



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: September 30, 2026

Certificate Number: 3630.03

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<sup>1, 7</sup>:

I. Dimensional

Parameter/Equipment	Range	CMC <sup>2, 4</sup> (±)	Comments
Hand Tools <sup>3, 9</sup> –			
Calipers (OD/ID/Depth)	Up to 40 in (1000 mm)	320 µin (8.2 µm)	Gauge blocks
Depth Gages	Up to 24 in (600 mm)	300 µin (7.7 µm)	Gauge blocks
Height Gages	Up to 40 in (1000 mm)	(62 + 2.2L) µin	Gauge blocks
Dial Indicators	Up to 4 in (100 mm) (≥ 4 to 12) in (300 mm)	(5.7 + 20L) µin (10 + 44L) µin	ULM Gauge blocks
Thickness Gage	Up to 8 in (200 mm)	(6.5 + 1.5L) µin	Gauge blocks
Micrometers OD Flatness	Up to 24 in (600 mm) Up to 0.001 in	(12 + 4.1L) µin 10 µin	Gauge blocks Optical flat
Micrometers ID	Up to 24 in (600 mm)	(60 + 2.1L) µin	ULM, gauge blocks
Micrometers Depth Flatness	Up to 24 in (600 mm) Up to 0.001 in	(34 + 3.6L) µin 10 µin	Gauge blocks Optical flat

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Gage Blocks – Steel, Ceramic, Carbide, Chrome Carbide: Length Parallelism	(0.010 to 4) in	(2.3 + 1L) μin 3 μin	Gage block comparison
Steel Only: Length Parallelism	(5 to 8) in	(3 + 1L) μin 3 μin	
Length Parallelism	(10 to 20) in	(10 + 2.7L) μin 3 μin	
Angle Blocks	Up to 60°	3 arcsec	Sine bar/gauge blocks
Plug Gages – Parallel Plain	(0.007 to 24) in	(11 + 1.5L) μin	ULM with gage block
Tapered Plain Plug Gages – Diameter	Up to 6 in	60 μin	Taper measuring machine
Taper	Up to 6 in	90 μin	
Length/Step	Up to 6 in	150 μin	Gage block/MuCheck
Pin Gages/Set	Up to 1 in	25 μin	SuperMIC™, setting disc
Plain Snap Gages	Up to 12 in	(110 + 1.5L) μin	By comparison
Plain Ring Gages – Parallel	(0.04 to 6) in (6 to 12) in	(10 + 1L) μin (11 + 1.5L) μin	ULM with master ring

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Plain Ring Gages – Taper			
Inside Diameter	(0.125 to 4) in	65 µin	ULM – gage block
Inside Diameter	Up to 6 in	110 µin	By master plug
Taper	(0.125 to 6) in	90 µin	By calculation
Length/Step	Up to 4 in	150 µin	Gage block/MuCheck
Thread Measure Wire	Up to 80 TPI	5 µin	ANSI B89.1.17
Thread Plug Gages – Parallel			
Major Diameter	Up to 16 in	25 µin/in	ULM/gage blocks
Simple Pitch Diameter	Up to 4 in (> 4 to 12) in	65 µin (85 + 7L) µin	3-wire method
Linear Pitch Variation	Up to 4 in	25 µin per 4 in	ULM
Flank Angle	Up to 180°	20 arcmin	Optical comparator
Thread Plug Gauge – Taper			
Major Diameter	Up to 6 in	65 µin	Taper measuring instrument
Simple Pitch Diameter	Up to 6 in	170 µin	2 wire/PD measuring
Standoff	Up to 6 in	170 µin	
Taper	Up to 6 in	130 µin	By calculation
Lead	Up to 6 in	25 µin per 4 in	
Flank Angle	Up to 180°	20 arcmin	
Step	Up to 4 in	150 µin	Gage block/MuCheck

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Thread Ring Gages – Parallel Adjustable Type			
Functional Pitch Diameter	(0.06 to 12) in	(320 + 15L) μin	By comparison, fit to master plug
Minor Diameter	Up to 12 in	70 μin	Bore micrometer/gage block & pins
Thread Ring Gages – Parallel Non-Adjustable Type			
Simple Pitch Diameter	(0.5 to 6) in	120 μin	By comparison
Minor Diameter	Up to 6 in	70 μin	Bore micrometer/gage block & pins
Thread Ring Gauge – Taper Non-Adjustable			
Simple Pitch Diameter	Up to 4 in	150 μin	ULM/plain ring
Standoff	Up to 6 in	250 μin	Master plug
Taper	Up to 4 in	150 μin	PD measurements
Step/Length	Up to 6 in	150 μin	Gage blocks/MuCheck
Thread Caliper Gauges – Adjustable			
Pitch Diameter	Up to 6 in	(400 + 6L) μin	Fit to master/setting plug
Step Masters	Up to 1 in (1 to 24) in	30 μin (30 + 2L) μin	Electronic amp, probe, gage blocks
Length Standards – Setting Rods	Up to 48 in	(13 + 2L) μin	By comparison

Parameter/Equipment	Range	CMC <sup>2, 4, 8</sup> ( $\pm$ )	Comments
Height Masters	Up to 24 in	$(0.6R + 3L) \mu\text{in}$	Gage blocks/MuCheck
Micrometers – High Resolution			
Linearity	Up to 1 in	15 $\mu\text{in}$	Gage block
Force	Up to 48 lbf	0.03 lbf	Force gauge
Bore Gages			
2-Point	(0.5 to 24) in	$(0.6R + 50) \mu\text{in}$	By comparison
3-Point	Up to 6 in	$(0.6R + 82 + 10L) \mu\text{in}$	Plain setting ring
High Resolution Comparators	Up to 2 in	2.2 $\mu\text{in}$	Master blocks
Sine Bars & Plates	Up to 10 in	40 $\mu\text{in}/5 \text{ in}$	By comparison
Precision Levels	Up to 18 in	$(0.6R + 15) \mu\text{in}$	Level test rig
Steel Ruler	Up to 40 in	0.000 22 in	Optical comparator
Protractors	Up to 180°	0.01°	Angle blocks sine plate/gage blocks
One Dimensional Measurement –			
Diameter	Up to 10 in	110 $\mu\text{in}$	Bench micrometer
Length	Up to 10 in	110 $\mu\text{in}$	Bench micrometer
Two Dimensional Measurement –			
Angle	Up to 360°	0° 3'	Optical comparator

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Universal Length Measuring Machine	Up to 26 in (4 in travel)	(2.6 + 1.1L) μin	Master blocks

## II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
DC Voltage <sup>3</sup> – Measure	(0 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1020) V	11 μV/V + 0.35 μV 9.6 μV/V + 0.34 μV 9.6 μV/V + 0.57 μV 12 μV/V + 35 μV [12 + (14·V/1000) <sup>2</sup> ] μV/V + 120 μV	Agilent 3458A  V = voltage
	(0 to 10) kV (10 to 140) kV	0.034 % + 0.034 V 0.091 % + 0.8 V	Vitrek 4700 w/ HVL-150 probe
DC Voltage <sup>3</sup> – Generate	(0 to 329.9999) mV (0.33 to 3.299 99) V (3.3 to 32.999 99) V (33 to 329.9999) V (330 to 1000.000) V	16 μV/V + 0.78 μV 8.6 μV/V + 1.6 μV 9.4 μV/V + 16 μV 14 μV/V + 120 μV 14 μV/V + 1200 μV	Fluke 552X series calibrator
DC Current <sup>3</sup> – Measure	(10 to 100) μA 100 μA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	24 μA/A + 0.93 nA 24 μA/A + 5.8 nA 24 μA/A + 58 nA 41 μA/A + 0.58 μA 0.013 % + 12 μA	Agilent 3458A
	(0 to 329.999) μA (0.330 to 3.299 99) mA (3.3 to 32.9999) mA (33 to 329.999) mA (0.33 to 1.099 99) A (1.1 to 2.999 99) A (3 to 10.9999) A (11 to 20.5) A	0.012 % + 0.016 μA 78 μA/A + 0.039 μA 78 μA/A + 0.20 μA 78 μA/A + 2.0 μA 0.016 % + 32 μA 0.03 % + 32 μA 0.039 % + 390 μA 0.078 % + 580 μA	Fluke 552X series calibrator

Parameter/Equipment	Range	CMC <sup>2, 5</sup> (±)	Comments
DC Current <sup>3</sup> – Generate (cont)			
Clamp-On Meters	(20 to 149.999) A (150 to 549.999) A (550 to 1025) A	0.58 % + 0.17 A 0.58 % + 0.58 A 0.59 % + 0.58 A	Fluke 552X series w/ Fluke 5500A/coil
Resistance <sup>3</sup> – Measure	(0 to 10) Ω (10 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 100 MΩ to 1 GΩ	18 μΩ/Ω + 58 μΩ 15 μΩ/Ω + 0.58 mΩ 13 μΩ/Ω + 0.57 mΩ 13 μΩ/Ω + 5.7 mΩ 13 μΩ/Ω + 56 mΩ 18 μΩ/Ω + 2.3 Ω 58 μΩ/Ω + 120 Ω 0.058 % + 1200 Ω 0.58 % + 12 kΩ	Agilent 3458A
Resistance <sup>3</sup> – Generate	(0 to 10.9999) Ω (11 to 32.9999) Ω (33 to 109.9999) Ω (110 to 329.9999) Ω (330 to 1.099 999) kΩ (1.1 to 3.299 999) kΩ (3.3 to 10.999 99) kΩ (11 to 32.999 99) kΩ (33 to 109.9999) kΩ (110 to 329.9999) kΩ 330 kΩ to 1.099 999 MΩ (1.1 to 3.299 999) MΩ (3.3 to 10.999 99) MΩ (11 to 32.999 99) MΩ (33 to 109.9999) MΩ (110 to 329.9999) MΩ (330 to 1100) MΩ	32 μΩ/Ω + 0.78 mΩ 24 μΩ/Ω + 1.2 mΩ 22 μΩ/Ω + 1.1 mΩ 22 μΩ/Ω + 1.6 mΩ 22 μΩ/Ω + 1.6 mΩ 22 μΩ/Ω + 16 mΩ 22 μΩ/Ω + 16 mΩ 22 μΩ/Ω + 0.16 Ω 22 μΩ/Ω + 0.16 Ω 25 μΩ/Ω + 1.6 Ω 25 μΩ/Ω + 1.6 Ω 47 μΩ/Ω + 24 Ω 0.011 % + 36 Ω 0.02 % + 2.0 kΩ 0.039 % + 2.4 kΩ 0.24 % + 78 kΩ 1.2 % + 390 kΩ	Fluke 552X series calibrator

Parameter/Range	Frequency	CMC <sup>2, 5</sup> (±)	Comments
AC Voltage <sup>3</sup> – Measure			
(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	0.035 % + 3.5 μV 0.024 % + 1.3 μV 0.035 % + 1.3 μV 0.12 % + 1.3 μV 0.58 % + 1.3 μV 4.7 % + 2.4 μV	Agilent 3458A
(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 300 kHz to 1 MHz (1 to 2) MHz	0.0081 % + 4.7 μV 0.0081 % + 2.4 μV 0.017 % + 2.4 μV 0.035 % + 2.4 μV 0.093 % + 2.4 μV 0.35 % + 12 μV 1.2 % + 12 μV 1.8 % + 12 μV	
(0.1 to 1.0) 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 300 kHz to 1 MHz (1 to 2) MHz	0.0081 % + 47 μV 0.0081 % + 24 μV 0.017 % + 24 μV 0.035 % + 24 μV 0.093 % + 24 μV 0.35 % + 120 μV 1.2 % + 120 μV 1.8 % + 120 μV	
(1.0 to 10.0) 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 300 kHz to 1 MHz (1 to 2) MHz	0.0081 % + 0.47 mV 0.0081 % + 0.24 mV 0.017 % + 0.24 mV 0.035 % + 0.24 mV 0.093 % + 0.24 mV 0.35 % + 1.2 mV 1.2 % + 1.2 mV 1.8 % + 1.2 mV	
(10.0 to 100.0) 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 300 kHz to 1 MHz	0.024 % + 4.7 mV 0.024 % + 2.4 mV 0.024 % + 2.4 mV 0.041 % + 2.4 mV 0.14 % + 2.4 mV 0.47 % + 12 mV 1.8 % + 12 mV	



Parameter/Range	Frequency	CMC <sup>2, 5</sup> (±)	Comments
AC Voltage <sup>3</sup> – Measure (cont)			
(100.0 to 700) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.047 % + 47 mV 0.047 % + 24 mV 0.07 % + 24 mV 0.14 % + 24 mV 0.35 % + 24 mV	Agilent 3458A
(0.1 to 10) kV (10 to 100) kV	60 Hz 60 Hz	0.14 % + 0.11 V 0.57 % + 1.1 V	Vitretek 4700 w/ HLV-150 probe
AC Voltage <sup>3</sup> – Generate			
(1 to 32.999) 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	0.063 % + 4.7 μV 0.012 % + 4.7 μV 0.016 % + 4.7 μV 0.078 % + 4.7 μV 0.28 % + 9.4 μV 0.63 % + 39 μV	Fluke 552X series calibrator
(33 to 329.999) 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 % + 6.3 μV 0.012 % + 6.3 μV 0.013 % + 6.3 μV 0.028 % + 6.3 μV 0.063 % + 25 μV 0.16 % + 55 μV	
(0.33 to 3.299 99) 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 0.012 % + 47 μV 0.015 % + 47 μV 0.024 % + 39 μV 0.055 % + 97 μV 0.19 % + 470 μV	
(3.3 to 32.9999) V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.024 % + 510 μV 0.012 % + 470 μV 0.019 % + 470 μV 0.028 % + 470 μV 0.07 % + 1300 μV	

Parameter/Range	Frequency	CMC <sup>2, 5</sup> ( $\pm$ )	Comments
AC Voltage <sup>3</sup> – Generate (cont)			
(33 to 329.999) V	45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.015 % + 1600 $\mu$ V 0.016 % + 4700 $\mu$ V 0.02 % + 4700 $\mu$ V 0.024 % + 4700 $\mu$ V 0.16 % + 39 000 $\mu$ V	Fluke 552X series calibrator
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.024 % + 7800 $\mu$ V 0.02 % + 7800 $\mu$ V 0.024 % + 7800 $\mu$ V	
AC Current <sup>3</sup> – Measure			
(5 to 100) $\mu$ A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	0.47 % + 0.035 $\mu$ A 0.18 % + 0.035 $\mu$ A 0.07 % + 0.035 $\mu$ A 0.07 % + 0.035 $\mu$ A	Agilent 3458A
(0.05 to 1) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	0.47 % + 0.24 $\mu$ A 0.18 % + 0.24 $\mu$ A 0.07 % + 0.24 $\mu$ A 0.035 % + 0.24 $\mu$ A	
(0.5 to 10) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	0.47 % + 2.4 $\mu$ A 0.18 % + 2.4 $\mu$ A 0.07 % + 2.4 $\mu$ A 0.035 % + 2.4 $\mu$ A	
(5 to 100) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	0.47 % + 24 $\mu$ A 0.18 % + 24 $\mu$ A 0.07 % + 24 $\mu$ A 0.035 % + 24 $\mu$ A	
(0.05 to 1) A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	0.47 % + 240 $\mu$ A 0.19 % + 240 $\mu$ A 0.093 % + 240 $\mu$ A 0.12 % + 240 $\mu$ A	

Parameter/Range	Frequency	CMC <sup>2,5</sup> (±)	Comments
AC Current <sup>3</sup> – Generate			
(29 to 329.99) μA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.16 % + 0.078 μA 0.12 % + 0.078 μA 0.097 % + 0.078 μA 0.24 % + 0.12 μA 0.63 % + 0.16 μA 1.3 % + 0.32 μA	Fluke 552X series calibrator
(0.33 to 3.2999) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.16 % + 0.12 μA 0.097 % + 0.12 μA 0.078 % + 0.12 μA 0.16 % + 0.16 μA 0.39 % + 0.24 μA 0.78 % + 0.47 μA	
(3.3 to 32.999) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.14 % + 1.6 μA 0.07 % + 1.6 μA 0.032 % + 1.6 μA 0.063 % + 1.6 μA 0.16 % + 2.4 μA 0.32 % + 3.2 μA	
(33 to 329.99) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.14 % + 16 μA 0.07 % + 16 μA 0.032 % + 16 μA 0.078 % + 39 μA 0.16 % + 78 μA 0.32 % + 160 μA	
(0.33 to 1.099 99) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.14 % + 78 μA 0.039 % + 78 μA 0.47 % + 780 μA 2.0 % + 3900 μA	
(1.1 to 2.999 99) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.14 % + 78 μA 0.047 % + 78 μA 0.47 % + 780 μA 2.0 % + 3900 μA	
(3 to 10.9999) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.047 % + 1600 μA 0.078 % + 1600 μA 2.4 % + 1600 μA	
(11 to 20.5) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.094 % + 3900 μA 0.12 % + 3900 μA 2.4 % + 3900 μA	

Parameter/Range	Frequency	CMC <sup>2, 5</sup> (±)	Comments
AC Current <sup>3</sup> – Generate (cont)			
Clamp-On Meters: (Toroidal Type)			
(20 to 54.999) A (55 to 149.999) A (150 to 1025) A	(45 to 65) Hz	0.31 % + 0.054 A 0.34 % + 0.042 A 0.34 % + 0.13 A	Fluke 552X series w/ Fluke 5500A/coil
(20 to 54.999) A (55 to 149.999) A (150 to 400) A	(65 to 440) Hz	0.93 % + 0.054 A 0.94 % + 0.046 A 1.2 % + 0.22 A	
(Non-Toroidal Type)			
(20 to 149.999) A (150 to 549.999) A (550 to 1025) A	(45 to 65) Hz	0.65 % + 0.30 A 0.66 % + 1.1 A 0.65 % + 1.1 A	
(20 to 149.999) A (150 to 400) A	(65 to 440) Hz	1.2 % + 0.30 A 1.4 % + 1.1 A	
Capacitance <sup>3</sup> – Generate			
(0.22 to 0.399 99) nF (0.4 to 1.0999) nF (1.1 to 3.2999) nF (3.3 to 10.999) nF (11 to 32.9999) nF (33 to 109.999) nF (110 to 329.999) nF (0.33 to 1.099 99) μF (1.1 to 3.299 99) μF (3.3 to 10.9999) μF (11 to 32.9999) μF (33 to 109.999) μF (110 to 329.999) μF (0.33 to 1.099 99) mF (1.1 to 3.2999) mF (3.3 to 10.9999) mF  (11 to 32.9999) mF (33 to 110) mF	10 Hz to 10 kHz 10 Hz to 10 kHz 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz (10 to 80) Hz (0 to 50) Hz (0 to 20) Hz (0 to 6) Hz (0 to 2) Hz (0 to 0.6) Hz (0 to 0.2) Hz	0.39 % + 0.0078 nF 0.39 % + 0.0078 nF 0.39 % + 0.0078 nF 0.20 % + 0.0078 nF 0.20 % + 0.078 nF 0.20 % + 0.078 nF 0.20 % + 0.24 nF 0.20 % + 0.78 nF 0.20 % + 2.4 nF 0.20 % + 7.8 nF 0.32 % + 24 nF 0.35 % + 78 nF 0.35 % + 240 nF 0.35 % + 0.78 μF 0.35 % + 2.4 μF 0.35 % + 7.8 μF 0.59 % + 24 μF 0.86 % + 78 μF	Fluke 552X series calibrator

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Simulation of Thermocouples & Thermocouple Indicating Devices <sup>3</sup> – Generate			
Type B	(600 to 800) °C (800 to 1000) °C (1000 to 1550) °C (1550 to 1820) °C	0.35 °C 0.27 °C 0.24 °C 0.26 °C	Fluke 552X series calibrator
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.39 °C 0.13 °C 0.11 °C 0.13 °C 0.17 °C	
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.21 °C 0.13 °C 0.11 °C 0.14 °C 0.18 °C	
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.26 °C 0.14 °C 0.13 °C 0.21 °C 0.32 °C	
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C	0.32 °C 0.18 °C 0.15 °C 0.14 °C 0.21 °C	
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.45 °C 0.28 °C 0.26 °C 0.32 °C	
Type S	(0 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C	0.37 °C 0.28 °C 0.29 °C 0.36 °C	

Parameter/Equipment	Range	CMC <sup>2, 5, 6</sup> ( $\pm$ )	Comments
Electrical Simulation of Thermocouples & Thermocouple Indicating Devices <sup>3</sup> – Generate (cont)  Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.49 °C 0.19 °C 0.13 °C 0.11 °C	Fluke 552X series calibrator
Electrical Simulation of RTD Indicators & Indicating Systems <sup>3</sup> –  Pt 385, 100 $\Omega$	(-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 0.07 °C 0.078 °C 0.094 °C 0.18 °C	Fluke 552X series calibrator
Oscilloscopes <sup>3</sup> –  Amplitude – DC Signal 50 $\Omega$ Load 1 M $\Omega$ Load  Amplitude – Square Wave 50 $\Omega$ Load  1 M $\Omega$ Load  Bandwidth Flatness  Time Marker  Resistance – Measure	  1 mV to 6.6 V 1 mV to 130 V  1 mV to 6.6 V <sub>pp</sub> 10 Hz to 100 kHz  1 mV to 130 V <sub>pp</sub> 10 Hz to 100 kHz  50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (600 to 1100) MHz  50 ms to 5 s 2 ns to 20 ms  (40 to 60) $\Omega$ (0.5 to 1.5) M $\Omega$	  0.20 % + 32 $\mu$ V 0.039 % + 32 $\mu$ V  0.20 % + 32 $\mu$ V  0.078 % + 32 $\mu$ V  1.2 % + 78 $\mu$ V 1.6 % + 78 $\mu$ V 3.2 % + 78 $\mu$ V 3.9 % + 78 $\mu$ V  (20 + (t*1000)) $\mu$ s/s 1.9 $\mu$ s/s  0.079 % 0.078 %	  552XA/SC1100            t = time in seconds

### III. Mechanical

Parameter/Equipment	Range	CMC <sup>2, 6</sup> ( $\pm$ )	Comments
Pneumatic & Hydraulic Gage Pressure <sup>9</sup>	(-14.2 to 0) psig (0 to 6) psig (6 to 15 000) psig	0.036 psi 0.006 psi 0.10 %	Digital pressure standard
Torque Wrenches	10 oz·in to 1000 lbf·ft	0.6 %	Norbar 43236 torque standard, CDI – DTT transducers

### IV. Thermodynamics

Parameter/Equipment	Range	CMC <sup>2, 6</sup> ( $\pm$ )	Comments
IR Thermometers	(35 to 500) °C	0.25 °C + 0.21 %	Fluke 4181 $\epsilon = 0.95$ , $\lambda = (8 \text{ to } 14) \mu\text{m}$

### V. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2, 6, 8</sup> ( $\pm$ )	Comments
Frequency <sup>3</sup> – Measure	(1 to 40) Hz 40 Hz to 10 MHz	0.058 % 0.12 %	Agilent 3458A
Frequency <sup>3</sup> – Measuring Equipment	0.01 Hz to 2 MHz Up to 500 MHz	2 $\mu\text{Hz}/\text{Hz}$ + 3.9 $\mu\text{Hz}$ 2 $\mu\text{Hz}/\text{Hz}$	Fluke 5522A Fluke 5522A/SC1100

<sup>1</sup> This laboratory offers commercial calibration service and field calibration service where noted.

<sup>2</sup> 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.

- <sup>3</sup> 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.
- <sup>4</sup> In the statement of CMC,  $L$  is the numerical value of the nominal length of the device measured in inches for Imperial units, or in millimeters for metric units, and  $R$  is the resolution unit under test.
- <sup>5</sup> 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.
- <sup>6</sup> In the statement of CMC, percentages are to be read as percent of reading, unless otherwise noted.
- <sup>7</sup> This scope meets A2LA's *P112 Flexible Scope Policy*
- <sup>8</sup> 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.
- <sup>9</sup> The contributions attributed to the repeatability of the "best existing device" are not included in the CMC claim.





# Accredited Laboratory

A2LA has accredited

## PYLON ELECTRONICS INC.

Mississauga, Ontario, CANADA

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 5<sup>th</sup> day of August 2024

A blue ink signature of Mr. Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3630.03  
Valid to September 30, 2026

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