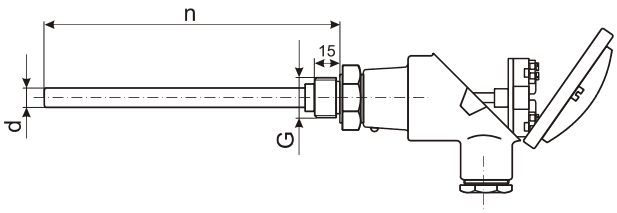
RTD PROBE WITH PROTECTION HEAD AND INSERT — **CSx (TSCSx)**

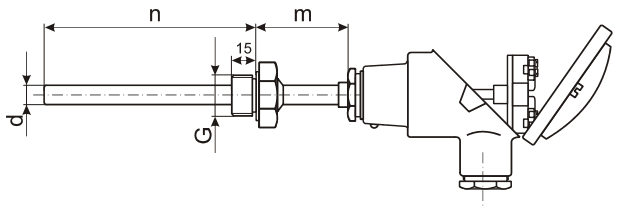
(FOR IN-HEAD TRANSMITTER)** — **OCSx (TSOCSx)**

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

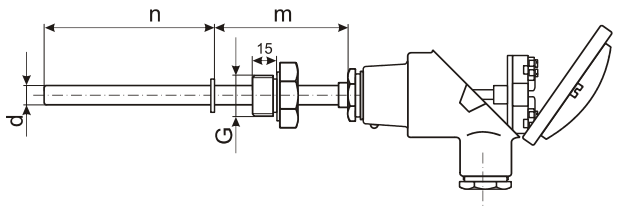
DESIGN WITHOUT EXTENSION (CS)



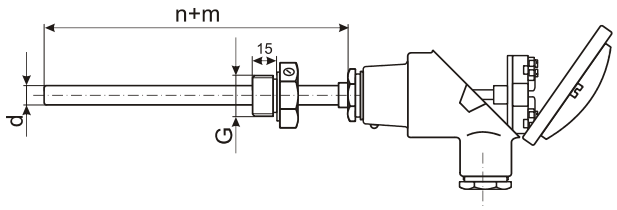
EXTENDED DESIGN WITH WELDED CONNECTION (CS1)



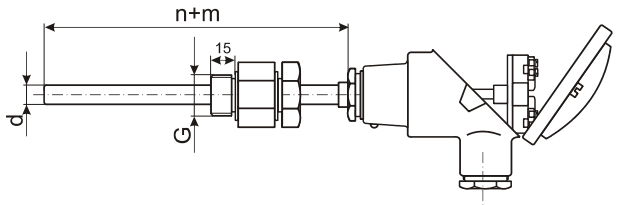
EXTENDED DESIGN WITH MOVABLE CONNECTION (CS2)



DESIGN WITH ADJUSTABLE CONNECTION (CS3)



DESIGN WITH GLAND-TYPE CONNECTION (CS4)



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

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 or adjustable flange
- no mounting appliances

Thermal isolation between nipple and metal head: (for TS(O)CS 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)CS1 and TS(O)CS2 only, [mm])

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

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

Process pressure:

Probe design	CS, CS1	CS2	CS4	CS3
Max. pressure *	25 bar	16 bar	6 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 COMECO!

** Order transmitter separately!!!

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

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	**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	Diameter 'd' [mm]	**8/4**, **8/5**, **9/6**, **10/6**, **12/6**, **14/6**, **12/8**, **14/8**, **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, **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	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** [9]
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], **OP** - electrochemically polished sheath surface
#2	Local indicator	**X** - none, **A** - local indicator mounted [8]

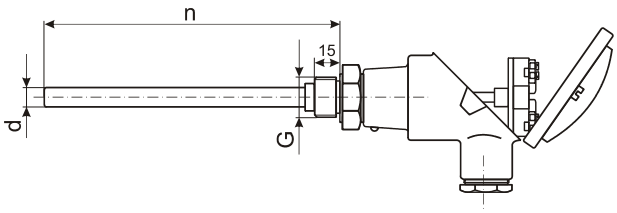
[1] 'n+m' for TS(O)CS3 and TS(O)CS4!
[2] Only for TS(O)CS1 and TS(O)CS2!
[3] Only for TS(O)CS4!
[4] Only for Pt sensors!
[5] Only for non-explosion-proof RTDs!
[6] Requires 'OS' option!
[7] Only for TS(O)CS!
[8] With windowed head only! See indicator datasheets and order separately!
[9] Contact COMECO!

T/C PROBE WITH PROTECTION HEAD AND INSERT — **CSx (TSCSx)**

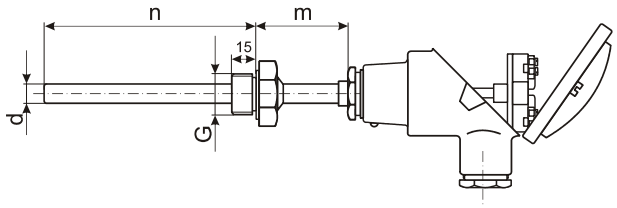
(FOR IN-HEAD TRANSMITTER)** — **OCSx (TSOCSx)**

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

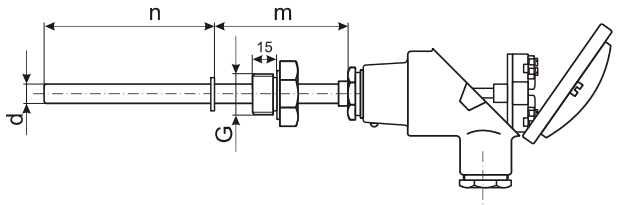
DESIGN WITHOUT EXTENSION (CS)



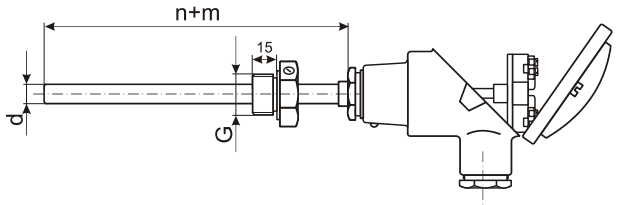
EXTENDED DESIGN WITH WELDED CONNECTION (CS1)



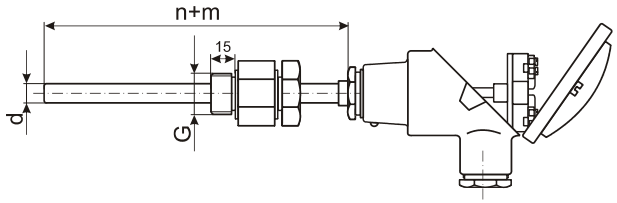
EXTENDED DESIGN WITH MOVABLE CONNECTION (CS2)



DESIGN WITH ADJUSTABLE CONNECTION (CS3)



DESIGN WITH GLAND-TYPE CONNECTION (CS4)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS d [mm]	DIMENSIONS d-insert [mm]	DIMENSIONS wires
Regular Thermocouple Insert Design				
1 x J; 1 x L	T4 0...800 °C	10,12,14,16,20	6,8,10	2
2 x J; 2 x L	T4 0...800 °C	12,14,16,20	8,10	2x2
1 x K	T3 0...850 °C T16 0...1100 °C	10,12,14,16,20	6,8,10	2
2 x K	T6* 0...1150 °C	12,14,16,20	8,10	2x2
1 x E	T3 0...850 °C	10,12,14,16,20	6,8,10	2
2 x E	T13 0...1000 °C	12,14,16,20	8,10	2x2
1 x S 1 x R	T16 0...1100 °C T6* 0...1150 °C	10,12,14,16,20	6,8,10	2
2 x S 2 x R	T16 0...1100 °C T6* 0...1150 °C	12,14,16,20	8,10	2x2
MI Thermocouple Insert Design				
1 x J	T4 0...800 °C	6,8,10,12,14,16,20	3, 4.5, 6, 8	2
2 x J	T4 0...800 °C			2x2
1 x K 1 x N, 1 x E	T3 0...850 °C T16 0...1100 °C	8,10,12,14,16,20	4.5, 6, 8	2
2 x K 2 x N, 2 x E	T6* 0...1150 °C T6* 0...1250 °C			2x2

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 or adjustable flange
- no mounting appliances

Thermal isolation between nipple and metal head: (for TS(O)CS 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®

Process length:
n = 50…3000 mm

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	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 (hot junction design):
standard (isolated), grounded, open-tube, exposed (see Appendix - Tip shapes)

Process pressure:

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

Sheath material:
1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4762(M4), 1.4841(M5), 1.4845(M6), 1.4876(M7), 2.4816(M8), 1.4362 (M15)

MI sheath material:
1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4762(M4), 1.4841(M5), 1.4876(M7), 2.4816(M8)

Accuracy class:
'1' or '2' (see Appendix - T/C Tolerance)

* Please contact COMECO!

** Order transmitter separately!!!

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

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		**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 thermocouples		**1** or **2**
G2	Thermocouple		**J** - type "J", **K** - type "K", **N** - type "N", **E** - type "E", **L** - type "L", **S** - type "S", **R** - type "R"
G3	Temperature range		**T3** - 0…850 °C, **T4** - 0…800 °C, **T6** - 0…1200 °C [7], **T13** - 0…1000 °C, **T16** - 0…1100 °C
G4	Diameter 'd' [mm]	T/C w/ regular insert	**10/6**, **10/8**, **12/6**, **12/8**, **14/6**, **14/8**, **14/10**, **16/10**, **20/10**
		T/C w/ MI insert	**6/3**, **8/4**, **10/6**, **12/6**, **14/6**, **16/6**, **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, **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	Sheath material (both outer and insert)	T/C w/ regular insert	**M2** - 1.4541, **M3** - 1.4571, **M4** - 1.4762, **M5** - 1.4841, **M6** - 1.4845, **M7** - 1.4876, **M8** - 2.4816, **M9** - 1.4404, **M15** - 1.4362
		T/C w/ MI insert	**M2** - 1.4541, **M3** - 1.4571, **M4** - 1.4762, **M5** - 1.4841, **M6** - 1.4845, **M8** - 2.4816, **M9** - 1.4404
G11	Accuracy class		**1** - '1' [7], **2** - '2'
G14	Insert tip shape (hot junction)		**X** - standard (isolated from sheath), **G** - grounded, **E** - exposed hot junction, **O** - open-tube design
#1	Options		**X** - none, **OV** - vibration proof (secured screws) [4], **OS** - spring-loaded insert, **OT** - thermal isolation [5], **OP** - electrochemically polished sheath surface
#2	Local indicator		**X** - none, **A** - local indicator mounted [6]

[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)CS4!
[4] Requires 'OS' option!
[5] Only for TS(O)CS!
[6] With windowed head only! See indicator datasheets and order separately!
[7] Contact COMECO!