Name of Accreditation Program	JCSS Accreditation Program
Accreditation Identification	JCSS 0119 Calibration
Name of Conformity Assessment Body	Japan Electric Meters Inspection Corporation Kyushu
Name of Legal Entity	Japan Electric Meters Inspection Corporation JCN 4010405002454
Inquiry Point	Calibration Section TEL: +81-92-541-3033 FAX: +81-92-541-3036

*JCN: Japan Corporate Number

23・12・11-NITE-015
2024-04-26

Certificate of Accreditation

International Accreditation Japan (IAJapan) hereby accredits the following conformity assessment body as a calibration laboratory of Japan Calibration Service System.

Accreditation Identification: JCSS 0119 Calibration

Name of Conformity Assessment Body: Japan Electric Meters Inspection Corporation, Kyushu

Name of Legal Entity: Japan Electric Meters Inspection Corporation

Location of Conformity Assessment Body: 2-1-40, Shiobaru, Minami-ku, Fukuoka-shi, Fukuoka 815-0032, JAPAN

Scope of Accreditation: Time & Frequency & Rotational speed, Electricity (Direct Current & Low Frequency) , Temperature (as the following pages)

Accreditation Requirement: ISO/IEC 17025:2017*

* The relevant accreditation requirements described in the Accreditation Scheme Document for JCSS are also applied.

Effective Date of Accreditation: 2024-04-26

Expiry Date of Accreditation: 2028-04-25

Date of Initial Accreditation: 2002-10-22

Hideaki Tanaka

TANAKA Hideaki
Chief Executive, International Accreditation Japan (IAJapan)
National Institute of Technology and Evaluation

- International Accreditation Japan (IAJapan) is a laboratory accreditation body which has signed MRAs of ILAC (International Laboratory Accreditation Cooperation) and APAC (Asia Pacific Accreditation Cooperation).
- MRA requirements are, in addition to relevant international standards and guides, requirements for participation in proficiency testing programs, surveillance and reassessment, and the policy for the traceability of measurement for MRA purpose.
- This laboratory fulfills ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation means this laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).
- The latest accreditation information is publicly available on IAJapan Website as an accreditation certificate.

General Field of Calibration: Time & Frequency & Rotational speed
Date of Initial Accreditation of the Field: 2018-06-21
Laboratory's permanent facility/On-site Calibration: Laboratory's permanent facility
Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Time & Frequency Counter, etc.	Frequency Generator	From 1 Hz up to 10 MHz		2.4×10^{-7}
	Frequency Counter	From 1 Hz up to 10 MHz		2.4×10^{-7}
	Time-Interval Source *1	From 1 s up to 60 s		0.01 s
	Time-Interval Measuring Equipment	Calibration by Frequency Measurement (rate) *2	Up to 9.999 s	0.05 s
		Calibration by Time-Interval Measurement	From 100 ms less than 10 s From 10 s up to 60 s More than 60 s up to 3 600 s	0.000 1 s 0.001 s 0.09 s
	Tachometer	From 60 rpm up to 100 000 rpm		4 ppm + 0.02 rpm

#All Calibration Procedures are in-house procedures developed by this laboratory.

*1：Limited to Withstand Voltage tester.

*2：Limited to the frequency of Crystal oscillator 32.768 kHz.

Note: The values in the CMC column include sources of uncertainty attributed to a unit under test.

Laboratory's permanent facility/On-site Calibration: On-site Calibration
Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Time & Frequency Counter, etc.	Frequency Generator	From 1 Hz up to 10 MHz		2.4×10^{-7}
	Frequency Counter	From 1 Hz up to 10 MHz		2.4×10^{-7}
	Time-Interval Source *1	From 1 s up to 60 s		0.01 s
	Time-Interval Measuring Equipment	Calibration by Time-Interval Measurement	From 100 ms less than 10 s From 10 s up to 60 s More than 60 s up to 3 600 s	0.000 1 s 0.001 s 0.09 s
	Tachometer	From 60 rpm up to 100 000 rpm		4 ppm + 0.02 rpm

#All Calibration Procedures are in-house procedures developed by this laboratory.

*1：Limited to Withstand Voltage tester.

Note: The values in the CMC column include sources of uncertainty attributed to a unit under test.

General Field of Calibration: Electricity (Direct Current & Low Frequency)
Date of Initial Accreditation of the Field: 2002-10-22
Laboratory's permanent facility/On-site Calibration: Laboratory's permanent facility
Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	DC Resistor	0.001 Ω	0.000 03 mΩ
		0.01 Ω	0.000 2 mΩ
		More than 0.01 Ω less than 0.1 Ω	0.001 Ω
		0.1 Ω	0.001 0 mΩ
		More than 0.1 Ω less than 1 Ω	0.001 Ω
		1 Ω	0.000 005 Ω
		More than 1 Ω less than 10 Ω	0.000 2 Ω
		10 Ω	0.05 mΩ
		More than 10 Ω less than 100 Ω	0.002 Ω
		100 Ω	0.40 mΩ
		More than 100 Ω less than 1 kΩ	0.02 Ω
		1 kΩ	4.0 mΩ
		More than 1 kΩ less than 10 kΩ	0.2 Ω
		10 kΩ	0.040 Ω
		More than 10 kΩ less than 100 kΩ	2 Ω
		100 kΩ	0.40 Ω
		More than 100 kΩ less than 1 MΩ	0.02 kΩ
		1 MΩ	0.005 0 kΩ
		More than 1 MΩ less than 10 MΩ	0.000 6 MΩ
		10 MΩ	0.000 3 MΩ
		More than 10 MΩ less than 19 MΩ	0.020 MΩ
		19 MΩ	0.006 MΩ
		More than 19 MΩ up to 30 MΩ	0.020 MΩ
		More than 30 MΩ less than 100 MΩ	0.060 MΩ
		100 MΩ	0.010 MΩ
		More than 100 MΩ less than 1 GΩ	0.10 %
		1 GΩ	1.0 MΩ
		More than 1 GΩ up to 2 GΩ	4 MΩ
		More than 2 GΩ up to 3 GΩ	6 MΩ

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	DC Resistance Measuring Equipment	0.001 Ω	0.10 μΩ
		0.01 Ω	1.0 μΩ
		0.1 Ω	10 μΩ
		1 Ω	0.10 mΩ
		More than 1 Ω less than 1.9 Ω	1.0 mΩ
		1.9 Ω	0.20 mΩ
		More than 1.9 Ω less than 10 Ω	2.0 mΩ
		10 Ω	0.20 mΩ
		More than 10 Ω less than 19 Ω	2.0 mΩ
		19 Ω	1.0 mΩ
		More than 19 Ω less than 100 Ω	5.0 mΩ
		100 Ω	1.0 mΩ
		More than 100 Ω up to 400 Ω	0.008 0 Ω
		More than 400 Ω less than 1 kΩ	0.040 Ω
		1 kΩ	10 mΩ
		More than 1 kΩ less than 1.9 kΩ	0.20 Ω
		1.9 kΩ	0.10 Ω
		More than 1.9 kΩ less than 10 kΩ	0.40 Ω
		10 kΩ	0.10 Ω
		More than 10 kΩ less than 19 kΩ	2.0 Ω
		19 kΩ	1.0 Ω
		More than 19 kΩ less than 100 kΩ	4.0 Ω
		100 kΩ	1.0 Ω
		More than 100 kΩ less than 190 kΩ	20 Ω
		190 kΩ	10 Ω
		More than 190 kΩ less than 1 MΩ	50 Ω
		1 MΩ	10 Ω
		More than 1 MΩ up to 1.9 MΩ	1.0 kΩ
		More than 1.9 MΩ less than 10 MΩ	2.0 kΩ
		10 MΩ	1.0 kΩ
		More than 10 MΩ up to 19 MΩ	10 kΩ
		More than 19 MΩ less than 33 MΩ	20 kΩ
		From 33 MΩ less than 100 MΩ	80 kΩ
		100 MΩ	10 kΩ
		More than 100 MΩ less than 110 MΩ	1.0 MΩ
		From 110 MΩ less than 330 MΩ	5.0 MΩ
		From 330 MΩ up to 1 GΩ	14 MΩ
		More than 1 GΩ up to 2 GΩ	1 %

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	DC Voltage Source	From 0 V up to 100 mV	0.3 ppm + 2.5 μV
		More than 0.1 V up to 1 V	4.0 ppm + 2.5 μV
		More than 1 V up to 10 V	5.5 ppm + 2 μV
		More than 10 V up to 100 V	7.5 ppm + 0.05 mV
		More than 100 V up to 600 V	13 ppm
		More than 600 V up to 1 000 V	34 ppm – 12.6 mV
		More than 1 kV up to 4 kV	0.03 kV
		More than 4 kV up to 7 kV	0.04 kV
		More than 7 kV up to 10 kV	0.05 kV
	DC Voltage Measuring Equipment	From 0 V up to 1 V	5.5 ppm + 0.5 μV
		More than 1 V up to 10 V	5.5 ppm + 2 μV
		More than 10 V up to 100 V	7.5 ppm + 0.05 mV
		More than 100 V up to 600 V	13 ppm
		More than 600 V up to 1 000 V	34 ppm – 12.6 mV
		From 2 kV up to 10 kV	0.08 % + 1 V
	Direct Current Source	From 0 μA up to 100 μA	6 ppm + 0.002 5 μA
		More than 0.1 mA up to 1 mA	5 ppm + 0.030 μA
		More than 1 mA up to 10 mA	5 ppm + 0.30 μA
		More than 10 mA up to 100 mA	10 ppm + 3.0 μA
		More than 0.1 A up to 1 A	30 ppm + 0.025 mA
		More than 1 A up to 30 A	75 ppm + 0.20 mA
	Direct Current Measuring Equipment	From 0 μA up to 100 μA	6 ppm + 0.002 5 μA
		More than 0.1 mA up to 1 mA	5 ppm + 0.030 μA
		More than 1 mA up to 10 mA	5 ppm + 0.30 μA
		More than 10 mA up to 100 mA	10 ppm + 3.0 μA
		More than 0.1 A up to 1 A	30 ppm + 0.025 mA
		More than 1 A up to 30 A	75 ppm + 0.20 mA
		More than 30 A up to 40 A	0.40 A
		More than 40 A up to 50 A	0.50 A
		More than 50 A up to 500 A	1.0 %

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	AC Voltage Source	From 10 mV up to 20 mV	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	0.005 mV
		More than 20 mV up to 60 mV		0.025 %
		More than 60 mV up to 200 mV		0.015 %
		More than 200 mV up to 600 mV		95 ppm
		From 300 mV up to 600 mV	10 kHz	95 ppm
		300 mV, 600 mV	100 kHz	0.015 %
		More than 600 mV up to 200 V	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz, 10 kHz	50 ppm
		1 V, 2 V, 6 V, 10 V, 20 V, 60 V, 100 V, 200 V	100 kHz	0.010 %
		600 V		0.040 %
		More than 200 V up to 1 000 V	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz, 10 kHz	60 ppm
		More than 1 kV up to 4 kV	50 Hz, 60 Hz	0.03 kV
		More than 4 kV up to 7 kV		0.04 kV
		More than 7 kV up to 10 kV		0.05 kV
	AC Voltage Measuring Equipment	From 10 mV up to 20 mV	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	0.005 mV
		More than 20 mV up to 60 mV		0.025 %
		More than 60 mV up to 200 mV		0.015 %
		More than 200 mV up to 600 mV		95 ppm
		From 300 mV up to 600 mV	10 kHz	95 ppm
		300 mV, 600 mV	100 kHz	0.015 %
		More than 600 mV up to 200 V	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz, 10 kHz	50 ppm
		1 V, 2 V, 6 V, 10 V, 20 V, 60 V, 100 V, 200 V	100 kHz	0.010 %
		600 V		0.040 %
		More than 200 V up to 1 000 V	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz, 10 kHz	60 ppm
		More than 1 kV up to 10 kV	50 Hz, 60 Hz	0.07 % + 4 V

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	Alternating Current Source	From 0.001 A up to 0.006 A	50 Hz, 60 Hz	0.025 % + 0.1 μA
		More than 0.006 A less than 0.01 A		0.025 % + 0.5 μA
		From 0.01 A up to 0.02 A		0.015 % + 0.3 μA
		More than 0.02 A up to 0.2 A		0.015 % + 3 μA
		More than 0.2 A up to 2 A		0.028 % + 0.03 mA
		More than 2 A up to 10 A		0.038 % + 0.2 mA
		More than 10 A up to 20 A		0.045 % + 0.5 mA
		More than 20 A up to 60 A		0.045 % + 1 mA
	Alternating Current Measuring Equipment	From 0.001 A less than 0.01 A	50 Hz, 60 Hz	0.030 % + 0.5 μA
		From 0.01 A up to 0.02 A		0.015 % + 0.3 μA
		More than 0.02 A up to 0.2 A		0.015 % + 3 μA
		More than 0.2 A up to 2 A		0.028 % + 0.03 mA
		More than 2 A up to 10 A		0.038 % + 0.2 mA
		More than 10 A up to 20 A		0.15 %
		More than 20 A up to 60 A		0.18 % + 0.01 A
		More than 60 A up to 100 A		0.3 A
		More than 100 A up to 500 A		1.5 %

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Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	Temperature Indicator	Thermocouple B, with Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	10 μV
		Thermocouple R, with Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple S, with Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple N, with Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	22 μV
		Thermocouple K, with Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	23 μV
		Thermocouple E, with Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	28 μV
		Thermocouple J, with Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	24 μV
		Thermocouple T, with Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	23 μV
		Thermocouple B, without Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	9 μV
		Thermocouple R, without Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple S, without Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple N, without Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	11 μV
		Thermocouple K, without Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	11 μV
		Thermocouple E, without Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	13 μV
		Thermocouple J, without Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	12 μV
		Thermocouple T, without Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	12 μV
		Resistance thermometer Sensor	From 18.52 Ω up to 390.48 Ω (From -200 ˚C up to 850 ˚C)	0.10 Ω

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	Temperature Indicator calibration equipment	Thermocouple B, with Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	10 μV
		Thermocouple R, with Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple S, with Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple N, with Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	22 μV
		Thermocouple K, with Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	23 μV
		Thermocouple E, with Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	25 μV
		Thermocouple J, with Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	24 μV
		Thermocouple T, with Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	23 μV
		Thermocouple B, without Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	9 μV
		Thermocouple R, without Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple S, without Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple N, without Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	11 μV
		Thermocouple K, without Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	11 μV
		Thermocouple E, without Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	13 μV
		Thermocouple J, without Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	12 μV
		Thermocouple T, without Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	12 μV
		Resistance thermometer Sensor	From 18.52 Ω up to 390.48 Ω (From -200 ˚C up to 850 ˚C)	0.10 Ω

#All Calibration Procedures are in-house procedures developed by this laboratory.

<table>
<tr><th colspan="2">Calibration Procedures# and Type of Instruments/Materials to be calibrated</th><th colspan="4">Range</th><th>Expanded Uncertainty (Level of Confidence Approximately 95 %)</th></tr>
<tr><td rowspan="4">Electric Power Measuring Equipment, etc.</td><td>Power Meter (Active power)</td><td colspan="4">From 10 V up to 300 V
From 250 mA up to 30 A
50 Hz, 60 Hz
Power factor; whole range</td><td>0.28 mW/VA
～ 0.32 mW/VA
(Appendix1)</td></tr>
<tr><td>Power Meter (Reactive power)</td><td colspan="4">From 10 V up 300 V
From 250 mA up to 30 A
50 Hz, 60 Hz
Power factor, whole range</td><td>0.30 mvar/VA
～ 0.38 mvar/VA
(Appendix1)</td></tr>
<tr><td rowspan="3">Energy Meter (Active Energy)</td><td rowspan="3">110 V,100 V
5 A
50 Hz, 60 Hz</td><td>Three phase three wire system (include unbalance load)</td><td>Power factor: 1
Power factor: 0.866 lag※
Power factor: 0.866 lead※
Power factor: 0.5 lag
Power factor: 0.5 lead
※110 V only</td><td rowspan="3">0.02 %</td></tr>
<tr><td>Single phase three wire system (include unbalance load)</td><td>Power factor: 1
Power factor: 0.5 lag
Power factor: 0.5 lead</td></tr>
<tr><td>Single phase two wire system</td><td>Power factor: 1
Power factor: 0.5 lag
Power factor: 0.5 lead</td></tr>
</table>

#All Calibration Procedures are in-house procedures developed by this laboratory.

Appendix1

<table>
<tr><th rowspan="2">Category</th><th colspan="5">Range</th><th rowspan="2">Expanded Uncertainty (Level of Confidence Approximately 95 %)</th></tr>
<tr><th>Phase wire</th><th>Frequency</th><th>Voltage</th><th>Current</th><th>Power factor</th></tr>
<tr><td rowspan="8">Power Meter (Active power)</td><td rowspan="6">Single phase two wire</td><td rowspan="6">50, 60 Hz</td><td rowspan="5">100 V</td><td rowspan="5">5 A</td><td>1</td><td>0.30 mW/VA</td></tr>
<tr><td>0.5 lag</td><td>0.28 mW/VA</td></tr>
<tr><td>0.5 lead</td><td>0.28 mW/VA</td></tr>
<tr><td>0 lag</td><td>0.28 mW/VA</td></tr>
<tr><td>0 lead</td><td>0.28 mW/VA</td></tr>
<tr><td>300 V</td><td>5 A</td><td>1</td><td>0.31 mW/VA</td></tr>
<tr><td>100 V</td><td>0.5 A</td><td>1</td><td>0.32 mW/VA</td></tr>
<tr><td>Single phase three wire</td><td>50, 60 Hz</td><td>100 V</td><td>5 A</td><td>1</td><td>0.29 mW/VA</td></tr>
<tr><td>Three phase three wire</td><td>50, 60 Hz</td><td>100 V</td><td>5 A</td><td>1</td><td>0.29 mW/VA</td></tr>
<tr><td rowspan="8">Power Meter (Reactive power)</td><td rowspan="6">Single phase two wire</td><td rowspan="6">50, 60 Hz</td><td rowspan="5">100 V</td><td rowspan="5">5 A</td><td>1</td><td>0.30 mvar/VA</td></tr>
<tr><td>0.5 lag</td><td>0.30 mvar/VA</td></tr>
<tr><td>0.5 lead</td><td>0.30 mvar/VA</td></tr>
<tr><td>0 lag</td><td>0.30 mvar/VA</td></tr>
<tr><td>0 lead</td><td>0.30 mvar/VA</td></tr>
<tr><td>300 V</td><td>5 A</td><td>0 lag</td><td>0.38 mvar/VA</td></tr>
<tr><td>100 V</td><td>0.5 A</td><td>0 lag</td><td>0.32 mvar/VA</td></tr>
<tr><td>Single phase three wire</td><td>50, 60 Hz</td><td>100 V</td><td>5 A</td><td>0 lag</td><td>0.30 mvar/VA</td></tr>
<tr><td>Three phase three wire</td><td>50, 60 Hz</td><td>100 V</td><td>5 A</td><td>0 lag</td><td>0.30 mvar/VA</td></tr>
</table>

Laboratory's permanent facility/On-site Calibration: On-site Calibration

Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	DC Resistance Measuring Equipment	More than 190 MΩ up to 2 GΩ		1.0 %
		More than 100 MΩ up to 190 MΩ		2.0 MΩ
		More than 10 MΩ up to 100 MΩ		1.0 %
		More than 1 MΩ up to 10 MΩ		0.20 %
		More than 10 kΩ up to 1 MΩ		0.10 %
		From 1 Ω up to 10 kΩ		0.050 % (lower limit 10 mΩ)
	DC Voltage Source	From 0 μV up to 1000 V		0.010 % (lower limit 0.010 mV)
		More than 1 kV up to 4 kV		0.03 kV
		More than 4 kV up to 7 kV		0.04 kV
		More than 7 kV up to 10 kV		0.05 kV
	DC Voltage Measuring Equipment	From 0 μV up to 1000 V		0.050 % (lower limit 5 μV)
	Direct Current Source	From 0 μA up to 30 A		0.10 % (lower limit 0.05 μA)
	Direct Current Measuring Equipment	From 0 μA up to 10 A		0.10 % (lower limit 0.10 μA)
		More than 10 A less than 16.5 A		1.5 %
		From 16.5 A up to 23 A		0.30 A
		More than 23 A up to 40 A		0.40 A
		More than 40 A up to 50 A		0.50 A
		More than 50 A up to 500 A		1 %
	AC Voltage Source	From 10 mV up to 40 mV	50 Hz, 60 Hz, 400 Hz, 1 kHz	0.10 mV
		More than 40 mV up to 1000 V		0.30 %
		More than 1 kV up to 4 kV	50 Hz, 60 Hz	0.03 kV
		More than 4 kV up to 7 kV		0.04 kV
		More than 7 kV up to 10 kV		0.05 kV
	AC Voltage Measuring Equipment	From 10 mV up to 1000 V	50 Hz, 60 Hz, 400 Hz, 1 kHz	0.10 % (lower limit 0.10 mV)
	Alternating Current Source	From 1 mA up to 60 A	50 Hz, 60 Hz	0.50 %
	Alternating Current Measuring Equipment	From 1 mA up to 10 A	50 Hz, 60 Hz	0.30 %
		More than 10 A up to 60 A		0.50 %
		More than 60 A up to 100 A		0.3 A
		More than 100 A up to 500 A		1.5 %

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	Temperature Indicator	Thermocouple B, with Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	10 μV
		Thermocouple R, with Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple S, with Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple N, with Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	22 μV
		Thermocouple K, with Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	23 μV
		Thermocouple E, with Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	28 μV
		Thermocouple J, with Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	24 μV
		Thermocouple T, with Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	23 μV
		Thermocouple B, without Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	9 μV
		Thermocouple R, without Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple S, without Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple N, without Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	11 μV
		Thermocouple K, without Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	11 μV
		Thermocouple E, without Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	13 μV
		Thermocouple J, without Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	12 μV
		Thermocouple T, without Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	12 μV
		Resistance thermometer Sensor	From 18.52 Ω up to 390.48 Ω (From -200 ˚C up to 850 ˚C)	0.10 Ω

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Direct Current & Low Frequency Measuring Equipment, etc.	Temperature Indicator calibration equipment	Thermocouple B, with Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	10 μV
		Thermocouple R, with Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple S, with Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	10 μV
		Thermocouple N, with Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	22 μV
		Thermocouple K, with Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	23 μV
		Thermocouple E, with Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	25 μV
		Thermocouple J, with Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	24 μV
		Thermocouple T, with Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	23 μV
		Thermocouple B, without Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	9 μV
		Thermocouple R, without Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple S, without Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	9 μV
		Thermocouple N, without Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	11 μV
		Thermocouple K, without Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	11 μV
		Thermocouple E, without Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	13 μV
		Thermocouple J, without Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	12 μV
		Thermocouple T, without Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	12 μV
		Resistance thermometer Sensor	From 18.52 Ω up to 390.48 Ω (From -200 ˚C up to 850 ˚C)	0.10 Ω

#All Calibration Procedures are in-house procedures developed by this laboratory.

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	Expanded Uncertainty (Level of Confidence Approximately 95 %)
Electric Power Measuring Equipment, etc.	Power Meter (Active power)	From 30 V up to 240 V From 250 mA up to 25 A 50 Hz, 60 Hz Power factor; whole range	0.15 W ～ 6×10 W (Appendix 2, 3)

#All Calibration Procedures are in-house procedures developed by this laboratory.

Appendix 2

Category	Range					Expanded Uncertainty (Level of Confidence Approximately 95 %)
	Phase wire	Frequency	Voltage	Current	Power factor	
Power Meter (Active Power)	Single phase two wire	50 Hz 60 Hz	240 V	25 A	0 lag～1～0 lead	30 W
				10 A	0 lag～1～0 lead	12 W
				5 A	0 lag～1～0 lead	6 W
				2.5 A	0 lag～1～0 lead	3.0 W
				1 A	0 lag～1～0 lead	1.2 W
			120 V	25 A	0 lag～1～0 lead	15 W
				10 A	0 lag～1～0 lead	6 W
				5 A	0 lag～1～0 lead	3.0 W
				2.5 A	0 lag～1～0 lead	1.5 W
				1 A	0 lag～1～0 lead	0.6 W
			60 V	10 A	0 lag～1～0 lead	3.0 W
				5 A	0 lag～1～0 lead	1.5 W
				2.5 A	0 lag～1～0 lead	0.8 W
				1 A	0 lag～1～0 lead	0.30 W
			30 V	10 A	0 lag～1～0 lead	1.5 W
				5 A	0 lag～1～0 lead	0.8 W
				2.5 A	0 lag～1～0 lead	0.38 W
				1 A	0 lag～1～0 lead	0.15 W

Appendix 3

Category	Range					Expanded Uncertainty (Level of Confidence Approximately 95 %)
	Phase wire	Frequency	Voltage	Current	Power factor	
Power Meter (Active Power)	Single phase three wire, Three phase three wire	50 Hz 60 Hz	240 V	25 A	0 lag～1～0 lead	6×10 W
				10 A	0 lag～1～0 lead	24 W
				5 A	0 lag～1～0 lead	12 W
				2.5 A	0 lag～1～0 lead	6 W
				1 A	0 lag～1～0 lead	2.4 W
			120 V	25 A	0 lag～1～0 lead	30 W
				10 A	0 lag～1～0 lead	12 W
				5 A	0 lag～1～0 lead	6 W
				2.5 A	0 lag～1～0 lead	3.0 W
				1 A	0 lag～1～0 lead	1.2 W

Laboratory's permanent facility/On-site Calibration: Laboratory's permanent facility

Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Low Frequency Impedance Measuring Equipment, etc.	AC Resistance Measuring Equipment	1 kHz	100 kΩ	0.17 kΩ
			10 kΩ	0.016 kΩ
			1 kΩ	0.001 6 kΩ
			100 Ω	0.16 Ω
			10 Ω	0.030 Ω
			1 Ω	0.004 7 Ω
			100 mΩ	0.13 mΩ
			10 mΩ	0.04 mΩ

#All Calibration Procedures are in-house procedures developed by this laboratory.

Laboratory's permanent facility/On-site Calibration: On-site Calibration

Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Low Frequency Impedance Measuring Equipment, etc.	AC Resistance Measuring Equipment	1 kHz	100 kΩ	0.17 kΩ
			10 kΩ	0.016 kΩ
			1 kΩ	0.001 6 kΩ
			100 Ω	0.16 Ω
			10 Ω	0.030 Ω
			1 Ω	0.004 7 Ω
			100 mΩ	0.13 mΩ
			10 mΩ	0.04 mΩ

#All Calibration Procedures are in-house procedures developed by this laboratory.

General Field of Calibration: Temperature
Date of Initial Accreditation of the Field: 2023-09-14
Laboratory's permanent facility/On-site Calibration: Laboratory's permanent facility
Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Contact Type Thermometer	Temperature sensors with display unit (Comparison calibration)	From -30 °C up to 250 °C		0.15 °C
		Equipped within temperature controlled enclosures	From -30 °C up to 200 °C	0.25 °C
	Thermometer calibration equipment	From -40 °C up to 250 °C		0.060 °C

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Laboratory's permanent facility/On-site Calibration: On-site Calibration
Calibration and Measurement Capabilities

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		Expanded Uncertainty (Level of Confidence Approximately 95 %)
Contact Type Thermometer	Temperature sensors with display unit (Comparison calibration)	From -30 °C up to 250 °C		0.15 °C
		Equipped within temperature controlled enclosures	From -30 °C up to 200 °C	0.25 °C
	Thermometer calibration equipment	From -40 °C up to 250 °C		0.060 °C

#All Calibration Procedures are in-house procedures developed by this laboratory.