

FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

118-119, First Floor, Sushant Tower, Sector – 56, Gurugram – 122011, Haryana, India.



CERTIFICATE OF ACCREDITATION (AS PER ISO/IEC 17025:2017)

This is to attest that

ALTRACAL SYSTEMS PRIVATE LIMITED

M-25, New Ashok Colony Morar
Gwalior, Madhya Pradesh - 474006, India

Calibration Laboratory

has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories and supplementary criteria for calibration laboratories.

Certificate Number: CL-143

Issue Date: 19.02.2025

Valid Until: 18.02.2027

The certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard and the relevant requirements of FDAS. (for scope of accreditation visit website www.fdasindia.org).

A handwritten signature in blue ink, appearing to read 'Devi Saran Tewari', with a horizontal line underneath.

DEVI SARAN TEWARI
Director

FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

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SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 143)

Laboratory Name: Altracal Systems Private Limited
M-25, New Ashok Colony Morar,
Gwalior, Madhya Pradesh – 474006, India.

Validity: 19.02.2025 to 18.02.2027

Amended on N/A

Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
Group: Measure Mode				
1	AC Current @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.01 mA to 0.1mA	0.82 % to 0.26 %
2	AC Current @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.12 % to 0.23 %	0.26 % to 0.23 %
3	AC Current @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.4 A to 10 A	0.23 % to 0.24 %

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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
4	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2, IS 1248 Part 9 IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mV to 100 mV	0.54 % to 0.12 %
5	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.1 V to 100 V	0.12 % to 0.11 %
6	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 V to 100 V	0.10 %
7	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 V to 1000 V	0.11 % to 0.12 %
8	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.01 μ A to 100 μ A	2.79 % to 1.26 %


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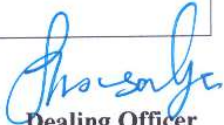
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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
9	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.1 mA to 1 mA	1.26 % to 0.07 %
10	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 mA to 10 mA	0.07 % to 0.09 %
11	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mA to 100 mA	0.09 % to 0.07 %
12	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 mA to 400 mA	0.07% to 0.12%
13	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.4 A to 2 A	0.12 % to 0.15 %


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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
14	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	2 A to 10 A	0.15 % to 0.19 %
15	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 mV to 100 mV	0.49 % to 0.02 %
16	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.1 V to 10 V	0.02 % to 0.012 %
17	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 V to 100 V	0.012 % to 0.007 %

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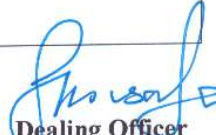
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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
18	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 V to 1000 V	0.007 % to 0.006 %
19	Resistance (4 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 ohm to 100 ohm	0.36 % & 0.02 %
20	Resistance (4 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 kohm to 100 kohm	0.013 % & 0.02 %
21	Resistance (2 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 Mohm to 100 Mohm	0.13 % & 0.94 %
22	Resistance (2 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 Mohm to 1000 Mohm	0.94 % & 2.34 %


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S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
23	Frequency	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	45 Hz to 1 kHz	0.13 % & 0.013 %
24	Timer/Stopwatch	Using Time Calibrator by Comparison Method / IS 10996: 2021	1 sec to 1000 sec	0.58s to 0.89s
25	Timer/Stopwatch	Using Time Calibrator by Comparison Method/ IS 10996: 2021	1000 sec to 86400 sec	0.89s to 23.64s

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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
Group: Source Mode				
1	AC Current @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 mA to 200 mA	0.28 % & 0.27 %
2	AC Current @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	200 mA to 1000 mA	0.27 % & 0.36 %
3	AC Current @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 A to 10 A	0.36 % & 0.22 %
4	AC Voltage @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mV to 200 mV	0.36 % & 0.27 %


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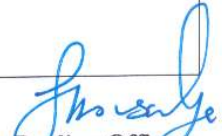
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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
5	AC Voltage @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 V to 200 V	0.27 %
6	AC Voltage @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	200 V to 1000V V	0.27 % & 0.20 %
7	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 mA to 2 mA	0.24 % & 0.18 %
8	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	2 mA to 20 mA	0.18 % & 0.20 %
9	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	20 mA to 200 mA	0.20 % & 0.15 %


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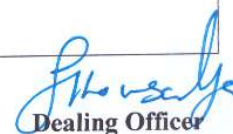
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S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
10	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	200 mA to 1000 mA	0.15 % & 0.26 %
11	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 A to 10 A	0.26 % & 0.13 %
12	DC Voltage	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mV to 200 mV	0.24 % & 0.18 %
13	DC Voltage	Using Multifunction Calibrator by Direct Method / IS: IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 V to 2 V	0.18 % & 0.19 %
14	DC Voltage	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	2 V to 1000 V	0.19 % & 0.13 %


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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
15	Resistance	Using Decade Resistance Box by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 ohm to 1000 Mohm	0.23 % & 0.58 %
16	Frequency	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	45 Hz to 1 kHz	0.29 % & 0.18 %
17	DC Current	Using Multifunction with X100 Current Coil Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 A to 1000 A	2.57 % & 1.20 %
18	AC Current @ 50 Hz	Using Multifunction with X100 Current Coil Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 A to 1000 A	2.14% & 1.03 %


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Electro-Technical Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
19	RTD - PT 100 (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	-200 to 700 °C	1.39 °C
20	k type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11	-200°C to 950 °C	2.12 °C
21	J type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibratiopn by Direct Method / IS: Euramet Guide CG- 11: 2007	-200°C to 700 °C	1.39 °C
22	N type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	-200°C to 1000 °C	2.09 °C

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S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
25	S type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	0°C to 1760 °C	3.94 °C
26	E type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	-200 to 500 °C	0.93 °C
27	B type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	400°C to 1800°C	3.95 °C
28	R type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	400°C to 1800°C	3.94 °C


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Group: Measure Mode				
1	AC Current @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.01 mA to 0.1mA	0.82 % to 0.26 %
2	AC Current @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.12 % to 0.23 %	0.26 % to 0.23 %
3	AC Current @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.4 A to 10 A	0.23 % to 0.24 %

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S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
4	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2, IS 1248 Part 9 IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mV to 100 mV	0.54 % to 0.12 %
5	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.1 V to 100 V	0.12 % to 0.11 %
6	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 V to 100 V	0.10 %
7	AC Voltage @ 50 Hz to 1 kHz	Using Reference 6½ Digit Digital Multi- meter by Direct Method IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 V to 1000 V	0.11 % to 0.12 %
8	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.01 μ A to 100 μ A	2.79 % to 1.26 %


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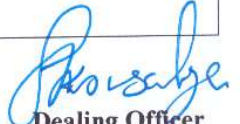
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9	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.1 mA to 1 mA	1.26 % to 0.07 %
10	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 mA to 10 mA	0.07 % to 0.09 %
11	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mA to 100 mA	0.09 % to 0.07 %
12	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 mA to 400 mA	0.07% to 0.12%
13	DC Current	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.4 A to 2 A	0.12 % to 0.15 %


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15	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 mV to 100 mV	0.49 % to 0.02 %
16	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.1 V to 10 V	0.02 % to 0.012 %
17	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 V to 100 V	0.012 % to 0.007 %


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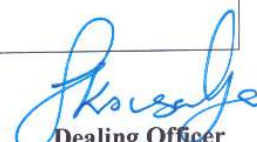
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Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
18	DC Voltage	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 V to 1000 V	0.007 % to 0.006 %
19	Resistance (4 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 ohm to 100 ohm	0.36 % & 0.02 %
20	Resistance (4 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 kohm to 100 kohm	0.013 % & 0.02 %
21	Resistance (2 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 Mohm to 100 Mohm	0.13 % & 0.94 %
22	Resistance (2 Wire)	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	100 Mohm to 1000 Mohm	0.94 % & 2.34 %


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SCOPE OF ACCREDITATION

(Annexure to Certificate of CL - 143)

Laboratory Name: Altracal Systems Private Limited
M-25, New Ashok Colony Morar,
Gwalior, Madhya Pradesh – 474006, India.

Validity: 19.02.2025 to 18.02.2027

Amended on N/A

Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
23	Frequency	Using Reference 6½ Digit Digital Multi- meter by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	45 Hz to 1 kHz	0.13 % & 0.013 %
24	Timer/Stopwatch	Using Time Calibrator by Comparison Method / IS 10996: 2021	1 sec to 1000 sec	0.58s to 0.89s
25	Timer/Stopwatch	Using Time Calibrator by Comparison Method/ IS 10996: 2021	1000 sec to 86400 sec	0.89s to 23.64s

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Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
Group: Source Mode				
1	AC Current @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 mA to 200 mA	0.28 % & 0.27 %
2	AC Current @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	200 mA to 1000 mA	0.27 % & 0.36 %
3	AC Current @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 A to 10 A	0.36 % & 0.22 %
4	AC Voltage @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mV to 200 mV	0.36 % & 0.27 %


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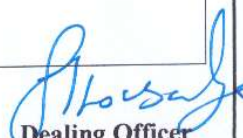
Laboratory Name: Altracal Systems Private Limited
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Validity: 19.02.2025 to 18.02.2027

Amended on N/A

Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
5	AC Voltage @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 V to 200 V	0.27 %
6	AC Voltage @ 50 Hz to 1 kHz	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	200 V to 1000V V	0.27 % & 0.20 %
7	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 mA to 2 mA	0.24 % & 0.18 %
8	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	2 mA to 20 mA	0.18 % & 0.20 %
9	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	20 mA to 200 mA	0.20 % & 0.15 %


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Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
10	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	200 mA to 1000 mA	0.15 % & 0.26 %
11	DC Current	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 A to 10 A	0.26 % & 0.13 %
12	DC Voltage	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 mV to 200 mV	0.24 % & 0.18 %
13	DC Voltage	Using Multifunction Calibrator by Direct Method / IS: IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	0.2 V to 2 V	0.18 % & 0.19 %
14	DC Voltage	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	2 V to 1000 V	0.19 % & 0.13 %


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Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
15	Resistance	Using Decade Resistance Box by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	1 ohm to 1000 Mohm	0.23 % & 0.58 %
16	Frequency	Using Multifunction Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	45 Hz to 1 kHz	0.29 % & 0.18 %
17	DC Current	Using Multifunction with X100 Current Coil Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 A to 1000 A	2.57 % & 1.20 %
18	AC Current @ 50 Hz	Using Multifunction with X100 Current Coil Calibrator by Direct Method / IS: 13875 Part 1 & 2: 2023, IS 1248 Part 9: 2021	10 A to 1000 A	2.14% & 1.03 %

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Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
19	RTD - PT 100 (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	-200 to 700 °C	1.39 °C
20	k type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11	-200°C to 950 °C	2.12 °C
21	J type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	-200°C to 700 °C	1.39 °C
22	N type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	-200°C to 1000 °C	2.09 °C

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Electro-Technical Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
25	S type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	0°C to 1760 °C	3.94 °C
26	E type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	-200 to 500 °C	0.93 °C
27	B type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	400°C to 1800°C	3.95 °C
28	R type (Temperature Indicator & Controller)	Using Multifunction Calibrator Calibration by Direct Method / IS: Euramet Guide CG- 11: 2007	400°C to 1800°C	3.94 °C

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Thermal Calibration (Laboratory based)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
Group:				
1	RTD / Thermocouple with Temperature indicator / Controller, Temperature gauge, Data logger, Transmitter with indicator	Using RTD Sensor with digital indicator and Dry bath furnace by comparison method	-25°C to 250°C	0.42°C
2	RTD / Thermocouple with Temperature indicator / Controller, Temperature gauge, Data logger, Transmitter with indicator	Using S type Thermocouple with digital indicator and Dry bath furnace by comparison method	250°C to 1200°C	3.2°C
3	Temperature indicator / Controller with sensor of Dry Block Furnace (Single position)	Using S type Thermocouple with indicator by comparison method	250°C to 1200°C	2.5°C

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Thermal Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
Group:				
1	RTD / Thermocouple with Temperature indicator / Controller, Temperature gauge, Data logger, Transmitter with indicator	Using RTD Sensor with digital indicator and Dry bath furnace by comparison method	-25°C to 400°C	0.42°C
2	RTD / Thermocouple with Temperature indicator / Controller, Temperature gauge, Data logger, Transmitter with indicator	Using S type Thermocouple with digital indicator and Dry bath furnace by comparison method	400°C to 1200°C	3.1°C
3	Temperature indicator / Controller with sensor of Cold room, Dry Block Furnace, Refrigerator, Liquid bath, Deep Freezer, Hot air oven (Single position)	Using RTD Sensor with indicator by comparison method	-25°C to 100°C	1.2°C


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Thermal Calibration (At-site)

S. No.	Parameter	Calibration Method/ Procedure & Equipment used as Reference Standard	Range	Uncertainty in Measurement (\pm) *
Group:				
4	Temperature indicator / Controller with sensor of Hot Air Oven, Dry Block Furnace, Heating Block, Muffle Furnace, BOD Incubator, Liquid bath, Auto clave (Single position)	Using RTD Sensor with indicator by comparison method	100°C to 400°C	1.2°C
5	Temperature indicator / Controller with sensor of Dry Block Furnace (Single position)	Using S type Thermocouple with indicator by comparison method	400°C to 1200°C	4.2°C

* Expanded uncertainty expressed in coverage probability of approximately 95% (coverage factor K=2)

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