



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Cal Tec Process Management
1400 Grange Hall Road, Suite 500
Beavercreek, OH 45430

Fulfills the requirements of

ISO/IEC 17025:2017

In the fields of

CALIBRATION AND DIMENSIONAL MEASUREMENT

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.

A handwritten signature in black ink, appearing to be 'Jason Stine', is positioned above a horizontal line.

Jason Stine, Vice President

Expiry Date: 10 April 2026

Certificate Number: AC-1320



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

Cal Tec Process Management

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CALIBRATION AND DIMENSIONAL MEASUREMENT

Valid to: **April 10, 2026**

Certificate Number: **AC-1320**

CALIBRATION

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	Up to 320 mV 320 mV to 3.2 V (3.2 to 32) V (32 to 320) V 320 V to 1 kV	71 μ V/V + 8.5 μ V 65 μ V/V + 65 μ V 75 μ V/V + 0.73 mV 77 μ V/V + 11 mV 73 μ V/V + 23 mV	Multifunction Calibrator
DC Voltage – Measure	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	71 μ V/V + 5.9 μ V 65 μ V/V + 42 μ V 70 μ V/V + 0.42 mV 75 μ V/V + 4.5 mV 77 μ V/V + 23 mV	Precision DMM
AC Voltage – Source	Up to 10 mV 10 Hz to 3 kHz (3 to 10) kHz (10 to 30) kHz (30 to 50) kHz (50 to 100) kHz (10 to 32) mV 10 Hz to 3 kHz (3 to 10) kHz (10 to 30) kHz (30 to 50) kHz (50 to 100) kHz (32 to 320) mV 10 Hz to 3 kHz (3 to 10) kHz (10 to 30) kHz (30 to 50) kHz (50 to 100) kHz	0.72 mV/V + 0.39 mV 0.72 mV/V + 0.52 mV 1.4 mV/V + 0.97 mV 1.5 mV/V + 2 mV 6.4 mV/V + 5.1 mV 0.72 mV/V + 0.11 mV 2.3 mV/V + 0.13 mV 1.4 mV/V + 0.25 mV 1.5 mV/V + 0.49 mV 2 mV/V + 1.3 mV 0.72 mV/V + 0.3 mV 0.72 mV/V + 0.3 mV 1.4 mV/V + 0.5 mV 1.5 mV/V + 0.51 mV 6.3 mV/V + 0.84 mV	Multifunction Calibrator



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Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Source	320 mV to 3.2 V		Multifunction Calibrator
	10 Hz to 3 kHz	0.72 mV/V + 3 mV	
	(3 to 10) kHz	0.72 mV/V + 3 mV	
	(10 to 30) kHz	1.4 mV/V + 5 mV	
	(30 to 50) kHz	1.5 mV/V + 5.1 mV	
	(50 to 100) kHz	6.3 mV/V + 8.4 mV	
	(3.2 to 32) V		
	10 Hz to 3 kHz	0.72 mV/V + 30 mV	
	(3 to 10) kHz	0.85 mV/V + 30 mV	
	(10 to 30) kHz	1.5 mV/V + 50 mV	
	(30 to 50) kHz	1.9 mV/V + 51 mV	
	(50 to 100) kHz	7 mV/V + 86 mV	
	(32 to 105) V		
	10 Hz to 3 kHz	0.72 mV/V + 0.23 V	
	(3 to 10) kHz	0.85 mV/V + 0.23 V	
	(10 to 30) kHz	1.5 mV/V + 0.38 V	
	(30 to 50) kHz	1.9 mV/V + 0.38 V	
	(50 to 100) kHz	7 mV/V + 0.61 V	
	(105 to 320) V		
	40 Hz to 1 kHz	0.79 mV/V + 0.23 V	
(1 to 3) kHz	1 mV/V + 0.23 V		
(3 to 10) kHz	1 mV/V + 0.23 V		
(10 to 20) kHz	1.4 mV/V + 0.23 V		
(20 to 30) kHz	1.9 mV/V + 0.38 V		
(320 to 800) V			
40 Hz to 1 kHz	0.79 mV/V + 0.24 V		
(1 to 3) kHz	1 mV/V + 0.24 V		
(3 to 10) kHz	1 mV/V + 0.25 V		
(10 to 20) kHz	1.4 mV/V + 0.28 V		
(20 to 30) kHz	1.9 mV/V + 0.43 V		
800 V to 1 kV			
40 Hz to 1 kHz	0.79 mV/V + 0.26 V		
(1 to 3) kHz	1 mV/V + 0.26 V		
(3 to 10) kHz	1 mV/V + 0.31 V		
(10 to 20) kHz	1.4 mV/V + 0.39 V		
AC Voltage – Measure	1 mV to 1 V		Precision DMM
	(3 to 5) Hz	10 mV/V + 0.49 mV	
	(5 to 10) Hz	3.5 mV/V + 0.49 mV	
	10 Hz to 20 kHz	0.85 mV/V + 1 mV	
	(20 to 50) kHz	1.5 mV/V + 2 mV	
(50 to 100) kHz	6.4 mV/V + 5.2 mV		



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	(1 to 100) V (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz 100 V to 1 kV (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	10 mV/V + 31 mV 3.5 mV/V + 31 mV 1 mV/V + 34 mV 1.9 mV/V + 59 mV 7 mV/V + 0.13 V 10 mV/V + 0.26 V 3.6 mV/V + 0.26 V 1.4 mV/V + 0.39 V 1.9 mV/V + 0.49 V 7 mV/V + 0.68 V	Precision DMM
Resistance – Source	Up to 40 Ω 40 Ω to 4 kΩ (4 to 40) kΩ (40 to 400) kΩ 400 kΩ to 4 MΩ (4 to 40) MΩ (40 to 400) MΩ	1 mΩ/Ω + 0.24 Ω 0.37 mΩ/Ω + 0.32 Ω 0.27 mΩ/Ω + 2.3 Ω 0.27 mΩ/Ω + 23 Ω 0.57 mΩ/Ω + 0.23 kΩ 8 mΩ/Ω + 10 kΩ 20 mΩ/Ω + 0.11 MΩ	Multifunction Calibrator
Resistance – Measure	Up 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	1 mΩ/Ω + 0.24 Ω 1 mΩ/Ω + 0.25 Ω 0.37 mΩ/Ω + 0.31 Ω 0.37 mΩ/Ω + 0.84 Ω 0.27 mΩ/Ω + 20 Ω 0.42 mΩ/Ω + 0.20 kΩ 0.64 mΩ/Ω + 2 kΩ 8 mΩ/Ω + 41 kΩ 20 mΩ/Ω + 0.11 MΩ	Precision DMM
DC Current – Source	Up to 320 μA 320 μA to 3.2 mA (3.2 to 32) mA (32 to 320) mA 320 mA to 3.2 A (3.2 to 10.5) A	0.52 mA/A + 2.3 μA 0.52 mA/A + 3.1 μA 0.52 mA/A + 5.6 μA 0.53 mA/A + 0.2 mA 1.6 mA/A + 0.81 mA 1.6 mA/A + 1.3 mA	Multifunction Calibrator
DC Current Clamp-on Meters	(10.5 to 750) A	0.21 mA/A	Multifunction Calibrator, Wavetek 50 Turn Coil
DC Current – Measure	(1 to 100) μA 100 μA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A (1 to 10) A	0.52 mA/A + 49 nA 0.52 mA/A + 0.11 μA 0.52 mA/A + 2.2 μA 0.53 mA/A + 11 μA 0.79 mA/A + 0.23 mA 1.6 mA/A + 1.3 mA	Precision DMM



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source	Up to 32 μ A	1.7 mA/A + 2.5 μ A	Multifunction Calibrator
	10 Hz to 3 kHz	3.7 mA/A + 3 μ A	
	3 kHz to 10 kHz		
	(32 to 320) μ A		
	10 Hz to 3 kHz	1.7 mA/A + 2.4 μ A	
	3 kHz to 10 kHz	3.7 mA/A + 3.5 μ A	
	320 μ A to 3.2 mA		
	10 Hz to 3 kHz	1.7 mA/A + 6.5 μ A	
	3 kHz to 10 kHz	3.7 mA/A + 71 μ A	
	(3.2 to 320) mA		
AC Current – Measure	10 Hz to 3 kHz	1.7 mA/A + 0.40 mA	Precision DMM
	3 kHz to 10 kHz	3.7 mA/A + 70 mA	
	320 mA to 3.2 A		
	10 Hz to 3 kHz	1.8 mA/A + 6 mA	
	3 kHz to 10 kHz	4.3 mA/A + 70 mA	
	(3.2 to 10.5) A		
	10 Hz to 3 kHz	2.5 mA/A + 6.7 mA	
	3 kHz to 10 kHz	6.1 mA/A + 71 mA	
	(10.5 to 750) A		
	10 Hz to 3 kHz	21 mA/A + 2.01 A	
AC Current – Measure	Up to 100 μ A	1.8 mA/A + 1.8 μ A	Precision DMM
	10 Hz to 5 kHz		
	100 μ A to 1 mA	1.4 mA/A + 0.72 μ A	
	10 Hz to 5 kHz		
	(1 to 10) mA	1.8 mA/A + 8.8 μ A	
	10 Hz to 5 kHz		
	(10 to 100) mA	1.4 mA/A + 63 μ A	
10 Hz to 5 kHz			
100 mA to 1 A	2.7 mA/A + 2.6 mA		
10 Hz to 1 kHz			
(1 to 10) A	5.3 mA/A + 12 mA		
Oscilloscopes	50 kHz to 600 MHz	4.8 MHz	Multifunction Calibrator
Rise Time	5 ns to 100 ms	3.1 ms	
	100 ms to 5 s	80 ms	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure	Type E (-250 to 1 000) °C	1.3 °C	Multifunction Calibrator
	Type J (-210 to 1 200) °C	1.3 °C	
	Type K (-250 to 1 370) °C	1.3 °C	
	Type N (-270 to 1 130) °C	1.3 °C	
	Type S (0 to 1 700) °C	1.3 °C	
	Type T (-250 to 1 000) °C	1.3 °C	

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
GPS Receivers (Survey Grade)	Global Positioning	HD 0.012 ft VD 0.02 ft	Certified Length Master
Total Station Theodolite ¹ Horizontal Distance (Angle)	Up to 360°	2.9"	CTPM Linear Master, CTPM Optical Range
Vertical Distance (Angle)	(-10 to 10)°	3"	
Base Line Distance	Up to 30 m	0.73 mm	
Auto/Builders Level, Rotating Laser ^{1,2}	Level Accuracy	0.004 6 in	CTPM Linear Master
Height Gages ²	Up to 24 in	(85 + 12L) μin	Length Standard, Gage Blocks
Outside Micrometers ²	Up to 48 in	(19 + 15L) μin	Gage Blocks, Length Standards
Inside Micrometers ²	(0.5 to 40) in	(48 + 13L) μin	Length Machine, Length Standard
Depth Micrometers ²	Up to 12 in	(95 + 9L) μin	Depth Master, Gage Blocks
Dial Indicators	Up to 2 in	67 μin	Indicator Calibrator, Gage Blocks
Calipers ²	Up to 24 in	(580 + 21.7L) μin	Cal Master, Gage Blocks, Length Standards

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Thread Plugs ^{1,2} Major Diameter	(0.012 to 8) in	(15 + 9.6L) μin	Bench Micrometer, Laser Attachment, Thread Wires
Pitch Diameter	(0.012 to 8) in	(33 + 7.9L) μin	
Pin Gages ^{1,2}	(0.012 to 2) in	(15 + 14L) μin	Laser Micrometer
Plain Plug Gages ^{1,2}	(0.012 to 8) in	(5.4 + 11L) μin	Bench Micrometer, Laser Attachment
Gage Blocks ^{1,2}	(0.05 to 1) in 2 in 3 in 4 in	(3.8 + 10L) μin 25 μin 37 μin 48 μin	DMS 680, Master Gage Blocks
Laser Micrometers ^{1,2}	(0.005 to 12) in	(15 + 10L) μin	Master Gage Pins
Surface Plates ² Overall Flatness	(1 to 2.5) ft ² (1 to 32) ft ²	120 μin (18 + 3.4L) μin	In accordance with ASME B89.3.7 using Mahr Federal Level System Repeat-o-Meter
Local Area Flatness	Up to 0.001 in	80 μin	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pressure Gages	(-15 to 300) psi (0 to 3 000) psi (0 to 10 000) psi	0.24 psi 1.1 psi 3.2 psi	Comparison to Additel Pressure Gages
Torque Tools ¹	(5 to 50) lbf·in (40 to 400) lbf·in (100 to 1 000) lbf·in (25 to 250) lbf·ft (60 to 600) lbf·ft	0.6 % of reading + 0.001 lbf·in 0.6 % of reading – 0.01 lbf·in 1 % of reading + 0.057 lbf·in 0.6 % of reading – 0.003 lbf·ft 0.6 % of reading – 0.02 lbf·ft	Torque Calibrator

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure	(0 to 60) °C	0.18 °C	Fluke 1620A w/ probe

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure/Source (Thermohygrometers)	(0 to 60) °C	0.18 °C	Comparison to Fluke 1620A w/ Probe
Humidity – Measure/Source (Thermohygrometers)	(20 to 70) %RH	1.6 %RH	/Source (Thermohygrometers) Fluke 1620A w/ probe
Temperature – Source (Thermometers Thermocouples)	(-25 to 350) °C	0.8 °C	Fluke 9142 Field Metrology Well, Platinum Thermometer
Temperature Uniformity Surveys (TUS) Ovens/Furnaces	(0 to 850) °C	1.2 °C	Data Acquisition, Thermocouple Wire per AMS 2750 (G), CQI 9
System Accuracy Tests (SAT) Temperature Controllers, Temperature Recorders	(0 to 850) °C	1.2 °C	Temperature Calibrator, Thermocouple Wire per AMS 2750 (G), CQI 9

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Source	10 Hz to 600 MHz 100 MHz to 3.2 GHz	1.4 µHz/Hz 1.2 µHz/Hz	Multifunction Calibrator, Frequency Generator
Frequency – Measure	10 Hz to 8 GHz	0.63 µHz/Hz	Comparison to Frequency Counter

DIMENSIONAL MEASUREMENT

1 Dimensional

Parameter	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Length Measurements – 1D	(0.01 to 40) in	7.1 μ in	Linear Laser System utilized as the Reference Standard.
Length Measurements – 1D	X axis: Up to 18 in Y axis: Up to 20 in Z axis: Up to 16 in	340 μ in 340 μ in 340 μ in	Coordinate Measuring Machine utilized as the Reference Standard.

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. Parameters calibrated in the laboratory only and are not available for on-site calibration.
2. L = length in inches; " = arc-second.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1320.
4. Legal Entity: Aldinger Company



Jason Stine, Vice President

