



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

RS CALIBRATION SERVICES, INC.
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 Pleasanton, CA 94566
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CALIBRATION

Valid To: May 31, 2018

Certificate Number: 2220.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
DC Voltage ³ – Generate	(0 to 100) mV (0 to 30) V (0 to 300) V	0.98 μV 0.11 mV 1.6 mV	Fluke 5522A
DC Current ³ – Generate	(0 to 10) mA (0 to 1000) mA	0.97 μA 0.19 mA	Fluke 5522A
Resistance ³ – Generate Fixed Point	(0 to 1) MΩ 100 Ω	12 kΩ 7.2 mΩ	Fluke 5522A

Parameter/Range	Frequency	CMC ^{2,4} (\pm)	Comments
AC Voltage ³ – Generate (0 to 100) mV (1 to 750) V	50 Hz 10 kHz	0.018 mV 0.078 V	Fluke 5522A
AC Current ³ – Generate (0 to 1) A	1 kHz	0.50 mA	Fluke 5522A

Parameter/Equipment	Range	CMC ^{2,4} (\pm)	Comments
DC Voltage ³ – Measure	(0 to 30) V (0 to 300) V	0.12 mV 1.6 mV	HP 3458A
DC Current ³ – Measure	(0 to 10) mA (0 to 1000) mA	0.66 mA 0.19 mA	HP 3458A
Resistance ³ – Measure Fixed Point	(0 to 1) M Ω 100 Ω	35 Ω 2.9 m Ω	HP 3458A

Parameter/Range	Frequency	CMC ^{2,4} (\pm)	Comments
AC Voltage ³ – Measure (1 to 750) V	1.0 kHz	0.17 V	HP 3458A

II. Fluid Quantities

Parameter/Equipment	Range	CMC ² (±)	Comments
Air Flow Rate	(10 to 100) sccm (0.1 to 1) slm (1 to 10) slm (10 to 100) slm (40 to 400) slm	0.44 sccm 0.059 slm 0.064 slm 0.32 slm 2.3 slm	DHI Molbloc
Air Flow Rate ³	(5 to 500) sccm 500 sccm to 50 slm	14 sccm 0.037 slm	Sierra Instruments primary gas flow calibrator

III. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Pressure	(-30 to 30) in·H ₂ O (0 to 500) psi	0.0048 in·H ₂ O 0.038 psi	Ruska 725x pressure controllers

IV. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Relative Humidity ³	(10 to 90) % RH (0 to 70) °C	0.63 % RH 0.080 °C	Thunder Scientific 2500 generator
	(10 to 90) % RH	2.5 % RH	Vaisala HM141 w/HMP4c
Temperature – Direct Measurement by Comparison	-196 °C (-80 to -20) °C 0 °C (TPW) (-20 to 110) °C (110 to 180) °C (180 to 550) °C	0.010 °C 0.0047 °C 0.0036 °C 0.014 °C 0.016 °C 0.024 °C	SPRT Hart Scientific 5699, Fluke 1595A Super thermometer
	(230 to 660) °C (>660 to 960) °C	0.63 °C 0.75 °C	Type “S” thermocouple

Parameter/Equipment	Range	CMC ² (±)	Comments
Temperature – Direct Measurement by Comparison ³	-196 °C 0 °C (TPW)	0.023 °C 0.025 °C	PRT/RTD + meter

¹ This laboratory offers commercial 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 using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure the measurand in the ranges indicated. CMC are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.





Accredited Laboratory

A2LA has accredited

RS CALIBRATION SERVICES, INC.

Pleasanton, CA

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 ANSI/NCSLI 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 20th day of July 2016.

A handwritten signature in black ink, appearing to read "L. Smith".

President and CEO
For the Accreditation Council
Certificate Number 2220.01
Valid to May 31, 2018
Revised April 16, 2018

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