SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
ANSI/NCSL Z540-1-1994

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CALIBRATION

Valid To: November 30, 2026 Certificate Number: 3601.10

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the organization's compliance with R205 – A2LA's Calibration Program Requirements), accreditation is granted to this laboratory to perform the following calibrations[1, 5]:

I. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Micrometers[3]	Up to 40 in	(62 + 2.9*L*) µin	Gage blocks
Calipers[3]	Up to 40 in	(65 + 0.51*L*) µin	Gage blocks
Length & Travel Indicators	Up to 6 in	76 µin	Gage blocks & granite surface plate
Height Gages	Up to 24 in	84 µin	Gage blocks & granite surface plate

II. Electrical DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
DC Voltage – Generate[3]	(0 to 329.9999) mV (0 to 3.299 999) V (0 to 32.999 99) V (30 to 329.9999) V (100 to 1020) V	51 µV/V + 2.3 µV 38 µV/V + 3.9 µV 38 µV/V + 39 µV 44 µV/V + 390 µV 45 µV/V + 1200 µV	Fluke 5500A
DC Current – Generate[3]	(0.33 to 3.3) mA (3.3 to 33) mA (33 to 330) mA (0.33 to 2.2) A (2.2 to 11) A	190 µA/A + 0.039 µA 82 µA/A + 0.19 µA 100 µA/A + 1.9 µA 300 µA/A + 34 µA 870 µA/A + 580 µA	Fluke 5500A
DC Voltage – Measure[3]	Up to 100 mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1050) V	8.0 µV/V + 0.30 µV 7.3 µV/V + 0.30 µV 7.0 µV/V + 0.5 µV 9.4 µV/V + 30 µV 13 µV/V + 100 µV	Keysight 3458A
DC Current – Measure[3]	Up to 100 µA (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	35 µA/A + 0.80 nA 18 µA/A + 5.0 nA 20 µA/A + 50 nA 36 µA/A + 0.50 µA 100 µA/A + 10 µA	Keysight 3458A
AC Voltage – Generate[3]			
Up 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	0.12 % + 0.016 mV 0.078 % + 0.016 mV 0.12 % + 0.016 mV 0.16 % + 0.016 mV 0.31 % + 0.026 mV 0.84 % + 0.047 mV	Fluke 5500A
(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	0.048 % + 0.016 mV 0.024 % + 0.016 mV 0.055 % + 0.016 mV 0.080 % + 0.031 mV 0.18 % + 0.13 mV 0.41 % + 0.26 mV	

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
AC Voltage – Generate[3] (cont)			
(0.33 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	0.045 % + 47 µV 0.024 % + 47 µV 0.055 % + 47 µV 0.078 % + 47 µV 0.19 % + 0.16 mV 0.41 % + 0.70 mV	Fluke 5500A
(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	0.045 % + 0.62 mV 0.027 % + 0.47 mV 0.055 % + 0.47 mV 0.078 % + 0.47 mV 0.18 % + 1.6 mV	
(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	0.039 % + 2.3 mV 0.061 % + 7.0 mV 0.071 % + 7.0 mV 0.10 % + 7.0 mV 0.19 % + 0.062 V	
(330 to 1000) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.039 % + 0.016 V 0.062 % + 0.016 V 0.070 % + 0.016 V	
AC Voltage – Measure[3]			
Up to 100 mV	(10 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300 kHz (0.3 to 1) MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	0.0072 % + 0.0048 mV 0.0096 % + 0.0024 mV 0.017 % + 0.0024 mV 0.031 % + 0.0024 mV 0.092 % + 0.0024 mV 0.41 % + 0.012 mV 1.3 % + 0.012 mV 4.1 % + 0.084 mV 4.2 % + 0.096 mV 15 % + 0.12 mV	Keysight 3458A

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
AC Voltage – Measure[3] (cont)			
(0.1 to 1) V	(10 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300 kHz (0.3 to 1) MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	0.0082 % + 48 µV 0.0086 % + 24 µV 0.016 % + 24 µV 0.036 % + 24 µV 0.079 % + 24 µV 0.32 % + 0.12 mV 0.99 % + 0.12 mV 4.0 % + 0.84 mV 4.1 % + 0.96 mV 15 % + 1.2 mV	Keysight 3458A
(1 to 10) V	(10 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300 kHz (0.3 to 1) MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	0.016 % + 0.48 mV 0.0086 % + 0.24 mV 0.016 % + 0.24 mV 0.033 % + 0.24 mV 0.082 % + 0.24 mV 0.32 % + 1.2 mV 0.99 % + 1.2 mV 4.0 % + 8.4 mV 4.0 % + 9.6 mV 15 % + 0.012 V	
(10 to 100) V	(10 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.020 % + 4.8 mV 0.021 % + 2.4 mV 0.022 % + 2.4 mV 0.036 % + 2.4 mV 0.12 % + 2.4 mV	
(100 to 750) V	(10 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.041 % + 0.040 V 0.047 % + 0.020 V 0.063 % + 0.020 V 0.12 % + 0.020 V 0.30 % + 0.020 V	
AC Current – Measure[3]			
(Up to 100) µA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.40 % + 3.6 nA 0.15 % + 3.6 nA 0.060 % + 3.6 nA 0.064 % + 3.6 nA	Keysight 3458A

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
AC Current – Measure[3] (cont)			
(0.1 to 1) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.41 % + 0.24 µA 0.15 % + 0.24 µA 0.06 % + 0.24 µA 0.031 % + 0.24 µA 0.06 % + 0.24 µA 0.4 % + 0.48 µA 0.55 % + 1.8 µA	Keysight 3458A
(1 to 10) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.41 % + 2.4 µA 0.15 % + 2.4 µA 0.06 % + 2.4 µA 0.032 % + 2.4 µA 0.06 % + 2.4 µA 0.4 % + 4.8 µA 0.55 % + 18 µA	
(10 to 100) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.41 % + 24 µA 0.15 % + 24 µA 0.06 % + 24 µA 0.031 % + 24 µA 0.06 % + 24 µA 0.4 % + 48 µA 0.55 % + 0.18 mA	
(0.1 to 1) A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	0.4 % + 0.21 mA 0.16 % + 0.21 mA 0.08 % + 0.21 mA 0.1 % + 0.21 mA 0.3 % + 0.21 mA 1 % + 0.42 mA	
Resistance – Measure[3]	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 (0.1 to 1) GΩ	17 µΩ/Ω + 50 µΩ 15 µΩ/Ω + 0.50 mΩ 18 µΩ/Ω + 0.50 mΩ 14 µΩ/Ω + 5.0 mΩ 14 µΩ/Ω + 50 mΩ 220 µΩ/Ω + 2.0 Ω 180 µΩ/Ω + 0.10 kΩ 0.087 % + 1.0 kΩ 0.41 % + 10 kΩ	Keysight 3458A

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Resistance – Generate[3]	Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (0.33 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 (0.33 to 1.1) MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ	0.017 % + 0.78 mΩ 0.014 % + 1.2 mΩ 0.0076 % + 1.1 mΩ 0.0075 % + 1.6 mΩ 0.0073 % + 1.6 mΩ 0.0071 % + 1.6 mΩ 0.0070 % + 1.6 mΩ 0.0071 % + 0.16 Ω 0.0088 % + 0.16 mΩ 0.0095 % + 1.6 Ω 0.012 % + 1.6 Ω 0.014 % + 23 Ω 0.057 % + 39 Ω 0.12 % + 1.9 kΩ 0.53 % + 2.3 kΩ 1.1 % + 0.078 MΩ	Fluke 5500A
Electrical Calibration of Thermocouple Indicators[3] – Generate & Measure			
Type B	(600 to 800) °C (800 to 1000) °C (1000 to 1550) °C (1550 to 1820) °C	0.44 °C 0.36 °C 0.32 °C 0.35 °C	Fluke 5500A
Type C	(0 to 150) °C (150 to 650) °C (650 to 1000) °C (1000 to 1800) °C (1800 to 2316) °C	0.30 °C 0.27 °C 0.31 °C 0.44 °C 0.70 °C	
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.43 °C 0.20 °C 0.19 °C 0.20 °C 0.23 °C	
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.26 °C 0.18 °C 0.17 °C 0.21 °C 0.24 °C	

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Electrical Calibration of Thermocouple Indicators[3] – Generate & Measure (cont)			
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.33 °C 0.20 °C 0.21 °C 0.25 °C 0.37 °C	Fluke 5500A
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C	0.40 °C 0.25 °C 0.22 °C 0.21 °C 0.27 °C	
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.51 °C 0.37 °C 0.34 °C 0.38 °C	
Type S	(0 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C	0.46 °C 0.36 °C 0.37 °C 0.44 °C	
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.52 °C 0.24 °C 0.18 °C 0.20 °C	

III. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Scales and Balances[3]	(5 to 20) g (20 to 50) g (50 to 200) g (200 to 1000) g (1 to 5) kg	1.5 mg 5.2 mg 5.4 mg 6.5 g 0.0065 kg	ASTM Class 6 (applied load)
Truck & Rail Scales[3]	(1 to 10) lb (10 to 25) lb (25 to 50) lb (50 to 500) lb (500 to 1000) lb (1000 to 5000) lb (6000 to 30 000) lb	0.0026 lb 0.0065 lb 0.013 lb 0.13 lb 0.26 lb 1.6 lbs 1.4 lb	Weight cart and weight blocks (applied load)
Pressure – Measuring Equipment[3]	(-14 to 0) psig (0 to 30) psig (0 to 100) psig (0 to 500) psig (0 to 1000) psig (0 to 3000) psig (0 to 5000) psig (0 to 10 000) psig (0 to 20 000) psig	0.0027 psig 0.0037 psig 0.019 psig 0.069 psig 0.18 psig 0.35 psig 0.57 psig 1.6 psig 3.7 psig	Pressure transducers
Torque – Measuring Equipment[3]	(5 to 25) lbf·in (25 to 50) lbf·in (50 to 250) lbf·in (250 to 500) lbf·in (25 to 125) lbf·ft (125 to 250) lbf·ft (100 to 500) lbf·ft (500 to 1000) lbf·ft	0.058 lbf·in 0.066 lbf·in 0.51 lbf·in 0.91 lbf·in 0.19 lbf·ft 0.76 lbf·ft 1.6 lbf·ft 4.6 lbf·ft	Mountz BMX50i Mountz BMX500i Mountz BMX250F Mountz BMX1000F

IV. Thermodynamics

Parameter/Equipment	Range	CMC[2] (±)	Comments
Temperature – Measuring Equipment[3]	Up to 50 °C (50 to 420) °C (420 to 660) °C (-25 to 140) °C	0.072 °C 0.42 °C 0.60 °C 0.036 °C	Fluke 9144 field metrology well with Fluke 5609 PRT Fluke 7109A Portable bath w/Fluke 5609 PRT

[1] This laboratory offers commercial calibration service and field calibration service.

[2] Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

[3] Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g., resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

[4] The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.

[5] This scope meets A2LA's *P112 Flexible Scope Policy*.

Accredited Laboratory

A2LA has accredited

G.T. MICHELLI CO., LLC

Houston, TX

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and R205 – Specific Requirements: Calibration Laboratory Accreditation Program. 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*).

Presented this 26th day of March 2025.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3601.10
Valid to November 30, 2026

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.