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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
		ELECTRO TECH	NICAL CALIBRATION	
I.	SOURCE	 		
1.	DC Voltage <sup>#</sup>	10 mV to 100 mV 100 mV to 300 mV 300 mV to 500mV 500mV to 1000mV 1V to 1000V	0.15% to 0.01% 0.01% 0.031% to 0.02% 0.02% to 0.013% 0.013% to 0.011%	Using Multifunction calibrator 1000A by Direct Method
2.	AC Voltage#	10Hz to 1kHz 10mV to 100mV  20Hz to 1kHz 100mV to 300mV  50Hz to 1kHz 300mV to 3V 3V to 100V 100V to 500V 500V to 750V  1kHz to 20kHz 10mV to 100mV 100mV to 300mV 300mV to 3V 3V to 100V	0.86% to 0.13%  0.13% to 0.1%  0.1% to 0.21%  0.21% to 0.13%  0.13% to 0.1%  0.19 to 0.127 %  0.86% to 0.3%  0.3%  0.3%  0.3%  0.28% to 0.28%  0.28% to 0.118%	Using Multifunction calibrator 1000A by Direct Method
3.	DC Current <sup>#</sup>	100µA to 300µA 300µA to 300 mA 300mA to 10A 10A to 1000A	0.095% to 0.081% 0.081% to 0.1% 0.1% 1.0%	Using Multifunction calibrator 1000A With Current Coil by Direct Method

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
4.	AC Current <sup>#</sup>	10Hz to 2 kHz 100µA to 300µA 300µA to 30mA 30mA to 300mA 300mA to 10A 10A to 20A 50Hz to 1 kHz 20A to 1000A	0.6% to 0.45% 0.45% to 0.177% 0.177% to 0.168% 0.168% to 0.65% 0.65% to 0.74%	Using Multifunction calibrator 1000A by Direct Method
5.	Resistance <sup>#</sup>	10Ω to 30Ω 30 Ω to 60 Ω 60 Ω to 300 Ω 300 Ω to 600 Ω 600 Ω to 3k Ω 3k Ω to 60k Ω 60k Ω to 300k Ω 300k Ω to 600k Ω 600k Ω to 3M Ω 3M Ω to 60M Ω 60M Ω to 300M Ω	1.1% to 0.25% 0.25% to 0.12% 0.12% to 0.026% 0.026% to 0.034% 0.035% to 0.021% 0.021% to 0.039% 0.039% to 0.027% 0.027% to 0.031% 0.031% to 0.036% 0.036% to 0.29% 0.29% to 0.24%	Using Multifunction calibrator 1000A by Direct Method
6.	Capacitance <sup>#</sup>	1kHz 100pF to 900pF 1nF to 9nF 10nF to 99nF 100nF to 999nF 1µF to 10µF	3.5% 3.5% 3.5% 3.5% 3.5%	Using Standard Capacitance Box by Direct Method
7.	Inductance <sup>#</sup>	<b>1kHz</b> 100μΗ to 100mH 100mH to 1H	3.5% 3.5%	Using Standard Inductance Box by Direct Method

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
8.	Frequency <sup>#</sup>	1Hz to 100kHz	0.068% to 0.007%	Using Multifunction calibrator 1000A by Direct Method
9.	Temperature Simulation (Indicator, Controller Recorder) RTD Sensor 'J' Type Thermocouple 'T' Type Thermocouple 'R' Type Thermocouple 'R' Type Thermocouple 'S' Type Thermocouple 'S' Type Thermocouple 'D' Type Thermocouple 'N' Type Thermocouple 'B' Type Thermocouple	(-)200°C to 800°C e (-)180°C to 750°C e (-)200°C to 400°C e (-)200°C to 1340° e 50°C to 1700°C e 50°C to 800°C e (-)200°C to 1300°	0.59°C 0.70°C 0.92°C 2.40°C 2.52°C 0.50°C	Using Multifunction calibrator 1000A by Direct Method
II.	MEASURE			
1.	DC Voltage <sup>#</sup>	1 mV to 100 mV 100 mV to 1000 \	0.42% to 0.009% / 0.009%	Using 6½ DMM Agilent 34401A by Direct Method
	DC High Voltage <sup>#</sup>	1 kV to 40 kV	3.3%	Using HV Probe & DMM by Direct Method
2.	AC Voltage <sup>#</sup>	1kHz 10mV to 100mV 40Hz to 1kHz 100mV to 10V 10V to 100V 100V to 750V	0.98% to 0.23 % 0.23% 0.23% to 0.12% 0.12% to 0.1%	Using 6½ DMM Agilent 34401A by Direct Method

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	AC High Voltage <sup>#</sup>	<b>50Hz</b> 1kV to 28kV	7.8%	Using HV Probe & DMM by Direct Method
3.	DC Current <sup>#</sup>	1mA to 10mA 10mA to 1A 1A to 3A 3A to 5A 5A to 20A	0.32% to 0.083% 0.083% to 0.17% 0.17% 0.17% to 1.22% 1.22% to 0.61%	Using 6½ DMM Agilent 34401A & current shunt Agilent 34330A by Direct Method
4.	AC Current <sup>#</sup>	40Hz to 1kHz 100mA to 1A 1A to 3A 3A to 30A	0.35% to 0.2% 0.24% to 0.3% 0.3% to 0.92%	Using 6½ DMM Agilent 34401A & current shunt Agilent 34330A by Direct Method
5.	Resistance <sup>#</sup>	10 $\Omega$ to 100 $\Omega$ 100 $\Omega$ to 1Μ $\Omega$ 1Μ $\Omega$ to 10Μ $\Omega$ 10Μ $\Omega$ to 100Μ $\Omega$	0.063% to 0.018% 0.018% to 0.047% 0.047% to 0.065% 0.065% to 0.94%	Using 6½ DMM Agilent 34401A by Direct Method
6.	Frequency <sup>#</sup>	3Hz to 100kHz 100kHz to 20MHz	0.12% to 0.013% 0.015% to 0.002%	Using 6½ DMM & Frequency Counter by Direct Method
7.	Timer**	1s to 10s 10s to 1000s 1000s to 9900s 9900s to 86400s	0.11s to 0.08s 0.08s to 0.175s 0.175s to 1.4s 1.4s to 5s	Using Standard Timer by Direct Method

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SI.	Quantity Measured / Instrument		*Calibration Measurement Capability (±)	Remarks
8.	Temperature Simulation (Indicator, Controller, Recorder) RTD Sensor 'J' Type Thermocouple 'K' Type Thermocouple 'R' Type Thermocouple 'S' Type Thermocouple 'S' Type Thermocouple 'E' Type Thermocouple 'N' Type Thermocouple 'N' Type Thermocouple 'B' Type Thermocouple	(-)200°C to 800°C (-)180°C to 750°C (-)200°C to 400°C (-)200°C to 1340°C 50°C to 1700°C 100°C to 1700°C (-)200°C to 1000°C (-)200°C to 1300°C	0.32°C 0.49°C 0.60°C 0.72°C 2.41°C 2.41°C 0.39°C 0.75°C 2.90°C	Using MFC Unomat TRX by Direct Method

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
		MECHANICA	AL CALIBRATION	
I.	PRESSURE INDICATI	NG DEVICES		
1.	Vacuum <sup>#</sup> (Digital / Dial Gauge, Transmitter, Transducers)	(-)0.9 to 0 bar	0.2 % rdg	Using Digital Pressure Calibrator by comparison method as per DKD-R-6-1
2.	Pressure (Pneumatic) # (Digital / Dial Gauge, Magnehelic Gauge, Manometer, Differential Pressure, Transmitter, Transducers)	0 to 50 mmWc >50 to 200 mmWc >200 to 2000 mmWc 0 to 1 bar >1 to 40 bar	0.18 mmWc 0.2 mmWc 1.5 mmWC 0.2 % rdg 0.27 % rdg	Using Differential Pressure Calibrator / Digital Pressure Calibrator & Digital Pressure Gauge by comparison method as per DKD-R-6-1
3.	Pressure (Hydraulic) <sup>#</sup> (Digital / Dial Gauge, Transmitter, Transducers)	1 to 70 bar >70 to 700 bar	0.11 %rdg 0.14 % rdg	Using Digital Pressure Gauge by comparison method as per DKD-R-6-1
4.	Pressure (Hydraulic) <sup>#</sup> (Digital / Dial Gauge, Transmitter, Transducers)	7.0 bar to 700 bar	0.02 %rdg	Using Dead Weight Tester by comparison method as per DKD-R-6-1

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measuremen Capability (±)	t Remarks
II.	ACOUSTICS			
1.	Sound Level Meter #	94 dB 114 dB	0.52 dB 0.25 dB	Using Sound Level Calibrator by comparison method as per IS 15575 / OIML-R-58, AVM-WI-M15
III.	WEIGHTS	<del></del>		
1.	Mass # Calibration of Weights	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 100 g 200 g	0.02 mg	Using Weights of accuracy class E2 & Digital Balance up to 60/200 g readability 0.01/0.1 mg by Substitution method & ABBA Weighing Cycle procedure. Calibration of Class F2 Accuracy and Coarser based on OIML-R-111
		500 g 1 kg 2 kg 5 kg 10 kg 20 kg	10 mg 20 mg 20 mg 100 mg 200 mg 200 mg	Using Weights of accuracy class F1 & Electronic Balance up to 4100 g / 22000 g readability 0.01 g / 0.1 g by Substitution method & ABBA Weighing Cycle procedure. Calibration of Class M1 Accuracy and Coarser based on OIML-R-111

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	Quantity Measured / Instrument	Range/Frequency	*Calibration Measuremen Capability (±)	t Remarks
IV.	WEIGHING SCALE AI	ND BALANCE		
1.	Calibration of Weighing Balance # d= 0.001 mg and Coarser d= 0.01 mg and Coarser d= 0.1 mg and Coarser d= 10 mg and Coarser d= 10 mg and Coarser d= 10 g and Coarser d= 10 g and Coarser d= 10 g and Coarser	0 to 5 g  0 to 60 g  >60 g to 200 g  >200 g to 4 kg  >4 kg to 20 kg  >20 kg to 100 kg  >100 kg to 500 kg  >500 kg to 1000 kg	0.008 mg 0.05 mg 0.2 mg 0.02 g 0.2 g 20 g 80 g 500 g	Using Standard Weights accuracy class E2. Calibration of Weighing Balances of Class-I and coarser as per OIML-R-76-1 Using Standard Weights accuracy class F1. Calibration of Weighing Balances of Class-II and coarser as per OIML-R-76-1 Using Standard Weights accuracy class M1. Calibration of Weighing
	d= 200 g and Coarser	>1000 kg to 2000 kg	800 g	Balances of Class-III and coarser as per OIML-R-76-1
٧.	VOLUME	<del></del>	٠	
1.	Piston Pipette # (Micro Pipette)	10 μl to 100 μl >100 μl to 5000 μl	0.13 μl 0.74 μl	Using Digital precision Balances up to 60/200 g readability 0.01/0.1 mg & Distilled water of known density. as per ISO 8655-6, ISO/TR 20461

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
2.	Volumetric Glassware <sup>#</sup> (Glass Burette)	0.1 ml to 50 ml >50 ml to 100 ml	2.0 μl 8.5 μl	Using Digital precision Balances upto 60/210g readability 0.01mg/0.1mg & Distilled water of known density. as per ISO 4787, ISO/TR 20461
	Volumetric Glassware <sup>#</sup> (Glass Pipette- Graduated / Non- Graduated)	0.1 ml to 50 ml >50 ml to 100 ml	2.0 μl 8.5 μl	Using Digital precision Balances upto 60/210g readability 0.01mg/0.1mg & Distilled water of known density. as per ISO 4787, ISO/TR 20461
	Volumetric Glassware* (Measuring Cylinder, Volumetric Flask, Conical Flask, Dispenser, Beaker, Specific Gravity Cup, Pycnometer)	5 ml to 100 ml >100 ml to 2000 ml >2000 ml to 10000 ml	8.5 μl 75.0 μl 6.5 ml	Using Digital precision Balances up to 60 / 210 / 4100 / 22000g, readability 0.01mg / 0.1mg / 0.01g / 0.1g & Distilled water of known density. as per ISO 4787, ISO/TR 20461
VI.	TORQUE GENERATII	NG DEVICES		
1.	Torque Wrench, Torque Screw Driver* (Type-I Class-A, B, C, D, E. Type-II Class-A, B, C, D, E, F, G)	0.1 Nm to 2 Nm >2 Nm to 20 Nm >20Nm to 1000 Nm	1.0% rdg. 1.0% rdg 0.8% rdg	Using Digital Torque Calibration System by comparison method as per ISO 6789

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
VII.	MOBILE FORCE ME	ASURING SYSTEM	<u>:</u>	
1.	Push Pull Gauge, Force Gauge <sup>#</sup>	5N to 50 N >50 to 500 N	0.9 N 0.2 N	Using Standard Slotted Weights As Per ASTM E4- 16
VIII.	ACCELERATION AN	D SPEED	<del>-</del>	
1.	Tachometer, RPM Indicator * (Digital/Mechanical) (Non Contact Type)	60 rpm to 2000 rpm >2000 rpm to 99950rpm	0.7% 0.06%	Using Digital Tachometer by comparison method as per IS 12508
2.	Speed, RPM Indicator*	60rpm to 99950rpm	0.8%	Using Digital Tachometer by comparison method as per IS 12508
3.	Speed, RPM Indicator* (Contact Type)	60rpm to 99950rpm	0.06%	Using Digital Tachometer by comparison method as per IS 12508
IX.	DENSITY AND VISC	OSITY	<del>-</del>	
1.	Density Hydrometers	0.6 g/ml to 1.6 g/ml	0.0013 g/ml	Using Standard Hydrometer and appropriate Liquid by comparison method as per IS 3104-2

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SI.	Quantity Measured / Instrument	, , , ,	Calibration Measurement Capability (±)	Remarks
Χ.	DIMENSION (BASIC MI	EASURING INSTRUMENT	S, GAUGE, ETC.)	
1.	Caliper <sup>\$</sup> (Vernier / Dial / Digital) L.C.: 0.01 mm <sup>¢</sup>	0 to 300 mm 0 to 600 mm 0 to 1000 mm 0 to 1500 mm 0 to 2000 mm	12.4 µm 16.2 µm 20.7 µm 21.7 µm 39.0 µm	Using Gauge Block, Long Gauge Block and Caliper Checker by comparison method as per IS-3651 (Part-1,2 & 3)
2.	Inside Caliper <sup>\$</sup> (Mech / Dial / Digital) L.C.: 0.01 mm <sup>Ф</sup>	10 to 300 mm 10 to 600 mm	10.3 μm 12.2 μm	Using Caliper Checker by comparison method as per AVM-WI-D-02
3.	Height Gauge # (Mech / Dial / Digital) L.C.: 0.01 mm <sup>Φ</sup>	0 to 300 mm 0 to 600 mm 0 to 1000 mm	9.9 μm 12.0 μm 18.8 μm	Using Gauge Block, Long Gauge Block and Caliper Checker by comparison method as per IS-2921
4.	External Micrometer <sup>®</sup> (Mech / Digital / Indicating) L.C.: 0.001 mm <sup>Φ</sup> L.C.: 0.01 mm	0 to 100 mm > 100 mm to 300 mm > 300 mm to 600 mm >600 mm to 1000 mm >1000 mm to 2000 mm	1.0 µm 4.9 µm 9.7 µm 15.8 µm 38.4 µm	Using Gauge Block, Long Gauge Block by comparison method as per IS-2967

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
5.	Internal Micrometer <sup>\$</sup> (Caliper Type) (Mech / Digital) L.C.: 0.001 mm <sup>\$</sup>	5 mm to 100 mm	1.3 µm	Using Gauge Block by comparison method as per IS-2966
6.	Internal Micrometer <sup>\$</sup> (Stick / Tubular Type) L.C.: 0.01 mm <sup>\$</sup>	13 mm to 100 mm >100 mm to 500 mm >500 mm to 2100 mm	5.9 μm 8.0 μm 39.0 μm	Using Gauge Block, Long Gauge Block & Dial Test Indicator by comparison method as per IS-2966
7.	Depth Micrometer <sup>s</sup> (Mech / Digital) L.C.: 0.001 mm <sup>\$</sup>	0 to 150 mm 0 to 300 mm	5.33 μm 5.33 μm	Using Gauge Block, Long Gauge Block by comparison method as per BS-6468
8.	Depth Caliper <sup>\$</sup> (Mech / Dial / Digital) L.C.: 0.01 mm <sup>\$</sup>	0 to 300 mm 0 to 600 mm	8.2 μm 13.7 μm	Using Gauge Block, Caliper Checker, Long Gauge Block by comparison method as per IS-4213
9.	Dial Indicator <sup>®</sup> (Dial / Digital) L.C.: 0.001 mm <sup>Φ</sup>	0 to 100 mm	1.82 μm	Using Length Measuring Machine by comparison method as per IS-2092

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
10.	Dial Test Indicator <sup>\$</sup> (Dial / Digital) L.C.: 0.001 mm <sup>Φ</sup> L.C.: 0.01 mm <sup>Φ</sup>	0 to 0.14 mm 0 to 1.6 mm	0.7 μm 0.7 μm	Using Length Measuring Machine by comparison method as per IS-11498
11.	Dial Caliper Gauge <sup>®</sup> L.C.: 0.01 mm <sup>Φ</sup>	0 to 100 mm	6.1 µm	Using Gauge Block by comparison method as per AVM-WI-D23
12.	Dial Thickness Gauge <sup>\$</sup> L.C.: 0.001 mm <sup>Φ</sup> L.C.: 0.01 mm <sup>Φ</sup>	0 to 25 mm 0 to 100 mm	1.0 μm 6.0 μm	Using Gauge Block by comparison method as per AVM-WI-D10
13.	Dial Bore Gauge <sup>®</sup> Span Dia. (6mm to 400mm) L.C.: 0.001 mm <sup>Ф</sup>	1 mm (Transmission Error)	1.1 µm	Using Length Measuring Machine by comparison method as per AVM-WI- D21
14.	LVDT, Electronic Probe with DRO <sup>\$</sup> L.C.:0.0001mm <sup>¢</sup>	0 to 100 mm	0.81 μm	Using Gauge Block by comparison method as per AVM-WI-D09
15.	Micrometer Head <sup>\$</sup> L.C.:0.001mm <sup>¢</sup>	0 to 50mm	1.0 µm	Using Gauge Block, Electronic Comparator by comparison method as per IS-9483

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
16.	Feeler Gauge <sup>\$</sup>	0.005 mm to 2mm	1.42 µm	Using Length Measuring Machine by comparison method as per IS-3179
17.	Surface Plate <sup>#</sup>	3500 mm x 2600 mm	3.1√(L+W)/150 µm Where L+W in mm	Using Spirit Level L.C.:0.02 mm/m as per IS-12937, IS-2285, IS- 7327
18.	Comparator Stand*	300 mm x 300 mm	2.0 μm	Using Surface Plate With Dial Test Indicator as per IS-7599
19.	Straight Edges <sup>\$</sup>	50 to 1000 mm	2.0 μm	Using Surface Plate With Dial Test Indicator as per IS-12937 & IS-2220
20.	Engineers Parallel \$	50 to 1000 mm	2.0 μm	Using Surface Plate With Dial Test Indicator as per IS-4241
21.	Right Angle, Try Square, Engineers Square <sup>\$</sup> (Parallelism, Squareness)	50 to 300 mm	4.34 μm 8.5 μm	Using Surface Plate With Slip Gauge Set, Dial Test Indicator & Granite Square as per IS-2103

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
22.	Angle Plate, Box Angle Plate <sup>\$</sup> (Parallelism, Flatness, Squareness)	100 to 300 mm	4.3 μm 8.6 μm	Using Surface Plate With Slip Gauge Set, Dial Test Indicator & Granite Square as per IS-2554, IS-6232, IS-6973
23.	V-Block * (Squareness, Parallelism, Symmetricity)	50 to 200 mm	8.5 μm 7.1 μm 7.1 μm	Using Surface Plate With Slip Gauge Set, Granite Square, Test Mandrel & Dial Test Indicator as per IS-2949
24.	Coating Thickness Gauge <sup>§</sup> L.C.: 0.1 µm <sup>Φ</sup>	10 μm to 2000 μm	3.2 µm	Using Standard Foil by comparison method as per AVM-WI-D26
25.	Ultra Sonic Thickness Gauge <sup>\$</sup> L.C.: 0.01mm <sup>0</sup>	0 to 100 mm	54.4 μm	Using Gauge Block as per AVM-WI-D11
26.	Plain Plug Gauge, Setting Plug Gauge <sup>\$</sup>	1 mm to 200mm	1.6 μm	Using Length Measuring Machine, Gauge Block by comparison method as per IS-3455
27.	Snap gauge, Gap Gauge <sup>\$</sup>	3 mm to 150 mm >150 mm to 500 mm	2.0 μm 5.8 μm	Using Gauge Block, Long Gauge Block as per IS- 3455

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
28.	Thread Plug Gauge <sup>\$</sup>	2 mm to 100 mm	3.9 µm	Using Length Measuring Machine, Thread Measuring Wire Set as per IS-2334, IS-4218, IS- 6311, ISO-228, ANSI/ASME-B1.2
29.	Bench Center * (Parallelism & Co- axiality Measurement)	300 to 1000 mm	11.8 μm	Using Test Mandrel & Dial Test Indicator as per IS- 5980
30.	Thread Pitch Gauge <sup>\$</sup>	0.1 to 7 mm	7.92 µm	Using Profile Projector as per IS 4211
31.	Radius Gauge, Radius Measurement <sup>\$</sup>	0.1 to 50 mm	9.8 µm	Using Profile Projector as per IS 5273
32.	Taper Scale <sup>\$</sup>	0.1 to 15 mm	5.5 μm	Using Profile Projector as per AVM-WI-D44
33.	Wet Film Thickness Gauge <sup>\$</sup>	10 to 3000 μm	5.5 μm	Using Profile Projector as per AVM-WI-D45
34.	Test Sieve \$	0.025 to 125 mm	8.03 µm	Using Profile Projector as per IS 460
35.	Steel Scale \$ L.C.: 0.5 mm <sup>Φ</sup>	0 to 1000 mm	36.7 µm	Using Tape & Scale Calibrator as per IS 1481
36.	Bevel Protector \$ L.C.: 1' <sup>©</sup>	0 to 360°	2.0' of arc	Using Angle Gauge Set as per IS 4239

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
37.	Angle Protector, Combination Set <sup>\$</sup> L.C.: 1° <sup>©</sup>	0 to 180°	35'	Using Angle Gauge Set as per AVM-WI-D47
38.	Industrial Angle Gauges, Angle Measurements <sup>\$</sup>	0 to 360°	4.63' of arc	Using Profile Projector as per AVM-WI-D48
39.	Weld Fillet Gauge <sup>\$</sup>	0 to 100 mm 0 to 60°	27.9 μm 35'	Using Profile Projector as per AVM-WI-D49
40.	Measuring Tape, Pie Tape \$	0 to 50 meter	59 √L µm Where 'L' is in meter	Using Tape & Scale Calibrator as per IS 1269
41.	Plain Ring Gauge, Setting Ring Gauge <sup>\$</sup>	3 to 100 mm	2.0 µm	Using Length Measuring Machine as per IS 3485, IS 3455
42.	Thread Ring Gauge <sup>\$</sup>	4 to 100 mm	2.0 µm	Using Length Measuring Machine, Master Setting Ring as per IS-2334, IS- 4218, IS-6311, ISO-228, ANSI/ASME-B1.2
43.	3 Point Micrometer L.C.: 0.001 mm <sup>©</sup>	4 to 100 mm	3.31 µm	Using Master Ring Gauge as per AVM-WI-D50

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
II.	DIMENSION (PRECIS	SION EQUIPMENTS)		
1.	Caliper Checker, Depth Micrometer Checker <sup>\$</sup>	0 to 300 mm	5.0 μm	Using Gauge Block, Long Gauge Block, Electronic Probe by comparison method as per AVM-WI- D30
2.	Caliper Checker \$	0 to 600mm	9.8 µm	Using Gauge Block, Long Gauge Block, Electronic Probe by comparison method as per AVM-WI- D30
3.	Cylindrical Measuring Pins <sup>\$</sup>	0.1 mm to 20 mm	1.4 µm	Using Length Measuring Machine as per IS-11103
4.	Cylindrical Setting Master <sup>\$</sup>	5 mm to 100 mm	1.8 µm	Using Length Measuring Machine by comparison method as per IS-4349
5.	Dial Calibration Tester <sup>\$</sup> L.C .:0.0001mm <sup>Φ</sup>	0 to 25mm	0.9 μm	Using Gauge Block, Electronic Comparator by comparison method as per AVM-WI-D32
6.	Electronic Height Gauge, 2D Height Gauge <sup>#</sup> L.C.: 0.0001 mm <sup>Φ</sup>	0 to 600 mm	8.8 µm	Using Gauge Block, Long Gauge Block by comparison method as per IS-2921

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
7.	Height Master <sup>\$</sup> L.C.: 0.002 mm <sup>Φ</sup>	0 to 300 mm 0 to 600 mm	5.1 μm 9.8 μm	Using Gauge Block, Long Gauge Block, Electronic Probe by comparison method as per AVM-WI- D40
8.	Length Bar <sup>\$</sup>	10 mm to 100 mm	1.9 μm	Using Length Measuring Machine as per IS-7014
9.	Length Bar, Long Gauge Block <sup>\$</sup>	100mm to 500 mm	6.1 µm	Using Gauge Block, Electronic Probe by comparison method as per IS-7014, IS-2984
10.	Length Measuring Machine <sup>#</sup> (Single Axis) L.C.: 0.0001 mm <sup>Φ</sup>	0 to 100 mm	2.0 µm	Using Gauge Block by comparison method as per AVM-WI-D41
11.	Micrometer Setting Rod <sup>\$</sup>	25 mm to 100 mm >100mm to 600 mm	1.95 μm 7.31 μm	Using Length Measuring Machine Gauge Block, Electronic Comparator by comparison method as per AVM-WI-D29
12.	Profile Projector, Video Measuring Machine <sup>#</sup> L.C.: 0.001 mm <sup>Φ</sup> L.C.: 1" <sup>†</sup>	Linear 0 to 300mm Angle 360° Magnification 10X to 100X	6.7 μm 2.1 minute 4.7%	Using Glass Scale, Angle gauge set by comparison method as per AVM-WI- D36

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
13.	Standard Foil \$	0.01 mm to 2mm	1.47 μm	Using Length Measuring Machine by comparison method as per AVM-WI- D26
14.	Thread Measuring Wire <sup>\$</sup>	0.17 to 6.5 mm	1.5 μm	Using Length Measuring Machine as per IS-11103, IS-6311

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
       		THERMAL (	<u>CALIBRATION</u>	
ī.	TEMPERATURE			
1.	Liquid-In-Glass Thermometers <sup>#</sup>	(-)80°C to 50°C >50°C to 250°C	0.21°C 0.32°C	Using RTD (PT 100), 6½ DMM. with Cryostatic Circulator & Oil Bath by comparison method
2.	RTD's, Thermocouple with & without controllers, Temperature Indicator With Sensor, Recorders With Probes, Temperature Baths, Dry Block Calibrators, Low Temperature Bath, Digital Thermometers With Sensor, Temperature Gauges, Temperature Switches, Data Logger With Sensor, Temperature Transmitter, Temperature Transducer#	>100°C to 400°C >400°C to 500°C	0.2°C 0.26°C 2.10°C 2.92°C	Using RTD(PT 100), S- type Thermocouple, 6½ DMM with Cryostatic Circulator & Dry Block Temperature Calibrators by Comparison method

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	Temperature By Spatial Mapping, Thermal Chambers, Furnaces, Ovens, Incubators, Water Bath, Refrigerator, Deep Freezers, Autoclaves*	(-)80°C to 100°C >100°C to 400°C >400°C to 600°C >600°C to 800°C >800°C to 1200°C	0.65°C 1.5°C 2.3°C 2.5°C 3.5°C	Using Thermocouple Type-K, Multi Channel Temperature Recorder by Direct method
4.	Thermal Chambers, Furnaces, Ovens, Incubators, Dry Block Furnace, Water Bath, BOD Incubator, Centrifuge, Dryer, Refrigerator, Deep Freezers, Autoclaves*	-80°C to 50°C >50°C to 200°C >200°C to 400°C >400°C to 500°C >500°C to 1200°C	0.65°C 0.3°C 0.32°C 1.87°C 3.0°C	Temperature Calibrator With RTD / Thermocouple Sensor (Single Position Calibration) by Direct method
5.	Thermal Chambers, Furnaces, Dry Block Furnace*	>1200°C to 1500°C	4.7°C	Temperature Calibrator With Thermocouple Sensor (Single Position Calibration) by Direct method
6.	Non-Contact Type Thermometer# (Infrared Thermometer, Digital Pyrometer)	50°C to 300°C >300°C to 900°C	2.85°C 3.4°C	Infrared Thermometer & Black Body Source by comparison method

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SI.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
II.	SPECIFIC HEAT AND	HUMIDITY		
1.	Temperature & Humidity Indicators (Digital / Analog), Thermo-Hygrometer, Thermo- hygrographs, Humidity Sensor With and without Indicator, Controller, Data Logger, Recorder, Humidity Transmitter# (Temperature, Relative Humidity)	10% to 95% RH @25°C 10°C to 50°C @50% RH	0.92% RH 0.7°C	Digital RH Indicator with Sensor & Humidity Generator by comparison method
2.	Temperature Indicator of Environmental &Climatic Chamber*	10% to 95% RH @25°C 10°C to 50°C @ 50% RH	0.95% RH 0.7°C	Digital RH Indicator with Sensor & Humidity Generator by comparison method
3.	Thermal Mapping of Environmental &Climatic Chamber*	10% to 95% RH 10°C to 50°C	1.24% RH 1.5°C	Digital RH Datalogger with Sensor by direct method

<sup>\*</sup> Measurement Capability is expressed as an uncertainty (±) at a confidence probability of 95.45%

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

Vishal Shukla	Avijit Das
Convenor	Program Manager

<sup>\$</sup> Only in Permanent Laboratory

<sup>♣</sup> Only for Site Calibration

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