



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: August 31, 2027

Certificate Number: 6785.01

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. Electrical/DC Low Frequency

Parameter/Equipment	Range	CMC ^{2, 4, 6} ($\pm$)	Comments
DC Voltage – Generate ³	Up to 100 mV (0.001 to 1) V (1 to 10) V (10 to 120) V (120 to 1020) V	0.0026 % + 0.8 μ V 0.000 72 % + 1 μ V 0.000 66 % + 10 μ V 0.000 92 % + 100 μ V 0.000 86 % + 1000 μ V	Fluke 5560A/SC1100
DC Voltage – Measure ³	Up to 100 mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1000) V	17 μ V/V + 0.30 μ V 9.7 μ V/V + 0.30 μ V 9.4 μ V/V + 0.50 μ V 12 μ V/V + 30 μ V 13 μ V/V + 0.1 mV	Agilent 3458A
DC Current – Generate ³	Up to 120 μ A (0.12 to 1.2) mA (1.2 to 12) mA (12 to 120) mA (0.12 to 1.2) A (1.2 to 3.1) A (3.1 to 12) A (12 to 30.2) A	92 μ A/A + 0.006 μ A 480 μ A/A + 0.015 μ A 490 μ A/A + 0.08 μ A 490 μ A/A + 0.8 μ A 520 μ A/A + 0.01 μ A 76 μ A/A + 0.15 μ A 720 μ A/A + 0.25 μ A 830 μ A/A + 0.5 μ A	Fluke 5560A/SC1100

Parameter/Equipment	Range	CMC ^{2, 4, 6} ($\pm$)	Comments
DC Current – Measure ³	Up to 100 μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	23 μ A/A + 0.80 nA 23 μ A/A + 5.0 nA 23 μ A/A + 50 nA 39 μ A/A + 0.5 μ A 110 μ A/A + 10 μ A	Agilent 3458A

Parameter/Range	Frequency	CMC ^{2, 4, 6} ($\pm$)	Comments
AC Voltage – Generate ³			Fluke 5560A/SC1100
Up to 12 mV	Up to 5 Hz 5 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz	3.9 % + 0.007 mV 0.0092 % + 0.006 mV 0.024 % + 0.006 mV 0.092 % + 0.015 mV 0.57 % + 0.03 mV 0.58 % + 0.03 mV	
(12 to 120) mV	Up to 5 Hz 5 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz	0.078 % + 0.007 mV 0.0043 % + 0.006 mV 0.011 % + 0.008 mV 0.027 % + 0.02 mV 0.06 % + 0.03 mV 0.063 % + 0.03 mV	
(0.12 to 1.2) V	Up to 5 Hz (5 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz	0.078 % + 0.075 mV 0.0047 % + 0.06 mV 0.0067 % + 0.008 mV 0.01 % + 0.014 mV 0.022 % + 0.04 mV 0.087 % + 0.08 mV 0.091 % + 0.08 mV	
(1.2 to 12) V	Up to 5 Hz (5 Hz to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz	0.078 % + 0.75 mV 0.0062 % + 0.35 mV 0.02 % + 0.05 mV 0.012 % + 0.05 mV 0.025 % + 0.13 mV 0.023 % + 0.6 mV 0.025 % + 0.6 mV	
(12 to 120) V	Up to 5 Hz (5 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.078 % + 7.5 mV 0.0062 % + 3.5 mV 0.0062 % + 0.5 mV 0.011 % + 0.5 mV 0.022 % + 1.3 mV	

Parameter/Range	Frequency	CMC ^{2, 4, 6} ($\pm$)	Comments
AC Voltage – Generate ³ (cont) (120 to 330) V	Up to 5 Hz (5 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.078 % + 7.5 mV 0.0062 % + 3.5 mV 0.0062 % + 0.5 mV 0.011 % + 0.5 mV 0.022 % + 1.3 mV	Fluke 5560A/SC1100
AC Voltage – Measure ³ Up to 100 mV 100 mV to 1 V (1 to 10) V	Up to 40 Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz Up to 40 Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz Up to 40 Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	0.008 % + 4 μ V 0.008 % + 2 μ V 0.015 % + 2 μ V 0.033 % + 2 μ V 0.088 % + 2 μ V 0.3 % + 10 μ V 1.2 % + 10 μ V 4.0 % + 70 μ V 4.0 % + 80 μ V 15 % + 0.1 mV 0.007 % + 40 μ V 0.0074 % + 20 μ V 0.014 % + 20 μ V 0.03 % + 20 μ V 0.08 % + 20 μ V 0.3 % + 100 μ V 1.1 % + 100 μ V 4.0 % + 0.7 mV 4.0 % + 0.8 mV 15 % + 1.0 mV 0.008 % + 0.4 mV 0.0075 % + 0.2 mV 0.014 % + 0.2 mV 0.03 % + 0.2 mV 0.08 % + 0.2 mV 0.3 % + 1.0 mV 0.99 % + 1.0 mV 4.0 % + 7.0 mV 4.0 % + 8.0 mV 15 % + 10 mV	Agilent 3458A

Parameter/Range	Frequency	CMC ^{2, 4, 6} ($\pm$)	Comments
AC Voltage – Measure ³ (cont) (10 to 100) V	Up to 40 Hz 40Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.02 % + 4.0 mV 0.02 % + 2.0 mV 0.02 % + 2.0 mV 0.036 % + 2.0 mV 0.12 % + 2.0 mV	Agilent 3458A
AC Current – Generate ³ (Up to 120) μ A 120 μ A to 1.2 mA (1.2 to 12) mA (12 to 120) mA 120 mA to 1.2A	Up to 3 Hz (3 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz Up to 3 Hz (3 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz Up to 10 Hz (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz Up to 3 Hz (3 to 45) Hz 45 Hz to 1kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz Up to 3 Hz (3 to 45) Hz 45 Hz to 1kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.042 % + 0.01 μ A 0.053 % + 0.01 μ A 0.057 % + 0.01 μ A 0.056 % + 0.01 μ A 0.09 % + 0.04 μ A 2.9 % + 0.1 μ A 0.0023 % + 0.1 μ A 0.0023 % + 0.1 μ A 0.0022 % + 0.1 μ A 0.0022 % + 0.1 μ A 0.014 % + 0.1 μ A 0.036 % + 5.0 μ A 0.022 % + 0.1 μ A 0.022 % + 0.1 μ A 0.022 % + 0.1 μ A 0.022 % + 0.1 μ A 0.14 % + 0.1 μ A 0.44 % + 10 μ A 0.022 % + 0.01 mA 0.021 % + 0.01 mA 0.013 % + 0.005 mA 0.022 % + 0.008 mA 0.12 % + 0.1 mA 0.44 % + 0.1 mA 0.022 % + 0.1 mA 0.024 % + 0.1 mA 0.029 % + 0.05 mA 0.026 % + 0.08 mA 0.004 % + 0.3 mA 0.46 % + 0.3 mA	Fluke 5560A/SC1100

Parameter/Range	Frequency	CMC ^{2, 4, 6} ($\pm$)	Comments
AC Current – Generate ³ (cont)			Fluke 5560A/SC1100
(1.2 to 3.1) A	Up to 3 Hz (3 to 45) Hz 45 Hz to 1kHz (1 to 5) kHz (5 to 10) kHz	0.0071 % + 0.1 mA 0.0077 % + 0.1 mA 0.0094 % + 0.05 mA 0.0084 % + 0.08 mA 0.0013 % + 0.3 mA	
(3.1 to 12) A	Up to 3 Hz (3 to 45) Hz 45 Hz to 1kHz (1 to 5) kHz (5 to 10) kHz	0.042 % + 0.1 mA 0.042 % + 0.1 mA 0.032 % + 0.05 mA 0.031 % + 0.08 mA 0.029 % + 0.3 mA	
(12 to 30.2) A	Up to 3 Hz (3 to 45) Hz 45 Hz to 1kHz	0.16 % + 0.5 mA 0.16 % + 0.5 mA 0.12 % + 0.3 mA	
AC Current – Measure ³			Agilent 3458A
Up to 100 μ A	Up to 10 Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 1 kHz	0.40 % + 0.03 μ A 0.15 % + 0.03 μ A 0.065 % + 0.03 μ A 0.065 % + 0.03 μ A	
(0.1 to 1) mA	Up to 10 Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.40 % + 0.2 μ A 0.15 % + 0.2 μ A 0.068 % + 0.2 μ A 0.042 % + 0.2 μ A 0.068 % + 0.2 μ A 0.40 % + 0.4 μ A 0.55 % + 1.5 μ A	
(1 to 10) mA	Up to 10 Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.40 % + 2 μ A 0.15 % + 2 μ A 0.062 % + 2 μ A 0.033 % + 2 μ A 0.064 % + 2 μ A 0.40 % + 4 μ A 0.55 % + 15 μ A	

Parameter/Range	Frequency	CMC ^{2, 4, 6} (±)	Comments
AC Current – Measure ³ (cont)			Agilent 3458A
(10 to 100) mA	Up to 10 Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.40 % + 20 µA 0.15 % + 20 µA 0.062 % + 20 µA 0.033 % + 20 µA 0.062 % + 20 µA 0.40 % + 40 µA 0.55 % + 0.15 mA	
(0.1 to 1) A	Up to 10 Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz	0.40 % + 0.2 mA 0.16 % + 0.2 mA 0.08 % + 0.2 mA 0.10 % + 0.2 mA 0.30 % + 0.2 mA 0.96 % + 0.4 mA	

Parameter/Equipment	Range	CMC ^{2, 4, 6} (±)	Comments
Resistance – Generate ³	Up to 12 Ω (12 to 120) Ω (120 to 1200) Ω (1.2 to 12) kΩ (12 to 120) kΩ 120 kΩ to 1.2 MΩ (1.2 to 12) MΩ (12 to 120) MΩ (120 to 1200) MΩ	0.004 % + 0.001 Ω 0.0022 % + 0.001 Ω 0.0019 % + 0.002 Ω 0.012 % + 0.02 Ω 0.0022 % + 0.02 Ω 0.0027 % + 0.002 Ω 0.0029 % + 0.03 kΩ 0.035 % + 0.0025 MΩ 0.33 % + 0.1 MΩ	Fluke 5560A/SC1100
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	0.0018 % + 50 µΩ 0.0017 % + 0.5 mΩ 0.0013 % + 0.5 mΩ 0.0012 % + 5.0 mΩ 0.0013 % + 50 mΩ 0.0019 % + 2 Ω 0.0056 % + 100 Ω 0.051 % + 1.0 kΩ 0.52 % + 10 kΩ	Agilent 3458A

Parameter/Equipment	Range	CMC ^{2, 4, 6} (±)	Comments
Capacitance – Generate ³	Up to 350 pF 350 pF to 1.1 nF (1.1 to 1.2) nF (1.2 to 11) nF (11 to 12) nF (12 to 110) nF (110 to 120) nF 120 nF to 1.1 µF (1.1 to 1.2) µF (1.2 to 11) µF (11 to 12) µF (12 to 110) µF (110 to 120) µF 120 µF to 1.1 mF (1.1 to 1.2) mF (1.2 to 11) mF (11 to 12) mF (12 to 120) mF	0.017 % + 0.004 nF 0.036 % + 0.004 nF 0.025 % + 0.004 nF 0.1 % + 0.005 nF 0.06 % + 0.005 nF 0.11 % + 0.03 nF 0.11 % + 0.03 nF 0.11 % + 0.0003 µF 0.11 % + 0.0003 µF 0.14 % + 0.008 nF 0.12 % + 0.008 nF 0.14 % + 0.025 nF 0.12 % + 0.025 nF 0.56 % + 0.25 nF 0.52 % + 0.25 nF 0.35 % + 0.01 mF 0.21 % + 0.003 nF 0.36 % + 0.03 nF	Fluke 5560A/SC1100
Electrical Simulation of RTDs ³ Pt 385; 100 Ω	(-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C	0.039 °C 0.039 °C 0.055 °C 0.070 °C 0.078 °C 0.094 °C 0.18 °C	Fluke 5560A/SC1100
Electrical Simulation of Thermocouples - Source & Measure ³ Type J Type K Type T	Up to -190 °C (-190 to -100) °C (-100 to 150) °C (150 to 750) °C (750 to 1200) °C Up to -190 °C (-190 to -100) °C (-100 to 120) °C (120 to 1000) °C (1000 to 1350) °C Up to -190 °C (-190 to -150) °C (-150 to 120) °C (120 to 400) °C	0.42 °C 0.20 °C 0.18 °C 0.19 °C 0.23 °C 0.56 °C 0.23 °C 0.26 °C 0.29 °C 0.41 °C 0.67 °C 0.51 °C 0.25 °C 0.19 °C	Fluke 5560A/SC1100

Parameter/Equipment	Range	CMC ^{2, 4} ($\pm$)	Comments
Oscilloscope ³ – Amplitude/Vertical Gain Characteristics –			Fluke 5560A/SC1100
DC (Z = 50 Ω)	Up to 25 mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 6.6) V	0.24 % + 40 μ V 0.25 % + 40 μ V 0.36 % + 40 μ V 0.27 % + 40 μ V	
DC (Z = 1 M Ω)	Up to 25 mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 11) V (11 to 130) V	0.052 % + 40 μ V 0.72 % + 40 μ V 0.27 % + 40 μ V 0.073 % + 40 μ V 0.052 % + 40 μ V	
Square Wave 10 Hz to 10 kHz (Z = 50 Ω)	(1 to 25) mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 6.6) V	0.26 % + 40 μ V 0.25 % + 40 μ V 0.38 % + 40 μ V 0.28 % + 40 μ V	
10 Hz to 10 kHz (Z = 1 M Ω)	(1 to 25) mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 11) V (11 to 130) V	0.11 % + 40 μ V 0.10 % + 40 μ V 0.54 % + 40 μ V 0.15 % + 40 μ V 0.10 % + 40 μ V	
Rise Time 5 mV _{p-p} to 2.5 V _{p-p} 1 kHz to 10 MHz	($\leq$ 300) ps	100 ps	
Leveled Sine Wave 5 mV _{p-p} to 5.5 V _{p-p}	50 kHz (reference) 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (600 to 1100) MHz	2.1 % + 300 μ V 3.6 % + 300 μ V 4.1 % + 300 μ V 6.0 % + 300 μ V 7.0 % + 300 μ V	
Time Marker	(2 to 5) ns 10 ns (20 to 50) ns 100 ns to 20 ms 50 ms to 5 s	200 μ s/s 1000 μ s/s 200 μ s/s 320 μ s/s (25 + 1000t) μ s/s	t = time marker period

II. Mechanical

Parameter/Equipment	Range	CMC ^{2, 4, 7} (±)	Comments
Torque – Measuring Equipment ³	(5 to 50) lbf·in (50 to 500) lbf·in (25 to 250) lbf·ft (75 to 750) lbf·ft	0.56 % 0.44 % + 0.10 lbf·in 0.51 % + 0.033 lbf·ft 0.45 % + 0.20 lbf·ft	AWS torque transducers
Tachometers ³ Non-Contact	(60 to 100) RPM (100 to 1000) RPM (>1000 to 10 000) RPM (>10 000 to 100 000) RPM	0.027 RPM 0.25 RPM 0.8 RPM 2.0 RPM	Fluke 5560A/SC1100
Rotational Speed – Measure ³ Non-Contact	(10 to 100) RPM (>100 to 1000) RPM (>1000 to 10 000) RPM (>10 000 to 100 000) RPM	1.7 RPM 1.9 RPM 3.9 RPM 12 RPM	Shimpo DT-207LR

III. Thermodynamic

Parameter/Equipment	Range	CMC ² (±)	Comments
Relative Humidity – Measure ³	(15 to 40) % RH (>40 to 90) % RH (90 to 95) % RH	1.3 % RH 1.7 % RH 2.3 % RH	Vaisala HMI41/HMP46

IV. Time & Frequency

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
Frequency – Generate ³	Up to 120 Hz (120 to 1200) Hz (1.2 to 12) kHz (12 to 120) kHz (120 to 1200) kHz (1.2 kHz to 2MHz)	0.33 % + 5 µHz 0.000 21 % + 5 µHz 0.058 % + 5 µHz 0.0059 % + 5 µHz 0.000 61 % + 5 µHz 0.29 % + 5 µHz	Fluke 5560A/SC1100

¹ This laboratory offers commercial 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 In the statement of the CMC, percent (%) indicates percent of indicated value.

⁵ This scope meets A2LA *P112 Flexible Scope Policy*.

⁶ The measurands stated are measured with the Agilent 3458A series of instruments. This capability is suitable for the calibration of the devices intended to generate the measurand in the ranges indicated. CMC are expressed as either a specific value that covers the full range or as a combination of the fraction of the reading/output plus a range specification. (Certain parameters are available as fixed source input values only (e. g. Resistance).

⁷ 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. CMC's 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.



Accredited Laboratory

A2LA has accredited

ELECTRONIC LABORATORIES INC.

Westminster, MD

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 3rd day of October 2025.

A blue ink signature of Mr. Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 6785.01
Valid to August 31, 2027

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