

Laboratory **Auto Instrument Calibration Laboratory, Prasanna Apartment, Office No. 2, J.M. Road, Shivajinagar, Pune, Maharashtra**

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

Discipline **Electro-Technical Calibration** Issue Date **22.04.2016**

Certificate Number **C-0278** Valid Until **21.04.2018**

Last Amended on **16.06.2016** Page **1 of 5**

Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
<u>SOURCE</u>			
1. DC VOLTAGE ^{\$}	100 μ V to 1 V 1 V to 1000 V	4.88 % to 0.08 % 0.08 % to 0.05 %	Using MFC Fluke 9100E. by Direct method
2. DC CURRENT ^{\$}	50 μ A to 1A 1 A to 20 A 10 A to 1000 A	0.05 % 0.05 % to 0.1 % 1.23 %	Using MFC Fluke 9100E. by Direct Method with Current Coil
3. AC VOLTAGE ^{\$}	50 Hz to 1 kHz 1 mV to 1V 1V to 1000 V	4.9 % to 0.2 % 0.2 % to 0.08 %	Using MFC Fluke 9100E by Direct Method
4. AC CURRENT ^{\$}	50 Hz to 1 kHz 100 μ A to 1 mA 1 mA to 1 A 1 A to 20 A	0.43 % to 0.1 % 0.1 % 0.3 %	Using MFC Fluke 9100E. by Direct Method with
	50 Hz 10 A to 900 A	1.13 %	With Current Coil
5. DC RESISTANCE ^{\$} (2 Wire)	50 Ω 100 Ω 500 Ω 1 m Ω 10 m Ω 100 m Ω	1.63 % 0.80 % 0.80 % 0.70 % 0.50 % 0.50 %	Using Resistance Decade Box by Direct Method
6. RESISTANCE ^{\$} (2 Wire)	1 Ω to 1000 Ω 1 k Ω to 1 M Ω 1 M Ω to 400 M Ω	5.9 % to 0.8 % 0.8 % to 0.07 % 0.07 % to 0.15 %	Using MFC Fluke 9100E. by Direct Method
7. CAPACITANCE ^{\$}	1 kHz 1 nF to 1 mF	4.2 % to 1.53 %	Using MFC Fluke 9100E. by Direct Method

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8. FREQUENCY [§]	1 Hz to 10 MHz	0.06 %	Using MFC Fluke 9100. by Direct Method
	10 MHz to 160 MHz	0.01 %	With Frequency Generator by Direct Method
9. HIGH RESISTANCE [§] (For Insulation Tester)	500 V & 1000 V		
	10 MΩ to 100 MΩ 100 MΩ to 1000 MΩ	0.86 % to 0.7 % 0.7 % to 1.5 %	Using MFC Fluke 9100 E by Direct Method
10. TEMPERATURE SIMULATION [#] Thermocouple J TYPE/K TYPE R TYPE/S TYPE RTD	(-) 200°C to 1200 °C	0.4 °C	Using MFC Fluke 9100 by Direct Method
	(-) 200°C to 1700 °C	0.6 °C	
	(-) 200°C to 850 °C	0.41 °C	
11. ACTIVE POWER/ ENERGY [§] (1Φ / 3 Φ)	50 Hz 240 V 1 A to 5 A		Using 3 Φ Energy Meter Calibrator by Direct Method
	0.5 pF to UPF	1.0 %	
12. OSCILLOSCOPE	5 mV to 20 V/div (Sine Wave)	2.1 %	Using Frequency Generator Rigol DG4162 by Direct Method
	10 ns to 5 s/Div	0.27 %	
	Upto 100 MHz (50Ω)	3.0 %	
13. DC VOLTAGE [*]	1 mV to 1 V	0.5 % to 0.1 %	Using MFC Fluke 9100 E by Direct Method
	1 V to 1000 V	0.1 % to 0.2 %	
14. DC CURRENT [*]	1 mA to 1 A	0.73 % to 0.15 %	Using MFC Fluke 9100 E By Direct Method with Current Coil
	1 A to 20 A	0.15 % to 0.1 %	
	10 A to 500 A	1.0 %	

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15. AC VOLTAGE*	50 Hz 1 V to 750 V	0.2 % to 0.5 %	Using MFC Fluke 9100 E By Direct Method
16. AC CURRENT*	50 Hz 1 mA to 1A 1 A to 20 A 10 A to 500 A	0.46 % to 0.2 % 0.2 % to 0.5 % 1.1 %	Using MFC Fluke 9100 E by Direct Method With current Coil
17. DC RESISTANCE *	10 Ω to 1 k Ω 1 k Ω to 50 k Ω	2.5 % to 0.1 % 0.25 %	Using MFC Fluke 9100 E by Direct Method
18. FREQUENCY*	10 Hz to 1 kHz 1 kHz to 10 MHz	0.5 % to 0.25 % 0.25 % to 0.5 %	Using MFC Fluke 9100 E by Direct Method
<u>MEASURE</u>			
1. DC VOLTAGE\$	1 mV to 1 V 1 V to 1000 V	0.45 % to 0.01 % 0.01 % to 0.05 %	Using 6 ½ Digital Multimeter Fluke to 8846A by Direct Method
DC HIGH VOLTAGE\$	1 kV to 10 kV	5.3 %	Using HV Probe with Rishabh DMM by Direct Method
2. DC CURRENT\$	0.1 mA to 100 mA 0.1 A to 10 A	0.1 % to 0.06 % 0.06 % to 0.19 %	Using 6 ½ Digital Multimeter Fluke-8846A by Direct Method
3. AC VOLTAGE\$	50 Hz to 1 kHz 10 mV to 1 V 1 V to 1000 V 1 kV to 10 kV	0.967 % to 0.1 % 0.1 % to 0.11 % 5.7 %	Using 6 ½ Digital Multimeter Fluke-8846A by Direct Method Using HV Probe with Rishabh DMM by Direct Method

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4.	AC CURRENT ^{\$}	50 Hz to 1 kHz 1 mA to 1000 mA 1 A to 10 A	0.3 % to 0.15 % 0.15 % to 0.27 %	Using 6 ½ Digital Multimeter Fluke-8846A by Direct Method
5.	RESISTANCE ^{\$}	1 Ω to 1000 Ω 1 k Ω to 1000 k Ω 1 M Ω to 1000 M Ω	0.5 % to 0.01 % 0.01 % to 0.05 % 0.05 % to 3.3 %	Using 6 ½ Digital Multimeter Fluke-8846A by Direct Method
6.	FREQUENCY ^{\$}	10 Hz to 1 kHz 1 Hz to 160 MHz	0.06 % to 0.02 % 0.02 % to 0.1 %	Using 6 ½ Digital Multimeter Fluke-8846A by Direct Method Frequency Counter by Direct Method
7.	TIMER/STOP WATCH ^{\$}	1 s to 5 Hr	0.15 s to 0.1 min	Using Digital Time Calibrator, by Comparison Method
8.	INDUCTANCE ^{\$}	1 kHz 100 μ H to 10 H	0.58 %	Using Digital LCR Meter, by Direct Method
9.	DC VOLTAGE [*]	10 mV to 1000 mV 1 V to 1000 V	0.07 % to 0.1 % 0.1 % to 0.05 %	Using 6 ½ Digital Multimeter by Direct Method
10.	DC CURRENT [*]	1 mA to 100 mA 100 mA to 3 A 10 A to 100 A	0.65 % to 0.1 % 0.1 % to 0.26 % 0.54 %	Using 6 ½ Digital Multimeter by Direct Method With shunt 500 A/75 mV
11.	AC VOLTAGE [*]	50 Hz 1 V to 750 V	0.3 % to 0.21 %	Using 6 ½ Digital Multimeter by Direct Method
12.	AC CURRENT [*]	50 Hz 0.1 A to 1 A 50 A to 500 A	1.43 % to 0.53 % 3.63 %	Using 6 ½ Digital Multimeter by Direct Method With CT 500 A/5A

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13. RESISTANCE*	1 Ω to 1 k Ω 1 k Ω to 100 k Ω	1.2 % to 0.1 % 0.1 %	Using 6 ½ Digital Multimeter A by Direct Method
14. POWER/ENERGY# (Active) 1 Φ /3 Φ UPF to \pm 0.5	300 V 10 A to 100 A 3.0 kW to 30 kW	1.5 % to 0.98 %	Using 3 Phase Power Analyzer 3360 by Direct 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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