



NABL

National Accreditation Board for Testing and Calibration Laboratories

(An Autonomous Body under Department of Science & Technology, Govt. of India)

CERTIFICATE OF ACCREDITATION

R & D INSTRUMENT SERVICES

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

#5, Natesan Nagar, 27th Street, Alapakkam, Chennai, Tamil Nadu

in the discipline of

ELECTRO-TECHNICAL CALIBRATION

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Certificate Number C-0672

Issue Date 21/10/2016



Valid Until 20/10/2018

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL

Avijit Das
Program Manager

Anil Relia
Director

Prof. S. K. Joshi
Chairman



रा.प्र.प्र.बो.

राष्ट्रीय परीक्षण और अंशशोधन प्रयोगशाला प्रत्यायन बोर्ड

(विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार के अधीन स्वायत्तशासी निकाय)

प्रत्यायन प्रमाण-पत्र

आर एण्ड डी इंस्ट्रुमेंट सर्विसेस्

का मूल्यांकन और प्रत्यायन निम्न मानक के अनुसार

आई.एस.ओ./आई.ई.सी. 17025:2005

“परीक्षण एवं अंशशोधन प्रयोगशालाओं की सक्षमता की सामान्य अपेक्षाएँ”

चेन्नई, तमिलनाडु

में स्थित इसकी सुविधाओं के लिए

विद्युत तकनीकी अंशशोधन

के विषय क्षेत्र में किया गया।

(इस प्रयोगशाला के प्रत्यायन के विषय क्षेत्र की जानकारी एन ए बी एल वेबसाइट www.nabl-india.org से भी प्राप्त कर सकते हैं)

प्रमाण-पत्र संख्या अ-0672

जारी करने की तिथि 21/10/2016



वैधता की तिथि 20/10/2018

यह प्रमाण-पत्र उपर्युक्त मानक तथा राष्ट्रीय परीक्षण और अंशशोधन प्रयोगशाला प्रत्यायन बोर्ड की अतिरिक्त अपेक्षाओं का निरंतर संतोषप्रद अनुपालन किए जाने पर अनुबंध में निर्दिष्टानुसार प्रत्यायन के क्षेत्र के लिए वैध रहेगा।

रा.प्र.प्र.बो. की ओर से हस्ताक्षरित

अ. दास,

अविजीत दास
कार्यक्रम प्रबन्धक

अनिल रेलिया

अनिल रेलिया
निदेशक

श्रीकृष्ण जोशी

पो. श्रीकृष्ण जोशी
अध्यक्ष



NABL

SCOPE OF ACCREDITATION

Laboratory R & D Instrument Services, #5, Natesan Nagar, 27th Street, Alapakkam, Chennai, Tamil Nadu


Accreditation Standard ISO/IEC 17025: 2005

Discipline Electro-Technical Calibration Issue Date 21.10.2016

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
SOURCE			
1. DC VOLTAGE #	1mV to 10mV	0.37% to 0.04%	Using Multi Product Calibrator Transmille 3041A by Direct Method
	10mV to 100mV	0.04% to 0.007%	
	100mV to 1V	0.007% to 0.004%	
	1V to 10V	0.004% to 0.003%	
	10V to 100V	0.003% to 0.004%	
	100V to 1000V	0.004% to 0.004%	
2. DC CURRENT #	100 μ A to 1 mA	0.09% to 0.015%	Using Multi Product Calibrator Transmille 3041A by Direct Method
	1mA to 10mA	0.015% to 0.008%	
	10mA to 100mA	0.008% to 0.009%	
	100mA to 1A	0.009% to 0.015%	
	1A to 20A	0.015% to 0.10%	
	20A to 100A 100A to 1000A	0.76% to 0.31% 0.31% to 0.31%	
3. AC VOLTAGE #	50Hz		Using Multi Product Calibrator Transmille 3041A by Direct Method
	20mV to 200mV	0.45% to 0.05%	
	200mV to 2V	0.05% to 0.04%	
	2V to 20V	0.04%	
	20V to 200V	0.04% to 0.10%	
	200V to 700V 700V to 1000V	0.10% to 0.05% 0.05% to 0.08%	
	1kHz		Using Multi Product Calibrator Transmille 3041A by Direct Method
	20mV to 200mV	0.30% to 0.10%	
	200mV to 2V	0.10% to 0.08%	
	2V to 20V	0.08% to 0.07%	
	20V to 200V	0.07% to 0.10%	
	200V to 700V	0.10% to 0.21%	


Mohit Kaushik
Convenor


Avijit Das
Program Manager



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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks	
4. AC CURRENT #	10kHz		Using Multi Product Calibrator Transmille 3041A by Direct Method	
	200mV to 2V	0.10% to 0.08%		
	2V to 20V	0.08% to 0.07%		
	20V to 200V	0.07% to 0.11%		
		200V to 700V	0.11% to 0.21%	
	20kHz		Using Multi Product Calibrator Transmille 3041A by Direct Method	
	200mV to 2V	0.37%		
	2V to 20V	0.37% to 0.40%		
		20V to 200V	0.40% to 0.11%	
	50Hz		Using Multi Product Calibrator Transmille 3041A by Direct Method	
	25 μ A to 200 μ A	1.4% to 0.24%		
	200 μ A to 2mA	0.24% to 0.11%		
2mA to 20mA	0.11%			
20mA to 200mA	0.11% to 0.10%			
200mA to 2A	0.10% to 0.12%			
	2A to 20A	0.12% to 0.08%		
	20A to 100A	0.76% to 0.31%	Using Multi Product Calibrator Transmille 3041A & Clamp Coil by Direct Method	
	100A to 1000A	0.31% to 0.30%		
1kHz		Using Multi Product Calibrator Transmille 3041A by Direct Method		
25 μ A to 200 μ A	2.5% to 1.4%			
200 μ A to 2mA	1.4% to 0.73%			
2mA to 20mA	0.7% to 0.5%			
20mA to 200mA	0.5% to 0.5%			
	200mA to 2A	0.5% to 0.6%		

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
5. FREQUENCY *	10 Hz to 100Hz	0.006% to 0.002%	Using Multi Product Calibrator Transmille 3041A by Direct Method
	100 Hz to 1kHz	0.002%	
	1kHz to 10kHz	0.002%	
	10kHz to 100kHz	0.002%	
	100kHz to 300kHz	0.002%	
	300kHz to 1MHz	0.002% to 0.06%	
	1MHz to 10MHz	0.06%	
6. CAPACITANCE *	1kHz		Using Multi Product Calibrator Transmille 3041A by Direct Method
	1nF	0.64%	
	10nF	0.36%	
	20nF	0.46%	
	50nF	0.38%	
	100nF	0.32%	
	1 μ F	0.50%	
10 μ F	0.76%		
7. RESISTANCE *	0.1 Ω to 1 Ω	0.92% to 0.11%	Using High Precision DRB Vaiseshika 7400 and High Stability DRB Vaiseshika 8400 by Direct Method
	1 Ω to 10 Ω	0.11% to 0.06%	
	10 Ω to 10k Ω	0.06% to 0.06%	
	10k Ω to 100k Ω	0.06% to 0.06%	
	100k Ω to 1M Ω	0.06% to 2.31%	
	1M Ω to 10M Ω	2.31%	
	10M Ω to 100M Ω	2.31%	
	100M Ω to 1G Ω	2.31%	
8. TEMPERATURE SIMULATION *	K-Type Thermocouple (-) 200°C to 1360°C	0.20°C	Using Precision Calibrator Martel 3001, Fluke 7526A by Direct Method
	E-Type Thermocouple (-) 250°C to 1000°C	0.30°C	
	J-Type Thermocouple (-) 210°C to 1200°C	0.17°C	
	T-Type Thermocouple (-) 250°C to 400°C	0.43°C	
	N-Type Thermocouple (-) 200°C to 1300°C	0.30°C	
	R-Type Thermocouple 0°C to 1750°C	0.54°C	
	B-Type Thermocouple 600°C to 1820°C	0.42°C	
	S-Type Thermocouple 0°C to 1750°C	0.53°C	
	L-Type Thermocouple (-) 200°C to 900°C	0.77°C	

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
U-Type Thermocouple	(-) 240°C to 400°C	0.91°C	
C-Type Thermocouple	0°C to 2300°C	0.99°C	
b. RTD Type			
PT -100($\alpha=385$)	(-) 200°C to 800°C	0.09°C	Using Multi Product Calibrator Transmille 3041A by Direct Method
PT -500($\alpha=385$)	(-) 200°C to 630°C	0.09°C	
PT -1000($\alpha=385$)	(-) 200°C to 630°C	0.09°C	
MEASURE			
1. DC VOLTAGE[#]			
	1 mV to 100 mV	0.41% to 0.01%	Using Digital Multimeter Agilent 34401A by Direct Method
	100 mV to 1 V	0.01% to 0.006%	
	1 V to 10 V	0.006% to 0.005%	
	10 V to 100 V	0.005% to 0.006%	
	100 V to 1000 V	0.006%	
2. AC VOLTAGE[#]			
	50Hz		Using Digital Multimeter Agilent 34401A by Direct Method
	10 mV to 100 mV	0.54% to 0.12%	
	100 mV to 1 V	0.12% to 0.10%	
	1 V to 10 V	0.10% to 0.10%	
	10 V to 100 V	0.10% to 0.10%	
	100 V to 750 V	0.10% to 0.11%	
	10kHz		Using Digital Multimeter Agilent 34401A by Direct Method
	10 mV to 100 mV	0.54% to 0.12%	
	100 mV to 1 V	0.12% to 0.10%	
	1 V to 10 V	0.10% to 0.10%	
	10 V to 100 V	0.10% to 0.10%	
	100 V to 750 V	0.10% to 0.11%	
3. AC CURRENT[#]			
	50Hz		Using Digital Multimeter Agilent 34401A by Direct Method
	100 mA to 1 A	0.52% to 0.17%	
	1 A to 2 A	0.17% to 0.28%	

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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks	
4. DC CURRENT [#]	0.1 mA to 1 mA	1.17% to 0.13%	Using Digital Multimeter Agilent 34401A, 34405A and Precision Calibrator Martel 3001, Fluke 7526A by Direct Method	
	1 mA to 25 mA	0.13% to 0.02%		
	25 mA to 100 mA	0.02% to 0.06%		
	100 mA to 1 A	0.06% to 0.13%		
	1 A to 2 A	0.13% to 0.17%		
5. RESISTANCE [#]	2 A to 10 A	0.17% to 0.32%	Using Digital Multimeter Agilent 34401A by Direct Method	
	1 Ω to 100 Ω	0.47% to 0.016%		
	100 Ω to 1 k Ω	0.016% to 0.013%		
	1 k Ω to 10 k Ω	0.013% to 0.013%		
	10 k Ω to 100 k Ω	0.013% to 0.013%		
	100 k Ω to 1 M Ω	0.013% to 0.013%		
1 M Ω to 10 M Ω	0.013% to 0.047%			
6. FREQUENCY [#]	10 M Ω to 100 M Ω	0.047% to 0.94%	Using Digital Multimeter Agilent 34401A by Direct Method	
	3 Hz to 100 Hz	1.93% to 0.06%		
	100 Hz to 1 kHz	0.06% to 0.06%		
	1 kHz to 10 kHz	0.06% to 0.013%		
	10 kHz to 100 kHz	0.013% to 0.012%		
7. TIME INTERVAL [#]	100 kHz to 300 kHz	0.012% to 0.012%	Using Timer Omron HSCX by Comparison Method	
	10 sec to 100 sec	3.4% to 0.59%		
	100 sec to 1000 sec	0.59% to 0.06%		
	1000 sec to 2 Hr	0.06% to 0.016%		
8. TEMPERATURE SIMULATION [#]	2 Hr to 24Hr	0.016% to 0.012%	Using Precision Calibrator Martel 3001, Fluke 7526A by Direct Method	
	K - Type Thermocouple	(-) 200°C to 0°C		0.21°C
		0°C to 1360°C		0.19°C
	E - Type Thermocouple	(-)240°C to 0°C		0.31°C
		0°C to 1000°C		0.14°C
	J - Type Thermocouple	(-)210°C to 700°C		0.18°C
	700°C to 1200°C	0.31°C		


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Quantity Measured/ Instrument	Range / Frequency	Calibration Measurement Capability (\pm)	Remarks
N - Type Thermocouple	(-)200°C to -100°C	0.30°C	
	(-)100°C to 1300°C	0.15°C	
R - Type Thermocouple	0°C to 400°C	0.55°C	
	400°C to 1750°C	0.31°C	
B - Type Thermocouple	400°C to 1200°C	0.44°C	
	1200°C to 1820°C	0.29°C	
S - Type Thermocouple	0°C to 400°C	0.54°C	
	400°C to 1750°C	0.34°C	
L - Type Thermocouple	(-)200°C to 800°C	0.86°C	
	800°C to 900°C	0.77°C	
U - Type Thermocouple	(-)200°C to 0°C	0.70°C	
	0°C to 400°C	0.41°C	
T - Type Thermocouple	(-)240°C to 0°C	0.42°C	
	0°C to 400°C	0.22°C	
C - Type Thermocouple	0°C to 1000°C	0.46°C	
	1000°C to 2300°C	0.99°C	
RTD TYPE			
PT - 100($\alpha=385$)	(-)200°C to 800°C	0.047°C	Using Precision Calibrator Martel 3001, Fluke 7526A by Direct Method
PT - 500($\alpha=385$)	(-)200°C to 630°C	0.14°C	
PT-1000($\alpha=385$)	(-)200°C to 630°C	0.13°C	

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

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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