



Laboratory
Accreditation
Bureau

Certificate of Accreditation

ISO/IEC 17025:2005

Certificate Number L1139-1

Instrumentation Services Inc
3436 Toringdon Way, Suite 105
Charlotte, NC 28277

has met the requirements set forth in L-A-B's policies and procedures, and all requirements of ISO/IEC 17025:2005
"General Requirements for the competence of Testing and Calibration Laboratories." 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 January 2009).

Accreditation valid through September 18, 2010

R. Douglas Leonard, Jr., Managing Director
Laboratory Accreditation Bureau

Scope of Accreditation For Instrumentation Services Inc.

3436 Toringdon Way, Suite 105
Charlotte, NC 28277
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800-532-0415

In recognition of a successful assessment to ISO/IEC 17025:2005, accreditation is granted to **Instrumentation Services Inc.** to perform **Calibrations / Dimensional Inspection** as shown in the following tables:

Accreditation granted through: **September 18, 2010**

Calibration

Length - Dimensional Metrology – Hand Tools and Precision Gages 1D

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ^{2,3}	Remarks
OD/ID Micrometer	(0 to 18) in	(55 + 30L) μ in	Comparison with Gage Blocks
Caliper	(0 to 18) in	(189 + 29L) μ in	
Dial Indicator	(0 to 4) in	(55 + 59L) μ in	

Mass – Scale and Balances

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Weighing Systems ¹ Analytical Balance/Balance (0.0001g resolution) (0.001g resolution)	(0 to 100) g (0 to 400) g	0.37 mg 1.48 g	ASTM E617 Class 1 weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(0.1 g resolution)	(0 to 500) g	57.82 mg	ASTM E617 Class 2 weights and NIST Handbook 44 utilized for the calibration of the weighing system.
(1 g resolution)	0 g to 4 kg	577.53 mg	

Mass – Pressure

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Pressure Measure (in H ₂ O)	(0 to 10) in H ₂ O	0.032 in H ₂ O	Fluke 700P01 Pressure Module
Pressure Measure (psi Differential)	(0 to 5) psi	0.005 psi	Fluke 700P03 / 700P23 Pressure Module(s)
Pressure Measure (psi Gauge)	(0 to 15) psi	0.016 psi	Fluke 700P04 / 700P24 Pressure Module (s)
	(0 to 30) psi	0.09 psi	Fluke 700P05 Pressure Module
	(0 to 100) psi	0.054 psi	Fluke 700P06 Pressure Module
	(0 to 500) psi	0.317psi	Fluke 700P07 Pressure Module
	(0 to 1 000) psi	0.548 psi	Fluke 700P08 Pressure Module
	(0 to 1) psi	0.001 psi	Fluke 700P22 Pressure Module
	(0 to 5 000) psi	4.457 psi	Fluke 700P30 Pressure Module
	(0 to 10 000) psi	8.444 psi	Fluke 700P31 Pressure Module

Mass – Vacuum

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Pressure Measure (psi Vacuum)	(-10 to 0) psi	0.011 psi	Fluke 700PV4 Pressure Module
	(-15 to 30) psi	0.023 psi	Fluke 700PD5 Pressure Module

Electricity and Magnetism - Current

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
DC Current	(0 to 110) mA	0.067 mA	Comparison with Fluke Process Calibrator
	(0 to 22) mA	0.008 mA	

Electricity and Magnetism – Voltage

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
DC Voltage	0 V to 110 mV	0.045 mV	Comparison with Fluke Process Calibrator
	(0 to 1.1) V	0.001 V	
	(0 to 11) V	0.002 V	
	(0 to 300) V	0.166 V	

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
AC Voltage – Measu Only (0 to 1.1) VAC	20 Hz to 40 Hz	0.024 V	Comparison with Fluke Process Calibrator
	(20 to 40) Hz	0.024 V	
	(40 to 500) Hz	0.008 V	
	500 Hz to 1 kHz	0.024 V	
(1 to 5) kHz	0.024 V		
(1.1 to 11) VAC	(20 to 40) Hz	0.219 V	Comparison with Fluke Process Calibrator
	(40 to 500) Hz	0.057 V	
	500 Hz to 1 kHz	0.904 V	
	(1 to 5) kHz	0.219 V	
(11 to 110) VAC	(20 to 40) Hz	2.19 V	
	(40 to 500) Hz	0.57 V	
	500 Hz to 1 kHz	2.19 V	
	(1 to 5) kHz	10.99 V	
(110 to 300) VAC	(20 to 40) Hz	5.9 V	Comparison with Fluke Process Calibrator
	(40 to 500) Hz	1.5 V	
	500 Hz to 1 kHz	5.9 V	
	(1 to 5) kHz	29.9 V	

Electricity and Magnetism – Resistance Simulation

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Measure	(0 to 11) Ω	0.056 Ω	Comparison with Fluke Process Calibrator
	(11 to 110) Ω	0.113 Ω	
	(0.11 to 1.1) kΩ	1.155 Ω	
	(1.1 to 11) kΩ	21.206 Ω	
Source	(0 to 11) Ω	0.021 Ω	
	(11 to 110) Ω	0.052 Ω	
	(.11 to 1.1) kΩ	0.835 Ω	
	(1.1 to 11) kΩ	8.382 Ω	

Electricity and Magnetism – Electrical Temperature Simulation

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Thermocouple Simulation Type E	(-250 to -200) °C	1.43 °C	Comparison with Fluke Process Calibrator
	(-200 to -100) °C	0.67 °C	
	(600 to 1000) °C	0.6 °C	

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Type N	(-200 to -100) °C (-100 to 900) °C (900 to 1300) °C	1.11 °C 0.68 °C 0.77 °C	Comparison with Fluke Process Calibrator
Type J	(-210 to -100) °C (-100 to 800) °C (800 to 1200) °C	0.74 °C 0.53 °C 0.68 °C	
Type K	(-200 to -100) °C (-100 to 400) °C (400 to 1200) °C (1200 to 1372) °C	0.85 °C 0.62 °C 0.68 °C 0.85 °C	
Type T	(-250 to -200) °C (-200 to 0) °C (0 to 400) C	1.84 °C 0.76 °C 0.53 °C	
Type B	(600 to 800) °C (800 to 1000) °C (1000 to 1820) °C	1.39 °C 1.11 °C 1.2 °C	
Type R	(-20 to 0) °C (0 to 100) °C (100 to 1767) °C	2.34 °C 1.57 °C 1.11 °C	
Type S	(-20 to 0) °C (0 to 200) °C (200 to 1400) °C (1400 to 1767) °C	2.34 °C 1.63 °C 1 °C 1.18 °C	
Type C	(0 to 800) °C (800 to 1200) °C (1200 to 1800) °C (1800 to 2316) °C	0.93 °C 1.11 °C 1.38 °C 2.25 °C	
Type L	(-200 to -100) °C (-100 to 800) °C (800 to 900) °C	0.76 °C 0.57 °C 0.67 °C	
Type U	(-200 to 0) °C (0 to 600) °C	0.72 °C 0.54 °C	
RTD Simulation 100 Ω Pt (3926)	(-200 to 0) °C (0 to 630) °C	0.55 °C 0.64 °C	
100 Ω Pt (385)	(-200 to 0) °C (0 to 400) °C (400 to 800) °C	0.5 °C 0.66 °C 0.91 °C	
120 Ω Ni (672)	(-200 to 260) °C	0.5 °C	
200 Ω Pt (385)	(-200 to 0) °C (0 to 400) °C (400 to 630) °C	0.5 °C 0.66 °C 1.04 °C	

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
500 Ω Pt (385)	(-200 to 0) °C (0 to 400) °C (400 to 630) °C	0.5 °C 0.72 °C 1.05 °C	Comparison with Fluke Process Calibrator
1000 Ω Pt (385)	(-200 to 0) °C (0 to 400) °C (400 to 630) °C	0.55 °C 0.73 °C 0.96 °C	
10 Ω Cu (427)	(-100 to 0) °C (0 to 260) °C	2.15 °C 2.15 °C	
100 Ω Pt (3916)	(-200 to -190) °C (-190 to 0) °C (0 to 360) °C	0.55 °C 0.55 °C 0.73 °C	

Time and Frequency – Time Dissemination

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Stopwatch/Timers	3600 s	0.85 s	Comparison with stopwatch
Rotational Speed	(0.1 to 999.9) RPM (1000 to 9999.9) RPM	0.08 RPM 0.77 RPM	Comparison with Tachometer
	(10 000 to 25 000) RPM at 10 000 RPM	2.76 RPM	
Frequency (Measure)	(1 to 109.99) Hz (110 to 1099.9) Hz (1.1 to 10.999) kHz (11 to 50) kHz	0.051 Hz 0.512 Hz 0.005 kHz 0.051 kHz	Comparison with Fluke Process Calibrator
	Frequency (Source)	(0 to 10.99) Hz (11 to 109.99) Hz (110 to 1099.9) Hz (1.1 to 21.999) kHz (22 to 50) kHz	

Thermodynamic – Humidity

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Relative Humidity	(10 to 95) % RH	3.13 % RH	Comparison with a reference rH probe

Amount of Substance – Chemical

Calibration Parameter/Equipment	Range	Calibration and Measurement Capability(+/-) ²	Remarks
pH Transmitter	4 pH 7 pH 10 pH	0.05 pH	Comparison with standard solutions
Conductivity	1411 µmhos/cm	2.38 µmhos/cm	
	100.8 µmhos/cm	0.74 µmhos/cm	

Dimensional Inspection


Length – Dimensional Inspection – Dimensional Measurement 1D

Inspection Parameter	Range	Calibration and Measurement Capability(+/-) ²	Remarks
Dimensional Measurement 1D	(0 to 192) in	0.042 in	Comparison with Certified Tape Measure

Notes:

- 1) Laboratory offers calibration services at the laboratory's own facilities and at the client or other agreed upon facilities.
- 2) Calibration and Measurement Capability represents expanded uncertainties at approximately a 95% confidence level using a coverage factor of k=2.
- 3) *L* = Length in inches

Approved by: _____



 R. Douglas Leonard
 Chief Technical Officer

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