



National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : MECHATRON CALIBRATION & INSTRUMENT, 19/37, 2ND MAIN ROAD, SABARI NAGAR, CHENNAI, TAMIL NADU, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-3050 **Page No** 1 of 20

Validity 12/09/2022 to 11/09/2024 **Last Amended on** 17/11/2022

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
Permanent Facility					
1	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Temperature Calibrator by Direct Method	1 mV to 110 mV	0.014 mV to 0.059 mV
2	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Temperature Calibrator by Direct Method	110 mV to 1100 mV	0.059 mV to 0.40 mV
3	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Temperature Calibrator by Direct Method	4 ohm to 400 ohm	0.12 ohm to 0.25 ohm
4	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Temperature Calibrator by Direct Method	400 ohm to 4 kohm	0.25 ohm to 0.0036 ohm
5	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	B-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	600 °C to 1800 °C	3.16°C



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6	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	E-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 200 °C to 1000 °C	1.55°C
7	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	J-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 200 °C to 1200 °C	1.45°C
8	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	K-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 190 °C to 1350 °C	1.80°C
9	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	N-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 100 °C to 1200 °C	2.19°C
10	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	0 °C to 300 °C	2.95°C
11	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	300 °C to 1700 °C	3.16°C



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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
12	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD (PT-100)	Using High Precision Digital Thermometer by Direct Method	(-) 100 °C to 800 °C	0.59°C
13	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	S-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	0 °C to 1700 °C	3.16°C
14	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	T-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 200 °C to 400 °C	1.6°C
15	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	B-Type Thermocouple	Using Temperature Calibrator by Direct Method	600 °C to 1800 °C	2.27°C
16	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	E-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 200 °C to 1000 °C	0.74°C
17	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	J-Type Thermocouple	Using Temperature calibrator by Direct Method	(-) 200 °C to 1200 °C	0.86 °C



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18	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	K-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 200 °C to 1370 °C	1.15 °C
19	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	N-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 200 °C to 1250 °C	1.32°C
20	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	R-Type Thermocouple	Using Temperature Calibrator by Direct Method	300 °C to 1700 °C	2.92°C
21	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD (PT-100)	Using Temperature Calibrator by Direct Method	(-) 200 °C to 0 °C	0.65°C
22	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD (PT-100)	Using Temperature Calibrator by Direct Method	0 °C to 400 °C	0.66°C
23	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD (PT-100)	Using Temperature Calibrator by Direct Method	400 °C to 800 °C	0.98°C



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24	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	S-Type Thermocouple	Using Temperature Calibrator by Direct Method	50 °C to 1750 °C	2.23°C
25	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	T-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 100 °C to 400 °C	0.75 °C
26	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Timer / Stop watch	Using Time Totaliser by Comparison Method	1 s to 3600 s	0.065 s to 0.93 s
27	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Timer / Stop watch	Using Time Totaliser by Comparison Method	3600 s to 36000 s	0.93 s to 1.15 s
28	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Timer / Stop watch	Using Time Totaliser by Comparison Method	36000 s to 86400 s	1.15 s to 3.53 s
29	MECHANICAL-PRESSURE INDICATING DEVICES	Manometer, Magnehelic Gauge, Pressure Gauge & Pressure Calibrator (Low Pressure)	Using Digital Manometer with Screw Pump by Comparison Method as per DKD R 6-1	-137 mbar to 137 mbar	1.27 mbar



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30	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure Gauge, Pressure Calibrator, Pressure Switch, Pressure Transmitter & Pressure Transducer with Indicator (Pneumatic)	Using Digital Pressure Gauge with Pneumatic Pump by Comparison Method as per DKD R 6-1	0 to 35 bar	0.01 bar
31	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure Gauge, Pressure Switch, Pressure Transducer & Pressure Transmitter with Indicator (Hydraulic)	Using Digital Pressure Gauge with Hydraulic Pump by Comparison Method as per DKD R 6-1	0 to 700 bar	0.25 bar
32	MECHANICAL-PRESSURE INDICATING DEVICES	Vacuum Gauge, Vacuum Switch, Vacuum Calibrator, Vacuum Transducer & Vacuum Transmitter with Indicator	Using Digital Pressure Gauge with Pneumatic Pump by Comparison Method as per DKD R 6-1	- 0.95 bar to 0 bar	0.001 bar
33	THERMAL-SPECIFIC HEAT & HUMIDITY	Digital/Analog Thermo Hygrometer, Hygrograph, Humidity Sensor with Data Logger/ Temperature & Humidity Transmitter	Using Humidity Chamber & Digital Temperature Humidity Indicator with Sensor Hygrometer by Comparison Method	5 °C to 60 °C @ 50 % RH	0.33°C



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34	THERMAL-SPECIFIC HEAT & HUMIDITY	Digital/Analog Thermo Hygrometer, Hygrograph, Humidity Sensor with Indicator, Data Logger, Hygrometer, Temperature & Humidity Transmitter with indicator	Using Humidity Chamber & Digital Temperature Humidity Indicator with Sensor Hygrometer by Comparison Method	10 % rh to 95 % rh @ 25 °C	1.6% rh
35	THERMAL-TEMPERATURE	Black Body Source	Using Pyrometer by Comparison Method	10 °C to 500 °C	2.73°C
36	THERMAL-TEMPERATURE	Black Body Source	Using Pyrometer by comparison method	500 °C to 1200 °C	3.64°C
37	THERMAL-TEMPERATURE	Contact Type RTD, Thermometer, Temperature Gauge, Temperature Switch, Temperature Indicator/Controller with Sensor, Transmitter, Thermocouple with or without Indicator	Using Standard RTD, Liquid Bath, Oil Bath & High Precision Digital Thermometer by Comparison Method	-80 °C to 250 °C	0.13°C



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38	THERMAL-TEMPERATURE	Contact Type Thermometer, Temperature Gauge, Temperature Switch, Temperature Indicator / Controller with Sensor, Transmitter, Thermocouple with or without Indicator	Using S-Type Thermocouple with High Temperature Calibrator & High Precision Digital Thermometer by Comparison Method	600 °C to 1200 °C	1.36°C
39	THERMAL-TEMPERATURE	Contact Type Thermometer, Temperature Gauge, Temperature Switch, Temperature Indicator/Controller with Sensor, Transmitter, Thermocouple with or without Indicator	Using S-Type Thermocouple with Dry Block Temperature Calibrator, High Temperature Calibrator & High Precision Digital Thermometer by Comparison Method	250 °C to 600 °C	0.39°C
40	THERMAL-TEMPERATURE	IR Thermometer, Pyrometer with & without Indicator, Thermometer, Thermal Imager (Non-contact type)	Using Standard IR Thermometer, Pyrometer & Black Body Source of 0.95 Emissivity by Comparison Method	10 °C to 300 °C	2.74°C



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41	THERMAL-TEMPERATURE	IR Thermometer, Pyrometer with & without Indicator, Thermometer, Thermal Imager (Non-contact type)	Using Standard IR Thermometer, Pyrometer & Black Body Source of 0.99 emissivity by Comparison Method	300 °C to 1200 °C	3.7°C
42	THERMAL-TEMPERATURE	Liquid in Glass Thermometer, Wet and Dry Bulb, Analog Thermometer, Digital Thermometer	Using Standard RTD with Liquid Bath, Oil Bath & High Precision Digital Thermometer by Comparison Method	- 80 °C to 250 °C	0.32°C
43	THERMAL-TEMPERATURE	Temperature Indicator with sensor of Dry Block Calibrator, Temperature Bath	Using Standard RTD with Handheld High Precision Digital Thermometer by Comparison Method	- 80 °C to 250 °C	0.13°C
44	THERMAL-TEMPERATURE	Temperature Indicator with sensor of Dry Block Calibrator, Temperature Bath	Using RTD, S-Type Thermocouple & High Precision Digital Thermometer by Comparison Method	250 °C to 600 °C	0.32°C
45	THERMAL-TEMPERATURE	Temperature Indicator with sensor of Dry Block Calibrator, Temperature Bath	Using S-type Thermocouple & High Precision Digital Thermometer by Comparison Method	600 °C to 1200 °C	1.4°C



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Site Facility					
1	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Temperature Calibrator by Direct Method	1 mV to 110 mV	0.014 mV to 0.059 mV
2	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	DC Voltage	Using Temperature Calibrator by Direct Method	110 mV to 1100 mV	0.059 mV to 0.40 mV
3	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Temperature Calibrator by Direct Method	4 ohm to 400 ohm	0.12 ohm to 0.25 ohm
4	ELECTRO-TECHNICAL-DIRECT CURRENT (Source)	Resistance	Using Temperature Calibrator by Direct Method	400 ohm to 4 kohm	0.25 ohm to 0.0036 ohm
5	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	B-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	600 °C to 1800 °C	3.16°C



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6	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	E-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 200 °C to 1000 °C	1.55°C
7	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	J-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 200 °C to 1200 °C	1.45°C
8	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	K-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 190 °C to 1350 °C	1.80°C
9	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	N-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 100 °C to 1200 °C	2.19°C
10	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	0 °C to 300 °C	2.95°C
11	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	R-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	300 °C to 1700 °C	3.16°C



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12	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	RTD (PT-100)	Using High Precision Digital Thermometer by Direct Method	(-) 100 °C to 800 °C	0.59°C
13	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	S-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	0 °C to 1700 °C	3.16°C
14	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Measure)	T-Type Thermocouple	Using High Precision Digital Thermometer by Direct Method	(-) 200 °C to 400 °C	1.6°C
15	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	B-Type Thermocouple	Using Temperature Calibrator by Direct Method	600 °C to 1800 °C	2.27°C
16	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	E-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 200 °C to 1000 °C	0.74°C
17	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	J-Type Thermocouple	Using Temperature calibrator by Direct Method	(-) 200 °C to 1200 °C	0.86 °C



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18	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	K-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 200 °C to 1370 °C	1.15 °C
19	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	N-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 200 °C to 1250 °C	1.32°C
20	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	R-Type Thermocouple	Using Temperature Calibrator by Direct Method	300 °C to 1700 °C	2.92°C
21	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD (PT-100)	Using Temperature Calibrator by Direct Method	(-) 200 °C to 0 °C	0.65°C
22	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD (PT-100)	Using Temperature Calibrator by Direct Method	0 °C to 400 °C	0.66°C
23	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	RTD (PT-100)	Using Temperature Calibrator by Direct Method	400 °C to 800 °C	0.98°C



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24	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	S-Type Thermocouple	Using Temperature Calibrator by Direct Method	50 °C to 1750 °C	2.23°C
25	ELECTRO-TECHNICAL-TEMPERATURE SIMULATION (Source)	T-Type Thermocouple	Using Temperature Calibrator by Direct Method	(-) 100 °C to 400 °C	0.75 °C
26	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Timer / Stop watch	Using Time Totaliser by Comparison Method	1 s to 3600 s	0.065 s to 0.93 s
27	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Timer / Stop watch	Using Time Totaliser by Comparison Method	3600 s to 36000 s	0.93 s to 1.15 s
28	ELECTRO-TECHNICAL-TIME & FREQUENCY (Measure)	Timer / Stop watch	Using Time Totaliser by Comparison Method	36000 s to 86400 s	1.15 s to 3.53 s
29	MECHANICAL-PRESSURE INDICATING DEVICES	Manometer, Magnehelic Gauge, Pressure Gauge & Pressure Calibrator (Low Pressure)	Using Digital Manometer with Screw Pump by Comparison Method as per DKD R 6-1	-137 mbar to 137 mbar	1.27 mbar



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30	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure Gauge, Pressure Calibrator, Pressure Switch, Pressure Transmitter & Pressure Transducer with Indicator (Pneumatic)	Using Digital Pressure Gauge with Pneumatic Pump by Comparison Method as per DKD R 6-1	0 to 35 bar	0.01 bar
31	MECHANICAL-PRESSURE INDICATING DEVICES	Pressure Gauge, Pressure Switch, Pressure Transducer & Pressure Transmitter with Indicator (Hydraulic)	Using Digital Pressure Gauge with Hydraulic Pump by Comparison Method as per DKD R 6-1	0 to 700 bar	0.25 bar
32	MECHANICAL-PRESSURE INDICATING DEVICES	Vacuum Gauge, Vacuum Switch, Vacuum Calibrator, Vacuum Transducer & Vacuum Transmitter with Indicator	Using Digital Pressure Gauge with Pneumatic Pump by Comparison Method as per DKD R 6-1	- 0.95 bar to 0 bar	0.001 bar
33	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity Chamber, Environmental Chamber, Climatic Chamber	Using Digital Temperature and Humidity Sensor with Indicator by comparison method	10 %rh to 95 %rh	3.0%rh
34	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity Chamber, Environmental Chamber, Climatic Chamber	Using Digital Temperature and Humidity Sensor with Indicator by Comparison Method	5 °C to 60 °C	0.4°C



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35	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity Chamber, Environmental Chamber, Climatic Chamber (Multi position calibration)	Using Temperature & Humidity Data Logger with minimum 9 sensors by Comparison Method	10 % rh to 95 % rh @ 25 °C	4.22% RH
36	THERMAL-SPECIFIC HEAT & HUMIDITY	Humidity Chamber, Environmental Chamber, Climatic Chamber (Multi position calibration)	Using Temperature & Humidity Data logger with minimum 9 sensors by comparison method	5 °C to 60 °C	0.6°C
37	THERMAL-TEMPERATURE	Bath, Deep Freezer, Freezer, Refrigerator, Thermal/ Environmental Chamber, Water Bath, Hot Air Oven, Incubator, Autoclave only for Industrial Application (Multi position calibration)	Using Standard RTD with Data Logger with minimum 9 sensors by Comparison Method	(-) 80 °C to 250 °C	3.67°C
38	THERMAL-TEMPERATURE	Bath, Thermal Chamber, Hot Air Oven, Furnace, Muffle Furnace for Industrial Application (Multi position calibration)	Using Standard N-Type Thermocouple with Data Logger with minimum 9 sensors by Comparison Method	250 °C to 1200 °C	3.88°C



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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured / Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
39	THERMAL-TEMPERATURE	Black Body Source	Using Pyrometer by Comparison Method	10 °C to 500 °C	2.73°C
40	THERMAL-TEMPERATURE	Black Body Source	Using Pyrometer by comparison method	500 °C to 1200 °C	3.64°C
41	THERMAL-TEMPERATURE	Contact Type RTD, Thermometer, Temperature Gauge, Temperature Switch, Temperature Indicator/Controller with Sensor, Transmitter, Thermocouple with or without Indicator	Using Standard RTD, Liquid Bath, Oil Bath & High Precision Digital Thermometer by Comparison Method	-80 °C to 250 °C	0.13°C
42	THERMAL-TEMPERATURE	Contact Type Thermometer, Temperature Gauge, Temperature Switch, Temperature Indicator / Controller with Sensor, Transmitter, Thermocouple with or without Indicator	Using S-Type Thermocouple with High Temperature Calibrator & High Precision Digital Thermometer by Comparison Method	600 °C to 1200 °C	1.36°C



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43	THERMAL-TEMPERATURE	Contact Type Thermometer, Temperature Gauge, Temperature Switch, Temperature Indicator/Controller with Sensor, Transmitter, Thermocouple with or without Indicator	Using S-Type Thermocouple with Dry Block Temperature Calibrator, High Temperature Calibrator & High Precision Digital Thermometer by Comparison Method	250 °C to 600 °C	0.39°C
44	THERMAL-TEMPERATURE	IR Thermometer, Pyrometer with & without Indicator, Thermometer, Thermal Imager (Non-contact type)	Using Standard IR Thermometer, Pyrometer & Black Body Source of 0.95 Emissivity by Comparison Method	10 °C to 300 °C	2.74°C
45	THERMAL-TEMPERATURE	IR Thermometer, Pyrometer with & without Indicator, Thermometer, Thermal Imager (Non-contact type)	Using Standard IR Thermometer, Pyrometer & Black Body Source of 0.99 emissivity by Comparison Method	300 °C to 1200 °C	3.7°C
46	THERMAL-TEMPERATURE	Temperature Indicator with sensor of Dry Block Calibrator, Temperature Bath	Using Standard RTD with Handheld High Precision Digital Thermometer by Comparison Method	- 80 °C to 250 °C	0.13°C



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47	THERMAL-TEMPERATURE	Temperature Indicator with sensor of Dry Block Calibrator, Temperature Bath	Using RTD, S-Type Thermocouple & High Precision Digital Thermometer by Comparison Method	250 °C to 600 °C	0.32°C
48	THERMAL-TEMPERATURE	Temperature Indicator with sensor of Dry Block Calibrator, Temperature Bath	Using S-type Thermocouple & High Precision Digital Thermometer by Comparison Method	600 °C to 1200 °C	1.4°C
49	THERMAL-TEMPERATURE	Temperature Indicator/Controller with Sensor of Bath, Deep Freezer, Freezer, Refrigerator, Water Bath, Hot Air Oven, Furnace,(Incubator, Autoclave for Industrial Application)-(Single Point Calibration)	Using Standard RTD Sensor with Handheld High Precision Digital Thermometer by Comparison Method	- 80 °C to 250 °C	0.25°C



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50	THERMAL-TEMPERATURE	Temperature Indicator/Controller with Sensor of Bath, Furnace, Muffle Furnace for Industrial Application (Single Point Calibration)	Using Standard S-Type Thermocouple with Handheld High Precision Digital Thermometer by Comparison Method	600 °C to 1200 °C	1.53°C

* CMCs represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k = 2.