

CERTIFICATE OF ACCREDITATION

HI-TECH CALIBRATION & TESTING LLP

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

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

for its facilities at

GALA NO.: 60, ROYAL INDUSTRIAL HUB, VILLAGE: VALWADA, UMBERGAON, VALSAD, GUJARAT, INDIA

in the field of

CALIBRATION

Certificate Number:

CC-2478

Issue Date:

14/12/2023

Valid Until:

03/01/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL. (To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: HI-TECH CALIBRATION & TESTING LLP

Signed for and on behalf of NABL



N. Venkateswaran Chief Executive Officer





SCOPE OF ACCREDITATION

Laboratory Name :

Accreditation Standard Certificate Number Validity HI-TECH CALIBRATION & TESTING LLP, GALA NO.: 60, ROYAL INDUSTRIAL HUB, VILLAGE: VALWADA, UMBERGAON, VALSAD, GUJARAT, INDIA

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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
		1 30	Permanent Facility		
1	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 10 Hz to 10 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	10 μA to 30 μA	0.08%
2	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 10 Hz to 10 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	100 mA to 1 A	0.01 % to 0.1 %
3	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 10 Hz to 10 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	30 μA to 100 mA	0.04 % to 0.007 %
4	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 10 Hz to 5 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	1 A to 30 A	0.1 % to 0.3 %





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5	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 50 Hz	Using Multiproduct Calibrator with Current Coil and Clamp Meter by Comparison method	20 A to 1000 A	3%
6	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC High Vo l tage @ 50Hz	Using High Voltage Probe with Digital Multimeter or High Voltage Divider by Direct/Comparison method	1 kV to 20 kV	3.1%
7	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC High Vo l tage @ 50Hz	Using High Voltage Probe with Digital Multimeter or High Voltage Divider by Direct/Comparison method	20 kV to 100 kV	3%
8	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Power (Upto 230V, 5A, 50 Hz, 1p2w, PF= 0.5 to UPF)	Using meter with CT along with Power Source by Direct/Comparison method	575 W to 1150 W	0.5 % to 1.4 %
9	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 10 Hz to 100 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	3 V to 329.999 V	0.04%





National Accreditation Board for **Testing and Calibration Laboratories**

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10	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 10 Hz to 500 kHz	Using 8½ Digit Digital Reference Multi meter by Direct and Comparison method	0.3 V to 3 V	0.08 % to 0.1 %
11	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 10 Hz to 500 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	1 mV to 32.999 mV	0.8 % to 0.15 %
12	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 10 Hz to 500 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	33 mV to 329 . 99 mV	0.15 % to 0.08 %
13	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 50 Hz to 10 kHz	Using 8½ Digit Digital Reference Multimeter by Direct/Comparison method	330 V to 1020 V	0.1 % to 0.07 %
14	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1 kHz	Using 8½ Digit Digital Reference Multimeter or LCR meter by Direct/Comparison method	10 mF to 110 mF	0.027 % to 0.37 %





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15	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1 kHz	Using 8½ Digit Digital Reference Multimeter or LCR meter by Direct/Comparison method	220 pF to 1 nF	0.5 % to 0.7 %
16	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Capacitance @ 1kHz	Using 8½ Digit Digital Reference Multimeter or LCR meter by Direct and Comparison method	1 μF to 100 mF	0.5 % to 1.4 %
17	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Inductance	Using LCR meter by Direct/Comparison method	0.1 mH to 100 mH	14.8 % to 2.34 %
18	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Inductance	Using LCR meter by Direct/Comparison method	1 H to 10 H	3.4%
19	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Inductance	Using LCR meter by Direct/Comparison method	100 mH to 1 H	1.4%





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20	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power Factor Lag- UPF- Lead	Using meter with CT along with Power Source by Direct method	UPF to 0 . 5 PF @ 50 Hz	0.020PF
21	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Current @ 10 Hz to 440 Hz	Using 6½ Digit Multiproduct Calibrator by Direct method	1 A to 20 A	0.1 % to 0.4 %
22	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Current @ 10 Hz to 440 Hz	Using 6½ Digit Multiproduct Calibrator with Current Coils by Direct method	20 A to 1000 A	0.5 % to 0.8 %
23	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Current @ 10 Hz to 440 Hz	Using 6½ Digit Multiproduct Calibrator by Direct method	30 µA to 1 A	1.2 % to 0.1 %
24	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Power (Upto 230V, 5A, 50 Hz, 1p2w, PF= 0.5 to UPF)	Using 3 Phase Power Base Source & load manager by Direct method	575 W to 1150 W	1.5 % to 2.5 %





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25	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Voltage @ 45 Hz to 100 kHz	Using 6½ Digit Multiproduct Calibrator by Direct method	1 mV to 1 V	0.75 % to 0.05 %
26	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Voltage @ 45 Hz to 100 kHz	Using 6½ Multiproduct Calibrator by Direct method	1 V to 1000 V	0.07%
27	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Active Energy Up to 230V, 2.5A- 5A, 50 Hz, PF= 0.5 to UPF (3 Phase 4 wire)	Using 3 Phase Energy Source & load manager by Direct method	862.5 Wh to 3.45 kWh	1.5 % to 2.5 %
28	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Using 6½ Digit Multiproduct Calibrator or Decade Box by Direct method	0.4 nF to 1 nF	0.7%
29	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Using 6½ Digit Multiproduct Calibrator or Decade Box by Direct method	1 nF to 10 mF	0.7%
30	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Using 6½ Digit Multiproduct Calibrator or Decade Box by Direct method	11 mF to 110 mF	0.7 % to 1.5 %





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31	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Using 6½ Digit Multiproduct Calibrator or Decade Box by Direct method	220 pF to 400 pF	0.5 % to 1.8 %
32	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Inductance @ 1kHz	Using Inductance Decade Box by Direct method	0.1 mH to 1000 mH	3.2 % to 0.3 %
33	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Inductance @ 1kHz	Using Inductance Decade Box by Direct method	1 H to 11.11 H	1.4%
34	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	1 μA to 100 mA	0.12 % to 0.072 %
35	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 61/2 Digit Multiproduct Calibrator with Current Coil and Clamp meter By Comparison Method	1 A to 1000 A	11.3 % to 1 %





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36	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	1 A to 30 A	0.032%
37	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	100 mA to 1 A	0.0065 % to 0.05 %
38	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC High Voltage	Using Highvoltage probe with DMM or High Voltage Divider By Direct and Comparison Method	1 kV to 20 kV	5.1 % to 3 %
39	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC High Voltage	Using Highvoltage probe with DMM or High Voltage Divider By Direct and Comparison Method	20 kV to 100 kV	3%
40	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	0.1 mV to 1mV	0. 328 % to 0.033 %
41	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	1 mV to 100 mV	0.033% to 0.001%





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42	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	10 V to 1000 V	0.002 % to 0.002 %
43	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	100 mV to 10 V	0.001 % to 0.002 %
44	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	Resistance	Using 81/2 Digit Digital Reference Multimeter or LCR meter By Direct and Comparison Method	0.1 mohm to 1 mohm	0.55%
45	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	Resistance	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	1 Gohm to 10 Gohm	0.04 % to 3 %
46	ELECTRO- TECHNICAL - DIRECT CURRENT (Measure)	Resistance	Using 81/2 Digit Digital Reference Multimeter or LCR meter By Direct and Comparison Method	1 mohm to 100 mohm	0.06 % to 0.6 %
47	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	Resistance	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	1 ohm to 100 kohm	0.0062%





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48	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	Resistance	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	10 MOhm to 1000 MOhm	0.003 % to 0.3 %
49	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	Resistance	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	100 kohm to 10 Mohm	0.58 % to 0.003 %
50	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	Resistance	Using 81/2 Digit Digital Reference Multi Meter By Direct and Comparison Method	100 mohm to 1 ohm	0.6 % to 0.0025 %
51	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Current	Using 61/2 Digit Multiproduct Calibrator By Direct method	1 μΑ to 100 μΑ	0.08%
52	ELECTRO- TECHNICAL - DIRECT CURRENT (Source)	DC current	Using 61/2 Digit Multi Product Calibrator By Direct method	10 A to 20 A	0.31%
53	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC current	Using 61/2 Digit Multiproduct Calibrator By Direct Method	100 μA to 100 mA	0.08 %





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54	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC current	Using 61/2 Digit Multiproduct Calibrator By Direct Method	100 mA to 10 A	0.07 %
55	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC current	Using 61/2 Digit Multiproduct Calibrator with Current Coil By Direct Method	20 A to 1000 A	0.7 %
56	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using 61/2 Digit Multiproduct Calibrator By Direct Method	0.1 mohm to 1 mohm	1.65%
57	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using Resistance Decade Box By Direct method	1 Gohm to 100 Gohm	1%
58	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using Resistance Decade Box By Direct method	1 mohm to 1 ohm	1.0 % to 0.4%
59	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using 61/2 Digit Digital Multifunction by Direct method	1 ohm to 100 Mohm	0.15 % to 0.02 %





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60	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using Resistance Decade Box By Direct method	1 ohm to 11.111 Mohm	0.4 % to 0.1 %
61	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using 61/2 Digit Digital Multiproduct Calibrator by Direct Method	100 Mohm to 1000 Mohm	0.2 % to 0.3 %
62	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using Resistance Decade Box By Direct method	11 Mohm to 1000 Mohm	0.25 % to 0.75 %
63	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Voltage	Using 61/2 Digit Multiproduct Calibrator By Direct Method	0.1 mV to 1 mV	0.6%
64	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Voltage	Using 61/2 Digit Multiproduct Calibrator By Direct method	1 mV to 100 mV	0.6 % to 0.01 %
65	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Voltage	Using 61/2 Digit Multiproduct Calibrator By Direct method	100 mV to 1000 V	0.01 % to 0.01%





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66	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	Resistance	Using Resistance Decade box By Direct Method	100 µohm	0.85%
67	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	PRT/ RTD Sensor	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	-200 °C to 800 °C	0.02°C
68	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocouple B- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	600 °C to 1820 °C	0.1°C
69	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocouple E- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	(-)250 °C to 1000 °C	0.1°C
70	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocouple J- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	- 200 °C to 800 °C	0.025°C
71	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocoup le J - Type	Using 81/2 Digit Digital Reference Multi Meter By Direct and Comparison Method	760 °C to 1200 °C	0.03°C





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72	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocouple K- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	(-)270 °C to 1372 °C	0.1°C
73	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocoup l e N- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	(-)200 °C to 1370 °C	0.1°C
74	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocouple R- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	0 °C to 1767 °C	0.11°C
75	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocouple S- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	0 °C to 1767 °C	0.11°C
76	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Measure)	Thermocouple T- Type	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	(-)250 °C to 400 °C	0.088°C
77	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	PRT/RTD (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)	Using 61/2 Digit Multiproduct Calibrator By Direct Method	-200 °C to 850 °C	0.1°C





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78	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple B - Type (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)	Using 61/2 Digit Multiproduct Calibrator By Direct Method	600 °C to 1820 °C	0.15°C
79	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple E - Type (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)	Using 61/2 Digit Multiproduct Calibrator By Direct Method	(-)250 °C to 1000 °C	0.15°C
80	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple J Type (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)		0 °C to 1200 °C	0.15°C
81	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple K Type (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)	Using 61/2 Digit Multiproduct Calibrator By Direct Method	-200 °C to 1372 °C	0.15°C
82	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple N Type (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)	Using 61/2 Digit Multiproduct Calibrator By Direct Method	-200 °C to 1300 °C	0.15°C
83	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple R & S Type (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)	Using 61/2 Digit Multiproduct Calibrator By Direct Method	0 °C to 1767 °C	0.7°C





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84	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple T Type (Indicator/Controller/ Recorder/Datalogger /Scanner/Calibrator)	Using 61/2 Digit Multiproduct Calibrator By Direct Method	-250 °C to 400 °C	0.15°C
85	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Frequency	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	10 Hz to 60 Hz	0.1%
86	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Frequency	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	100 kHz to 10 MHz	0.6%
87	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Frequency	Using 81/2 Digit Digital Reference Multimeter By Direct and Comparison Method	50 Hz to 100 kHz	0.6%
88	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Time Interval meter / Timer / Stop Watch	Using Digital Time Interval meter or Timer By Direct and Comparison Method	1 min to 5 min	0.6sec
89	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Time Interval meter / Timer / Stop Watch	Using Digital Time Interval Meter by Direct or Comparison method	1 s to 60 s	0.06s





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90	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Time Interval Meter / Timer / Stop Watch	Using Digital Time Interval meter or Timer By Direct and Comparison Method	5 min to 60 min	0.6sec
91	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Time Interval Meter/Timer / Stop Watch	Using Time Interval Meter or Timer By Direct and Comparison method	1 hrs. to 3 hrs.	0.6sec
92	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Time Interval Meter/Timer / Stop Watch	Using Digital Time Interval Meter or Digital By Direct and Comparison Method	3 hrs. to 24 hrs.	2.1sec
93	ELECTRO- TECHNICAL- TIME & FREQUENCY (Source)	Frequency	Using 61/2 Digit Multiproduct Calibrator By Direct Method	10 Hz to 100 kHz	0.15 % to 0.03 %
94	ELECTRO- TECHNICAL- TIME & FREQUENCY (Source)	Frequency	Using 61/2 Digit Multiproduct Calibrator or Frequency Counter By Direct Method	100 kHz to 10 MHz	0.03 % to 0.001 %





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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
		1 30	Site Facility	-	
1	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 10 Hz to 10 kHz	Using 6½ Digit Digital Multimeter by Direct/Comparison method	0.03 mA to 100 mA	0.4 % to 0.01 %
2	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 10 Hz to 10 kHz	Using 6½ Digit Digital Multimeter by Direct/Comparison method	100 mA to 1 A	0.01 % to 0.03 %
3	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Current @ 10 Hz to 5 kHz	Using 6½ Digit Digital Multimeter by Direct/Comparison method	1 A to 10 A	0.04%
4	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC High Vo l tage @ 50Hz	Using High Voltage Divider with kV meter by Direct method	1 kV to 20 kV	3.1%





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5	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC High Vo l tage @ 50Hz	Using High vo l tage Divider with kV meter by Direct method	20 kV to 100 kV	3%
6	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Power (Upto 230V, 5A, 50 Hz, 1p2w, PF= 0.5 to UPF)	Using meter with CT along with Power Source by Direct/Comparison method	575 W to 1150 W	0.5 % to 1.4 %
7	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 10 Hz to 300 kHz	Using 6½ Digit Digital Multimeter by Direct/Comparison method	1 mV to 1000 mV	0.8 % to 0.08 %
8	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage @ 10 Hz to 300 kHz	Using 6½ Digit Digital Multimeter by Direct/Comparison method	1 V to 1000 V	0.08 % to 0.02 %
9	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Active Energy Up to 230V, 2.5A- 5A, 50 Hz, PF= 0.5 to UPF (3 Phase 4 wire)	Using meter with CT along with Power Source by Direct/Comparison method	862.5 Wh to 3.45 kWh	0.5 % to 1.4 %





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10	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	Power Factor Lag- UPF- Lead	Using meter with CT along with Power Source by Direct method	UPF to 0.5 PF @ 50 Hz	0.020PF
11	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Current @ 45 Hz to 100 Hz	Using 5½ Digit Multifunction Calibrator by Direct method	20 µA to 10 A	0.30 % to 1.61 %
12	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	AC Voltage @ 45 to 100 Hz	Using 5½ Digit Multifunction Calibrator by Direct method	10 mV to 1000 V	0.50 % to 0.22 %
13	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Source)	Capacitance @ 1kHz	Using Decade Box by Direct method	1 nF to 10 mF	0.3 % to 0.08 %
14	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 61/2 Digit Digital Multimeter By Direct and Comparison Method	1 μA to 100 mA	5.4 % to 0.072 %





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15	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 61/2 Digit Digital Multimeter By Direct and Comparison Method	1 A to 10 A	0.032%
16	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 61/2 Digit Digital Multimeter By Direct and Comparison Method	100 mA to 1 A	0.007 % to 0.05 %
17	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC High Voltage	Using Hight Voltage Divider with kV meter By Direct method	1 kV to 20 kV	5.1 % to 3
18	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC High Voltage	Using Hight Voltage Divider with kV meter By Direct method	20 kV to 100 kV	3%
19	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 61/2 Digit Digital Multimeter By Direct and Comparison Method	0.1 mV to 1000 mV	0.6 % to 0.04 %
20	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 61/2 Digit Digital Multimeter By Direct and Comparison Method	1 V to 1000 V	0.02%





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21	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC current	Using 51/2 digit Multifunction By Direct method	1 mA to 10 A	0.2 % to 0.6 %
22	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using Resistance Decade Box By direct method	1 ohm to 11.1111 Mohm	0.25%
23	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Resistance	Using Resistance Decade Box By Direct method	11 Mohm to 1000 Mohm	0.25 % to 0.75 %
24	ELECTRO- TECHNICAL- DIRECT CURRENT (Source)	DC Voltage	Using 51/2 digit Multifunction By Direct method	1 mV to 1000 V	1.65 % to 0.13 %
25	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	pt-100 Type (Indicator/Controller/ Recorder/Datalogger /Scanner)	Using Universal Calibrator By Direct Method	-200 °C to 800 °C	0.3°C
26	ELECTRO- TECHNICAL- TEMPERATURE SIMULATION (Source)	Thermocouple J Type (Indicator/Controller/ Recorder/Datalogger /Scanner)	Using Universal Calibrator By Direct Method	0 °C to 760 °C	0.3°C





Watch

FREQUENCY

(Measure)

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Measurand or Reference Measurement range and Material/Type of instrument * Calibration and **Calibration or Measurement** additional parameters S.No Discipline / Group or material to be calibrated Measurement Method or procedure where applicable(Range or measured / Quantity Capability(CMC)(±) and Frequency) Measured /Instrument ELECTRO-Thermocouple K TECHNICAL-Using Universal Type **Calibrator By Direct** 27 **TEMPERATURE** (Indicator/Controller/ 0 °C to 1350 °C 1.6°C Recorder/Datalogger SIMULATION Method (Source) (Scanner) **ELECTRO-**Thermocouple R & S Using Universal TECHNICAL-Type 28 (Indicator/Controller/ Calibrator By Direct 0 °C to 1767 °C 0.7°C TEMPERATURE Recorder/Datalogger Method SIMULATION (Source) (Scanner) ELECTRO-Using Digital Time TECHNICAL-Time Interval meter nterval meter or 29 TIME & 1 min to 5 min 0.6sec Timer By Direct and / Timer / Stop Watch FREQUENCY **Comparison Method** (Measure) ELECTRO-Using Digital Time TECHNICAL-Time Interval meter nterval Meter by 30 TIME & 1 s to 60 s 0.06s / Timer / Stop Watch Direct or FREQUENCY Comparison method (Measure) ELECTRO-Using Digital Time TECHNICAL-Time Interval Meter / Interval meter or 31 TIME & 5 min to 60 min 0.6sec Timer / Stop Watch Timer By Direct and FREQUENCY **Comparison Method** (Measure) ELECTRO-Using Time Interval TECHNICAL-Time Interval Meter or Timer By 32 Meter/Timer / Stop 1 hrs. to 3 hrs. TIME & 0.6sec Direct and

Comparison method





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33	ELECTRO- TECHNICAL- TIME & FREQUENCY (Measure)	Time Interval Meter/Timer / Stop Watch	Using Digital Time Interval Meter or Digital By Direct and Comparison Method	3 hrs. to 24 hrs.	2.1sec
34	ELECTRO- TECHNICAL- TIME & FREQUENCY (Source)	Frequency	Using 51/2 digit Multifunction By Direct method	40 Hz to 1000 Hz	0.7 % to 0.3 %