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

CONRAD KACSIK INSTRUMENT SYSTEMS, INC.
30925 Aurora Rd.
Solon, OH 44139
Christopher S. Miller Phone: 440 836 0103 x 107

CALIBRATION

Valid To: December 31, 2023 Certificate Number: 1385.01

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, 4] (±)	Comments
DC Voltage – Measure[3]	(0 to 100) mV (0.1 to 1) V (1 to 10) V	22 µV/V + 1 µV 9.0 µV/V + 1 µV 8.0 µV/V + 1 µV	HP 3458A, opt 002
DC Voltage – Generate[3]	(0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V	29 µV/V + 1 µV 16 µV/V + 2 µV 16 µV/V + 20 µV	Fluke 5520A/SC600
DC Current – Measure[3]	(0 to 100) µA (0.1 to 1) mA (1 to 10) mA (10 to 100) mA	22 µA/A + 8 nA 18 µA/A + 5 nA 18 µA/A + 50 nA 30 µA/A + 0.5 µA	HP 3458A, opt 002
DC Current – Generate[3]	(0 to 329.999) µA (0.3 to 3.299) mA (3 to 32.99) mA	0.03 % + 20 nA 0.012 % + 50 nA 0.012 % + 0.25 µA	Fluke 5520A/SC600

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Electrical Calibration of mV Thermocouple Sources[3] –			
Type B	(649 to 1649) °C	1.2 °C	HP 3458A opt 002, Kaye ice point, Omega T/C half junctions
Type C	(537 to 2204) °C	0.93 °C	
Type J	(-210 to 760) °C	0.12 °C	
Type K	(-270 to 1372) °C	0.13 °C	
Type N	(-270 to 1300) °C	0.14 °C	
Type R	(0 to 1767) °C	0.28 °C	
Type S	(0 to 1767) °C	0.28 °C	
Type T	(-270 to 400) °C	0.13 °C	
Type E	(-270 to 1000) °C	0.14 °C	
Electrical Calibration of Thermocouple Indicators[3] –			
Type B	(649 to 1649) °C	1.2 °C	Fluke 5520A HP 3458A opt 002, Kaye ice point, Omega T/C half junctions
Type C	(537 to 2204) °C	0.93 °C	
Type J	(-200 to 760) °C	0.12 °C	
Type K	(-200 to 1372) °C	0.13 °C	
Type N	(-200 to 1300) °C	0.14 °C	
Type R	(-50 to 1767) °C	0.28 °C	
Type S	(-50 to 1767) °C	0.28 °C	
Type T	(-250 to 400) °C	0.13 °C	
Type E	(-270 to 1000) °C	0.14 °C	

II. Fluid Quantities

Parameter/Equipment	Range	CMC[2] (±)	Comments
Vacuum Gauges – All Gases	$(1 \cdot 10^{-6}$ to $1 \cdot 10^{-4})$ Torr	8.1 x 10^{-2} Torr	Televac MM200/Televac CC-10
	$(1 \cdot 10^{-4}$ to 1x$10^{-3})$ Torr	8.3 x 10^{-2} Torr	
	$(1 \cdot 10^{-3}$ to $1 \cdot 10^{-2})$ Torr	1.1 x 10^{-1} Torr	
	(1·10-2 to $7.5 \cdot 10^{2}$) Torr	6.4 x 10^{-2} Torr	

III. Thermodynamics

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Thermocouples and Extension Wires for Furnaces & Ovens	(100 to 1000) °F (1100 to 1600) °F (1700 to 1900) °F (2000 to 2200) °F	1.0 °F 1.4 °F 1.9 °F 2.2 °F	Hart 1560 scanner, Lindberg tube oven, Primary T/C type S
Ovens[3] –			ASTM E145 testing:
Ventilation Rate	(50 to 200) air changes/hr	5.2 % air changes/hr	Anemometer
Temperature	(20 to 500) °C	0.15 °C	Digital survey recorder
Time Constant	(10 to 660) s	1.5 s	Stopwatch
Uniformity Survey	(40 to 175) °C (175 to 500) °C	0.64 °C 0.78 °C	Digital survey recorder, T/C type J ½ special limits
Uniformity Survey	(40 to 400) °F (500 to 2200) °F 2350 °F	1.6 °F (1.7 to 3.2) °F 4.1 °F	AMS-2750 uniformity Survey: digital survey recorder, T/C type K
System Accuracy Test	(-300 to 32) °F (32 to 500) °F (500 to 1000) °F (1000 to 2300) °F	1.3 °F 1.7 °F 1.9 °F 2.3 °F	AMS 2750
Infrared Thermometers – Measuring Equipment	(500 to 2200) °F	3.2 °F	Black body source Ircon BCH-22F-1 Infrared systems 564/301 E=.99
	122 °F 212 °F 302 °F	1.9 °F 1.9 °F 1.9 °F	Hart Scientific 9135 E= 0.95
Infrared Calibrators – Measure	(50 to 250) °C	0.08 °C	CELABS R5T185L RTD, HP 3458A opt 002
	(260 to 1100) °C	0.72 °C	Ectron 1140A, primary T/C type S
	(1101 to 1204) °C	1.7 °C	Contact thermometry method

[1] This laboratory offers commercial 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] 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 a fixed floor specification.

[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*.

Accredited Laboratory

A2LA has accredited

CONRAD KACSIK INSTRUMENT SYSTEMS, INC.

Solon, OH

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 23rd day of February 2022.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1385.01
Valid to December 31, 2023

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