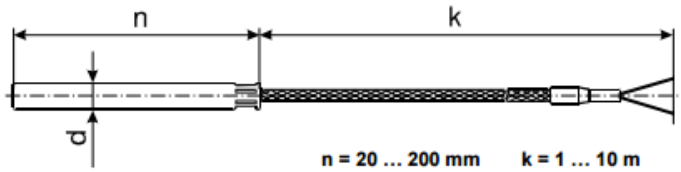
TERMOREZISTENTE/TERMISTOARE TSA DREPTE, TSAL in UNGHI de 90 grade, TSAB CURBATE

(MI) RTD CABLE PROBE FOR FREE MOUNTING** **TSAx**

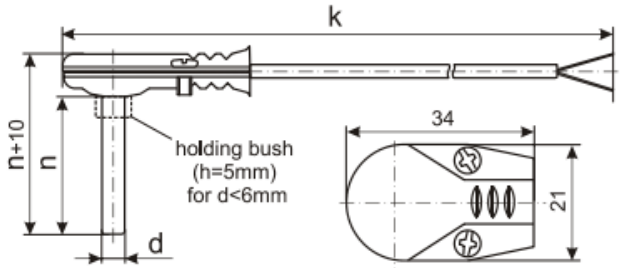
Sheath - stainless steel (see table notes)
Cable - see table notes

STRAIGHT-TUBE DESIGN (TSA)



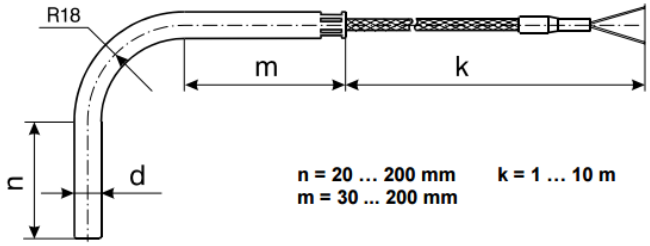
n = 20 ... 200 mm k = 1 ... 10 m

DESIGN WITH ANGLED TERMINATION (TSAL)



n = 20 ... 200 mm k = 1 ... 10 m

BENDED-TUBE DESIGN (TSAB)



n = 20 ... 200 mm k = 1 ... 10 m
m = 30 ... 200 mm

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	SLSL, TSL, TT, YY, UU, YU	T9 -50...200 °C	3*	2, 3*
		T1* -50...400 °C	4, 4.5**	2, 3*
			5	2, 3*
	GLGL	*T7 0...200 °C*	6	2, 3, 4*
		T8 0...400 °C	8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	TT	T22 -200...200 °C	6, 8	2x2, 2x3*
1 x Cu (RH, RK)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	5*	2, 3*
			6	2, 3, 4*
			8	2, 3, 4
2 x Cu (RH, RK)	*GLGL, TT*	*T7 0...200 °C*	6, 8	2x2, 2x3*
1 x PTC (RP, RQ)	SLSL, TSL, YY, UU, YU	T12 -50...100 °C	6	2, 3
2 x PTC (RP, RQ)	*GLGL, TT*	*T19 0...100 °C*	8	2x2

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)
- YY (PVC, max. 100 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)

Applicable cables:

Probe design / Temp. range	TSA, TSAB	TSAL
T12, T19	all	all
T7, T9	no PUR, no PVC	
T22	TT	TT, SLSL, TSL
T1, T8	GLGLP	no PUR, no PVC

Tip shape:
standard, narrowed, pitted (see Appendix - Tip Shapes)

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

Cable connector:
4-pin (C3) (see Appendix - Connectors)

* Please contact

** Available only for TSAL!

Ordering code TSA(L,B) - (MI -[1]) G1G2.G3.G4.G6.G7.G8.G10.G11.G12.G14.G15 - #1

Code	Feature or option		Code values
G1	Number of RTD sensors		1 or 2
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP - PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50...400 °C, T7 - 0...200 °C, T8 - 0...400 °C, T9 - -50...200 °C, T12 - 50...100 °C, T19 - 0...100 °C, T22 - -200...200 °C
G4	Diameter 'd' [mm]	regular design	4, 5, 6, 8
		MI design	3 [5], 4.5, 6, 8
G6	Probe length 'n' [mm]		20...200
G7	Probe length 'm' [mm] [2]		30...200
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane [5], 1PV...10PV - PVC
G10	Sheath material (wetted parts)		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class		X - none [3], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [5]
G14	Tip shape		X - standard closed, N - narrowed [4], P - pitted [4]
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only)
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled) [4], OS - cable protection SS spring (≈ 50 mm), OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface [4]

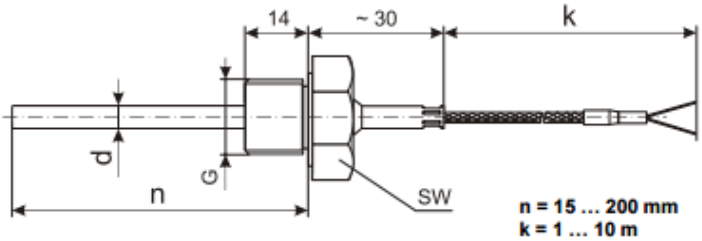
[1] Available only for TSAL!
[2] Only for TSAB!
[3] For non-Pt sensors
[4] Only for non-MI (regular) design!

TERMOREZISTENTE/TERMISTOARE cu filet : TSAG/TSAG2 DREPTE, TSAGL/TSAGL2 in UNGHI

SCREW-IN CABLE PROBE **TSAGx**

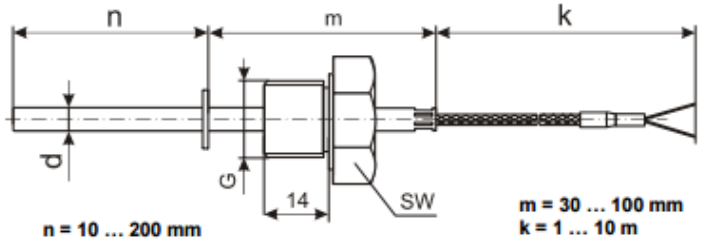
Sheath - stainless steel (see table notes)
Cable - see table notes

STRAIGHT DESIGN WITH WELDED CONNECTION (TSAG)



n = 15 ... 200 mm
k = 1 ... 10 m

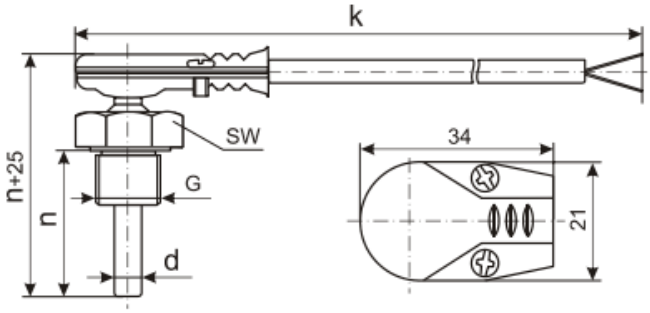
STRAIGHT DESIGN WITH MOVABLE CONNECTION (TSAG2)



n = 10 ... 200 mm

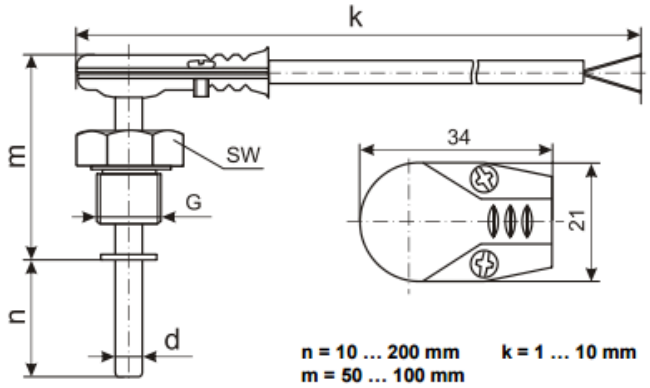
m = 30 ... 100 mm
k = 1 ... 10 m

ANGLED DESIGN WITH WELDED CONNECTION (TSAGL)



n = 15 ... 200 mm k = 1 ... 10 m

ANGLED DESIGN WITH MOVABLE CONNECTION (TSAGL2)



n = 10 ... 200 mm k = 1 ... 10 mm
m = 50 ... 100 mm

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
RTD Design				
1 x Pt (RB,RD,RF,RG)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C T1* -50...400 °C	4, 5	2, 3*
			6	2, 3, 4*
	GLGL, TT	*T7 0...200 °C*	8	2, 3, 4
2 x Pt (RB,RD,RF,RG)		*T8 0...400 °C*	6, 8	2x2, 2x3*
	TT	*T22 -200...200 °C*		
1 x Cu (RH, RK)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	5*	2, 3*
			6	2, 3, 4*
			8	2, 3, 4
2 x Cu (RH, RK)	*GLGL, TT*	*T7 0...200 °C*	6 ,8	2x2, 2x3*
1 x PTC (RP, RQ)	SLSL, TSL, YY, UU, YU	T12 -50...100 °C	6	2, 3
2 x PTC (RP, RQ)	*GLGL, TT*	*T19 0...100 °C*	8	2x2
Thermocouple Design				
1 x K, 1 x N, 1 x E	SLSL, TSL, YY, UU, YU	T9 -50...200 °C T1* -50...400 °C	5, 6, 8	2
	GLGL, TT, SFSF	*T8 0...400 °C* *T4 0...800 °C* *T3* 0...850 °C*		
1 x J, 1 x T	SLSL, TSL, YY, UU, YU	T9 -50...200 °C T1* -50...400 °C	5, 6, 8	2
	GLGL, TT, SFSF	*T8 0...400 °C* *T4* 0...800 °C*		

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)
- YY (PVC, max. 100 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)
- SFSF (mineral fiber, max. 1000 °C ambient temperature)

Applicable cables:

Probe design / Temp. range	TSAG, TSAG2	TSAGL, TSAGL2
T12, T19	all	all
T7, T9	no PUR, no PVC	
T22	TT	TT, SLSL, TSL
T1, T8	GLGLP, SFSF	no PUR, no PVC
T3, T4	SFSF	GLGLP, SFSF

Tip shape:
- RTD: standard, narrowed, pitted
- T/C: standard (isolated), grounded, open-tube, exposed

(see Appendix - Tip Shapes)

Accuracy class:
- RTD: 'A', 'B', or '2xB'
- T/C: '1' or '2'

(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

Available threads and HEX sizes:

G	M6	M8	M10 1/8"	M12 1/4"	M14	M16 3/8"	M18	M20 1/2"
SW	10	10	12(13)	14	17	19	22	24

* Please contact

Ordering code TSAG(2,L,L2) - G1G2.G3.G4.G6.G7.G8.G9.G10.G11.G12.G14.G15 - #1

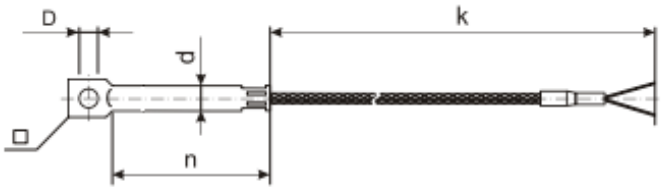
Code	Feature or option		Code values
G1	Number of sensors		1 or 2
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP -PTC 1k, RQ - PTC 2k, J - T/C type "J", K - T/C type "K", T - T/C type "T"
G3	Temperature range		T1 - -50...400 °C, T3 - 0...850 °C [4], T4 - 0...800 °C [4], T7 - 0...200 °C, T8 - 0...400 °C, T9 - -50...200 °C, T12 - 50...100 °C, T19 - 0...100 °C, T22 - -200...200 °C
G4	Diameter 'd' [mm]	RTD	4, 5, 6, 8
		T/C	5, 6, 8
G6	Probe length 'n' [mm]		10...200 (see tables overleaf)
G7	Probe length 'm' [mm] [1]		30...100 (see tables overleaf)
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane [4], 1MF...10MF - mineral fiber, 1PV...10PV - PVC
G9	Mounting connection		Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q7 - M12x1.5, Q8 - M14x1.5, Q10 - 1/2" NPT, Q18 - G1/8", Q19 - 1/8" NPT, Q20 - M10x1, Q23 - G1/4", Q24 - 1/4" NPT, Q26 - M8x1, Q29 - M8x1.25, Q30 - M10x1.5, Q31 - M6x1, Uxx - union nut (xx - same as for Qxx)
G10	Sheath material (wetted parts)		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class	RTD	X - none [2], A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' [4], 2 - '2'
G12	Number of wires [3]		2, 3, 4 [4]
G14	Tip shape	RTD	X - standard closed, N - narrowed, P - pitted
		T/C	X - standard (isolated from sheath), G - grounded, E - exposed hot junction, O - open-tube design
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled), OS - cable protection SS spring (≈ 50 mm), OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface

[1] Only for TSAG2 and TSAGL2!
[2] For non-Pt sensors
[3] Only for RTD sensors!

TERMOREZISTENTE/TERMISTOARE TSAT cu surub de fixare, pentru masurare pe suprafata

CABLE PROBE WITH SCREW FIXING FOR SURFACE MEASUREMENT — **TSAT**

Sheath - stainless steel (see table notes)
Cable - see table notes



n = 20 ... 30 mm k = 1 ... 10 m

d	4	5	6
□	6x6	7x7	8x8
D	3	3, 4	3, 4, 5

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
RTD Design				
1 x Pt (RB,RD,RF,RG)	SLSL, TSL, TT, YY, UU, YU	T9 -50...200 °C T12 -50...100 °C	4, 5	2, 3*
			6	2, 3, 4*
2 x Pt (RB,RD,RF,RG)	*GLGL*	*T7 0...200 °C* *T8 0...400 °C*	6	2x2
	TT	T22 -200...200 °C		
1 x PTC (RP, RQ)	SLSL, TSL, YY, UU, YU	T12 -50...100 °C	6	2, 3
	GLGL, TT	*T19 0...100 °C*		
Thermocouple Design				
1 x K, 1 x J, 1 x T	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	4, 5, 6	2
	GLGL, TT	*T8 0...400 °C*		

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)
- YY (PVC, max. 100 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)

Tip shape:
- RTD: standard
- T/C: standard (isolated) or grounded

(see Appendix - Tip Shapes)

Accuracy class:
- RTD: 'A', 'B', or '2xB'
- T/C: '1' or '2'

(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

* Please contact

TERMOREZISTENTE/TERMISTOARE TSB baioneta drepte ; TSBG baioneta drepte, cu cuplaj mobil

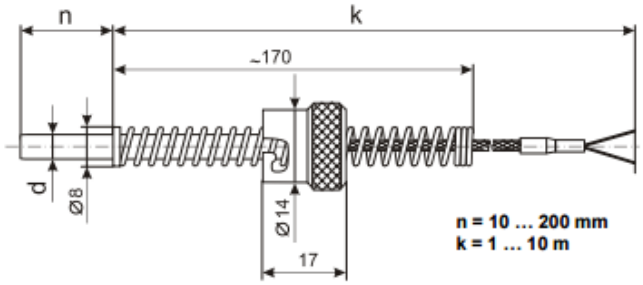
TSBL baioneta in unghi, TSBGL baioneta in unghi, cu cuplaj mobil

(MI) RTD BAYONET CABLE PROBE** **TSBx**

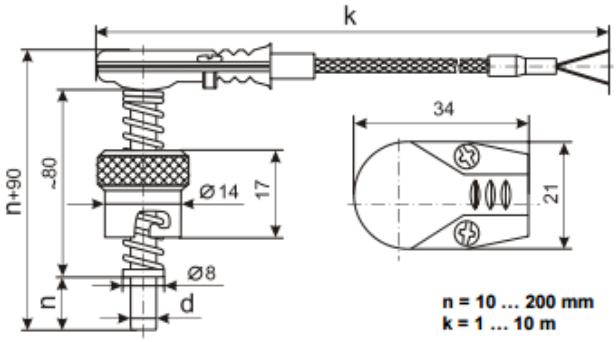
Sheath - stainless steel (see table notes)
Cable - see table notes

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	SLSL, TSL, TT YY, UU, YU	T7 0...200 °C T9 -50...200 °C	4, 4.5**, 5	2, 3*
			6	2, 3, 4*
	SLSL, TSL, TT, GLGL	T1 -50...400 °C T8 0...400 °C	8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	*GLGL, SFSF TT, TSL, SLSL*	*T11* -50...600 °C* *T22 -200...200 °C*	6, 8	2x2, 2x3*
1 x Cu (RH, RK)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	5*	2, 3*
			6	2, 3, 4*
			8	2, 3, 4
2 x Cu (RH, RK)	*GLGL, TT*	*T7 0...200 °C*	6, 8	2x2, 2x3*
1 x PTC (RP, RQ)	SLSL, TSL, YY, UU, YU	T12 -50...100 °C	6	2, 3
2 x PTC (RP, RQ)	*GLGL, TT*	*T19 0...100 °C*	8	2x2

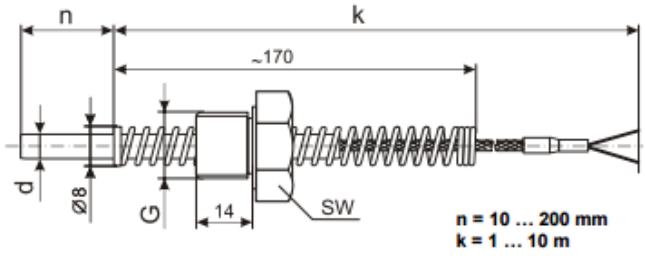
STRAIGHT-TUBE DESIGN (TSB)



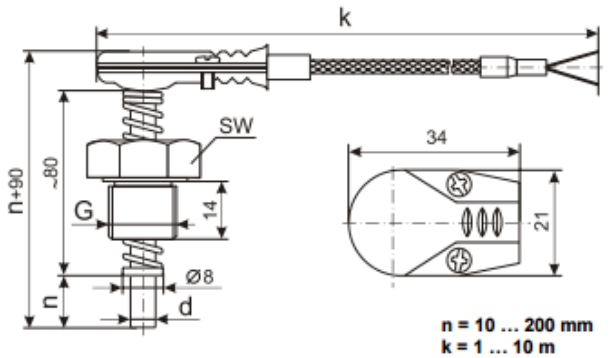
DESIGN WITH ANGLED TERMINATION (TSBL)



STRAIGHT DESIGN WITH MOVABLE CONNECTION (TSBG)



ANGLED DESIGN WITH MOVABLE CONNECTION (TSBGL)



Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- **GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)**
- **SLSL or TSL (silicone, max. 250 °C ambient temperature)**
- **TT (Teflon®, max. 250 °C ambient temperature)**
- **YY (PVC, max. 100 °C ambient temperature)**
- **UU or YU (PUR, max. 80 °C ambient temperature)**
- **SFSF (mineral fiber, max. 1000 °C ambient temperature)**

Applicable cables:

Temp. range \ Probe design	TSB, TSBG	TSBL, TSBGL
T12, T19	all	all
T7, T9	no PUR, no PVC	
T22	TT	TT, SLSL, TSL
T1, T8	GLGLP, SFSF	no PUR, no PVC
T11	SFSF	GLGLP, SFSF

Tip shape:
standard, narrowed, pitted (see Appendix - Tip Shapes)

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

Cable connector:
4-pin (C3) (see Appendix - Connectors)

Bayonet:
ø13x1... ø20x1; aluminum, brass, or stainless steel

Available threads and HEX sizes:

G	M8	M10 1/8"	M12 1/4"	M14	M16 3/8"	M18	M20 1/2"
SW	10	12(13)	14	17	19	22	24

*** Please contact .**

**** Available only for TSBL and TSBGL!**

Ordering code TSB(L,G,GL) - (MI -[1]) G1G2.G3.G4.G5'5".G6.G8.G9.G10.G11.G12.G14.G15 - #1

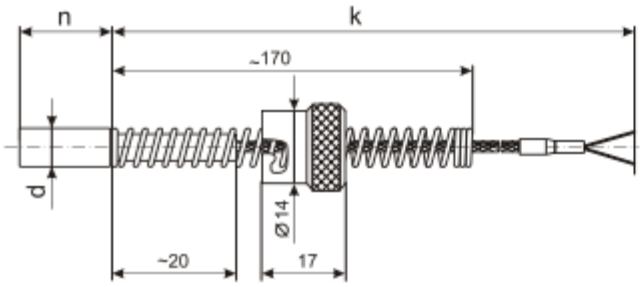
Code	Feature or option		Code values
G1	Number of RTD sensors		1 or 2
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP -PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50...400 °C, T7 - 0...200 °C, T8 - 0...400 °C, T9 - -50...200 °C, T11 - -50...600 °C [1,2,7], T12 - 50...100 °C, T19 - 0...100 °C, T22 - -200...200 °C
G4	Diameter 'd' [mm]	regular design	4, 5, 6, 8
		MI design	4.5, 6, 8 [7]
G5'	Bayonet size [3]		13 - ø13x1, 14 - ø14x1, 15 - ø15x1, 17 - ø17x1, 20 - ø20x1, Z - other (specify!)
G5"	Bayonet material [3]		AL - aluminum, BR - brass, SS - stainless steel
G6	Probe length 'n' [mm]		10...200
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane [7], 1MF...10MF - mineral fiber, 1PV...10PV - PVC
G9	Mounting connection [4]		Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q7 - M12x1.5, Q8 - M14x1.5, Q10 - 1/2" NPT, Q18 - G1/8", Q19 - 1/8" NPT, Q20 - M10x1, Q23 - G1/4", Q24 - 1/4" NPT, Q26 - M8x1, Q29 - M8x1.25, Q30 - M10x1.5, Uxx - union nut (xx - same as for Qxx)
G10	Sheath material (wetted parts)		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class		X - none [5], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [7]
G14	Tip shape		X - standard closed, N - narrowed [6], P - pitted [6]
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only)
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled) [5], OS - cable protection SS spring (≈ 50 mm) [1], OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface [6]

[1] Available only for TSBL and TSBGL!
[2] Available only for MI design!
[3] Only for TSB and TSBL!
[4] Only for TSBG and TSBGL!
[5] For non-Pt sensors
[6] Only for non-MI (regular) design!

TERMOREZISTENTE/TERMOCUPLE TSBS baioneta, cu cablu inserat

BAYONET CABLE INSERT **TSBS**

Sheath - stainless steel (see table notes)
Cable - see table notes



n = 5 ... 25 mm **k = 1 ... 10 m**

insert diameter 'd' [mm]	5	6	7	8
spring OD [mm]	5	6	7	8

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
RTD Design				
1 x Pt (RB,RD,RF,RG)	SLSL, TSL	T9 -50...200 °C T1* -50...400 °C	5	2, 3*
	GLGL, TT	*T7 0...200 °C* *T8 0...400 °C*	6, 7, 8	2, 3
Thermocouple Design				
1 x K, 1 x J	SLSL, TSL	T9 -50...200 °C T1* -50...400 °C	5*, 6, 7, 8	2
	GLGL, TT	*T7 0...200 °C* *T8 0...400 °C*		

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- **GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)**
- **SLSL or TSL (silicone, max. 250 °C ambient temperature)**
- **TT (Teflon®, max. 250 °C ambient temperature)**

Tip shape:
- **RTD: standard**
- **T/C: standard (isolated) or grounded**

(see Appendix - Tip Shapes)

Accuracy class:
- **RTD: 'A', 'B', or '2xB'**
- **T/C: '1' or '2'**

(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

Bayonet:
- **ø14x1; aluminum or Ni-plated brass (default)**
- **ø12x1, ø15x1, ø18x1, or other on request**

*** Please contact**

Ordering code TSBS - G2.G3.G4.G5.G6.G8.G10.G11.G12.G14.G15 - #1

Code	Feature or option		Code values
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, J - T/C type "J", K - T/C type "K"
G3	Temperature range		T7 - 0...200 °C, T9 - -50...200 °C, T8 - 0...400 °C, T1 - -50...400 °C
G4	Diameter 'd' [mm]		5, 6, 7, 8
G5	Bayonet		12 - ø12x1, 14 - ø14x1, 15 - ø15x1, 18 - ø18x1, Z - other (specify!) (3)
G6	Probe length 'n' [mm]		5...25
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®
G10	Sheath material (wetted parts)	RTD	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
		T/C	M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class	RTD	A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' (3), 2 - '2'
G12	Number of wires (1)		2, 3 (3)
G14	Tip shape (hot junction) (2)		X - standard (isolated from sheath), G - grounded
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled), OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface

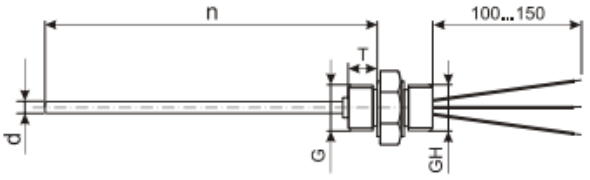
(1) Only for RTD sensors!
(2) Only for thermocouples!

TERMOREZISTENTE/TERMISTOARE cu niplu filetat : TSEC cu niplu fix, TSEC1 cu niplu sudat, TSEC2 cu niplu mobil, TSEC3 cu niplu ajustabil, TSEC4 cu niplu si presetupa, TSEC5 cu niplu union

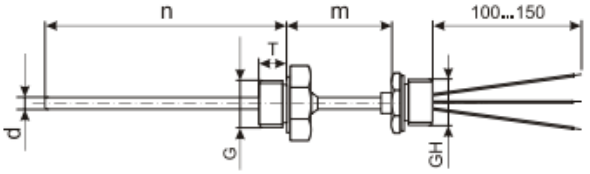
(MI) RTD PROBE FOR HEAD ASSEMBLY **TSECx**

Sheath - stainless steel (see Appendix - Sheath materials)
Extension wires - Teflon® or glass fiber

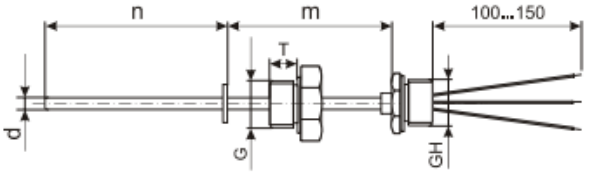
DESIGN WITHOUT EXTENSION (TSEC)



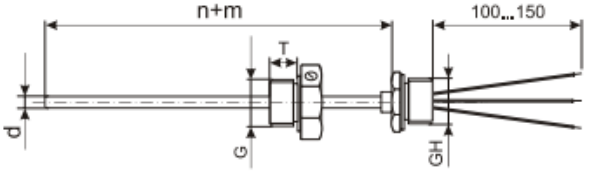
EXTENDED DESIGN WITH WELDED CONNECTION (TSEC1)



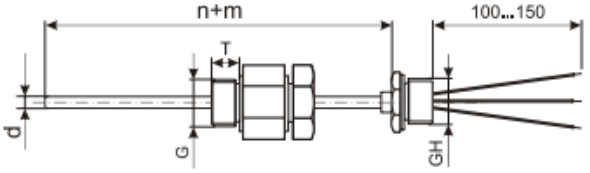
EXTENDED DESIGN WITH MOVABLE CONNECTION (TSEC2)



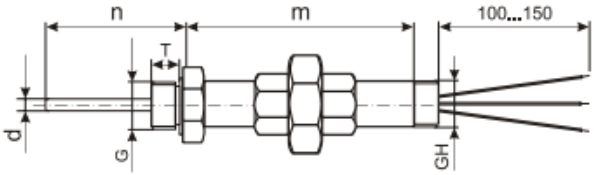
DESIGN WITH ADJUSTABLE CONNECTION (TSEC3)



DESIGN WITH GLAND-TYPE CONNECTION (TSEC4)



DESIGN WITH NIPPLE-UNION-NIPPLE CONNECTION (TSEC5)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS n [mm]	DIMENSIONS d [mm]	DIMENSIONS wires
Regular Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	50...500	4	2, 3*
	T1 -50...400 °C		5	
	T24 -50...500 °C	50...1500	6	2, 3, 4*
	T11* -50...600 °C	50...3000	8, 10, 12, 14, 16, 20	2, 3, 4
2(3) x Pt (RB,RD,RF,RG)	T2* -200...600 °C	50...3000	6*, 8, 10	2x2(3)*
	T4* 0...800 °C		12, 14, 16, 20	2x2(3), 3x2
	T22 -200...200 °C			
1 x Cu (RH, RK)	T9 -50...200 °C	50...1500	6	2, 3, 4*
		50...3000	8, 10, 12, 14, 16, 20	
2 x Cu (RH, RK)	T9 -50...200 °C	50...3000	8, 10	2x2
			12, 14, 16, 20	2x2(3)*
1 x PTC (RP, RQ)	T12 -50...100 °C	50...1500	6	2, 3
		50...3000	8, 10, 12, 14	
2 x PTC (RP, RQ)		50...3000	8, 10, 12, 14	2x2
MI Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	50...50000	3*	2, 3*
	T1 -50...400 °C		4.5	2, 3*
	T24 -50...500 °C		6	2, 3, 4*
	T11* -50...600 °C		8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C	50...50000	6, 8	2x2, 2x3*
	T4* 0...800 °C			
	T22 -200...200 °C			

Process connection 'G' (nipple or union nut):
- M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2), M27x2(Q5), M33x2(Q25)
- 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11), 1"(Q12/Q15)
- welded or adjustable flange
- other
- w/o mounting appliances

Thread length:
- cylindrical thread: T = 15 mm
- NPT thread: according to ANSI B1.20.1

Head connection 'GH':
- M10x1(Q20), M12x1.5(Q7), M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2)
- 1/4"(Q23/Q24), 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11)
- welding

Extension length:
m = 0...1500 mm (w/o spring-loaded adapter)
m = m1...1500 mm (w/ spring-loaded adapter)

Extension diameter: (for TSEC1 and TSEC2 only, [mm])

Probe diameter 'd' / Ext. length 'm'	3, 4 mm	4.5...6 mm	8 mm	10 mm	10+ mm
up to 50 mm	8	d	d	d	d
50...150 mm	8	8	d	d	d
150...500 mm	10	10	10	d	d
500+ mm	14	14	14	14	d

Tip shape:
standard, narrowed, pitted (see Appendix - Tip Shapes)

Process pressure:

Probe design	TSEC, TSEC1	TSEC2	TSEC4	TSEC3, TSEC5
Max. pressure *	25 bar	16 bar	6 bar	0 bar

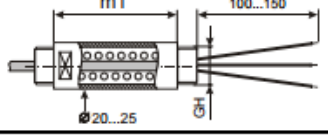
Sheath material:
1.4301(M1), 1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362(M15)

Wire material:
Cu, Ni, or Ag

Extension wire isolation:
Teflon® (T) or glass fiber (GL)

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

Spring-loaded adapter: (mounted between probe and protection head)



m1 = 60...100 mm
d ≤ 8 mm

* Please contact

Ordering code TSEC(1,2,3,4,5) - (MI -) G1G2.G3.G4.G6.G7.G9'9".GH.G10.G11.G12.G13.G14 - #1

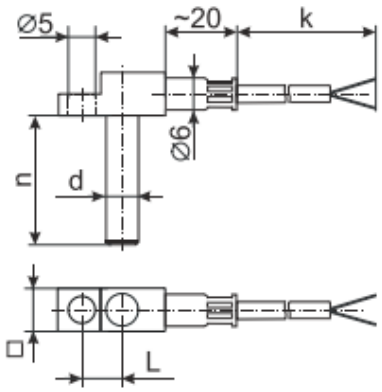
Code	Feature or option		Code values
G1	Number of RTD sensors		1, 2, or 3 [10]
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP - PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50...400 °C, T2 - -200...600 °C, T4 - 0...800 °C, T9 - -50...200 °C, T11 - -50...600 °C, T22 - -200...200 °C, T24 - -50...500 °C
G4	Diameter 'd' [mm]	regular design	4, 5, 6, 8, 10, 12, 14, 16, 20
		MI design	3 [10], 4.5, 6, 8
G6	Probe length 'n' [mm] [1]		50...50000 (see table overleaf)
G7	Probe length 'm' [mm] [2]		0...1500 (m1...1500 with 'OA' option)
G9'	Mounting connection		X - no mounting appliances [3], Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q5 - M27x2, Q6 - G3/4", Q9 - 3/8" NPT, Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q12 - G1", Q15 - 1" NPT, Q25 - M33x2, Uxx - union nut (xx - same as for Qxx), F - flange (specify!), Z - other connection (specify!)
G9"	Compression fitting ferrule [4]		BR - brass, GR - graphite, SS - stainless steel, TF - Teflon®
GH	Head connection		W - welding, Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q6 - G3/4", Q7 - M12x1.5, Q9 - 3/8" NPT, Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q20 - M10x1, Q23 - G1/4", Q24 - 1/4" NPT, Z - other connection (specify!)
G10	Sheath material (wetted parts)	regular design	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404), M15 - 1.4362 [10]
		MI design	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404)
G11	Accuracy class		X - none [5], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [10]
G13	Wire material [6]		CU - copper [7], NI - nickel, AG - silver [8]
G14	Tip shape		X - standard closed, N - narrowed [8], P - pitted [8]
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled) [8], OA - spring-loaded adapter [9], OP - electrochemically polished sheath surface [8]

[1] 'n+m' for TSEC3 and TSEC4!
[2] Only for TSEC1, TSEC2, and TSEC5!
[3] Only for TSEC!
[4] Only for TSEC4!
[5] For non-Pt sensors
[6] Only for Pt sensors!
[7] Not applicable to non-MI (regular) RTDs for above 500 °C!
[8] Only for non-MI (regular) design!
[9] Only for TSEC, TSEC1, and TSEC5!

TERMOREZISTENTE/TERMOCUPLE TSG in UNGHI DREPT, cu surub de fixare

ANGLED PROBE WITH SCREW FIXING **TSG**

Sheath - stainless steel (see table notes)
Cable - see table notes



n = 10 ... 30 mm

k = 1 ... 10 m

□	8x8	10x10
Lmin	7	9
d	4, 5	4, 5, 6

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE		DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	GLGL	T8	0...400 °C	4*, 5	2, 3*
		T7	0...200 °C	6	2, 3
1 x K, 1 x J, 1 x T	*SLSL, TSL*	*T9*	*-50...200 °C*	5, 6	2
	TT	T7	0...200 °C		
	YY, UU, YU	*T10*	*-10...60 °C*		
		T12	*-50...100 °C*		

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- **GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)**
- **SLSL or TSL (silicone, max. 250 °C ambient temperature)**
- **TT (Teflon®, max. 250 °C ambient temperature)**
- **YY (PVC, max. 100 °C ambient temperature)**
- **UU or YU (PUR, max. 80 °C ambient temperature)**

Tip shape:
- **RTD: standard**
- **T/C: standard (isolated) or grounded**

(see Appendix - Tip Shapes)

Accuracy class:
- **RTD: 'A', 'B', or '2xB'**
- **T/C: '1' or '2'**

(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

*** Please contact**

Ordering code TSG - G2.G3.G4.G5.G6.G7.G8.G10.G11.G12.G14.G15 - #1

Code	Feature or option		Code values
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, J - T/C type "J", K - T/C type "K", T - T/C type "T"
G3	Temperature range		T7 - 0...200 °C, T8 - 0...400 °C, T9 - -50...200 °C, T10 - -10...60 °C, T12 - -50...100 °C
G4	Diameter 'd' [mm]		4, 5, 6
G5	Dimension '□'		8 - 8x8 mm, 10 - 10x10 mm
G6	Probe length 'n' [mm]		10...30
G7	Dimension 'L' [mm]		7...20
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane (3), 1PV...10PV - PVC
G10	Sheath material		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class	RTD	A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' (3), 2 - '2'
G12	Number of wires (1)		2, 3
G14	Tip shape (hot junction) (2)		X - standard (isolated from sheath), G - grounded
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled), OS - cable protection SS spring (≈ 50 mm), OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface

(1) Only for RTD sensors!
(2) Only for thermocouples!

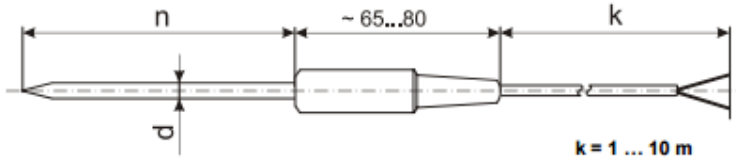
TERMOREZISTENTE cu varf ascutit, pentru penetrare, cu maner :

TSI 1 maner plastic ; TSI 2 maner silicon ; TSI 3 maner metal

PENETRATION RTD PROBE WITH HANDLE TSIx

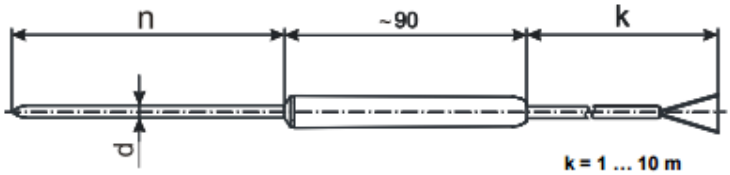
Sheath - stainless steel (see table notes)
Cable and handle - see table notes

DESIGN WITH SILICONE HANDLE (TSI1)



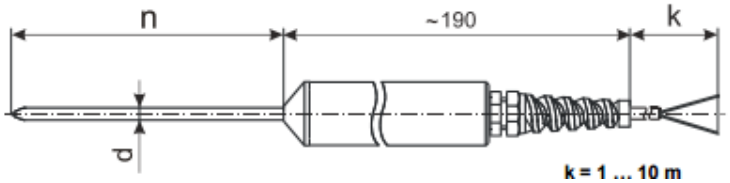
k = 1 ... 10 m

DESIGN WITH PLASTIC HANDLE (TSI2)



k = 1 ... 10 m

DESIGN WITH ROBUST METAL HANDLE (TSI3)



k = 1 ... 10 m

SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	4, 5	2, 3*
		6	2, 3, 4*
		8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	5, 6	2x2
		8	2, 3*

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

Handle type:
- silicone (TSI1)
- glass-filed plastic (TSI2)
- stainless steel 1.4301 (TSI3)

Filling:
thermal conductive paste

Cable connector:
4-pin (C3) (see Appendix - Connectors)

Dimension limits:

Model	TSI1, TSI2	TSI3
d = 4	n = 50...200	n = 50...200
d = 5	n = 50...300	n = 50...300
d = 6	n = 50...500	n = 50...500
d = 8	-	n = 50...800

Ordering code TSI(1,2,3) - G1G2.G4.G6.G8.G10.G11.G12.G15 - #1

Code	Feature or option	Code values
G1	Number of RTD sensors	1 or 2
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000
G4	Diameter 'd' [mm]	4, 5, 6, 8
G6	Probe length 'n' [mm]	50...500
G8	Cable length 'k' [m] and type	1SL...10SL - silicone, 1TF...10TF - Teflon® (1)
G10	Sheath material (wetted parts)	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class (1)	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3 (1), 4 (1)
G15	Connector	X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only)
#1	Options	X - none, OP - electrochemically polished sheath surface

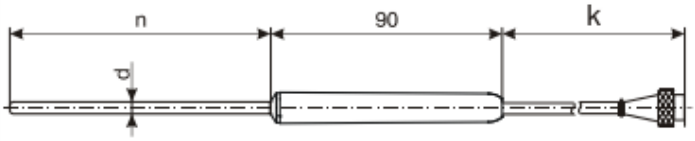
TERMOREZISTENTE/TERMOCUPLE cu manevrare manuala, cu conector :

TSH maner plastic ; TSHN maner metal

(MI) HAND-HELD PROBE WITH CONNECTOR **TSHx**

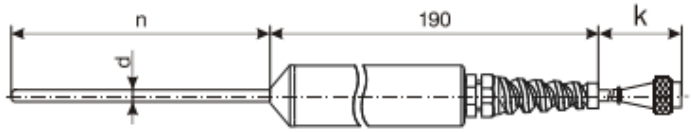
Sheath - see table
Cable - see table notes
Connector - see table notes

DESIGN WITH PLASTIC HANDLE (TSH)



n = 200 ... 2 000 mm d ≤ 6 mm k = 1 ... 10 m

DESIGN WITH ROBUST METAL HANDLE (TSHN)



n = 200 ... 2 000 mm k = 1 ... 10 m

SENSITIVE ELEMENT	SHEATH MATERIAL	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
RTD Design				
1 x Pt (RB,RD,RF,RG)	M1, M2, M3, M9	T7 0...200 °C T8 0...400 °C	4, 5	2, 3*
		T1* -50...400 °C	6	2, 3, 4*
1 x Cu (RH, RK)		T7 0...200 °C	5*, 6	2, 3, 4*
Regular Thermocouple Design				
1 x K, 1 x J, 1 x T	M2, M3, M9	T7 0...200 °C T8 0...400 °C	5, 6	2
MI Thermocouple Design				
1 x J, 1 x T **	M2, M3, M8	T4 0...800 °C	1, 1.5, 2, 3, 4.5, 6, 8, 10	2
	M9, M5		1, 1.5, 2, 3, 4.5, 6, 8	2
	M4		6, 8	2
	M10		3, 4.5, 6	2
1 x K, 1 x N, 1 x E **	M2, M3	T3 0...850 °C	1, 1.5, 2, 3, 4.5, 6, 8, 10	2
	M9		1, 1.5, 2, 3, 4.5, 6, 8	2
	M7*	T16 0...1100 °C	3, 6, 10	2
	M8		1, 1.5, 2, 3, 4.5, 6, 8, 10	2
	M4	T6 0...1150 °C	6, 8	2
	M5		1.5, 3, 4.5, 6, 8	2
	M10	T6 0...1250 °C	3, 4.5, 6	2
1 x S(R)	M8	T16 0...1100 °C	3, 4.5, 6	2

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4762 (M4), 1.4841 (M5), 1.4876 (M7), 2.4816 (M8), 1.4404 (M9), Nicrobell® (M10)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)

Tip shape:
- RTD: standard, narrowed, pitted
- T/C: standard (isolated), grounded, open-tube, exposed

(see Appendix - Tip Shapes)

Accuracy class:
- RTD: 'A', 'B', or '2xB'
- T/C: '1' or '2'

(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

* Please contact

** For T/C type "T": (T8) 0...400 °C; for T/C type "E": (T13) 0...1000 °C

Ordering code TSH(N) - (MI-) G2.G3.G4.G6.G8.G10.G11.G12.G14.G15 - #1

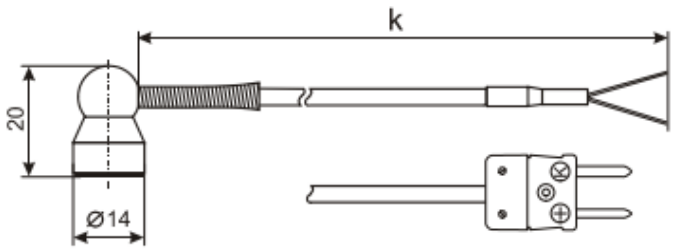
Code	Feature or option		Code values
G2	Sensor	regular design	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, J - T/C type "J", K - T/C type "K", T - T/C type "T"
		MI design	E - T/C type "E", J - T/C type "J", K - T/C type "K", N - T/C type "N", R - T/C type "R", S - T/C type "S", T - T/C type "T"
G3	Temperature range		T1 - -50...400 °C, T3 - 0...850 °C, T4 - 0...800 °C, T6 - 0...1150(1250) °C, T7 - 0...200 °C, T8 - 0...400 °C, T16 - 0...1100 °C
G4	Diameter 'd' [mm]	RTD	4, 5, 6, 8
		regular T/C design	5, 6
		MI T/C design	1, 1.5, 2, 3, 4.5, 6, 8, 10
G6	Probe length 'n' [mm]		200...2000
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®
G10	Sheath material (wetted parts)	RTD	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
		regular T/C design	M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
		MI T/C design	M2 - 1.4541, M3 - 1.4571, M4 - 1.4762 (1.4749), M5 - 1.4841, M7 - 1.4876 (Incolloy 800), M8 - 2.4816 (Inconel 600), M9 - 1.4404, M10 - Nicrobell®
G11	Accuracy class	RTD	X - none [1], A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' [5], 2 - '2'
G12	Number of wires [2]		2, 3, 4 [5]
G14	Tip shape	RTD	X - standard closed, N - narrowed, P - pitted
		T/C	X - standard (isolated from sheath) [3], G - grounded, E - exposed hot junction [3], O - open-tube design [3]
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled) [4], OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface [4]

[1] For non-Pt sensors
[2] Only for RTD sensors!
[3] Not available when d = 1!
[4] Only for non-MI (regular) design!

TERMOREZISTENTE/TERMOCUPLE TSM cu fixare magnetic, pentru masurare pe suprafata

MAGNETIC PROBE FOR SURFACE MEASUREMENT **TSM**

Design - pawn-type plastic body w/ permanent magnet ring
Cable - see table notes



k = 1 ... 10 m

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	WIRES
1 x Pt (RB,RD,RF,RG)	SLFSL, TFT	T7** 0...200 °C T9** -50...200 °C	2, 3*
1 x K, 1 x J	YFY	T10 -10...60 °C T12 -50...100 °C	2
1 x T		T19 0...100 °C	2

Sheath material:
PPS plastic, magnet ring w/ ferrous metal jacket

Cable type:
- SLFSL or TFSL (silicone w/ copper shield, max. 250 °C ambient temperature)
- TFT (Teflon® w/ copper shield, max. 250 °C ambient temperature)
- YFY (PVC w/ copper shield, max. 105 °C ambient temperature)

Tip shape:
- RTD: standard
- T/C: grounded
(see Appendix - Tip Shapes)

Accuracy class:
- RTD: 'A', 'B', or '2xB'
- T/C: '1' or '2'
(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

*** Please contact**

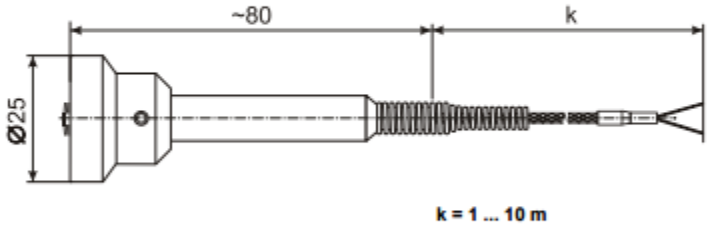
**** Up to 250 °C (short-term)**

Ordering code TSM - G2.G3.G8.G11.G12.G15 - #1

Code	Feature or option		Code values
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, J - T/C type "J", K - T/C type "K", T - T/C type "T"
G3	Temperature range		T7 - 0...200(250) °C, T9 - -50...200(250) °C, T10 - -10...60 °C, T12 - -50...100 °C, T19 - 0...100 °C
G8	Cable length 'k' [m] and type		1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PV...10PV - PVC
G11	Accuracy class	RTD	A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' (2), 2 - '2'
G12	Number of wires (1)		2, 3 (2)
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OB - braid termination lead (only w/o connector)

(1) Only for RTD sensors!

TERMOREZISTENTE/TERMOCUPLE TSMS cu fixare magnetica, pentru masurare pe suprafata

MAGNETIC THERMOCOUPLE PROBE FOR SURFACE MEASUREMENT — TSMS Design - SS body w/ chromium plated magnet holder and T/C spring Extension cable - see table notes	SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	WIRE [mm]
 k = 1 ... 10 m	1 x K, 1 x J, 1 x N	GLGLP, GLGLV	T8* 0...350 °C	0.5
Sheath material: magnet holder: Cr-plated black steel sensor body: stainless steel w/ ceramic isolator **Cable type:** GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature) **Tip shape:** exposed hot junction, flat-surfaced (see Appendix - Tip Shapes) **Accuracy class:** '1' or '2' (see Appendix - T/C Tolerance) **Thermocouple connector:** 'standard' (C5) or 'miniature' (C6) (see Appendix - Connectors)				
* up to 400 °C for short-term use				

Ordering code TSMS - G2.G8.G11.G15 - #1

Code	Feature or option	Code values
G2	Thermocouple	J - type "J", K - type "K", N - type "N"
G8	Cable length 'k' [m] and type	1GL...10GL - glass fiber
G11	Accuracy class	1 - '1' (1), 2 - '2'
G15	Connector	X - none, C5 - T/C connector, C6 - miniature T/C connector
#1	Options	X - none, OS - cable protection SS spring (≈ 50 mm), OB - braid termination lead (only w/o connector)

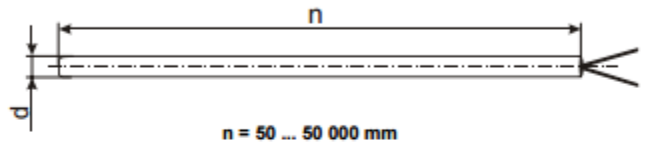
TERMOREZISTENTE izolate mineral : TSN sensor-cablu ; TSNA sensor cu cablu de extensie

TSNH senzor cu cablu, cu conector ; TSNHA sensor cu conector si cablu de extensie

MINERAL-INSULATED RTD PROBE — **TSNx**

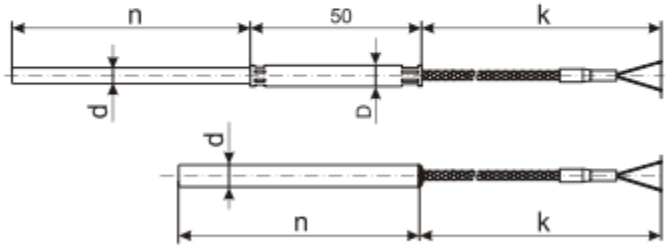
Sheath - see table
Extension cable - see table notes

MI CABLE PROBE ONLY (TSN)



n = 50 ... 50 000 mm

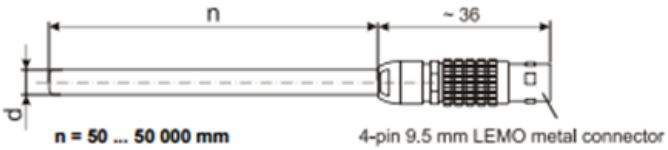
DESIGN WITH EXTENSION CABLE (TSNA)



n = 50 ... 50 000 mm
k = 1 ... 10 m

d	3	4.5	6	8
D	6	6	8	d

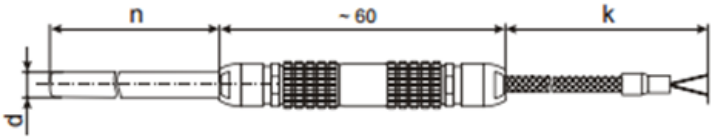
DESIGN WITH CONNECTOR (TSNH)



n = 50 ... 50 000 mm
d ≤ 6 mm

4-pin 9.5 mm LEMO metal connector

DESIGN WITH CONNECTOR AND EXTENSION CABLE (TSNHA)



n = 50 ... 50 000 mm d ≤ 6 mm k = 1 ... 10 m

SENSITIVE ELEMENT	SHEATH MATERIAL	TEMPERATURE RANGE **	DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	M1, M2, M3, M5, M8, M9	T7 0...200 °C T8 0...400 °C T9 -50...200 °C T22 -200...200 °C	3*, 4.5, 6, 8	2, 3, 4*
2 x Pt (RB,RD,RF,RG)	M1, M2, M3, M5, M8, M9	T1 -50...400 °C T11* -50...600 °C T4* 0...800 °C	4.5*, 6, 8	2x2 2x3*

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4841 (M5), 2.4816 (M8), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature ***)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature ***)
- YY (PVC, max. 100 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)

Tip shape:
standard or narrowed *
(see Appendix - Tip Shapes)

Accuracy class:
'A', 'B', or '2xB'
(see Appendix - RTD Tolerance)

Cable connector:
4-pin (C3)
(see Appendix - Connectors)

Temperature limitation:
The temperature around TSNA holding tube and TSNH(A) connector must not exceed -50...200 °C!

* Please contact
** Max. 550 °C (for chip RTD) or 800 °C (for wire-wound RTD)
*** Sub-zero temperatures are not recommended

Ordering code TSN(A,H,HA) - G1G2.G3.G4.G6.G8.G10.G11.G12.G14.G15 - #1

Code	Feature or option	Code values
G1	Number of RTD sensors	1 or 2
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000
G3	Temperature range	T7 - 0...200 °C, T9 - -50...200 °C, T22 - 200...200 °C, T8 - 0...400 °C, T1 - -50...400 °C, T11 - 50...600 °C [4], T4 - 0...800 °C [4]
G4	Diameter 'd' [mm] [1]	3 [4], 4.5, 6, 8
G6	Probe length 'n' [mm]	50...50000
G8	Cable length 'k' [m] and type	X - no cable, 1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane [4], 1PV...10PV - PVC
G10	Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M5 - 1.4841, M8 - 2.4816 (Inconel 600), M9 - 1.4404
G11	Accuracy class	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3, 4 [4]
G14	Tip shape	X - standard (isolated from sheath), N - narrowed [2,4]
G15	Connector [3]	X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only)
#1	Options	X - none, OS - cable protection SS spring (≈ 50 mm) [3], OB - braid termination lead (only w/o connector) [3]

[1] Up to 6 mm for TSNH and TSNHA
[2] Only for TSN!
[3] Only for TSNA and TSNHA!

TERMOREZISTENTE izolate mineral, cu filet :

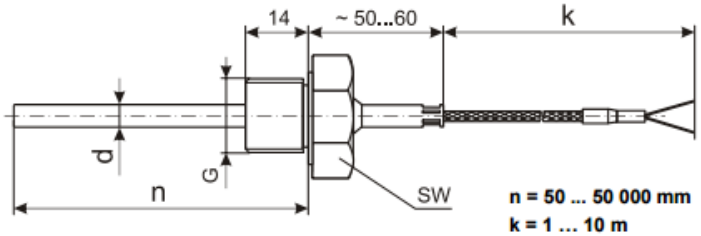
TSNG drept ; TSNG1 cu extensie ; TSNGL in unghi drept

SCREW-IN MI RTD PROBE **TSNGx**

Sheath - see table
Extension cable - see table notes

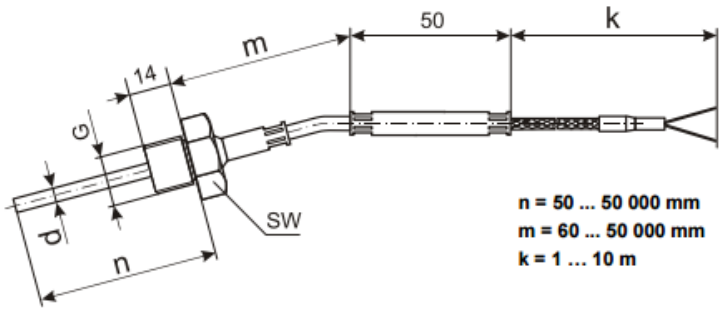
SENSITIVE ELEMENT	SHEATH MATERIAL	TEMPERATURE RANGE **	DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	M1, M2, M3, M5, M8, M9	T7 0...200 °C T8 0...400 °C T9 -50...200 °C T22 -200...200 °C T1 -50...400 °C	3*, 4.5, 6, 8	2, 3, 4*
2 x Pt (RB,RD,RF,RG)	M1, M2, M3, M5, M8, M9	T11* -50...600 °C T4* 0...800 °C	4.5*, 6, 8	2x2 2x3*

STRAIGHT DESIGN (TSNG)



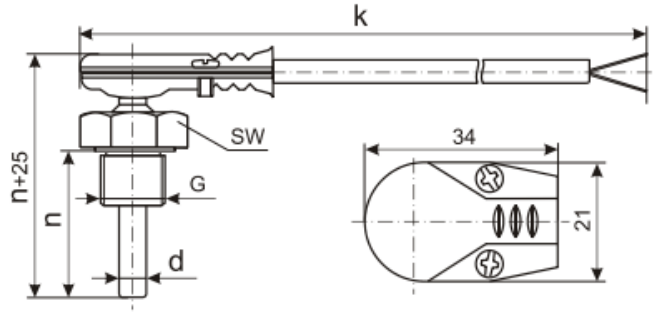
n = 50 ... 50 000 mm
k = 1 ... 10 m

EXTENDED DESIGN (TSNG1)



n = 50 ... 50 000 mm
m = 60 ... 50 000 mm
k = 1 ... 10 m

ANGLED DESIGN (TSNGL)



n = 50 ... 50 000 mm
k = 1 ... 10 m

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4841 (M5), 2.4816 (M8), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature ***)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature ***)
- YY (PVC, max. 100 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)

Tip shape:
standard
(see Appendix - Tip Shapes)

Accuracy class:
'A', 'B', or '2xB'
(see Appendix - RTD Tolerance)

Cable connector:
4-pin (C3)
(see Appendix - Connectors)

Temperature limitation:
The temperature beyond the HEX body (SW) must not exceed -50...200 °C!

Available threads and HEX sizes:

G	M6	M8	M10 1/8"	M12 1/4"	M14	M16 3/8"	M18	M20 1/2"
SW	10	10	12(13)	14	17	19	22	24

* Please contact
** Max. 550 °C (for chip RTD) or 800 °C (for wire-wound RTD)
*** Sub-zero temperatures are not recommended

Ordering code TSNG(G1,L) - G1G2.G3.G4.G6.G7.G8.G9.G10.G11.G12.G15 - #1

Code	Feature or option	Code values
G1	Number of RTD sensors	1 or 2
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000
G3	Temperature range	T7 - 0...200 °C, T9 - -50...200 °C, T22 - 200...200 °C, T8 - 0...400 °C, T1 - -50...400 °C, T11 - 50...600 °C [3], T4 - 0...800 °C [3]
G4	Diameter 'd' [mm]	3 [3], 4.5, 6, 8
G6	Probe length 'n' [mm]	50...50000
G7	Probe length 'm' [mm] [1]	60...50000
G8	Cable length 'k' [m] and type	1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane [3], 1PV...10PV - PVC
G9	Mounting connection	Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q7 - M12x1.5, Q8 - M14x1.5, Q10 - 1/2" NPT, Q18 - G1/8", Q19 - 1/8" NPT, Q20 - M10x1, Q23 - G1/4", Q24 - 1/4" NPT, Q26 - M8x1, Q29 - M8x1.25, Q30 - M10x1.5, Q31 - M6x1, Uxx - union nut (xx - same as for Qxx)
G10	Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M5 - 1.4841, M8 - 2.4816 (Inconel 600), M9 - 1.4404
G11	Accuracy class	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3, 4 [3]
G15	Connector	X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only)
#1	Options	X - none, OS - cable protection SS spring (≈ 50 mm) [2], OB - braid termination lead (only w/o connector)

[1] Only for TSNG1!
[2] Only for TSNG!

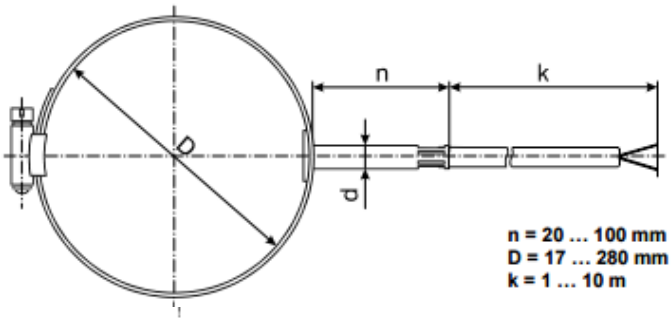
TERMOREZISTENTE/TERMOCUPLE cu fixare cu clema pentru masurare pe conducta :

TST drept ; TSNGL in unghi drept

(MI) CLAMP CABLE PROBE FOR PIPE-SURFACE MEASUREMENT** — **TSTx**

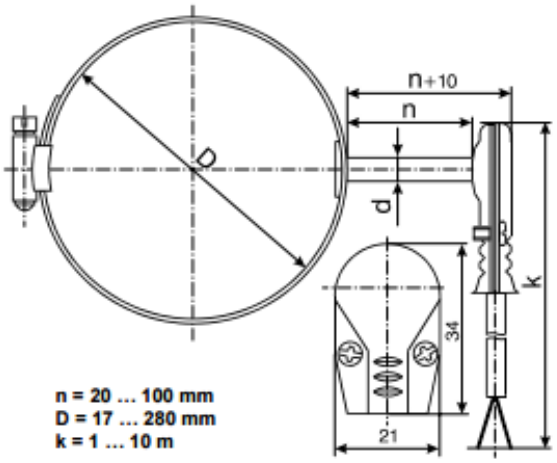
Sheath - stainless steel (see table notes)
Clamp - see table notes
Cable - see table notes

STRAIGHT-TUBE DESIGN (TST)



n = 20 ... 100 mm
D = 17 ... 280 mm
k = 1 ... 10 m

DESIGN WITH ANGLED TERMINATION (TSTL)



n = 20 ... 100 mm
D = 17 ... 280 mm
k = 1 ... 10 m

Diameter 'D'	Average pipe OD
17...29 mm	22
25...45 mm	35
40...60 mm	50
63...83 mm	73
78...98 mm	88
93...113 mm	103
108...128 mm	118
123...143 mm	133
138...158 mm	148
153...173 mm	163
168...188 mm	178
183...203 mm	193
198...218 mm	208
213...233 mm	223
228...248 mm	238
243...263 mm	253
258...280 mm	269

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
RTD Design				
1 x Pt (RB,RD,RF,RG)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	4.5**, 5	2, 3*
		T1* -50...400 °C	6	2, 3, 4*
2 x Pt (RB,RD,RF,RG)	GLGL, TT	T7 0...200 °C	6	2x2
		T8 0...400 °C		
1 x Cu (RH, RK)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	5*	2, 3*
			6	2, 3, 4*
2 x Cu (RH, RK)	GLGL, TT	T7 0...200 °C	6	2x2
1 x PTC (RP, RQ)	SLSL, TSL, YY, UU, YU	T12 -50...100 °C	6	2, 3
	GLGL, TT	T19 0...100 °C		
Regular Thermocouple Design				
1 x J, 1 x K, 1 x T	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	5, 6	2
		T1* -50...400 °C		
	GLGL, TT	T8 0...400 °C		
MI Thermocouple Design **				
1 x N, 1 x E, 1 x T	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	4.5, 6	2
		T1* -50...400 °C		
	GLGL, TT	T8 0...400 °C		

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)
- YY (PVC, max. 100 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)

Tip shape:
- RTD: standard
- T/C: standard (isolated) or grounded
(see Appendix - Tip Shapes)

Accuracy class:
- RTD: 'A', 'B', or '2xB'
- T/C: '1' or '2'
(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

Available clamp sizes:

Diameter 'D'	Clamp width
17...113 mm	8 mm or 14 mm
108...280 mm	14 mm

- other on request

* Please contact

** Available only for TSTL!

Ordering code TST(L) - (MI -[1]) G1G2.G3.G4.G5.G6.G8.G10.G11.G12.G14.G15 - #1

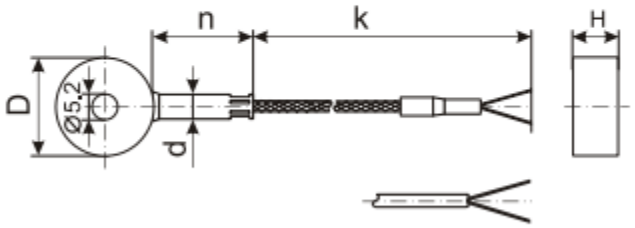
Code	Feature or option		Code values
G1	Number of sensors [3]		1 or 2
G2	Sensor	regular design	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP -PTC 1k, RQ - PTC 2k, J - T/C type "J", K - T/C type "K", T - T/C type "T"
		MI design	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP -PTC 1k, RQ - PTC 2k, E - T/C type "E", N - T/C type "N", T - T/C type "T"
G3	Temperature range		T1 - -50...400 °C, T7 - 0...200 °C, T8 - 0...400 °C, T9 - -50...200 °C, T12 - 50...100 °C, T19 - 0...100 °C
G4	Diameter 'd' [mm]	regular design	5, 6
		MI design	4.5, 6
G5	Clamp diameter 'D' (average pipe OD)		22 - 17...29 mm, 35 - 25...45 mm, 50 - 40...60 mm, 73 - 63...83 mm, 88 - 78...98 mm, 103 - 93...113 mm, 118 - 108...128 mm, 133 - 123...143 mm, 148 - 138...158 mm, 163 - 153...173 mm, 178 - 168...188 mm, 193 - 183...203 mm, 208 - 198...218 mm, 223 - 213...233 mm, 238 - 228...248 mm, 253 - 243...263 mm, 269 - 258...280 mm, Z - other on request (specify average pipe OD) [6]
G6	Probe length 'n' [mm]		20...100
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane [6], 1PV...10PV - PVC
G10	Sheath material (wetted parts)		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class	RTD	X - none [2], A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' [5], 2 - '2'
G12	Number of wires [3]		2, 3, 4 [6]
G14	Tip shape (hot junction) [4]		X - standard (isolated from sheath), G - grounded
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled) [5], OS - cable protection SS spring (≈ 50 mm), OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface [5]

[1] Available only for TSTL!
[2] For non-Pt sensors
[3] Only for RTD sensors!
[4] Only for thermocouples!
[5] Only for non-MI (regular) design!

TERMOREZISTENTE/TERMOCUPLE toroidale [gaura 5,2 mm], cu fixare cu surub : TSTO

TOROIDAL CABLE PROBE — **TSTO**

Sheath - stainless steel (see table notes)
Cable - see table notes



n = 20 ... 30 mm
D = 8 ... 24 mm
k = 1 ... 10 m

d [mm]	4	5	6
H [mm]	6	7	8

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
RTD Design				
1 x Pt (RB,RD,RF,RG)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	4, 5	2, 3*
		T12 -50...100 °C	6	2, 3, 4*
2 x Pt (RB,RD,RF,RG)	GLGL, TT	T7 0...200 °C	6	2x2
		T8 0...400 °C		
1 x PTC (RP, RQ)	SLSL, TSL, YY, UU, YU	T12 -50...100 °C	6	2, 3
	GLGL, TT	T19 0...100 °C		
Thermocouple Design				
1 x K, 1 x J, 1 x T	SLSL, TSL, YY, UU, YU	T9 -50...200 °C	5, 6	2
	GLGL, TT	T8 0...400 °C		

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)
- YY (PVC, max. 100 °C ambient temperature)

Tip shape:
- RTD: standard
- T/C: standard (isolated) or grounded

(see Appendix - Tip Shapes)

Accuracy class:
- RTD: 'A', 'B', or '2xB'
- T/C: '1' or '2'

(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

* Please contact

Ordering code TSTO - G1G2.G3.G4.G5.G6.G8.G10.G11.G12.G14.G15 - #1

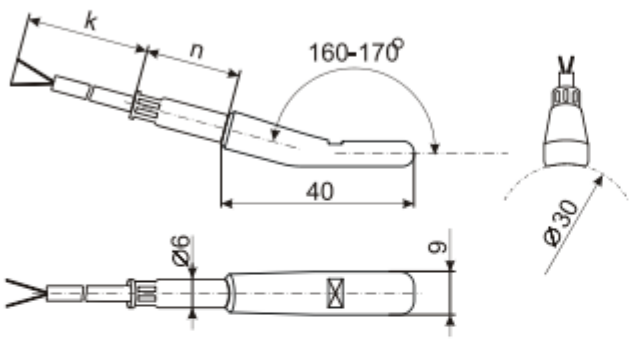
Code	Feature or option		Code values
G1	Number of sensors		1 or 2
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RP -PTC 1k, RQ - PTC 2k, J - T/C type "J", K - T/C type "K", T - T/C type "T"
G3	Temperature range		T7 - 0...200 °C, T8 - 0...400 °C, T9 - -50...200 °C, T12 - 50...100 °C, T19 - 0...100 °C
G4	Diameter 'd' [mm]		4, 5, 6
G5	Toroid diameter 'D' [mm]		8...24
G6	Probe length 'n' [mm]		20...30
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane [4], 1PV...10PV - PVC
G10	Sheath material (wetted parts)		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class	RTD	X - none [1], A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' [4], 2 - '2'
G12	Number of wires [2]		2, 3, 4 [4]
G14	Tip shape (hot junction) [3]		X - standard (isolated from sheath), G - grounded
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled), OS - cable protection SS spring (≈ 50 mm), OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface

[1] For non-Pt sensors
[2] Only for RTD sensors!
[3] Only for thermocouples!

TERMOREZISTENTE/TERMOCUPLE/TERMISTOARE TSY tip deget pentru masurare pe suprafata conducte

FINGER CABLE PROBE FOR PIPE-SURFACE MEASUREMENT — **TSY**

Sheath - stainless steel (see table notes)
Cable - see table notes



n = 20 ... 30 mm
k = 1 ... 10 m

SENSITIVE ELEMENT	CABLE TYPE	TEMPERATURE RANGE	WIRES
RTD Design			
1 x Pt (RB,RD,RF,RG)	SLSL, TSL, YY, UU, YU	T9 -50...200 °C T12 -50...100 °C	2, 3, 4*
2 x Pt (RB,RD,RF,RG)	*GLGL, TT*	*T7 0...200 °C* *T8 0...400 °C*	2x2
1 x PTC (RP, RQ)	SLSL, TSL, YY, UU, YU *GLGL, TT*	T12 -50...100 °C *T19 0...100 °C*	2, 3
Thermocouple Design			
1 x K, 1 x J, 1 x T	SLSL, TSL, YY, UU, YU *GLGL, TT*	T9 -50...200 °C *T8 0...400 °C*	2

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Cable type:
- GLGLP(V) (glass fiber w/ steel braid, max. 400 °C ambient temperature)
- SLSL or TSL (silicone, max. 250 °C ambient temperature)
- TT (Teflon®, max. 250 °C ambient temperature)
- YY (PVC, max. 100 °C ambient temperature)
- UU or YU (PUR, max. 80 °C ambient temperature)

Tip shape:
- RTD: standard
- T/C: standard (isolated) or grounded

(see Appendix - Tip Shapes)

Accuracy class:
- RTD: 'A', 'B', or '2xB'
- T/C: '1' or '2'

(see Appendix - RTD or T/C Tolerance)

Cable connector:
4-pin (C3), 'T/C standard' (C5) or 'T/C miniature' (C6)
(see Appendix - Connectors)

* Please contact

Ordering code TSY - G1G2.G3.G6.G8.G10.G11.G12.G14.G15 - #1

Code	Feature or option		Code values
G1	Number of sensors		1 or 2
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RP -PTC 1k, RQ - PTC 2k, J - T/C type "J", K - T/C type "K", T - T/C type "T"
G3	Temperature range		T7 - 0...200 °C, T8 - 0...400 °C, T9 - -50...200 °C, T12 - 50...100 °C, T19 - 0...100 °C
G6	Probe length 'n' [mm]		20...30
G8	Cable length 'k' [m] and type		1GL...10GL - glass fiber, 1SL...10SL - silicone, 1TF...10TF - Teflon®, 1PU...10PU - polyurethane (4), 1PV...10PV - PVC
G10	Sheath material (wetted parts)		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class	RTD	X - none (1), A - 'A', B - 'B', C - '2xB'
		T/C	1 - '1' (4), 2 - '2'
G12	Number of wires (2)		2, 3, 4 (4)
G14	Tip shape (hot junction) (3)		X - standard (isolated from sheath), G - grounded
G15	Connector		X - none, C3 - 4-pin male plug-in connector ø8 (for H5700 thermometer only), C5 - T/C connector, C6 - miniature T/C connector
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled), OS - cable protection SS spring (≈ 50 mm), OB - braid termination lead (only w/o connector), OP - electrochemically polished sheath surface

(1) For non-Pt sensors
(2) Only for RTD sensors!
(3) Only for thermocouples!

TERMOREZISTENTE/TERMISTOARE pentru inlocuire/inserare

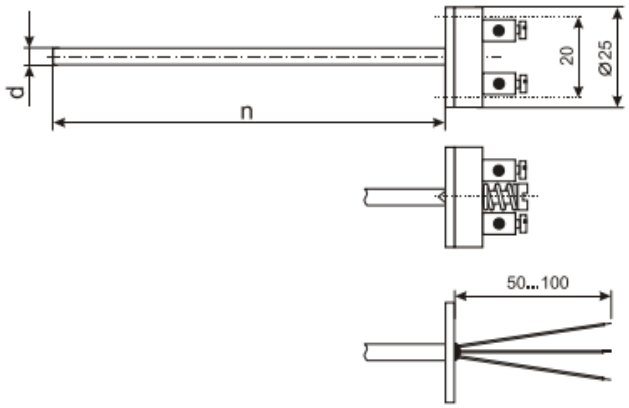
TSSB, TSSM cu bloc de conexiuni ; TSOSB, TSOSM fara bloc de conexiuni/pentru transmiter

(MI) RTD REPLACEABLE INSERT TSSx

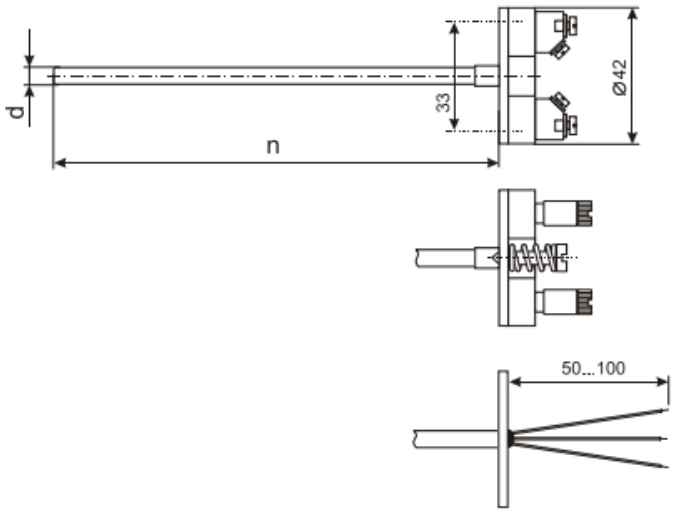
- PREPARED FOR IN-HEAD TRANSMITTER ** TSOSx

Sheath - stainless steel (see Appendix - Sheath materials)
Terminal base - Al_2O_3. Terminals - Ni-plated brass

DESIGN WITH TERMINAL BLOCK TYPE "M" (TS(O)SM)



DESIGN WITH TERMINAL BLOCK TYPE "B" (TS(O)SB)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS n [mm]	d [mm]	wires
Regular Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C T1 -50...400 °C T24 -50...500 °C T11* -50...600 °C	50...200	4	2
		50...500	5	2, 3*
		50...1500	6	2, 3, 4*
		50...3000	8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C T4* 0...800 °C	50...3000	6, 8, 10	2x2, 2x3*
3 x Pt * (RB,RD,RF,RG)	T22 -200...200 °C	50...3000	8, 10	3x2
1 x Cu (RH, RK)	T9 -50...200 °C	50...1500	6	2, 3, 4*
		50...3000	8	2, 3, 4
2 x Cu (RH, RK)	T9 -50...200 °C	50...3000	6	2x2*
			8	2x2(3)*
1 x PTC (RP, RQ)	T12 -50...100 °C	50...1500	6	2, 3
		50...3000	8, 10	
2 x PTC (RP, RQ)		50...3000	8, 10	2x2
MI Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C T1 -50...400 °C T24 -50...500 °C T11* -50...600 °C	50...50000	3*	2, 3*
			4.5	2, 3*
			6	2, 3, 4*
			8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C T4* 0...800 °C T22 -200...200 °C	50...50000	6, 8	2x2, 2x3*

Suitable protection heads: (see Appendix - Protection Heads)
- TS(O)SM: heads with 20 mm mounting distance
- TS(O)SB: heads with 33 mm mounting distance

Fixing to protection head:
direct (default) or springing ('OS' option)

Tip shape:
standard, narrowed, pitted (see Appendix - Tip Shapes)

Sheath material:
1.4301(M1), 1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362 (M15)

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

* Please contact

** No transmitter mounted!

Ordering code TS✱(B, M) - (MI -) G1G2.G3.G4.G6.G10.G11.G12.G13.G14 - #1

Code	Feature or option		Code values
✱	Base model variant		S - standard (w/ terminal block), OS - prepared for in-head transmitter (w/o terminal block)
G1	Number of RTD sensors		1, 2, or 3 [7]
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP - PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50...400 °C, T2 - -200...600 °C, T4 - 0...800 °C, T9 - -50...200 °C, T11 - -50...600 °C, T22 - -200...200 °C, T24 - -50...500 °C
G4	Diameter 'd' [mm]	regular design	4, 5, 6, 8, 10
		MI design	3 [7], 4.5, 6, 8
G6	Insert length 'n' [mm] [1]		50...50000 (see table overleaf)
G10	Sheath material (wetted parts)	regular design	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404, M15 - 1.4362
		MI design	M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class		X - none [2], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [7]
G13	Wire material [3]		CU - copper [4], NI - nickel, AG - silver [5]
G14	Tip shape		X - standard closed, N - narrowed [5], P - pitted [5]
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled) [5,6], OS - spring-fixed terminal block, OP - electrochemically polished sheath surface [5]

[1] This length does not coincide with the probe immersion length!
[2] For non-Pt sensors
[3] Only for Pt sensors!
[4] Not applicable to non-MI (regular) RTDs for above 500 °C!
[5] Only for non-MI (regular) design!
[6] Requires 'OS' option!

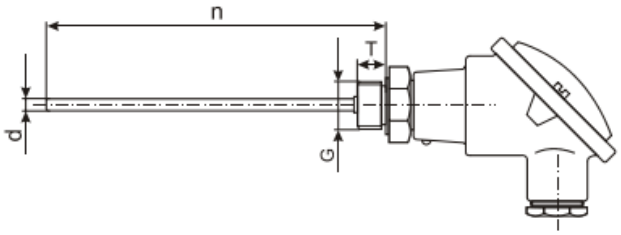
TERMOREZISTENTE/TERMISTOARE cu cap pentru bloc de conexiuni sau montaj transmiter TSC1/2/3/4, cu bloc de conexiuni ; TSOC1/2/3/4 fara bloc de conexiuni/pentru transmiter

(MI) RTD PROBE WITH PROTECTION HEAD TSCx

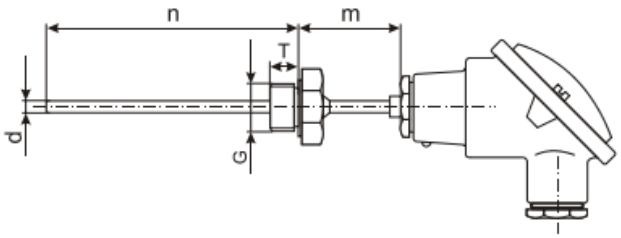
- FOR IN-HEAD TRANSMITTER ** TSOCx

Sheath - stainless steel (see Appendix - Sheath materials)
Head - aluminum, stainless steel, iron, or plastic (see Appendix - Protection heads)

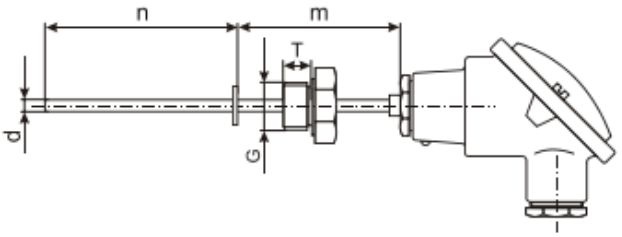
DESIGN WITHOUT EXTENSION (TS(O)C)



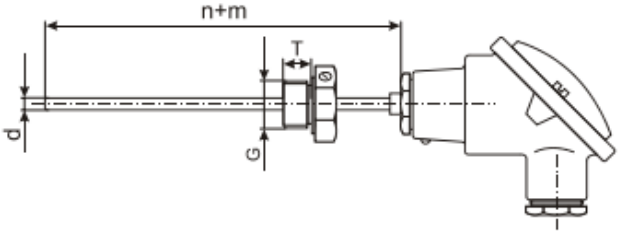
EXTENDED DESIGN WITH WELDED CONNECTION (TS(O)C1)



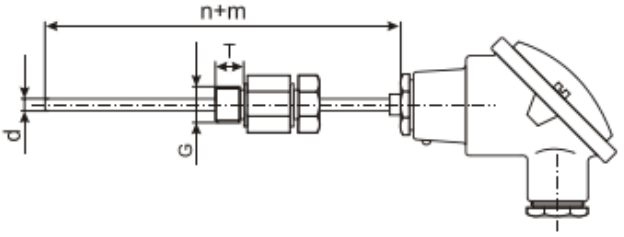
EXTENDED DESIGN WITH MOVABLE CONNECTION (TS(O)C2)



DESIGN WITH ADJUSTABLE CONNECTION (TS(O)C3)



DESIGN WITH GLAND-TYPE CONNECTION (TS(O)C4)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS n [mm]	DIMENSIONS d [mm]	DIMENSIONS wires
Regular Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	50...500	4	2, 3*
	T1 -50...400 °C		5	
	T24 -50...500 °C	50...1500	6	2, 3, 4*
	T11* -50...600 °C	50...3000	8, 10, 12, 14, 16, 20	2, 3, 4
2(3) x Pt (RB,RD,RF,RG)	T2* -200...600 °C T4* 0...800 °C T22 -200...200 °C	50...3000	6*, 8, 10	2x2(3)*
			12, 14, 16, 20	2x2(3), 3x2
1 x Cu (RH, RK)	T9 -50...200 °C	50...1500	6	2, 3, 4*
		50...3000	8, 10, 12, 14, 16, 20	
2 x Cu (RH, RK)	T9 -50...200 °C	50...3000	8, 10	2x2
			12, 14, 16, 20	2x2(3)*
1 x PTC (RP, RQ)	T12 -50...100 °C	50...1500	6	2, 3
		50...3000	8, 10, 12, 14	
2 x PTC (RP, RQ)		50...3000	8, 10, 12, 14	2x2
MI Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C T1 -50...400 °C T24 -50...500 °C T11* -50...600 °C	50...50000	3*	2, 3*
			4.5	2, 3*
			6	2, 3, 4*
			8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C T4* 0...800 °C T22 -200...200 °C	50...50000	6, 8	2x2, 2x3*

Protection head:
B, MA, MB, G, N, Cx, Dx, Ex (see Appendix - Protection Heads)

Process connection 'G' (nipple or union nut):
- M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2), M27x2(Q5), M33x2(Q25)
- 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11), 1"(Q12/Q15)
- welded or adjustable flange
- other
- w/o mounting appliances

Thread length:
- cylindrical thread: T = 15 mm
- NPT thread: according to ANSI B1.20.1

Thermal isolation between nipple and metal head: (for TS(O)C only)

Protection head	Length 'n'
MA, MB	up to 50 mm
B	up to 100 mm
other	up to 150 mm

Maximum temperature	Insulation material
200 °C	POM
400 °C	Teflon®

Extension length:
m = 0...1500 mm

Extension diameter: (for TS(O)C1 and TS(O)C2 only, [mm])

Ext. length 'm' \ Probe diameter 'd'	3, 4 mm	4.5...6 mm	8 mm	10 mm	10+ mm
up to 50 mm	8	d	d	d	d
50...150 mm	8	8	d	d	d
150...500 mm	10	10	10	d	d
500+ mm	14	14	14	14	d

Tip shape:
standard, narrowed, pitted (see Appendix - Tip Shapes)

Process pressure:

Probe design	TS(O)C, TS(O)C1	TS(O)C2	TS(O)C4	TS(O)C3
Max. pressure *	25 bar	16 bar	6 bar	0 bar

Sheath material:
1.4301(M1), 1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362(M15)

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

* Please contact

** Order transmitter separately!!!

Ordering code TS✱(1,2,3,4) - (MI -) G0.G1G2.G3.G4.G6.G7.G9'9".G10.G11.G12.G13.G14 - #1.#2

Code	Feature or option		Code values
✱	Base model variant		C - standard (w/ terminal block), OC - prepared for in-head transmitter (w/o terminal block)
G0	Protection head		B - type "B", CC - type "CC", CS - type "CS", D - type "D", DH - type "DH", DHW - type "DHW", DW - type "DW", E - type "E", EG - type "EG", EGS - type "EGS", EGSS - type "EGSS", EGW - type "EGW", EGWSS - type "EGWSS", ES - type "ES", G - type "G", MA - type "MA", MB - type "MB", N - type "N"
G1	Number of RTD sensors		1, 2, or 3 [11]
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP - PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50...400 °C, T2 - -200...600 °C, T4 - 0...800 °C, T9 - -50...200 °C, T11 - -50...600 °C, T22 - -200...200 °C, T24 - -50...500 °C
G4	Diameter 'd' [mm]	regular design	4, 5, 6, 8, 10, 12, 14, 16, 20
		MI design	3 [11], 4.5, 6, 8
G6	Probe length 'n' [mm] [1]		50...50000 (see table overleaf)
G7	Probe length 'm' [mm] [2]		0...1500
G9'	Mounting connection		X - no mounting appliances [3], Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q5 - M27x2, Q6 - G3/4", Q9 - 3/8" NPT, Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q12 - G1", Q15 - 1" NPT, Q25 - M33x2, Uxx - union nut (xx - same as for Qxx), F - flange (specify!), Z - other connection (specify!)
G9"	Compression fitting ferrule [4]		BR - brass, GR - graphite, SS - stainless steel, TF - Teflon®
G10	Sheath material (wetted parts)	regular design	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404), M15 - 1.4362 [11]
		MI design	M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404)
G11	Accuracy class		X - none [5], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [11]
G13	Wire material [6]		CU - copper [7], NI - nickel, AG - silver [8]
G14	Tip shape		X - standard closed, N - narrowed [8], P - pitted [8]
#1	Options		X - none, OV - vibration proof (spring terminals, MgO or Silicone filled, secured screws) [8], OT - thermal isolation [3], OP - electrochemically polished sheath surface [8]
#2	Incorporated devices		X - none, T - in-head transmitter [9], A - local indicator [10]

[1] 'n+m' for TS(O)C3 and TS(O)C4!
[2] Only for TS(O)C1 and TS(O)C2!
[3] Only for TS(O)C!
[4] Only for TS(O)C4!
[5] For non-Pt sensors
[6] Only for Pt sensors!
[7] Not applicable to non-MI (regular) RTDs for above 500 °C!
[8] Only for non-MI (regular) design!
[9] Only for variant 'OC'! See transmitter datasheets and order separately!
[10] With windowed head only! See indicator datasheets and order separately!

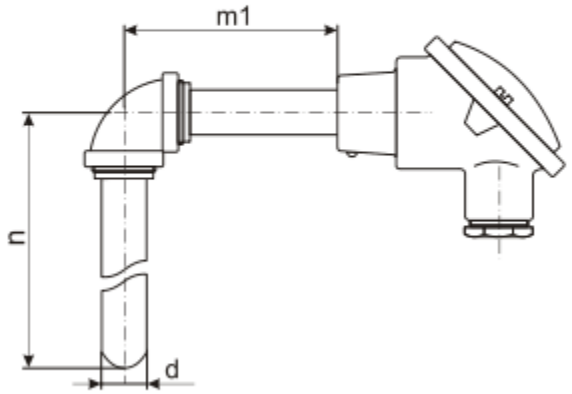
TERMOREZISTENTE in unghi, cu cap pentru bloc de conexiuni sau pentru montaj transmiter TSL1, TSL1, TSL3, cu bloc de conexiuni ; TSOL, TSOL1, TOSL3 fara bloc de conexiuni/pentru transmiter

ANGLED RTD PROBE WITH PROTECTION HEAD **Lx (TSLx)**

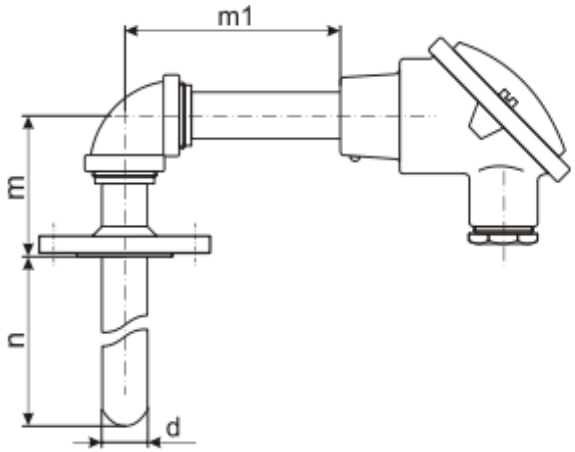
(FOR IN-HEAD TRANSMITTER)** **OLx (TSOLx)**

Sheath - stainless steel (see Appendix - Sheath materials)
Head - aluminum, stainless steel, or plastic (see Appendix - Protection heads)

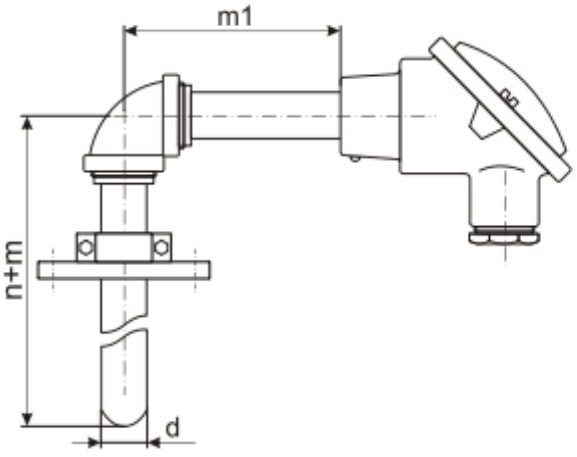
DESIGN WITHOUT FLANGE (L)



DESIGN WITH WELDED FLANGE (L1)



DESIGN WITH ADJUSTABLE FLANGE (L3)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C T1 -50...400 °C T11* -50...600 °C	10, 12, 14, 16, 20, 22	2, 3, 4*
2(3) x Pt (RB,RD,RF,RG)	T2* -200...600 °C T4* -0...800 °C	12, 14, 16, 20, 22	2x2(3)* 3x2*
1 x Cu (RH, RK)	T9 -50...200 °C	10, 12, 14, 16, 20, 22	2, 3, 4*
2 x Cu (RH, RK)	T9 -50...200 °C	12, 14, 16, 20, 22	2x2(3)*

Protection head:
B, MA, MB, G, N, Dx, Ex, EX (see Appendix - Protection heads)

Process connection:
- welded flange
- adjustable flange
- no mounting appliances

Insertion length:
n = 200...1500 mm

Extension length:
m = 100...1000 mm

Holding tube:
- m1 = 100...1000 mm
- OD 20(22) mm
- tube/elbow material 1.4301 or 1.4541

Tip shape:
standard, narrowed, pitted (see Appendix - Tip shapes)

Process pressure:

Probe design	L, L1	L3
Max. pressure *	25 bar	0 bar

Sheath material:
1.4301(M1), 1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362 (M15)

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

* Please contact

** Order transmitter separately!!!

Ordering code TS✱(1,3) - G0.G1G2.G3.G4.G6.G7'.G7''.G9.G10.G11.G12.G13.G14 - #1.#2

Code	Feature or option	Code values
✱	Base model variant	L - standard (w/ terminal block), OL - prepared for in-head transmitter (w/o terminal block)
G0	Protection head	B - type "B", MA - type "MA", MB - type "MB", G - IP65, type "G", N - type "N", D - type "D", DW - windowed, type "DW", DH - w/ high cap, type "DH", DHW - windowed, type "DHW", E - IP65, type "E", ES - stainless-steel, type "ES", EG - IP68 ATEX-approved, type "EG", EGS - IP66 ATEX-approved, type "EGS", EGW - windowed ATEX-approved, type "EGW", EX - explosion-proof instrument housing (specify!)
G1	Number of RTD sensors	1, 2, or 3 [6]
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100
G3	Temperature range	T1 - -50...400 °C, T2 - -200...600 °C (Ni or Ag wires only!), T4 - 0...800 °C (Ag wires only!), T9 - -50...200 °C, T11 - -50...600 °C (Ni or Ag wires only!)
G4	Diameter 'd' [mm]	10, 12, 14, 16, 20, 22
G6	Probe length 'n' [mm] [1]	200...1500
G7'	Probe length 'm' [mm] [2]	100...1000
G7''	Probe length 'm1' [mm]	100...1000
G9	Mounting connection	X - no mounting appliances, F - flange (specify!), Z - other connection (specify!)
G10	Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404, M15 - 1.4362
G11	Accuracy class [3]	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3, 4 [5]
G13	Wire material [3]	CU - copper, NI - nickel, AG - silver
G14	Tip shape	X - standard closed, N - narrowed, P - pitted [4]
#1	Options	X - none, OV - vibration proof (MgO or Silicone filled, secured screws), OP - electrochemically polished sheath surface
#2	Local indicator	X - none, A - local indicator mounted [5]

[1] 'n+m' for TS(O)L3!
[2] Only for TS(O)L1!
[3] Only for Pt sensors!
[4] Only for non-explosion-proof RTDs!
[5] With windowed head only! See indicator datasheets and order separately!

TERMOREZISTENTE/TERMISTOARE cu cap pentru bloc de conexiuni sau montaj transmiter si posibilitate de insertie pentru inlocuire/schimbare senzor

TSDS, TSDS1, TSDS2, TSDS3, TSDS4, TSDS5 cu bloc de conexiuni ; TSODS, TSODS1, TSODS2, TSODS3, TSODS4, TSODS5 fara bloc de conexiuni/pentru transmitter

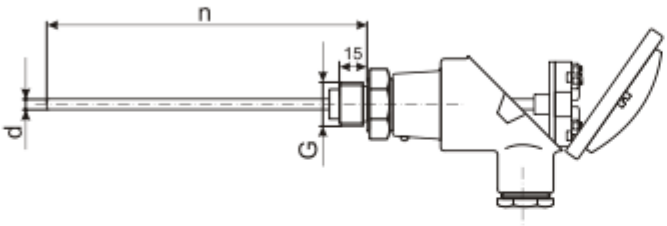
RTD PROBE WITH PROTECTION HEAD AND OPEN REPLACEABLE INSERT FOR THERMOWELL OR PROTECTION TUBE — **DSx (TSDSx)**

(FOR IN-HEAD TRANSMITTER)** — **ODSx (TSODSx)**

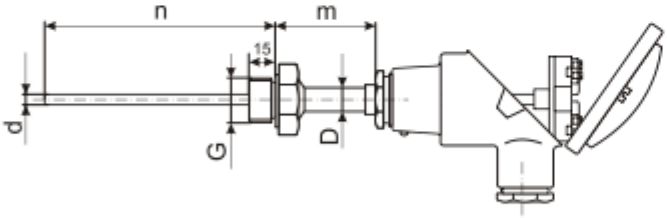
Sheath - stainless steel (see Appendix - Sheath materials)
Head - aluminum, stainless steel, or plastic (see Appendix - Protection heads)

SENSITIVE ELEMENT	TEMPERATURE RANGE		DIMENSIONS D [mm]	d [mm]	wires
1 x Pt (RB,RD,RF,RG)	T9	-50...200 °C	8, 10	5	2, 3*
	T1	-50...400 °C	10, 12	6	2, 3, 4*
	T11*	-50...600 °C	12, 14	8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2*	-200...600 °C	10, 12	6	2x2*
	T4*	-0...800 °C	12, 14	8	2x2(3)*
1 x Cu (RH, RK)	T9	-50...200 °C	10, 12	6	2, 3, 4*
			12, 14	8	2, 3, 4
2 x Cu (RH, RK)	T9	-50...200 °C	10, 12	6	2x2*
			12, 14	8	2x2(3)*

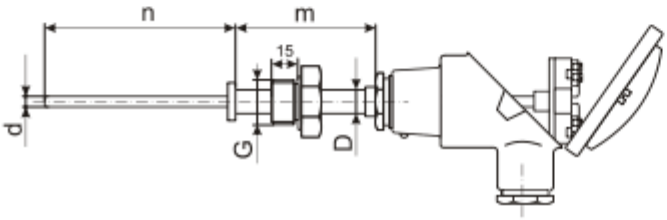
DESIGN WITHOUT EXTENSION (DS)



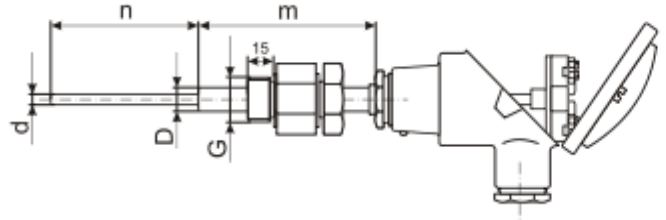
EXTENDED DESIGN WITH WELDED CONNECTION (DS1)



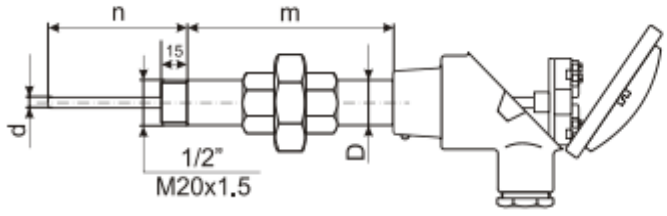
EXTENDED DESIGN WITH MOVABLE CONNECTION (DS2)



DESIGN WITH SLIDING GLAND-TYPE CONNECTION (DS4)



DESIGN WITH NIPPLE-UNION-NIPPLE CONNECTION (DS5)



Protection head:
B, MA, MB, G, N, Dx, Ex, EX (see Appendix - Protection heads)

Process connection 'G' (nipple or union nut):
- M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2), M27x2(Q5), M33x2(Q25)
- 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11), 1"(Q12/Q15)
- welded flange

Thermal isolation between nipple and metal head: (for TS(O)DS only)

Protection head	Length 'n'
MA, MB	up to 50 mm
B	up to 100 mm
other	up to 150 mm

Maximum temperature	Insulation material
200 °C	POM
400 °C	Teflon®

Insertion length (must fit thermowell / protection tube length 'L'!):
n = 50...2000 mm

Extension length:
m = 50...1000 mm (w/o spring-loaded adapter)
m = m1...1000 mm (w/ spring-loaded adapter)

Tip shape:
standard, narrowed, pitted (see Appendix - Tip shapes)

Process pressure:
- with metal thermowell up to 500 bar (see Accessories - Thermowells)
- with ceramic protection tube (see Accessories - Protection tubes) *

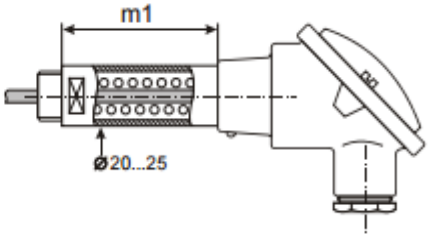
Sheath material:
1.4301(M1) or 1.4541(M2)

Insert sheath material:
1.4301(M1), 1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362 (M15)

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

Spring-loaded adapter:
(mounted between probe and protection head)



m1 = 60...100 mm

* Please contact

** Order transmitter separately!!!

Ordering code TS✱(1,2,4,5) - G0.G1G2.G3.G4.G6.G7.G9'9".G10.G11.G12.G13.G14 - #1.#2

Code	Feature or option	Code values
✱	Base model variant	DS - standard (w/ terminal block), ODS - prepared for in-head transmitter (w/o terminal block)
G0	Protection head	B - type "B", MA - type "MA", MB - type "MB", G - IP65, type "G", N - type "N", D - type "D", DW - windowed, type "DW", DH - w/ high cap, type "DH", DHW - windowed, type "DHW", E - IP65, type "E", ES - stainless-steel, type "ES", EG - IP68 ATEX-approved, type "EG", EGS - IP66 ATEX-approved, type "EGS", EGW - windowed ATEX-approved, type "EGW", EX - explosion-proof instrument housing (specify!)
G1	Number of RTD sensors	1 or 2
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100
G3	Temperature range	T1 - -50...400 °C, T2 - -200...600 °C (Ni or Ag wires only!), T4 - 0...800 °C (Ag wires only!), T9 - -50...200 °C, T11 - -50...600 °C (Ni or Ag wires only!)
G4	Diameters 'D/d' [mm] [1]	8/5, 10/5, 10/6, 12/6, 14/6, 14/8, 20/6, 21/6, 20/8, 21/8
G6	Probe length 'n' [mm]	50...2000
G7	Probe length 'm' [mm] [2]	50...1000 (m1...1000 with 'OA' option)
G9'	Mounting connection	X - no mounting appliances, Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q5 - M27x2, Q6 - G3/4", Q9 - 3/8" NPT, Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q12 - G1", Q15 - 1" NPT, Q25 - M33x2, Uxx - union nut (xx - same as for Qxx), F - flange (specify!), Z - other connection (specify!)
G9"	Compression fitting ferrule [3]	TF - Teflon®, BR - brass, SS - stainless steel
G10	Insert sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404, M15 - 1.4362
G11	Accuracy class [4]	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3, 4 [10]
G13	Wire material [4]	CU - copper, NI - nickel, AG - silver
G14	Tip shape	X - standard closed, N - narrowed, P - pitted [5]
#1	Options	X - none, OV - vibration proof (MgO or Silicone filled insert, secured screws) [6], OS - spring-loaded insert, OT - thermal isolation [7], OA - spring-loaded adapter [8], OP - electrochemically polished sheath surface
#2	Local indicator	X - none, A - local indicator mounted [9]

[1] Only 'd' for TS(O)DS!
[2] Omit for TS(O)DS without 'OA' option!
[3] Only for TS(O)DS4!
[4] Only for Pt sensors!
[5] Only for non-explosion-proof RTDs!
[6] Requires 'OS' option!
[7] Only for TS(O)DS!
[8] Only for TS(O)DS, TS(O)DS1, and TS(O)DS5! Insert is not replaceable!
[9] With windowed head only! See indicator datasheets and order separately!

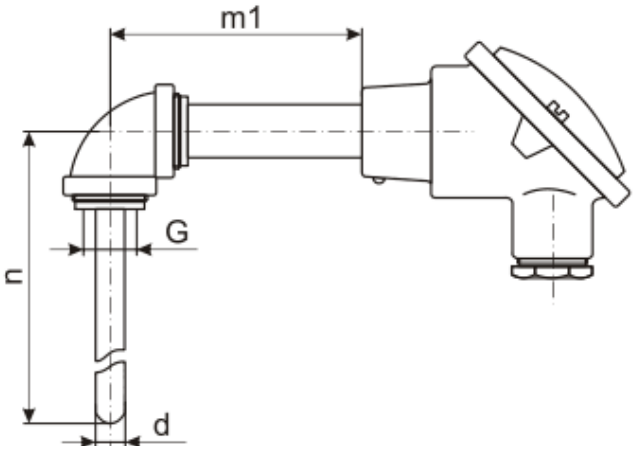
TERMOREZISTENTE in unghi, cu cap pentru bloc de conexiuni sau pentru montaj transmiter si cu tub de protectie

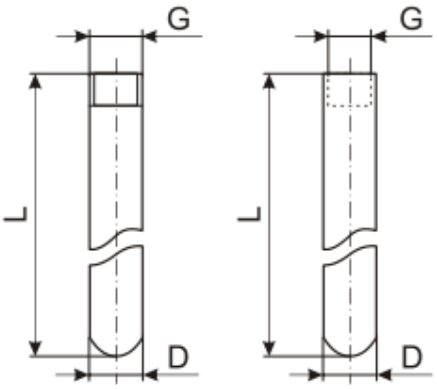
TSLD cu bloc de conexiuni ; TSOLD fara bloc de conexiuni/pentru transmiter

ANGLED RTD PROBE WITH PROTECTION HEAD LDx (TSLDx)
FOR PROTECTION TUBE ASSEMBLY

(FOR IN-HEAD TRANSMITTER) OLDx (TSOLDx)**

Holding tube - stainless steel 1.4301 or 1.4404
Protection tube - metal (see Accessories - Protection tubes)
Head - aluminum, stainless steel, or plastic (see Appendix - Protection heads)





Protection Tube Material	d [mm]
M1, M3, M4, M6, M6S, M8, M9, M11, M13, M14	6, 8, 10
M12	6, 8
M20	6

SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C T1 -50...400 °C	6	2, 3, 4*
	T11* -50...600 °C	8, 10, or bare	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C T4* -0...800 °C	6*, 8, 10, or bare	2x2
1 x Cu (RH, RK)	T9 -50...200 °C	6 or bare	2, 3
		8, 10, or bare	2, 3, 4*
2 x Cu (RH, RK)	T9 -50...200 °C	8, 10, or bare	2x2

Protection head:
B, MA, MB, G, N, Dx, Ex, EX (see Appendix - Protection heads)

Process connection (must fit the YA connection 'G'):
G1/2"(Q4), G3/4"(Q6), male or female (see Accessories - Protection tubes)

Insertion length (must fit the YA length 'L'):
n = 100...1000 mm

Holding tube:
- m1 = 100...1000 mm
- OD 20(22) mm
- tube/elbow material 1.4301 or 1.4541

Tip shape:
standard, narrowed, pitted (see Appendix - Tip shapes)

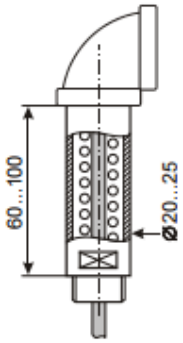
Process pressure:
YA protection tube process pressure (see Accessories - Protection tubes)

Sheath material:
1.4301(M1), 1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362 (M15), or bare sensor

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

Spring-loaded adapter:
(mounted between protection tube and elbow)



* Please contact

** Order transmitter separately!!!

Ordering code TS✱ - G0.G1G2.G3.G4.G6.G7.G9.G10.G11.G12.G13.G14 - #1.#2

Code	Feature or option	Code values
✱	Base model variant	LD - standard (w/ terminal block), OLD - prepared for in-head transmitter (w/o terminal block)
G0	Protection head	B - type "B", MA - type "MA", MB - type "MB", G - IP65, type "G", N - type "N", D - type "D", DW - windowed, type "DW", DH - w/ high cap, type "DH", DHW - windowed, type "DHW", E - IP65, type "E", ES - stainless-steel, type "ES", EG - IP68 ATEX-approved, type "EG", EGS - IP66 ATEX-approved, type "EGS", EGW - windowed ATEX-approved, type "EGW", EX - explosion-proof instrument housing (specify!)
G1	Number of RTD sensors	1, 2, or 3 [5]
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100
G3	Temperature range	T1 - -50...400 °C, T2 - -200...600 °C (Ni or Ag wires only!), T4 - 0...800 °C (Ag wires only!), T9 - -50...200 °C, T11 - -50...600 °C (Ni or Ag wires only!)
G4	Diameter 'd' [mm] (must fit the protection tube ID)	X (bare sensor), 6, 8, 10
G6	Probe length 'n' [mm]	100...1000
G7	Probe length 'm1' [mm]	100...1000
G9	Mounting connection (must fit the protection tube thread)	Q4 - G1/2", Q6 - G3/4", U4 - G1/2-F", U6 - G3/4-F"
G10	Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404, M15 - 1.4362
G11	Accuracy class [1]	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3, 4 [5]
G13	Wire material [1]	CU - copper, NI - nickel, AG - silver
G14	Tip shape	X - standard closed, N - narrowed, P - pitted [2]
#1	Options	X - none, OV - vibration proof (MgO or Silicone filled, secured screws), OA - spring-loaded adapter [3], OP - electrochemically polished sheath surface
#2	Local indicator	X - none, A - local indicator mounted [4]

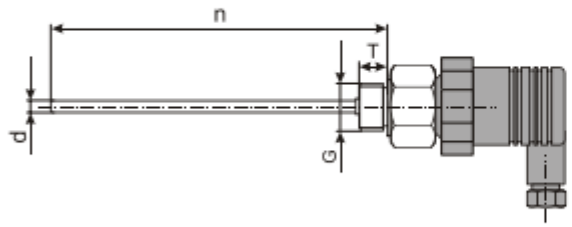
[1] Only for Pt sensors!
[2] Only for non-explosion-proof RTDs!
[3] Not available for bare sensor!
[4] With windowed head only! See indicator datasheets and order separately!

TERMOREZISTENTE TSK, TSK1, TSK2, TSK3, TSK4, cu filet si cu conector detasabil

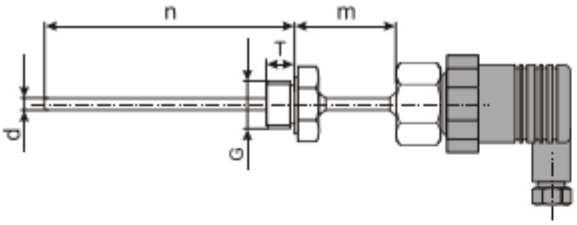
(MI) RTD PROBE WITH DETACHABLE CONNECTOR TSKx

Sheath - stainless steel (see Appendix - Sheath materials)
Connector - IP65/68 (see Appendix - Sensor connectors)

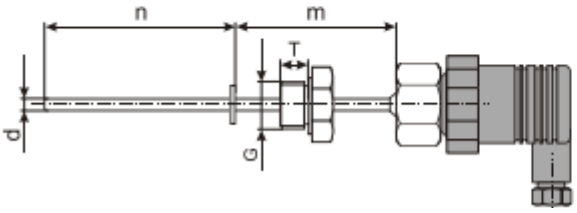
DESIGN WITHOUT EXTENSION (TSK)



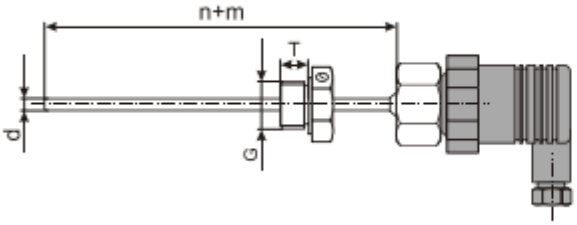
EXTENDED DESIGN WITH WELDED CONNECTION (TSK1)



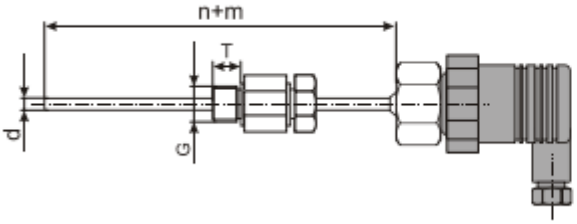
EXTENDED DESIGN WITH MOVABLE CONNECTION (TSK2)



DESIGN WITH ADJUSTABLE CONNECTION (TSK3)



DESIGN WITH GLAND-TYPE CONNECTION (TSK4)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS n [mm]	d [mm]	wires
Regular Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C T1 -50...400 °C T24 -50...500 °C T11* -50...600 °C	50...500	4	2, 3*
			5	2, 3
		50...1500	6	2, 3, 4*
		50...3000	8, 10, 12, 14	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C T4* 0...800 °C	50...3000	6*, 8, 10, 12, 14	2x2(3)*
3 x Pt * (RB,RD,RF,RG)	T22 -200...200 °C	50...3000	8, 10, 12, 14	3x2
1 x Cu (RH, RK)	T9 -50...200 °C	50...1500	6	2, 3, 4*
		50...3000	8, 10, 12, 14	
2 x Cu (RH, RK)		50...3000	8, 10	2x2
			12, 14	2x2(3)*
1 x PTC (RP, RQ)	T12 -50...100 °C	50...1500	6	2, 3
		50...3000	8, 10, 12, 14	
2 x PTC (RP, RQ)		50...3000	8, 10, 12, 14	2x2
MI Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C T1 -50...400 °C T24 -50...500 °C T11* -50...600 °C T2* -200...600 °C	50...50000	3*	2, 3*
			4.5	2, 3*
			6	2, 3, 4*
			8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T4* 0...800 °C T22 -200...200 °C	50...50000	6, 8	2x2, 2x3*

Detachable wiring connector:
C1, C7, C8 (see Appendix - Connectors)

Process connection 'G' (nipple or union nut):
- M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2), M27x2(Q5), M33x2(Q25)
- 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11), 1"(Q12/Q15)
- welded or adjustable flange
- other
- w/o mounting appliances

Thread length:

Extension length:
m = 0...1500 mm

Extension diameter: (for TSK1 and TSK2 only, [mm])

Probe diameter 'd' / Ext. length 'm'	3, 4 mm	4.5...6 mm	8 mm	10 mm	10+ mm
up to 50 mm	8	d	d	d	d
50...150 mm	8	8	d	d	d
150...500 mm	10	10	10	d	d
500+ mm	14	14	14	14	d

Tip shape:
standard, narrowed, pitted (see Appendix - Tip Shapes)

Process pressure:

Probe design	TSK, TSK1	TSK2	TSK4	TSK3
Max. pressure *	25 bar	16 bar	6 bar	0 bar

Sheath material:
1.4301(M1), 1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362(M15)

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

* Please contact

Ordering code TSK(1,2,3,4) - (MI -) G1G2.G3.G4.G6.G7.G9'9".G10.G11.G12.G13.G14.G15 - #1

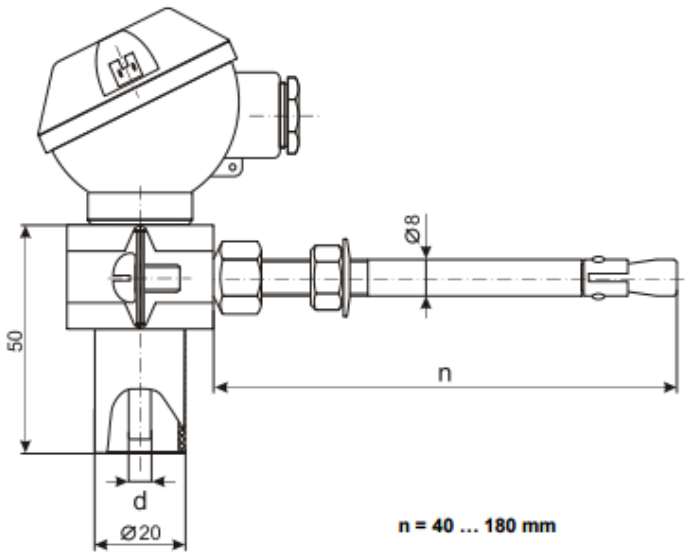
Code	Feature or option		Code values
G1	Number of RTD sensors [1]		1, 2, or 3 [10]
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP - PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50...400 °C, T2 - -200...600 °C, T4 - 0...800 °C, T9 - -50...200 °C, T11 - -50...600 °C, T22 - -200...200 °C, T24 - -50...500 °C
G4	Diameter 'd' [mm]	regular design	4, 5, 6, 8, 10, 12, 14
		MI design	3 [10], 4.5, 6, 8
G6	Probe length 'n' [mm] [2]		50...50000 (see table overleaf)
G7	Probe length 'm' [mm] [3]		0...1500
G9'	Mounting connection		X - no mounting appliances [4], Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q5 - M27x2, Q6 - G3/4", Q9 - 3/8" NPT, Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q12 - G1", Q15 - 1" NPT, Q25 - M33x2, Uxx - union nut (xx - same as for Qxx), F - flange (specify!), Z - other connection (specify!)
G9"	Compression fitting ferrule [5]		BR - brass, GR - graphite, SS - stainless steel, TF - Teflon®
G10	Sheath material (wetted parts)	regular design	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404), M15 - 1.4362
		MI design	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404)
G11	Accuracy class		X - none [6], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [10]
G13	Wire material [7]		CU - copper [8], NI - nickel, AG - silver [9]
G14	Tip shape		X - standard closed, N - narrowed [9], P - pitted [9]
G15	Wiring connector		C1 - 4-pin connector M12 (IP68), C7 - DIN 43650 4-pin connector (IP65), C8 - DIN 43651 6-pin connector (IP65)
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled) [9], OP - electrochemically polished wetted parts [9]

[1] The total number of wires must comply with the selected wiring connector!
[2] 'n+m' for TSK3 and TSK4!
[3] Only for TSK1 and TSK2!
[4] Only for TSK!
[5] Only for TSK4!
[6] For non-Pt sensors
[7] Only for Pt sensors!
[8] Not applicable to non-MI (regular) RTDs for above 500 °C!
[9] Only for non-MI (regular) design!

TERMOREZISTENTE TSCA cu bolt de ancorare/fixare

OUTDOOR RTD PROBE WITH ANCHOR BOLT **TSCA**

Sheath - stainless steel (see Appendix - Sheath materials)
Head - aluminum (see Appendix - Protection heads)



n = 40 ... 180 mm

SENSITIVE ELEMENT	TEMPERATURE RANGE		DIMENSIONS d [mm]	DIMENSIONS wires
1 x Pt (RB,RD,RF,RG)	T12	-50...100 °C	4	2
			5	2, 3*
			6	2, 3, 4*
2 x Pt (RB,RD,RF,RG)	T12	-50...100 °C	6	2x2
1 x Cu (RH, RK)	T12	-50...100 °C	5, 6	2, 3
2 x Cu (RH)	T12	-50...100 °C	6	2x2
1 x PTC (RP, RQ)	T12	-50...100 °C	6	2

Protection head:
MA, MB (see Appendix - Protection Heads)

Mounting accessories:
Zn-plated anchor bolt (ø8) w/ rubber sealed clamp (ø20)

Tip shape:
standard, narrowed, pitted (see Appendix - Tip Shapes)

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Filling:
silicone grease (except pitted version)

Protection tube:
PVC, ø20x2

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

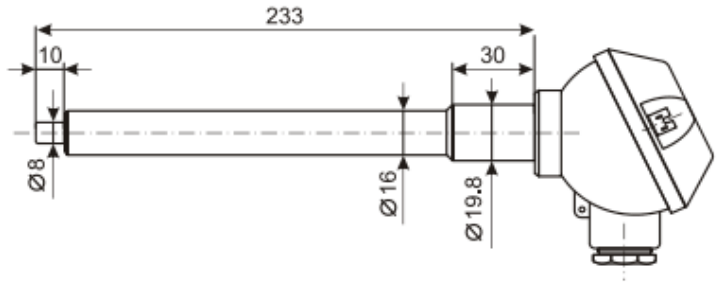
*** Please contact**

Ordering code TSCA - G0.G1G2.G4.G6.G10.G11.G12.G14

Code	Feature or option	Code values
G0	Protection head	MA - type "MA", MB - type "MB"
G1	Number of RTD sensors	1 or 2
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP -PTC 1k, RQ - PTC 2k
G4	Diameter 'd' [mm]	4, 5, 6
G6	Anchor bolt length 'n' [mm]	40...180 (step 10 mm)
G10	Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class (1)	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3, 4 (2)
G14	Tip shape	X - standard closed, N - narrowed, P - pitted

(1) Only for Pt sensors!

TERMOREZISTENTE TSCC pentru masini de taiat carne

RTD PROBE FOR MEAT CUTTING MACHINES TSCC Sheath - stainless steel (see Appendix - Sheath materials) Head - aluminum or stainless steel (see Appendix - Protection heads)	SENSITIVE ELEMENT	TEMPERATURE RANGE	WIRES
	1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	2, 3, 4
	2 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	2x2, 2x3*
	1 x Cu (RH, RK)	T9 -50...200 °C	2, 3, 4
	2 x Cu (RH)	T9 -50...200 °C	2x2, 2x3*

Protection head:
B, MA, MB, D, G, ES (see Appendix - Protection Heads)

Sheath material:
1.4301 (M1), 1.4541 (M2), 1.4571 (M3), 1.4404 (M9)

Filling:
silicone grease

Accuracy class:
'A', 'B', or '2xB'
(see Appendix - RTD Tolerance)

*** Please contact**

Ordering code TSCC - G0.G1G2.G10.G11.G12 - #1

Code	Feature or option	Code values
G0	Protection head	B - type "B", MA - type "MA", MB - type "MB", D - type "D", G - type "G", ES - type "ES"
G1	Number of RTD sensors	1 or 2
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100
G10	Sheath material	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class [1]	A - 'A', B - 'B', C - '2xB'
G12	Number of wires	2, 3, 4 [2]
#1	Options	X - none, OP - electrochemically polished sheath surface

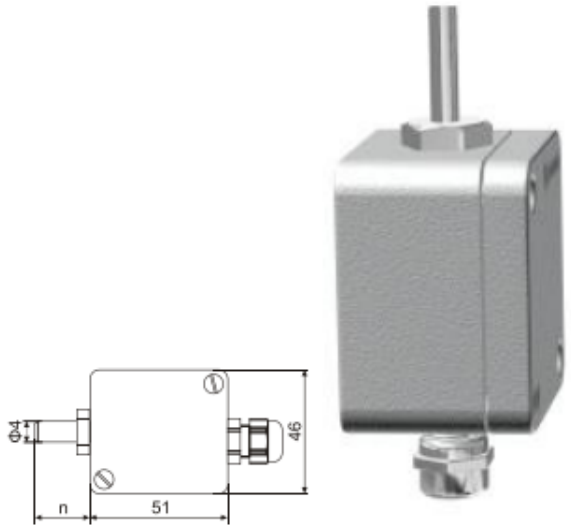
[1] Only for Pt sensors!

TERMOREZISTENTE TSP pentru exterior
TRANSMITERE cu TERMOREZISTENTA TSOP pentru exterior, 4-20 mA

Outdoor RTD Probe (Transmitter) TS(O)P

- **Low cost**
- **Ptx sensitive element**
- **2-wire 4…20 mA output available**
- **IP66 protection class**
- **Robust aluminum enclosure**
- **Ready to use - no adjustments**

The outdoor temperature probes TSP and TSOP measure temperature by means of a Ptx sensitive element mounted in a thin stainless steel stem for fast response. The TSOP model, in addition, converts the measured temperature into standard 4...20 mA 2-wire signal. Both models are enclosed in a freely mountable robust aluminum enclosure with IP66 protection class and are equipped with a PG7 cable gland for stable and protected electrical decoupling. Five different temperature measurement ranges from -50 °C and up to 100 °C as well as customer specified ranges are available. Thanks to their simplicity, small size, and affordable price, TSP and TSOP are applicable for various outdoor applications, environment temperature control, climatic temperature measurement, etc.



Technical specifications

Input	
Incorporated RTD	Pt100 or Pt1000 (w=1.385)
Measurement range	-50...50 °C; 0...50 °C; -20...60 °C; 0...100 °C [1]; -50...100 °C [1]
Range on request	minimum span 50 °C
Output	*(transmitter only)*
Signal type	4...20 mA, 2-wire
Linearity proportional to	measured value
Output at sensor burnout	32 mA
Output at sensor shorted	0.2 mA
Accuracy	*(transmitter only)*
Electronic measurement error	0.2% from span or 0.2 °C [2]
RTD measurement error	according to accuracy class
Non-linearity	within measurement error
Self-heating error	0.02%/mA at 24 V
Temperature drift	0.02% from span for 1 °C

Power supply		
Loop voltage		10...32 VDC
Admissible variations		1 Vp-p at 50 Hz
Maximum line load		750 Ω at 24V/20mA
Operating conditions		
Ambient temperature		-30...65 °C
Ambient humidity		5...95 %RH
EM compatibility		according to EN 61326
Design and materials		
Stem diameter	4 mm	5 mm
Stem length	20...60 mm	60...200 mm
Sensor sheath		stainless steel
Housing material		aluminum
Wiring		PG7 metal cable gland
Mounting		free
Protection class		IP66

[1] Not available for TSOP
[2] Which is greater

Ordering code TS(O)P - G2.G3.G6.G11 - #1

Code	Feature or option	Code values
G2	Sensor [3]	RD - Pt100, RG - Pt1000
G3	Temperature range	T25 - -20...60 °C, T17 - -50...50 °C, T18 - 0...50 °C, T19 - 0...100 °C [1], T12 - -50...100 °C [1], TZ - other (specify, ΔT ≥ 50 °C)
G6	Stem length 'n' [mm]	20...200 (see table above)
G11	Accuracy class	A - 'A', B - 'B', C - '2xB'
#1	Options	X - none, OP - electrochemically polished sheath surface

[3] Do not code for TSOP

TERMOREZISTENTE TSR pentru interior
TRANSMITERE cu TERMOREZISTENTA TSOR pentru interior, 4-20 mA

Indoor RTD Probe (Transmitter) TS(O)R

- **Low-cost variant for budget applications**
- **Ptx sensitive element**
- **2-wire 4…20 mA output available**
- **Easy & Fast connection plug**
- **Ready to use - no adjustments**
- **DIN-rail accessory available**

The indoor temperature probes TSR, TSR1, TSOR, and TSOR1 perform fast temperature measurement by means of a Ptx sensitive element mounted in a copper sheath or inside the housing. The TSOR and TSOR1 variants, in addition, convert the measured temperature into standard 4...20 mA 2-wire signal. All variants are enclosed in a freely mountable small plastic box that may also be mounted on a DIN rail when an optional mounting clamp is installed. TSR and TSOR are also equipped with a 3-pin plug-in terminal that allow fast and easy electrical decoupling. Five different temperature measurement ranges from -50 °C and up to 100 °C as well as customer specified ranges are available. Thanks to their simplicity, small size, and affordable price, TSR, TSR1, TSOR, and TSOR1 are applicable for various indoor applications, room temperature control, control board temperature measurement, etc.

Technical specifications

Input	
Incorporated RTD	Pt100 or Pt1000 (w=1.385)
Measurement range	-50...50 °C; 0...50 °C; -20...60 °C; 0...100 °C [1]; -50...100 °C [1]
Range on request	minimum span 50 °C
Output	*(transmitter only)*
Signal type	4...20 mA, 2-wire
Linearity proportional to	measured value
Output at sensor burnout	32 mA
Output at sensor shorted	0.2 mA
Accuracy	*(transmitter only)*
Electronic measurement error	0.2% from span or 0.2 °C [2]
RTD measurement error	according to accuracy class
Non-linearity	within measurement error
Self-heating error	0.02%/mA at 24 V
Temperature drift	0.02% from span for 1 °C

Power supply	
Loop voltage	10...32 VDC
Admissible variations	1 Vp-p at 50 Hz
Maximum line load	750 Ω at 24V/20mA
Operating conditions	
Ambient temperature	-30...65 °C
Ambient humidity	5...85 %RH
Directives	CE (2004/108/EC), LVD (2006/95/EC)

Design and materials	TS(O)R	TS(O)R1
Sensor sheath	copper	none (hidden sensor)
Housing material	plastic	plastic
Wiring	plug-in terminal	hidden terminal
Mounting	free [3]	free [3]
Dimensions	40x75x26 mm (w/o terminal)	40x75x26 mm
Weight	max. 45 g	max. 30 g
Protection class	IP44 (excl. terminal)	IP20

[1] Not available for TSOR and TSOR1.
[2] Which is greater
[3] DIN-rail mounting accessory is also available (see 'Accessories')

Ordering code TS✱ - G2.G3.G11

Code	Feature or option	Code values
✱	Variant	R - RTD probe, R1 - low-cost RTD probe, OR - temperature transmitter, OR1 - low-cost temperature transmitter
G2	Sensor [4]	RD - Pt100, RG - Pt1000
G3	Temperature range	T25 - -20...60 °C, T17 - -50...50 °C, T18 - 0...50 °C, T19 - 0...100 °C [1], T12 - -50...100 °C [1], TZ - other (specify, ΔT ≥ 50 °C)
G11	Accuracy class	A - 'A', B - 'B', C - '2xB'

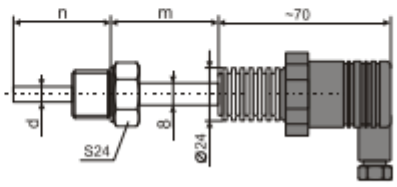
[4] Do not code for TSOR and TSOR1.

TRANSMITERE cu TERMOREZISTENTA TSOK pentru conditii dificile, 4-20 mA

RTD Probe with Current Output TSOK

- **Pt100 or Pt1000 sensitive element**
- **2-wire 4...20 mA output**
- **Easy & Fast connection plug**
- **Vibration-proof design**
- **Small dimensions**
- **Extended design for higher temperature available**
- **High protection class - IP65**
- **Local indicator available**

TSOK measures temperature by the means of a Ptx sensitive element and converts it into standard 4...20 mA 2-wire current signal. This transmitter has a robust vibration-proof stainless steel sheath with IP65 protection class, and is equipped with a DIN 43650 connector that allows fast and easy electrical decoupling. The probe interior is filled with special compound, which protects the electronics from the harsh ambient influences. Eight different temperature measurement ranges from -50 °C and up to 400 °C as well as customer specified ranges are available. Various stem diameters and lengths as well as stainless steel types are also available. A local loop-powered indicator TI200 can be optionally mounted between the sheath top and the connector. Thanks to its small size and robust design, TSOK is applicable for cars, rail vehicles, construction machines, and other industrial equipment.



Technical specifications

Input	
Input (RTD) type	Pt100 or Pt1000 (w=1.385), class B
Measurement range	-50...50 °C; -20...60 °C; 0...50 °C; 0...100 °C; -50...100 °C; 0...150 °C; 0...200 °C; 0...300 °C [1]; 0...400 °C [1,5]
Range on request	minimum span 50 °C
Output	
Signal type	4...20 mA, 2-wire
Linearity proportional to	measured value
Output at sensor burnout	32 mA
Output at sensor shorted	0.2 mA
Accuracy	
Electronic measurement error	0.2% from span or 0.2 °C [2]
RTD measurement error	according to accuracy class
Non-linearity	within measurement error
Temperature drift	0.01% from span for 1 °C

Power supply	
Loop voltage	10...32 VDC
Admissible variations	1 Vp-p at 50 Hz
Maximum line load	750 Ω at 24V/20mA
Operating conditions	
Medium pressure	max. 25 bar
Ambient temperature	-40...85 °C
Ambient humidity	0...98 %RH
EM compatibility and safety	according to EN 61000, EN 61010
Design and materials	
Sensor sheath	stainless steel
Wiring	4-pin detachable connector DIN 43650
Mounting thread	M16, M18, M20, 3/8", 1/2", or other
Stem diameter	6 or 8 mm
Stem length	20...300 mm
Extension length [1]	50...100 mm
Protection class	IP65

[1] Only for the extended-design variant!
[2] Which is greater

Ordering code TSO✱ - G3.G4.G6.G7.G9.G10.G14 - #1.#2

Code	Feature or option		Code values
✱	Variant		K - short-design, K1 - extended-design
G3	Temperature range		T17 - -50...50 °C, T25 - -20...60 °C, T18 - 0...50 °C, T19 - 0...100 °C, T12 - -50...100 °C, T20 - 0...150 °C, T7 - 0...200 °C, T23 - 0...300 °C [1], T8 - 0...400 °C [1,5], TZ - other (specify, ΔT ≥ 50 °C)
G4	Stem diameter 'd' [mm]		6, 8
G6	Stem length 'n' [mm]		20 [3]...300 (step 5 mm)
G7	Extension length 'm' [mm] [1]		50...100 (step 5 mm)
G9	Mounting thread	cylindrical (15 mm length)	Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", QZ - other (specify!)
		tapered (standard length)	Q9 - 3/8" NPT, Q10 - 1/2" NPT, QZ - other (specify!)
G10	Sheath material		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G14	Tip shape		X - standard closed, N - narrowed
#1	Options		X - none, OP - electrochemically polished sheath surface
#2	Local indicator TI200		X - none, A - local indicator TI200 [4]

[3] Minimum thread length + 5 mm!
[4] See TI200 specifications and order separately!
[5] Contact

TRANSMITERE cu TERMOREZISTENTA TSOJ programabil prin comunicatie seriala RS232, 4-20 mA

Programmable RTD Probe with Current Output TSOJ

- **Programmable conversion range**
- **2-wire 4...20 mA output**
- **Easy & Fast connection plug**
- **Straight or angled cable connector**
- **Small dimensions**
- **Vibration-proof design**
- **High protection class - IP65**

TSOJ measures temperature within the -50...200 °C range via a Pt100 sensitive element and converts it into standard 4...20 mA 2-wire signal. The configuration software "TraCon" enables programming of the measurement range and output direction as well as other parameters. The probe has a robust vibration-proof stainless steel sheath with IP65 protection class, and its interior is filled with special compound, which protects the electronics from the harsh ambient influences. TSOJ is equipped with a detachable connector that allows fast and easy electrical decoupling. Various stem diameters and lengths as well as stainless steel types are available. Thanks to its robust design and flexible programming, the TSOJ probe is a fast and convenient solution to varying problems involving temperature measurement and conversion in industrial environments.

Technical specifications

Input	*(programmable)*
Input (RTD) type	Pt100 (w=1.385)
Measurement range	min. -50...max. 200 °C, programmable
Minimum programmable span	50 °C
Output	*(programmable)*
Signal type	4...20 mA or 20...4 mA, 2-wire
Maximum load	800 Ω at 24V/20mA
Sensor failure reaction	< 3.9 or > 20.2 mA, programmable
Accuracy	
Measurement error	0.2% from span or 0.2 °C [1]
RTD error	according to the accuracy class
Non-linearity	within measurement error
Temperature drift	0.01% from span for 1 °C
Power supply	
Loop voltage	10...32 VDC
Admissible variations	1 Vp-p at 50 Hz

Serial interface	
Interface type	RS232, requiring special cable [2]
Configuration software	"TraCon", free
Operating conditions	
Medium pressure	max. 25 bar
Ambient temperature	-20...70 °C
Ambient humidity	0...95 %RH, non-condensing
EM compatibility	according to EN 61326
Design and materials	
Case material	stainless steel
Wiring	4-pin detachable connector M12 or DIN 43650 (incl. female part)
Dimensions	ø30x max. 66 mm (w/o stem and connector)
Mounting thread	M16, M18, M20, 3/8", 1/2", or other
Stem diameter	6 or 8 mm
Stem length	20...300 mm, step 5 mm
Protection class	IP65

[1] Which is greater
[2] Ordered separately

Ordering code TSOJ - G4.G6.G9.G10.G11.G14.G15 - #1

Code	Feature or option		Code values
G4	Stem diameter 'd' [mm]		6, 8
G6	Stem length 'n' [mm]		20 [3]...300 (step 5 mm)
G9	Mounting thread	cylindrical (15 mm length)	Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", QZ - other (specify!)
		tapered (standard length)	Q9 - 3/8" NPT, Q10 - 1/2" NPT, QZ - other (specify!)
G10	Sheath material		M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4404
G11	Accuracy class [4]		A - 'A', B - 'B'
G14	Tip shape		X - standard closed, N - narrowed
G15	Wiring connector		C1A - angled connector M12, C1S - straight connector M12, C7 - DIN 43650 connector
#1	Options		X - none, OP - electrochemically polished sheath surface

[3] Minimum thread length + 5 mm!
[4] Of the built-in Pt100 sensor

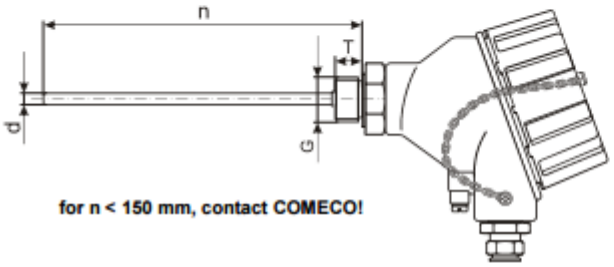
TERMOREZISTENTE pentru zone EX, cu cap de conexiuni
TSC, TSC1, TSC2, TSC3, TSC4, cu bloc de conexiuni
TSOC, TSOC1, TSOC2, TSOC3, TSC4, fara bloc de conexiuni/pentru transmiter

ATEX (MI) RTD PROBE — **TSCx - EX**

- FOR IN-HEAD TRANSMITTER ** — **TSOCx - EX**

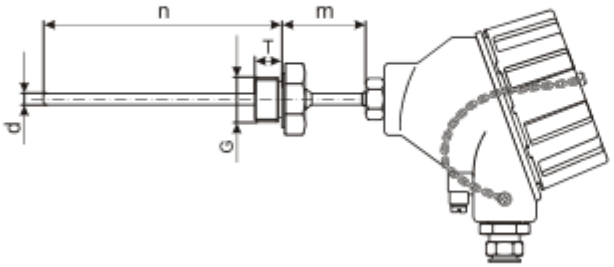
II 2 G Ex d IIC T6 Gb -20°C≤Ta≤+65°C
II 2 D Ex tb IIIC T80 °C Db IP65 — EC-type Certificate No. MP 08 ATEX 0002

DESIGN WITHOUT EXTENSION (TS(O)C)

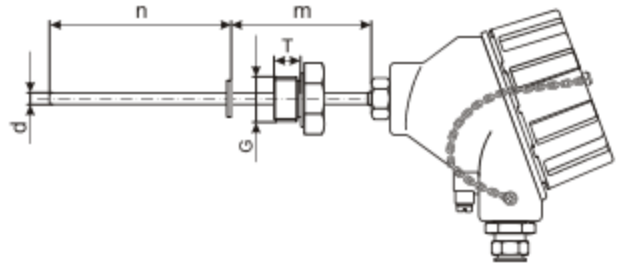


for n < 150 mm, contact COMECO!

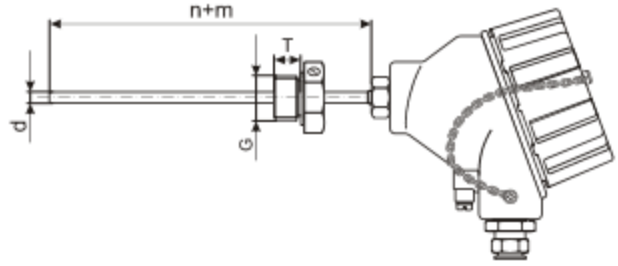
EXTENDED DESIGN WITH WELDED CONNECTION (TS(O)C1)



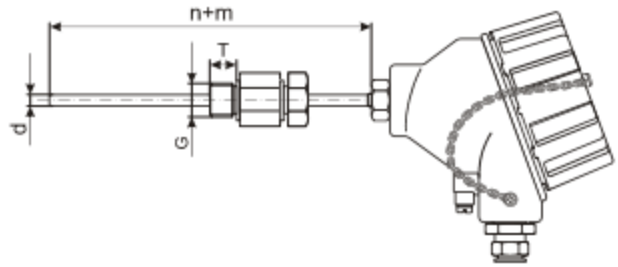
EXTENDED DESIGN WITH MOVABLE CONNECTION (TS(O)C2)



DESIGN WITH ADJUSTABLE CONNECTION (TS(O)C3)



DESIGN WITH GLAND-TYPE CONNECTION (TS(O)C4)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS n [mm]	DIMENSIONS d [mm]	DIMENSIONS wires
Regular Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	50...500	4	2, 3*
	T1 -50...400 °C		5	
	T24 -50...500 °C	50...1500	6	2, 3, 4*
	T11* -50...600 °C	50...3000	8, 10, 12, 14, 16, 20	2, 3, 4
2(3) x Pt (RB,RD,RF,RG)	T2* -200...600 °C	50...3000	6*, 8, 10	2x2(3)*
	T4* 0...800 °C		12, 14, 16, 20	2x2(3), 3x2
	T22 -200...200 °C			
1 x Cu (RH, RK)	T9 -50...200 °C	50...1500	6	2, 3, 4*
		50...3000	8, 10, 12, 14, 16, 20	
2 x Cu (RH, RK)	T9 -50...200 °C	50...3000	8, 10	2x2
			12, 14, 16, 20	2x2(3)*
1 x PTC (RP, RQ)	T12 -50...100 °C	50...1500	6	2, 3
		50...3000	8, 10, 12, 14	
2 x PTC (RP, RQ)		50...3000	8, 10, 12, 14	2x2
MI Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	50...50000	3*	2, 3*
	T1 -50...400 °C		4.5	2, 3*
	T24 -50...500 °C		6	2, 3, 4*
	T11* -50...600 °C		8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C	50...50000	6, 8	2x2, 2x3*
	T4* 0...800 °C			
	T22 -200...200 °C			

Protection head:
EG(SS), EGS, EGW(SS), EX8(SS), EX8W(SS), EX10(SS), EX10W(SS), EX8WD, EX10WD (see Appendix - Protection Heads)

Electrical entry:
- cable gland(s): SS or brass, cemented, ID 7.5 mm
- threaded head conduit(s)

Process connection 'G' (nipple or union nut):
- M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2), M27x2(Q5), M33x2(Q25)
- 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11), 1"(Q12/Q15)
- welded or adjustable flange
- other
- w/o mounting appliances

Thread length:
- cylindrical thread: T = 15 mm
- NPT thread: according to ANSI B1.20.1

Extension length:
m = 0...1500 mm

Extension diameter: (for TS(O)C1 and TS(O)C2 only, [mm])

Ext. length 'm' \ Probe diameter 'd'	3, 4 mm	4.5...6 mm	8 mm	10 mm	10+ mm
up to 50 mm	8	d	d	d	d
50...150 mm	8	8	d	d	d
150...500 mm	10	10	10	d	d
500+ mm	14	14	14	14	d

Tip shape:
standard or narrowed (see Appendix - Tip Shapes)

Process pressure:

Probe design	TS(O)C, TS(O)C1	TS(O)C2	TS(O)C4	TS(O)C3
Max. pressure *	25 bar	16 bar	6 bar	0 bar

Sheath material:
1.4301(M1), 1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362(M15)

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

* Please contact

** Order transmitter separately!!!

Ordering code TS✱(1,2,3,4) - (MI -) G0'n0".G1G2.G3.G4.G6.G7.G9'9".G10.G11.G12.G13.G14 - #1.#2 - EX

Code	Feature or option		Code values
✱	Base model variant		C - standard (w/ terminal block), OC - prepared for in-head transmitter (w/o terminal block)
G0'	Protection head		EG - type "EG", EGS - type "EGS", EGSS - type "EGSS", EGW - type "EGW", EGWSS - type "EGWSS", EX8 - type "EX8", EX8SS - type "EX8SS", EX8W - type "EX8W", EX8WSS - type "EX8WSS", EX10 - type "EX10", EX10SS - type "EX10SS", EX10W - type "EX10W", EX10WSS - type "EX10WSS", EX8WD - type "EX8WD", EX10WD - type "EX10WD"
G0"	Electrical entry ('n' - number of entries [12])		G - gland, U2 - M20x1.5, U4 - G1/2", U6 - G3/4", U10 - 1/2" NPT, U11 - 3/4" NPT
G1	Number of RTD sensors		1, 2, or 3 [11]
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP - PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50...400 °C, T2 - -200...600 °C, T4 - 0...800 °C, T9 - -50...200 °C, T11 - -50...600 °C, T22 - -200...200 °C, T24 - -50...500 °C
G4	Diameter 'd' [mm]	regular design	4, 5, 6, 8, 10, 12, 14, 16, 20
		MI design	3 [11], 4.5, 6, 8
G6	Probe length 'n' [mm] [1]		50...50000 (see table overleaf)
G7	Probe length 'm' [mm] [2]		0...1500
G9'	Mounting connection		X - no mounting appliances [3], Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q5 - M27x2, Q6 - G3/4", Q9 - 3/8" NPT, Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q12 - G1", Q15 - 1" NPT, Q25 - M33x2, Uxx - union nut (xx - same as for Qxx), F - flange (specify!), Z - other connection (specify!)
G9"	Compression fitting ferrule [4]		BR - brass, GR - graphite, SS - stainless steel, TF - Teflon®
G10	Sheath material (wetted parts)	regular design	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404), M15 - 1.4362 [11]
		MI design	M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404)
G11	Accuracy class		X - none [5], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [11]
G13	Wire material [6]		CU - copper [7], NI - nickel, AG - silver [8]
G14	Tip shape		X - standard closed, N - narrowed [8]
#1	Options		X - none, OV - vibration proof (spring terminals, MgO or Silicone filled, secured screws) [8], OP - electrochemically polished sheath surface [8]
#2	Incorporated devices		X - none, T - in-head transmitter [9], A - local indicator [10]

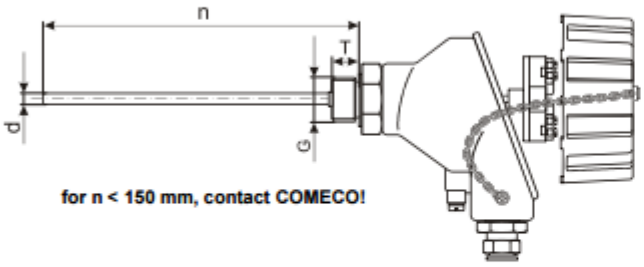
[1] 'n+m' for TS(O)C3 and TS(O)C4!
[2] Only for TS(O)C1 and TS(O)C2!
[3] Only for TS(O)C!
[4] Only for TS(O)C4!
[5] For non-Pt sensors
[6] Only for Pt sensors!
[7] Not applicable to non-MI (regular) RTDs for above 500 °C!
[8] Only for non-MI (regular) design!
[9] Only for variant 'OC'! See transmitter datasheets and order separately!
[10] With windowed head only! See indicator datasheets and order separately!
[11] Contact
[12] Applicable for the selected head type (see Appendix - Protection Heads)

TERMOREZISTENTE pentru zone EX, cu cap de conexiuni, pentru inserare/inlocuire senzor TSCS, TSCS1, TSCS2, TSCS3, TSCS4, cu bloc de conexiuni TSOCS, TSOCS1, TSOCS2, TSOCS3, TSOCS4, fara bloc de conexiuni/pentru transmiter

ATEX RTD PROBE WITH (MI) INSERT — **TSCSx - EX**
- FOR IN-HEAD TRANSMITTER ** — **TSOCSx - EX**

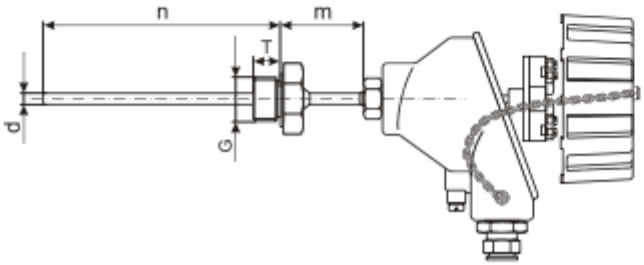
II 2 G Ex d IIC T6 Gb -20°C≤Ta≤+65°C
II 2 D Ex tb IIIC T80 °C Db IP65 — EC-type Certificate No. MP 08 ATEX 0002

DESIGN WITHOUT EXTENSION (TS(O)CS)

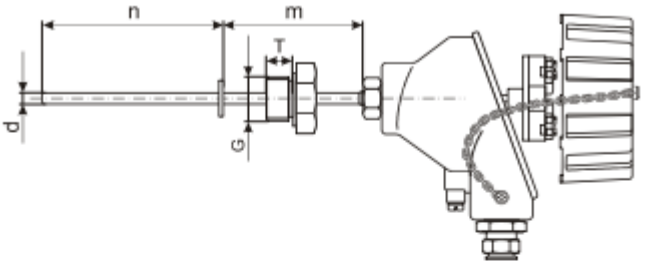


for n < 150 mm, contact COMECO!

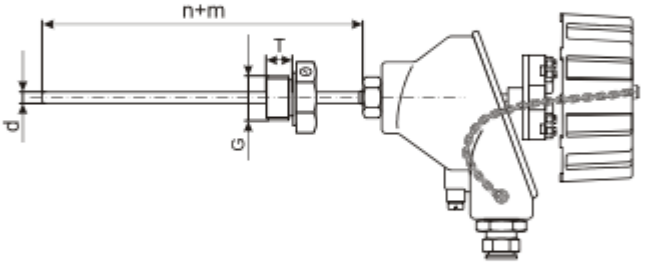
EXTENDED DESIGN WITH WELDED CONNECTION (TS(O)CS1)



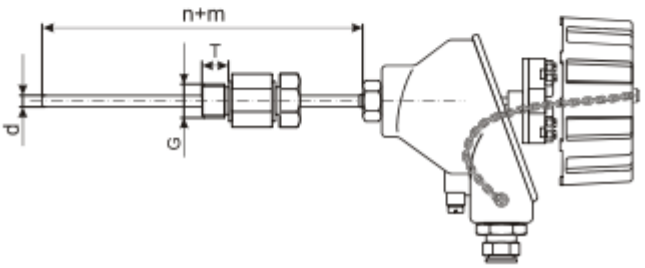
EXTENDED DESIGN WITH MOVABLE CONNECTION (TS(O)CS2)



DESIGN WITH ADJUSTABLE CONNECTION (TS(O)CS3)



DESIGN WITH GLAND-TYPE CONNECTION (TS(O)CS4)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS d [mm]	d insert [mm]	wires
Regular Insert Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	8	4, 5	2, 3*
	T1 -50...400 °C	9, 10, 12, 14, 16, 20	6	2, 3, 4*
	T24 -50...500 °C			
	T11* -50...600 °C	12, 14, 16, 20	8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T2* -200...600 °C	9, 10, 12, 14, 16, 20	6	2x2*
	T4* 0...800 °C			
	T22 -200...200 °C	12, 14, 16, 20	8	2x2(3)*
1 x Cu (RH, RK)	T9 -50...200 °C	9, 10, 12, 14, 16, 20	6	2, 3, 4*
		12, 14, 16, 20	8	2, 3, 4
2 x Cu (RH, RK)	T9 -50...200 °C	9, 10, 12, 14, 16, 20	6	2x2*
		12, 14, 16, 20	8	2x2(3)*
MI Insert Design				
1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	6, 8, 9, 10, 12, 14, 16, 20	3*	2, 3*
	T1 -50...400 °C	8, 9, 10, 12, 14, 16, 20	4.5	2, 3*
	T24 -50...500 °C			
	T11* -50...600 °C	9, 10, 12, 14, 16, 20	6	2, 3, 4*
	T2* -200...600 °C	12, 14, 16, 20	8	2, 3, 4
2 x Pt (RB,RD,RF,RG)	T4* 0...800 °C	9, 10, 12, 14, 16, 20	6	2x2, 2x3*
	T22 -200...200 °C	12, 14, 16, 20	8	2x2, 2x3*

Protection head:
EG(SS), EGS, EGW(SS), EX8(SS), EX8W(SS), EX10(SS), EX10W(SS), EX8WD, EX10WD (see Appendix - Protection Heads)

Electrical entry:
- cable gland(s): SS or brass, cemented, ID 7.5 mm
- threaded head conduit(s)

Process connection 'G' (nipple or union nut):
- M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2), M27x2(Q5), M33x2(Q25)
- 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11), 1"(Q12/Q15)
- welded or adjustable flange
- other
- w/o mounting appliances

Thread length:
- cylindrical thread: T = 15 mm
- NPT thread: according to ANSI B1.20.1

Extension length:
m = 0...1500 mm

Extension diameter: (for TS(O)CS1 and TS(O)CS2 only, [mm])

Probe diameter 'd' / Ext. length 'm'	6 mm	8 mm	9, 10 mm	10+ mm
up to 50 mm	d	d	d	d
50...150 mm	8	d	d	d
150...500 mm	10	10	d	d
500+ mm	14	14	14	d

Tip shape:
standard or narrowed (see Appendix - Tip Shapes)

Process pressure:

Probe design	TS(O)CS, TS(O)CS1	TS(O)CS2	TS(O)CS4	TS(O)CS3
Max. pressure *	25 bar	16 bar	6 bar	0 bar

Sheath material:
1.4301(M1), 1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362(M15)

Wire material:
Cu, Ni, or Ag

Accuracy class:
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)

* Please contact

** Order transmitter separately!!!

Ordering code TS✱(1,2,3,4) - (MI -) G0'n0".G1G2.G3.G4.G6.G7.G9'9".G10.G11.G12.G13.G14 - #1.#2 - EX

Code	Feature or option		Code values
✱	Base model variant		CS - standard (w/ terminal block), OCS - prepared for in-head transmitter (w/o terminal block)
G0'	Protection head		EG - type "EG", EGS - type "EGS", EGSS - type "EGSS", EGW - type "EGW", EGWSS - type "EGWSS", EX8 - type "EX8", EX8SS - type "EX8SS", EX8W - type "EX8W", EX8WSS - type "EX8WSS", EX10 - type "EX10", EX10SS - type "EX10SS", EX10W - type "EX10W", EX10WSS - type "EX10WSS", EX8WD - type "EX8WD", EX10WD - type "EX10WD"
G0"	Electrical entry ('n' - number of entries [13])		G - gland, U2 - M20x1.5, U4 - G1/2", U6 - G3/4", U10 - 1/2" NPT, U11 - 3/4" NPT
G1	Number of RTD sensors		1 or 2
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100
G3	Temperature range		T1 - -50...400 °C, T2 - -200...600 °C, T4 - 0...800 °C, T9 - -50...200 °C, T11 - -50...600 °C, T22 - -200...200 °C, T24 - -50...500 °C
G4	Diameter 'd' / 'd insert' [mm]	regular insert	8/4, 8/5, 9/6, 10/6, 12/6, 14/6, 12/8, 14/8, 16/6, 16/8, 20/6, 20/8
		MI insert	6/3 [12], 8/4.5, 9/6, 10/6, 12/6, 14/6, 16/6, 16/8, 20/6, 20/8
G6	Probe length 'n' [mm] [1]		50...3000
G7	Probe length 'm' [mm] [2]		0...1500
G9'	Mounting connection		X - no mounting appliances [3], Q0 - M16x1.5, Q1 - M18x1.5, Q2 - M20x1.5, Q3 - G3/8", Q4 - G1/2", Q5 - M27x2, Q6 - G3/4", Q9 - 3/8" NPT, Q10 - 1/2" NPT, Q11 - 3/4" NPT, Q12 - G1", Q15 - 1" NPT, Q25 - M33x2, Uxx - union nut (xx - same as for Qxx), F - flange (specify!), Z - other connection (specify!)
G9"	Compression fitting ferrule [4]		BR - brass, GR - graphite, SS - stainless steel, TF - Teflon®
G10	Sheath material (wetted parts and insert)	regular insert	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404), M15 - 1.4362 [12]
		MI insert	M2 - 1.4541, M3 - 1.4571, M9 - 1.4401 (1.4404)
G11	Accuracy class		X - none [5], A - 'A', B - 'B', C - '2xB'
G12	Number of wires		2, 3, 4 [12]
G13	Wire material [6]		CU - copper [7], NI - nickel, AG - silver [8]
G14	Tip shape		X - standard closed, N - narrowed [12]
#1	Options		X - none, OV - vibration proof (MgO or Silicone filled insert, secured screws) [8,9], OS - spring-loaded insert, OP - electrochemically polished wetted parts
#2	Incorporated devices		X - none, T - in-head transmitter [10], A - local indicator [11]

[1] 'n+m' for TS(O)CS3 and TS(O)CS4!
[2] Only for TS(O)CS1 and TS(O)CS2!
[3] Only for TS(O)CS!
[4] Only for TS(O)CS4!
[5] For non-Pt sensors
[6] Only for Pt sensors!
[7] Not applicable to non-MI (regular) RTD inserts for above 500 °C!
[8] Only for non-MI (regular) inserts!
[9] Requires 'OS' option!
[10] Only for variant 'OCS'! See transmitter datasheets and order separately!
[11] With windowed head only! See indicator datasheets and order separately!
[12] Contact
[13] Applicable for the selected head type (see Appendix - Protection Heads)