

Laboratory CIPET Calibration Centre, B-27, Amausi Industrial Area, Lucknow, Uttar Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2745 (In lieu of C-0230, C-0231, C-0288, C-0814) **Page** 1 of 11

Validity 30.07.2018 to 29.07.2020 **Last Amended on** -

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (\pm)	Remarks
<u>ELECTRO TECHNICAL CALIBRATION</u>				
1.	SOURCE			
1.	DC Voltage ^s	1 mV to 300 mV 300 mV to 3 V 3V to 1000 V	0.8% to 0.03 % 0.03 % to 0.16% 0.16% to 0.01%	Using Wavetek Datron multifunction standard 9100 by Direct Method
2.	DC Current ^s	10 μ A to 300 μ A 300 μ A to 30 mA 30 mA to 3 A 3 A to 10 A 10A to 1000 A	0.16 %to 0.02% 0.02% to 0.014% 0.014% to 0.18% 0.18% 2.80% to 1.50%	Using Wavetek Datron multifunction standard 9100 by Direct Method Using current coil by Direct Method
3.	AC Voltage ^s	50 Hz 10 mV to 300 mV 300 mV to 30 V 30 V to 1000 V	4.4 %to 0.13% 0.13% to 0.08% 0.08 %to 0.1%	Using Wavetek Datron multifunction standard 9100 by Direct Method
4.	AC Current ^s	50 Hz 100 μ A to 300 mA 300 mA to 3A 3 A to 10 A 10 A to 1000 A	0.12% to 0.4% 0.4% 0.4% 4.1% to 1.1%	Using Wavetek Datron multifunction standard 9100 by Direct Method Using current coil by Direct Method
5.	DC Resistance ^s	1 Ω to 400 Ω 400 Ω to 400 k Ω 400 k Ω to 400 M Ω	1.25 %to 0.03% 0.03% 0.03 %to 0.6%	Using Wavetek Datron multifunction standard 9100 by Direct Method

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6.	Frequency ^s	1 Hz to 10 MHz	0.66% to 0.09%	Using Wavetek Datron multifunction standard 9100 by Direct Method
7.	Capacitance ^s	10 nF to 400 nF 400 nF to 4 mF 4 mF to 1 mF	0.8% to 2.1% 2.1 %to 0.65% 0.65% to 3.7%	Using Wavetek Datron multifunction standard 9100 by Direct Method
II.	MEASURE			
1.	DC Voltage ^s	1 mV to 100 mV 100 mV to 10 V 10V to 1000 V	0.5 %to 0.012% 0.012 % to 0.05% 0.05% to 0.013%	Using 6½ Digital Multimeter by Direct Method
2.	DC Current ^s	10 mA to 3 A	0.14% to 0.18%	Using 6½ Digital Multimeter by Direct Method
3.	AC Voltage ^s	50 Hz 1 mV to 100 mV 100 mV to 10 V 10 V to 100 V 100 V to 750 V	0.55 % to 0.12% 0.12% 0.12% 0.12%	Using 6½ Digital Multimeter by Direct Method
4.	AC Current ^s	50 Hz 100 mA to 3 A	0.09% to 0.18%	Using 6½ Digital Multimeter by Direct Method
5.	DC Resistance ^s	10 Ω to 1 k Ω 1k Ω to 100 k Ω 100 k Ω to 1 M Ω 1 M Ω to 100 M Ω	0.08 % to 0.05% 0.05 % to 0.03% 0.03 % to 0.05% 0.05 % to 1.0%	Using 6½ Digital Multimeter by Direct Method

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6.	Frequency ^s	10 Hz to 1 MHz	0.1 %to 0.48%	Using 6½ Digital Multimeter by Direct Method
7.	Time ^s	1740 s	1.2 s	Using Stop watch by Comparison Method
8.	DC Voltage [*]	1 mV to 100 mV	2% to 0.2%	Using 6½ Digital Multimeter by Direct Method
9.	Resistance [*]	10 Ω to 400 Ω	0.18% to 0.05%	Using 6½ Digital Multimeter by Direct Method

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<u>MECHANICAL CALIBRATION</u>				
I.	UTM , TENSION CREEP,HARDNESS AND TORSION TESTING MACHINE			
1	Testing Machine* (UTM,CTM,TTM) Tension Compression	50 N to 100 KN 50 N to 1000 KN	0.71 % 0.60 %	Using Load Cell & Proving Rings,IS 1828-2015 Class 1
II.	DUROMETER			
1.	Rubber Hardness Tester \$ (Shore D)	10-90 Shore D	1.3 Shore D	Using Mikrotek Make Rubber Hardness Tester Calibrator, ASTM-2240-2015
III.	ACCELERATION AND SPEED			
1.	Tachometer \$ (Non-Contact Type)	10 rpm to 500 rpm 500 rpm to 60000 rpm	0.76 rpm 27.0 rpm	Using Digital Tachometer With Variable Drive Motor,SANAS TR 45-1

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V.	WEIGHING SCALE AND BALANCE			
1.	Electronic Weighing Balance ^s Calibration of Electronic Weighing Balance of Class II & Coarser Readability:0.01 mg Readability:0.1 mg	0 to 60 g 60 to 200 g	0.05 mg 0.5 mg	Using Standard Weight E2 Class as per OIML R 76-1
	Calibration of Electronic Weighing Balance of Class III & Coarser Readability:0.1 g	0 to 24 kg	0.2 g	Using Standard Weight E2 & F2 Class as per OIML R 76-1
	Readability:1 g Readability:10 g	0 to 50 kg 0 to 200 kg	1.5 g 20.0 g	Using Standard Weight F2 Class as per OIML R 76-1
VI.	VOLUME			
1.	Pipette,Burette, Volumetric Flask& Measuring Cylinder ^s	1 ml to 50 ml 10 ml to 200 ml 200 ml to 500 ml 500 ml to 1000 ml 1000 ml to 5000 ml	0.02 ml 0.3 ml 0.5 ml 0.5 ml 2.5 ml	Using Weighing Balance with resolution of 0.01 mg/ 0.1 mg and 0.1 g by Gravimetric Method as per ISO 4787.

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VII.	DIMENSION (BASIC MEASURING INSTRUMENTS, GAUGE ETC)			
1.	Caliper Vernier Dial/Digital ^s LC 0.01 mm ϕ	0 to 300 mm	18.0 μ m	Using "0" Grade Gauge Block as per IS 3651
2.	External Micrometer ^s LC 0.001 mm ϕ	0 to 100 mm	4.0 μ m	Using "0" Grade Gauge Block as per IS 2967
3.	Height Gauge ^s LC 0.01 mm ϕ	0 to 300 mm	10.0 μ m	Using Caliper Checker as per IS 2921
4.	Dial Gauge ^s (Plunger Type) LC 0.01 mm ϕ	0 to 25 mm	6.4 μ m	Using "0" Grade Gauge Block as per IS 2092
5.	Dial Gauge ^s (Lever Type) LC 0.002 mm ϕ	0 to 1.8 mm	5.0 μ m	Using "0" Grade Gauge Block as per IS 11498
6.	Dial Thickness Gauge ^s LC 0.01 mm ϕ	0 to 25 mm	10.0 μ m	Using "0" Grade Gauge Block as per CCC/CP-M/03

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VIII.	PRESSURE INDICATING DEVICES			
1.	Hydraulic Pressure Pressure Gauge (Analog/Digital) Pressure Switches Pressure Transmitter with Display [§]	0 to 70 kg/cm ² 70 to 700 kg/cm ²	0.056 % rdg 0.057 % rdg	Using Hydraulic Dead Weight Tester By Comparison Method as per DKD R/6-1
2.	Hydraulic Pressure Pressure Gauge (Analog/Digital) Pressure Switches Pressure Transmitter with Display [#]	0 to 70 kg/cm ² 70 to 700 kg/cm ²	0.033 kg/cm ² 0.085 kg/cm ²	Using Digital Pressure gauge by Comparison Method as per DKD R/6-1&2
3.	Pneumatic Pressure Pressure Gauge (Analog/Digital) Pressure Switches Pressure Transmitter with Display [#]	0 to 6 bar	0.0022 bar	Using Digital Pressure gauge by Comparison Method as per DKD R/6-1&2
4.	Hydraulic Pressure Pressure Gauge (Analog/Digital) Pressure Switches Pressure Transmitter with Display [#]	0 to (-) 0.9 bar	0.0022 bar	Using Digital Pressure gauge by Comparison Method as per DKD R/6-1&2

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<u>THERMAL CALIBRATION</u>				
I.	TEMPERATURE			
1.	RTD , Thermocouple with & without Indicator /Data Logger/ Recorder, Temp.Gauge, Digital Thermometer, Temp.Transmitter, Glass Thermometer [§]	(-) 40 °C to 150 °C	0.20 °C	Using PRT with Digital Readout & High Precision Bath By Comparison Method.
2.	RTD , Thermocouple with & without Indicator /Datalogger/ Recorder, Temp.Gauge, Digital Thermometer, Temp.Transmitter, Glass Thermometer [#]	>150°C to 600 °C	0.53 °C	Using PRT with Digital Readout & Dry Block Bath By Comparison Method.
3.	Thermocouple with & without Indicator / Data Logger/ Recorder, Temp.Gauge, Digital Thermometer, Temp.Transmitter, [#]	>600°C to 1200 °C	1.87 °C	Using S-Type Thermocouple with Digital Read out & Dry Block Furnace By Comparison Method

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (\pm)	Remarks
4.	Temp. Indicators of Deep Freezers, Refrigerator, Oven, Environmental Chamber, Incubator, BOD Incubator, Liquid Bath/Dry Block Furnaces, Vacuum Oven, Centrifuge Chamber, Autoclave #	(-) 40 °C to 200 °C	0.34 °C	Using PRT with Digital Read out by Single Position Calibration
5.	Temp. Indicator of Muffle Furnace / Dry block Furnace/Industrial Furnace #	>200°C to 1200 °C	1.85 °C	Using S-Type Thermocouple with Digital Read out by Single Position Calibration
II.	SPECIFIC HEAT AND HUMIDITY			
1.	Digital & Analog Hygrometers, RH Sensors/with Indicator/Recorder/ Data Logger\$	15% RH to 95% RH @25°C	\pm 1.82 % RH @25°C	Using Standard Rotronica RH Sensor with Indicator & Portable Temp/Humidity generator by Comparison Method
2.	Humidity Indicator of Calibrator/ Generator / Chamber#	15% RH to 95% RH @ 25 °C	\pm 1.70 % RH @25°C	Using Standard Rotronica RH Sensor with Indicator by Single Position Calibration

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<u>OPTICAL CALIBRATION</u>				
I.	IRRADIANCE			
1.	CR 10 Radiometer [§] (i) 340 nm (ii) 313 nm	0-1.60 W/m ² 0-1.30 W/m ²	5.52% 5.52 %	Using Accelerated Weathering Tester QUV-A & QUV-B as Source with standard Radiometer
2.	CR 20 Radiometer 340 nm with Window Filter [§]	0-0.62 W/m ²	5.55 %	Using Q-Sun Xenon Test Chamber as Source with Standard Radiometer
3.	CR 20 Radiometer 340 nm with Day light Filter [§]	0-0.70 W/m ²	5.55 %	Using Q-Sun Xenon Test Chamber as Source with Standard Radiometer
4.	CR 20 Radiometer 420 nm with Window Filter [§]	0-1.50 W/m ²	5.55%	Using Q-Sun Xenon Test Chamber as Source with Standard Radiometer

*Measurement Capability is expressed as an uncertainty (\pm) at a confidence probability of 95%

[§] Only in Permanent Laboratory

* Only for Site Calibration

The Laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

^φ Laboratory can also calibrate instruments/devices of coarser resolution/least count within the accredited range using same reference standard/master equipment under the scope of accreditation.

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