

Laboratory Eastern Calibrators, 1 Anil Roy Road, Kolkata, West Bengal

Accreditation Standard ISO/IEC 17025:2005

Discipline Electro-Technical Calibration Issue Date 24.04.2015

Certificate Number C- 0371 Valid Until 23.04.2017

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b>I. SOURCE</b>			
1. DC VOLTAGE #	5 mV to 20 mV	0.14 % to 0.0364 %	Using Time Electronics Multi Function Calibrator 5025 by Direct Method
	20 mV to 200 mV	0.0364 % to 0.0076 %	
	0.2 V to 2 V	0.0076 % to 0.0052 %	
	2 V to 20 V	0.0052 % to 0.0051 %	
	20 V to 200 V	0.0051 % to 0.0094 %	
	200 V to 1000 V	0.0094 % to 0.0116 %	
2. AC VOLTAGE #	<b>50 Hz</b>		Using Time Electronics Multi Function Calibrator 5025 by Direct Method
	5 mV to 20 mV	1.39 % to 0.0635 %	
	20 mV to 200 mV	0.0635 % to 0.211 %	
	0.2 V to 2 V	0.211 % to 0.0456 %	
	2 V to 20 V	0.0456 % to 0.0472 %	
	20 V to 200 V	0.0472 % to 0.0865 %	
	200 V to 1000 V	0.0865 % to 0.108 %	
3. DC CURRENT #	50 $\mu$ A to 200 $\mu$ A	0.105 % to 0.0272 %	Using Time Electronics Multi Function Calibrator 5025 by Direct Method
	0.2 mA to 2mA	0.0272 % to 0.27 %	
	2 mA to 20 mA	0.27 % to 0.0464 %	
	20 mA to 200 mA	0.0464 % to 0.0122 %	
	0.2 to 2 A	0.0122 % to 0.0316 %	
	2 A to 20 A	0.0316 % to 0.088 %	
	20 A to 400 A	0.088 % to 0.91 %	
	400 A to 1000 A	0.91 %	Using Current Coil
4. AC CURRENT #	<b>50 Hz</b>		Using Time Electronics Multi Function Calibrator 5025 by Direct Method
	50 $\mu$ A to 200 $\mu$ A	1.0165 % to 0.2547 %	
	0.2 mA to 2 mA	0.2547 % to 0.273 %	
	2 mA to 20 mA	0.273 % to 0.0777 %	
	20 mA to 200 mA	0.0777 %	
	0.2 to 2 A	0.0777 % to 0.271 %	
	2A to 20 A	0.271 %	
	20 A to 400 A	0.271 % to 1.207 %	Using Current Coil
	400 A to 1000 A	1.207 % to 1.390 %	

Sangeeta Kunwar  
Convenor

Avijit Das  
Program Manager

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5. RESISTANCE #	10 $\Omega$ to 100 $\Omega$	0.58 % to 0.059 %	Using Time Electronics Multi Function Calibrator 5025 , by Direct Method	
	100 $\Omega$ to 1 k $\Omega$	0.059 % to 0.0115 %		
	1k $\Omega$ to 10 k $\Omega$	0.0115 % to 0.0162 %		
	10 k $\Omega$ to 100 k $\Omega$	0.0162 % to 0.0098 %		
	100 k $\Omega$ to 1 M $\Omega$	0.0098 % to 0.021 %		
	1M $\Omega$ to 10 M $\Omega$	0.021 % to 0.13245 %		
6. CAPACITANCE #	1 kHz		Using Time Electronics Multi Function Calibrator 5025, by Direct Method	
	1 nF to 10 nF	1.732 % to 0.0735 %		
	10 nF to 100 nF	0.0735 % to 0.6483 %		
	100 nF to 1 $\mu$ F	0.6483 % to 0.2897 %		
	1 $\mu$ F to 100 $\mu$ F	0.2897 % to 0.5778 %		
7. INDUCTANCE #	1 mH to 500 mH	1.16 %	Using Time Electronics Multi Function Calibrator5025, by Direct Method	
	500 mH to 10 H	1.16 % to 0.58 %		
8. FREQUENCY #	20 Hz to 100 kHz	0.0037 % to 0.0033 %	Using Time Electronics Multi Function Calibrator 5025, by Direct Method	
	100 kHz to 1 MHz	0.0033 % to 0.007 %		
9. SIMULATED TEMPERATURE # Thermocouple Type				
	J Type	50 $^{\circ}$ C to 800 $^{\circ}$ C	0.59 $^{\circ}$ C	Using Digital Calibrator Metravi by Direct Method
	K Type	100 $^{\circ}$ C to 1200 $^{\circ}$ C	0.60 $^{\circ}$ C to 0.85 $^{\circ}$ C	
	R Type	200 $^{\circ}$ C to 1700 $^{\circ}$ C	1.8 $^{\circ}$ C	
	S Type	200 $^{\circ}$ C to 1700 $^{\circ}$ C	1.8 $^{\circ}$ C	
	RTD Sensor	0 $^{\circ}$ C to 800 $^{\circ}$ C	0.36 $^{\circ}$ C to 0.93 $^{\circ}$ C	

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<b>II. MEASURE</b>			
1. DC VOLTAGE \$	20 mV to 50 mV	0.1461 % to 0.1485 %	Using Pico Test 6 ½ DMM M3511A by Direct Method
	50 mV to 500 mV	0.1485 % to 0.2639 %	
	500 mV to 10 V	0.2639 % to 0.0373 %	
	10 V to 100 V	0.0373 % to 0.0162 %	
	100 V to 1000 V	0.0162 % to 0.0190 %	
DC VOLTAGE #	2 kV to 10 kV	4.042 %	+ HV Probe
2. AC VOLTAGE \$	50 Hz		Using Pico Test 6 ½ DMM M3511A by Direct Method
	50 mV to 500 mV	0.262 % to 0.035 %	
	500 mV to 5 V	0.035 % to 1.063 %	
	5 V to 100 V	1.063 % to 0.190 %	
	100 V to 700 V	0.190 % to 0.187 %	
AC VOLTAGE #	50 Hz		+ HV Probe
	2 kV to 10 kV	5.8 % to 9.6 %	
3. DC CURRENT \$	5 mA to 100 mA	0.52 % to 0.6930 %	
	100 mA to 1A	0.6930 % to 0.250 %	
	1 A to 10 A	0.250 % to 0.3430 %	
4. AC CURRENT \$	50 Hz		Using Pico Test 6 ½ DMM M3511A by Direct Method
	1 A to 10 A	0.29 % to 0.862 %	
5. FREQUENCY \$	40 Hz to 10 kHz	0.1882 % to 0.2309 %	Using Pico Test 6 ½ DMM
6. RESISTANCE #	1 $\Omega$ to 100 $\Omega$	0.633 % to 0.0956 %	Using Pico Test 6 ½ DMM M3511A, Digital Insulation Tester (SEW) by Direct Method
	100 $\Omega$ to 1 M $\Omega$	0.0956 % to 0.0287 %	
	1 M $\Omega$ to 10 M $\Omega$	0.0287 % to 0.163 %	
	10 M $\Omega$ to 10000 M $\Omega$	0.163 % to 4.2 %	

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7. TIME (ANALOG DIGITAL) STOP WATCH AND TIMER #	5 s to 999 s	0.70 s	Using Time Delay Counter by Direct Method

\*Measurement Capability is expressed as an uncertainty ( $\pm$ ) at a confidence probability of 95%

\$Only in Permanent Laboratory

#The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.