

**Laboratory** Unitech Instruments, Sect. No. 25, Plot No. 406, Pradhikaran, Nigdi, Pune, Maharashtra

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

**Certificate Number** CC-2681 (in lieu of C-1395, C-1396 & C-1397) **Page** 1 of 7

**Validity** 30.05.2018 to 29.05.2020 **Last Amended on** -

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>	1 mV to 200 mV 200 mV to 100 V 100 V to 1000 V	4.72 % to 0.066 % 0.064 % to 0.081 % 0.081 % to 0.063 %	Using MFC Mecco 90ABy Direct Method
2.	DC Current <sup>#</sup>	10 $\mu$ A to 500 mA 500 mA to 20 A 50 A to 1000 A	0.48 % to 0.17 % 0.17 % to 0.13 % 0.9%	Using MFC Mecco 90A with CC By Direct Method
3.	AC Voltage <sup>#</sup>	<b>50 Hz</b> 2 mV to 200 mV 200 mV to 100 V 100 V to 1000 V	3.6 % to 0.11 % 0.11 % to 0.11 % 0.11 % to 0.11 %	Using MFC Mecco 90ABy By Direct Method
		<b>60 Hz</b> 2 mV to 200 mV 200 mV to 100 V 100 V to 1000 V	3.6 % to 0.11 % 0.11 % to 0.11 % 0.11 % to 0.11 %	
4.	AC Current <sup>#</sup>	<b>50 Hz</b> 100 mA to 500 mA 500 mA to 20 A 50 A to 1000 A	0.474 % to 0.21 % 0.21 % to 0.21 % 0.9 %	Using MFC Mecco 90A with CC By Direct Method
5.	DC Resistance <sup>#</sup>	100 m $\Omega$ 500 m $\Omega$	0.6 % 1.05 %	Using fixed low value Resistances By Direct Method
		1 $\Omega$ to 1 k $\Omega$ 1 k $\Omega$ to 1M $\Omega$ 1 M $\Omega$ to 100 M $\Omega$ 100 M $\Omega$ to 1 G $\Omega$	0.960 % to 0.19 % 0.19 % 0.19 % to 0.59 % 0.60 %	Using Deade Resistance Box By Direct Method

Ashish Kakran  
Convenor

Avijit Das  
Program Director

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
6.	Temperature <sup>#</sup> J-Type (T/C) K-Type (T/C) S-Type (T/C) R-Type (T/C) T-Type (T/C) RTD PT-100	200 °C to 750 °C (-) 200 °C to 1000 °C 0 °C to 1300 °C 0 °C to 1700 °C (-) 200 °C to 400 °C (-) 200 °C to 400 °C	0.7 °C 0.8 °C 1.2 °C 0.85 °C 0.35 °C 0.61 °C	By Simulation Method by mV/ ohm
II.	<b>MEASURE</b>			
1.	DC Voltage <sup>#</sup>	1 mV to 100 mV 100 mV to 100 V 100 V to 1000 V	0.715 % to 0.009 % 0.009 % to 0.051 % 0.051 % to 0.016 %	Using 61/2 Fluke 8846A DMM By Direct Method
2.	DC Current <sup>#</sup>	10 $\mu$ A to 400 mA 400 mA to 10 A	0.36 % to 0.085 % 0.085 % to 0.21 %	Using 61/2 Fluke 8846A DMM By Direct Method
3.	AC Voltage <sup>#</sup>	<b>50 Hz</b> 100 mV to 100 V 100 V to 1000 V	0.13 % to 0.110 % 0.11 %	Using 61/2 Fluke 8846A DMM By Direct Method
4.	AC Current <sup>#</sup>	<b>50 Hz</b> 10 mA to 400 mA 400 mA to 10 A	0.18 % to 0.26 % 0.26 % to 0.32 %	Using 61/2 Fluke 8846A DMM By Direct Method
5.	DC Resistance <sup>#</sup>	1 $\Omega$ to 1 M $\Omega$ 1 M $\Omega$ to 10 M $\Omega$ 10 M $\Omega$ to 100 M $\Omega$ 100 M $\Omega$ to 1 G $\Omega$	0.5 % to 0.21 % 0.21 % to 0.21 % 0.21 % to 1 % 1 % to 1.05 %	Using 61/2 Fluke 8846A DMM By Direct Method
6.	Time <sup>#</sup>	10 s to 6 Hrs	0.18 sec to 2.6 sec	Using Digital Timer By Direct Method
7.	AC High Voltage <sup>*</sup>	<b>50 Hz</b> 1 kV to 10 kV	4.8 %	Using Zeal HV Probe with 18s DMM By Direct Method

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**Certificate Number**        **CC-2681** *(in lieu of C-1395, C-1396 & C-1397)*                      **Page**        **3 of 7**

**Validity**                        **30.05.2018 to 29.05.2020**                      **Last Amended on** -

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
8.	DC High Voltage*	1 kV to 10 kV	3.9 %	Using Zeal HV Probe with 18s DMM By Direct Method

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
2.	Calibration of Weighing Balances*	0 to 200) g d=0.1 mg & coarser	0.5 mg	Calibration of Electronic Weighing Balance of Class II and Coarser as per OIML R 76-1 (2006) and NABL-122-3
		>(200 g to 20 kg) d=0.1 g & coarser	1.1 g	Using Calibration of Electronic Weighing Balance of class II
		>(20 to 100) kg d=5 g	7.5 g	Calibration of Electronic Weighing Balance of Class III and Coarser
II.	<b>PRESSURE INDICATING DEVICES</b>			
1.	Pressure-Pneumatic Pressure Gauges, Pressure Calibrators, Pressure Transmitters & Pressure Switches#	0 to 1 bar	0.01 bar	By Comparison Method as per DKD R-6-1 & NABL 122-13
2.	Pressure Gauges, Pressure Calibrators, Pressure Transmitters & Pressure Switches#	0 to 30 bar	0.05 bar	By Comparison Method as per DKD R-6-1 & NABL 122-13
3.	Pressure Hydraulic Pressure Gauges, Pressure Calibrators, Pressure Transmitters & Pressure Switches#	0 to 400 bar	0.37 bar	By Comparison Method as per DKD R-6-1 & NABL 122-13
		>400 bar to 700 bar	0.55 bar	

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Page 6 of 7

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4.	Vacuum Gauges & Vacuum Transmitters <sup>#</sup>	(-) 0.8 to 0 bar	0.02 bar	By Comparison Method as per DKD R-6-2, ISO 27893 & NABL 122-13
III.	<b>ACCELERATION AND SPEED</b>			
1.	Non-Contact Type Tachometer <sup>\$</sup>	100 rpm to 1500 rpm 1500 rpm to 20000 rpm 20000 rpm to 90000 rpm	2 rpm 23 rpm 104 rpm	As per SANAS TR45-1&2

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<b><u>THERMAL CALIBRATION</u></b>				
<b>I.</b>	<b>TEMPERATURE</b>			
1.	RTD, Dial Temp. Gauge <sup>#</sup>	0 to 100 °C 100 °C to 400 °C	0.45 °C 0.60 °C	By Comparison Method
2.	Thermocouple Sensors only with & without Indicators (For Devices like Ovens, Furnaces, Baths, Temperature Transmitter) <sup>#</sup>	400 °C to 800 °C 800 °C to 1200 °C	2.0 °C 2.72 °C	By Comparison Method
3.	Glass Thermometer <sup>#</sup>	30 °C to 250 °C	0.72 °C	By Comparison method
4.	Freezer, Chamber, Oven, Incubator, Furnace, Room <sup>*</sup>	(-) 30 °C to 50°C 50 °C to 300 °C	2.05 °C 3.80 °C	By Spatial Mapping 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.

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