



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid to: April 30, 2026

Certificate Number: 1876.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the organization's compliance with A2LA's Calibration Program Requirements) accreditation is granted to this laboratory to perform the following calibrations^{1, 7}:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2, 4} ($\pm$)	Comments
Calipers, Verniers & Linear Scales ³	Up to 36 in	$(360 + 4.5L) \mu\text{in} + 0.6R$	Gage blocks, rod standards
Height Gages ³	Up to 36 in	$(370 + 4.1L) \mu\text{in} + 0.6R$	Gage blocks
Indicators ³	Up to 2 in	$(28 + 6.3L) \mu\text{in} + 0.6R$	Gage blocks
Micrometers ³ – Outside Inside Depth	Up to 1 in (1 to 12) in (12 to 24) in Up to 36 in Up to 6 in	47 μin $(88 + 3.2L) \mu\text{in}$ 1200 μin $(68 + 26L) \mu\text{in}$ 580 μin	Gage blocks, rod standards
Gage Blocks	Up to 1 in (1 to 4) in	4.5 μin $(1.9 + 2.6L) \mu\text{in}$	Labmaster universal measuring machine, master gage blocks

Parameter/Equipment	Range	CMC ^{2, 4} ($\pm$)	Comments
Rules ³ & Tapes ³	Up to 60 in	0.032 in	Gage blocks, linear standards
Thread Plugs – Major Diameter Pitch Diameter	Up to 4 in (4 to 80) TPI Up to 4 in (4 to 80) TPI	53 μ in 100 μ in	Supermicrometer TM with thread measuring wires
Length Standards – Setting Rods	 (1 to 20) in (20 to 40) in	 (59 + 1.8L) μ in (35 + 3.1L) μ in	 Gage blocks, digital probe with amplifier

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2, 6, 9} ($\pm$)	Comments
DC Voltage – Generate ^{3, 5}	(0 to 202) mV 202 mV to 2.02 V (2.02 to 20.2) V (20.2 to 202) V (202 to 1025) V	15 μ V/V + 2 μ V 9 μ V/V + 2.5 μ V 8 μ V/V + 24 μ V 12 μ V/V + 240 μ V 12 μ V/V + 2400 μ V	Transmille 4010-SYS
DC Voltage – Measure ³	(0 to 200) mV 100 mV to 2 V (1 to 20) V (10 to 200) V (100 to 1000) V (1000 to 20 000) V	5.1 μ V/V + 100 nV 3.5 μ V/V + 400 nV 3.5 μ V/V + 4 nV 5.5 μ V/V + 40 μ V 5.5 μ V/V + 500 μ V 2.3 %	Fluke 8508A Fluke 80k-40
DC Current – Generate ⁵	(0 to 202) μ A (0.2 to 2.02) mA (2.02 to 20.2) mA (20.2 to 202) mA	0.010 % + 0.01 μ A 0.0050 % + 0.03 μ A 0.0050 % + 0.2 μ A 0.0050 % + 2 μ A	Transmille 4010-SYS

Parameter/Equipment	Range	CMC ^{2,9} (±)	Comments
Resistance – Measure ³ (cont)	(20 to 200) kΩ 200 kΩ to 2 MΩ (2 to 20) MΩ (20 to 200) MΩ 200 MΩ to 2 GΩ	8 μΩ/Ω + 50 mΩ 9 μΩ/Ω + 1 Ω 20 μΩ/Ω + 100 Ω 130 μΩ/Ω + 10 kΩ 1500 μΩ/Ω + 1 MΩ	Fluke 8508A
Capacitance – Generate ⁵ Fixed Points Simulated	1nF 2 nF 5 nF 10 nF 100 nF 1μF 10 μF (0.95 to 9.5)μF (9.5 to 95) μF 95 μF to 0.95 mF (0.95 to 9.5) mF (9.5 to 100) mF	0.25 % 0.25 % 0.25 % 0.25 % 0.25 % 0.40 % 0.60 % 0.7 % 0.7 % 0.7 % 0.7 % 0.7 %	Transmille 4010-SYS

Parameter/Range	Frequency	CMC ^{2,9} (±)	Comments
AC Voltage – Measure ³ (1 to 200) mV 200 mV to 2V	(1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	180 μV/V + 14 μV 160 μV/V + 4 μV 120 μV/V + 4 μV 110 μV/V + 2 μV 140 μV/V + 4 μV 340 μV/V + 8 μV 770 μV/V + 20 μV 170 μV/V + 120 μV 150 μV/V + 20 μV 91 μV/V + 20 μV 76 μV/V + 20 μV 110 μV/V + 20 μV 220 μV/V + 40 μV 570 μV/V + 200 μV 3000 μV/V + 2 mV 10 000 μV/V + 20 mV	Fluke 8508A

Parameter/Range	Frequency	CMC ^{2,9} ($\pm$)	Comments
AC Voltage – Measure ³ (cont)			
(2 to 20) V	(1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	150 μ V/V + 1.2 mV 120 μ V/V + 200 μ V 90 μ V/V + 200 μ V 75 μ V/V + 200 μ V 110 μ V/V + 200 μ V 220 μ V/V + 400 μ V 570 μ V/V + 2 mV 3000 μ V/V + 20 mV 10 000 μ V/V + 200 mV	Transmille 4010-SYS
(20 to 200) V	(1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	150 μ V/V + 12 mV 120 μ V/V + 2 mV 91 μ V/V + 2 mV 77 μ V/V + 2 mV 110 μ V/V + 2 mV 220 μ V/V + 4 mV 570 μ V/V + 20 mV 3000 μ V/V + 200 mV 10 000 μ V/V + 2 V	
(20 to 1000) V	(1 to 10) Hz (10 to 40) Hz 40 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz	150 μ V/V + 70 mV 120 μ V/V + 20 mV 120 μ V/V + 20 mV 230 μ V/V + 40 mV 580 μ V/V + 200 mV	
AC Voltage – Generate ^{3,5}			
(0 to 202) mV	(10 to 45) Hz 45 Hz to 1 kHz (1 to 20) kHz (20 to 100) kHz (100 to 500) kHz	0.08 % + 15 μ V 0.02 % + 15 μ V 0.02 % + 28 μ V 0.10 % + 40 μ V 0.40 % + 100 μ V	Transmille 4010-SYS
202 mV to 2.02 V	(10 to 45) Hz 45 Hz to 1 kHz (1 to 20) kHz (20 to 100) kHz (100 to 500) kHz	0.05 % + 180 μ V 0.02 % + 120 μ V 0.02 % + 180 μ V 0.07 % + 300 μ V 0.30 % + 450 μ V	
(2.02 to 20.2) V	(10 to 45) Hz 45 Hz to 1 kHz	0.05 % + 1600 μ V 0.02 % + 1000 μ V	

Parameter/Range	Frequency	CMC ^{2,9} (±)	Comments
AC Voltage – Generate ^{3,5} (cont)			Transmille 4010-SYS
(2.02 to 20.2) V	(1 to 20) kHz (20 to 100) kHz	0.02 % + 1600 µV 0.06 % + 3000 µV	
(20.2 to 202) V	(30 to 45) Hz 45 Hz to 1 kHz (1 to 10) kHz (10 to 40) kHz	0.05 % + 20 mV 0.02 % + 12 mV 0.02 % + 16 mV 0.03 % + 30 mV	
(202 to 1020) V	(30 to 45) Hz 45 Hz to 1 kHz (1 to 10) kHz	0.07 % + 200 mV 0.05 % + 60 mV 0.04 % + 120 mV	
AC Current – Generate ^{3,5}			Transmille 4010-SYS
(0 to 202) µA	(10 to 45) Hz 45 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz	0.23 % + 0.25 µA 0.31 % + 0.15 µA 0.80 % + 0.25 µA 1.6 % + 0.40 µA	
(.202 to 2.02) mA	(10 to 45) Hz 45 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz	0.20 % + 0.25 µA 0.06 % + 0.20 µA 0.50 % + 0.30 µA 1.0 % + 0.60 µA	
(2.02 to 20.2) mA	(10 to 45) Hz 45 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz	0.20 % + 3 µA 0.04 % + 2 µA 0.25 % + 3 µA 0.50 % + 4 µA	
(20.2 to 202) mA	(10 to 45) Hz 45 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz	0.20 % + 30 µA 0.04 % + 20 µA 0.50 % + 40 µA 0.70 % + 200 µA	
(0.202 to 2.02) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz	0.20 % + 300 µA 0.06 % + 200 µA 0.50 % + 400 µA	
(2.02 to 30) A	(30 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.20 % + 3 mA 0.09 % + 2 mA 0.30 % + 4 mA 0.61 % + 4 mA	

Parameter/Range	Frequency	CMC ^{2, 6, 9} ($\pm$)	Comments
AC Current – Generate ^{3, 5} (cont) (11 to 500) A	 (50 to 60) Hz	 0.39 %	 Transmille 4010-SYS, plus coil, clamp-on only
AC Current – Measure ³ (0 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 20) A	 1 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz (1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz (1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz (1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz 10 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz 10 Hz to 2 kHz (2 to 10) kHz	 500 μ A/A + 20 nA 710 μ A/A + 20 nA 0.40 % + 20 nA 320 μ A/A + 200 nA 310 μ A/A + 200 nA 710 μ A/A + 200 nA 0.40 % + 200 nA 310 μ A/A + 2 μ A 300 μ A/A + 2 μ A 710 μ A/A + 2 μ A 0.40 % + 2 μ A 310 μ A/A + 20 μ A 290 μ A/A + 20 μ A 630 μ A/A + 20 μ A 620 μ A/A + 200 μ A 740 μ A/A + 200 μ A 0.30 % + 200 μ A 820 μ A/A + 2 mA 0.25 % + 2 mA	 Fluke 8508A
Electrical Calibration of Thermocouple Indicating Systems ^{3, 5} – Type E Type J	 (-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C (-210 to -100) °C (-100 to -30) °C	 0.50 °C 0.10 °C 0.09 °C 0.12 °C 0.15 °C 0.23 °C 0.11 °C	 Transmille 4010-SYS

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouple Indicating Systems ^{3,5} – (cont)			
Type J	(-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.10 °C 0.14 °C 0.20 °C	Transmille 4010-SYS
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1370) °C	0.27 °C 0.15 °C 0.11 °C 0.20 °C 0.26 °C	
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 410) °C (410 to 1300) °C	0.42 °C 0.21 °C 0.17 °C 0.25 °C	
Type R	(0 to 250) °C (250 to 1000) °C (1000 to 1760) °C	0.80 °C 0.44 °C 0.51 °C	
Type S	(0 to 250) °C (250 to 1000) °C (1000 to 1760) °C	0.80 °C 0.44 °C 0.51 °C	
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.60 °C 0.11 °C 0.10 °C 0.12 °C	
Electrical Calibration of Passive PRT Measuring Equipment ^{3,5} –			
60.25 Ω	-100 °C	0.01 °C	Transmille 4010-SYS
100 Ω	0 °C	0.01 °C	
111.67 Ω	30 °C	0.01 °C	
123.24 Ω	60 °C	0.01 °C	
138.50 Ω	100 °C	0.01 °C	
175.84 Ω	200 °C	0.02 °C	
247.04 Ω	400 °C	0.03 °C	
375.51 Ω	800 °C	0.08 °C	

III. Fluid Quantities

Parameter/Equipment	Range	CMC ^{2, 6, 8} ($\pm$)	Comments
Flow ³ (Water)	Up to 0.25 gpm (0.25 to 10) gpm (10 to 200) gpm	0.012 gpm 0.031 gpm 0.53 gpm	Gravimetric determination
Air Velocity – Measure ³	Up to 3500 FPM	6.1 %	Extech SDL350 anemometer

IV. Mechanical

Parameter/Equipment	Range	CMC ^{2, 4, 6} ($\pm$)	Comments
Scales ³ & Balances ³	Up 500 mg 500 mg to 50 g (50 to 200) g (200 to 500) g (500 g to 1000) g (1 to 2) kg (2 to 5) kg (5 to 10) kg (10 to 25) kg (25 to 32) kg (0.005 to 0.02) lb (0.02 to 0.05) lb (0.05 to 0.1) lb (0.1 to 0.5) lb (0.5 to 1.0) lb (1.0 to 5) lb (5 to 10) lb (10 to 20) lb (20 to 30) lb Up to 600 lb (600 to 2000) lb	0.19 mg 0.14 mg 0.58 mg 1.4 mg 2.8 mg 230 mg 580 mg 1.2 g 2.9 g 3.8 g 0.000 004 6 lb 0.000 011 lb 0.000 024 lb 0.000 11 lb 0.000 18 lb 0.0006 lb 0.0012 lb 0.0024 lb 0.0035 lb 0.018lb + 0.6R 0.029 lb + 0.6R	Verification with Class 1, 4 & F weights

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
Pressure Gauges ³ , Transducers ³ , & Transmitters ³ –			
Pneumatic	(-14 to 30) psig (30 to 710) psig	0.033 psi 0.046 %	Gage comparison dead weight system
Hydraulic	(10 to 16 000) psig	0.009 %	Dead weight system
Torque Wrenches ³	(15 to 50) ozf·in (50 to 200) ozf·in (12.5 to 50) lbf·in (50 to 400) lbf·in (400 to 600) lbf·in (600 to 1000) lbf·in (83 to 250) lbf·ft (250 to 500) lbf·ft (500 to 1000) lbf·ft (1000 to 2000) lbf·ft	0.29 ozf·in 0.84 ozf·in 0.28 lbf·in 1.5 lbf·in 3.6 lbf·in 13 lbf·in 1.4 lbf·ft 5.9 lbf·ft 7.5 lbf·ft 12 lbf·ft	Digital torque calibrator
Torque Analyzers ³ & Transducers ³	5 lbf·in to 250 lbf·ft (250 to 2000) lbf·ft	0.20 % of applied load 0.23 % of applied load	Torque arms with Class 4 & F weights, including specific arms
Force – Tension & Compression ³	(1 to 50 000) lbf (50 001 to 100 000) lbf	0.041 % 0.046 %	Class 4 & F weights & deadweights Load cell comparison

V. Thermodynamics

Parameter/Equipment	Range	CMC ^{2, 8} (±)	Comments
Temperature –			
Measure	(-74 to 419) °C (>419 to 660) °C (>661 to 1065) °C	0.032 °C 0.039 °C 1.9 °C	ASI-01-228AB Fluke 52 with Type K
Measuring Equipment ³	(-20 to 29.7) °C (>29.7 to 660) °C	0.066 °C 0.12 °C	ASI-01-228AB

Parameter/Equipment	Range	CMC ^{2, 8} (±)	Comments
Relative Humidity – Measure ³	(15 to 75) % RH (75 to 80) % RH	2.0 % RH 3.1 % RH	Vaisala HMI41 with HMP42
Humidity – Measuring Equipment ³	(15 to 75) % RH (75 to 80) % RH	2.1 % RH 3.1 % RH	Vaisala HMI41 with HMP42, with chamber

VI. Time & Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
Digital/Mechanical Tachometer ³	(20 to 1000) RPM (1001 to 30 000) RPM	0.06 RPM 0.68 RPM	Strobe standard
Timers & Stopwatches ³	1 sec to 24 hr	0.06 + 0.27 sec/24 hr	Reference stopwatch

¹ This laboratory offers commercial calibration services and field calibration services (where noted).

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 In the statement of CMC, L is the numerical value of the nominal length of the device measured in inches, and LSD is least significant digit, and R is the resolution of the unit under test.

⁵ Fluke 5500A CMCs are based upon the temperature the standard was calibrated ($t_{cal} \pm 5\text{ }^{\circ}\text{C}$) and assuming the instrument is zeroed at least every seven days or when the ambient temperature changes more than $5\text{ }^{\circ}\text{C}$. For Resistance, a zero calibration is performed at least every 12 hours within $\pm 1\text{ }^{\circ}\text{C}$ of use. For AC Current, CMCs are determined with the LCOMP off. CMCs are also based upon 1-year floor specifications. CMCs are expressed as either a fraction of the reading or as a fraction of the reading plus a fixed floor specification.

- ⁶ In the statement of CMC, percentages are percentage of reading, unless otherwise indicated.
- ⁷ This scope meets A2LA's *P112 Flexible Scope Policy*.
- ⁸ 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.
- ⁹ 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 fraction/percentage of the reading plus a fixed floor specification.



Accredited Laboratory

A2LA has accredited

ALABAMA SCALE & INSTRUMENT, INC. d.b.a. ASI Calibration Labs – Alabama

Mobile, AL

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 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 10th day of January 2023.

A blue ink signature of Mr. Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1876.01
Valid to April 30, 2026

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