



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

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CALIBRATION

Valid To: September 30, 2025

Certificate Number: 1395.24

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1,6}:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2, 5} (\pm)	Comments
Micrometers ³	Up to 1 in	(95 + 6.4L) μ in	Gage blocks
Calipers ³			
External Length	Up to 6 in	(310 + 6.4L) μ in	Gage blocks
Internal Length	1 in	(310 + 6.4L) μ in	Ring gage
Step & Depth	1 in	(310 + 6.4L) μ in	Step blocks, surface plate
Indicators ³	Up to 1 in	(150 + 6.3L) μ in	Gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
DC Voltage – Generate ³	Up to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (330 to 1000) V	16 μV/V + 0.78 μV 9.2 μV/V + 1.6 μV 10 μV/V + 16 μV 15 μV/V + 120 μV 15 μV/V + 1.2 mV	Fluke 5520A
DC Voltage – Measure ³	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V*	11 μV/V + 0.3 μV 5.3 μV/V + 0.3 μV 5.1 μV/V + 0.5 μV 8.5 μV/V + 30 μV 8.9 μV/V + 100 μV*	HP 3458A, opt 2 *add 12 (Vin/1000) ² parts in 10 ⁶ to all Vin > 100
DC Current – Generate ³	(0 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) A	0.012 % + 0.02 μA 79 μA/A + 0.04 μA 79 μA/A + 0.19 μA 80 μA/A + 32 μA 0.016 % + 32 μA 0.030 % + 32 μA 0.040 % + 0.39 mA 0.078 % + 0.59 mA	Fluke 5520A
Clamp Meters ³	(10 to 1000) A	0.82 % + 0.029 A	Fluke 5500A/coil & 5520A/SC1100
DC Current – Measure ³	(10 to 100) μA (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A (1 to 2) A (2 to 20) A (20 to 100) A	0.003 μA/A + 0.8 nA 0.03 μA/A + 5 nA 0.3 μA/A + 50 nA 0.005 mA/A + 500 nA 0.15 mA/A + 10 μA 0.003 A 0.058 A 0.29 A	HP 3458A, opt 2 Current shunt, HP 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 (0.33 to 1.1) GΩ	33 μΩ/Ω + 0.0078 Ω 26 μΩ/Ω + 1.2 mΩ 27 μΩ/Ω + 1.2 mΩ 30 μΩ/Ω + 1.6 mΩ 27 μΩ/Ω + 1.6 mΩ 30 μΩ/Ω + 1.6 mΩ 34 μΩ/Ω + 78 mΩ 27 μΩ/Ω + 0.78 Ω 22 μΩ/Ω + 0.32 Ω 27 μΩ/Ω + 7.8 Ω 30 μΩ/Ω + 7.8 Ω 48 μΩ/Ω + 120 Ω 0.010 % + 200 Ω 0.02 % + 1.9 kΩ 0.039 % + 2.4 kΩ 0.23 % + 78 kΩ 1.2 % + 390 kΩ	Fluke 5520A/SC1100
Resistance – Measure ³	(0 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 (100 to 1000) MΩ	25 μΩ/Ω + 50 μΩ 21 μΩ/Ω + 0.5 mΩ 12 μΩ/Ω + 0.5 mΩ 12 μΩ/Ω + 50 mΩ 14 μΩ/Ω + 90 mΩ 20 μΩ/Ω + 2 Ω 59 μΩ/Ω + 100 Ω 0.061 % + 1 kΩ 32 % + 10 kΩ	HP 3458A, opt 2
Electrical Simulation of Thermocouples Indicating Devices – Generate & Measure ³			
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.42 °C 0.18 °C 0.17 °C 0.18 °C 0.21 °C	Fluke 5520A/SC1100
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.24 °C 0.18 °C 0.17 °C 0.18 °C 0.22 °C	

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Simulation of Thermocouples Indicating Devices – Generate & Measure ³ (cont)			
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.28 °C 0.19 °C 0.18 °C 0.24 °C 0.33 °C	Fluke 5520A/SC1100
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.50 °C 0.22 °C 0.18 °C 0.17 °C	

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
Capacitance – Generate ³			
(0.19 to 0.3999) nF	10 Hz to 10 kHz	0.55 % + 7.8 pF	Fluke 5520A
(0.4 to 1.0999) nF	10 Hz to 10 kHz	0.44 % + 7.8 pF	
(1.1 to 3.2999) nF	10 Hz to 3 kHz	0.42 % + 7.8 pF	
(3.3 to 10.9999) nF	10 Hz to 1 kHz	0.24 % + 7.8 pF	
(11 to 32.9999) nF	10 Hz to 1 kHz	0.23 % + 78 pF	
(33 to 109.999) nF	10 Hz to 1 kHz	0.24 % + 78 pF	
(110 to 329.999) nF	10 Hz to 1 kHz	0.24 % + 0.23 nF	
(0.33 to 1.099 99) μF	10 Hz to 600 Hz	0.24 % + 0.8 nF	
(1.1 to 3.299 99) μF	(10 to 300) Hz	0.23 % + 2.3 nF	
(3.3 to 10.9999) μF	(10 to 150) Hz	0.24 % + 7.8 nF	
(11 to 32.9999) μF	(10 to 120) Hz	0.34 % + 24 nF	
(33 to 109.999) μF	(10 to 80) Hz	0.39 % + 78 nF	
(110 to 329.999) μF	(0 to 50) Hz	0.39 % + 0.24 μF	
(0.33 to 1.099 99) mF	(0 to 20) Hz	0.37 % + 0.8 μF	
(1.1 to 3.2999) mF	(0 to 6) Hz	0.37 % + 2.3 μF	
(3.3 to 10.9999) mF	(0 to 2) Hz	0.37 % + 8 μF	
(11 to 32.9999) mF	(0 to 0.6) Hz	0.59 % + 24 μF	
(33 to 110) mF	(0 to 0.2) Hz	0.86 % + 78 μF	

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Oscilloscope ³ –			
Amplitude – DC Signal			
50 Ω	1 mV to 6.6 V	0.2 % + 40 μV	Fluke 5520A/SC1100
1 MΩ	1 mV to 130 V	0.05 % + 40 μV	
Amplitude – Square Wave ³			
50 Ω	1 mV _{p-p} to 6.6 V _{p-p} , 10 Hz to 100 kHz	0.23 % + 31 μV	
1 MΩ	1 mV _{p-p} to 130 V _{p-p} , 10 Hz to 100 kHz	0.16 % + 31 μV	
Bandwidth	5 mV to 5.5 V:		
	50 kHz	1.8 % + 0.23 mV	
	50 kHz to 100 MHz	2.8 % + 0.23 mV	
	(100 to 300) MHz	3.2 % + 0.23 mV	
	(300 to 600) MHz	4.7 % + 0.23 mV	
	4 mV to 3.5 V:		
	(600 to 1100) MHz	5.5 % + 0.23 mV	
Time Marker	5 s to 50 ms 1 ns to 20 ms	60 μs/s 2.1 μs/s	
Rise Time	1 kHz to 2 MHz: (200 to 300) ps	82 ps	
	(2 to 10) MHz: (200 to 350) ps	82 ps	

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
AC Voltage – Generate ³			
(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	0.064 % + 4.7 μV 0.019 % + 4.7 μV 0.023 % + 4.7 μV 0.082 % + 4.7 μV 0.28 % + 9.3 μV 0.63 % + 39 μV	Fluke 5520A/SC1100
(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	0.024 % + 6.2 μV 0.013 % + 6.2 μV 0.014 % + 6.2 μV 0.029 % + 6.2 μV 0.063 % + 25 μV 0.16 % + 55 μV	
(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	0.024 % + 39 μV 0.014 % + 47 μV 0.017 % + 47 μV 0.025 % + 39 μV 0.056 % + 97 μV 0.2 % + 470 μV	
(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	0.025 % + 510 μV 0.014 % + 470 μV 0.02 % + 470 μV 0.03 % + 470 μV 0.072 % + 1.3 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	0.017 % + 1.6 mV 0.017 % + 4.7 mV 0.022 % + 4.7 mV 0.03 % + 4.7 mV 0.17 % + 39 mV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.025 % + 7.8 mV 0.021 % + 7.8 mV 0.025 % + 7.8 mV	

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
AC Voltage – Measure ³			
(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	0.05 % + 3 μV 0.037 % + 1.1 μV 0.048 % + 1.1 μV 0.12 % + 1.1 μV 0.61 % + 1.1 μV 4.7 % + 2 μV	HP 3458A, opt 2
(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 (0.3 to 1) MHz	110 μV/V + 4 μV 91 μV/V + 2 μV 0.017 % + 2 μV 0.036 % + 2 μV 0.096 % + 2 μV 0.76 % + 10 μV 1.2 % + 10 μV	
100 mV to 1 V	(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 (0.3 to 1) MHz	83 μV/V + 40 μV 84 μV/V + 20 μV 0.016 % + 20 μV 0.035 % + 20 μV 0.093 % + 20 μV 0.35 % + 100 μV 1.2 % + 100 μV	
(1 to 10) V	(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 (0.3 to 1) MHz	85 μV/V + 0.4 mV 84 V/V + 0.2 mV 0.017 % + 0.2 mV 0.035 % + 0.2 mV 0.093 % + 0.2 mV 0.35 % + 1.0 mV 1.2 % + 1.0 mV	
(10 to 100) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.02 % + 4 mV 0.01 % + 2 mV 0.024 % + 2.5 mV 0.041 % + 2.5 mV 0.14 % + 2.5 mV	
(100 to 1000) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.05 % + 40 mV 0.05 % + 20 mV 0.07 % + 20 mV 0.14 % + 20 mV 0.35 % + 20 mV	

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
AC Current – Generate ³			
(29 to 330) µA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1.0 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.16 % + 80 nA 0.12 % + 80 nA 0.1 % + 80 nA 0.23 % + 0.12 µA 0.62 % + 0.16 µA 1.3 % + 0.31 µA	Fluke 5520A/SC1100
(0.33 to 3.3) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1.0 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.16 % + 0.12 µA 0.1 % + 0.12 µA 0.08 % + 0.12 µA 0.16 % + 0.16 µA 0.39 % + 0.23 µA 0.8 % + 0.47 µA	
(3.3 to 33) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1.0 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.14 % + 1.6 µA 0.071 % + 1.6 µA 0.034 % + 1.6 µA 0.064 % + 1.6 µA 0.16 % + 2.4 µA 0.32 % + 3.1 µA	
(33 to 330) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1.0 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.14 % + 16 µA 0.071 % + 16 µA 0.034 % + 16 µA 0.079 % + 39 µA 0.16 % + 78 µA 0.32 % + 0.16 mA	
(0.33 to 1.1) A	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1.0 kHz (1 to 5) kHz (5 to 10) kHz	0.14 % + 78 µA 0.039 % + 78 µA 0.039 % + 78 µA 0.47 % + 0.78 mA 2.0 % + 4 mA	
(1.1 to 3) A	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1.0 kHz (1 to 5) kHz (5 to 10) kHz	0.14 % + 78 µA 0.15 % + 78 µA 0.055 % + 78 µA 0.47 % + 0.78 mA 2.0 % + 4 mA	
(3 to 11) A	45 Hz to 1.0 kHz (1 to 5) kHz	0.083 % + 1.6 mA 2.4 % + 1.6 mA	
(11 to 20.5) A	45 Hz to 1.0 kHz (1 to 5) kHz	0.12 % + 4 mA 2.4 % + 4 mA	

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
AC Current – Generate ³ (cont)			
Clamp Meters			
Up to 500 A	(45 to 440) Hz	1.2 % + 0.078 A	Fluke 5500A/coil & 5520A LCOMP OFF
(500 to 1000) A	(45 to 440) Hz	1.2 % + 0.19 A	
AC Current – Measure ³			
(5 to 100) µA	45 Hz to 5 kHz	0.07 % + 0.03 µA	HP 3458A, opt2 * w/ Valhalla 2575A
(0.1 to 1) mA	45 Hz to 5 kHz	0.07 % + 0.2 µA	
(1 to 10) mA	45 Hz to 5 kHz	0.07 % + 2 µA	
(10 to 100) mA	45 Hz to 5 kHz	0.07 % + 20 µA	
(0.1 to 1) A	45 Hz to 5 kHz	0.12 % + 0.2 mA	
(1 to 2) A	45 Hz to 1 kHz	0.14 % + 0.2 mA	
(2 to 20) A*	45 Hz to 1 kHz	0.17 % + 2 mA	
(20 to 200) A*	45 Hz to 1 kHz	0.17 % + 2 mA	

III. Mechanical

Parameter/Equipment	Range	CMC ^{2,5,7} (±)	Comments
Torque Measure – Wrenches & Drivers ³	(5 to 50) ozf·in (5 to 25) lbf·in (25 to 250) lbf·in (25 to 250) lbf·ft	0.77 % Indicated Value 0.77 % Indicated Value 0.77 % Indicated Value 0.77 % Indicated Value	Check-line ITI & ITF-System
Tachometers – Noncontact ³	(10 to 200 000) rpm	0.19 mrpm/rpm + 0.58R	HP 33250A phase locked to GPS-12R

IV. Time & Frequency

Parameter/Equipment	Range	CMC ^{2, 5, 7} (\pm)	Comments
Frequency – Generate Equipment ³			
Rubidium Standard	10 MHz	$(1 \times 10^{-9}) \text{ Hz} + 0.58R$	Pendulum Instruments GPS-12R
	Up to 80 MHz Up to 26.5 GHz	$(1 \times 10^{-9}) \text{ Hz} + 1 \mu\text{Hz}$ $(1.2 \times 10^{-9}) \text{ Hz} + 0.58R$	Rubidium, Agilent 33120A & 83630B
Frequency – Measure ³	Up to 12.4 GHz	$(1 \times 10^{-9}) \text{ Hz} + 0.58R$	Rubidium, Agilent 53132A, HP53131A

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 stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.

⁵ In the statement of CMC, R is the resolution of the unit under test; L is the numerical value of the nominal length of the device measured in inches. In the statement of CMC, the value is defined as the percentage of reading.

⁶ This scope meets A2LA's *P112 Flexible Scope Policy*.

⁷ 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.



Accredited Laboratory

A2LA has accredited

SIMCO ELECTRONICS

Longmont, CO

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/NCCL 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 14th day of August 2023.

A blue ink signature of Mr. Trace McInturff, written over a horizontal line.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1395.24
Valid to September 30, 2025

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