

Name of Accreditation Program	JCSS Accreditation Program
Accreditation No.	JCSS0050
Date of Initial Accreditation	1995-06-21
Latest Date of Issue	2017-07-31
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 & FrequencyDate of Initial Accreditation of the Field : 2017-07-31Permanent Laboratory/On-site Calibration : Permanent Laboratory

Type of Service		Calibration Scope	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

Note: The above CMC columns, the values include sources of uncertainty attributed to a unit under test.

General Field of Calibration : TemperatureDate of Initial Accreditation of the Field : 2016-10-20Permanent Laboratory/On-site Calibration : Permanent Laboratory

Type of Service		Calibration Scope	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)

(*1) Temperature converted from Electromotive Force (EMF).

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

Type of Service		Calibration scope	CMC (Level of Confidence Approximately 95%)
Direct Current & Low Frequency Measuring Equipment, etc.	DC Resistor	0.001 Ω	0.000 03 m Ω
		0.01 Ω	0.000 2 m Ω
		More than 0.01 Ω less than 0.1 Ω	0.001 Ω
		0.1 Ω	0.001 0 m Ω
		More than 0.1 Ω less than 1 Ω	0.10 m Ω
		1 Ω	0.005 m Ω
		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 m Ω
		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 m Ω
		More than 100 Ω less than 1 k Ω (except 190 Ω)	0.020 Ω
		190 Ω	0.010 Ω
		1 k Ω	4.0 m Ω
		More than 1 k Ω less than 10 k Ω (except 1.9 k Ω)	0.20 Ω
		1.9 k Ω	0.10 Ω
		10 k Ω	0.040 Ω
		More than 10 k Ω less than 100 k Ω (except 19 k Ω)	2.0 Ω
		19 k Ω	1.0 Ω
		100 k Ω	0.40 Ω
		More than 100 k Ω less than 1 M Ω (except 190 k Ω)	0.020 k Ω
		190 k Ω	0.010 k Ω
		1 M Ω	0.005 0 k Ω
		More than 1 M Ω up to 10 M Ω (except 1.9 M Ω)	0.000 3 M Ω
		1.9 M Ω	0.000 2 M Ω
		More than 10 M Ω up to 30 M Ω (except 19 M Ω)	0.020 M Ω
		19 M Ω	0.006 M Ω
		More than 30 M Ω less than 100 M Ω	0.060 M Ω
		100 M Ω	0.005 M Ω
More than 100 M Ω up to 110 M Ω	0.30 M Ω		
More than 110 M Ω less than 1 G Ω	0.7 %		
1 G Ω	1.0 M Ω		
More than 1 G Ω up to 10 G Ω	0.05 %		
More than 10 G Ω up to 100 G Ω	0.10 %		

Type of Service		Calibration scope	CMC (Level of Confidence Approximately 95%)
Direct Current & Low Frequency Measuring Equipment, etc.	DC Resistance Measuring Equipment	0.001 Ω	0.10 $\mu\Omega$
		0.01 Ω	0.50 $\mu\Omega$
		0.1 Ω	2.0 $\mu\Omega$
		1 Ω	7.0 $\mu\Omega$
		More than 1 Ω less than 10 Ω	0.20 m Ω
		10 Ω	40 $\mu\Omega$
		More than 10 Ω less than 100 Ω	1.0 m Ω
		100 Ω	0.40 m Ω
		More than 100 Ω up to 400 Ω	4.0 m Ω
		More than 400 Ω less than 1 k Ω	10 m Ω
		1 k Ω	4.0 m Ω
		More than 1 k Ω less than 10 k Ω	0.10 Ω
		10 k Ω	40 m Ω
		More than 10 k Ω up to 19 k Ω	1.0 Ω
		More than 19 k Ω less than 100 k Ω	2.0 Ω
		100 k Ω	0.40 Ω
		More than 100 k Ω up to 190 k Ω	10 Ω
		More than 190 k Ω less than 1 M Ω	20 Ω
		1 M Ω	5.0 Ω
		More than 1 M Ω up to 1.9 M Ω	0.4 k Ω
		More than 1.9 M Ω up to 10 M Ω	0.5 k Ω
		More than 10 M Ω less than 11 M Ω	2 k Ω
		From 11 M Ω up to 19 M Ω	10 k Ω
		More than 19 M Ω less than 33 M Ω	20 k Ω
		From 33 M Ω less than 100 M Ω	30 k Ω
		100 M Ω	5 k Ω
		More than 100 M Ω less than 110 M Ω	0.1 M Ω
		From 110 M Ω less than 330 M Ω	2.0 M Ω
	From 330 M Ω less than 1 G Ω	5.0 M Ω	
	1 G Ω	1.0 M Ω	
	More than 1 G Ω up to 100 G Ω	0.3 %	
	DC Voltage Source	From 0 V up to 100 mV	4.5 ppm+0.7 μ V
		More than 0.1 V up to 1 V	5.5 ppm+0.6 μ V
		More than 1 V up to 10 V	5.5 ppm+2 μ V
		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
	DC Voltage Measuring Equipment	From 0 V up to 1 V	5.5 ppm+0.5 μ V
		More than 1 V up to 10 V	5.5 ppm+2 μ V
		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

Type of Service		Calibration scope		CMC (Level of Confidence Approximately 95%)
Direct Current & Low Frequency Measuring Equipment, etc.	Direct Current Source	From 0 μ A up to 100 μ A		10 ppm+0.001 0 μ A
		More than 0.1 mA up to 1 mA		10 ppm+0.015 μ A
		More than 1 mA up to 10 mA		10 ppm+0.15 μ A
		More than 10 mA up to 100 mA		10 ppm+2.0 μ A
		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 μ A up to 100 μ A		10 ppm+0.001 0 μ A
		More than 0.1 mA up to 1 mA		10 ppm+0.015 μ A
		More than 1 mA up to 10 mA		10 ppm+0.15 μ A
		More than 10 mA up to 100 mA		10 ppm+2.0 μ A
		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 %	

Type of Service		Calibration scope		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
	More than 0.006 A less than 0.01 A		50 Hz, 60 Hz	0.025 % + 0.5 μ A
	From 0.01 A up to 0.02 A		50 Hz, 60 Hz	0.015 % + 0.3 μ A
	More than 0.02 A up to 0.2 A		50 Hz, 60 Hz	0.015 % + 3 μ A
	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 μ A
		From 0.01 A up to 0.02 A	50 Hz, 60 Hz	0.015 % + 0.3 μ A
		More than 0.02 A up to 0.2 A	50 Hz, 60 Hz	0.015 % + 3 μ A
		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 %	

Type of service		Calibration scope		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 $^{\circ}\text{C}$ up to 1820 $^{\circ}\text{C}$)	2 μV
		Thermocouple R, without Reference Junction	From -226 μV up to 21101 μV (From -50 $^{\circ}\text{C}$ up to 1768 $^{\circ}\text{C}$)	2 μV
		Thermocouple S, without Reference Junction	From -236 μV up to 18693 μV (From -50 $^{\circ}\text{C}$ up to 1768 $^{\circ}\text{C}$)	2 μV
		Thermocouple N, without Reference Junction	From -3990 μV up to 47513 μV (From -200 $^{\circ}\text{C}$ up to 1300 $^{\circ}\text{C}$)	2 μV
		Thermocouple K, without Reference Junction	From -5891 μV up to 54886 μV (From -200 $^{\circ}\text{C}$ up to 1372 $^{\circ}\text{C}$)	2 μV
		Thermocouple E, without Reference Junction	From -8825 μV up to 76373 μV (From -200 $^{\circ}\text{C}$ up to 1000 $^{\circ}\text{C}$)	2 μV
		Thermocouple J, without Reference Junction	From -8095 μV up to 69553 μV (From -210 $^{\circ}\text{C}$ up to 1200 $^{\circ}\text{C}$)	2 μV
		Thermocouple T, without Reference Junction	From -5603 μV up to 20872 μV (From -200 $^{\circ}\text{C}$ up to 400 $^{\circ}\text{C}$)	2 μV

Type of service		Calibration scope			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		

Type of Service		Calibration scope		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 to 132 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'

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
		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