



## Welcome to Issue #92

With springtime comes the birth of new things. The trees awaken from their winter slumber. Baby animals learn something new every day from their mothers. Why not take this time of year to "awaken" from your winter slumber and learn something new? The Modal Shop, Inc. offers educational seminars throughout each year, and this year we have more events than ever! Keep checking the "Technical Exchange" section of this newsletter for updates each month. Thanks for reading!

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### Tip of the Month: Portable Accelerometer Calibrator Validates Both Low and High Frequencies

Even though accelerometer reference frequencies are at a single point (either 100 hz or 159.2 hz), it is beneficial to have a portable vibration calibrator with selectable excitation frequency. This allows users to validate both the low- and high-end of the frequency response ranges of most accelerometers, as well as their nominal calibration at reference frequency.

### Technical Exchanges

#### [Sensors Expo & Conference](#)

June 9-11, 2015  
Long Beach, CA

#### [SAAMI \(Sporting Arms and Ammunition Manufacturers Institute\) Ballistic Pressure](#)

### Accelerometer Calibration from a Risk Management Perspective By Mike Dillon, Calibration Product Manager

Recently, I was asked the question: "I dropped my accelerometer from a tabletop to a concrete floor. What is the risk of damage?"

Since the question was asked in terms of risk, I gave the rather long answer I give here in terms of risk management, rather than a short answer of "high or low."



When we think of risk, we think of it first as risk assessment and then risk management.

#### Define the Risk

First we define what the hypothetical risk event is: For this case, we will say - "My accelerometer was damaged when it fell from the table, and the damage is such that it will affect the interpretation of the data I collect with it..."

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[modalshop.com/calibration.asp?ID=1054](http://modalshop.com/calibration.asp?ID=1054)

### Microphone Calibration Part 1: The Insert Voltage Technique By Bryan Butsch, Engineer

In this month's article, we will discuss microphone calibration using the insert voltage technique to calculate the open circuit



sensitivity of a precision condenser microphone. Let us first define open circuit sensitivity before explaining how to calculate it. The open circuit voltage of a microphone, according to IEC 1094-1, is the unloaded alternating voltage as

### [Sensor Training](#)

By Bob Metz, PCB Piezotronics  
June 17, 2015  
Buffalo, NY

### [SAE Noise & Vibration Conference & Exhibition](#)

June 22-25, 2015  
Grand Rapids, MI

### [NCSLI Workshop & Symposium](#)

July 19-23, 2015  
Grapevine, TX

### [Dynamic Sensors & Calibration Techniques Seminar](#)

By The Modal Shop, Inc.  
July 24, 2015  
Dallas, TX

### [NI Week](#)

August 3-6, 2015  
Austin, TX

### [Internoise](#)

August 9-12, 2015  
San Francisco, CA

### Quick Links

[PTB](#)

[NIST](#)

[ISO TC 108](#) - Mechanical vibration,  
shock and condition monitoring

[ISO TC 108/SC 3](#) - Use and  
calibration of vibration and shock  
measuring instruments

[ISO TC 108/SC 6](#) - Vibration and  
shock generating systems

[SAVE \(Formerly SAVIAC\)](#)

[Vibration Institute](#)

[Equipment Reliability Institute  
\(ERI\)](#)

[TMS Video Vault](#)

[Calibration - Learn More](#)

### Previous Newsletters

#### [Dynamic Sensors & Calibration #91](#)

Why is 100 Hz or 159.2 Hz the  
Reference Frequency?; Sound  
Power Basics

#### [Dynamic Sensors & Calibration #90](#)

ICP vs Charge Mode Sensors;  
Percent Difference vs Deviation in  
Accelerometer Calibration

### Select Newsletter Articles by Topic

[Function and Structure of  
Accelerometers](#)

[Similarities Between Charge and  
ICP Operation](#)

[Selecting Accelerometers for](#)

measured at the electrical output terminals of the microphone. The open circuit sensitivity of a microphone is the ratio of the microphone's open circuit voltage to the sound pressure level applied to the microphone by a sound source. Because it is impossible to measure the open circuit voltage from a microphone directly at its electrical terminals, the insert voltage technique (as described in section 5.3 of IEC 1094-2) must be applied...

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[modalshop.com/calibration.asp?ID=1055](http://modalshop.com/calibration.asp?ID=1055)

### Blast from the Past: The Devil is in the Accelerometer Calibration Details

When seeking the best uncertainties and most consistent daily verification and operation of your accelerometer calibration system, it pays to know your sensor details. The key to accelerometer calibration is ensuring that everything starts from a "flat line." This means no relative motion between Reference Accelerometer and Sensor-Under-Test, as well as no local resonances and...



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[modalshop.com/calibration.asp?ID=653](http://modalshop.com/calibration.asp?ID=653)

Thanks for joining us for another issue of "Dynamic Sensors & Calibration Tips". As always, please speak up and [let us know what you like](#). We appreciate all feedback: positive, critical or otherwise. Take care!

Sincerely,

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A PCB Group Company  
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[Master List of Topics \(T.O.C.\)](#)

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