



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Process Measurement Company

5735 Lindsay Street

Minneapolis, MN 55422

(and satellite locations as shown on the scope)

Fulfills the requirements of

ISO/IEC 17025:2017

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 26 June 2023

Certificate Number: AC-1959



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

Process Measurement Company

5735 Lindsay Street
Minneapolis, MN 55422
Shaomeng Yang 763-354-9040
syang@processmeasurementco.com

CALIBRATION

Valid to: **June 26, 2023**

Certificate Number: **AC-1959**

Satellite locations in:

[Denver, CO \(AC-1959.01\)](#)

[Omaha, NE \(AC-1959.02\)](#)

[Kansas City, KS \(AC-1959.03\)](#)

Accredited Services performed at Main Site laboratory

(AC-1959)

Process Measurement Company

5735 Lindsay Street
Minneapolis, MN 55422
Shaomeng Yang 763-354-9040
syang@processmeasurementco.com

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	(1 to 220) mV 220 mV to 2.2 V (2.2 to 22) V (22 to 220) V (220 to 1 100) V	9 μ V/V 6 μ V/V 5 μ V/V 5 μ V/V 8 μ V/V	Fluke 5720A Multiproduct Calibrator
DC Voltage – Measure	(1 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	8.6 μ V/V 6.8 μ V/V 4.5 μ V/V 6.5 μ V/V 8.2 μ V/V	Agilent 3458A Multimeter
DC High Voltage – Measure	(12 to 120) kV	0.15 % of reading	Ross Engineering VD120 Voltage Divider w/ Agilent 34401A Multimeter
DC Current – Source	(1 to 220) μ A 220 μ A to 2.2 mA (2.2 to 22) mA (22 to 220) mA 220 mA to 2.2 A	57 μ A/A 41 μ A/A 47 μ A/A 53 μ A/A 0.27 mA/A	Fluke 5720A Multiproduct Calibrator
DC Current – Measure	(0.5 to 1) μ A (1 to 10) μ A (10 to 100) μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	1.5 mA/A 0.2 mA/A 0.12mA/A 51 μ A/A 48 μ A/A 57 μ A/A 0.12 mA/A	Agilent 3458A Multimeter
	(1 to 3) A	0.38 mA/A	Agilent 34401A Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	(1 to 10) mV		Agilent 3458A Multimeter
	(1 to 40) Hz	0.8 mV/V	
	40 Hz to 1 kHz	0.66 mV/V	
	(1 to 20) kHz	0.66 mV/V	
	(20 to 50) kHz	1.2 mV/V	
	(50 to 100) kHz	1.5mV/V	
	(100 to 300) kHz	7.2 mV/V	
	(10 to 100) mV		
	(1 to 40) Hz	0.14 mV/V	
	40 Hz to 1 kHz	0.2 mV/V	
	(1 to 20) kHz	0.2 mV/V	
	(20 to 50) kHz	0.49 mV/V	
	(50 to 100) kHz	0.82 mV/V	
	(100 to 300) kHz	1.5 mV/V	
	300 kHz to 1 MHz	4.7mV/V	
	100 mV to 1 V		
	(1 to 40) Hz	0.36 mV/V	
	40 Hz to 1 kHz	0.08 mV/V	
	(1 to 20) kHz	0.25 mV/V	
	(20 to 50) kHz	0.17 mV/V	
(50 to 100) kHz	0.27 mV/V		
(100 to 300) kHz	0.84 mV/V		
300 kHz to 1 MHz	2.9 mV/V		
(1 to 10) V			
(1 to 40) Hz	0.87 mV/V		
40 Hz to 1 kHz	78 μ V/V		
(1 to 20) kHz	90 μ V/V		
(20 to 50) kHz	0.17 mV/V		
(50 to 100) kHz	0.22 mV/V		
(100 to 300) kHz	0.64 mV/V		
300 kHz to 1 MHz	3.1 mV/V		
AC Voltage – Measure	(10 to 100) V		Agilent 3458A Multimeter
	40 Hz to 1 kHz	0.11 mV/V	
	(1 to 20) kHz	69 μ V/V	
	(20 to 50) kHz	0.11 mV/V	
	(50 to 100) kHz	0.21 mV/V	
AC Voltage – Measure	(100 to 700) V		Agilent 3458A Multimeter
	40 Hz to 1 kHz	0.14 mV/V	
AC High Voltage – Measure	(8.5 to 85) kV 60 Hz	0.6 % of reading	Ross Engineering VD120 Voltage Divider w/ Agilent 34401A Multimeter



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source	(2.2 to 200) mV		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	38 μ V	
	(1 to 100) kHz	34 μ V	
	(100 to 500) kHz	310 μ V	
	200 mV to 2 V		
	10 Hz to 1 kHz	45 μ V	
	(1 to 100) kHz	68 μ V	
	100 kHz to 1 MHz	950 μ V	
	(2 to 20) V		
	10 Hz to 1 kHz	42 μ V	
	(1 to 10) kHz	55 μ V	
	(10 to 50) kHz	7.1 mV	
	(20 to 200) V		
	10 Hz to 1 kHz	5 mV	
(1 to 40) kHz	6 mV		
(40 to 100) kHz	16 mV		
(200 to 1 000) V			
10 Hz to 1 kHz	40 mV		
(1 to 10) kHz	52 mV		
AC Voltage – Source	(2.2 to 200) μ A		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	0.17 μ A	
	(1 to 10) kHz	0.37 μ A	
	(10 to 30) kHz	0.67 μ A	
	200 μ A to 2 mA		
	10 Hz to 1 kHz	0.28 μ A	
(1 to 10) kHz	13 μ A		
(10 to 30) kHz	25 μ A		
AC Voltage – Source	(2 to 20) mA		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	3 μ A	
	(1 to 10) kHz	58 μ A	
	(10 to 30) kHz	30 μ A	
	(20 to 200) mA		
	10 Hz to 1 kHz	350 μ A	
	(1 to 10) kHz	0.82 mA	
	(10 to 30) kHz	1.6 mA	
	200 mA to 2 A		
	10 Hz to 1 kHz	2.8 mA	
	(1 to 10) kHz	1.3 mA	
	(10 to 30) kHz	5.4 mA	
	(2 to 30) A		
10 Hz to 1 kHz	8.7 mA		
(1 to 10) kHz	8.7 mA		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source	(1 to 220) μ A (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz 220 μ A to 2.2 mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (2.2 to 22) mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (22 to 220) mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.32 mA/A 0.21 mA/A 0.16 mA/A 0.34 mA/A 1.4 mA/A 0.27 mA/A 0.18 mA/A 0.14 mA/A 0.25 mA/A 1.4 mA/A 0.278 mA/A 0.18 mA/A 0.14 mA/A 0.23 mA/A 1.4 mA/A 0.27 mA/A 0.18 mA/A 0.14 mA/A 0.36 mA/A 1.2 mA/A	Fluke 5720A Multiproduct Calibrator
AC Current – Source	220 mA to 1 A 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (1 to 2.2) A 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (2.02 to 30) A (30 to 99) Hz (45 to 99) Hz 100 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.35 mA/A 0.53 mA/A 7.2 mA/A 0.3 mA/A 0.53 mA/A 7.2 mA/A 14 mA/A 14 mA/A 15 mA/A 18 mA/A 22 mA/A	Fluke 5720A Multiproduct Calibrator
AC Current – Source	(2.2 to 11) A (45 to 65) Hz (65 to 500) Hz 500 Hz to 1 kHz	7 mA/A 7 mA/A 8.1 mA/A	Fluke 5500A/6 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure	(1 to 100) μ A		Agilent 3458A Multimeter
	(10 to 20) Hz	0.58 mA/A	
	(20 to 45) Hz	0.4 mA/A	
	(45 to 100) Hz	0.4 mA/A	
	100 Hz to 5 kHz	0.57 mA/A	
	100 μ A to 1 mA		
	(10 to 20) Hz	0.36 mA/A	
	(20 to 45) Hz	0.24 mA/A	
	(45 to 100) Hz	0.22 mA/A	
	100 Hz to 5 kHz	0.39 mA/A	
	(1 to 10) mA		
	(10 to 20) Hz	0.39 mA/A	
	(20 to 45) Hz	0.27 mA/A	
	(45 to 100) Hz	0.27 mA/A	
100 Hz to 5 kHz	0.36 mA/A		
(10 to 100) mA			
(10 to 20) Hz	0.39 mA/A		
(20 to 45) Hz	0.26 mA/A		
(45 to 100) Hz	0.26 mA/A		
100 Hz to 5 kHz	0.34 mA/A		
AC Current – Measure	100 mA to 1 A		Agilent 3458A Multimeter
	(10 to 20) Hz	0.45 mA/A	
	(20 to 45) Hz	0.41 mA/A	
	(45 to 100) Hz	0.41 mA/A	
	100 Hz to 5 kHz	0.65 mA/A	
Resistance – Source	1 Ω	0.12 m Ω	Transmille 4010 Multi Product Calibrator
	10 Ω	0.28 m Ω	
	100 Ω	1.4 m Ω	
	1 k Ω	11 m Ω	
	10 k Ω	0.11 Ω	
	100 k Ω	1.8 Ω	
	1 M Ω	0.24 k Ω	
	10 M Ω	0.48 k Ω	
100 M Ω	13 k Ω		
Resistance – Source	1 G Ω	1.2 k Ω	IET SRL-1G Resistance Standard

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Measure	Up to 1 Ω	0.15 m Ω	Agilent 3458A Multimeter
	(1 to 10) Ω	0.49 m Ω	
	(10 to 100) Ω	13 m Ω	
	100 V to 1 k Ω	13 m Ω	
	(1 to 10) k Ω	0.13 Ω	
	(10 to 100) k Ω	1.5 Ω	
	100 k Ω to 1 M Ω	25 Ω	
	(1 to 10) M Ω	0.49 k Ω	
(10 to 100) M Ω	27 k Ω		
Oscilloscopes			Fluke 5500A/6 Multiproduct Calibrator
DC Voltage, 50 Ω	(0 to 2.2) V	5.4 mV/V	
DC Voltage, 1 M Ω	(0 to 33) V	3.6 mV/V	
Square Wave Signal 50 Ω at 1 kHz	1.8 mV to 2.2 V	6 mV/V	
Square Wave Signal 1 M Ω at 1 kHz	1.8 mV to 105 V	4.8 mV/V	
Leveled Sine Wave Flatness (relative to 50 kHz)	50 kHz to 100 MHz (100 to 300) MHz	35 mV/V 27 mV/V	
Time Marker 50 Ω	2 ns to 5 s	1.3 μ s/s	
Rise/Fall Time	400 ps	170 ps	
Capacitance – Source Simulated (Variable)	(1 to 9) μ F	17 nF/ μ F	Transmille 4010 Multi Product Calibrator
	(10 to 90) μ F	13 nF/ μ F	
	(100 to 900) μ F	9 nF/ μ F	
	(1 to 9) mF	12 μ F/mF	
	(10 – 50) mF	11 μ F/mF	
Capacitance – Source Passive (Fixed)	1 nF	4.3 pF	Transmille 4010 Multi Product Calibrator
	5 nF	32 pF	
	10 nF	47 pF	
	100 nF	300 pF	
	1 μ F	3 nF	
	10 μ F	32 nF	



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators	Type E (-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.58 °C 0.13 °C 0.12 °C 0.19 °C 0.19 °C 0.27 °C 0.14 °C 0.12 °C 0.17 °C 0.23 °C 0.32 °C 0.19 °C 0.14 °C 0.24 °C 0.31 °C 0.7 °C 0.13 °C 0.12 °C 0.14 °C	Transmille 4010 Multi Product Calibrator
Electrical Simulation of RTD Indicators	Pt 385 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 800) °C Pt 3926 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 800) °C Pt 3916 100 Ω (-200 to -190) °C (-190 to -80) °C (-80 to 0) °C (0 to 800) °C	0.04 °C 0.04 °C 0.04 °C 0.03 °C 0.16 °C 0.64 °C 0.64 °C 0.16 °C 0.64 °C 0.64 °C 0.64 °C	Transmille 4010 Multi Product Calibrator

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pipettes	(0.1 to 5) μL (5 to 25) μL (25 to 100) μL (100 to 200) μL	0.2 μL 0.31 μL 0.72 μL 1.4 μL	Artel PCS 3 Photometric Pipette Calibration System
Torque Tools	(5 to 50) lbf-in (30 to 400) lbf-in (100 to 1 000) lbf-in (20 to 250) lbf-ft (100 to 1 000) lbf-ft	1.3 % of reading 0.66 % of reading 0.43 % of reading 0.49 % of reading 1.3 % of reading	CDI Torque Calibrator
Pressure (Pneumatic) – Air	(-14.5 to -0.01) psi (0.01 to 300) psi	0.2 % of reading 0.1 % of reading	Heise PTE-1 w/HQS-2 Pressure Calibrator
Pressure (Pneumatic) – Nitrogen	(0.2 to 50) psig (2 to 1 000) psig	0.004 psi 0.06 psi	Ruska 2465A Gas Piston Pressure System
Pressure (Hydraulic)	(200 to 10 000) psi	0.02 % of reading	Fluke P3214-PSI Dead Weight Tester

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure	(-40 to -15) $^{\circ}\text{C}$ (-15 to 0) $^{\circ}\text{C}$ (0 to 50) $^{\circ}\text{C}$ (50 to 250) $^{\circ}\text{C}$ (250 to 400) $^{\circ}\text{C}$	0.83 $^{\circ}\text{C}$ 0.04 $^{\circ}\text{C}$ 0.05 $^{\circ}\text{C}$ 0.05 $^{\circ}\text{C}$ 0.07 $^{\circ}\text{C}$	ASL F250 Thermometer with 935-14-16 Probe

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Source	10 MHz	13×10^{-9} Hz	Agilent 53220A Counter
Frequency – Measure	0.1 Hz to 350 MHz	1.1 $\mu\text{Hz}/\text{Hz}$	Agilent 53220A Counter
Tachometers – Non-Contact	(1 to 100 000) RPM	0.015 % of reading	Agilent 33250A Signal Generator

[Return to Site Listing \(top\)](#)

[Go to Notes \(bottom\)](#)

Accredited Services performed at satellite laboratory

(AC-1959.01)

Process Measurement Company

2475 West 2nd Avenue, Unit 34A

Denver, CO 80223

Jake Bates 303-937-7226

jbates@processmeasurementco.com

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	(2.2 to 200) mV	36 μ V/V	Transmille 4010 Multiproduct Calibrator
	200 mV to 2 V	19 μ V/V	
	(2 to 20) V	17 μ V/V	
	(20 to 200) V	15 μ V/V	
	(200 to 1 000) V	20 μ V/V	
DC Voltage – Measure	Up to 100 mV	0.11 mV/V	Agilent 3458A Multimeter
	100 mV to 1 V	16 μ V/V	
	(1 to 10) V	65 μ V/V	
	(10 to 100) V	71 μ V/V	
	100 V to 1 kV	66 μ V/V	
DC High Voltage – Measure	(19 to 195) kV	0.68 % of reading	Ross Engineering VD195 Voltage Divider w/ Agilent 34401A Multimeter
DC Current – Source	(2.2 to 200) μ A	590 μ A/A	Transmille 4010 Multiproduct Calibrator
	200 μ A to 2 mA	199 μ A/A	
	(2 to 20) mA	75 μ A/A	
	(20 to 200) mA	75 μ A/A	
	200 mA to 2 A	166 μ A/A	
	(2 to 30) A	0.3 mA/A	
DC Current – Measure	(0.1 to 1) μ A	1.5 mA/A	Agilent 3458A Multimeter
	(1 to 10) μ A	20 μ A/A	
	(10 to 100) μ A	0.12 μ A/A	
	(0.1 to 1) mA	49 μ A/A	
	(1 to 10) mA	48 μ A/A	
	(10 to 100) mA	53 μ A/A	
	(0.1 to 1) A	0.11 mA/A	
	(1 to 3) A	0.38 mA/A	Agilent 34401A Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source	(2.2 to 200) mV		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	38 μ V	
	(1 to 100) kHz	34 μ V	
	(100 to 500) kHz	310 μ V	
	200 mV to 2 V		
	10 Hz to 1 kHz	45 μ V	
	(1 to 100) kHz	68 μ V	
	100 kHz to 1 MHz	950 μ V	
	(2 to 20) V		
	10 Hz to 1 kHz	42 μ V	
	(1 to 10) kHz	55 μ V	
	(10 to 50) kHz	7.1 mV	
	(20 to 200) V		
	10 Hz to 1 kHz	5 mV	
(1 to 40) kHz	6 mV		
(40 to 100) kHz	16 mV		
(200 to 1 000) V			
10 Hz to 1 kHz	40 mV		
(1 to 10) kHz	52 mV		
AC Voltage – Measure	(0.1 to 10) mV		Agilent 3458A Multimeter
	(1 to 40) Hz	0.81 mV/V	
	40 Hz to 1 kHz	0.61 mV/V	
	(1 to 20) kHz	0.61 mV/V	
	(20 to 50) kHz	0.75 mV/V	
	(50 to 100) kHz	1.3 mV/V	
	(100 to 300) kHz	2.5 mV/V	
	(10 to 100) mV		
	(1 to 40) Hz	0.47 mV/V	
	40 Hz to 1 kHz	0.19 mV/V	
	(1 to 20) kHz	0.19 mV/V	
	(20 to 50) kHz	0.34 mV/V	
	(50 to 100) kHz	0.75 mV/V	
	(100 to 300) kHz	1.3 mV/V	
300 kHz to 1 MHz	3.8 mV/V		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	100 mV to 1 V (1 to 40) Hz	0.43 mV/V	Agilent 3458A Multimeter
	40 Hz to 1 kHz (1 to 20) kHz	69 μ V/V	
	(20 to 50) kHz	69 μ V/V	
	(50 to 100) kHz	0.12 mV/V	
	(100 to 300) kHz	0.17 mV/V	
	300 kHz to 1 MHz	0.59 mV/V	
	(1 to 10) V	2.37 mV/V	
	(1 to 40) Hz	0.45 mV/V	
	40 Hz to 1 kHz	85 μ V/V	
	(1 to 20) kHz	84 μ V/V	
	(20 to 50) kHz	0.12 mV/V	
	(50 to 100) kHz	0.16 mV/V	
	(100 to 300) kHz	0.43 mV/V	
	300 kHz to 1 MHz	2.4 mV/V	
	(10 to 100) V		
(1 to 40) Hz	0.44 mV/V		
40 Hz to 1 kHz	91 μ V/V		
(1 to 20) kHz	79 μ V/V		
(20 to 50) kHz	0.14 mV/V		
(50 to 100) kHz	0.23 mV/V		
(100 to 750) V			
45 Hz to 1 kHz	0.41 mV/V		
(1 to 20) kHz	94 μ V/V		
AC High Voltage – Measure	(13 to 138) kV 60 Hz	0.55 % of reading	Ross Engineering VD85 Voltage Divider w/ Agilent 34401A Multimeter
AC Current – Source	(2.2 to 200) μ A		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	0.17 μ A	
	(1 to 10) kHz	0.37 μ A	
	(10 to 30) kHz	0.67 μ A	
	200 μ A to 2 mA		
	10 Hz to 1 kHz	0.28 μ A	
	(1 to 10) kHz	13 μ A	
	(10 to 30) kHz	25 μ A	
	(2 to 20) mA		
10 Hz to 1 kHz	3 μ A		
(1 to 10) kHz	58 μ A		
(10 to 30) kHz	30 μ A		



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source	(20 to 200) mA		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	350 μ A	
	(1 to 10) kHz	0.82 mA	
	(10 to 30) kHz	1.6 mA	
	200 mA to 2 A		
	10 Hz to 1 kHz	2.8 mA	
	(1 to 10) kHz	1.3 mA	
	(10 to 30) kHz	5.4 mA	
AC Current – Measure	(2 to 30) A		Agilent 3458A Multimeter
	10 Hz to 1 kHz	8.7 mA	
	(1 to 10) kHz	8.7 mA	
	(1 to 100) μ A		
	(10 to 20) Hz	0.56 mA/A	
	(20 to 45) Hz	1.3 mA/A	
	(45 to 100) Hz	1.3 mA/A	
	100 Hz to 5 kHz	0.58 mA/A	
	100 μ A to 1 mA		
	(10 to 20) Hz	0.45 mA/A	
	(20 to 45) Hz	0.59 mA/A	
	(45 to 100) Hz	0.59 mA/A	
	100 Hz to 5 kHz	1.2 mA/A	
	(1 to 10) mA		
	(10 to 20) Hz	0.46 mA/A	
	(20 to 45) Hz	0.22 mA/A	
	(45 to 100) Hz	0.21 mA/A	
	100 Hz to 5 kHz	0.33 mA/A	
	(10 to 100) mA		
	(10 to 20) Hz	0.43 mA/A	
(20 to 45) Hz	0.21 mA/A		
(45 to 100) Hz	0.21 mA/A		
100 Hz to 5 kHz	0.32 mA/A		
100 mA to 1 A			
(10 to 20) Hz	0.38 mA/A		
(20 to 45) Hz	0.37 mA/A		
(45 to 100) Hz	0.37 mA/A		
100 Hz to 5 kHz	0.66 mA/A		
(1 to 3) A	(10 to 45) Hz	2.6 mA/A	Agilent 34401A Multimeter
	45 Hz to 1 kHz	1.4 mA/A	
	(1 to 5) kHz	9 mA/A	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Resistance – Source	0.1 Ω	6 m Ω	Transmille 4010 Multiproduct Calibrator	
	1 Ω	6 m Ω		
	10 Ω	6 m Ω		
	100 Ω	7 m Ω		
	1 k Ω	23 m Ω		
	10 k Ω	0.13 Ω		
	100 k Ω	2.4 Ω		
	1 M Ω	30 Ω		
	10 M Ω	1.4 K Ω		
	100 M Ω	0.18 M Ω		
	1 G Ω	13 M Ω		
Resistance – Measure 4 Wire	(0 to 1) Ω	0.12 m Ω	Agilent 3458A Multimeter	
	(1 to 10) Ω	29 m Ω		
	(10 to 100) Ω	13 m Ω		
	(0.1 to 1) k Ω	10 m Ω		
	(1 to 10) k Ω	0.1 Ω		
	(10 to 100) k Ω	0.13 Ω		
	100 k Ω to 1 M Ω	24 Ω		
	(1 to 10) M Ω	0.49 k Ω		
	(10 to 100) M Ω	14 k Ω		
	100 M Ω to 1 G Ω	0.31 M Ω		
Oscilloscopes	DC Voltage, 50 Ω	(0 to 2.2) V	4.1 mV/V	Fluke 5500A/3 Multiproduct Calibrator
	DC Voltage, 1 M Ω	(0 to 33) V	2.9 mV/V	
	Square Wave Signal 50 Ω at 1 kHz	1.8 mV to 2.2 V	4.2 mV/V	
	Square Wave Signal 1 M Ω at 1 kHz	1.8 mV to 105 V	2.8 mV/V	
	Leveled Sine Wave Flatness (relative to 50kHz)	50 kHz to 100 MHz	0.41 V/V	
		(100 to 300) MHz	0.34 V/V	
	Time Marker 50 Ω	2 ns to 5 s	1.2 μ s/s	
Rise/ Fall Time	400 ps	80 ps		
Capacitance – Source @ 400 Hz	(1.1 to 3.3) μ F	5.7 mF/F	Fluke 5500A/3 Multiproduct Calibrator	
	(3.3 to 11) μ F	5.2 mF/F		



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance – Source @ 1 kHz	(330 to 500) pF 500 pF to 1.1 nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF 330 nF to 1.1 μF	40 mF/F 18 mF/F 9.7 mF/F 7 mF/F 7 mF/F 4 mF/F 4.3 mF/F 3 mF/F	Fluke 5500A/3 Multiproduct Calibrator
Capacitance – Source @ 100 Hz	(11 to 33) μF (33 to 110) μF (110 to 330) μF 330 μF to 1.1 mF	6 mF/F 7.1 mF/F 9.3 mF/F 13 mF/F	Fluke 5500A/3 Multiproduct Calibrator
Electrical Simulation of Thermocouple Indicators	Type E (-250 to -100) °C (-100 to -25) °C (-250 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.58 °C 0.2 °C 0.18 °C 0.2 °C 0.25 °C 0.32 °C 0.2 °C 0.18 °C 0.21 °C 0.28 °C 0.39 °C 0.22 °C 0.2 °C 0.31 °C 0.47 °C 0.73 °C 0.29 °C 0.2 °C 0.18 °C	Fluke 5500A/3 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 385, 100 Ω		Fluke 5500A/3 Multiproduct Calibrator
	(-200 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 300) °C	0.11 °C	
	(300 to 400) °C	0.12 °C	
	(400 to 630) °C	0.14 °C	
	(630 to 800) °C	0.27 °C	
	Pt 3926, 100 Ω		
	(-200 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 300) °C	0.11 °C	
	(300 to 400) °C	0.12 °C	
	(400 to 630) °C	0.14 °C	
	Pt 3916, 100 Ω		
	(-200 to -190) °C	0.29 °C	
	(-190 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.07 °C	
	(100 to 260) °C	0.08 °C	
	(260 to 300) °C	0.09 °C	
	(300 to 400) °C	0.11 °C	
	(400 to 600) °C	0.12 °C	
	(600 to 630) °C	0.27 °C	
	Pt 385, 200 Ω		
	(-200 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.05 °C	
(0 to 100) °C	0.05 °C		
(100 to 260) °C	0.06 °C		
(260 to 300) °C	0.14 °C		
(300 to 400) °C	0.15 °C		
(400 to 600) °C	0.17 °C		
(600 to 630) °C	0.19 °C		



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Electrical Simulation of RTD Indicators	Pt 385, 500 Ω			
	(-200 to -80) °C	0.05 °C		
	(-80 to 0) °C	0.06 °C		
	(0 to 100) °C	0.06 °C		
	(100 to 260) °C	0.07 °C		
	(260 to 300) °C	0.09 °C		
	(300 to 400) °C	0.09 °C		
	(400 to 600) °C	0.11 °C		
	(600 to 630) °C	0.13 °C		
	Pt 385, 1 000 Ω			
	(-200 to -80) °C	0.04 °C		
	(-80 to 0) °C	0.04 °C		
	(0 to 100) °C	0.05 °C		
	(100 to 260) °C	0.06 °C		
	(260 to 300) °C	0.07 °C		
	(300 to 400) °C	0.08 °C		
	(400 to 600) °C	0.08 °C		
	(600 to 630) °C	0.27 °C		
	PtNi 385, 120 Ω (Ni120)			
(-80 to 0) °C	0.09 °C			
(0 to 100) °C	0.09 °C			
(100 to 260) °C	0.17 °C			
Cu 427, 10 Ω				
(-100 to 260) °C	0.35 °C			
			Fluke 5500A/3 Multiproduct Calibrator	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools	(5 to 50) lbf-in	0.69 % of reading	CDI Torque Calibrator
	(30 to 400) lbf-in	0.61 % of reading	
	(100 to 1 000) lbf-in	1.2 % of reading	
	(20 to 250) lbf-ft	0.77 % of reading	
	(60 to 600) lbf-ft	0.85 % of reading	
Pressure	(100 to 10 000) psi	0.006 9 % of reading	Deadweight Tester

[Return to Site Listing \(top\)](#)

[Go to Notes \(bottom\)](#)

Accredited Services performed at satellite laboratory

(AC-1959.02)

Process Measurement Company

4865 G Street

Omaha, NE 68117

Carl Duncan 402-517-5012

cduncan@processmeasurementco.com

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	Up to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V 330 V to 1 kV	69 μ V/V 52 μ V/V 52 μ V/V 57 μ V/V 60 μ V/V	Fluke 5500A Multiproduct Calibrator
DC Voltage – Measure	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	85 μ V/V 47 μ V/V 40 μ V/V 51 μ V/V 55 μ V/V	Agilent 34401A Multimeter
DC Current – Source	Up to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 2.2 A (2.2 to 11) A	0.016 mA/A 0.015 mA/A 0.02 mA/A 0.03 mA/A 0.71 mA/A	Fluke 5500A Multiproduct Calibrator
DC Current – Measure	Up to 10 mA (10 to 100) mA 100 mA to 1 A (1 to 3) A	0.07 mA/A 0.55 mA/A 1.1 mA/A 1.5 mA/A	Agilent 34401A Multimeter
AC Voltage – Source	(1 to 33) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.11 mV/V 0.11 mV/V 1.1 mV/V 3.7 mV/V 5.3 mV/V	Fluke 5500A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source	(33 to 330) mV		Fluke 5500A Multiproduct Calibrator
	(10 to 45) Hz	0.05 mV/V	
	45 Hz to 10 kHz	0.48 mV/V	
	(10 to 20) kHz	1.2 mV/V	
	(20 to 50) kHz	2 mV/V	
	(50 to 100) kHz	3.7 mV/V	
	330 mV to 3.3 V		
	(10 to 45) Hz	0.03 mV/V	
	45 Hz to 10 kHz	0.04 mV/V	
	(10 to 20) kHz	0.97 mV/V	
	(20 to 50) kHz	1.7 mV/V	
	(50 to 100) kHz	3.7 mV/V	
	(3.3 to 33) V		
	(20 to 45) Hz	0.04 mV/V	
	45 Hz to 10 kHz	0.04 mV/V	
	(10 to 20) kHz	1 mV/V	
	(20 to 100) kHz	3.7 mV/V	
	(33 to 330) V		
45 to 1 kHz	0.85 mV/V		
(1 to 10) kHz	0.7 mV/V		
(10 to 20) kHz	1.2 mV/V		
330 V to 1.02 kV			
45 to 1 kHz	0.06 mV/V		
(1 to 5) kHz	2.6 mV/V		
(5 to 20) kHz	3.2 mV/V		
AC Voltage – Measure	Up to 100 mV		Agilent 34401A Multimeter
	(5 to 10) Hz	0.84 mV/V	
	10 Hz to 20 kHz	1.4 mV/V	
	(20 to 50) kHz	6.7 mV/V	
	(50 to 100) kHz	11 mV/V	
	(100 to 300) kHz	54 mV/V	
	100 mV to 1 V		
	(5 to 10) Hz	1 mV/V	
	10 Hz to 20 kHz	1 mV/V	
	(20 to 50) kHz	1 mV/V	
	(50 to 100) kHz	7 mV/V	
	(1 to 10) V		
	(5 to 10) Hz	4 mV/V	
	10 Hz to 20 kHz	4.1 mV/V	
(20 to 50) kHz	15 mV/V		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	(10 to 100) V 45 Hz to 1 kHz (1 to 10) kHz (10 to 10) kHz	7.8 mV/V 7.9 mV/V 15 mV/V	Agilent 34401A Multimeter
	(100 to 750) V 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	5.5 mV/V 5.5 mV/V 1.7 mV/V	
AC Current – Source	(3.3 to 33) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	2.5 mA/A 1.9 mA/A 19 mA/A 2.9 mA/A 7.6 mA/A	Fluke 5500A Multiproduct Calibrator
	(33 to 330) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	3 mA/A 0.23 mA/A 2.5 mA/A 8.5 mA/A 7 mA/A	
	330 mA to 2.2 A 45 Hz to 1 kHz (1 to 5) kHz	2.5 mA/A 2.7 mA/A	
	220 mA to 11 A 45 to 1 kHz	15 mA/A	
	Up to 1 A 10 Hz to 5 kHz	1.4 mA/A	
	(1 to 3) A 10 Hz to 5 kHz	4.1 mA/A	
AC Current – Measure			Agilent 34401A Multimeter
Capacitance – Source @ 1 kHz	(3.3 to 11) nF	6 mF/F	Fluke 5500A Multiproduct Calibrator
	(11 to 33) nF	5.9 mF/F	
	(33 to 110) nF	5.9 mF/F	
	(110 to 330) nF	8 mF/F	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source	Up to 11 Ω	9.3 m Ω	Fluke 5500A Multiproduct Calibrator
	(11 to 33) Ω	18 m Ω	
	(33 to 110) Ω	21 m Ω	
	(110 to 330) Ω	36 m Ω	
	330 Ω to 1.1 k Ω	0.14 Ω	
	(1.1 to 3.3) k Ω	0.33 Ω	
	(3.3 to 11) k Ω	1.3 Ω	
	(11 to 33) k Ω	3.2 Ω	
	(33 to 110) k Ω	16 Ω	
	(110 to 330) k Ω	43 Ω	
	330 k Ω to 1.1 M Ω	200 Ω	
	(1.1 to 3.3) M Ω	790 Ω	
	(3.3 to 11) M Ω	7.6 k Ω	
	(11 to 33) M Ω	35 k Ω	
(33 to 110) M Ω	0.63 M Ω		
Resistance – Measure 4 Wire	(10 to 100) Ω	18 m Ω	Agilent 34401A Multimeter
	100 Ω to 1 k Ω	0.21 m Ω	
	(1 to 10) k Ω	36 m Ω	
	(10 to 100) k Ω	0.33 Ω	
	100 k Ω to 1 M Ω	0.16 k Ω	
	(1 to 10) M Ω	200 Ω	
Electrical Simulation of Thermocouple Indicators	Type E		Fluke 5500A Multiproduct Calibrator
	(-250 to -100) $^{\circ}\text{C}$	0.59 $^{\circ}\text{C}$	
	(-100 to -25) $^{\circ}\text{C}$	0.24 $^{\circ}\text{C}$	
	(-250 to 350) $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$	
	(350 to 650) $^{\circ}\text{C}$	0.21 $^{\circ}\text{C}$	
	(650 to 1 000) $^{\circ}\text{C}$	0.26 $^{\circ}\text{C}$	
	Type J		
	(-210 to -100) $^{\circ}\text{C}$	0.32 $^{\circ}\text{C}$	
	(-100 to -30) $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$	
	(-30 to 150) $^{\circ}\text{C}$	0.19 $^{\circ}\text{C}$	
	(150 to 760) $^{\circ}\text{C}$	0.21 $^{\circ}\text{C}$	
	(760 to 1 200) $^{\circ}\text{C}$	0.28 $^{\circ}\text{C}$	



ANSI National Accreditation Board

Electrical – DC/Low Frequency

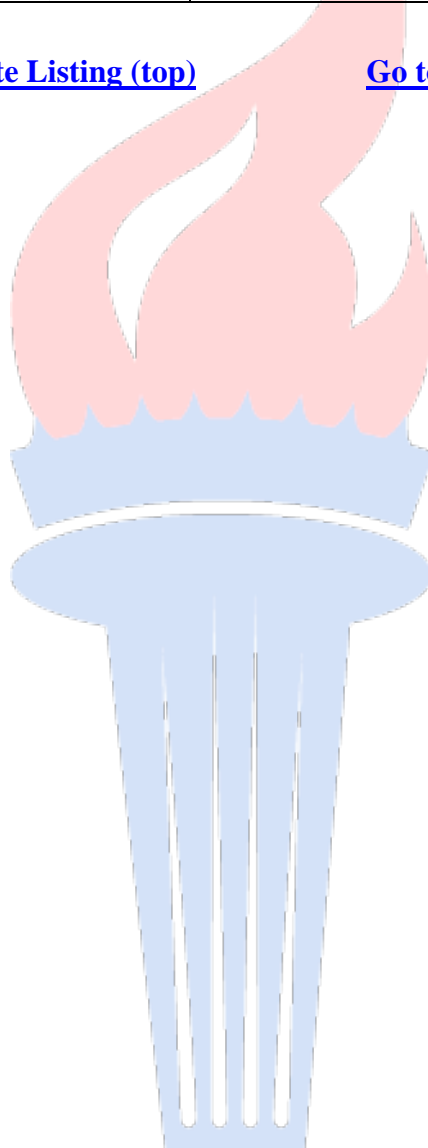
Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators	Type K		Fluke 5500A Multiproduct Calibrator
	(-200 to -100) °C	0.4 °C	
	(-100 to -25) °C	0.25 °C	
	(-25 to 120) °C	0.2 °C	
	(120 to 1 000) °C	0.32 °C	
	(1 000 to 1 372) °C	0.48 °C	
	Type T		
	(-250 to -150) °C	0.73 °C	
	(-150 to 0) °C	0.31 °C	
	(0 to 120) °C	0.2 °C	
(120 to 400) °C	0.18 °C		
Electrical Simulation of RTD Indicators	Pt 385, 100 Ω		Fluke 5500A Multiproduct Calibrator
	(-200 to -80) °C	0.14 °C	
	(-80 to 0) °C	0.14 °C	
	(0 to 100) °C	0.15 °C	
	(100 to 300) °C	0.15 °C	
	(300 to 400) °C	0.17 °C	
	(400 to 630) °C	0.17 °C	
	(630 to 800) °C	0.3 °C	
	Pt 3926, 100 Ω		
	(-200 to -80) °C	0.07 °C	
	(-80 to 0) °C	0.07 °C	
	(0 to 100) °C	0.09 °C	
	(100 to 300) °C	0.11 °C	
	(300 to 400) °C	0.12 °C	
	(400 to 630) °C	0.15 °C	
	Pt 3916, 100 Ω		
	(-200 to -190) °C	0.29 °C	
	(-190 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.08 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 260) °C	0.09 °C	
(260 to 300) °C	0.1 °C		
(300 to 400) °C	0.11 °C		
(400 to 600) °C	0.11 °C		
(600 to 630) °C	0.27 °C		

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools	(5 to 50) lbf-in	0.57 % of reading	CDI Torque Calibrator
	(30 to 400) lbf-in	0.53 % of reading	
	(100 to 1 000) lbf-in	0.45 % of reading	
	(20 to 250) lbf-ft	0.6 % of reading	
	(60 to 600) lbf-ft	0.69 % of reading	

[Return to Site Listing \(top\)](#)

[Go to Notes \(bottom\)](#)



Accredited Services performed at satellite laboratory

(AC-1959.03)

Process Measurement Company

3100 South 44th Street
Kansas City, KS 66106
Jake Gilliam 913-384-2064
jgilliam@processmeasurementco.com

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	Up to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V 330 V to 1 kV	88 μ V/V 70 μ V/V 76 μ V/V 85 μ V/V 65 μ V/V	Fluke 5500A/6 Multiproduct Calibrator
DC Voltage – Measure	(1 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	15 μ V/V 6.8 μ V/V 4.5 μ V/V 6.4 μ V/V 8.2 μ V/V	Agilent 3458A Multimeter
DC High Voltage – Measure	(5 to 30) kV	0.15 % of reading	Ross Engineering VD30 Voltage Divider w/ Fluke 8846A Multimeter
DC Current – Source	Up to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 2.2 A (2.2 to 11) A	0.25 mA/A 0.17 mA/A 0.2 mA/A 0.38 mA/A 2.6 mA/A	Fluke 5500A/6 Multiproduct Calibrator
DC Current – Measure	(0.1 to 1) μ A (1 to 10) μ A (10 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	6.9 mA/A 0.9 mA/A 0.24 mA/A 83 μ A/A 0.11 mA/A 0.13 mA/A 0.16 mA/A	Agilent 3458A Multimeter
	(1 to 3) A	1.6 mA/A	Fluke 8846A Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source	(1 to 33) mV		Fluke 5500A/6 Multiproduct Calibrator
	(10 to 45) Hz	12 mV/V	
	45 Hz to 10 kHz	9.7 mV/V	
	(10 to 20) kHz	1.1 mV/V	
	(20 to 50) kHz	3.7 mV/V	
	(50 to 100) kHz	5.3 mV/V	
	(33 to 330) mV		
	(10 to 45) Hz	4.9 mV/V	
	45 Hz to 10 kHz	1.3 mV/V	
	(10 to 20) kHz	1.2 mV/V	
	(20 to 50) kHz	2 mV/V	
	(50 to 100) kHz	3.7 mV/V	
	330 mV to 3.3 V		
	(10 to 45) Hz	1.8 mV/V	
	45 Hz to 10 kHz	0.4 mV/V	
	(10 to 20) kHz	0.97 mV/V	
	(20 to 50) kHz	1.7 mV/V	
	(50 to 100) kHz	3.7 mV/V	
	(3.3 to 33) V		
	(20 to 45) Hz	1.8 mV/V	
45 Hz to 10 kHz	0.5 mV/V		
(10 to 20) kHz	1 mV/V		
(20 to 100) kHz	3.7 mV/V		
(33 to 330) V			
45 to 1 kHz	0.61 mV/V		
(1 to 10) kHz	1 mV/V		
(10 to 20) kHz	1.2 mV/V		
330 V to 1.02 kV			
45 to 1 kHz	0.71 mV/V		
(1 to 5) kHz	2.6 mV/V		
(5 to 20) kHz	3.2 mV/V		
AC Voltage – Measure	Up to 100 mV		Agilent 3458A Multimeter
	(5 to 10) Hz	4.9 mV/V	
	10 Hz to 20 kHz	1.2 mV/V	
	(20 to 50) kHz	12 mV/V	
	(50 to 100) kHz	13 mV/V	
	(100 to 300) kHz	14 mV/V	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	100 mV to 1 V (5 to 10) Hz	4.8 mV/V	Agilent 3458A Multimeter
	10 Hz to 20 kHz (20 to 50) kHz	1.1 mV/V 2 mV/V	
	(50 to 100) kHz (1 to 10) V	7.9 mV/V	
	(5 to 10) Hz	2.1 mV/V	
	10 Hz to 20 kHz (20 to 50) kHz	0.54 mV/V 2.8 mV/V	
	(10 to 100) V		
	45 Hz to 1 kHz (1 to 10) kHz	0.7 mV/V 1.5 mV/V	
	(10 to 10) kHz	1.5 mV/V	
	(100 to 750) V		
	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	2.6 mV/V 3.1 mV/V 3.1 mV/V	
AC High Voltage – Measure	(13 to 138) kV 60 Hz	0.6 % of reading	Ross Engineering VD30 Voltage Divider w/ Fluke 8846A Multimeter
AC Current – Source	(3.3 to 33) mA (10 to 20) Hz	2.5 mA/A	Fluke 5500A/6 Multiproduct Calibrator
	(20 to 45) Hz	1.3 mA/A	
	45 Hz to 1 kHz (1 to 5) kHz	12 mA/A 2.4 mA/A	
	(5 to 10) kHz	7.3 mA/A	
	(33 to 330) mA (10 to 20) Hz	2.4 mA/A	
	(20 to 45) Hz	0.23 mA/A	
	45 Hz to 1 kHz (1 to 5) kHz	1.2 mA/A 2.4 mA/A	
	(5 to 10) kHz	7 mA/A	
	330 mA to 2.2 A 45 Hz to 1 kHz (1 to 5) kHz	2.5 mA/A 2.9 mA/A	
	(2.2 to 11) A (45 to 65) Hz	1 mA/A	
	(65 to 500) Hz	1.5 mA/A	
	500 Hz to 1 kHz	4.1 mA/A	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure	(1 to 100) μ A		Agilent 3458A Multimeter
	(10 to 20) Hz	1.6 mA/A	
	(20 to 45) Hz	0.52 mA/A	
	(45 to 100) Hz	0.36 mA/A	
	100 Hz to 5 kHz	0.73 mA/A	
	100 μ A to 1 mA		
	(10 to 20) Hz	0.39 mA/A	
	(20 to 45) Hz	0.23 mA/A	
	(45 to 100) Hz	0.25 mA/A	
	100 Hz to 5 kHz	0.43 mA/A	
	(1 to 10) mA		
	(10 to 20) Hz	0.43 mA/A	
	(20 to 45) Hz	0.2 mA/A	
	(45 to 100) Hz	0.21 mA/A	
	100 Hz to 5 kHz	0.33 mA/A	
(10 to 100) mA			
(10 to 20) Hz	0.45 mA/A		
(20 to 45) Hz	0.23 mA/A		
(45 to 100) Hz	0.21 mA/A		
100 Hz to 5 kHz	0.32 mA/A		
100 mA to 1 A			
(10 to 20) Hz	0.38 mA/A		
(20 to 45) Hz	0.4 mA/A		
(45 to 100) Hz	0.37 mA/A		
100 Hz to 5 kHz	0.66 mA/A		
(1 to 3) A			Fluke 8846A Multimeter
(10 to 45) Hz	3.1 mA/A		
45 Hz to 1 kHz	2.3 mA/A		
(1 to 5) kHz	9 mA/A		
Capacitance – Source @ 1 kHz	(3.3 to 11) nF	6.9 mF/F	Fluke 5500A/6 Multiproduct Calibrator
	(11 to 33) nF	7 mF/F	
	(33 to 110) nF	4 mF/F	
	(110 to 330) nF	4.3 mF/F	
	(0.33 to 1.1) μ F	3 mF/F	
	(1.1 to 3.3) μ F	5.7 mF/F	
	(3.3 to 11) μ F	5.2 mF/F	
(11 to 33) μ F	6 mF/F		
Capacitance – Source @ 400 Hz	(33 to 110) μ F	7.1 mF/F	
	(110 to 330) μ F	9.3 mF/F	
Capacitance – Source @ 100 Hz	(0.33 to 1.1) mF	13 mF/F	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source	Up to 11 Ω	11 m Ω	Fluke 5500A/6 Multiproduct Calibrator
	(11 to 33) Ω	22 m Ω	
	(33 to 110) Ω	30 m Ω	
	(110 to 330) Ω	50 m Ω	
	330 Ω to 1.1 k Ω	0.19 Ω	
	(1.1 to 3.3) k Ω	0.39 Ω	
	(3.3 to 11) k Ω	1.9 Ω	
	(11 to 33) k Ω	4.2 Ω	
	(33 to 110) k Ω	21 Ω	
	(110 to 330) k Ω	53 Ω	
	330 k Ω to 1.1 M Ω	0.26 k Ω	
	(1.1 to 3.3) M Ω	0.64 k Ω	
	(3.3 to 11) M Ω	8.4 k Ω	
	(11 to 33) M Ω	39 k Ω	
(33 to 110) M Ω	0.65 M Ω		
Resistance – Measure 4 Wire	(10 to 100) Ω	28 m Ω	Agilent 3458A Multimeter
	100 Ω to 1 k Ω	0.18 Ω	
	(1 to 10) k Ω	1.8 Ω	
	(10 to 100) k Ω	20 Ω	
	100 k Ω to 1 M Ω	0.24 k Ω	
	(1 to 10) M Ω (10 to 100) M Ω	7.6 k Ω 12 k Ω	
Oscilloscopes	DC Voltage, 50 Ω	4.1 mV/V	Fluke 5500A/6 Multiproduct Calibrator
	DC Voltage, 1 M Ω	2.9 mV/V	
	Square Wave Signal 50 Ω at 1 kHz	1.8 mV to 2.2 V 4.2 mV/V	
	Square Wave Signal 1 M Ω at 1 kHz	1.8 mV to 105 V 2.9 mV/V	
	Leveled Sine Wave Flatness (relative to 50 kHz)	50 kHz to 100 MHz (100 to 300) MHz 42 mV/V 34 mV/V	
	Time Marker 50 Ω	2 ns to 5 s 1.2 ms/s	
	Rise/Fall Time	400 ps 80 ps	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators	Type E (-250 to -100) °C (-100 to -25) °C (-250 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.58 °C 0.2 °C 0.18 °C 0.2 °C 0.25 °C 0.32 °C 0.2 °C 0.18 °C 0.21 °C 0.28 °C 0.39 °C 0.22 °C 0.2 °C 0.31 °C 0.47 °C 0.73 °C 0.29 °C 0.2 °C 0.18 °C	Fluke 5500A/6 Multiproduct Calibrator
Electrical Simulation of RTD Indicators	Pt 385, 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C Pt 3926 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C	0.06 °C 0.06 °C 0.08 °C 0.11 °C 0.12 °C 0.14 °C 0.14 °C 0.27 °C 0.06 °C 0.06 °C 0.08 °C 0.11 °C 0.12 °C 0.14 °C	Fluke 5500A/6 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 3916, 100 Ω		Fluke 5500A/6 Multiproduct Calibrator
	(-200 to -190) $^{\circ}\text{C}$	0.29 $^{\circ}\text{C}$	
	(-190 to -80) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(-80 to 0) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(0 to 100) $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	
	(100 to 260) $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$	
	(260 to 300) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$	
	(300 to 400) $^{\circ}\text{C}$	0.11 $^{\circ}\text{C}$	
	(400 to 600) $^{\circ}\text{C}$	0.12 $^{\circ}\text{C}$	
	(600 to 630) $^{\circ}\text{C}$	0.27 $^{\circ}\text{C}$	
	Pt 385, 200 Ω		
	(-200 to -80) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(-80 to 0) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(0 to 100) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(100 to 260) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(260 to 300) $^{\circ}\text{C}$	0.14 $^{\circ}\text{C}$	
	(300 to 400) $^{\circ}\text{C}$	0.15 $^{\circ}\text{C}$	
	(400 to 600) $^{\circ}\text{C}$	0.17 $^{\circ}\text{C}$	
	(600 to 630) $^{\circ}\text{C}$	0.19 $^{\circ}\text{C}$	
	Pt 385, 500 Ω		
	(-200 to -80) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(-80 to 0) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(0 to 100) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(100 to 260) $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	
(260 to 300) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$		
(300 to 400) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$		
(400 to 600) $^{\circ}\text{C}$	0.11 $^{\circ}\text{C}$		
(600 to 630) $^{\circ}\text{C}$	0.13 $^{\circ}\text{C}$		
Pt 385, 1 000 Ω			
(-200 to -80) $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$		
(-80 to 0) $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$		
(0 to 100) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$		
(100 to 260) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$		
(260 to 300) $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$		
(300 to 400) $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$		
(400 to 600) $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$		
(600 to 630) $^{\circ}\text{C}$	0.27 $^{\circ}\text{C}$		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	PtNi 385, 120 Ω (Ni120)		Fluke 5500A/6 Multiproduct Calibrator
	(-80 to 0) °C	0.09 °C	
	(0 to 100) °C	0.09 °C	
	(100 to 260) °C	0.17 °C	
	Cu 427, 10 Ω		
	(-100 to 260) °C	0.35 °C	

Mass and Mass Related

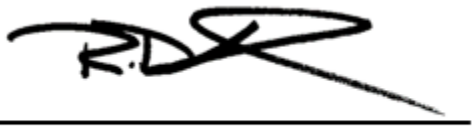
Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools	(5 to 50) lbf-in	0.69 % of reading	CDI Torque Calibrator
	(30 to 400) lbf-in	0.61 % of reading	
	(100 to 1 000) lbf-in	1.2 % of reading	
	(20 to 250) lbf-ft	0.77 % of reading	
	(60 to 600) lbf-ft	0.85 % of reading	

[Return to Site Listing \(top\)](#)

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1959. Site specific sections are identified by city and suffix (AC-1959.xx) for convenience.



R. Douglas Leonard Jr., VP, PILR SBU