

Laboratory	Sigma Test & Research Centre, A-131, Mangolpuri Industrial Area, Phase – II, New Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electro-Technical Calibration	Issue Date	20.11.2014
Certificate Number	C-1158	Valid Until	19.11.2016
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
<u>SOURCE</u>			
1. DC VOLTAGE	1 mV to 300 mV 300 mV to 300 V 300 V to 1000 V	0.5 % to 0.013 % 0.013 % to 0.02 % 0.02 % to 0.013 %	Using Fluke 9100 by direct method.
2. DC CURRENT	1 μ A to 300 mA 300 mA to 10 A 10 A to 1000 A	1.5 % to 0.16 % 0.16 % to 0.1 % 0.55 % to 0.9 %	Using Fluke 9100 by direct method. Using Current Coil
3. AC VOLTAGE	50 Hz, 1 kHz 10 mV to 30 mV 30 mV to 300 V 300 V to 1000 V	1.16 % to 0.42 % 0.42 % to 0.07 % 0.07 % to 0.08 %	Using Fluke 9100 by direct method.
4. AC CURRENT	50 Hz, 1 kHz 100 μ A to 300 mA 300 mA to 10 A 10 A to 850 A	0.49 % to 0.33 % 0.33 % to 0.13 % 0.65 % to 0.7 %	Using Fluke 9100 by direct method. Using Current Coil
5. FREQUENCY	10 Hz to 1 kHz	0.009 %	Using Fluke 9100 by direct method.
6. RESISTANCE (2 WIRE)	1 Ω to 1 M Ω 1 M Ω to 40 M Ω 40 M Ω to 100 M Ω	1.42 % to 0.06 % 0.06 % to 0.2 % 0.2 % to 0.36 %	Using Fluke 9100 by direct method.

**Sangeeta Kunwar
Convenor**

**Avijit Das
Program Manager**

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7. TEMPERATURE SIMULATION[#] (Temperature Controller / Indicator / Recorder/ Process Meter/ Temperature Data Logger)			
RTD Type	-200°C to 800 °C	0.3°C to 0.6°C	Using Fluke 9100 MF Calibrator.
'J' Type T/C	-200°C to 760 °C	0.32°C	
'K' Type T/C	-200°C to 1300 °C	0.4°C	
'T' Type T/C	-200°C to 400 °C	0.4°C	
'N' Type T/C	-200°C to 1300 °C	0.4°C	
'S' Type T/C	0°C to 1300 °C	1.16°C	
'R' Type T/C	0 °C to 1700 °C	1.25°C	
8. DC VOLTAGE*	100 mV to 100V 100 V to 1000 V	0.08 % 0.08 %	Using Fluke 9100 MF Calibration Fluke / 5080A by Direct Method
9. DC CURRENT*	100 μ A to 300mA 300mA to 10A	0.6 % to 1.1% 1.1 % to 0.4%	Using MF Calibration Fluke /5080A with 50 Turn current coil by Direct Method
10. AC VOLTAGE*	50 Hz 100 mV to 300 mV 300 mV to 1000 V	0.93% to 0.35% 0.35% to 0.25%	Using Fluke 9100 MF Calibration Fluke / 5080A by Direct Method
11. AC CURRENT*	50 Hz 300 μ A to 10 A	0.62% to 0.45%	Using MF Calibration Fluke /5080A with 50 Turn current coil by Direct Method
12. FREQUENCY*	45 Hz to 1000 Hz	0.03% to 0.06%	Using Fluke 9100 MF Calibration Fluke / 5080A by Direct Method

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13. RESISTANCE* (2 WIRE)	1 Ω to 10 Ω 10 Ω to 10 M Ω 10 M Ω to 100 M Ω	4.2 % to 0.7 % 0.7 % to 0.2 % 0.2 % to 1.2 %	Using Fluke 9100 MF Calibration Fluke / 5080A by Direct Method
<u>MEASURE</u>			
1. DC VOLTAGE[#]	1 mV to 100 mV 100 mV to 10 V 10 V to 1000 V	0.42% to 0.01 % 0.01% to 0.005% 0.005% to 0.007%	Using 6½ DMM 8846 A Fluke by Comp. /Direct Method.
2. DC CURRENT[#]	10 μ A to 10A	0.4% to 0.17%	Using 6½ DMM 8846 A Fluke by Comp. /Direct Method.
3. AC VOLTAGE[#]	50 Hz 10 mV to 100 mV 100 mV to 10 V 10 V to 1000 V	0.6% to 0.06% 0.06% to 0.14% 0.14% to 0.2%	Using 6½ DMM 8846 A Fluke by Comp. /Direct Method.
4. AC CURRENT[#]	50 Hz 100 μ A to 400 mA 400 mA to 10 A	1.5% to 0.35 % 0.35% to 0.3%	Using 6½ DMM 8846 A Fluke by Comp. /Direct Method.
5. FREQUENCY[#]	45 Hz to 100 Hz 100 Hz to 1000 Hz	0.02% to 0.015% 0.015%	Using 6½ DMM 8846 A Fluke by Comp. /Direct Method.
6. RESISTANCE[#] (2 WIRE)	1 Ω to 10 M Ω 10 M Ω to 100 M Ω	0.36% to 0.05% 0.05% to 0.95%	Using 6½ DMM 8846 A Fluke by Comp. /Direct Method.
7. INDUCTANCE^{\$}	1 kHz 1 mH to 100 mH	2.2%	Using LCR Meter by Direct Method
8. CAPACITANCE^{\$}	1 kHz 1 nF to 10 μ F	2.5%	Using LCR Meter by Direct Method
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9. AC RESISTANCE ^{\$}	1 kHz 1 Ω to 1M Ω	1.5%	Using LCR Meter by Direct Method
10. TIMER/HOUR METER [#]	20 s to 9000 s	8.5 S	Using digital time interval meter / 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.