



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Process Measurement Company

9150 Isanti Street

Blaine, MN 55449

(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.

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

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Blaine, MN 55449

Shaomeng Yang 763-354-9040

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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

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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	(1 to 329) mV 329 mV to 3.29 V (3.29 to 32.9) V (32.9 to 329) V (329 to 1 000) V	6 μ V/V 5.7 μ V/V 7.5 μ V/V 8 μ V/V 7.2 μ V/V	Multiproduct Calibrator
DC Voltage – Measure ¹	(1 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	10 μ V/V 5 μ V/V 5 μ V/V 7 μ V/V 9 μ V/V	8.5 Digit Multimeter
DC High Voltage – Measure ¹	(10 to 40) kV (40 to 80) kV	0.22 % of reading + 0.11 kV 0.41 % of reading + 39 V	Voltage Divider, 6.5 Digit Multimeter
DC Current – Source ¹	(1 to 3.29) mA (3.29 to 32.9) mA (32.9 to 329) mA 329 mA to 1 A (1 to 2.2) A (2.2 to 11) A	53 μ A/A 72 μ A/A 0.14 mA/A 0.12 mA/A 0.2 mA/A 0.11 mA/A	Multiproduct Calibrator
DC Current – Measure ¹	(1 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	27 μ A/A 24 μ A/A 25 μ A/A 42 μ A/A 0.12 mA/A	8.5 Digit Multimeter
DC Current – Measure ¹	(1 to 3) A	0.38 mA/A	6.5 Digit Multimeter
AC Voltage – Measure ¹	(1 to 10) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.8 mV/V 0.66 mV/V 0.66 mV/V 1.2 mV/V 1.5mV/V 7.2 mV/V	8.5 Digit Multimeter



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure ¹	(10 to 100) mV		8.5 Digit Multimeter
	(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 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		
(10 to 100) V			
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		
(100 to 700) V			
40 Hz to 1 kHz	0.14 mV/V		
AC High Voltage – Measure ¹	60 Hz (8.5 to 85) kV	0.6 % of reading	Voltage Divider, 6.5 Digit Multimeter
AC Voltage – Source ¹	(2.2 to 32.9) mV		Multiproduct Calibrator
	(10 to 45) Hz	31 μ V	
	45 Hz to 10 kHz	24 μ V	
	(32.9 to 329) mV		
(10 to 45) Hz	0.29 mV		
45 Hz to 10 kHz	0.21 mV		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source ¹	329 mV to 3.29 V (10 to 45) Hz	2.9 mV	Multiproduct Calibrator
	45 Hz to 10 kHz (3.29 to 329) V	2.2 mV	
	(10 to 45) Hz	0.49 V	
	45 Hz to 10 kHz	0.51 V	
	(329 to 1 000) V (10 to 45) Hz	0.76 V	
	45 Hz to 10 kHz	0.58 V	
AC Current – Source ¹	(1 to 329) μ A 10 Hz to 1 kHz	0.41 μ A	Multiproduct Calibrator
	329 μ A to 3.29 mA 10 Hz to 1 kHz	4.1 μ A	
	(3.29 to 32.9) mA 10 Hz to 1 kHz	42.3 μ A	
	(32.9 to 329) mA 10 Hz to 1 kHz	0.52 mA	
	329 mA to 1 A 10 Hz to 1 kHz	11 mA	
AC Current – Measure ¹	(1 to 100) μ A (10 to 20) Hz	0.58 mA/A	8.5 Digit Multimeter
	(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		



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure ¹	100 mA to 1 A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.45 mA/A 0.41 mA/A 0.41 mA/A 0.65 mA/A	8.5 Digit Multimeter
Resistance – Source ¹ (Simulated-Fixed)	1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ	0.6 mΩ 0.9 mΩ 2.7 mΩ 18 mΩ 0.11 Ω 1.5 Ω 20 Ω 0.52 kΩ 51 kΩ	Multiproduct Calibrator
Resistance – Measure ¹	Up to 10 Ω (10 to 100) Ω (0.1 to 1) kΩ (1 to 10) kΩ (10 to 100) kΩ (0.1 to 1) MΩ (1 to 10) MΩ (10 to 100) MΩ	25 μΩ/Ω 2.1 mΩ/Ω 14 μΩ/Ω 15 μΩ/Ω 1.5 mΩ/Ω 38 mΩ/Ω 1 kΩ/Ω 73 kΩ/Ω	8.5 Digit Multimeter
Capacitance – Source ¹ (Simulated-Fixed)	1 nF 10 nF 100 nF 1 μF 10 μF 100 μF 1 mF	10 pF 52 pF 0.27 nF 2.7 nF 37 nF 0.51 μF 60 μF	Multiproduct Calibrator
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure ¹	Type E (-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C	0.58 °C 0.2 °C 0.18 °C 0.2 °C 0.25 °C	Multiproduct Calibrator



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 Indicating Devices – Source/Measure ¹	Type J		Multiproduct Calibrator
	(-210 to -100) °C	0.32 °C	
	(-100 to -30) °C	0.2 °C	
	(-30 to 150) °C	0.18 °C	
	(150 to 760) °C	0.21 °C	
	(760 to 1 200) °C	0.28 °C	
	Type K		
	(-200 to -100) °C	0.39 °C	
	(-100 to -25) °C	0.22 °C	
	(-25 to 120) °C	0.2 °C	
	(120 to 1 000) °C	0.31 °C	
	(1 000 to 1 372) °C	0.47 °C	
	Type T		
(-250 to -150) °C	0.73 °C		
(-150 to 0) °C	0.29 °C		
(0 to 120) °C	0.2 °C		
(120 to 400) °C	0.18 °C		
Electrical Simulation of RTD Indicating Devices – Source ¹	Pt 385 100 Ω		Multiproduct Calibrator
	(-200 to -80) °C	0.04 °C	
	(-80 to 0) °C	0.04 °C	
	(0 to 100) °C	0.04 °C	
	(100 to 800) °C	0.03 °C	
	Pt 3926 100 Ω		
	(-200 to -80) °C	0.16 °C	
	(-80 to 0) °C	0.64 °C	
	(0 to 800) °C	0.64 °C	
	Pt 3916 100 Ω		
	(-200 to -190) °C	0.16 °C	
	(-190 to -80) °C	0.64 °C	
	(-80 to 0) °C	0.64 °C	
(0 to 800) °C	0.64 °C		



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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools ¹	(4 to 50) lbf·in (30 to 400) lbf·in (80 to 1 000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft	0.12 % of reading + 0.32 lbf·in 0.38 % of reading + 0.3 lbf·in 0.57 % of reading + 0.6 lbf·in 0.67 % of reading + 1.7 lbf·ft 0.1 % of reading + 2.3 lbf·ft	Torque Calibrator
Pneumatic Pressure Measuring Instruments ¹ (N ₂)	Up to 500 psig	0.008 % of reading	Gas Piston Pressure System
Hydraulic Pressure Measuring Instruments ¹	(200 to 10 000) psig	0.023 % of reading	Dead Weight Tester

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure ¹	(-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 ¹	80 MHz	2 μHz/Hz	Function/Arbitrary Waveform Generator
Frequency – Measure ¹	0.1 Hz to 350 MHz	1.1 μHz/Hz	Frequency Counter
Non-contact Tachometers ^{1,2}	(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)

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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	(2.2 to 200) mV 200 mV to 2 V (2 to 20) V (20 to 200) V (200 to 1 000) V	36 μ V/V 19 μ V/V 17 μ V/V 15 μ V/V 20 μ V/V	Advanced Multiproduct Calibrator
DC Voltage – Measure ¹	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 μ V/V 65 μ V/V 71 μ V/V 66 μ V/V	8.5 Digit Multimeter
DC High Voltage – Measure ¹	(19 to 195) kV	0.3 % of reading	Voltage Divider, 6.5 Digit Multimeter
DC Current – Source ¹	(2.2 to 200) μ A 200 μ 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 μ A/A 75 μ A/A 75 μ A/A 0.17 mA/A 0.3 mA/A	Advanced Multiproduct Calibrator
DC Current – Measure ¹	(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	1.5 mA/A 20 μ A/A 0.12 μ A/A 49 μ A/A 48 μ A/A 53 μ A/A 0.11 mA/A	8.5 Digit Multimeter
DC Current – Measure ¹	(1 to 3) A	0.38 mA/A	6.5 Digit Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source ¹	(2.2 to 200) mV		Advanced Multiproduct Calibrator
	10 Hz to 1 kHz	38 μ V	
	(1 to 100) kHz	34 μ V	
	(100 to 500) kHz	0.31 mV	
	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	0.95 mV	
	(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		
AC Voltage – Measure ¹	(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 ¹	100 mV to 1 V (1 to 40) Hz	0.43 mV/V	8.5 Digit Multimeter
	40 Hz to 1 kHz (1 to 20) kHz	69 μV/V	
	(20 to 50) kHz	69 μV/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 (1 to 40) Hz	2.37 mV/V	
	40 Hz to 1 kHz (1 to 20) kHz	0.45 mV/V	
	(20 to 50) kHz	85 μV/V	
	(50 to 100) kHz	84 μV/V	
	(100 to 300) kHz	0.12 mV/V	
	300 kHz to 1 MHz	0.16 mV/V	
	(10 to 100) V (1 to 40) Hz	0.43 mV/V	
	40 Hz to 1 kHz (1 to 20) kHz	2.4 mV/V	
	(20 to 50) kHz	0.44 mV/V	
(50 to 100) kHz	91 μV/V		
(100 to 750) V 45 Hz to 1 kHz (1 to 20) kHz	79 μV/V		
	0.14 mV/V		
	0.23 mV/V		
	0.41 mV/V		
	94 μV/V		
AC High Voltage – Measure ¹	60 Hz (13 to 138) kV	0.62 % of reading	Voltage Divider, 6.5 Digit Multimeter
AC Current – Source ¹	(2.2 to 200) μA 10 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz	0.17 μA 0.37 μA 0.67 μA	Advanced Multiproduct Calibrator
	200 μA to 2 mA 10 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz	0.28 μA 13 μA 25 μA	
	(2 to 20) mA 10 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz	3 μA 58 μA 30 μA	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source ¹	(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	
	(2 to 30) A		
10 Hz to 1 kHz	8.7 mA		
(1 to 10) kHz	8.7 mA		
AC Current – Measure ¹	(1 to 100) μ A		8.5 Digit Multimeter
	(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		
AC Current – Measure ¹	(1 to 3) A		6.5 Digit Multimeter
	(10 to 45) Hz	2.6 mA/A	
	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 ¹ (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 ¹ (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
Capacitance – Source ¹ (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
Capacitance – Source ¹ (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



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 Indicating Devices – Source/Measure ¹	Type E		Multiproduct Calibrator
	(-250 to -100) °C	0.58 °C	
	(-100 to -25) °C	0.2 °C	
	(-25 to 350) °C	0.18 °C	
	(350 to 650) °C	0.2 °C	
	(650 to 1 000) °C	0.25 °C	
	Type J		
	(-210 to -100) °C	0.32 °C	
	(-100 to -30) °C	0.2 °C	
	(-30 to 150) °C	0.18 °C	
	(150 to 760) °C	0.21 °C	
	(760 to 1 200) °C	0.28 °C	
	Type K		
	(-200 to -100) °C	0.39 °C	
	(-100 to -25) °C	0.22 °C	
(-25 to 120) °C	0.2 °C		
(120 to 1 000) °C	0.31 °C		
(1 000 to 1 372) °C	0.47 °C		
Type T			
(-250 to -150) °C	0.73 °C		
(-150 to 0) °C	0.29 °C		
(0 to 120) °C	0.2 °C		
(120 to 400) °C	0.18 °C		
Electrical Simulation of RTD Indicating Devices – Source ¹	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 ¹	(4 to 50) lbf·in (30 to 400) lbf·in (80 to 1 000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft	0.12 % of reading + 0.32 lbf·in 0.38 % of reading + 0.3 lbf·in 0.57 % of reading + 0.6 lbf·in 0.67 % of reading + 1.7 lbf·ft 0.1 % of reading + 2.3 lbf·ft	Torque Calibrator
Pressure Measuring Instruments ¹	Up to 1 000 psig (1 000 to 10 000) psig	0.04 % of reading 0.022 % of reading + 0.16 psi	Deadweight Tester

Thermodynamic

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

Time and Frequency

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

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Accredited Services performed at satellite laboratory

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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	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	Multiproduct Calibrator
DC Voltage – Measure ¹	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	8.5 Digit Multimeter
DC Current – Source ¹	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 μ A/A 15 μ A/A 20 μ A/A 30 μ A/A 0.71 mA/A	Multiproduct Calibrator
DC Current – Measure ¹	Up to 10 mA (10 to 100) mA 100 mA to 1 A (1 to 3) A	70 μ A/A 0.55 mA/A 1.1 mA/A 1.5 mA/A	8.5 Digit Multimeter
AC Voltage – Source ¹	(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



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source ¹	(33 to 330) mV		Multiproduct Calibrator
	(10 to 45) Hz	50 μ V/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	30 μ V/V	
	45 Hz to 10 kHz	40 μ V/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	40 μ V/V	
	45 Hz to 10 kHz	40 μ V/V	
	(10 to 20) kHz	1 mV/V	
	(20 to 100) kHz	3.7 mV/V	
	AC Voltage – Measure ¹	(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		60 μ V/V	
(1 to 5) kHz		2.6 mV/V	
(5 to 20) kHz		3.2 mV/V	
Up to 100 mV			
(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 ¹	(10 to 100) V 45 Hz to 1 kHz (1 to 10) kHz (10 to 10) kHz (100 to 750) V 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	7.8 mV/V 7.9 mV/V 15 mV/V 5.5 mV/V 5.5 mV/V 1.7 mV/V	6.5 Digit Multimeter
AC Current – Source ¹	(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 (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 330 mA to 2.2 A 45 Hz to 1 kHz (1 to 5) kHz 220 mA to 11 A 45 to 1 kHz	2.5 mA/A 1.9 mA/A 19 mA/A 2.9 mA/A 7.6 mA/A 3 mA/A 0.23 mA/A 2.5 mA/A 8.5 mA/A 7 mA/A 2.5 mA/A 2.7 mA/A 15 mA/A	Multiproduct Calibrator
AC Current – Measure ¹	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
Capacitance – Source ¹ (Simulated)	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	Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source ¹ (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 ¹ (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 ¹	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 ¹	Type K		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 Indicating Devices – Source ¹	Pt 385, 100 Ω		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

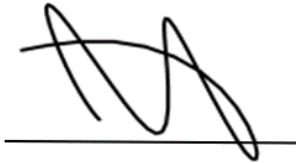
Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools ¹	(5 to 50) lbf·in (30 to 400) lbf·in (100 to 1 000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft	1.5 % of reading 0.74 % of reading 0.54 % of reading 1 % of reading 1.5 % of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

