

Temperature and Humidity

Calibration and Measurement Capability (CMC) publicly available in the KCDB of BIPM (https://kcdb.bipm.org/appendixC/T/CO/T_CO.pdf)

Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					Reference Standard used in calibration		Service Identifier
Quantity/ Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Standard	Source of traceability	
Temperature	Platinum Resistance Thermometer	Ice point bath	0	0	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	Ice point bath	INM	INM-L02-04
						Relative humidity	50% RH ± 15% RH								
Temperature	Platinum Resistance Thermometer	Comparison in stirred ethanol bath	-80	0	°C	Temperature	21 °C ± 2 °C	0.072	°C	2	95%	No	SPRTs	PTB	INM-L02-05
						Relative humidity	50% RH ± 15% RH								
Temperature	Platinum Resistance Thermometer	Comparison in stirred water and oil baths	0	150	°C	Temperature	21 °C ± 2 °C	0.044	°C	2	95%	No	SPRTs	PTB	INM-L02-06
						Relative humidity	50% RH ± 15% RH								
Temperature	Platinum Resistance Thermometer	Comparison in metal block furnace	50	100	°C	Temperature	21 °C ± 2 °C	0.12	°C	2	95%	No	SPRTs	PTB	INM-L02-07
						Relative humidity	50% RH ± 15% RH								
Temperature	Platinum Resistance Thermometer	Comparison in metal block furnace	100	200	°C	Temperature	21 °C ± 2 °C	0.22	°C	2	95%	No	SPRTs	PTB	INM-L02-08
						Relative humidity	50% RH ± 15% RH								
Temperature	Platinum Resistance Thermometer	Comparison in metal block furnace	200	300	°C	Temperature	21 °C ± 2 °C	0.32	°C	2	95%	No	SPRTs	PTB	INM-L02-09
						Relative humidity	50% RH ± 15% RH								
Temperature	Platinum Resistance Thermometer	Comparison in metal block furnace	300	419.5	°C	Temperature	21 °C ± 2 °C	0.44	°C	2	95%	No	SPRTs	PTB	INM-L02-10
						Relative humidity	50% RH ± 15% RH								

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Quantity/ Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Standard	Source of traceability	
Temperature	Thermocouples: noble metal, (Types S, R and B)	Comparison Ice point and metal tube & block furnace	0	400	°C	Temperature	21 °C ± 2 °C	0.12 to 1.2	°C	2	95%	No	Noble metal T/C	INM, PTB	INM-L02-11
						Relative humidity	50% RH ± 15% RH								
Temperature	Thermocouples: noble metal, (Types S, R and B)	Comparison metal tube & block furnace	400	800	°C	Temperature	21 °C ± 2 °C	1.2 to 2.4	°C	2	95%	No	Noble metal T/C	PTB	INM-L02-12
						Relative humidity	50% RH ± 15% RH								
Temperature	Thermocouples: noble metal, (Types S, R and B)	Comparison metal tube & block furnace	800	1200	°C	Temperature	21 °C ± 2 °C	2.4 to 3.3	°C	2	95%	No	Noble metal T/C	PTB	INM-L02-13
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.05 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.048	°C	2	95%	No	SPRTs	PTB	INM-L02-14
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.1 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.049	°C	2	95%	No	SPRTs	PTB	INM-L02-15
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.2 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.056	°C	2	95%	No	SPRTs	PTB	INM-L02-16
						Relative humidity	50% RH ± 15% RH								

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Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					Reference Standard used in calibration		Service Identifier
Quantity/ Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Standard	Source of traceability	
Temperature	Liquid-in-Glass thermometers: 0.5 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0.092	°C	2	95%	No	SPRTs	PTB	INM-L02-17
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 1 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	-38	5	°C	Temperature	21 °C ± 2 °C	0,17	°C	2	95%	No	SPRTs	PTB	INM-L02-18
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.05 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.037	°C	2	95%	No	SPRTs	PTB	INM-L02-19
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.1 °C graduation	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.039	°C	2	95%	No	SPRTs	PTB	INM-L02-20
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.2 °C graduation	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.048	°C	2	95%	No	SPRTs	PTB	INM-L02-21
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.5 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.089	°C	2	95%	No	SPRTs	PTB	INM-L02-22
						Relative humidity	50% RH ± 15% RH								

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Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					Reference Standard used in calibration		Service Identifier
Quantity/ Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Standard	Source of traceability	
Temperature	Liquid-in-Glass thermometers: 1 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	5	80	°C	Temperature	21 °C ± 2 °C	0.17	°C	2	95%	No	SPRTs	PTB	INM-L02-23
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.05 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.053	°C	2	95%	No	SPRTs	PTB	INM-L02-24
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.1 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.054	°C	2	95%	No	SPRTs	PTB	INM-L02-25
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.2 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.061	°C	2	95%	No	SPRTs	PTB	INM-L02-26
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.5 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.096	°C	2	95%	No	SPRTs	PTB	INM-L02-27
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 1 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	80	150	°C	Temperature	21 °C ± 2 °C	0.17	°C	2	95%	No	SPRTs	PTB	INM-L02-28
						Relative humidity	50% RH ± 15% RH								
Temperature	Liquid-in-Glass thermometers: 0.02 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	16	24	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	SPRTs	PTB	INM-L02-29
						Relative humidity	50% RH ± 15% RH								

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Quantity/ Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Standard	Source of traceability	
Temperature	Liquid-in-Glass thermometers: 0.01 °C graduation Total immersion, Mercury	Comparison in stirred liquid bath	-1	1	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	SPRTs	PTB	INM-L02-30
						Relative humidity	50% RH ± 15% RH								
Temperature	Digital System Thermometers (PRT Sensor)	Ice point bath	0	0	°C	Temperature	21 °C ± 2 °C	0.013	°C	2	95%	No	Ice point bath	INM	INM-L02-31
						Relative humidity	50% RH ± 15% RH								
Temperature	Digital System Thermometers (PRT Sensor)	Comparison in stirred ethanol bath	-80	0	°C	Temperature	21 °C ± 2 °C	0.072	°C	2	95%	No	SPRTs	PTB	INM-L02-32
						Relative humidity	50% RH ± 15% RH								
Temperature	Digital System Thermometers (PRT Sensor)	Comparison in stirred water and oil baths	0	150	°C	Temperature	21 °C ± 2 °C	0.044	°C	2	95%	No	SPRTs	PTB	INM-L02-33
						Relative humidity	50% RH ± 15% RH								
Temperature	Digital System Thermometers (PRT Sensor)	Comparison in metal block furnace	50	100	°C	Temperature	21 °C ± 2 °C	0.12	°C	2	95%	No	SPRTs	PTB	INM-L02-34
						Relative humidity	50% RH ± 15% RH								
Temperature	Digital System Thermometers (PRT Sensor)	Comparison in metal block furnace	100	200	°C	Temperature	21 °C ± 2 °C	0.22	°C	2	95%	No	SPRTs	PTB	INM-L02-35
						Relative humidity	50% RH ± 15% RH								
Temperature	Digital System Thermometers (PRT Sensor)	Comparison in metal block furnace	200	300	°C	Temperature	21 °C ± 2 °C	0.32	°C	2	95%	No	SPRTs	PTB	INM-L02-36
						Relative humidity	50% RH ± 15% RH								

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Quantity/ Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Standard	Source of traceability	
Temperature	Digital System Thermometers (PRT Sensor)	Comparison in metal block furnace	300	419.5	°C	Temperature	21 °C ± 2 °C	0.44	°C	2	95%	No	SPRTs	PTB	INM-L02-37
						Relative humidity	50% RH ± 15% RH								
Temperature	Digital System Thermometers (Base metal thermocouple sensor)	Comparison in stirred liquid bath and metal block furnace	-80	250	°C	Temperature	21 °C ± 2 °C	0.80	°C	2	95%	No	SPRTs	PTB	INM-L02-38
						Relative humidity	50% RH ± 15% RH								
Humidity	Relative Humidity (capacitive hygrometers)	Chilled mirror hygrometer and two pressure humidity generator at 20 °C and Patm Bogota	12	85	%RH	Temperature	21 °C ± 2 °C	1.7 to 2.5	% RH	2	95%	No	Chilled mirror hygrometer and two pressure humidity generator	PTB, INM	INM-L02-39
						Relative humidity	50% RH ± 15% RH								
Temperature	Thermohygrometers: temperature measurement	Comparison in climatic chamber	0	70	°C	Temperature	21 °C ± 2 °C	0.2	°C	2	95%	No	Digital System Thermometers (PRT sensors)	INM	INM-L02-40
						Relative humidity	50% RH ± 15% RH								

Non-standard methods recognized internationally

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