

Laboratory Perfect Calibration Centre Pvt. Ltd., No. 40, 71<sup>st</sup> Cross, 5<sup>th</sup> Block,  
Rajajinagar, Bangalore, Karnataka

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247 Page 1 of 25

Validity 21.10.2018 to 20.10.2020 Last Amended on 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>ELECTRO TECHNICAL CALIBRATION</u></b>				
<b>I.</b>	<b>SOURCE</b>			
1.	DC Voltage <sup>#</sup>	0.1 mV to 1 mV 1 mV to 10 mV 10 mV to 100 mV 100 mV to 10 V 10 V to 1000 V	1.30% to 0.12% 0.12% to 0.014% 0.014% to 0.0036% 0.0036% to 0.0017% 0.0017% to 0.0024%	Using Multi Product Calibrator by Direct Method
		<b>10 Hz to 10 kHz</b> 1 mV to 100 mV 100 mV to 10 V 10 V to 30V	0.74% to 0.09% 0.09% to 0.029% 0.029% to 0.020%	
		<b>45Hz to 1 kHz</b> 1 mV to 1 V 1 V to 10 V 10 V to 100V 100 V to 1000V	0.63% to 0.029% 0.029% to 0.029% 0.029% to 0.030% 0.030% to 0.032%	
		<b>10kHz to 100 kHz</b> 1 mV to 100 mV 100 mV to 1 V 1 V to 100 V	0.70% to 0.10% 0.10% to 0.015% 0.015% to 0.29%	
		<b>100kHz to 300kHz</b> 30mV to 3V	0.93% to 0.30%	

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247

Page

2 of 25

Validity 21.10.2018 to 20.10.2020

Last Amended on 13.12.2018

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3.	DC Current <sup>#</sup>	10 $\mu$ A to 100 $\mu$ A 100 $\mu$ A to 1mA 1 mA to 100 mA 100 mA to 1A 1 A to 10 A 10A to 20A 20A to 1000A	0.25% to 0.0021% 0.0021% to 0.017% 0.017% to 0.015% 0.015% to 0.028% 0.028% to 0.06% 0.06% to 0.12% 0.12% to 0.48%	Using Multi Product Calibrator by Direct Method  With 50 Turns Current Coil
4.	AC Current <sup>#</sup>	<b>10Hz to 5 kHz</b> 30 $\mu$ A to 100 mA 100 mA to 3 A  <b>10 Hz to 1 kHz</b> 30 $\mu$ A to 100 $\mu$ A  <b>45 Hz to 1 kHz</b> 100 $\mu$ A to 100mA 100mA to 1A 1 A to 10A 10A to 20A  <b>5kHz</b> 100mA to 1A 1A to 20A  <b>50Hz</b> 20A to 1000A	0.92% to 0.33% 0.33% to 0.74%  0.62% to 0.29%  0.26% to 0.08% 0.08% to 0.07% 0.07% to 0.14% 0.14% to 0.20%  0.24% to 0.81% 0.81% to 3.5%  0.58% to 0.47%	Using Multi Product Calibrator by Direct Method          With 50 Turns Current Coil

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 3 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
5.	Resistance <sup>#</sup>	50μΩ 100μΩ to 1Ω 1Ω to 100Ω 100Ω to 100kΩ 100kΩ to 1MΩ 1MΩ to 100MΩ 100MΩ to 1000MΩ  5kV 1GΩ to 1TΩ	1.18% 0.79% to 0.12% 0.12% to 0.005% 0.005% to 0.0037% 0.0037% to 0.0042% 0.0042% to 0.063% 0.063% to 1.81%  2.32% to 5.87%	Using Micro Ohm Standard & Standard Resistance  Using Multi Product Calibrator  By Direct Method  Using Decade Megohm box
6.	Capacitance <sup>#</sup>	1 kHz 100pF to 1μF  100 Hz 1 μF to 10 μF 10 μF to 100 μF	1.17% to 1.18%  0.41 % to 0.29 % 0.29 % to 0.52 %	Using Capacitance Subtitutor by Direct Method  Using Multi Product Calibrator
7.	DC Power <sup>#</sup>	1V to 600V 1mA to 1000A 10mW to 10W 10W to 1kW 1kW to 600kW	0.028% to 0.027% 0.027% to 0.081% 0.44%	Using Multi Product Calibrator With Current Coil by Direct Method

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247 Page 4 of 25

Validity 21.10.2018 to 20.10.2020 Last Amended on 13.12.2018

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8.	AC Power <sup>#</sup> (Single Phase)	<b>50Hz @ UPF</b> 120V to 240V 0.01A to 20A 1.2 W to 4.8kW	0.10 % to 0.12 %	Using Multi Product Calibrator by Direct Method
		<b>50Hz @ 0.8 Lead</b> 120V to 240V 0.1A to 20A 9.6 W to 3.8 kW	0.09 % to 0.13 %	
		<b>50Hz @ 0.5 Lag</b> 120V to 240V 0.1A to 20A 6 W – 2.4 kW	0.39 %	
		<b>50Hz @ 0.2 Lag</b> 120V to 240V 0.1A to 20A 2.4 W to 960 W	1.03 %	
9.	Power Factor <sup>#</sup>	0.20 – 1 – 0.2 PF Lead / Lag	0.0021 PF	Using Multi Product Calibrator by Direct Method
10.	Inductance <sup>#</sup>	<b>1kHz</b> 100 $\mu$ H to 1H 1H to 10H	1.18%	Using Decade Inductance Box by Direct Method
11.	Frequency <sup>#</sup>	10Hz to 1kHz 1kHz to 1MHz 1MHz to 500MHz	0.058% to 0.008% 0.0011% to 0.010% 0.00065% to 0.0029%	Using Multi Product Calibrator by Direct Method

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**Certificate Number** CC-2247 **Page** 5 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
12.	Oscilloscope# Amplitude	1mV to 130V		Using Multi Product Calibrator by Direct Method
		DC Signal	4.09% to 0.08%	
	AC Signal	4.14% to 0.14%		
	Time Marker	2ns to 5s	0.029% to 0.12%	
	Bandwidth	50kHz to 500MHz	1.8% to 7.4%	
13.	Temperature# Simulation/Indicator, Recorder / Controller			Using Multi Product Calibrator by Direct Method
	RTD	(-)200°C to 800°C	0.026°C	
	Thermocouple			
	S TC	0°C to 1760°C	0.045°C	
	R TC	0°C to 1760°C	0.14°C	
	J TC	(-)200°C to 1200°C	0.045°C	
	K TC	(-)200°C to 1370°C	0.056°C	
	E TC	(-)250°C to 1000°C	0.036°C	
	B TC	600°C to 1800°C	0.35°C	
	T TC	(-)200°C to 400°C	0.028°C	
	N TC	(-)200°C to 1300°C	0.059°C	
	L TC	(-)200°C to 900°C	0.036°C	
	U TC	(-)200°C to 600°C	0.045°C	

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247

Page

6 of 25

Validity 21.10.2018 to 20.10.2020

Last Amended on 13.12.2018

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II.	<b>MEASURE</b>			
		1 mV to 100 mV 100 mV to 1 V 1 V to 1000V	0.41% to 0.0009% 0.0009% to 0.00056% 0.00056% to 0.0058%	Using 8 ½ DMM & 6 ½ DMM by Direct Method
		0.5kV to 30 kV	2.39%	Using HV Probe With DMM by Direct Method
		30 kV to 50kV	3.24%	Using HV Divider With DMM by Direct Method
2.	AC Voltage <sup>#</sup>	<b>50 Hz to 50kHz</b> 10 mV to 100mV 100 mV to 10 V 10 V to 100V  <b>10 Hz to 100 kHz</b> 100 mV to 10 V  <b>45 Hz to 10 kHz</b> 100 mV to 100 V 100 V to 1000V  <b>50 Hz</b> 0.5kV to 28kV 28 kV to 50 kV	0.53% to 0.036% 0.036% to 0.12% 0.12% to 0.089%  0.112% to 0.089%  0.02% to 0.016% 0.016% to 0.022%  3.12% 3.78%	Using 8 ½ DMM by Direct Method       Using HV Probe With DMM by Direct Method  Using HV Divider With DMM by Direct Method
3.	DC Current <sup>#</sup>	10µA to 100µA 100µA to 1mA 1mA to 100mA 100mA to 1A 1A to 10A	0.026% to 0.0024% 0.0024% to 0.0024% 0.0024% to 0.0066% 0.0066% to 0.023% 0.023% to 0.052%	Using 8 ½ & 6 ½ DMM by Direct Method

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 7 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
		10 A to 1000A	0.70%	Using shunt With Indicator by Direct Method
4.	AC Current <sup>#</sup>	<b>45Hz to 5 kHz</b> 30 $\mu$ A to 100 $\mu$ A 100 $\mu$ A to 100mA 100 mA to 1A 1A to 10A  <b>50Hz</b> 10A to 1000A	0.29% to 0.16% 0.16% to 0.16% 0.16% to 0.20% 0.20% to 0.42%  0.13% to 0.70%	Using 8 ½ & 6 ½ DMM by Direct Method  Using AC shunt/ CT With Indicator by Direct Method
5.	Resistance <sup>#</sup>	10m $\Omega$ to 1 $\Omega$ 1 $\Omega$ to 100 $\Omega$ 100 $\Omega$ to 10 K $\Omega$ 10k $\Omega$ to 100k $\Omega$ 100k $\Omega$ to 1M $\Omega$ 1M $\Omega$ to 10M $\Omega$ 10M $\Omega$ to 1G $\Omega$ 1G $\Omega$ to 10G $\Omega$ 10G $\Omega$ to 100G $\Omega$	0.19% to 0.078% 0.0015% to 0.0010% 0.0010% to 0.0010% 0.0010% to 0.0011% 0.0011% to 0.0015% 0.0015% to 0.0036% 0.0036% to 0.29% 0.29% to 0.30% 3.39% to 6.60%	Using LCR Meter by Direct Method  Using 8 ½ DMM by Direct Method  Using Megohm meter by Direct Method
6.	Capacitance <sup>#</sup>	<b>1kHz</b> 100pF to 1nF 1nF to 1 $\mu$ F  <b>100Hz</b> 1 $\mu$ F to 100 $\mu$ F	0.06% 0.07%  0.06% to 0.40%	Using LCR Meter by Direct Method
7.	Inductance <sup>#</sup>	<b>1kHz</b> 100 $\mu$ H to 10H	0.31% to 0.08%	Using LCR Meter by Direct Method

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247 Page 8 of 25

Validity 21.10.2018 to 20.10.2020 Last Amended on 13.12.2018

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8.	Frequency <sup>#</sup>	1Hz to 100MHz 100MHz to 600MHz	0.00036% to 0.0012% 0.0012%	Using Frequency Counter by Direct Method
		<b>50Hz @ UPF</b> 120V to 240V 0.01A to 20A 1.2W to 4.8Kw	0.50% to 0.12%	
		<b>50Hz @ 0.8Lead</b> 120V to 240V 0.1A to 20A 9.6W to 3.8kW	0.19% to 0.3%	
		<b>50Hz@ 0.5Lag</b> 120V to 240V 0.1A to 20A 6W to 2.4kW	0.51%	
		<b>50Hz@0.2Lag</b> 120V to 240V 0.1A to 20A 2.4W to 960W	1.04%	

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 9 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

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10.	Temperature# Simulation Temperature Indicator, Recorder / Controller RTD THERMOCOUPLE S TC R TC J TC K TC E TC B TC T TC N TC L TC U TC	(-)200°C to 800°C  0°C to 1760°C 0°C to 1760°C (-)200°C to 1200°C (-)200°C to 1300°C (-)250°C to 1000°C 600°C to 1800°C (-)200°C to 400°C (-)200°C to 1300°C (-)200°C to 900°C (-)200°C to 600°C	0.0006°C  0.42°C 0.38°C 0.11°C 0.14°C 0.09°C 0.75°C 0.09°C 0.15°C 0.096°C 0.12°C	Using 8 ½ DMM by Simulation Method
11.	Time Interval#	0.1sec to 24Hr	0.22% to 0.03%	Using Time Interval Meter
12.	Energy / Power Analyser 1Ø & 3Ø# (Active Power/Energy)	50Hz 63.5V to 240V 0.5Ato5A 0.5 to UPF to 0.5 PF Lead / Lag	0.29%	Using SATEC Power Meter by Direct/Comparison Method

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247 Page 10 of 25

Validity 21.10.2018 to 20.10.2020 Last Amended on 13.12.2018

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<b><u>MECHANICAL CALIBRATION</u></b>				
<b>I.</b>	<b>DUROMETER</b>			
1.	Rubber Hardness Tester <sup>§</sup> (Durometer) Spring Force Shore A Shore D	0to100 SHORE A 0to100 SHORE D	1.16 Shore A 0.41 Shore D	Using load cell with Indicator & fixture AS PER ASTM D 2240 – 02b & 03
<b>II.</b>	<b>TORQUE GENERATING DEVICES</b>			
1.	Torque Wrench <sup>§</sup> (Type I – Class B,C,D,E & TYPE II- Class A,B,C,D,E)	0.2 to 2 Nm 2 Nm to 20 Nm 20Nm to 200Nm 200Nm to 2000Nm	1.97% 1.56% 1.56% 1.56%	Using Electronic Torque Tester IS/ISO 6789
<b>III.</b>	<b>MOBILE FORCE MEASURING SYSTEM</b>			
1.	Push Pull Gauge <sup>§</sup> (Analog / Digital) / Force Gauge / Spring Balance	0 to 100N 100 to 500N 500N to 1500N	0.06% 0.09% 0.11%	Using Dead Weight Force Calibration Machine With Stainless Steel Weight VDI/VDE2624

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 11 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

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<b>IV.</b>	<b>TORQUE MEASURING DEVICES</b>			
1.	Torque Sensor / Transducers With Indicator / Torque Meter / Tester <sup>§</sup>	0.1 to 2.0 Nm 2.0 to 1500Nm	0.49% 0.47%	Using Weight Torque Calibration Machine Lever Arm With Stainless Steel Weights as per BS7882
<b>V.</b>	<b>UTM, TENSION CREEP AND TORSION TESTING MACHINE</b>			
1.	Universal Testing Machines / Compression Testing Machine / Spring Testing Machine*	Compression 0.1kN to 1kN 1kN to 50 kN 50kN to 100kN 100kN to 1000kN 1000kN to 2000kN	0.11% 0.14% 0.22% 0.29% 0.59%	Using Force Proving Instruments (Load Cell With Indicator And Proving Ring) As Per IS 1828 PART-I & ISO 7500-1
2.	Universal Testing Machines / Compression Testing Machine / Spring Testing Machine*	Tension 0.1kN to 1kN 1kN to 50 kN	0.14% 0.17%	Using Force Proving Instruments (Load Cell With Indicator And Proving Ring) As Per IS 1828 PART-I & ISO 7500-1

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247

Page 12 of 25

Validity 21.10.2018 to 20.10.2020

Last Amended on 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
VI.	WEIGHING SCALE AND BALANCE			
				Using E2 Class Standard Weights 1 mg to 200g Calibration of Class 1 Weighing Balance and Coarser As Per OIML R-76
				Using F1 & F2 Class Standard Weights Up to 50kg Calibration of Class 2 Weighing Balance and Coarser As Per OIML R-76
				Using M1 & F1 Class Weights Up to 600kg Calibration of Class 3 Weighing Balance and Coarser As Per OIML R-76

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**Certificate Number** CC-2247 **Page** 13 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

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<b>VII. DENSITY AND VISCOSITY</b>				
1.	Density Hydrometers <sup>§</sup>	0.650g/ml to 1.100g/ml 1.100g/ml to 2.000g/ml	0.0009 g/ml 0.0012g/ml	Using Hydrometers & Appropriate liquid Calibration Of Hydrometers By Comparison Method As Per Archimedes Principle Based On IS:3104
2.	Density Alcoholmeters <sup>§</sup>	94% to 104%	0.008g/ml	Using Alcohol meters & Appropriate liquid Calibration Of Alcohol Meters By Comparison Method As Per Archimedes Principle Based On IS:3608
<b>VIII. DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)</b>				
1.	Spirit Level <sup>§</sup> Sensitivity: 0.01 mm/M <sup>φ</sup>	0.2 mm/M	8.0 $\mu$ m/M	Using Electronic Level By Comparison based on IS : 5706
2.	Gauge Blocks <sup>§</sup>	0.5 to 25mm Above 25 mm up to 50 mm Above 50 mm	0.14 $\mu$ m 0.17 $\mu$ m 0.24 $\mu$ m	Using Gauge block comparator& 00 grade slip gauge block By comparison based on IS ; 2984
3.	Bevel Protractor <sup>§</sup> L.C. 1 arc min <sup>φ</sup>	Up to 360°	3.17min	Using Profile Projector By Direct Method Based On IS: 5812

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**Certificate Number** CC-2247

**Page**

**14 of 25**

**Validity** 21.10.2018 to 20.10.2020

**Last Amended on** 13.12.2018

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4.	Test Sieves <sup>§</sup>	0.032 mm to 10 mm 10mm to 50 mm 50mm to 100 mm	3.3 $\mu$ m 3.4 $\mu$ m 3.5 $\mu$ m	Using Profile Projector By Comparison Method Based On IS: 460-1985
5.	Radius Gauge <sup>§</sup>	R2 to 50 mm	3.5 $\mu$ m	Using Profile Projector By Comparison Method Based On IS: 5273-1969
6.	Thread Pitch Gauge <sup>§</sup>	Pitch 0.2 to 12mm	3.4 $\mu$ m	Using Profile Projector By Comparison Method Based On IS: 4211-1993
7.	Taper Scale <sup>§</sup>	1 : 150mm	3.8 $\mu$ m	Using Profile Projector By Comparison Method
8.	Weld Gauge / Weld Fillet Gauge <sup>§</sup>	0 to 50 mm Angle 90°	3.8 $\mu$ m 3.2 $\mu$ m	Using Profile Projector By Comparison Method
9.	Wire Gauge / Wet Film Thickness Gauge <sup>§</sup>	0 to 10mm	3.8 $\mu$ m	Using Profile Projector By Comparison Method
10.	Flakiness Gauges / Thickness Gauge <sup>§</sup>	4.5 mm to 35 mm	3.8 $\mu$ m	Using Profile Projector By Comparison Method
11.	Elongation Gauge <sup>§</sup>	14 mm to 85 mm	8.2 $\mu$ m	Using Digital Caliper By Comparison Method
12.	Measuring Scale <sup>§</sup> L.C: 0.5mm <sup>¶</sup>	Up to 1000mm	35 $\mu$ m	Using Profile Projector By Comparison Method Based On IS : 1481

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Certificate Number CC-2247

Page

15 of 25

Validity 21.10.2018 to 20.10.2020

Last Amended on 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
13.	Calipers <sup>§</sup> ( Vernier/Dial/Digital) LC : 10 $\mu$ m <sup>¶</sup>	Up to 1000mm	8.2 $\mu$ m	Using Caliper Checker, Gauge Block & Length Bar By Comparison Based On IS : 3651(part1,2,3)
14.	Depth Gauge <sup>§</sup> (Vernier/Dial/ Digital) LC : 10 $\mu$ m <sup>¶</sup>	Up to 200mm	7.7 $\mu$ m	Using Caliper Checker, Gauge Blocks & Length Bar By Comparison Based On IS : 4213-1991
15.	Height Gauge <sup>§</sup> (Dial/Digital) LC : 10 $\mu$ m <sup>¶</sup>	0 to 300 mm 0 to 600 mm	7.5 $\mu$ m 8.7 $\mu$ m	Using Caliper Checker, Length Bar By Comparison Based On IS : 2921
16.	External Micrometer <sup>§</sup> (Analog/Digital) LC : 1 $\mu$ m LC: 10 $\mu$ m <sup>¶</sup>	Up to 150mm Up to 1000mm	1.6 $\mu$ m 7.6 $\mu$ m	Using Gauge Block, Length Bar By Comparison Based On IS : 2967
17.	Depth Micrometer <sup>§</sup> ( Analog/Digital) LC: 10 $\mu$ m <sup>¶</sup>	Up to 100mm	6.8 $\mu$ m	Using Gauge Block By Comparison Based On IS : 6468
18.	Internal Micrometer <sup>§</sup> ( Analog/Digital) LC : 1 $\mu$ m <sup>¶</sup>	5 mm to 30mm	3.8 $\mu$ m	Using Gauge Block & Accessories By Comparison Based On IS : 2966

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**Certificate Number** CC-2247

**Page**

**16 of 25**

**Validity** 21.10.2018 to 20.10.2020

**Last Amended on** 13.12.2018

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19.	Stick Micrometer <sup>§</sup> LC : 10 $\mu$ m <sup>¶</sup>	25 mm to 600mm Above 600 Up to 1000mm	5.8 $\mu$ m 6.4	Using Gauge Block, Accessories By Comparison Based On IS : 2966
20.	Plunger Dial Gauge <sup>§</sup> ( Analog /Digital) LC: 1 $\mu$ m <sup>¶</sup>	Upto25mm	1.6 $\mu$ m	Using Dial Calibration Tester By Comparison Based On IS : 2092-1983
21.	Lever Type Dial Indicator <sup>§</sup> ( Analog /Digital) LC : 1 $\mu$ m <sup>¶</sup>	Up to 1mm	1.6 $\mu$ m	Using Dial Calibration Tester By Comparison Method Based On IS : 11498
22.	Dial Bore Gauge <sup>§</sup> ( Analog /Digital) LC : 1 $\mu$ m <sup>¶</sup>	Dia Range $\emptyset$ 6- 500mm  Probing range : Up to 1.5 mm	1.6 $\mu$ m	Using Dial Calibration Tester By Comparison Method Based On IS : B7515
23.	Dial Thickness <sup>§</sup> LC : 10 $\mu$ m <sup>¶</sup>	Upto 50mm	3.6 $\mu$ m	Using Gauge Block By Comparison Method Based On IS : 14271
24	Pistol Caliper <sup>§</sup> LC : 100 $\mu$ m <sup>¶</sup>	Upto 100mm	28.9 $\mu$ m	Using Gauge Block By Comparison Method

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247

**Page** 17 of 25

**Validity** 21.10.2018 to 20.10.2020

**Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
25.	Snap Gauge / Gap Gauges <sup>§</sup> ( Fixed/Adjustable)	2 mm to 100mm 100 mm to 200mm	0.33 $\mu$ m 0.52 $\mu$ m	Using Gauge Block & Accessories By Comparison Method Based On IS : 3455
26.	Feeler Gauge <sup>§</sup>	Upto 1 mm	2.4 $\mu$ m	Using Digital Micro Meter By Comparison Method Based On IS : 3179
27.	Micrometer Setting Rod <sup>§</sup>	25mm to 600mm	3.8 $\mu$ m	Using Gauge Block & Electronic Comparator By Comparison Method
28.	Plain Plug Gauge/ Width Gauge <sup>§</sup>	2 mm to 100mm Above 100 mm upto 300mm	1.2 $\mu$ m 2.5 $\mu$ m	Using Gauge Block & Electronic Comparator By Comparison Method Based On IS : 3455
29.	Height Measuring System (1D/2D)* Resolution: 0.1 $\mu$ m <sup>¶</sup>	Upto 600mm	3.8 $\mu$ m	Using Gauge Block /Long Gauge Block By Comparison Based On IS : 2921
30.	Surface Plate* (Granite/Cast Iron )	3000mm X 3000mm	0.9 $\sqrt{(W+L)}/125$ $\mu$ m W=Width in mm L= Length in mm	Using Electronic Level By In-Direct Method Based On IS : 7327-2003 & 12937

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247

**Page**

**18 of 25**

**Validity** 21.10.2018 to 20.10.2020

**Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
31.	Profile Projector* LC : 1 $\mu$ m <sup>φ</sup>  LC : 1 Arc Sec <sup>φ</sup>	Linear: Upto 300mm  Angle Upto 360°  Mag: Upto 100x	4.8 $\mu$ m  28Arc Sec  0.1%	Using Glass Scale, Angle Gauge, Digital Calipers & Gauge Block By Comparison Method Based On JIS : B7184
32.	Video Measuring System* LC : 0.1 $\mu$ m LC : 1 Arc Sec.	Linear Upto 300mm	4.8 $\mu$ m	Using Glass Scale, Angle Gauge, Digital Calipers & Gauge Block By Comparison Method
<b>IX.</b>	<b>ACCELERATION &amp; SPEED</b>			
1.	Speed Tachometer <sup>\$</sup>	10 to 30 rpm 30 to 1000 rpm 1000 to 10000 rpm 10000 to 40000 rpm 40000 to 90000 rpm	0.6 rpm 1.25 rpm 2.76 rpm 3.90 rpm 5.41 rpm	By Comparison based on SANAS TR 45-02
2.	Centrifuge/Rpm Meter*	50 to 100 rpm 100 to 5000 rpm 5000 to 50000 rpm	1.26 to 0.64% 0.64 to 0.12% 0.12 to 0.01%	By Comparison based on SANAS TR 45-02

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 19 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b>X.</b>	<b>PRESSURE INDICATING DEVICES</b>			
1.	Analog/Digital, Pressure Gauge/ Pressure Controller/Pressure Indicator/ Recorder/Transmitter / Transducer With Indicator/Compound Gauge/Switch/Valves /Manometer/ Pneumatic Pressure/ Hydraulic Pressure Pneumatic Pressure Hydraulic Pressure <sup>#</sup>	0 to 20 bar 0 to 40 bar 0 to 700 bar	0.06% rdg 0.04% rdg 0.04% rdg	Using Digital Pressure Calibrator & Pressure Comparison Method As Per DKD-R6-1 By Comparison Method
2.	Analog / Digital Vacuum Gauge/ Vacuum Indicator/ Controller/ Recorder/ Transmitter/ Transducer With Indicator/ Compound Gauge / Switch / Valves/ Manometer <sup>#</sup>	-0.9 to 0 bar	0.9% rdg	Using Digital Vacuum Calibrator & Pressure Comparator By Comparison Method As Per DKD-R6-2 By Comparison Method
3.	Differential Pressure Sensor of Air Leak Tester <sup>*</sup>	$\pm$ 2500 Pa	6.08 Pa	Using Leak Master by Comparison Method

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 20 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
<b>XI.</b>	<b>ACCELERATION</b>			
1.	Vibration Amplitude-Accelerometer / Vibration Sensor §	5 to 100 Hz 100 to 160 Hz 160 to 1 kHz 1kHz to 2.4 kHz  Linearity up to 30g (pk) @ 160Hz	2.00 % 1.25% 1.50 % 1.70%  1.25%	Using Vibrating Source With Master Accelerometer By Comparison Method as per ISO 16063
2.	Vibration Amplitude – Vibration Exciter <sup>§</sup>	5 to 100 Hz 100 to 160 Hz 160 to 1 kHz 1kHz to 2.4 kHz  Linearity up to 30g (pk) @ 160Hz	2.00 % 1.25% 1.50 % 1.70%  1.25%	Using Accelerometer, Digital Multimeter & Frequency Counter By Comparison Method as per ISO 16063
3.	Vibration Amplitude-Vibration Exciter Vibration Meter <sup>§</sup>  Acceleration	5 to 100 Hz 100 to 160 Hz 160 to 1 kHz 1kHz to 2.4 kHz  Linearity up to 30g (pk) @ 160Hz	2.00 % 1.25% 1.50 % 1.70%  1.25%	Using Vibrating Source With Master Accelerometer By Comparison Method as per ISO 16063  Using Vibrating Source With Master Vibration Meter By Comparison Method

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247

**Page** 21 of 25

**Validity** 21.10.2018 to 20.10.2020

**Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
	Velocity	10 Hz to 1 kHz 1.0 mm/s to 155 mm/s (pk)	2.9%	
	Displacement	10 Hz to 500Hz 0.01 mm to 1.0mm (pk-pk) 1.0 to 2.0 mm (pk-pk)	9.14% 2.5%	
4.	Vibration Amplitude – Vibration Exciter*	10 to 5000 Hz Upto 5g	2.5%	Using Vibration Meter By Comparison Method as per ISO 16063

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247

Page 22 of 25

Validity 21.10.2018 to 20.10.2020

Last Amended on 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>OPTICAL CALIBRATION</u></b>				
1.	Lux Meter <sup>s</sup>	5.4 Lux to 5000 Lux 5000 Lux to 25000 Lux 25000 Lux to 32000 Lux	3% of rdg 2.13% of rdg 2.2% of rdg	Using Master Lux Meter Using Light Source And Power Supply by Comparison Method

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 23 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>THERMAL CALIBRATION</u></b>				
<b>I.</b>	<b>TEMPERATURE</b>			
1.	RTD'S, RTD With Indicator, SPRT, Thermocouple With Indicator, Digital Thermometer, Temperature Gauge, Temperature/ Data Logger With Sensor Thermocouple, Temperature Transmitter <sup>§</sup>	(-)95°C to (-)25°C (-)25°C to 150°C 150°C to 600°C 600°C to 1200°C	0.11°C 0.08°C 0.16°C 1.77°C	Using SSPRT With Indicator, Using S Type Thermocouple With indicator, 6 1/2 Digit Multimeter And Dry Block Bath by Comparison Method
2.	Thermo Hygrometer, Temperature & Humidity Meter, Temperature Graph, Humidity Indicator, Humidity Transmitter, Temperature And Humidity Data Logger <sup>§</sup>	(-)30°C to 50°C 5% RH to 95%RH	0.14°C 0.75%	Using SSPRT With Indicator & Humidity Meter by Comparison Method
3.	Low & High Temperature Bath <sup>§</sup>	(-)80°C to 100°C 100°C to 300°C 300°C to 1200°C	0.12°C 0.20°C 1.77°C	Using SSPRT With Indicator & S-Type thermocouple with indicator by Comparison Method

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**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** CC-2247 **Page** 24 of 25

**Validity** 21.10.2018 to 20.10.2020 **Last Amended on** 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
4.	RTD'S, RTD With Indicator, SPRT, Thermocouple With Indicator, Digital Thermometer, Temperature Gauge, Temperature/ Data Logger With Sensor Thermocouple, Temperature Transmitter*	(-)25°C to 150°C 150°C to 600°C 600°C to 1200°C	0.08°C 0.16°C 1.77°C	Using SSPRT With Indicator, Using S Type Thermocouple With indicator, 6 1/2 Digit Multimeter And Dry Block Bath By Comparison Method
5.	Oven ,Incubator, Chamber ,Baths, Freezers, Autoclave, Furnace* (Single Point)	(-)80°C to 100°C 100°C to 300°C	0.12°C 0.20°C	Using SSPRT With Indicator By Comparison Method
6.	Furnace (Single Point), High Temperature Bath*	Upto 600°C 600°C to 1200°C 1200°C to 1500°C	0.16°C 1.43°C 2.96°C	Using SSPRT With Indicator , S-Type Multi-meter By Comparison Method
7.	Furnace* (Multi Point)	Upto 1200°C	1.85°C	Using N-Type Thermocouple & Data Logger By Comparison Method

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2247 Page 25 of 25

Validity 21.10.2018 to 20.10.2020 Last Amended on 13.12.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
8.	Temperature & Humidity Chamber* (Multi Point)	(-)80°C to 300°C 15% RH to 95%RH	0.21°C 0.96%RH	Using RTD Sensors & Data Logger & Humidity meter By Comparison Method

\* 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.

Ⓞ 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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