

Laboratory Hi Tech Calibration Services, No. 130, 2nd Floor, VGP Nagar, Mugappair West, Chennai, Tamil Nadu

Accreditation Standard ISO/IEC 17025:2005

Discipline Electro-Technical Calibration **Issue Date** 11.09.2015

Certificate Number C-1262 **Valid Until** 10.09.2017

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
<u>MEASURE</u>			
1. DC VOLTAGE [#]	0.1 mV to 100 mV 100 mV to 1 V 1 V to 1000 V	4.1% to 0.01% 0.01% to 0.0054% 0.0054%	Using 6 ½ digit Multimeter by Direct Method
2. AC VOLTAGE [#]	50 Hz to 1 kHz 100 mV to 750 V	0.105%	Using 6 ½ digit Multimeter by Direct Method
3. DC CURRENT [#]	10 μ A to 100 μ A 100 μ A to 100 mA 100 mA to 3 A 3 A to 20 A	0.35% to 0.09% 0.09% to 0.063% 0.063% to 0.2% 0.35 %	Using 6 ½ digit Multimeter by Direct Method Using 6 ½ digit Multimeter with Shunt by Direct Method
4. AC CURRENT [#]	50 Hz to 1 kHz 100 μ A to 1 mA 1 mA to 3 A 3 A to 20 A	0.17% 0.17% 0.35 %	Using 6 ½ digit Multimeter by Direct Method Using 6 ½ digit Multimeter with Shunt by Direct Method
5. DC RESISTANCE [#]	100 m Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 M Ω 1 M Ω to 10 M Ω 10 M Ω to 100 M Ω 100 M Ω to 1 G Ω	0.46 % to 0.06 % 0.06% to 0.02% 0.02% to 0.013% 0.013% to 0.05% 0.05% to 0.93% 0.93% to 9.24%	Using 6 ½ digit Multimeter by Direct Method
6. FREQUENCY [#]	3 Hz to 10 Hz 10 Hz to 100 Hz 100 Hz to 10 kHz	0.081% to 0.05% 0.05% to 0.01% 0.01%	Using 6 ½ digit Multimeter by Direct Method

Vishal Shukla
Convenor

Avijit Das
Program Manager

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7. TIME# (TIMER / STOP WATCH)	1 s to 1000 s 1000 s to 5000 s 5000 s to 86400 s	0.002 s to 0.063 s 0.063 s to 0.25 s 0.25 s to 1 s	Using Time Totaliser by Direct Method
8. TEMPERATURE SIMULATION# RTD Pt 100	(-) 200 °C to 800 °C	0.13 °C to 0.46 °C	Using Multi Function Calibrator by Direct Method
Thermocouples			
K Type	(-) 200 °C to 1370 °C	0.5 °C to 0.64 °C	Using Multi Function Calibrator by Direct Method
J Type	(-) 200 °C to 1200 °C	0.5 °C	
B Type	600 °C to 1800 °C	1.3 °C	
R Type	0 °C to 1760 °C	1.13 °C to 0.83 °C	
E Type	(-) 200 °C to 1000 °C	0.64 °C to 0.38 °C	
N Type	(-) 200 °C to 1300 °C	0.64 °C to 0.56 °C	
T Type	(-) 200 °C to 400 °C	0.79 °C to 0.3 °C	
U Type	(-) 200 °C to 600 °C	0.72 °C to 0.4 °C	
L Type	(-) 200 °C to 900 °C	0.5 °C to 0.35 °C	
S Type	0 °C to 1760 °C	0.97 °C	
9. DC HIGH VOLTAGE#	1 kV to 5 kV 5 kV to 30 kV	1.5% 2.5 % to 1.5%	Using High Voltage Probe with Digital Multimeter by Direct Method
10. AC HIGH VOLTAGE #	50 Hz 1 kV to 4 kV 4 kV to 28 kV	2.5% 6.2%	Using High Voltage Probe with Digital Multimeter by Direct Method
<u>SOURCE</u>			
1. DC VOLTAGE#	1 mV to 10 mV 10 mV to 100 mV 100 mV to 1 V 1 V to 1000 V	4.75% to 0.52% 0.52 % to 0.1% 0.1% to 0.06% 0.06%	Using Universal Calibrator by Direct Method

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2. AC VOLTAGE [#]	50 Hz		
	10 mV to 100 mV	0.77% to 0.13%	Using Universal Calibrator by Direct Method
	100 mV to 1 V	0.13% to 0.1%	
	1 V to 100 V	0.1%	
100 V to 750 V	0.1% to 0.14%		
3. DC CURRENT [#]	10 μ A to 100 μ A	0.3% to 0.1%	Using Universal Calibrator by Direct Method
	100 μ A to 1 A	0.1% to 0.1%	
	1 A to 20 A	0.1% to 0.37%	Using Universal Calibrator with Current Coil by Direct Method
	20 A to 100 A	0.50% to 0.35%	
	100 A to 1000 A	0.35%	
4. AC CURRENT [#]	50 Hz		
	30 μ A to 100 mA	0.48% to 0.18%	Using Universal Calibrator by Direct Method
	100 mA to 10 A	0.18% to 0.29%	
	10 A to 20 A	0.29% to 0.51%	
	20 A to 100 A	0.50% to 0.35%	Using Universal Calibrator with Current Coil by Direct Method
100 A to 1000 A	0.351%		
5. DC RESISTANCE [#]	0.01 Ω to 0.1 Ω	3.89% to 0.62%	Using Decade Resistance Box & Decade Meg Ohm Box by Direct Method
	0.1 Ω to 1 Ω	0.62% to 0.07%	
	1 Ω to 10 Ω	0.07% to 0.06%	
	10 Ω to 100 k Ω	0.06%	
	100 k Ω to 100 M Ω	0.06% to 2.44%	
	100 M Ω to 100 G Ω	2.44% to 6.0%	
6. FREQUENCY [#]	3 Hz to 10 Hz	0.19% to 0.06%	Using Multi Function Calibrator by Direct Method
	10 Hz to 100 Hz	0.06% to 0.013%	
	100 Hz to 10 kHz	0.013% to 0.57%	

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7. TEMPERATURE SIMULATION [#]			
RTD Pt 100	(-) 200 °C to 0 °C 0 °C to 800 °C	0.18 °C 0.18 °C to 0.41 °C	Using Multi Function Calibrator by Direct Method
Thermocouples			
K Type	(-) 100 °C to 1370 °C	0.35 °C to 0.47 °C	Using Multi Function Calibrator by Direct Method
J Type	(-) 60 °C to 1120 °C	0.35 °C	
B Type	600 °C to 1800 °C	1.29 °C	
R Type	0 °C to 1760 °C	1.09 °C to 0.9 °C	
E Type	(-) 50 °C to 850 °C	0.29 °C	
N Type	(-) 200 °C to 1300 °C	0.47 °C	
T Type	(-) 100 °C to 400 °C	0.35 °C to 0.24 °C	
U Type	(-) 100 °C to 600 °C	0.35 °C to 0.24 °C	
L Type	(-) 60 °C to 900 °C	0.3 °C	
S Type	0 °C to 1760 °C	1 °C to 1.1 °C	

* 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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