



# 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**

and national standard

**ANSI/NCSL Z540-1-1994 (R2002)**

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](http://www.anab.org).

A handwritten signature in black ink, appearing to be 'J. Stine', is positioned above a horizontal line.

Jason Stine, Vice President  
Expiry Date: 26 June 2025  
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, 2025**

Certificate Number: **AC-1959**

**Satellite locations in:**

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

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

**Accredited Services performed at Main Site laboratory**

**(AC-1959)**

**Process Measurement Company**

5735 Lindsay Street  
Minneapolis, MN 55422  
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**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	(1 to 329) mV	10 $\mu$ V/V	Multiproduct Calibrator
	329 mV to 3.29 V	9 $\mu$ V/V	
	(3.29 to 32.9) V	10 $\mu$ V/V	
	(32.9 to 329) V	20 $\mu$ V/V	
	(329 to 1 000) V	10 $\mu$ V/V	
DC Voltage – Measure <sup>1</sup>	(1 to 100) mV	8 $\mu$ V/V	8.5 Digit Multimeter
	100 mV to 1 V	5 $\mu$ V/V	
	(1 to 10) V	4 $\mu$ V/V	
	(10 to 100) V	7 $\mu$ V/V	
	100 V to 1 kV	9 $\mu$ V/V	
DC High Voltage – Measure <sup>1</sup>	(12 to 120) kV	0.15 % of reading	Voltage Divider, 6.5 Digit Multimeter
DC Current – Source <sup>1</sup>	(1 to 3.29) mA	61 $\mu$ A/A	Multiproduct Calibrator
	(3.29 to 32.9) mA	87 $\mu$ A/A	
	(32.9 to 329) mA	0.16 mA/A	
	329 mA to 1 A	0.12 mA/A	
DC Current – Measure <sup>1</sup>	(1 to 100) $\mu$ A	27 $\mu$ A/A	8.5 Digit Multimeter
	(0.1 to 1) mA	24 $\mu$ A/A	
	(1 to 10) mA	25 $\mu$ A/A	
	(10 to 100) mA	42 $\mu$ A/A	
	(0.1 to 1) A	0.13 mA/A	
	(1 to 3) A	0.38 mA/A	6.5 Digit Multimeter



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure <sup>1</sup>	(1 to 10) mV		8.5 Digit 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	4.7 mV/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 μV/V		
(1 to 20) kHz	90 μV/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		
(10 to 100) V			
40 Hz to 1 kHz	0.11 mV/V		
(1 to 20) kHz	69 μV/V		
(20 to 50) kHz	0.11 mV/V		
(50 to 100) kHz	0.21 mV/V		
(100 to 700) V			
40 Hz to 1 kHz	0.14 mV/V		
AC High Voltage – Measure <sup>1</sup>	60 Hz (8.5 to 85) kV	0.6 % of reading	Voltage Divider, 6.5 Digit Multimeter

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source <sup>1</sup>	(2.2 to 32.9) mV		Multiproduct Calibrator
	10 Hz to 1 kHz	23 $\mu$ V	
	(1 to 100) kHz	14 $\mu$ V	
	(32.9 to 329) mV		
	10 Hz to 1 kHz	0.23 mV	
	(1 to 100) kHz	0.14 mV	
	100 kHz to 1 MHz	0.95 mV	
	329 mV to 3.29 V		
	10 Hz to 1 kHz	2.2 mV	
	(1 to 10) kHz	1.4 mV	
	(10 to 50) kHz	7.1 mV	
	(3.29 to 329) V		
	10 Hz to 1 kHz	0.35 V	
	(1 to 10) kHz	0.29 V	
AC Current – Source <sup>1</sup>	(329 to 1 000) V		Multiproduct Calibrator
	10 Hz to 1 kHz	0.76 V	
	(1 to 10) kHz	0.58 V	
	(1 to 329) $\mu$ A		
	(10 to 20) Hz	0.32 mA/A	
	(20 to 40) Hz	0.21 mA/A	
	40 Hz to 1 kHz	0.16 mA/A	
	(1 to 5) kHz	0.34 mA/A	
	(5 to 10) kHz	1.4 mA/A	
	329 $\mu$ A to 3.29 mA		
	(10 to 20) Hz	0.27 mA/A	
	(20 to 40) Hz	0.18 mA/A	
	40 Hz to 1 kHz	0.14 mA/A	
	(1 to 5) kHz	0.25 mA/A	
(5 to 10) kHz	1.4 mA/A		
(3.29 to 32.9) mA			
(10 to 20) Hz	0.28 mA/A		
(20 to 40) Hz	0.18 mA/A		
40 Hz to 1 kHz	0.14 mA/A		
(1 to 5) kHz	0.23 mA/A		
(5 to 10) kHz	1.4 mA/A		

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source <sup>1</sup>	329 mA to 1 A (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (2.2 to 10) A 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.27 mA/A 0.18 mA/A 0.14 mA/A 0.36 mA/A 1.2 mA/A 0.35 mA/A 0.53 mA/A 7.2 mA/A	Multiproduct Calibrator
AC Current – Measure <sup>1</sup>	(1 to 100) $\mu$ A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz 100 $\mu$ A to 1 mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (1 to 10) mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (10 to 100) mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz 100 mA to 1 A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.58 mA/A 0.4 mA/A 0.4 mA/A 0.57 mA/A 0.36 mA/A 0.24 mA/A 0.22 mA/A 0.39 mA/A 0.39 mA/A 0.27 mA/A 0.27 mA/A 0.36 mA/A 0.39 mA/A 0.26 mA/A 0.26 mA/A 0.34 mA/A 0.45 mA/A 0.41 mA/A 0.41 mA/A 0.65 mA/A	Digit Multimeter

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Resistance – Source <sup>1</sup> (Simulated-Fixed)	1 Ω	0.25 mΩ	Multiproduct Calibrator	
	10 Ω	2.1 mΩ		
	100 Ω	2.1 mΩ		
	1 kΩ	14 mΩ		
	10 kΩ	0.14 Ω		
	100 kΩ	1.5 Ω		
	1 MΩ	37 Ω		
	10 MΩ 100 MΩ	1.1 kΩ 73 kΩ		
Resistance – Measure <sup>1</sup>	Up to 10 Ω	25 μΩ/Ω	8.5 Digit Multimeter	
	(10 to 100) Ω	2.1 mΩ/Ω		
	(0.1 to 1) kΩ	14 μΩ/Ω		
	(1 to 10) kΩ	15 μΩ/Ω		
	(10 to 100) kΩ	1.5 mΩ/Ω		
	(0.1 to 1) MΩ	38 mΩ/Ω		
	(1 to 10) MΩ	1.1 kΩ/Ω		
	(10 to 100) MΩ	73 kΩ/Ω		
Oscilloscopes <sup>1</sup>	DC Voltage, 50 Ω	(0 to 2.2) V	5.4 mV/V	Multiproduct Calibrator
	DC Voltage, 1 MΩ	(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 MΩ 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 μs/s	
	Rise/Fall Time	400 ps	170 ps	
Capacitance – Source <sup>1</sup> (Simulated-Fixed)	1 nF	4.3 pF	Multiproduct Calibrator	
	5 nF	32 pF		
	10 nF	47 pF		
	100 nF	0.3 nF		
	1 μF	3 nF		
	10 μF	32 nF		

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure <sup>1</sup>	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 0.2 °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	Multiproduct Calibrator
Electrical Simulation of RTD Indicating Devices – Source <sup>1</sup>	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	Multiproduct Calibrator



**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools <sup>1</sup>	(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	1.4 % of reading 0.74 % of reading 0.56 % of reading 1 % of reading 1.3 % of reading	Torque Calibrator
Pneumatic Pressure Measuring Instruments <sup>1</sup> (Air)	(-14.5 to -0.01) psi (0.01 to 300) psi	0.2 % of reading 0.1 % of reading	Pressure Calibrator
Pneumatic Pressure Measuring Instruments <sup>1</sup> (N <sub>2</sub> )	(0.2 to 50) psig (2 to 1 000) psig	0.004 psi 0.06 psi	Gas Piston Pressure System
Hydraulic Pressure Measuring Instruments <sup>1</sup>	(200 to 10 000) psi	0.02 % of reading	Dead Weight Tester

**Thermodynamic**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure <sup>1</sup>	(-40 to -15) °C (-15 to 0) °C (0 to 50) °C (50 to 250) °C (250 to 400) °C	0.83 °C 0.04 °C 0.05 °C 0.05 °C 0.07 °C	Standard Thermometer with Probe

**Time and Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Source <sup>1</sup>	80 MHz	2 μHz/Hz	Function/Arbitrary Waveform Generator
Frequency – Measure <sup>1</sup>	0.1 Hz to 350 MHz	1.1 μHz/Hz	Frequency Counter
Non-contact Tachometers <sup>1,2</sup>	(1 to 100 000) rpm	0.015 % of reading	Function/Arbitrary Waveform Generator

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**Accredited Services performed at satellite laboratory**

**(AC-1959.01)**

**Process Measurement Company**

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**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source <sup>1</sup>	(2.2 to 200) mV 200 mV to 2 V (2 to 20) V (20 to 200) V (200 to 1 000) V	36 $\mu$ V/V 19 $\mu$ V/V 17 $\mu$ V/V 15 $\mu$ V/V 20 $\mu$ V/V	Advanced Multiproduct Calibrator
DC Voltage – Measure <sup>1</sup>	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	0.11 mV/V 16 $\mu$ V/V 65 $\mu$ V/V 71 $\mu$ V/V 66 $\mu$ V/V	8.5 Digit Multimeter
DC High Voltage – Measure <sup>1</sup>	(19 to 195) kV	0.3 % of reading	Voltage Divider, 6.5 Digit Multimeter
DC Current – Source <sup>1</sup>	(2.2 to 200) $\mu$ A 200 $\mu$ A to 2 mA (2 to 20) mA (20 to 200) mA 200 mA to 2 A (2 to 30) A	0.59 mA/A 20 $\mu$ A/A 75 $\mu$ A/A 75 $\mu$ A/A 0.17 mA/A 0.3 mA/A	Advanced Multiproduct Calibrator
DC Current – Measure <sup>1</sup>	(0.1 to 1) $\mu$ A (1 to 10) $\mu$ A (10 to 100) $\mu$ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	1.5 mA/A 20 $\mu$ A/A 0.12 $\mu$ A/A 49 $\mu$ A/A 48 $\mu$ A/A 53 $\mu$ A/A 0.11 mA/A	8.5 Digit Multimeter
	(1 to 3) A	0.38 mA/A	6.5 Digit 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 <sup>1</sup>	(2.2 to 200) mV		Advanced Multiproduct Calibrator
	10 Hz to 1 kHz	38 $\mu$ V	
	(1 to 100) kHz	34 $\mu$ V	
	(100 to 500) kHz	0.31 mV	
	200 mV to 2 V		
	10 Hz to 1 kHz	45 $\mu$ V	
	(1 to 100) kHz	68 $\mu$ V	
	100 kHz to 1 MHz	0.95 mV	
	(2 to 20) V		
	10 Hz to 1 kHz	42 $\mu$ V	
	(1 to 10) kHz	55 $\mu$ 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		
AC Voltage – Measure <sup>1</sup>	(200 to 1 000) V		8.5 Digit Multimeter
	10 Hz to 1 kHz	40 mV	
	(1 to 10) kHz	52 mV	
	(0.1 to 10) mV		
	(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 <sup>1</sup>	100 mV to 1 V		8.5 Digit Multimeter
	(1 to 40) Hz	0.43 mV/V	
	40 Hz to 1 kHz	69 $\mu$ V/V	
	(1 to 20) kHz	69 $\mu$ V/V	
	(20 to 50) kHz	0.12 mV/V	
	(50 to 100) kHz	0.17 mV/V	
	(100 to 300) kHz	0.59 mV/V	
	300 kHz to 1 MHz	2.37 mV/V	
	(1 to 10) V		
	(1 to 40) Hz	0.45 mV/V	
	40 Hz to 1 kHz	85 $\mu$ V/V	
	(1 to 20) kHz	84 $\mu$ 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 $\mu$ V/V		
(1 to 20) kHz	79 $\mu$ 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 $\mu$ V/V		
AC High Voltage – Measure <sup>1</sup>	60 Hz (13 to 138) kV	0.62 % of reading	Voltage Divider, 6.5 Digit Multimeter
AC Current – Source <sup>1</sup>	(2.2 to 200) $\mu$ A		Advanced Multiproduct Calibrator
	10 Hz to 1 kHz	0.17 $\mu$ A	
	(1 to 10) kHz	0.37 $\mu$ A	
	(10 to 30) kHz	0.67 $\mu$ A	
	200 $\mu$ A to 2 mA		
	10 Hz to 1 kHz	0.28 $\mu$ A	
	(1 to 10) kHz	13 $\mu$ A	
	(10 to 30) kHz	25 $\mu$ A	
	(2 to 20) mA		
	10 Hz to 1 kHz	3 $\mu$ A	
(1 to 10) kHz	58 $\mu$ A		
(10 to 30) kHz	30 $\mu$ A		

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source <sup>1</sup>	(20 to 200) mA		Advanced Multiproduct Calibrator
	10 Hz to 1 kHz	0.35 mA	
	(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 <sup>1</sup>	(2 to 30) A		8.5 Digit Multimeter
	10 Hz to 1 kHz	8.7 mA	
	(1 to 10) kHz	8.7 mA	
	(1 to 100) $\mu$ 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 $\mu$ 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	6.5 Digit Multimeter
	45 Hz to 1 kHz	1.4 mA/A	
	(1 to 5) kHz	9 mA/A	



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source <sup>1</sup> (Simulated-Fixed)	0.1 Ω 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 GΩ	6 mΩ 6 mΩ 6 mΩ 7 mΩ 23 mΩ 0.13 Ω 2.4 Ω 30 Ω 1.4 KΩ 0.18 MΩ 13 MΩ	Advanced Multiproduct Calibrator
Resistance – Measure <sup>1</sup> (4-wire)	(0 to 1) Ω (1 to 10) Ω (10 to 100) Ω (0.1 to 1) kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ 100 MΩ to 1 GΩ	0.12 mΩ 29 mΩ 13 mΩ 10 mΩ 0.1 Ω 0.13 Ω 24 Ω 0.49 kΩ 14 kΩ 0.31 MΩ	8.5 Digit Multimeter
Oscilloscopes <sup>1</sup> DC Voltage 50 Ω load 1 MΩ load  Square Wave Signal 1 kHz 50 Ω load 1 MΩ load  Leveled Sine Wave Flatness (relative to 50kHz)  Time Marker 50 Ω load  Rise/ Fall Time	(0 to 2.2) V (0 to 33) V  1.8 mVp-p to 2.2 Vp-p 1.8 mVp-p to 105 Vp-p  50 kHz to 100 MHz (100 to 300) MHz  2 ns to 5 s  400 ps	4.1 mV/V 2.9 mV/V  4.2 mV/V 2.8 mV/V  0.41 V/V 0.34 V/V  1.2 μs/s  80 ps	Multiproduct Calibrator
Capacitance – Source <sup>1</sup> (Simulation)	400 Hz (1.1 to 3.3) μF (3.3 to 11) μF	5.7 mF/F 5.2 mF/F	Advanced Multiproduct Calibrator



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance – Source <sup>1</sup> (Simulated)	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 100 Hz (11 to 33) μF (33 to 110) μF (110 to 330) μF 330 μF to 1.1 mF	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 6 mF/F 7.1 mF/F 9.3 mF/F 13 mF/F	Advanced Multiproduct Calibrator
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure <sup>1</sup>	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 0.2 °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	Multiproduct Calibrator

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicating Devices – Source <sup>1</sup>	Pt 385, 100 Ω		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		

**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools <sup>1</sup>	(5 to 50) lbf·in	1.5 % of reading	Torque Calibrator
	(30 to 400) lbf·in	0.74 % of reading	
	(100 to 1 000) lbf·in	0.6 % of reading	
	(20 to 250) lbf·ft	1.3 % of reading	
Pressure Measuring Instruments <sup>1</sup>	(100 to 10 000) psi	0.024 % of reading	Deadweight Tester

**Thermodynamic**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure <sup>1</sup>	(-40 to 0) °C	0.24 °C	Standard Thermometer with Probe
	(0 to 30) °C	0.06 °C	
	(30 to 210) °C	0.09 °C	
	(210 to 400) °C	0.16 °C	
	400 °C	0.19 °C	

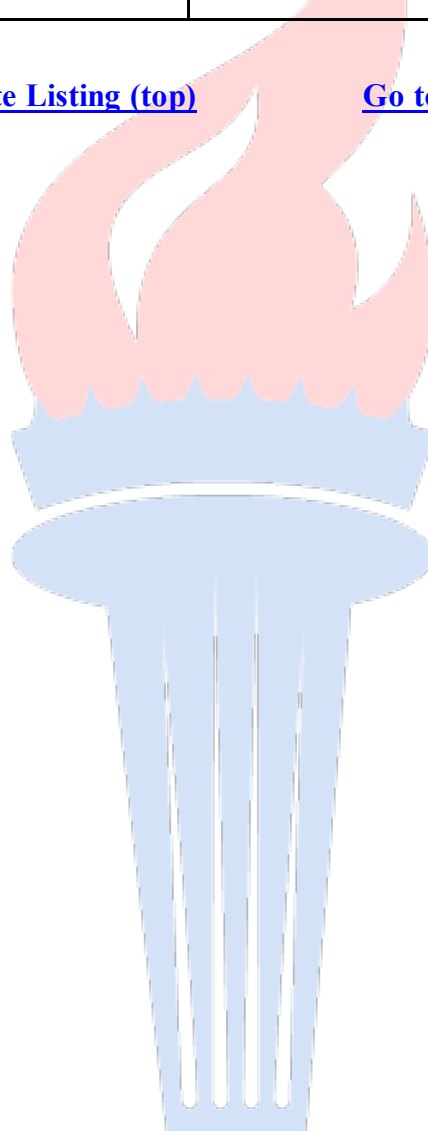


**Time and Frequency**

<b>Parameter/Equipment</b>	<b>Range</b>	<b>Expanded Uncertainty of Measurement (+/-)</b>	<b>Reference Standard, Method, and/or Equipment</b>
Frequency – Source <sup>1</sup>	10 Hz to 10 MHz	3 $\mu$ Hz/Hz	Advanced Multiproduct Calibrator
Frequency – Measure <sup>1</sup>	1 Hz to 10 MHz	0.11 mHz/Hz	8.5 Digit Multimeter
Non-contact Tachometers <sup>1,2</sup>	Up to 28 800 rpm	0.58 rpm	Comparison to Standard Tachometer

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**Accredited Services performed at satellite laboratory**

**(AC-1959.02)**

**Process Measurement Company**

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**Electrical – DC/Low Frequency**

<b>Parameter/Equipment</b>	<b>Range</b>	<b>Expanded Uncertainty of Measurement (+/-)</b>	<b>Reference Standard, Method, and/or Equipment</b>
DC Voltage – Source <sup>1</sup>	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 $\mu$ V/V 52 $\mu$ V/V 52 $\mu$ V/V 57 $\mu$ V/V 60 $\mu$ V/V	Multiproduct Calibrator
DC Voltage – Measure <sup>1</sup>	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	85 $\mu$ V/V 47 $\mu$ V/V 40 $\mu$ V/V 51 $\mu$ V/V 55 $\mu$ V/V	8.5 Digit Multimeter
DC Current – Source <sup>1</sup>	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	16 $\mu$ A/A 15 $\mu$ A/A 20 $\mu$ A/A 30 $\mu$ A/A 0.71 mA/A	Multiproduct Calibrator
DC Current – Measure <sup>1</sup>	Up to 10 mA (10 to 100) mA 100 mA to 1 A (1 to 3) A	70 $\mu$ A/A 0.55 mA/A 1.1 mA/A 1.5 mA/A	8.5 Digit Multimeter
AC Voltage – Source <sup>1</sup>	(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	Multiproduct Calibrator

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source <sup>1</sup>	(33 to 330) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz 330 mV to 3.3 V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (3.3 to 33) V (20 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 100) kHz (33 to 330) V 45 to 1 kHz (1 to 10) kHz (10 to 20) kHz 330 V to 1.02 kV 45 to 1 kHz (1 to 5) kHz (5 to 20) kHz	50 $\mu$ V/V 0.48 mV/V 1.2 mV/V 2 mV/V 3.7 mV/V 30 $\mu$ V/V 40 $\mu$ V/V 0.97 mV/V 1.7 mV/V 3.7 mV/V 40 $\mu$ V/V 40 $\mu$ V/V 1 mV/V 3.7 mV/V 0.85 mV/V 0.7 mV/V 1.2 mV/V 60 $\mu$ V/V 2.6 mV/V 3.2 mV/V	Multiproduct Calibrator
AC Voltage – Measure <sup>1</sup>	Up to 100 mV (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 100 mV to 1 V (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (1 to 10) V (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz	0.84 mV/V 1.4 mV/V 6.7 mV/V 11 mV/V 54 mV/V 1 mV/V 1 mV/V 1 mV/V 7 mV/V 4 mV/V 4.1 mV/V 15 mV/V	6.5 Digit Multimeter

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment		
AC Voltage – Measure <sup>1</sup>	(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	6.5 Digit 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 <sup>1</sup>	(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	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			
	AC Current – Measure <sup>1</sup>	Up to 1 A 10 Hz to 5 kHz (1 to 3) A 10 Hz to 5 kHz		1.4 mA/A 4.1 mA/A	6.5 Digit Multimeter
		1 kHz (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF		6 mF/F 5.9 mF/F 5.9 mF/F 8 mF/F	
	Capacitance – Source <sup>1</sup> (Simulated)				Multiproduct Calibrator



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source <sup>1</sup> (Simulated)	Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω 330 Ω to 1.1 kΩ (1.1 to 3.3) kΩ (3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ 330 kΩ to 1.1 MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ	9.3 mΩ 18 mΩ 21 mΩ 36 mΩ 0.14 Ω 0.33 Ω 1.3 Ω 3.2 Ω 16 Ω 43 Ω 0.2 kΩ 0.79 kΩ 7.6 kΩ 35 kΩ 0.63 MΩ	Multiproduct Calibrator
Resistance – Measure <sup>1</sup> (4 Wire)	(10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ	18 mΩ 0.21 mΩ 36 mΩ 0.33 Ω 0.16 kΩ 0.2 kΩ 34 kΩ	6.5 Digit Multimeter
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure <sup>1</sup>	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	0.59 °C 0.24 °C 0.2 °C 0.21 °C 0.26 °C 0.32 °C 0.2 °C 0.19 °C 0.21 °C 0.28 °C	Multiproduct Calibrator

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure <sup>1</sup>	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	0.4 °C 0.25 °C 0.2 °C 0.32 °C 0.48 °C 0.73 °C 0.31 °C 0.2 °C 0.18 °C	Multiproduct Calibrator
Electrical Simulation of RTD Indicating Devices – Source <sup>1</sup>	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 Pt 3916, 100 Ω (-200 to -190) °C (-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	0.14 °C 0.14 °C 0.15 °C 0.15 °C 0.17 °C 0.17 °C 0.3 °C 0.07 °C 0.07 °C 0.09 °C 0.11 °C 0.12 °C 0.15 °C 0.29 °C 0.06 °C 0.08 °C 0.08 °C 0.09 °C 0.1 °C 0.11 °C 0.11 °C 0.27 °C	Multiproduct Calibrator

**Mass and Mass Related**

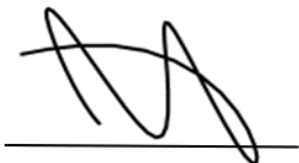
Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools <sup>1</sup>	(5 to 50) lbf·in (30 to 400) lbf·in (100 to 1 000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft	1.5 % of reading 0.74 % of reading 0.54 % of reading 1 % of reading 1.5 % of reading	Torque Calibrator

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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. rpm = revolutions per minute.
3. 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.



Jason Stine, Vice President

