

NABL

National Accreditation Board for Testing and Calibration Laboratories

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

CERTIFICATE OF ACCREDITATION

KARANDIKAR LABORATORIES PVT. LTD.

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

Gat No. 142, Boisar Chilhar Road, At Betegaon, Taluka Palghar Maharashtra

in the discipline of

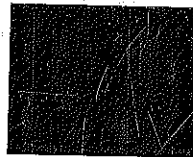
ELECTRO-TECHNICAL CALIBRATION

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

Certificate Number C-0149

Issue Date 07/11/2016

Valid Until 06/11/2018



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

अ. दास,

Avijit Das
Program Manager

Anil Relia

Anil Relia
Director

S.K. Joshi

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

करंदीकर लेबोरेटरीज् प्राइवेट लिमिटेड

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”

पलघर, महाराष्ट्र

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-0149

जारी करने की तिथि 07/11/2016



वैधता की तिथि 06/11/2018

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

प्रो. श्रीकृष्ण जोशी
अध्यक्ष



NABL

SCOPE OF ACCREDITATION

Laboratory	Karandikar Laboratories Pvt. Ltd. , Gat No. 142, Boisar Chilhar Road, At Betegaon, Taluka Palghar Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electro-Technical Calibration	Issue Date	07.11.2016
Certificate Number	C-0149	Valid Until	06.11.2018
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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
<u>MEASURE</u>			
1. DC VOLTAGE [#]	1 mV to 10 mV	0.04% to 0.005%	Using 8 ½ DMM3458A
	10 mV to 100 mV	0.005% to 0.0015%	Agilent by Direct Method
	100 mV to 10V	0.0015% to 0.001%	
	10 V to 1000 V	0.001% to 0.0012%	
	DC HIGH VOLTAGE [#]	1 kV to 1000V	2.6%
2. DC CURRENT [#]	1 µA to 10 µA	0.075% to 0.02%	Using 8 ½ DMM3458A
	10 µA to 100 µA	0.02% to 0.005 %	Agilent by Direct Method
	100 µA to 100 mA	0.005%	
	100 mA to 1 A	0.005% to 0.015%	
	1 A to 20A	0.015% to 0.10%	Using Time Electronics 7 ½ DMM
	20A to 100 A	0.03% to 0.06%	Using Shunts & DMM 3458A
3. AC VOLTAGE [#]	50 Hz to 1 kHz		Using 8 ½ DMM3458A
	1 mV to 10 mV	0.26% to 0.05%	Agilent by Direct Method
	10mV to 100mV	0.05% to 0.01%	
	100mV to 10V	0.011%	
	10V to 100 V	0.011% to 0.026%	
	100 V to 700 V	0.026% to 0.05%	
	10kHz		
	1mV to 100V	0.26% to 0.05%	


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 Program Manager




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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
	100kHz		
	10 mV to 100V	0.59% to 0.15%	
4. AC CURRENT [#]	50Hz to 1KHz		Using 8 1/2 DMM3458A
	10 μ A to 1 A	0.45% to 0.11%	Agilent by Direct Method
	1 A to 20 A	0.11% to 0.8%	7 1/2 DMM 5075
	50Hz		
	1 A to 20A	0.1%	Using Shunts & 8 1/2 DMM
	20 A to 100 A	0.76%	3458A Agilent
	100 A to 1000 A	0.8%	
AC POWER/ENERGY [#]	50Hz		
5. SINGLE / THREE PHASE [#]	40 V to 300. V 0.05 A to 20 A 0.25PF to UPF	0.9% to 0.2%	Using Digital Power Meter- Yokogawa WT-230
	Lead/Lag Active/Reactive 0.5 W/VAr to 6000 W/VAr		
ENERGY [#]	50Hz		
SINGLE / THREE PHASE	240V/415V 0.5 A 20 A	0.08%	Using HPU 3600 & WT-230
	0.5 to UPF Lead/Lag Active/Reactive 60 W to 4800 W		
POWER FACTOR [#]	0.25 Lag to UPF to 0.25Lead	0.006 PF	Using Digital Power Meter- Yokogawa WT-230


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6. FREQUENCY [#]	10 Hz to 1kHz 1 kHz to 200MHz	0.01% to 0.001% 0.001% to 0.0001%	Using 6½ DMM K2000 Uni.Counter Rascal Dana 9905
7. DC RESISTANCE [#]	1 m Ω to 10 m Ω 10 m Ω to 100 m Ω 100 m Ω to 1 Ω 1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 100 k Ω 100 k Ω to 1 M Ω 1M Ω to 10M Ω 10M Ω to 100 M Ω 100M Ω to 1G Ω	0.07% to 0.05 % 0.05% to 0.04% 0.04% to 0.007% 0.007% to 0.0025% 0.0025% to 0.002% 0.002% to 0.0016% 0.002% to 0.003% 0.003% to 0.008% 0.008% to 0.06% 0.06% to 0.6%	
8. AC RESISTANCE [#]	100Hz 0.01 Ω to 100 Ω	0.3%	Using LCR -Q Meter- APLAB-4910
9. INDUCTANCE [#]	1 kHz 100 μ H to 10H	0.4%	Using LCR -Q Meter- APLAB-4910
10. CAPACITANCE [#]	1 kHz 10 pF to 1000 μ F	0.5% to 1.1%	Using LCR -Q Meter- APLAB-4910
11. TIME DIGITAL STOPWATCH & TIMER [#]	1 s to 24 h	0.06secs to 18secs	Using Universal Counter / Stop Watch


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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
SOURCE			
1. DC VOLTAGE [#]	1 mV to 10 mV	0.35% to 0.04%	Using Fluke 5502A
	10 mV to 320 mV	0.04% to 0.008%	
	320 mV to 3.2 V	0.008% to 0.006%	
	3.2 V to 32 V	0.006%	
	32 V to 1000 V	0.006% to 0.007%	
2. DC CURRENT [#]	1 μ A to 10 μ A	2.4% to 0.25%	Using Fluke 9100Fluke 5502A
	10 μ A to 320 μ A	0.25% to 0.024%	
	320 μ A to 320 mA	0.02%	
	320 mA to 2.9 A	0.02% to 0.04%	
	2.9 A to 10 A	0.04% to 0.06%	
	10 A to 20 A	0.06% to 0.1%	
	20 A to 1000 A	0.25%	
3. AC VOLTAGE [#]	45 Hz to 1kHz	0.85% to 0.17%	Using Fluke 5502A
	3 mV to 30 mV		
	30 mV to 300 mV	0.17% to 0.04%	
	300 mV to 30 V	0.04 %	
	30 V to 300V	0.04% to 0.06%	
	300 V to 1000 V	0.06 %	
	1kHz to 10kHz		
	3 mV to 30 mV	0.85% to 0.17%	
	30 mV to 300 mV	0.17% to 0.04%	
	300 mV to 30 V	0.04 %	
30 V to 300 V	0.04 % to 0.09 %		


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	300 V to 1000 V	0.09 %	
	10 kHz to 100 kHz		
	30 mV to 300 mV	0.4 % to 0.25 %	
	300 mV to 200 V	0.25 %	
4. AC CURRENT#	50 Hz to 1 kHz		
	33 µA to 320 µA	0.7 % to 0.13 %	Using Fluke 5502A
	320 µA to 3.2 mA	0.13 % to 0.1 %	
	3.2 mA to 3.2 A	0.1 % to 0.12 %	
	3.2 A to 20 A	0.12 % to 0.2 %	
	50Hz		
	20 A to 1000 A	0.3 %	Using 9100 with CC
	1Ω to 32 Ω	0.076 % to 0.03%	Fluke 5502A MFC/
	32Ω to 32 kΩ	0.03% to 0.009 %	Decade Resistance Box
	32 kΩ to 3.2 MΩ	0.009 % to 0.02 %	General Radio
	3.2 MΩ to 32 MΩ	0.02 % to 0.1 %	
	32 MΩ to 320 MΩ	0.1 % to 0.5 %	
	320 MΩ to 1 GΩ	0.5 % to 1.5 %	
	Discrete Value		
	1mΩ	0.02%	Using Shunts/Resistor
	10mΩ	0.02%	Vaisheshika
	100mΩ	0.02%	
	1Ω	0.01%	
	1MΩ	0.03%	
	10MΩ	0.06%	
	100MΩ	0.5%	Using High value R box


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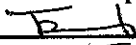


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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
	1GΩ	0.5%	
	10GΩ	0.57%	
	100GΩ	1%	
	1 TΩ	2%	
4. CAPACITANCE[#]	1 kHz		
	1 nF to 3nF	1.15 %	Using Fluke 5502A
	3 nF to 10μF	1.15% to 0.28%	
	10μF to 10mF	0.28% to 0.45%	
	10 mF to 30 mF	0.45% to 0.75%	
5. INDUCTANCE[#]	1 kHz		Using Inductance box Osaw make Discrete Inductor
	1 mH to 10H	0.2%	
6. FREQUENCY[#]	10.Hz to 10 kHz	0.0048%	Using Signal Gen. R & S make SMY01
	10kHz to 1GHz	0.0048% to 0.0001%	
7. OSCILLOSCOPE[#]	AC at 1kHz		
	20 mV/div – 20V/div	0.40%	Using Fluke 9100
Time Digital Stopwatch & Timer	5 nsec – 100ms/div	0.3% to 0.01%	Using Fluke 9100
Bandwidth	5MHz – 500 MHz	3.0%	Using Signal Gen. SMY01
8. TEMPERATURESIMULATION[#] (Indicator, Controller, Recorder)			
RTD Pt-100	(-) 200 °C to 850 °C	0.4 °C	Fluke 9100/5502A
K Type Thermocouple	(-) 200 °C to 1300 °C	0.3 °C	
J Type Thermocouple	(-) 100 °C to 1200 °C	0.3 °C	


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Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
T Type Thermocouple	(-) 200 °C to 400 °C	0.3 °C	
E Type Thermocouple	(-) 100 °C to 1000 °C	0.2 °C	
R Type Thermocouple	300° C to 1750 °C	1.0 °C	
S Type Thermocouple	300 °C to 1750 °C	1.0 °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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