Name of Accreditation Program	JCSS Accreditation Program
Accreditation No.	JCSS0050
Date of Initial Accreditation	1995-06-21
Latest Date of Issue	2018-09-03
Name and Address of Accredited Organization	Kansai Branch, Japan Electric Meters Inspection Corporation 6-110,1-chome,Oyodokita,Kita-ku,Osaka-shi,Osaka, 531-0077, Japan JCN 4010405002454
Inquiry Point	Calibration Service Section of JEMIC Kansai Branch Tel: +81-6-6451-2355 FAX: +81-6-6451-2357
Accreditation Standards	ISO/IEC 17025:2005 (Calibration)
Accreditation Scope	As attached

*JCN : Japan Corporate Number

General Field of Calibration：Time & Frequency & Rotational speed

Date of Initial Accreditation of the Field：2017-07-31

Permanent Laboratory/On-site Calibration：Permanent Laboratory

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	CMC (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	From 1 s up to 60 s	0.01 s
	Time-Interval Measuring Equipment	From 100 ms less than 1 s	0.000 1 s
		From 1 s up to 60 s	0.001 s
		More than 60 s up to 3600 s	0.09 s

#All Calibration Procedures are in-house procedures developed by this laboratory.
Note: The above CMC columns, the values include sources of uncertainty attributed to a unit under test.

Permanent Laboratory/On-site Calibration：On-site Calibration

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	CMC (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	From 1 s up to 60 s	0.01 s
	Time-Interval Measuring Equipment	From 100 ms less than 10 s	0.000 1 s
		From 10 s up to 60 s	0.001 s
		More than 60 s up to 3600 s	0.09 s

#All Calibration Procedures are in-house procedures developed by this laboratory.
Note: The above CMC columns, the values include sources of uncertainty attributed to a unit under test.

General Field of Calibration：Temperature

Date of Initial Accreditation of the Field：2016-10-20

Permanent Laboratory/On-site Calibration：Permanent Laboratory

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	CMC (Level of Confidence Approximately 95 %)
Contact Type Thermometer	Thermocouple (Comparison calibration)	0 °C	0.4 °C (*1)
		More than 0 °C up to 1100 °C	0.7 °C (*1)
	Temperature sensors with display unit (Comparison calibration)	From -30 °C up to 250 °C	0.14 °C
	Thermometer calibration equipment	From -40 °C up to 250 °C	0.080 °C

#All Calibration Procedures are in-house procedures developed by this laboratory.
(*1) Temperature converted from Electromotive Force (EMF).

Permanent Laboratory/On-site Calibration：On-site Calibration

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	CMC (Level of Confidence Approximately 95 %)
Contact Type Thermometer	Temperature sensors with display unit (Comparison calibration)	From -30 °C up to 250 °C	0.14 °C
	Thermometer calibration equipment	From -40 °C up to 250 °C	0.080 °C

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

General Field of Calibration：Electricity（Direct Current & Low Frequency）

Date of Initial Accreditation of the Field：1995-06-21

Permanent Laboratory/On-site Calibration：Permanent Laboratory

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	CMC (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	0.10 mΩ
		1 Ω	0.005 mΩ
		More than 1 Ω less than 10 Ω (except 1.9 Ω)	0.000 20 Ω
		1.9 Ω	0.000 10 Ω
		10 Ω	0.05 mΩ
		More than 10 Ω less than 100 Ω (except 19 Ω)	0.002 0 Ω
		19 Ω	0.001 0 Ω
		100 Ω	0.40 mΩ
		More than 100 Ω less than 1 kΩ (except 190 Ω)	0.020 Ω
		190 Ω	0.010 Ω
		1 kΩ	4.0 mΩ
		More than 1 kΩ less than 10 kΩ (except 1.9 kΩ)	0.20 Ω
		1.9 kΩ	0.10 Ω
		10 kΩ	0.040 Ω
		More than 10 kΩ less than 100 kΩ (except 19 kΩ)	2.0 Ω
		19 kΩ	1.0 Ω
		100 kΩ	0.40 Ω
		More than 100 kΩ less than 1 MΩ (except 190 kΩ)	0.020 kΩ
		190 kΩ	0.010 kΩ
		1 MΩ	0.005 0 kΩ
		More than 1 MΩ up to 10 MΩ (except 1.9 MΩ)	0.000 3 MΩ
		1.9 MΩ	0.000 2 MΩ
		More than10 MΩ up to 30 MΩ (except 19 MΩ)	0.020 MΩ
		19 MΩ	0.006 MΩ
		More than 30 MΩ less than 100 MΩ	0.060 MΩ
		100 MΩ	0.005 MΩ
		More than 100 MΩ up to 110 MΩ	0.30 MΩ
		More than 110 MΩ less than 1 GΩ	0.7 %
		1 GΩ	1.0 MΩ
		More than 1 GΩ up to 10 GΩ	0.05 %
		More than 10 GΩ up to 100 GΩ	0.10 %

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

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range	CMC (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	0.50 μΩ
		0.1 Ω	2.0 μΩ
		1 Ω	7.0 μΩ
		More than 1 Ω less than 10 Ω	0.20 mΩ
		10 Ω	40 μΩ
		More than 10 Ω less than 100 Ω	1.0 mΩ
		100 Ω	0.40 mΩ
		More than 100 Ω up to 400 Ω	4.0 mΩ
		More than 400 Ω less than 1 kΩ	10 mΩ
		1 kΩ	4.0 mΩ
		More than 1 kΩ less than 10 kΩ	0.10 Ω
		10 kΩ	40 mΩ
		More than 10 kΩ up to 19 kΩ	1.0 Ω
		More than 19 kΩ less than 100 kΩ	2.0 Ω
		100 kΩ	0.40 Ω
		More than 100 kΩ up to 190 kΩ	10 Ω
		More than 190 kΩ less than 1 MΩ	20 Ω
		1 MΩ	5.0 Ω
		More than 1 MΩ up to 1.9 MΩ	0.4 kΩ
		More than 1.9 MΩ up to10 MΩ	0.5 kΩ
		More than 10 MΩ less than 11 MΩ	2 kΩ
		From 11 MΩ up to 19 MΩ	10 kΩ
		More than 19 MΩ less than 33 MΩ	20 kΩ
		From 33 MΩ less than 100 MΩ	30 kΩ
		100 MΩ	5 kΩ
		More than 100 MΩ less than 110 MΩ	0.1 MΩ
		From 110 MΩ less than 330 MΩ	2.0 MΩ
		From 330 MΩ less than 1 GΩ	5.0 MΩ
		1 GΩ	1.0 MΩ
		More than 1 GΩ up to 100 GΩ	0.3 %
	DC Voltage Source	From 0 V up to 100 mV	4.5 ppm＋0.7 μV
		More than 0.1 V up to 1 V	5.5 ppm＋0.6 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 1000 V	34 ppm－12.6 mV
		More than 1 kV up to 10 kV	0.60 %
	DC Voltage Measuring Equipment	From 0 V up to 1 V	5.5 ppm＋0.5 μV
		More than 1 V up to10 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 1000 V	34 ppm－12.6 mV

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

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		CMC (Level of Confidence Approximately 95%)
Direct Current & Low Frequency Measuring Equipment, etc.	Direct Current Source	From 0 μA up to 100 μA		10 ppm＋0.001 0 μA
		More than 0.1 mA up to 1 mA		10 ppm＋0.015 μA
		More than 1 mA up to 10 mA		10 ppm＋0.15 μA
		More than 10 mA up to 100 mA		10 ppm＋2.0 μA
		More than 0.1 A up to 1 A		30 ppm＋0.010 mA
		More than 1 A up to 30 A		35 ppm＋0.15 mA
	Direct Current Measuring Equipment	From 0 μA up to 100 μA		10 ppm＋0.001 0 μA
		More than 0.1 mA up to 1 mA		10 ppm＋0.015 μA
		More than 1 mA up to 10 mA		10 ppm＋0.15 μA
		More than 10 mA up to 100 mA		10 ppm＋2.0 μA
		More than 0.1 A up to 1 A		30 ppm＋0.010 mA
		More than 1 A up to 30 A		35 ppm＋0.15 mA
		More than 30 A up to 40 A		0.60 A
		More than 40 A up to 1000 A		1.5 %
	Direct Current Standard Shunt	From 1 A up to 100 A		70 ppm
		More than 100 A up to 1000 A		95 ppm
	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	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	0.025 %
		More than 60 mV up to 200 mV	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	0.015 %
		More than 200 mV up to 600 mV	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	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	100 kHz	0.040 %
		More than 200 V up to 1000 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	0.30 %

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

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		CMC (Level of Confidence Approximately 95%)
Direct Current & Low Frequency Measuring Equipment, etc.	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	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	0.025 %
		More than 60 mV up to 200 mV	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	0.015 %
		More than 200 mV up to 600 mV	40 Hz, 50 Hz, 60 Hz, 400 Hz, 1 kHz	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	100 kHz	0.040 %
		More than 200 V up to 1000 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	0.15 %
	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	50 Hz, 60 Hz	0.025 %＋0.5 μA
		From 0.01 A up to 0.02 A	50 Hz, 60 Hz	0.015 %＋0.3 μA
		More than 0.02 A up to 0.2 A	50 Hz, 60 Hz	0.015 %＋3 μA
		More than 0.2 A up to 2 A	50 Hz, 60 Hz	0.028 %＋0.03 mA
		More than 2 A up to 10 A	50 Hz, 60 Hz	0.038 %＋0.2 mA
		More than 10 A up to 20 A	50 Hz, 60 Hz	0.045 %＋0.5 mA
		More than 20 A up to 60 A	50 Hz, 60 Hz	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	50 Hz, 60 Hz	0.015 %＋0.3 μA
		More than 0.02 A up to 0.2 A	50 Hz, 60 Hz	0.015 %＋3 μA
		More than 0.2 A up to 2 A	50 Hz, 60 Hz	0.028 %＋0.03 mA
		More than 2 A up to 10 A	50 Hz, 60 Hz	0.038 %＋0.2 mA
		More than 10 A up to 20 A	50 Hz, 60 Hz	0.15 %
		More than 20 A up to 60 A	50 Hz, 60 Hz	0.18 %＋0.01 A
		More than 60 A up to 100 A	50 Hz, 60 Hz	0.2 %
		More than 100 A up to 1000 A	50 Hz, 60 Hz	1.5 %

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

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		CMC (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)	4 μV
		Thermocouple R, with Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	4 μV
		Thermocouple S, with Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	4 μV
		Thermocouple N, with Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	20 μV
		Thermocouple K, with Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	21 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)	23 μV
		Thermocouple T, with Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	22 μV
		Thermocouple B, Without Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	2 μV
		Thermocouple R, without Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	2 μV
		Thermocouple S, without Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	2 μV
		Thermocouple N, without Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	4 μV
		Thermocouple K, without Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	4 μV
		Thermocouple E, without Reference Junction	From -8825 μV up to 76373 μV (From -200 ˚C up to 1000 ˚C)	6 μV
		Thermocouple J, without Reference Junction	From -8095 μV up to 69553 μV (From -210 ˚C up to 1200 ˚C)	5 μV
		Thermocouple T, without Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	5 μV
		Resistance thermometer Sensor	From 18.52 Ω up to 390.48 Ω (From -200 ˚C up to 850 ˚C)	0.010 Ω
	Temperature Indicator calibration equipment	Thermocouple B, with Reference Junction	From 291 μV up to 13820 μV (From 250 ˚C up to 1820 ˚C)	4 μV
		Thermocouple R, with Reference Junction	From -226 μV up to 21003 μV (From -50 ˚C up to 1760 ˚C)	4 μV
		Thermocouple S, with Reference Junction	From -236 μV up to 18609 μV (From -50 ˚C up to 1760 ˚C)	4 μV
		Thermocouple N, with Reference Junction	From -3990 μV up to 47513 μV (From -200 ˚C up to 1300 ˚C)	20 μV
		Thermocouple K, with Reference Junction	From -5891 μV up to 54819 μV (From -200 ˚C up to 1370 ˚C)	21 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)	23 μV
		Thermocouple T, with Reference Junction	From -5603 μV up to 20872 μV (From -200 ˚C up to 400 ˚C)	22 μV
		Resistance thermometer Sensor	From 18.52 Ω up to 390.48 Ω (From -200 ˚C up to 850 ˚C)	0.010 Ω

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

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		CMC (Level of Confidence Approximately 95 %)
Direct Current& Low Frequency Measuring Equipment, etc.	Temperature Indicator calibration equipment	Thermocouple B, without Reference Junction	From 1792 μV up to 13820 μV (From 600 °C up to 1820 °C)	2 μV
		Thermocouple R, without Reference Junction	From -226 μV up to 21101 μV (From -50 °C up to 1768 °C)	2 μV
		Thermocouple S, without Reference Junction	From -236 μV up to 18693 μV (From -50 °C up to 1768 °C)	2 μV
		Thermocouple N, without Reference Junction	From -3990 μV up to 47513 μV (From -200 °C up to 1300 °C)	2 μV
		Thermocouple K, without Reference Junction	From -5891 μV up to 54886 μV (From -200 °C up to 1372 °C)	2 μV
		Thermocouple E, without Reference Junction	From -8825 μV up to 76373 μV (From -200 °C up to 1000 °C)	2 μV
		Thermocouple J, without Reference Junction	From -8095 μV up to 69553 μV (From -210 °C up to 1200 °C)	2 μV
		Thermocouple T, without Reference Junction	From -5603 μV up to 20872 μV (From -200 °C up to 400 °C)	2 μV

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

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range			CMC (Level of Confidence Approximately 95 %)
Electric Power Measuring Equipment, etc.	Power Meter	From 10 V up to 300 V From 250 mA up to 30 A 50 Hz, 60 Hz Power factor, whole range			0.28 mW/VA ～ 0.32 mW/VA (Appendix 1)
		100 V 50 Hz, 60 Hz	100 mA	Power factor 1	0.010 W
			200 mA	Power factor 1	0.018 W
	Reactive Power Meter	From 10 V up to 300 V From 250 mA up to 30 A 50 Hz, 60 Hz Power factor, whole range			0.30 mvar/VA ～ 0.38 mvar/VA (Appendix 1)
	Energy Meter	110 V, 100 V 5 A 50 Hz, 60 Hz	Three phase three wire (including unbalanced load)	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)	0.02 %
			Single phase three wire (including unbalanced load)	Power factor 1 Power factor 0.5 lag Power factor 0.5 lead	
			Single phase two wire	Power factor 1 Power factor 0.5 lag Power factor 0.5 lead	

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

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		CMC (Level of Confidence Approximately 95%)
Electric Power Measuring Equipment, etc.	AC Voltage Transformer	Primary voltage 110 V, 220 V 440 V, 1100 V 2200 V, 3300 V	Secondary voltage From 27.5 V up to 132 V 50 Hz, 60 Hz	Ratio error 0.01 % Phase angle 0.6´
		Primary voltage 6600 V, 11000 V	Secondary voltage From 27.5 V up to 132 V 50 Hz, 60 Hz	Ratio error 0.01 % Phase angle 0.4´
		Primary voltage 22 kV, 33 kV	Secondary voltage From 27.5 V up to 132 V 50 Hz, 60 Hz	Ratio error 0.01 % Phase angle 0.5´
		Primary voltage 66 kV, 77 kV	Secondary voltage From 5.5 V up to 132 V 50 Hz, 60 Hz	Ratio error 0.02 % Phase angle 0.6´
		Primary voltage 110 kV	Secondary voltage From 11 V up to132 V 50 Hz, 60 Hz	Ratio error 0.03 % Phase angle 0.7´
		Primary voltage 110/√3 kV, 154/√3 kV, 187/√3 kV, 220/√3 kV, 275/√3 kV	Secondary voltage From 5.5/√3 V up to 132/√3 V 50 Hz, 60 Hz	Ratio error 0.04 % Phase angle 0.8´
	Alternating Current Transformer	Primary current From 0.1 A up to 200 A	Secondary current From 0.25 A up to 6 A 50 Hz, 60 Hz	Ratio error 0.01 % Phase angle 0.3´
		Primary current 250 A, 300 A, 400 A, 500 A, 600 A, 750 A, 800 A, 1000 A, 1200 A, 1500 A, 2000 A, 2400 A, 2500 A, 3000 A	Secondary current From 0.25 A up to 6 A 50 Hz, 60 Hz	Ratio error 0.01 % Phase angle 0.4´
		Primary current 4000 A, 5000 A	Secondary current From 0.25 A up to 5 A 50 Hz, 60 Hz	Ratio error 0.02 % Phase angle 0.5´

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

Appendix 1

Category	Calibration Scope						CMC (Level of Confidence Approximately 95 %)
	Type	Phase wire	Frequency	Voltage	Current	Power factor	
Power Meter	Active power	Single phase two wire	50 Hz 60 Hz	100 V	5 A	1	0.30 mW/VA
						0.5 lag	0.28 mW/VA
						0.5 lead	0.28 mW/VA
						0 lag	0.28 mW/VA
						0 lead	0.28 mW/VA
				300 V	5 A	1	0.31 mW/VA
				100 V	0.5 A	1	0.32 mW/VA
		Single phase three wire	50 Hz 60 Hz	100 V	5 A	1	0.29 mW/VA
		Three phase three wire	50 Hz 60 Hz	100 V	5 A	1	0.29 mW/VA
Reactive Power Meter	Reactive power	Single phase two wire	50 Hz 60 Hz	100 V	5 A	1	0.30 mvar/VA
						0.5 lag	0.30 mvar/VA
						0.5 lead	0.30 mvar/VA
						0 lag	0.30 mvar/VA
						0 lead	0.30 mvar/VA
				300 V	5 A	0 lag	0.38 mvar/VA
				100 V	0.5 A	0 lag	0.32 mvar/VA
		Single phase three wire	50 Hz 60 Hz	100 V	5 A	0 lag	0.30 mvar/VA
		Three phase three wire	50 Hz 60 Hz	100 V	5 A	0 lag	0.30 mvar/VA

Permanent Laboratory/On-site Calibration：On-site Calibration

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		CMC (Level of Confidence Approximately 95%)
Direct Current & Low Frequency Measuring Equipment, etc.	DC Resistance Measuring Equipment	From 1 Ω up to 1000 Ω		5 %
		From 0.01 MΩ up to 0.02 MΩ		0.000 3 MΩ
		More than 0.02 MΩ up to 2000 MΩ		1.0 %
	DC Voltage Source	From 0 μV up to 1000 V		The larger one of the two 0.010 % or 0.010 mV
		More than 1 kV up to 10 kV		0.60 %
	DC Voltage Measuring Equipment	From 0 μV up to 1000 V		The larger one of the two 0.050 % or 5 μV
	Direct Current Source	From 0 μA up to 30 A		The larger one of the two 0.10 % or 0.05 μA
	Direct Current Measuring Equipment	From 0 μA up to 10 A		The larger one of the two 0.10 % or 0.10 μA
		More than 10 A up to 30 A		0.2 %
		More than 30 A up to 40 A		0.60 A
		More than 40 A up to 1000 A		1.5 %
	AC Voltage Source	From 0.5 kV up to 1 kV	50 Hz, 60 Hz	0.004 kV
		More than 1 kV up to 10 kV	50 Hz, 60 Hz	0.30 %
	AC Voltage Measuring Equipment	From 10 mV up to 1 kV	50 Hz, 60 Hz, 400 Hz, 1 kHz	The larger one of the two 0.10 % or 0.10 mV
	Alternating Current Source	From 1 mA up to 100 mA	50 Hz, 60 Hz	0.6 %
	Alternating Current Measuring Equipment	From 1 mA less than 10 mA	50 Hz, 60 Hz	0.3 %
		From 10 mA up to 100 A	50 Hz, 60 Hz	0.2 %
		More than 100 A up to 1000 A	50 Hz, 60 Hz	1.5 %

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

Permanent Laboratory/On-site Calibration：On-site Calibration

Calibration Procedures# and Type of Instruments/Materials to be calibrated		Range		CMC (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)	27 μV
		Thermocouple J, with Reference Junction	From -8095 μV up to 69553 μV (From -210 °C up to 1200 °C)	25 μV
		Thermocouple T, with Reference Junction	From -5603 μV up to 20872 μV (From -200 °C up to 400 °C)	24 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.