

Field of Measurement	Parameter and Range of Measurement	Calibration Measurement Uncertainty (\pm)	Standard/Test Method Technique/Equipment
5. Temperature	Temperature Calibration		
	Liquid Bath		
	-50°C to <0°C	0.040 °C	In-house Method CP-T1008 by direct measurement of Temperature Standards
	0°C to 420°C	0.020 °C	
	Dry Block Calibrator		
	-50°C to 400°C	0.060 °C	In-house Method CP-T1018 based on <i>EURAMET cg-13</i> by Direct measurement of Temperature Standards
	>400°C to 600°C	0.50 °C	
	>600°C to 1200°C	0.50 °C	
	Thermocouple Probe		ASTM E220
	Type E, J, K, N		
	0 to 300 °C	0.60 °C	
	>300 to 420 °C	0.70 °C	
	>420 to 600 °C	1.2 °C	
	>600 to 800 °C	1.5 °C	
	>800 to 1000 °C	1.9 °C	
	Type J, K, N:		
	>1000 to 1200 °C	2.2 °C	
	Type T		
	0 to 200 °C	0.36 °C	
	>200 to 300 °C	0.53 °C	
	>300 to 420 °C	0.70 °C	
	Type R, S		
	0 to 420 °C	0.32 °C	
	>420 to 600 °C	0.55 °C	
	>600 to 1200 °C	0.80 °C	
	Resistance Thermometer		ASTM 644
	-50°C to 0°C	0.040°C	
	>0°C to 420°C	0.025°C	
	Standard platinum resistance thermometer		ITS-90 with fixed point
	At triple of water 0.01 °C and triple point of Hg -38.8334 °C	5.0 mK	
	At triple of water 0.01 °C and melting point of Gallium 29.7646 °C	5.0 mK	
	At triple of water 0.01 °C and freezing point of tin 231.9280 °C	7.0 mK	
	At triple of water 0.01 °C and freezing point of zinc 419.5270 °C	8.0 mK	
	-38.834 4 °C to 29.764 6 °C	5.0 mK	
	0.01 °C to 29.764 6 °C	5.0 mK	
	0.01 °C to 419.527 °C	8.0 mK	

Field of Measurement	Parameter and Range of Measurement	Calibration Measurement Uncertainty (\pm)	Standard/Test Method Technique/Equipment
5. Temperature (Cont.)	Temperature indicator with sensor		In-house method: CP-T1005 and CP-T1011 based on ASTM E 220 by comparison to temperature standards
	Resistance thermometer		
	-50°C to 0 °C	0.040 °C	
	>0°C to 420°C	0.025 °C	
	Thermocouple		
	Type R, S		
	0°C to 420 °C	0.25 °C	
	>420°C to 1200°C	0.90 °C	
	Type K, J, E, N		
	0°C to 1200 °C	2.2 °C	
	Type T		
	0°C to 400 °C	2.2 °C	
	Liquid in glass Thermometer		ASTM - E77
	Total immersion		
	-50 °C to 0 °C	0.050 °C	
	>0 °C to 50 °C	0.030 °C	
	>50 °C to 150 °C	0.040 °C	
	>150 °C to 300 °C	0.060 °C	
	>300 °C to 400 °C	0.15 °C	
	Partial immersion		
	-50 °C to 0 °C	0.10 °C	
	>0 °C to 105 °C	0.25 °C	
	>105 °C to 400 °C	0.50 °C	
	Thermo-hygrograph Temperature		In-house method CP-T1007 by direct comparison to Temperature standard in chamber In-house method CP-T1007 by direct comparison to humidity standards in chamber BSEN 7882 In-house method CP-T1007 by direct comparison to temperature standard in chamber In-house method CP-T1007 by direct comparison to humidity standards in chamber BSEN 7882
	10°C to 40°C	0.60 °C	
	Relative humidity		
	at temperature 23 °C		
	35 % to 50 %	3.0 %	
	> 50 % to 80 %	3.6 %	
	Thermo-hygrograph Temperature		
	10°C to 40°C	0.30 °C	
	Relative humidity		
	at temperature 23 °C		
	35 % to 50 %	3.0 %	
	> 50 % to 80 %	3.6 %	