The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

PCB PIEZOTRONICS INC.

Depew, NY

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 the requirements of ANSI/NCSLI Z540.3-2006 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 24th day of January 2012.

President & CEO
For the Accreditation Council
Certificate Number 1862.01
Valid to February 28, 2014

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005 & ANSI/NCSL Z540-1-1994 & ANSI/NCSL Z540.3-2006

PCB PIEZOTRONICS INC.
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CALIBRATION

Valid To: February 28, 2014 Certificate Number: 1862.01

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, 3] (±)	Comments
DC Voltage – Measure	(0 to 20) mV (20 to 200) mV 200 mV to 2 V (2 to 25) V (25 to 250) V	0.020 % + 6.9 µV 0.020 % + 6.9 µV 0.020 % + 12 µV 0.028 % + 1.2 mV 0.028 % + 1.5 mV	NI4060 DAQ card
DC Current – Measure	(0 to 200) mA	0.048 % + 12 µA	NI4060 DAQ card
AC Voltage – Measure	(0 to 200) mV (200 to 500) mV 500 mV to 1 V (1 to 2) V (2 to 5) V (5 to 10) V (10 to 250) V	0.068 % + 0.040 mV 0.068 % + 0.068 mV 0.068 % + 0.11 mV 0.068 % + 0.21 mV 0.068 % + 0.51 mV 0.13 % + 1.1 mV 0.72 % + 790 mV	NI6111E DAQ card NI4060 DAQ card

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II. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Acoustic Pressure	114.0 dB SPL @ 250 Hz	0.2 dB reading (rdg)	Microphone reference
Dynamic Force	(0 to 100 000) lbf	1 % full scale (fs)	Strain gauge, load cell reference
Impulse Force	(0 to 5000) lb (0 to 1000) Hz	3.8 % rdg	PCB quartz reference accelerometer
Static Medium Pressure	(0 to 15 000) psi	1 % fs	Dead weight reference (hydraulic)
Static Pressure	(0 to 30) psia (0 to 60) psia (0 to 15) psig (0 to 50) psig (0 to 100) psia or psig (0 to 300) psia or psig (0 to 600) psia or psig (0 to 1000) psia or psig (0 to 3000) psia or psig (0 to 6000) psia or psig (0 to 10 000) psia or psig	0.015 % fs 0.015 % fs 0.015 % fs 0.015 % fs 0.015 % fs 0.015 % fs 0.015 % fs 0.015 % fs 0.021 % fs 0.021 % fs 0.021 % fs	DHI PPC2+, DHI PPCK+ (vibrating quartz beam)
Static High Pressure	(0 to 100 000) psi	1.7 % fs	Strain gauge with digital reference
Dynamic Low Pressure	(0 to 100) psi 124.0 dB 250 Hz	1 % fs 0.45 dB rdg	Digital Heise reference (pneumatic) Piston phone reference

Parameter/Equipment	Range	CMC[2] (±)	Comments
Dynamic Medium Pressure	(0 to 1000) psi	1.3 % fs	Digital Heise reference (pneumatic)
Dynamic High Pressure	(0 to 25 000) psi	1.3 % fs	PCB quartz pressure sensor reference (hydraulic)
Vibration General Purpose –	(5 to 9) Hz (10 to 99) Hz (100 to 1999) Hz (2000 to 10 000) Hz (11 000 to 15 000) Hz	2 % rdg 1.5 % rdg 1 % rdg 2.5 % rdg 7 % rdg	PCB quartz acceleration reference, back to back comparison method
Portable Shaker Table	(79.6 to 159.2) Hz	1.4 % rdg	Surface mounted quartz reference
Low Frequency	(0.5 to 99) Hz (1 to 30) Hz (30.01 to 199) Hz (200 to 1000) Hz	1.8 % rdg 1 % rdg 1.5 % rdg 3 % rdg	PCB quartz acceleration reference, back to back comparison method
Primary Vibration – Mid to High Frequency Amplitude	5 Hz 5 Hz $< f <$ 100 Hz 100 Hz 159 Hz 159 Hz $< f \leq$ 1000 Hz 1000 Hz $< f \leq$ 5000 Hz 5000 Hz $< f \leq$ 15 kHz 15 kHz $< f \leq$ 20 kHz	1 % rdg 0.5 % rdg 0.2 % rdg 0.2 % rdg 0.5 % rdg 1 % rdg 1.5 % rdg 2.0 % rdg	Laser interferometry
Primary Vibration –			Laser interferometry
Mid to High Frequency Phase	5 Hz $\leq f <$ 5000 Hz 5000 Hz $< f \leq$ 20 kHz	0.5° 1°	
Low Frequency Phase	0.5 Hz $\leq f <$ 10 Hz	0.5°	And long stroke shaker
Primary Vibration –			Laser interferometry and long stroke shaker
Low Frequency Amplitude	0.5 Hz $\leq f <$ 10 Hz	0.3 % rdg	

[1] This laboratory offers commercial calibration service.

[2] Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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] CMCs are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.