



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

COOPER INSTRUMENTATION AND CALIBRATION SERVICES (CICS)

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CALIBRATION

Valid To: October 31, 2023

Certificate Number: 3496.01

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. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2, 7} (\pm)	Comments
DC Voltage ³ – Generate	(0 to 110) mV	0.026 mV	Fluke 741B/743B/754
	(111 to 1100) mV	0.26 mV	
	(0.11 to 1.1) V	0.001 V	
	(1.1 to 15) V	0.003 V	
	(0 to 100) mV	0.007 mV	Fluke 7526A
	(0 to 1) V	0.000 05 V	
	(0 to 10) V	0.0005 V	
	(0 to 100) V	0.005 V	
DC Voltage ³ – Measure	(0 to 110) mV	0.083 mV	Fluke 741B/743B/754
	(0.11 to 1.1) V	0.001 V	
	(1.1 to 11) V	0.007 V	
	(11 to 110) V	0.14 V	
	(110 to 300) V	0.37 V	Fluke 7526A
	(0 to 10) V	0.0009 V	
	(10 to 100) V	0.008 V	

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
DC Current ³ – Generate			
Source mA	(2 to 22) mA	0.009 mA	Fluke 741B/743B/754
Simulate Transmitter	(2 to 22) mA	0.013 mA	
	(0 to 20) mA (0 to 100) mA	0.003 mA 0.015 mA	Fluke 7526A
DC Current ³ – Measure	(0 to 30) mA (0 to 110) mA	0.013 mA 0.046 mA	Fluke 741B/743B/754
	(0 to 50) mA	0.008 mA	Fluke 7526A
DC Resistance ³ – Generate	(0 to 11) Ω (11 to 110) Ω 110 Ω to 1.1 kΩ	0.052 Ω 0.073 Ω 0.97 Ω	Fluke 741B/743B/754
	(0 to 10) mΩ (10 to 110) mΩ (100 to 1000) mΩ (1 to 10) Ω (10 to 100) Ω (100 to 1000) Ω (1 to 10) kΩ	2.8 mΩ 2.6 mΩ 2.9 mΩ 0.004 Ω 0.014 Ω 0.12 Ω 1.2 Ω	IET Labs high accuracy resistance substitute
	(5 to 400) Ω (0.005 to 4) kΩ	0.018 Ω 0.35 Ω	Fluke 7526A
DC Resistance ³ – Measure	(0 to 11) Ω (11 to 110) Ω 110 Ω to 1.1 kΩ (1.1 to 11) kΩ	0.068 Ω 0.16 Ω 1.5 Ω 25 Ω	Fluke 741B/743B/754
	(0 to 400) Ω (0 to 4) kΩ	0.016 Ω 0.16 Ω	Fluke 7526A

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Simulation of RTD Indicators ³ –			
Pt 3926, 100 Ω	(-200 to 0) °C (0 to 630) °C	0.2 °C 0.3 °C	Fluke 741B/743B/754
	(-200 to 630) °C	0.06 °C	Fluke 7526A
Pt 385, 100 Ω	(-200 to 0) °C (0 to 400) °C (400 to 800) °C	0.2 °C 0.3 °C 0.5 °C	Fluke 741B/743B/754
	(-200 to 800) °C	0.06 °C	Fluke 7526A
Ni 672, 120 Ω	(-80 to 260) °C	0.2 °C	Fluke 741B/743B/754
	(-80 to 260) °C	0.03 °C	Fluke 7526A
Pt 385, 200 Ω	(-200 to 0) °C (0 to 400) °C (400 to 630) °C	0.2 °C 0.3 °C 0.5 °C	Fluke 741B/743B/754
	(-200 to 400) °C (400 to 630) °C	0.46 °C 0.58 °C	Fluke 7526A
Pt 385, 500 Ω	(-200 to 0) °C (0 to 400) °C (400 to 630) °C	0.2 °C 0.3 °C 0.5 °C	Fluke 741B/743B/754
	(-200 to 630) °C	0.2 °C	Fluke 7526A
Pt 385, 1000 Ω	(-200 to 0) °C (0 to 400) °C (400 to 630) °C	0.2 °C 0.3 °C 0.5 °C	Fluke 741B/743B/754
	(-200 to 630) °C	0.1 °C	Fluke 7526A
Cu 427, 10 Ω	(-100 to 0) °C (0 to 260) °C	1.2 °C 1.2 °C	Fluke 741B/743B/754
	(-100 to 260) °C	0.44 °C	Fluke 7526A
Pt 3916, 100 Ω	(-200 to -190) °C (-190 to 0) °C (0 to 630) °C	0.4 °C 0.3 °C 0.3 °C	Fluke 741B/743B/754
	(-200 to 630) °C	0.06 °C	Fluke 7526A

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Simulation of Thermocouple Indicators ³ –			
Type E	(-250 to -200) °C	1.1 °C	Fluke 741B/743B/754
	(-200 to -100) °C	0.5 °C	
	(-100 to 600) °C	0.5 °C	
	(600 to 1000) °C	0.4 °C	
	(-250 to -200) °C	0.3 °C	Fluke 7526A
	(-200 to -100) °C	0.2 °C	
	(-100 to 0) °C	0.2 °C	
	(0 to 600) °C	0.2 °C	
	(600 to 1000) °C	0.2 °C	
Type J	(-210 to 100) °C	0.5 °C	Fluke 741B/743B/754
	(-100 to 800) °C	0.4 °C	
	(800 to 1200) °C	0.4 °C	
	(-210 to 100) °C	0.2 °C	Fluke 7526A
	(-100 to 800) °C	0.2 °C	
	(800 to 1200) °C	0.2 °C	
Type K	(-200 to -100) °C	0.7 °C	Fluke 741B/743B/754
	(-100 to 400) °C	0.5 °C	
	(400 to 1200) °C	0.5 °C	
	(1200 to 1372) °C	0.5 °C	
	(-250 to -200) °C	0.6 °C	Fluke 7526A
	(-200 to -100) °C	0.2 °C	
	(-100 to 500) °C	0.2 °C	
	(500 to 800) °C	0.2 °C	
	(800 to 1372) °C	0.2 °C	
Type T	(-250 to -200) °C	1.6 °C	Fluke 741B/743B/754
	(-200 to 0) °C	0.7 °C	
	(0 to 400) °C	0.7 °C	
	(-250 to -200) °C	0.4 °C	Fluke 7526A
	(-200 to -100) °C	0.2 °C	
	(-100 to 0) °C	0.2 °C	
	(0 to 200) °C	0.2 °C	
	(0 to 400) °C	0.2 °C	

II. Mechanical

Parameter/Equipment	Range	CMC ^{2, 4, 5} (\pm)	Comments
Micro-Pressure ³ – Measure	(-1 to 1) inH ₂ O (-5 to 5) inH ₂ O	0.001 inH ₂ O 0.005 inH ₂ O	Setra Micro-Cal 869
Vacuum – Measure	(0 to 30) inHg (-15 to 0) psi	0.018 inHg 0.026 psi	Fluke 700PD5
	(0 to 900) mmHgA (0 to 17.4) psia	0.3 mmHgA 0.02 psia	Meriam precision absolute manometer
Pressure – Measure ³	(0 to 1) psid (0 to 27.7) inH ₂ O (0 to 15) psid (0 to 100) psig (0 to 200) psig (0 to 500) psig (0 to 1500) psig (0 to 5000) psig (0 to 100) psia	0.002 psi 0.056 inH ₂ O 0.009 psi 0.062 psi 0.20 psi 0.34 psi 0.93 psi 4.8 psi 0.084 psia	Fluke 700P22 Fluke 700P24 Fluke 700PD6 Fluke 700PD7 Fluke 700PO7 Fluke 700PO9 Fluke 700P30 Fluke 700PA6

III. Thermodynamics

Parameter/Equipment	Range	CMC ^{2, 5} (\pm)	Comments
Relative Humidity ³ – Measure	(10 to 90) % RH	1.4 % RH	Vaisala M170
Temperature ³ – Measure	(0 to 40) °C	0.3 °C	Vaisala M170
	(-80 to 350) °C	0.063 °C	Hart 1521B
	(-80 to 350) °C	0.043 °C	Fluke 1523

IV. Time & Frequency

Parameter/Equipment	Range	CMC ^{2, 5} (\pm)	Comments
Rotational Speed ³ – Measure	(10 to 99.99) RPM (100 to 999.9) RPM (1000 to 12 000) RPM	0.02 RPM 0.2 RPM 2 RPM	Tachometer
Frequency ³ – Measure	(1.00 to 109.99) Hz (110.0 to 1099.9) Hz (1.100 to 10.999) kHz (11.00 to 50.00) kHz	0.06 Hz 0.59 Hz 0.006 Hz 0.059 Hz	Fluke 741B/743B/754
Measuring Equipment	(0.00 to 10.99) Hz (11.00 to 109.99) Hz (110.0 to 1099.9) Hz (1.100 to 21.999) kHz (22.000 to 50.000) kHz	0.016 Hz 0.17 Hz 0.17 Hz 0.003 kHz 0.006 kHz	
Stopwatch/Timer ³ – Measure	360 s	0.04 s	Fisher Scientific 14-649-7

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 Includes Measuring Equipment performed by comparison, actual uncertainty may be larger due to resolution of unit under test.

⁵ 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.

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

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.

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Accredited Laboratory

A2LA has accredited

COOPER INSTRUMENTATION AND CALIBRATION SERVICES (CICS)

Greensboro, NC

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/NCSL 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 2nd day of December 2021.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3496.01
Valid to October 31, 2023

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