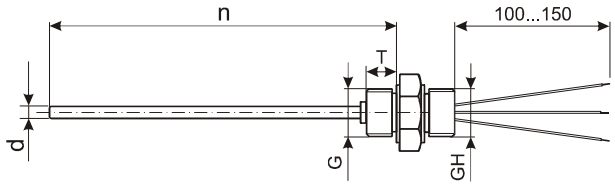
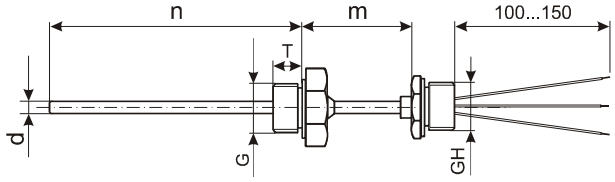
(MI) RTD PROBE FOR HEAD ASSEMBLY — TSECx

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

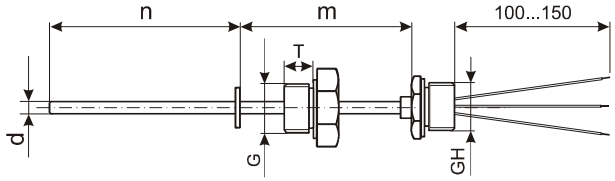
DESIGN WITHOUT EXTENSION (TSEC)



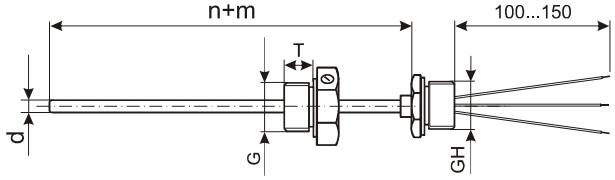
EXTENDED DESIGN WITH WELDED CONNECTION (TSEC1)



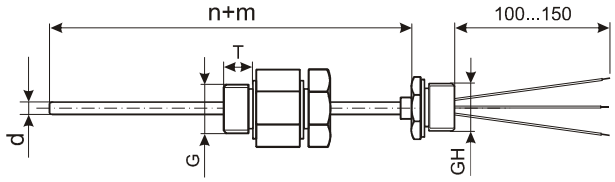
EXTENDED DESIGN WITH MOVABLE CONNECTION (TSEC2)



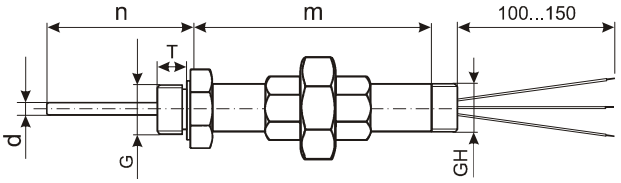
DESIGN WITH ADJUSTABLE CONNECTION (TSEC3)



DESIGN WITH GLAND-TYPE CONNECTION (TSEC4)



DESIGN WITH NIPPLE-UNION-NIPPLE CONNECTION (TSEC5)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS n [mm]	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 T2* -200...600 °C T4* 0...800 °C T26 -200...150 °C T22 -200...200 °C	50…500	4	2, 3*
			5	
		50…1500	6	2, 3, 4*
		50…3000	8, 10, 12, 14, 16, 20	2, 3, 4
2(3) x Pt (RB,RD,RF,RG)		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 T2* -200...600 °C T4* 0...800 °C T22 -200...200 °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)		50...50000	6, 8	2x2, 2x3*

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

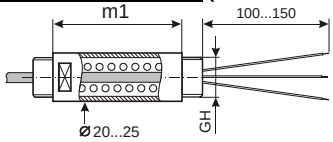
Sheath material:
1.4301(M1), 1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4362(M15)

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 COMECO!

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

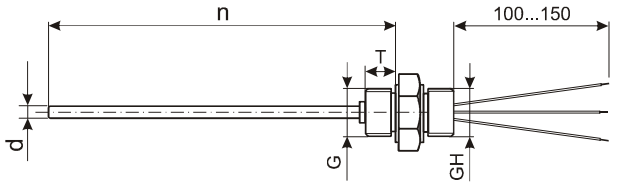
Code	Feature or option		Code values
G1	Number of RTD sensors		1, 2, or 3 [10]
G2	Sensor		RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100, RP - PTC 1k, RQ - PTC 2k
G3	Temperature range		T1 - -50…400 °C, T2 - -200…600 °C, T4 - 0…800 °C, T9 - -50…200 °C, T11 - -50…600 °C, T22 - -200…200 °C, T24 - -50…500 °C, T26 - -200…150 °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!
[10] Contact COMECO!

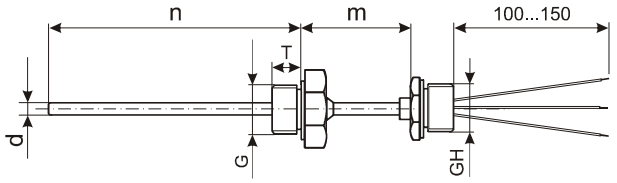
(MI) T/C PROBE FOR HEAD ASSEMBLY — TSECx

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

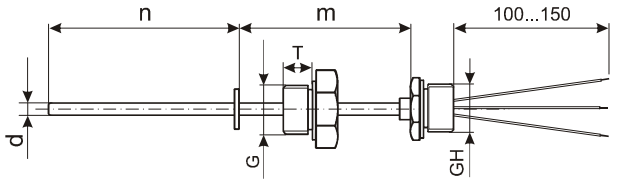
DESIGN WITHOUT EXTENSION (TSEC)



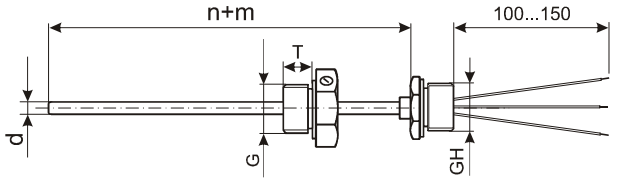
EXTENDED DESIGN WITH WELDED CONNECTION (TSEC1)



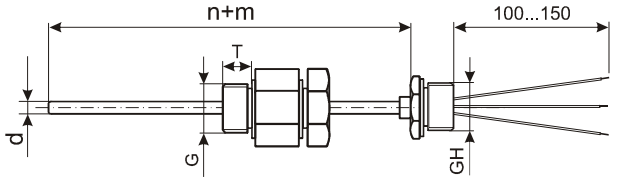
EXTENDED DESIGN WITH MOVABLE CONNECTION (TSEC2)



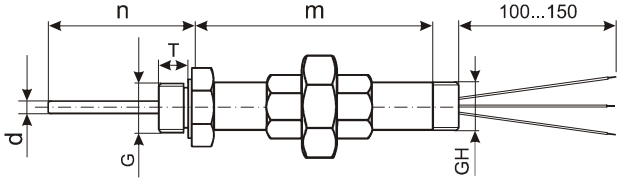
DESIGN WITH ADJUSTABLE CONNECTION (TSEC3)



DESIGN WITH GLAND-TYPE CONNECTION (TSEC4)



DESIGN WITH NIPPLE-UNION-NIPPLE CONNECTION (TSEC5)



SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS n [mm]	d [mm]	wires
Regular Design				
1(2) x J 1(2) x L	T4 0...800 °C	50...1500	6	2 (2x2)
		50...3000	8, 10, 12, 14, 16, 20, 22	
1(2) x K	T3 0...850 °C T16 0...1100 °C	50...1500	6	2 (2x2)
	T6* 0...1150 °C	50...3000	8, 10, 12, 14, 16, 20, 22	
1(2) x E	T3 0...850 °C	50...1500	6	2 (2x2)
	T13 0...1000 °C	50...3000	8, 10, 12, 14, 16, 20, 22	
1(2) x S 1(2) x R	T16 0...1100 °C	50...1500	6	2 (2x2)
	T6* 0...1150 °C	50...3000	8, 10, 12, 14, 16, 20, 22	
MI Design				
1 x J	T4 0...800 °C	50...50000	3, 4.5, 6, 8, 10*	2
2 x J				2x2
1 x T	T8 0...400 °C	50...50000	3, 4.5, 6, 8, 10*	2
2 x T				2x2
1 x K 1 x N, 1 x E	T3 0...850 °C T16 0...1100 °C	50...50000	3, 4.5, 6, 8, 10*	2
2 x K 2 x N, 2 x E	T6* 0...1150 °C T6* 0...1250 °C	50...50000	3, 4.5, 6, 8, 10*	2x2
2 x S 2 x R	T16 0...1100 °C T6* 0...1150 °C	50...10000	3, 4.5, 6	2x2

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 mm	4.5, 6 mm	8 mm	10 mm	10+ mm
up to 50 mm	6	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 (hot junction design):
standard (isolated), grounded, open-tube, exposed (see Appendix - Tip Shapes)

Process pressure:

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

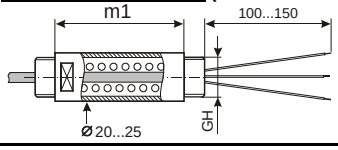
Sheath material:
1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4762(M4), 1.4841(M5), 1.4845(M6), 1.4876(M7), 2.4816(M8), 1.4362 (M15)

MI sheath material:
1.4401/1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4762(M4), 1.4841(M5), 1.4876(M7), 2.4816(M8), Nicrobell® (M10)

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

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

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



m1 = 60…100 mm
d ≤ 8 mm

* Please contact COMECO!

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

Code	Feature or option		Code values
G1	Number of thermocouples		**1** or **2**
G2	Thermocouple	regular design	**E** - type "E", **J** - type "J", **K** - type "K", **L** - type "L", **R** - type "R", **S** - type "S"
		MI design	**E** - type "E", **J** - type "J", **K** - type "K", **N** - type "N", **R** - type "R", **S** - type "S", **T** - type "T"
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]	regular design	**6**, **8**, **10**, **12**, **14**, **16**, **20**, **22**
		MI design	**3**, **4.5**, **6**, **8**, **10**
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	**M2** - 1.4541, **M3** - 1.4571, **M4** - 1.4762, **M5** - 1.4841, **M6** - 1.4845, **M7** - 1.4876, **M8** - 2.4816, **M9** - 1.4401 (1.4404), **M15** - 1.4362
		MI 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** - 1.4401 (1.4404), **M10** - Nicrobell®
G11	Accuracy class		**1** - '1' [7], **2** - '2'
G14	Tip shape (hot junction)		**X** - standard (isolated from sheath), **G** - grounded, **E** - exposed hot junction, **O** - open-tube design
#1	Options		**X** - none, **OA** - spring-loaded adapter [5], **OP** - electrochemically polished sheath surface [6]

[1] 'n+m' for TSEC3 and TSEC4!
[2] Only for TSEC1, TSEC2, and TSEC5!
[3] Only for TSEC!
[4] Only for TSEC4!
[5] Only for TSEC, TSEC1, and TSEC5!
[6] Only for non-MI (regular) design!
[7] Contact COMECO!