SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: August 30, 2027 Certificate Number: 1741.15

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, 8]:

I. Chemical

Parameter/Equipment	Range	CMC[2] (±)	Comments
pH Meters[3] – Fixed Points	4 pH 7 pH 10 pH	0.03 pH 0.03 pH 0.03 pH	Standard pH solutions
Conductivity Meters[3] – Fixed Points	100 µS/cm 1413 µS/cm 10 000 µS/cm	2.2 µS/cm 5.2 µS/cm 41 µS/cm	Standard conductivity solutions

II. Dimensional

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Pin Gage[3] – Class Z, ZZ	Up to 1.0 in	40 µin	Micrometer
Calipers[3]	Up to 40 in	$(4.5 + 9.9L)$ µin + $0.6R$	Gage blocks
Micrometers[3]	Up to 40 in	$(4.5 + 9.9L)$ µin + $0.6R$	Gage blocks

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Linear Indicators[3] – Dial & Test	Up to 4 in	(3 + 9.4*L*) µin + 0.6*R*	Gage blocks
Steel Rules[3]	Up to 72 in	(1.5 + 10L) µin + 0.6R	Gage blocks
Height Gages[3]	Up to 48 in	(53 + 8.9L) µin + 0.6R	Gage blocks w/surface plate
Tape Measures[3]	Up to 25 ft	(1.5 + 10L) µin + 0.6R	Gage blocks
Angle Indicators & Protractors[3] – Fixed Points	30°, 45°, 60°, 75°, 90°	0.03° + 0.6R	Angle block set
Feeler/Thickness Gages[3]	Up to 1 in	40 µin	Micrometer
Surface Plates[3] – Grades AA, A, & B			
Repeatability/Local Flatness	0.002 in	23 µin	Repeat-o-meter
Flatness	Up to 120 *DL* in	(33 + 0.54*DL*) µin	Federal level systems
Coating Thickness Gages[3] (Film, Ultrasonic)	Up to 60 mils	100 µin	Coating thickness standards
Optical Comparator [3] –			
X-Y Linearity	Up to 12 in	150 µin	Glass master scales
Magnification	10x to 250x	0.014 in	
Angle	Up to 90°	0.1°	

III. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
DC Voltage – Generate[3]	(0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (100 to 1020) V	73 µV/V + 3 µV 61 µV/V + 5 µV 61 µV/V + 50 µV 67 µV/V + 500 µV 69 µV/V + 1.5 mV	Fluke 5500A
DC Voltage – Measure[3]	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V (1 to 6) kV	0.011 % 0.0057 % 0.0049 % 0.0062 % 0.0067 % 1.3 %	Agilent 34401A Fluke 80K-6 & DMM
DC Current – Generate[3]	(0 to 3.3) mA (3.3 to 33) mA (33 to 330) mA 330 mA to 2.2 A (2.2 to 11) A	0.016 % + 0.05 µA 0.013 % + 0.25 µA 0.013 % + 3.3 µA 0.037 % + 44 µA 0.08 % + 330 µA	Fluke 5500A
DC Current – Measure[3]	(1 to 10) mA (10 to 100) mA 100 mA to 1 A (1 to 10) A	0.039 % 0.043 % 0.1 % 0.37 % + 2 mA	Agilent 34401A Fluke 287
DC Clamp-On Meters[3] Non-Toroidal	 Up to 550 A	 0.65 % + 0.5 A	 Fluke 5500A w/5500 coil

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	0.43 % + 20 µV 0.19 % + 20 µV 0.25 % + 20 µV 0.31 % + 20 µV 0.43 % + 33 µV 1.2 % + 60 µV	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	0.3 % + 50 µV 0.06 % + 20 µV 0.12 % + 20 µV 0.2 % + 40 µV 0.29 % + 170 µV 0.84 % + 330 µV	
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	0.18 % + 250 µV 0.037 % + 60 µV 0.097 % + 60 µV 0.17 % + 300 µV 0.29 % + 1.7 mV 0.6 % + 3.3 mV	
(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	0.19 % + 2.5 mV 0.05 % + 600 µV 0.1 % + 2.6 mV 0.23 % + 5 mV 0.29 % + 17 mV	
(33 to 330) V	45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz	0.06 % + 6.6 mV 0.1 % + 15 mV 0.11 % + 33 mV	
(330 to 1000) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.07 % + 80 mV 0.25 % + 100 mV 0.25 % + 500 mV	

Parameter/Range	Frequency	CMC[2, 4, 6] (±)	Comments
AC Voltage – Measure[3]			
Up to 750V	10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.12 % 0.21 % 0.82 %	Agilent 34401A
(1 to 6) kV – Fixed Point	60 Hz	1.6 %	Fluke 80K-6 & DMM
AC Current – Generate[3]			
(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	0.3 % + 0.15 µA 0.15 % + 0.15 µA 0.15 % + 0.25 µA 0.48 % + 0.15 µA 1.5 % + 0.15 µA	Fluke 5500A
(0.33 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	0.24 % + 0.3 µA 0.12 % + 0.3 µA 0.12 % + 0.3 µA 0.24 % + 0.3 µA 0.72 % + 0.3 µA	
(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	0.24 % + 3 µA 0.12 % + 3 µA 0.11 % + 3 µA 0.24 % + 3 µA 0.72 % + 3 µA	
(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	0.24 % + 30 µA 0.12 % + 30 µA 0.11 % + 30 µA 0.24 % + 30 µA 0.72 % + 30 µA	
330 mA to 2.2 A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz	0.24 % + 300 µA 0.12 % + 300 µA 0.9 % + 300 µA	
(2.2 to 11) A	(45 to 65) Hz (65 to 500) Hz 500 Hz to 1 kHz	0.08 % + 2 mA 0.12 % + 2 mA 0.4 % + 2 mA	

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
AC Current – Measure[3]			
Up to 1 A	10 Hz to 5 kHz	0.18 %	Agilent 34401A
(1 to 3) A	10 Hz to 5 kHz	0.26 %	
(3 to 10) A	45 Hz to 1 kHz	0.97 % + 5 mA	Fluke 287
AC Clamp-On Meters[3]–			
Up to 150 A:			
Toroidal	(45 to 65) Hz (65 to 440) Hz	0.49 % + 0.025 A 1 % + 0.027 A	Fluke 5500A w/ 5500 coil
Non-Toroidal	(45 to 65) Hz (65 to 440) Hz	0.76 % + 0.25 A 1.3 % + 0.25 A	
(150 to 550) A:			
Toroidal	(45 to 65) Hz	0.49 % + 0.09 A	
Non-Toroidal	(45 to 65) Hz	0.76 % + 0.9 A	
Capacitance – Generate[3]			
(0.33 to 11) nF	(50 to 1000) Hz	1 % + 0.01 nF	Fluke 5500A
(11 to 110) nF		0.32 % + 0.1 nF	
(110 to 330) nF		0.32 % + 0.3 nF	
(0.33 to 1.1) µF		0.32 % + 1 nF	
(1.1 to 3.3) µF		0.43 % + 3 nF	
(3.3 to 11) µF	(50 to 400) Hz	0.44 % + 10 nF	
(11 to 33) µF		0.5 % + 30 nF	
(33 to 110) µF	(50 to 200) Hz	0.63 % + 100 nF	
(110 to 330) µF	(50 to 100) Hz	0.86 % + 300 nF	
330 µF to 1.1 mF		1.3 % + 300 nF	

Parameter/Equipment	Range	CMC[2, 4, 6] (±)	Comments
Electrical Simulation of Temperature Displays & Readouts[3] –			
Type J	(-210 to -100) °C (-100 to 760) °C (760 to 1200) °C	0.4 °C 0.31 °C 0.36 °C	Fluke 5500A
Type K	(-200 to -100) °C (-100 to 1000) °C (1000 to 1372) °C	0.46 °C 0.39 °C 0.53 °C	
Type R	(0 to 250) °C (250 to 1000) °C (1000 to 1767) °C	0.72 °C 0.48 °C 0.53 °C	
Type S	(0 to 250) °C (250 to 1400) °C (1400 to 1767) °C	0.61 °C 0.5 °C 0.6 °C	
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 400) °C	0.79 °C 0.37 °C 0.3 °C	
Electrical Calibration of RTD's[3] –			
Generate	(-200 to 200) °C (200 to 600) °C (600 to 850) °C	0.11 °C 0.14 °C 0.17 °C	Additel 227
Measure	(-200 to 200) °C (200 to 600) °C (600 to 850) °C	0.11 °C 0.14 °C 0.17 °C	
Resistance – Measure[3]	Up 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	0.017 % 0.014 % 0.014 % 0.014 % 0.014 % 0.05 % 0.98 %	Agilent 34401A

Parameter/Equipment	Range	CMC[2, 4, 6] (±)	Comments
Resistance – Generate[3]	(0 to 11) Ω (11 to 33) Ω (33 to 330) Ω 330 Ω to 3.3 kΩ (3.3 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ 330 kΩ to 3.3 MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ	0.015 % + 0.008 Ω 0.015 % + 0.015 Ω 0.011 % + 0.015 Ω 0.011 % + 0.06 Ω 0.011 % + 0.6 Ω 0.014 % + 6 Ω 0.015 % + 6 Ω 0.019 % + 55 Ω 0.073 % + 550 Ω 0.12 % + 550 Ω 0.61 % + 5.5 kΩ 0.61 % + 17 kΩ	Fluke 5500A

IV. Fluid Quantities

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Viscosity Meters[3]	Up to 35 000 cP	0.7 %	Standard viscosity solution w/ bath

V. Mechanical

Parameter/Equipment	Range	CMC[2, 5, 6] (±)	Comments
Scales & Balances [3]	(5 to 10) g (10 to 500) g 500g to 5000 kg Up to 10 000 lb (1 to 5) g Up to 10 g Up to 30 g Up to 50 g Up to 100 g Up to 200 g Up to 300 g Up to 500 g Up to 1000 g > 1000 g	0.04 % + 0.6R 0.025 % + 0.6R 0.017 % + 0.6*R* 0.017 % + 0.6*R* 0.043 mg + 0.6*R* 0.062 mg + 0.6*R* 0.092 mg + 0.6*R* 0.17 mg + 0.6*R* 0.31 mg + 0.6*R* 0.63 mg + 0.6*R* 0.93 mg + 0.6*R* 1.5 mg + 0.6*R* 3.1 mg + 0.6*R* 3.1 mg per 1000 g + 0.6*R*	Class F weights & test cart ASTM Class 1 weights

Parameter/Equipment	Range	CMC[2, 5, 6] (±)	Comments
Force – Measure, Measuring Equipment[3] Tension & Compression	 Up to 500 lb Up to 1000 lb Up to 5000 lb Up to 1000 lb	 0.5 lbf 1 lbf 5 lbf 0.017 % + 0.6R	 Load cells Dead Weights
Torque – Measure Wrenches[3]	5 lbf·in to 600 lbf·ft	0.65 %	CDI Suretest 5000-ST
Pressure – Measuring Equipment[3] Pneumatic	 (0.01 to 100) psig (10 to 1000) psig (100 to 10 000) psig (1500 to 15 000) psig	 0.034 psig 0.34 psig 3.4 psig 9.8 psig	 Fluke 2700G Additel 681
Atmospheric Pressure (Vacuum) – Measure, Measuring Equipment[3]	(0.01 to 24) in·Hg	0.13 in·Hg	Fluke 2700G
Speed[3] – Optic/Non-Contact: Totalizer/Rate Meters	 (6 to 100 000) rpm (2 to 3300) fpm	 0.017 % 1.1 %	 Monarch PLT200
Indirect Verification of Rockwell Hardness Testers[3]	HRBW: (40 to 59) (60 to 79) (80 to 100) HRC: (20 to 30) (35 to 55) (60 to 65)	 0.68 HRBW 0.63 HRBW 0.62 HRBW 0.56 HRC 0.54 HRC 0.53 HRC	Indirect verification per ASTM E18

Parameter/Equipment	Range	CMC[2, 5, 6] (±)	Comments
Indirect Verification of Rockwell Hardness Testers[3] (cont)	HR15N: (70 to 77) (78 to 88) (90 to 92) HR30N: (42 to 50) (55 to 73) (77 to 82) 15T: Low Medium High 30T: Low Medium High	 0.61 HR15N 0.60 HR15N 0.59 HR15N 0.63 HR30N 0.61 HR30N 0.61 HR30N 0.59 HR15TW 0.59 HR15TW 0.62 HR15TW 0.63 HR30TW 0.60 HR30TW 0.63 HR30TW	Indirect verification per ASTM E18

VI. Thermodynamics

Parameter/Equipment	Range	CMC [2, 7] (±)	Comments
Relative Humidity – Measure	(10 to 90) % RH	1.4 % RH	Vaisala M170 w/ HMP- 76
Relative Humidity Measuring Equipment[3]	(10 to 90) % RH	1.5 % RH	Vaisala M170 w/ HMP- 76 with salts
Temperature – Measure[3]	(-196 to 420) °C	0.21 °C	Additel 227 w/ PRT
Temperature – Measuring Equipment[3]	(-15 to 110) °C (50 to 350) °C (-10 to 325) °C	0.3 °C 0.75 °C 0.21 °C	Fluke 9009 Fluke 9009 w/ ext probe

VI. Time & Frequency

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
Frequency – Measuring Equipment[3]	0.01 Hz to 11.99 kHz 12 kHz to 2 MHz	31 µHz/Hz + 1 mHz 31 µHz/Hz + 15 mHz	Fluke 5500A
Timers & Stopwatches[3]	(1 to 3600) s	0.2 s	Stopwatch

[1] This laboratory offers commercial calibration 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] 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] The statement of CMC, *L* is the numerical value of the nominal length of the device measured in inches, *R* is the resolution of the device, *DL* is the numerical value of the diagonal length of the device measured in inches.

[6] Unless otherwise noted, percentage refers to percent of reading.

[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.

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

Accredited Laboratory

A2LA has accredited

CROSS TECHNOLOGIES, INC

Olive Branch, MS

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 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 4th day of September 2025.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1741.15
Valid to August 30, 2027

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