

**Laboratory** Forbes Marshall (Hyd.) Pvt. Ltd., (Calibration Laboratory), Plot No.A-19/2 & T-4/2, IDA, Nacharam, Hyderabad, Telangana

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

**Certificate Number** CC-2609

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**Validity** 16.03.2018 to 15.03.2020

**Last Amended on --**

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>MECHANICAL CALIBRATION</u></b>				
<b>I.</b>	<b>Dimension (Basic Measuring Instrument, Gauge etc.)</b>			
1.	External Micrometer <sup>s</sup> (Mechanical/ Digital) L.C 0.01mm	Up to 100 mm	3.7 $\mu$ m	Using Gauge Blocks/ Long Gauge Blocks
2.	Caliper <sup>s</sup> (Vernier/Dial/Digital) LC:0.01mm LC:0.02mm	Upto 300mm Above 300 up to 600mm	7.5 $\mu$ m 14 $\mu$ m	Using Gauge Blocks/Caliper Checker/Length Bars
3.	Plunger Type Dial Gauge <sup>s</sup> (Analog/Digital) L.C:0.01mm	Upto 25mm	3.2 $\mu$ m	Using dial calibration tester
4.	Lever Type Dial <sup>s</sup> L.C:0.01mm	Upto 1 mm	3.2 $\mu$ m	Using dial calibration tester
5.	Bore Gauge <sup>s</sup> (Transmission Only) L.C:0.01mm	Dial Range : $\varnothing$ 16 to 300 mm Probing Range: Upto 1 mm	3.5 $\mu$ m	Using dial calibration tester

**Mohit Kaushik**  
Convenor

**Avijit Das**  
Program Director

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6.	Height Gauge <sup>s</sup> (Vernier/Dial/Digital) LC:0.01mm	Upto 300 mm	12.40 $\mu$ m	Using Gauge Blocks/Caliper checker/Length Bars
7.	Dial Thickness Gauge <sup>s</sup> LC:0.01mm	Upto 10 mm	5.5 $\mu$ m	Using Gauge Blocks
8.	Snap/Gap Gauges <sup>s</sup> (Fixed/Adjustable)	Upto 100 mm	2.5 $\mu$ m	Using Gauge Blocks
9.	Bevel Protractor LC:5'min	Upto 180 <sup>o</sup> C	5.0 Arc min	Using Angle Gauge blocks
10.	Measuring Scale <sup>s</sup>	Upto 1000mm	53.0 $\mu$ m	Using Scale & Tape calibrator
11.	Measuring Scale <sup>s</sup>	Upto 5 meters	52 $\sqrt$ L $\mu$ m L in mm	Using Scale & Tape calibrator
II.	<b>PRESSURE INDICATING DEVICES</b>			
1.	Pressure (Hydraulic ) Pressure Gauges, Test Gauges, Pressure Switches, Compound Gauges, Pressure Transmitters <sup>s</sup> (Digital/ Analogue)	2 kg/cm <sup>2</sup> to 70 kg/cm <sup>2</sup> 70 kg/cm <sup>2</sup> to 700 kg/cm <sup>2</sup>	0.91% of rdg 0.45% of rdg	Using Hydraulic Dead weight tester as DKD-R-6-1

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2.	Pneumatic Pressure Gauges, Test Gauges, Pressure Switches, Pressure Transmitters, Compound Gauges <sup>\$</sup> (Digital / Analogue )	0.1 to 1 bar	0.09% of rdg	Using Pneumatic Dead weight tester as DKD-R-6-1
3.	Vacuum Gauges, Compound Gauges, (Analogue/Digital) Vacuum Transmitters with Display <sup>\$</sup>	(-)0.85 bar to (-)0.1 bar	0.164% of rdg	Using Pneumatic Dead weight tester as DKD-R-6-1
4.	Magnehelic Gauges <sup>#</sup>	0 to 100mbar	0.26 mbar	Using Digital Differential Manometer
5.	Pressure Gauges, Pressure Switches, Compound Gauge, Pressure Transmitters* (Digital / Analogue),	0 to 700 kg/cm <sup>2</sup>	0.48 % of rdg	Using Digital Pressure Gauge & Comparator as DKD-R-6-1
6.	Pressure Gauges, Pressure Switches, Pressure Transmitters, Compound Gauges, Vacuum Gauge <sup>*</sup> (Digital / Analogue )	(-)0.85 bar to (-)0.1bar	0.18 % of rdg	Using Digital Vacuum Gauge & Vacuum Pump as DKD-R-6-1

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<b><u>THERMAL CALIBRATION</u></b>				
<b>I.</b>	<b>TEMPERATURE</b>			
1.	Glass Thermometers, Temperature Gauges, Digital Thermometers with Probe, RTD Sensors with or without Indicator, Thermocouple Sensor with Indicator/ Data Logger, Temperature Transmitter with Indicator <sup>\$</sup>	(-)90°C to 50°C	0.15°C	Using Digital Temperature Indicator with probe & 6.5 DMM, Low Temperature Bath
2.	Glass Thermometers, Temperature Gauges, Digital Thermometers with Probe, RTD Sensors with or without Indicator, Thermocouple Sensor with Indicator/ Data Logger, Temperature Transmitter with Indicator <sup>#</sup>	50°C to 300°C	0.21°C	Using Temperature Indicator with probe, 6.5 DMM & Oil Temperature Bath

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3.	Temperature Gauges, Digital Thermometers with Probe, RTD Sensors with or without Indicator, Thermocouple Sensor with Indicator, Data Logger, Temperature Transmitter with Indicator <sup>#</sup>	300°C to 1200°C	1.8°C	Using R-Type Thermocouple with indicator & Dry Temperature Bath
4.	Glass Thermometers, Temperature Gauges, Digital Thermometers with Probe, RTD Sensors with or without Indicator, Thermocouple Sensor with Indicator/ Data Logger, Temperature Transmitter with Indicator <sup>*</sup>	(-)70°C to 50°C	0.15°C	Using Digital Temperature Indicator with probe & 6.5 DMM, Low Temperature Bath
7.	Chambers, Incubators, Oven, Deep freezer <sup>*</sup>	(-)80°C to 300°C	5.4°C	Using RTD sensors (minimum nine) with data logger

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

<sup>§</sup> Only in Permanent Laboratory

<sup>\*</sup> Only for Site Calibration

<sup>#</sup> The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

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