



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Aozora Ventures, LLC dba MD Instruments
1129 S. Mill Iron Road
Muskegon, MI 49442

Fulfills the requirements of

ISO/IEC 17025:2017

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President

Expiry Date: 10 July 2027
Certificate Number: L2161



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
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).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Aozora Ventures, LLC dba MD Instruments

1129 S. Mill Iron Road
Muskegon, MI 49442
Mary C Fillion 231-773-4739

CALIBRATION

ISO/IEC 17025 Accreditation Granted: **10 July 2025**

Certificate Number: **L2161** Certificate Expiry Date: **10 July 2027**

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
DC Current Source / Measure ¹	Up to 20 mA	20 μ A	Comparison to Precision Multimeter, Power Supply
DC Current – Measure	Up to 10 mA (10 to 100) mA (0.1 to 3) A	2 μ A 14 μ A 0.03 % of reading + 3.6 mA	Comparison to Precision Multimeter
DC Current – Source	Up to 10 mA (10 to 100) mA (0.1 to 2) A	2 μ A 14 μ A 0.03 % of reading + 3.6 mA	Comparison to Precision Multimeter, Power Supply
AC Current – Measure (5 Hz to 5 kHz)	Up to 3 A	0.07 % of reading + 60 mA	Comparison to Precision Multimeter
AC Current – Source	Up to 2 A	0.07 % of reading + 60 mA	Comparison to Precision Multimeter, Power Supply
Resistance – Measure	Up to 100 Ω (100 to 500) Ω (0.5 to 1) k Ω (1 to 10) k Ω (10 to 100) k Ω (100 to 500) k Ω (0.5 to 1) M Ω (1 to 10) M Ω (10 to 100) M Ω	12 m Ω 58 m Ω 0.12 Ω 1.3 Ω 13 Ω 58 Ω 0.3 k Ω 1.9 k Ω 56 k Ω	Comparison to Precision Multimeter (4-wire configuration)

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
DC Voltage Source / Measure ¹	(-10 to 10) mV (-100 to 100) mV (1 to 10) V (10 to 100) V (100 to 1 000) V	6 μ V 11 μ V 0.5 mV 4.9 mV 47 mV	Comparison to Precision Multimeter, Power Supply
DC Voltage Source / Measure ¹	(-10 to 85) mV	6 μ V	Comparison to Ectron 1140A Thermocouple Simulator
DC Voltage – Measure	(-10 to 10) mV (-100 to 100) mV (1 to 10) V (10 to 100) V (100 to 1 000) V	6 μ V 11 μ V 0.5 mV 4.9 mV 47 mV	Comparison to Precision Multimeter
AC Voltage – Measure	10 Hz to 20 kHz Up to 100 mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 750) V	0.1 mV 1.2 mV 8.2 mV 79 mV 0.57 mV	Comparison to Precision Multimeter
Electrical Simulation of RTD Indicating Devices – Source	Pt 385, 100 Ω (-328 to 752) °F Pt 385, 200 Ω (-328 to 1 166) °F Pt 385, 500 Ω (-328 to 1 166) °F Pt 385, 1 000 Ω (-328 to 1 166) °F Pt 3926, 100 Ω (-328 to 1 166) °F	0.8 °F 1 °F 1 °F 1 °F 0.9 °F	Comparison to Precision Multimeter, Process Calibrator
Electrical Simulation of RTD Indicating Devices – Source	Pt 3916, 100 Ω (-328 to 1 166) °F Ni 672, 120 Ω (-112 to 500) °F Cu 427, 10 Ω (-148 to 500) °F	1 °F 0.5 °F 1.8 °F	Comparison to Precision Multimeter, Process Calibrator

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Electrical Simulation of Thermocouple Indicating Devices – Source	Type B (1 472 to 3 300) °F	1 °F	Comparison to Ectron 1140A Thermocouple Simulator
	Type C (32 to 3 272) °F	0.8 °F	
	Type E (-148 to 1 832) °F	0.3 °F	
	Type J (-346 to 2 190) °F	0.4 °F	
	Type K (-328 to 2 501) °F	0.3 °F	
	Type N (-148 to 2 372) °F	0.4 °F	
	Type R (212 to 3 212) °F	0.9 °F	
	Type S (300 to 3 212) °F	0.8 °F	
	Type T (-328 to 752) °F	0.4 °F	
Electrical Simulation of Thermocouple Indicating Devices – Source	Type B (1 076 to 3 092) °F	0.9 °F	Comparison to Fluke 7526A Precision Process Calibrator
	Type C (32 to 3 272) °F	0.9 °F	
	Type E (-328 to -148) °F	1.7 °F	
	(-148 to 32) °F	0.9 °F	
	(32 to 1 832) °F	0.3 °F	
	Type J (-346 to 2 190) °F	0.4 °F	
	Type K (-328 to 2 501) °F	0.3 °F	
	Type N (-328 to -148) °F	3.2 °F	
	(-148 to 2 372) °F	0.4 °F	
	Type R (-4 to 32) °F	5.9 °F	
	(32 to 212) °F	4.7 °F	
	(212 to 3212) °F	0.8 °F	

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Electrical Simulation of Thermocouple Indicating Devices – Source	Type S		Comparison to Fluke 7526A Precision Process Calibrator
	(32 to 212) °F	4.5 °F	
	(212 to 3 212) °F	0.8 °F	
	Type T		
	(-418 to -328) °F	5.3 °F	
	(-328 to 752) °F	0.4 °F	

Mass and Mass Related

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Pressure Devices	(0.1 to 5) psi	0.18 psi	Comparison to Process Calibrator, Pressure Modules
	(5 to 100) psi	0.3 psi	
	(100 to 1 000) psi	0.8 psi	
	(1 000 to 10 000) psi	12 psi	
Vacuum Devices ²	(-1 000 to 0) mbar	4.5 mbar	Comparison to MKS Baratron Capacitance Manometer
Vacuum Devices ²	(0 to 1 000) micron	2.5 % of reading	Comparison to MKS Vacuum Sensor

Thermodynamic

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Humidity – Source/Measure	(11 to 90) %RH	2.5 %RH	Comparison to Humidity Probe, Saturated Salt Solutions
Temperature – Measure	(-320 to 32) °F	0.3 °F	Comparison to RTD with Display System
	(32 to 600) °F	0.1 °F	
Temperature – Measure	(300 to 700) °F	1.6 °F	Comparison to Thermocouple Probe with Display System
	(700 to 1 500) °F	2.3 °F	
	(1 500 to 2 000) °F	2.6 °F	
	(2 000 to 2 200) °F	2.9 °F	

Thermodynamic

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Temperature System Accuracy Tests ¹	(-320 to 32) °F (32 to 1 000) °F (1 000 to 2 372) °F	0.7 °F 2.1 °F 3.7 °F	Reference Type K, N, S Thermocouple Probe or RTD with Field Test Instrument per the current revision of AMS 2750.
Temperature Uniformity Surveys ¹	Type J (-320 to 1 000) °F (1 000 to 1 400) °F Type K (-320 to 1 000) °F (1 000 to 2 450) °F Type N (-148 to 1 000) °F (1 000 to 2 372) °F Type S (392 to 1 000) °F (1 000 to 2 650) °F	2.1 °F 2.3 °F 2.4 °F 4.4 °F 2.2 °F 4.3 °F 3.2 °F 4.9 °F	Reference Thermocouples with Data Recorder per the current revision of AMS 2750.
Resistance Temperature Devices and Thermocouples	(32 to 450) °F	0.2 °F	Comparison to RTD with Display System
Resistance Temperature Devices and Thermocouples	(450 to 2 200) °F	5 °F	Comparison to Thermocouple with Display System
Infrared Thermometers	50 °C 200 °C 400 °C 600 °C	2.6 °C 4.9 °C 8.6 °C 12 °C	Comparison to Reference Pyrometer with Blackbody Source (Flat Plate) $\epsilon = 0.95, \lambda = (8 \text{ to } 14) \mu\text{m}$
Infrared Thermometers	300 °C 600 °C 900 °C 1 200 °C 1 500 °C	5 °C 9.6 °C 15 °C 21 °C 26 °C	Comparison to Reference Pyrometer with Blackbody Source (Flat Plate) $\epsilon = 0.99, \lambda = 1.6 \mu\text{m}$

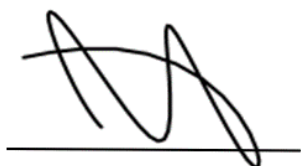
Time and Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Frequency – Measure	Up to 100 Hz (100 to 500) Hz (500 to 1 000) Hz (1 to 10) kHz (10 to 100) kHz	17 mHz 58 mHz 0.12 Hz 1.2 Hz 12 Hz	Comparison to Precision Multimeter
Stopwatch	Up to 24 hr	2 s	Comparison to Radio-Controlled Clock
Timers ¹	Up to 24 hr	2.7 s	Comparison to Stopwatch

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ($k=2$), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. 1 micron = 1 μ mHg.
3. Unless otherwise specified in the far-right column, the calibration procedure utilized by the laboratory was developed and validated internally.



Jason Stine, Vice President