NiCr-Ni ), Type N ( NiCrSi-NiSi )

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



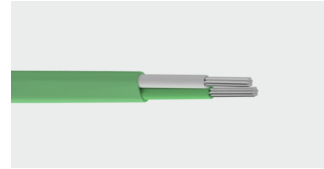
**TCuT insulation**

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



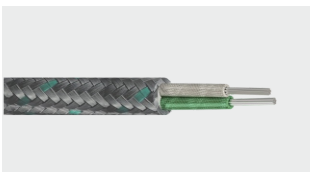
**TT insulation**

Conductor: Teflon® PFA  
Sheath: Teflon® PFA



**GLP insulation**

Conductor: Fiberglass  
Sheath: Stainless steel braid



**GLGLP insulation**

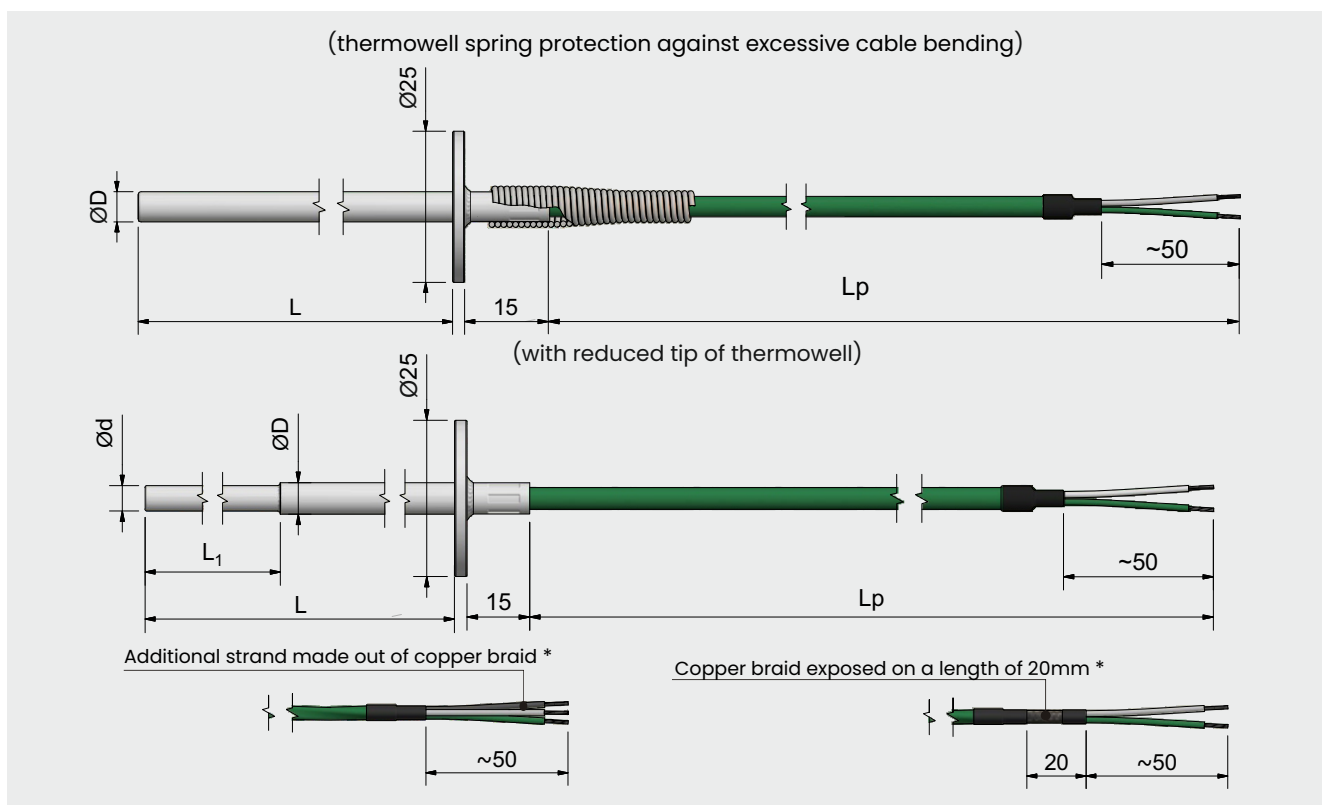
Conductor: Fiberglass  
Sheath: Fiberglass  
Braid: Stainless steel braid



**Available measuring range and thermowell diameter**

Measuring range	Thermowell dia. D [mm]	Insulation type	
-10 .. +105°C	Ø5, Ø6, Ø8	JJ	PVC
-50 .. +180°C	Ø4, Ø5, Ø6, Ø8	TSL	silicone
-50 .. +205°C	Ø3, Ø4, Ø5, Ø6, Ø8	TCuT	teflon® FEP
-50 .. +260°C	Ø3, Ø4, Ø5, Ø6, Ø8	TT	teflon® PFA
-50 .. +400°C	Ø5, Ø6, Ø8	GLP, GLGLP	fiberglass

**Non-standard sensor versions**



\* Available only for TCuT cable insulation

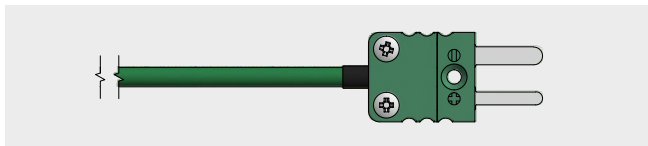
## Connectors (optional)

Sensors with connection cable can be equipped with connector.

Available options:

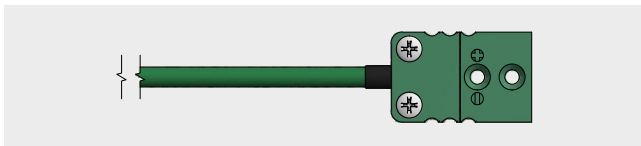
### Connector S-010-(thermocouple type)-W

Miniature plug, 2-pin.



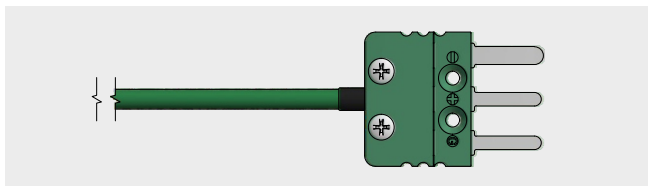
### Connector S-010-(thermocouple type)-G

Miniature socket, 2-pin.



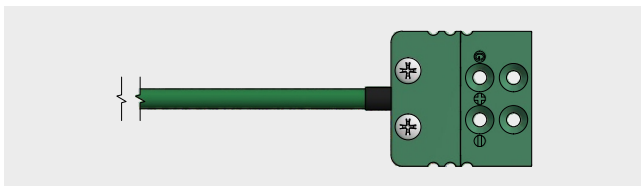
### Connector S-013-(thermocouple type)-W

Miniature plug, 3-pin.



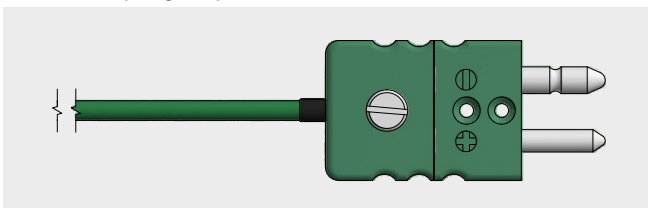
### Connector S-013-(thermocouple type)-G

Miniature socket, 3-pin.



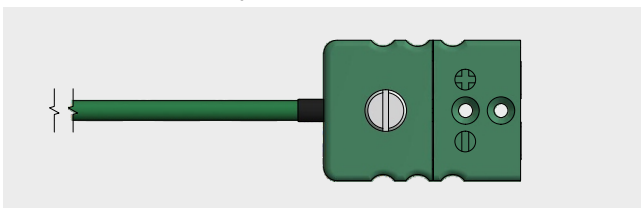
### Connector S-020-(thermocouple type)-W

Standard plug, 2-pin.



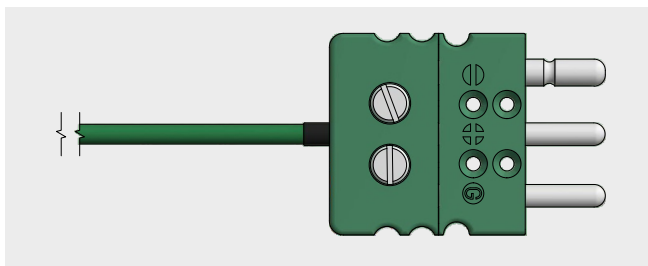
### Connector S-020-(thermocouple type)-G

Standard socket, 2-pin.



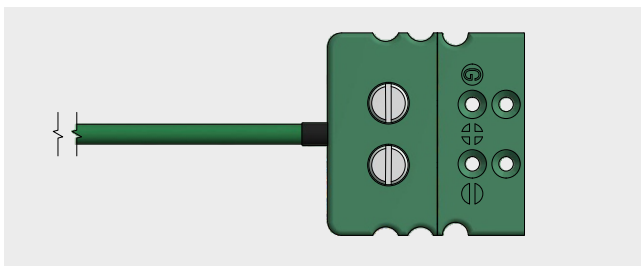
### Connector S-023-(thermocouple type)-W

Standard plug, 3-pin.



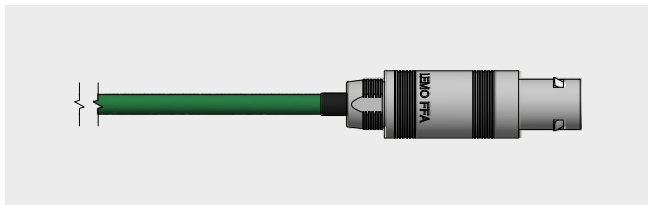
### Connector S-023-(thermocouple type)-G

Standard socket, 3-pin.



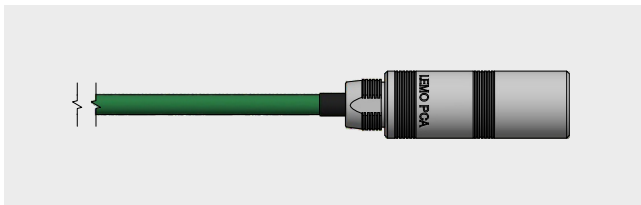
### Connector LEMO® FFA

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

TTE570 -  -  -  -  -  -  -

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>Thermowell diameter ØD</b>			
		5	Ø5 mm		
		6	Ø6 mm		
		8	Ø8 mm		
3	<input type="text"/>	<b>Thermowell length L</b>			
		50	50 mm		
		100	100 mm		
		150	150 mm		
4	<input type="text"/>	<b>Connecting cable length Lp</b>			
		1000	1000 mm		
		2500	2500 mm		
		xxx	other, please specify		
5	<input type="text"/>	<b>Tolerance class</b>			
		1	Class 1 according to PN-EN 60584-1		
2	<input type="text"/>	<b>Connecting cable type</b>			
		2	Class 2 according to PN-EN 60584-1		
6	<input type="text"/>	<b>Connecting cable type</b>		Temperature range of sensor	
		JJ	PVC / PVC	-10 .. +105°C	
		TSL	Teflon® FEP / Silicone	-50 .. +180°C	
		TCuT	Teflon® FEP / Cu braid / Teflon® FEP	-50 .. +205°C	
		TT	Teflon® PFA / Teflon® PFA	-50 .. +260°C	
		GLP	Fiberglass / Stainless steel	-50 .. +400°C	
7	<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.IS	Connector LEMO® FFA size IS		
	<input type="text"/>	xxx	other, please specify		

## Example

TTE570-K-8-150-2000-1-TSL

TC sensor type K, thermowell diameter Ø8 mm, thermowell length L=150 mm, connection cable length Lp=2000 mm, tolerance class 1, single conductors in teflon insulation, sheath in silicone insulation.

TTE570-J-6-100-2500-2-TT-FFA.IS

TC sensor type J, thermowell diameter Ø6 mm, thermowell length L=100 mm, connection cable length Lp=2500 mm, tolerance class 2, single conductors in teflon insulation, sheath in teflon insulation, connection cable equipped with LEMO® FFA plug size IS.