



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

J&W INSTRUMENTS  
4800 Mustang Circle  
New Brighton, MN 55112  
Diane Minarich Phone: 763 784 5708

CALIBRATION

Valid To: July 31, 2019

Certificate Number: 1752.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1</sup>:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
DC Voltage – Measure	(0 to 100) mV	20 $\mu$ V/V + 0.3 $\mu$ V	Agilent 3458A  TRX-II process calibrator, Beamex calibrator
	(0 to 100) V	90 $\mu$ V/V + 30 $\mu$ V	
	(0 to 100) mV	0.27 mV + 0.02 mV	
DC Current – Measure	(0 to 10) mA	36 $\mu$ A/A + 0.05 $\mu$ A	Agilent 3458A  TRX-II process calibrator, Beamex calibrator
	(10 to 100) mA	58 $\mu$ A/A + 0.05 $\mu$ A	
	(0 to 12) mA	0.03 % + 0.01 mA	
(12 to 24) mA	0.03 % + 0.01 mA		
AC Current – Measure	(0 to 40) A	1.3 A	Fluke 33 clamp on ammeter
Resistance – Measure	(0 to 10) $\Omega$	30 $\mu\Omega/\Omega$ + 50 $\mu\Omega$	Agilent 3458A  TRX-II process calibrator, Beamex calibrator
	(10 to 1000) $\Omega$	17 $\mu\Omega/\Omega$ + 0.5 $\mu\Omega$	
	(1 to 10) k $\Omega$	17 $\mu\Omega/\Omega$ + 5 $\mu\Omega$	
(0 to 400) $\Omega$	1.5 % + 0.09 $\Omega$		
400 $\Omega$ to 2 k $\Omega$	0.3 % + 0.4 $\Omega$		

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Thermocouple Simulation –			
Type K	(-270 to 1370) °C	0.4 °C	TRX-II process calibrator, Beamex calibrator
Type J	(-210 to 1200) °C	0.4 °C	
Type T	(-270 to 400) °C	0.28 °C	
Type B	(50 to 1820) °C	0.95 °C	
Type R	(-50 to 1769) °C	0.88 °C	
Type S	(-50 to 1769) °C	0.89 °C	
Type N	(-270 to 1300) °C	0.4 °C	
RTD Simulation <sup>3</sup> –			
Pt 385, 100 Ω	(-200 to 850) °C	0.4 °C	TRX-II process calibrator, Beamex calibrator
Pt 392, 100 Ω	(-200 to 510) °C	0.4 °C	

## II. Mechanical

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Pressure Gauges <sup>3</sup>	(0 to 300) psi	0.41 psi	DPI-603
	(0 to 1000) psi	0.61 psi	3D digital gauge
Vacuum Gauges <sup>3</sup>	(0 to 27) inHg	0.44 inHg	DPI-601
	(-30.5 to 610.8) inHg	0.2 inHg	DPI-610

### III. Thermodynamics

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Temperature – Measure	(192 to 660) °C	0.03 °C	5611 PRT
	(-50 to 300) °C	0.4 °C	RTD, TRX-II, Beamex
	(300 to 1200) °C	0.93 °C + 0.4 % of reading	T/C, TRX-II, Beamex
Temperature – Measuring Equipment, Fixed Points	0 °C	0.04 °C	ICE point
	Ambient to 200 °C	0.3 °C	PRT, Beamex

### IV. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Stopwatches and Timing Devices <sup>3</sup>	(0 to 24) hours	0.08 s	Stopwatch

<sup>1</sup> This laboratory offers commercial calibration service and field calibration service, where noted.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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. CMC's are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.



# Accredited Laboratory

A2LA has accredited

**J&W INSTRUMENTS, INC.**

*New Brighton, MN*

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/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 8 January 2009).



Presented this 31<sup>st</sup> day of May 2017.

A handwritten signature in black ink, written over a horizontal line.

President and CEO  
For the Accreditation Council  
Certificate Number 1752.01  
Valid to July 31, 2019

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