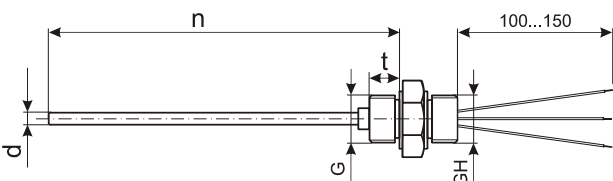


RTD PROBE FOR HEAD ASSEMBLY ECx (TSECx) Sheath - stainless steel (see Appendix - Sheath materials) Extension wires - Teflon® or glass fiber	SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS		
			n [mm]	d [mm]	wires
<b>DESIGN WITHOUT EXTENSION (EC)</b> 	1 x Pt (RB,RD,RF,RG)	T9 -50...200 °C	50...200	4	2, 3*
		T1 -50...400 °C	50...500	4.5, 5	2, 3*
		T11* -50...600 °C	50...1500	6	2, 3, 4*
		T15 -200...200 °C	50...3000	8, 10, 12, 14, 16, 20, 21	2, 3, 4
	2(3) x Pt (RB,RD,RF,RG)	T4* -0...800 °C	50...3000	6*, 8, 10	2x2
				12, 14, 16, 20, 21	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, 21		
2 x Cu (RH, RK)	T9 -50...200 °C	50...3000	8, 10	2x2	
			12, 14, 16, 20, 21	2x2(3)*	

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					
Thread length:					
t = 15 mm or 20 mm (NPT)					
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)					
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'	4, 4.5 mm	5, 6 mm	8 mm	10 mm	10+ mm
Ext. length 'm'					
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

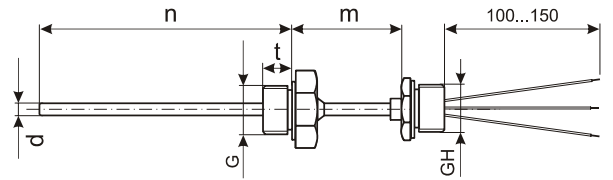
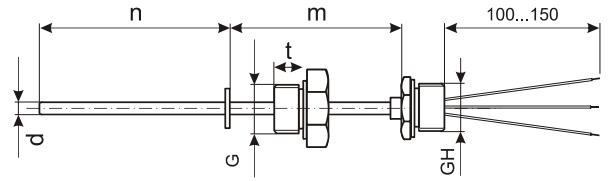
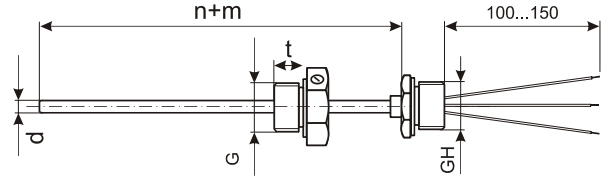
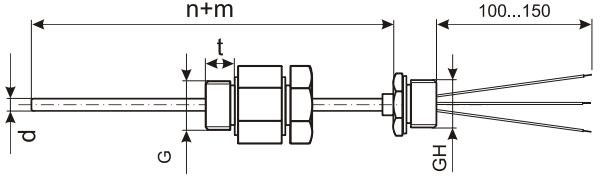
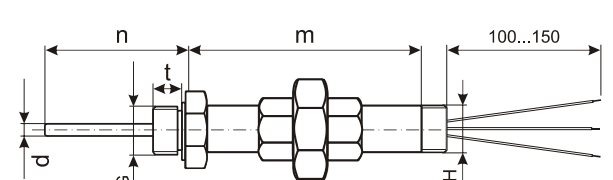
  

Tip shape:					
standard, narrowed, pitted (see Appendix - Tip shapes)					
Process pressure:					
Probe design	EC, EC1	EC2	EC4	EC3, EC5	
Max. pressure *	25 bar	16 bar	6 bar	0 bar	

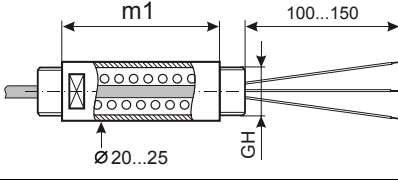
  

Sheath material:					
1.4301(M1), 1.4362 (M15), 1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4762(M4), 1.4848(M6)					
Wire material:					
Cu, Ni, or Ag					
Extension wire isolation:					
Teflon® (T) or glass fiber (GL)					
Accuracy class:					
'A', 'B', or '2xB' (see Appendix - RTD Tolerance)					
Spring-loaded adapter:					
(mounted between probe and protection head)					

DESIGN WITH WELDED CONNECTION (EC1)	
	
DESIGN WITH MOVABLE CONNECTION (EC2)	
	
DESIGN WITH ADJUSTABLE CONNECTION (EC3)	
	
DESIGN WITH GLAND-TYPE CONNECTION (EC4)	
	
DESIGN WITH NIPPLE-UNION-NIPPLE CONNECTION (EC5)	
	

Spring-loaded adapter:	
	
	m1 = 60...100 mm

\* Please contact COMECO!

COMECO reserves the right of changing specifications without prior notice!

**Ordering code** TSEC(1,2,3,4,5) - 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 <sup>(8)</sup>	
G2	Sensor	RB - Pt50, RD - Pt100, RF - Pt500, RG - Pt1000, RH - Cu50, RK - Cu100	
G3	Temperature range	T1 - -50...400 °C, T4 - 0...800 °C (Ag wires only!), T9 - -50...200 °C, T11 - -50...600 °C (Ni or Ag wires only!), T15 - -200...200 °C	
G4	Diameter 'd' [mm]	regular RTD	4, 5, 6, 8, 10, 12, 14, 16, 20, 21
		MI RTD <sup>(1)</sup>	4.5, 6
G6	Probe length 'n' [mm] <sup>(2)</sup>	50...3000 (see table overleaf)	
G7	Probe length 'm' [mm] <sup>(3)</sup>	0...1500 (m1...1500 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 <sup>(4)</sup>	TF - Teflon®, GR - graphite, BR - brass, SS - stainless steel	
GH	Head connection	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	M1 - 1.4301, M2 - 1.4541, M3 - 1.4571, M4 - 1.4762, M6 - 1.4845, M9 - 1.4404, M15 - 1.4362	
G11	Accuracy class	X - none <sup>(5)</sup> , A - 'A', B - 'B', C - '2xB'	
G12	Number of wires	2, 3, 4 <sup>(8)</sup>	
G13	Wire material	CU - copper, NI - nickel <sup>(1)</sup> , AG - silver <sup>(1)</sup>	
G14	Tip shape	X - standard closed, N - narrowed, P - pitted <sup>(6)</sup>	
#1	Options	X - none, OV - vibration proof (MgO or Silicone filled), OA - spring-loaded adapter <sup>(7)</sup> , OP - electrochemically polished sheath surface	

<sup>(1)</sup> Only for Pt sensors!

<sup>(2)</sup> 'n+m' for TSEC3 and TSEC4!

<sup>(3)</sup> Only for TSEC1, TSEC2, and TSEC5!

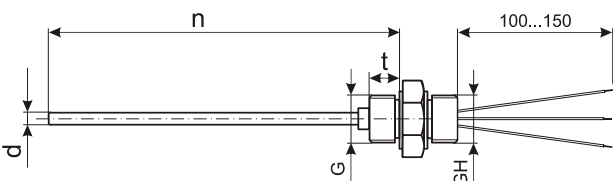
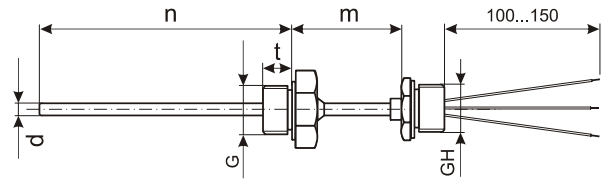
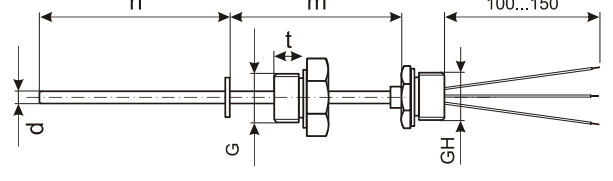
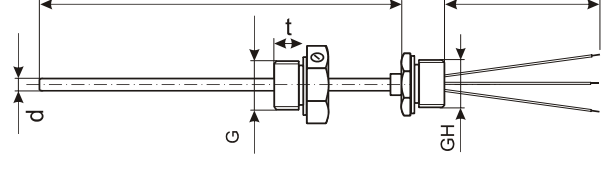
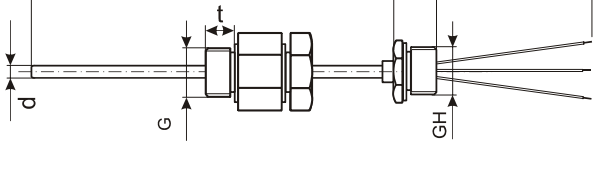
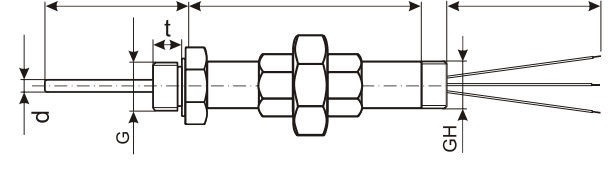
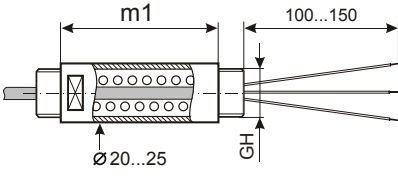
<sup>(4)</sup> Only for TSEC4!

<sup>(5)</sup> For non-Pt sensors

<sup>(6)</sup> Only for non-explosion-proof RTDs!

<sup>(7)</sup> Only for TSEC, TSEC1, and TSEC5!

<sup>(8)</sup> Contact COMECO!

T/C PROBE FOR HEAD ASSEMBLY ECx (TSECx) Sheath - stainless steel (see Appendix - Sheath materials) Extension wires - Teflon® or glass fiber	SENSITIVE ELEMENT	TEMPERATURE RANGE	DIMENSIONS																																										
			n [mm]	d [mm]	wires																																								
<p><b>DESIGN WITHOUT EXTENSION (EC)</b></p>  <p><b>EXTENDED DESIGN WITH WELDED CONNECTION (EC1)</b></p>  <p><b>EXTENDED DESIGN WITH MOVABLE CONNECTION (EC2)</b></p>  <p><b>DESIGN WITH ADJUSTABLE CONNECTION (EC3)</b></p>  <p><b>DESIGN WITH GLAND-TYPE CONNECTION (EC4)</b></p>  <p><b>DESIGN WITH NIPPLE-UNION-NIPPLE CONNECTION (EC5)</b></p> 	<b>MI Thermocouple Design</b>																																												
	1 x J	T4	0...800 °C	50...3000	3, 4.5, 6, 8, 10	2																																							
	2 x J					2x2																																							
	1 x K	T3	0...850 °C	50...3000	3, 4.5, 6, 8, 10	2																																							
	1 x N, 1 x E					T13	0...1000 °C	2x2																																					
	2 x K	T6*	0...1150 °C	50...3000	3, 4.5, 6, 8	2																																							
	2 x N, 2 x E						T16	0...1100 °C																																					
	1 x S, 1 x R	T6*	0...1250 °C	50...3000	3, 4.5, 6, 8	2x2																																							
	2 x S, 2 x R						T16	0...1100 °C																																					
	<p><b>Process connection 'G' (nipple or union nut):</b></p> <ul style="list-style-type: none"> <li>- M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2), M27x2(Q5), M33x2(Q25)</li> <li>- 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11), 1"(Q12/Q15)</li> <li>- welded or adjustable flange</li> <li>- no mounting appliances</li> </ul> <p><b>Thread length:</b> t = 15 mm or 20 mm (NPT)</p> <p><b>Head connection 'GH':</b></p> <ul style="list-style-type: none"> <li>- M10x1(Q20), M12x1.5(Q7), M16x1.5(Q0), M18x1.5(Q1), M20x1.5(Q2)</li> <li>- 1/4"(Q23/Q24), 3/8"(Q3/Q9), 1/2"(Q4/Q10), 3/4"(Q6/Q11)</li> </ul> <p><b>Extension length:</b> m = 0...1500 mm (w/o spring-loaded adapter) m = m1...1500 mm (w/ spring-loaded adapter)</p> <p><b>Extension diameter: (for TSEC1 and TSEC2 only) [mm]</b></p> <table border="1"> <thead> <tr> <th>Probe diameter 'd'</th> <th>3, 4.5 mm</th> <th>6 mm</th> <th>8 mm</th> <th>10 mm</th> </tr> </thead> <tbody> <tr> <td>Ext. length 'm'</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>up to 50 mm</td> <td>8</td> <td>d</td> <td>d</td> <td>d</td> </tr> <tr> <td>50...150 mm</td> <td>8</td> <td>8</td> <td>d</td> <td>d</td> </tr> <tr> <td>150...500 mm</td> <td>10</td> <td>10</td> <td>10</td> <td>d</td> </tr> <tr> <td>500+ mm</td> <td>14</td> <td>14</td> <td>14</td> <td>14</td> </tr> </tbody> </table> <p><b>Tip shape (hot junction design):</b> standard (isolated), grounded, open-tube, exposed (see Appendix - Tip shapes)</p> <p><b>Process pressure:</b></p> <table border="1"> <thead> <tr> <th>Probe design</th> <th>EC, EC1</th> <th>EC2</th> <th>EC4</th> <th>EC3, EC5</th> </tr> </thead> <tbody> <tr> <td>Max. pressure *</td> <td>25 bar</td> <td>16 bar</td> <td>6 bar</td> <td>0 bar</td> </tr> </tbody> </table> <p><b>Sheath material:</b> 1.4404(M9), 1.4541(M2), 1.4571(M3)</p> <p><b>MI-insert sheath material:</b> 1.4404(M9), 1.4541(M2), 1.4571(M3), 1.4762(M4), 1.4841(M5), 1.4876(M7), 2.4816(M8), Microbell® (M10)</p> <p><b>Extension wire isolation:</b> Teflon® (T) or glass fiber (GL)</p> <p><b>Accuracy class:</b> '1' or '2' (see Appendix - T/C Tolerance)</p> <p><b>Spring-loaded adapter:</b> (mounted between probe and protection head)</p>  <p>m1 = 60...100 mm d ≤ 8 mm</p>						Probe diameter 'd'	3, 4.5 mm	6 mm	8 mm	10 mm	Ext. length 'm'					up to 50 mm	8	d	d	d	50...150 mm	8	8	d	d	150...500 mm	10	10	10	d	500+ mm	14	14	14	14	Probe design	EC, EC1	EC2	EC4	EC3, EC5	Max. pressure *	25 bar	16 bar	6 bar
Probe diameter 'd'	3, 4.5 mm	6 mm	8 mm	10 mm																																									
Ext. length 'm'																																													
up to 50 mm	8	d	d	d																																									
50...150 mm	8	8	d	d																																									
150...500 mm	10	10	10	d																																									
500+ mm	14	14	14	14																																									
Probe design	EC, EC1	EC2	EC4	EC3, EC5																																									
Max. pressure *	25 bar	16 bar	6 bar	0 bar																																									
* Please contact COMECO!																																													

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

Code	Feature or option	Code values
<b>G1</b>	Number of thermocouples	<b>1 or 2</b>
<b>G2</b>	Thermocouple	<b>J</b> - type "J", <b>K</b> - type "K", <b>N</b> - type "N", <b>E</b> - type "E", <b>S</b> - type "S", <b>R</b> - type "R"
<b>G3</b>	Temperature range	<b>T4</b> - 0...800 °C, <b>T3</b> - 0...850 °C, <b>T13</b> - 0...1000 °C, <b>T16</b> - 0...1100 °C, <b>T6</b> - 0...1200 °C <sup>(6)</sup>
<b>G4</b>	Diameter 'd' [mm]	<b>3, 4.5, 6, 8, 10</b>
<b>G6</b>	Probe length 'n' [mm] <sup>(1)</sup>	<b>50...3000</b>
<b>G7</b>	Probe length 'm' [mm] <sup>(2)</sup>	<b>0...1500 (m1...1500 with 'OA' option)</b>
<b>G9'</b>	Mounting connection	<b>X</b> - no mounting appliances, <b>Q0</b> - M16x1.5, <b>Q1</b> - M18x1.5, <b>Q2</b> - M20x1.5, <b>Q3</b> - G3/8", <b>Q4</b> - G1/2", <b>Q5</b> - M27x2, <b>Q6</b> - G3/4", <b>Q9</b> - 3/8" NPT, <b>Q10</b> - 1/2" NPT, <b>Q11</b> - 3/4" NPT, <b>Q12</b> - G1", <b>Q15</b> - 1" NPT, <b>Q25</b> - M33x2, <b>Uxx</b> - union nut (xx - same as for Qxx), <b>F</b> - flange (specify!), <b>Z</b> - other connection (specify!)
<b>G9"</b>	Compression fitting ferrule <sup>(3)</sup>	<b>TF</b> - Teflon®, <b>GR</b> - graphite, <b>BR</b> - brass, <b>SS</b> - stainless steel
<b>GH</b>	Head connection	<b>Q0</b> - M16x1.5, <b>Q1</b> - M18x1.5, <b>Q2</b> - M20x1.5, <b>Q3</b> - G3/8", <b>Q4</b> - G1/2", <b>Q6</b> - G3/4", <b>Q7</b> - M12x1.5, <b>Q9</b> - 3/8" NPT, <b>Q10</b> - 1/2" NPT, <b>Q11</b> - 3/4" NPT, <b>Q20</b> - M10x1, <b>Q23</b> - G1/4", <b>Q24</b> - 1/4" NPT, <b>Z</b> - other connection (specify!)
<b>G10</b>	Sheath material	<b>M2</b> - 1.4541, <b>M3</b> - 1.4571, <b>M4</b> - 1.4762 (1.4749), <b>M5</b> - 1.4841, <b>M7</b> - 1.4876 (Incolloy 800), <b>M8</b> - 2.4816 (Inconel 600), <b>M9</b> - 1.4404, <b>M10</b> - Microbell®
<b>G11</b>	Accuracy class	<b>1</b> - '1' <sup>(6)</sup> , <b>2</b> - '2'
<b>G14</b>	Tip shape (hot junction)	<b>X</b> - standard (isolated from sheath), <b>G</b> - grounded, <b>E</b> - exposed hot junction <sup>(4)</sup> , <b>O</b> - open-tube design <sup>(4)</sup>
<b>#1</b>	Options	<b>X</b> - none, <b>OA</b> - spring-loaded adapter <sup>(5)</sup> , <b>OP</b> - electrochemically polished sheath surface

<sup>(1)</sup> 'n+m' for TSEC3 and TSEC4!

<sup>(2)</sup> Only for TSEC1, TSEC2, and TSEC5!

<sup>(3)</sup> Only for TSEC4!

<sup>(4)</sup> Only for non-explosion-proof thermocouples!

<sup>(5)</sup> Only for TSEC, TSEC1, and TSEC5!

<sup>(6)</sup> Contact COMECO!