SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

CONRAD KACSIK INSTRUMENT SYSTEMS, INC.
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Solon, OH 44139
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CALIBRATION

Valid To: December 31, 2017 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]:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 4, 5] (±)	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 + 1 µV 16 µV/V + 15 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 + 500 nA	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 % + 250 nA	Fluke 5520A/SC600

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Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Electrical Calibration of mV Thermocouple Sources[3] –			
Type J	-210 °C to 760 °C	0.13 °C	HP 3458A opt 002, Kaye Ice point, Omega T/C half junctions
Type K	-270 °C to 1372 °C	0.14 °C	
Type N	-270 °C to 1300 °C	0.15 °C	
Type R	0 °C to 1767 °C	0.28 °C	
Type S	0 °C to 1767 °C	0.27 °C	
Type T	-270 °C to 400 °C	0.14 °C	
Electrical Calibration of Thermocouple Indicators[3] –			
Type J	-200 °C to 760 °C	0.13 °C	HP 3458A opt 002, Kaye Ice point, Omega T/C half junctions
Type K	-200 °C to 1372 °C	0.14 °C	
Type N	-200 °C to 1300 °C	0.15 °C	
Type R	-50 °C to 1767 °C	0.28 °C	
Type S	-50 °C to 1767 °C	0.27 °C	
Type T	-250 °C to 400 °C	0.14 °C	

II. Thermodynamics

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermocouples and Extension Wires for Furnaces & Ovens	400 °F	0.90 °F	Hart 1560 scanner, Lindberg tube oven, Primary T/C type S
	700 °F	1.0 °F	
	1000 °F	1.0 °F	
	1400 °F	1.2 °F	
	1600 °F	1.4 °F	
	1900 °F	1.9 °F	
	2200 °F	2.2 °F	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Ovens –			ASTM E145 testing:
Ventilation Rate	(50 to 200) air changes/hr	4.7 % air exchanges/hr	Anemometer
Temperature	(20 to 500) °C	0.17 °C	Digital survey recorder
Time Constant	(10 to 660) s	1.2 s	Stopwatch
Uniformity Survey	(40 – 500) °C	0.70 °C	Digital survey recorder, T/C type J
Uniformity Survey	(40 to 500) °F (600 to 2350) °F	1.5 °F (2.0 to 5.4) °F	AMS-2750 uniformity Survey: Digital survey recorder, T/C type K
Infrared Thermometers	(900 to 2200) °F	2.9°F	Black body source Ircon BCH-22F-1 E=.99
	(500 to 2200) °F	2.8 °F	Infrared systems 564/301, E=.99
	122 °F	0.80 °F	Hart Scientific 9135 E= 0.95
	212 °F	0.70 °F	
	302 °F	0.80 °F	
Infrared Source	(50 °C to 100 °C)	0.17 °C	Pyromation R5T185L RTD, HP 3458A opt 002,
	(100 °C to 200 °C)	0.29 °C	
	(260 °C to 1204 °C)	0.70 °C	Fluke 5520A, primary T/C type S

[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 and this laboratory meets A2LA *R104 – General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. 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 measurands stated are generated with the Fluke 5520A. This capability is suited for the calibration of the devices intended to measure the stated measurand in the ranges indicated. Calibration and Measurement Capability (CMC) are expressed as either a specific value that covers the full range ort as a combination of the percent or portion of the reading plus a fixed floor specification.

[5] The measurands stated are measured with the HP 3458A. This capability is suitable for the calibration of the devices intended to generate the stated measurand in the ranges indicated. Calibration and Measurement Capability (CMC) are expressed as either a specific value that covers the full range or as a combination of the percent or portion of the reading plus a fixed floor specification.

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 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of Z540-1-1994 and any additional program requirements in the field of calibration. 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 8 January 2009*).

Presented this 12th day of January 2016.

Senior Director of Quality and Communication
For the Accreditation Council
Certificate Number 1385.01
Valid to December 31, 2017

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