

~ Calibration Certificate ~

Per ISO 16063-21

SN 61774

Model Number: 350D02/002EB

Serial Number: 61774

Description: ICP® Shock Sensor

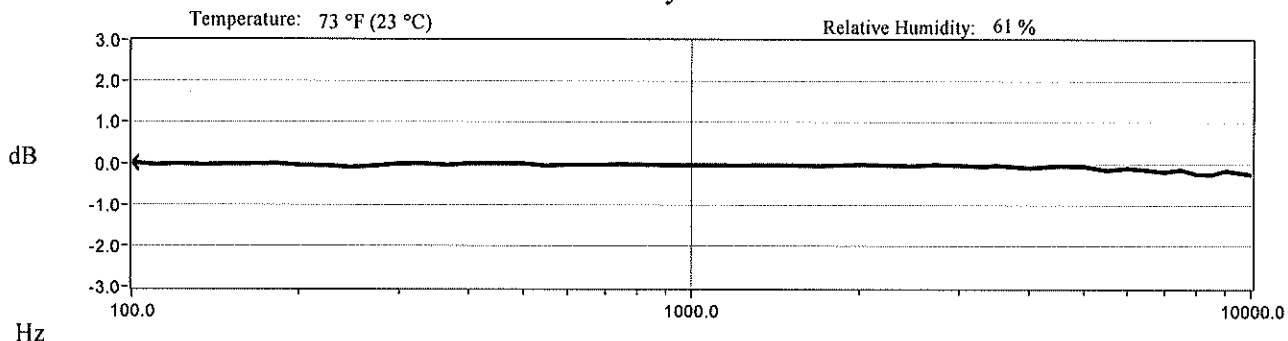
Manufacturer: PCB

Method: Back-to-Back Comparison AT401-3

Calibration Data

Sensitivity @ 100 Hz 0.097 mV/g Output Bias 11.7 VDC
(0.0099 mV/m/s²) Transverse Sensitivity 2.8 %

Sensitivity Plot



Data Points

Frequency (Hz)	Dev. (%)	Frequency (Hz)	Dev. (%)
REF. FREQ.	0.0	5000	-0.8
300	-0.2	7000	-2.3
500	-0.1	10000	-3.0
1000	-0.5		
3000	-0.6		

Mounting Surface: Beryllium w/Silicone Grease Fastener: 1/4-28 Male Fixture Orientation: Vertical

Acceleration Level (pk): 10.0 g (98.1 m/s²)

*The acceleration level may be limited by shaker displacement at low frequencies. If the listed level cannot be obtained, the calibration system uses the following formula to set the vibration amplitude; Acceleration Level (g) = 0.008 x (freq)^{1.5}. *The gravitational constant used for calculations by the calibration system is; 1 g = 9.80665 m/s².

Condition of Unit

As Found: n/a
As Left: New Unit, In Tolerance

Notes

1. Calibration is NIST Traceable thru Project 683/287323 and PTB Traceable thru Project 17014.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 10012-1, ANSI Z540.3 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Measurement uncertainty (95% confidence level with coverage factor of 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; +/- 2.0%, 10-99 Hz; +/- 1.5%, 100-1999 Hz; +/- 1.0%, 2-10 kHz; +/- 2.5%.

Technician: Mary Warren  Date: 6/18/2018



CALIBRATION CERT #1862.01

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CAL30-3612187652.198+0



~ Shock Acceptance Test ~

Model Number: 350D02/002EB
Serial Number: 61774
Description: Shock Sensor
Manufacturer: PCB

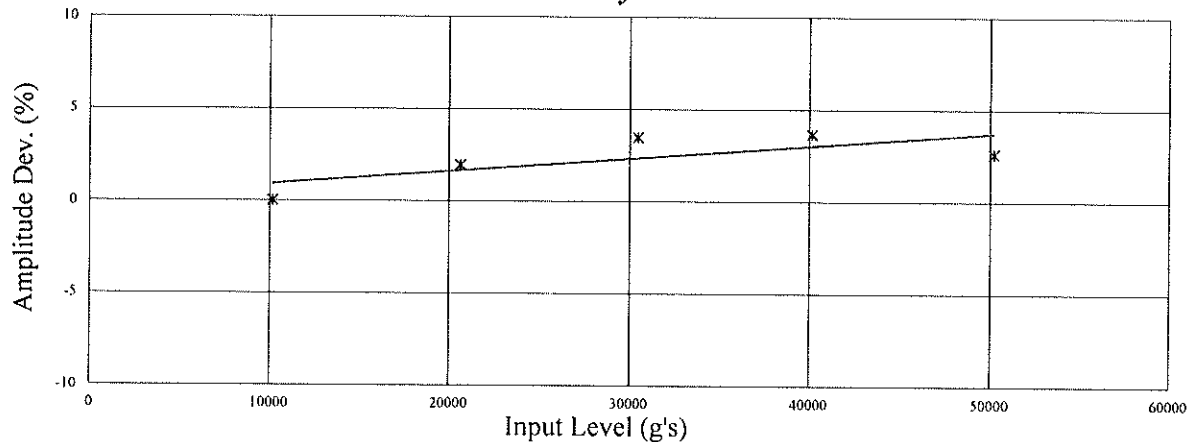
Customer: _____
PO No.: _____
Method: Hopkinson Bar (AT401-17)

Test Data

Input Level (g pk) ¹	(m/s ²)	Sensitivity ² (mV/g)	(mV/m/s ²)	Zero shift (%) ³	Non-linearity ⁴ per 10000 g's (981000 m/s ²)
50198	(492274)	0.1007	(0.0103)	0.044	
40150	(393737)	0.1017	(0.0104)	-0.056	0.70
30478	(298887)	0.1015	(0.0104)	-0.011	
20639	(202399)	0.1000	(0.0102)	-0.010	
10166	(99694)	0.0981	(0.01)	0.018	

Temperature: 70 °F (21 °C) Relative Humidity: 41 %

Linearity Plot



Condition of Unit

As Found: n/a
As Left: New Unit, In Tolerance

Notes

1. This system utilizes projectiles made from varied material (plastic, metal) necessary to achieve the desired test amplitude (g's) that when impacted against a Titanium (Hopkinson) bar, the resulting pulse duration generated during the test for acceleration ranges from 1000 to 10000 g's is typically 150 to 200 μ sec and from 10000 to 100000 g's; 30 to 40 μ sec.
2. The UUT sensitivity is based on the average output between 2000 and 4000 Hz from an FFT response.
3. The zero shift is calculated as a percentage of baseline shift relative to the peak output at the input g-level.
4. The Linearity Plot is referenced to the lowest input level. Non-linearity is reported as the slope of the best-fit line through the sensitivity deviation.
5. Calibration is traceable by Primary Methods through PCB control #'s CA668A and CA668B.
6. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
7. Calibration is performed in compliance with ISO 10012-1, ANSI/NCSS Z540.3 and ISO 17025.
8. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
9. Measurement uncertainty (95% confidence level with coverage factor of 2) for this test method is $\pm 5.0\%$.

Technician: Tyler Coady TC
4526

Date: 6/14/2018



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Cal Station 32 3611862840.51