



# CERTIFICATE OF ACCREDITATION

## The ANSI National Accreditation Board

Hereby attests that

**AppMet, Inc.**  
**7308 Peppermill Parkway**  
**North Charleston, SC 29418**

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

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

Jason Stine, Vice President

Expiry Date: 06 December 2026

Certificate Number: AC-1358



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**

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**CALIBRATION**

Valid to: **December 6, 2026**

Certificate Number: **AC-1358**

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
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	23 $\mu$ V/V + 1.2 $\mu$ V 14 $\mu$ V/V + 2.4 $\mu$ V 13 $\mu$ V/V + 23 $\mu$ V 21 $\mu$ V/V + 0.17 mV 21 $\mu$ V/V + 1.7 mV	Comparison to a Fluke 5520A Multiproduct Calibrator
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 (100 to 500) kHz (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 (100 to 500) 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 (100 to 500) kHz	0.91 mV/V + 6.9 $\mu$ V 0.18 mV/V + 7 $\mu$ V 0.25 mV/V + 6.9 $\mu$ V 1.2 mV/V + 6.9 $\mu$ V 4 mV/V + 14 $\mu$ V 9.2 mV/V + 58 $\mu$ V 0.36 mV/V + 9 $\mu$ V 0.17 mV/V + 9.6 $\mu$ V 0.19 mV/V + 9 $\mu$ V 0.41 mV/V + 9.8 $\mu$ V 0.93 mV/V + 37 $\mu$ V 2.3 mV/V + 81 $\mu$ V 0.34 mV/V + 61 $\mu$ V 0.16 mV/V + 0.1 mV 0.22 mV/V + 95 $\mu$ V 0.33 mV/V + 65 $\mu$ V 0.79 mV/V + 0.15 mV 2.7 mV/V + 0.72 mV	Comparison to a Fluke 5520A 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>	(3.3 to 33) V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (33 to 330) V 45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz 330 V to 1.02 kV 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.37 mV/V + 0.64 mV 0.18 mV/V + 0.69 mV 0.28 mV/V + 0.71 mV 0.40 mV/V + 0.77 mV 1 mV/V + 1.9 mV 0.22 mV/V + 2.3 mV 0.23 mV/V + 7.4 mV 0.29 mV/V + 6.6 mV 0.35 mV/V + 7.1 mV 2.2 mV/V + 63 mV 0.36 mV/V + 7.8 mV 0.29 mV/V + 13 mV 0.37 mV/V + 7.9 mV	Comparison to a Fluke 5520A Multiproduct Calibrator
DC Current – Source <sup>1</sup>	Up to 330 μA 330 μA to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 1.1 A (1.1 to 3) A (3 to 11) A (11 to 20.5) A	0.18 mA/A + 23 nA 0.12 mA/A + 41 nA 0.2 mA/A + 0.19 μA 0.2 mA/A + 19 nA 0.23 mA/A + 52 μA 0.45 mA/A + 37 μA 0.58 mA/A + 0.58 mA 1.1 mA/A + 1.8 mA	Comparison to a Fluke 5520A Multiproduct Calibrator
AC Current – Source <sup>1</sup>	(29 to 330) μA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz 330 μA to 3.3 mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	2.3 mA/A + 0.12 μA 1.7 mA/A + 0.11 μA 1.4 mA/A + 0.1 μA 3.3 mA/A + 0.17 μA 6 mA/A + 0.32 μA 2.3 mA/A + 0.17 μA 1.7 mA/A + 0.08 μA 1.1 mA/A + 0.27 μA 2.3 mA/A + 0.23 μA 3 mA/A + 1.3 μA	Comparison to a Fluke 5520A Multiproduct Calibrator

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source <sup>1</sup>	(3.3 to 33) mA		Comparison to a Fluke 5520A Multiproduct Calibrator
	(10 to 20) Hz	9.3 mA/A + 0.6 μA	
	(20 to 45) Hz	1.1 mA/A + 2.2 μA	
	45 Hz to 1 kHz	0.41 mA/A + 2.6 μA	
	(1 to 5) kHz	0.72 mA/A + 2.9 μA	
	(5 to 10) kHz	2.3 mA/A + 3.5 μA	
	(33 to 330) mA		
	(10 to 20) Hz	2.1 mA/A + 23 μA	
	(20 to 45) Hz	1.1 mA/A + 23 μA	
	45 Hz to 1 kHz	0.46 mA/A + 23 μA	
	(1 to 5) kHz	1.2 mA/A + 58 μA	
	(5 to 10) kHz	2.3 mA/A + 0.12 mA	
	330 mA to 1.1 A		
	(10 to 45) Hz	2.1 mA/A + 0.10 mA	
	45 Hz to 1 kHz	0.42 mA/A + 0.17 mA	
	(1 to 5) kHz	6.9 mA/A + 1.2 mA	
	(1.1 to 3) A		
	(45 to 65) Hz	2.1 mA/A + 0.18 mA	
	(65 to 500) Hz	0.5 mA/A + 0.35 mA	
	500 Hz to 1 kHz	6.9 mA + 1.2 mA	
(3 to 11) A			
(45 to 100) Hz	0.68 mA/A + 2.6 mA		
100 Hz to 1 kHz	1.1 mA/A + 2.4 mA		
(11 to 20.5) A			
(45 to 100) Hz	1.4 mA/A + 4.8 mA		
100 Hz to 1 kHz	1.7 mA/A + 6.7 mA		
Resistance – Source <sup>1</sup>	Up to 11 Ω		Simulation using a Fluke 5520A Multiproduct Calibrator
	(11 to 33) Ω	37 μΩ/Ω + 1.4 mΩ	
	(33 to 110) Ω	35 μΩ/Ω + 1.8 mΩ	
	(110 to 330) Ω	58 μΩ/Ω + 0.8 mΩ	
	330 Ω to 1.1 kΩ	23 μΩ/Ω + 5.2 mΩ	
	(1.1 to 3.3) kΩ	33 μΩ/Ω + 1.8 mΩ	
	(3.3 to 11) kΩ	31 μΩ/Ω + 25 mΩ	
	(11 to 33) kΩ	33 μΩ/Ω + 18 mΩ	
	(33 to 110) kΩ	31 μΩ/Ω + 0.25 Ω	
	(110 to 330) kΩ	33 μΩ/Ω + 0.18 Ω	
	330 kΩ to 1.1 MΩ	40 μΩ/Ω + 2.1 Ω	
	(1.1 to 3.3) MΩ	36 μΩ/Ω + 4.2 Ω	
	(3.3 to 11) MΩ	62 μΩ/Ω + 78 Ω	
	(11 to 33) MΩ	0.14 mΩ/Ω + 0.33 kΩ	



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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>	(11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ	0.29 mΩ/Ω + 3.4 kΩ 0.37 mΩ/Ω + 46 kΩ 3.5 mΩ/Ω + 0.13 MΩ	Comparison to a Fluke 5520A Multiproduct Calibrator
Resistance – Source <sup>1</sup>	1 GΩ 10 GΩ 100 GΩ 1 TΩ	13 MΩ 0.12 GΩ 1.7 GΩ 0.15 TΩ	Comparison to Fixed Resistors
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	4.4 μV/V + 0.41 μV 3.2 μV/V + 0.82 μV 2.8 μV/V + 3.3 μV 5.6 μV/V + 2.8 μV 1.7 μV/V + 0.15 mV	Comparison to a HP 3458A 8.5 Digit Multimeter
Capacitance – Source <sup>1</sup>	190 pF to 3.3 nF (3.3 to 11) nF (11 to 110) nF (110 to 330) nF 330 nF to 1.1 μF (1.1 to 3.3) μF (3.3 to 11) μF (11 to 33) μF (33 to 110) μF (110 to 330) μF 330 μA to 1.1 mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	5.9 mF/F + 12 pF 6.5 mF/F + 10 pF 3.6 mF/F + 65 pF 3.7 mF/F + 57 pF 3 mF/F + 1.1 nF 2.8 mF/F + 3.6 nF 3.1 mF/F + 11 nF 4.5 mF/F + 36 nF 5.3 mF/F + 0.11 μF 5.2 mF/F + 0.36 μF 4.5 mF/F + 1.1 μF 5.3 mF/F + 3.5 μF 5.2 mF/F + 12 μF 8.8 mF/F + 30 μF 13 mF/F + 0.11 mF	Comparison to a Fluke 5520A Multiproduct Calibrator
AC Voltage – Measure <sup>1</sup>	Up 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 (10 to 100) 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	12 μV/V + 3.4 μV 0.22 mV/V + 1.5 μV 0.35 mV/V + 1.3 μV 1.2 mV/V + 1.3 μV 5.8 mV/V + 1.4 μV 46 mV/V + 2.4 μV  86 μV/V + 4.3 μV 81 μV/V + 2.5 μV 0.17 mV/V + 1.6 μV 0.34 mV/V + 2.8 μV 0.92 mV/V + 2.6 μV 3.5 mV/V + 12 μV	Comparison to a HP 3458A 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 <sup>1</sup>	100 mV to 1 V		Comparison to a HP 3458A 8.5 Digit Multimeter
	(1 to 40) Hz	79 $\mu$ V/V + 50 $\mu$ V	
	40 Hz to 1 kHz	80 $\mu$ V/V + 25 $\mu$ V	
	(1 to 20) kHz	0.16 mV/V + 23 $\mu$ V	
	(20 to 50) kHz	0.35 mV/V + 24 $\mu$ V	
	(50 to 100) kHz	0.92 mV/V + 23 $\mu$ V	
	(100 to 300) kHz	3.5 mV/V + 0.12 mV	
	300 kHz to 1 MHz	12 mV/V + 0.14 mV	
	(1 to 2) MHz	17 mV/V + 0.13 mV	
	(1 to 10) V		
	(1 to 40) Hz	85 $\mu$ V/V + 0.46 mV	
	40 Hz to 1 kHz	83 $\mu$ V/V + 0.22 mV	
	(1 to 20) kHz	0.16 mV/V + 0.23 mV	
	(20 to 50) kHz	0.35 mV/V + 0.23 mV	
	(50 to 100) kHz	0.92 mV/V + 0.23 mV	
	(100 to 300) kHz	3.5 mV/V + 1.2 mV	
	300 kHz to 1 MHz	11 mV/V + 12 mV	
	(1 to 2) MHz	17 mV/V + 10 mV	
	(10 to 100) V		
	(1 to 40) Hz	0.23 mV/V + 4.7 mV	
40 Hz to 1 kHz	0.23 mV/V + 2.3 mV		
(1 to 20) kHz	0.23 mV/V + 2.5 mV		
(20 to 50) kHz	0.23 mV/V + 2.3 mV		
(50 to 100) kHz	0.41 mV/V + 2.3 mV		
(100 to 300) kHz	4.6 mV/V + 12 mV		
300 kHz to 1 MHz	17 mV/V + 12 mV		
100 V to 1 kV			
(1 to 40) Hz	0.46 mV/V + 46 mV		
40 Hz to 1 kHz	0.46 mV/V + 23 mV		
(1 to 20) kHz	0.23 mV/V + 23 mV		
(20 to 50) kHz	1.4 mV/V + 23 mV		
(50 to 100) kHz	3.5 mV/V + 23 mV		
DC Current – Measure <sup>1</sup>	100 nA to 1 $\mu$ A	14 $\mu$ A/A + 0.15 nA	Comparison to a HP 3458A 8.5 Digit Multimeter
	(1 to 10) $\mu$ A	1.2 $\mu$ A/A + 0.15 nA	
	(10 to 100) $\mu$ A	2.6 $\mu$ A/A + 0.14 nA	
	100 $\mu$ A to 1 mA	1.7 $\mu$ A/A + 2.9 nA	
	(1 to 10) mA	2.4 $\mu$ A/A + 12 nA	
	(10 to 100) mA	2.6 $\mu$ A/A + 0.17 $\mu$ A	
	100 mA to 1 A	3.6 $\mu$ A/A + 3.6 $\mu$ A	

**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure <sup>1</sup>	Up to 100 $\mu$ A		Comparison to a HP 3458A 8.5 Digit Multimeter
	(10 to 20) Hz	4.6 mA/A + 35 nA	
	(20 to 45) Hz	1.7 mA/A + 35 nA	
	(45 to 100) Hz	0.7 mA/A + 35 nA	
	100 Hz to 1 kHz	0.7 mA/A + 35 nA	
	100 $\mu$ A to 1 mA		
	(10 to 20) Hz	4.5 mA/A + 0.32 $\mu$ A	
	(20 to 45) Hz	1.7 mA/A + 0.23 $\mu$ A	
	(45 to 100) Hz	0.7 mA/A + 0.23 $\mu$ A	
	100 Hz to 5 kHz	0.35 mA/A + 0.23 $\mu$ A	
	(1 to 10) mA		
	(10 to 20) Hz	4.6 mA/A + 2.3 $\mu$ A	
	(20 to 45) Hz	1.7 mA/A + 2.3 $\mu$ A	
	(45 to 100) Hz	0.70 mA/A + 2.3 $\mu$ A	
	100 Hz to 5 kHz	0.35 mA/A + 2.3 $\mu$ A	
	(5 to 20) kHz	0.7 mA/A + 2.3 $\mu$ A	
	(20 to 50) kHz	4.6 mA/A + 4.6 $\mu$ A	
	(50 to 100) kHz	6.3 mA/A + 18 $\mu$ A	
	(10 to 100) mA		
	(10 to 20) Hz	4.6 mA/A + 23 $\mu$ A	
	(20 to 45) Hz	1.7 mA/A + 23 $\mu$ A	
	(45 to 100) Hz	0.7 mA/A + 23 $\mu$ A	
	100 Hz to 5 kHz	0.35 mA/A + 23 $\mu$ A	
	(5 to 20) kHz	0.70 mA/A + 23 $\mu$ A	
(20 to 50) kHz	4.6 mA/A + 46 $\mu$ A		
(50 to 100) kHz	6.4 mA/A + 0.17 mA		
100 mA to 1 A			
(10 to 20) Hz	4.6 mA/A + 0.23 mA		
(20 to 45) Hz	1.7 mA/A + 0.23 mA		
(45 to 100) Hz	0.7 mA/A + 0.23 mA		
100 Hz to 5 kHz	1.2 mA/A + 0.23 mA		
(5 to 20) kHz	3.5 mA/A + 0.23 mA		
(20 to 50) kHz	12 mA/A + 0.46 mA		





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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Measure <sup>1</sup>	10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 GΩ	4.7 μΩ/Ω + 0.36 mΩ 11 μΩ/Ω + 0.69 mΩ 11 μΩ/Ω + 0.81 mΩ 12 μΩ/Ω + 5.8 mΩ 11 μΩ/Ω + 75 mΩ 17 μΩ/Ω + 2.3 Ω 13 μΩ/Ω + 0.17 kΩ 0.58 mΩ/Ω + 1.1 kΩ 5.8 mΩ/Ω + 12 kΩ	Comparison to a HP 3458A 8.5 Digit Multimeter
Capacitance Measure <sup>1</sup>	1 MHz 1 nF 10 nF 100 nF 1 μF	0.001 pF 0.84mF/F + 0.000 2 pF 0.86 mF/F 8.6 mF/F	Comparison to a Keysight E4981A Capacitance Meter
Capacitance Measure	1 kHz 1 nF 10 nF 100 nF 1	0.82 mF/F + 0.000 04 nF 0.82 mF/F + 0.000 04 nF 0.82 mF/F + 0.000 04 nF 0.83 mF/F	Comparison to a Keysight E4981A Capacitance Meter
Capacitance Dissipation Factor Measure <sup>1,4</sup>	0 Df	0.000 76 Df	Comparison to a Keysight E4981A Capacitance Meter
Thermocouple Instruments <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	0.59 °C 0.22 °C 0.2 °C 0.22 °C 0.27 °C 0.33 °C 0.22 °C 0.2 °C 0.23 °C 0.29 °C 0.4 °C 0.24 °C 0.22 °C 0.32 °C 0.48 °C	Electrical Simulation using a Fluke 5520A Multiproduct Calibrator



**Electrical – DC/Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Instruments <sup>1</sup>	Type N (-200 to -100) °C	0.48 °C	Electrical Simulation using a Fluke 5520A Multiproduct Calibrator
	(-100 to -25) °C	0.28 °C	
	(-25 to 120) °C	0.25 °C	
	(120 to 410) °C	0.24 °C	
	(410 to 1 300) °C	0.33 °C	
	Type R (0 to 250) °C	0.67 °C	
	(250 to 400) °C	0.42 °C	
	(400 to 1 000) °C	0.4 °C	
	(1 000 to 1 767) °C	0.48 °C	
	Type S (0 to 250) °C	0.56 °C	
	(250 to 1 000) °C	0.43 °C	
	(1 000 to 1 400) °C	0.44 °C	
	(1 400 to 1 767) °C	0.54 °C	
	Type T (-250 to -150) °C	0.74 °C	
(-150 to 0) °C	0.3 °C		
(0 to 120) °C	0.22 °C		
(120 to 400) °C	0.2 °C		
Welding Power Supply <sup>1</sup> DC Voltage DC Current	(0 to 50) V (0 to 500) A	37 mV 4.4 A	Comparison to a Cannon Load Bank and Multimeter
DC Current Source – Clamp-on Ammeters	(20.5 to 1 000) A	3.3 mA/A + 0.46 A	Comparison to a Fluke 5520A Multiproduct Calibrator and 50 turn Current Coil
AC Current Source – Clamp-on Ammeters	(20.5 to 1 000) A (45 to 100) Hz	4.8 mA/A + 0.4 A	
	(20.5 to 600) A (100 to 1 000) Hz	5.3 mA/A + 0.27 A	

**Length – Dimensional Metrology**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Micrometers <sup>1</sup> Outside Inside	Up to 12 in (1.5 to 12) in	(79 + 13L) μin (136 + 8.4L) μin	Comparison to Gage Blocks

**Length – Dimensional Metrology**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Calipers <sup>1</sup>	Up to 40 in	(1 300 + 6L) μin	Comparison to Gage Blocks
Height Gages <sup>1</sup>	Up to 40 in	(90 + 10L) μin	Comparison to Gage Blocks
Indicator Calibrator <sup>1</sup>	Up to 1 in	27 μin	Comparison to Gage Blocks
Depth Gages <sup>1</sup>	Up to 24 in	(150 + 11L) μin	Comparison to Gage Blocks
Length Standards <sup>1</sup>	Up to 28 in	(65 + 20L) μin	Comparison to Gage Blocks and Analog Comparator
Coating Thickness Gauge <sup>3</sup>	Up to 50 mils	0.21 mils	Comparison to Supermicrometer and shims
Cylindrical Plugs	Up to 10 in	(4.6 + 17L) μin	Comparison to Gage Blocks with ID/OD Comparator
Cylindrical Rings	(0.125 to 11) in	(0.7 + 17L) μin	
Indicators <sup>1</sup>	Up to 1 in	110 μin	Comparison to Indicator Calibrator
Angle <sup>1</sup>	(0 to 90)°	0.013°	Comparison to 10 in Sine Bar MET-SB-001
Roughness <sup>1</sup>	118 μin	5.2 μin	Comparison to Roughness Standard

**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Pressure – Hydraulic <sup>1,2</sup>	(2 to 10 000) psig	(0.084 + 0.000 17P) psi	Comparison to Deadweight Tester
Pressure – Pneumatic <sup>1</sup>	(-14.7 to 3) psig	0.008 8 psi	Comparison to Pressure Module
Pressure – Pneumatic <sup>1,2</sup>	(3 to 500) psig	(0.008 8 + 0.000 18P) psi	Comparison to Deadweight Tester

**Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Hand Torque Tools <sup>1</sup>	(2.5 to 25) lbf in (25 to 250) lbf in (25 to 250) lbf ft (250 to 600) lbf ft	0.33 % of reading 0.33 % of reading 0.62 % of reading 1.6 % of reading	Comparison to Torque Calibrator MET-TW-001
Torque Calibration Equipment <sup>1</sup>	(2.5 to 25) lbf in (25 to 250) lbf in (25 to 250) lbf ft (250 to 600) lbf ft	0.083 % of reading 0.1 % of reading 0.066 % of reading 0.14 % of reading	Comparison to 6 in Torque Wheel and arm, Class F Weights MET-TW-002
Force Gages <sup>1,2</sup>	Up to 250 lbf (250 to 1 000) lbf (1 001 to 10 000) lbf	(0.008 6 + 0.000 3F) lbf 2.4 lbf 18 lbf	Comparison to Standard Weights, Load Cells
Gas Flow <sup>1,2</sup>	(1 to 100) ccm (100 to 1 000) ccm (1 to 250) lpm	(0.1 + 0.015X) ccm (5 + 0.01X) ccm (4.3 + 0.004 2X) lpm	Comparison to Bubble Generator, Laminar Flow Element MET-AF-001
Hydraulic Flow <sup>1</sup>	(0.2 to 5) gpm	0.87 % of reading	Comparison to Stopwatch/Prover MET-LF-001
Scales <sup>1</sup> 0.0002 lb resolution 0.001 lb resolution 0.01 lb resolution	Up to 10 lb (6 to 60) lb (25 to 250) lb	(0.000 5 + 0.000 3F) lb (0.006 + 0.000 15F) lb (0.000 2 + 0.013F) lb	Comparison to ASTM E617 Class 7 Weights
Analytical Balance <sup>1</sup> 0.000 2 g resolution 0.01 g resolution	Up to 100 g 100 g to 1 kg	1.3 mg 28 mg	Comparison to ASTM E617 Class 1 Weights
Hardness Testers	HRBW Low Middle High HREW Low Middle High	1.2 HRBW 0.76 HRBW 0.72 HRBW 0.79 HREW 0.63 HREW 1.8 HREW	Indirect Verification per ASTM E18 using Hardness Blocks

**Thermodynamic**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Temperature – Measure <sup>1</sup> (Atmospheric Conditions, Heat Sources, etc.)	(-50 to 650) °C	0.04 °C	Comparison to SPRT and 1502 Indicator

### Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Temperature – Measure <sup>1</sup> (Atmospheric Conditions, Heat Sources, etc.)	(650 to 1 350) °C	2.6 °C	Comparison to Thermocouple, 5520A Multifunction Calibrator
Temperature – Source (Temperature Probes with or without Indicators)	(0 to 200) °C (200 to 500) °C	(0.04 + 0.000 06T) °C (0.07 + 0.000 02T) °C	Comparison to RTD, 1502 Indicator and Baths, Dry Well
Relative Humidity <sup>1</sup>	(20 to 100) % RH	1.2 %RH	Comparison to Psychrometer
Radiation (Infrared) Thermometers	50 °C 150 °C 250 °C 350 °C	1.8 °C 2.8 °C 4 °C 4.9 °C	Comparison to RTD with Indicator, Blackbody Source (concentric rings); $\epsilon = 0.95, \lambda = (8 \text{ to } 14) \mu\text{m}$

### Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) <sup>2</sup>	Reference Standard, Method, and/or Equipment
Stopwatch <sup>1</sup>	1 s to 30 hr	(0.05 + 0.000 01S) s	Comparison to GPS, 5334B Counter MET-SW-002
Frequency	10 MHz	0.000 29 % of reading	Comparison to GPS Receiver
Optical Tachometer	(600 to 60 000) RPM	0.000 33 % of reading + 0.01 rpm	Comparison to 5520A Multiproduct Calibrator

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.  $L$  = length in inches,  $P$  = pressure in psi,  $R$  = resolution of unit under test,  $S$  = time in unit of seconds,  $F$  = force in units of pounds,  $T$  = temperature in degrees Celsius,  $c$  = flow rate in units scfm,  $l$  = flow rate in units slpm,  $W$  = weight in pounds; rpm = revolutions per minute..
3. 1 mil = 0.001 inch.
4. Unitless linear measure.
5. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1358.



Jason Stine, Vice President