

Laboratory Tescals Calibration Laboratories, Door No. 3/12,
Somasundaramoorthy Avenue, Sakthi Nagar, Porur, Chennai,
Tamil Nadu

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2398 (in lieu of C-1261)

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Validity 11.09.2017 to 10.09.2019

Last Amended on 26.09.2018

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (\pm)	Remarks
<u>ELECTRO-TECHNICAL CALIBRATION</u>				
1.	SOURCE			
1.	DC Voltage [§]	10 mV to 100 mV 100 mV to 10 V 10 V to 1000 V	0.59 % to 0.06 % 0.06 % to 0.05 % 0.05 % to 0.04 %	Using Multi-Function Calibrator Meco 90DQ by Direct Method
2.	AC Voltage [§]	50 Hz 10 mV to 100 mV 100 mV to 100 V 100 V to 1000 V	0.81% to 0.64 % 0.64 % to 0.51 % 0.51 % to 0.41 %	Using Multi-Function Calibrator Meco 90DQ by Direct Method
3.	DC Current [§]	100 μ A to 1 mA 1 mA to 100 mA 100 mA to 1 A 1 A to 10 A 10 A to 900 A	0.29 % to 0.15 % 0.15 % to 0.06 % 0.06 % to 0.51 % 0.51 % to 0.4 % 0.68 %	Using Multi-Function Calibrator Meco 90DQ by Direct Method Using Multi-Function Calibrator Meco 90DQ with Current Coil by Direct Method
4.	AC Current [§]	50 Hz 30 μ A to 100 μ A 100 μ A to 100 mA 100 mA to 1 A 1 A to 10 A 10 A to 900 A	3.06 % to 1.5 % 1.5 % 1.5 % to 0.52 % 0.52 % to 0.41 % 0.7 % to 0.77 %	Using Multi-Function Calibrator Meco 90DQ by Direct Method Using Multi-Function Calibrator Meco 90DQ with Current Coil by Direct Method

Dheeraj Chawla
Convenor

Avijit Das
Program Manager

Laboratory

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5.	DC Resistance [§] (2 wire method)	1 Ω to 1 kΩ	0.66 % to 0.32 %	Using Resistance Box Vaiseshika 7400 by Direct Method
		1 kΩ to 100 kΩ	0.32 % to 0.13 %	
		0.5 MΩ	0.58 %	Using Standard Resistance Box ST-RES-Box by Direct Method
		1 MΩ	2.31 %	
		2 MΩ	2.31 %	
		5 MΩ	2.31 %	
		10 MΩ	2.31 %	
		20 MΩ	2.31 %	
		50 MΩ	2.31 %	
100 MΩ	2.54 %			
	Temperature Simulation [§]			
	RTD Pt-100	(-) 200 °C to 800 °C	0.63 °C	Using Yokogawa CA 71 Calibrator by Direct Method
	Thermocouple			
	J Type	(-) 200 °C to 1200 °C	0.93 °C	
	K Type	(-) 200 °C to 1370 °C	1.24 °C	
	R Type	50 °C to 1700 °C	3.06 °C	
	S Type	50 °C to 1700 °C	3.04 °C	
	B Type	600 °C to 1800 °C	2.94 °C	
	N Type	(-) 200 °C to 400 °C	1.24 °C	
	T Type	(-) 100 °C to 400 °C	1.96 °C	
	E Type	(-) 200 °C to 950 °C	1.24 °C	
II.	MEASURE			
1.	DC Current [§]	0.1 mA to 100 mA	0.35 % to 0.12 %	Using DMM Keysight-34461A by Direct Method
		100 mA to 1A	0.12 % to 0.30 %	
		1 A to 10 A	0.30 % to 0.16 %	
2.	DC Current [#]	50 A to 800 A	1.4% to 1.5%	Using Shunt with DMM Keysight-34461A by Direct Method

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3.	DC Voltage ^s	10 mV to 1 V 1 V to 100 V 100 V to 1000 V	0.06 % to 0.01 % 0.01 % to 0.02 % 0.02 % to 0.01 %	Using DMM Keysight-34461A by Direct Method
4.	DC High Voltage [#]	1 kV to 10 kV 10 kV to 25 kV	7.45 % to 4.57 % 4.57 % to 4.86 %	Using HV probe Fluke 80k40 with Fluke DMM by Direct Method
5.	DC High Voltage [*]	2 kV to 10 kV 10 kV to 60 kV	4.77 % to 5.98 % 5.98 % to 7.08 %	Using HV Divider with Indicator by Direct Method
6.	AC Voltage ^s	50 Hz 20 mV to 100 mV 100 mV to 100 V 100 V to 750 V	0.25 % to 0.11 % 0.11 % to 0.33 % 0.33 % to 0.10 %	Using DMM Keysight-34461A by Direct Method
7.	AC High Voltage [#]	50 Hz 1 kV to 28 kV	8.64 % to 7.22 %	Using HV Probe Fluke 80k40 with Fluke DMM by Direct Method
8.	AC High Voltage [*]	5 kV to 95 kV	7.17 % to 7.08%	Using HV Divider with Indicator by Direct Method
9.	AC Current [#]	50 Hz 0.1 mA to 100 mA 100 mA to 1 A 1 A to 10 A	1.05 % to 0.21 % 0.21 % to 0.41% 0.41 % to 0.25 %	Using DMM Keysight-34461A by Direct Method
10.	DC Resistance [#]	1 Ω to 100 Ω 100 Ω to 10 M Ω 10 M Ω to 100 M Ω	0.47 % to 0.02 % 0.02 % to 0.05 % 0.05 % to 0.94 %	Using DMM Keysight-34461A by Direct Method

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (\pm)	Remarks
11.	Temperature Simulation# RTD Pt-100 Thermocouple J Type K Type R Type S Type B Type N Type T Type E Type	(-) 200 °C to 800 °C (-) 200 °C to 1200 °C (-) 200 °C to 1370 °C 50 °C to 1700 °C 50 °C to 1700 °C 600 °C to 1800 °C (-) 200 °C to 400 °C (-) 100 °C to 400 °C (-) 200 °C to 950 °C	1.26 °C 2.45 °C 2.56 °C 3.63 °C 3.63 °C 3.5 °C 2.5 °C 2.5 °C 2.5 °C	Using Yokogawa CA 71 Calibrator by Direct Method
12.	Time Interval#	10 sec to 24 hrs	0.34 sec to 54.3 sec	Using Digital Timer by Comparison Method
13.	Current Transformer# Ratio Error(RE) Phase Angle Error (PAE)	1 A to 2500 A (Primary) 1 A & 5 A (secondary) (from 5 % to 120 % of rated current)	0.075 % R.E. 3.9 ' to 1.5 '	Source with Current Transformer and Transformer Test Set Comparison Method
14.	Potential Transformer# Ratio Error (RE) Phase Angle Error (PAE)	6.6 kV to 33 kV /110V (from 80% to 120% of rated current)	0.063 % to 0.078 % 2.2'	Source with Standard Potential Transformer and Transformer Test Set Comparison Method
15.	Calibration of Instrument Transformer Test Set# Ratio Error Phase Error	CT Mode: 5A /1A	CT Mode: 0.06 % 2.2 '	Using Instrument Transformer Test Set by Comparison Method

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	Ratio Error Phase Error	PT Mode: 110V / 63.5 V	PT Mode: 0.06% 2.2 '	

* 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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