

**Welcome to Issue #96**

Happy September! The tips of the leaves on the trees are starting to change color and nights are getting cooler. It's great sleeping weather, but your friends at The Modal Shop get an early start on the day helping customers with their dynamic sensor and calibration needs. We work very hard on authoring papers, participating in standards committees, creating fun/informative newsletters and serving you in our daily customer application support. We appreciate both the trust we've earned, and the positive feedback we receive from the dynamic calibration market. Thanks for reading!

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**Tip of the Month:  
Caution with Magnetic  
Bases and Accelerometers**

Always exercise caution when using a magnetic base, as the magnetic forces can rapidly pull the magnet onto the test article, resulting in an impact shock. A strong magnet may be strong enough to produce a high shock impulse, potentially damaging the accelerometer. To learn more, check out this [link](#).

**Technical Exchanges**

**SAVE**  
October 5-8  
Orlando, FL

**SMRP**  
October 12-15  
Cincinnati, OH

[Automotive Testing Expo](#)

**Equipment Warm-Up and Thermal Stability**  
*By Bryan Butsch, Electrical Engineer*

In the Test and Measurement industry, we are constantly worried about making sure that the measurement we take is as close a representation as possible to the actual phenomena being



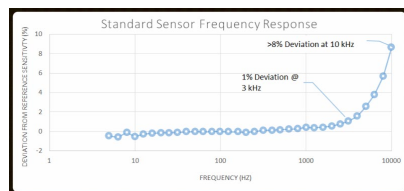
characterized. When trying to minimize measurement errors, warm-up time and thermal stability effects in our equipment often become an afterthought. Testing issues such as transducer mounting, cabling and equipment set-up (all of which will cause more noticeable errors in the measurement), typically occupy our minds. So why, with all of the technological advances that we have in electronics, do we even need to worry about letting the equipment warm up, or check the thermal stability?...

[Click to read full article](http://modalshop.com/calibration.asp?ID=1104)

**Common Methods of Reducing Accelerometer  
Calibration Uncertainty**  
*By Patrick Timmons, Calibration Systems Engineer*

**"How can I reduce the uncertainty of my  
calibration?"**

Before diving into this month's article, I thought it would be prudent to review the terminology for different sensors used in back-to-back accelerometer calibrations. For the purposes of this article, I will refer to the sensor that will ultimately be calibrated and used in the field as the "Sensor Under



October 20-22  
Novi, MI

[Dynamic Sensors & Calibration Seminar/NCSLI Michigan Section Meeting](#)

By The Modal Shop, Inc.  
October 23  
Farmington Hills, MI

[ISA Process Control & Safety Symposium](#)

November 9-12  
Houston, TX

**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 #95](#)

What Should the Pulse Duration Be for Shock Calibration?; Ski Slope FFT Vibration Data: What Causes It and How Can It Be Fixed?

[Dynamic Sensors & Calibration #94](#)

How Does Relative Motion Affect My Calibration?; Accelerometer Frequency Range: A Tale of Two Specs

**Select Newsletter Articles by Topic**

[Function and Structure of Accelerometers](#)

[Similarities Between Charge and ICP Operation](#)

[Selecting Accelerometers for Mechanical Shock](#)

[Master List of Topics \(T.O.C.\)](#)

**PCB Group Companies**

[The Modal Shop Systems & Service Website](#)

[PCB Piezotronics Sensor Website](#)

[IMI Monitoring Website](#)

[Larson Davis Acoustics Website](#)

[PCB Load & Torque Website](#)

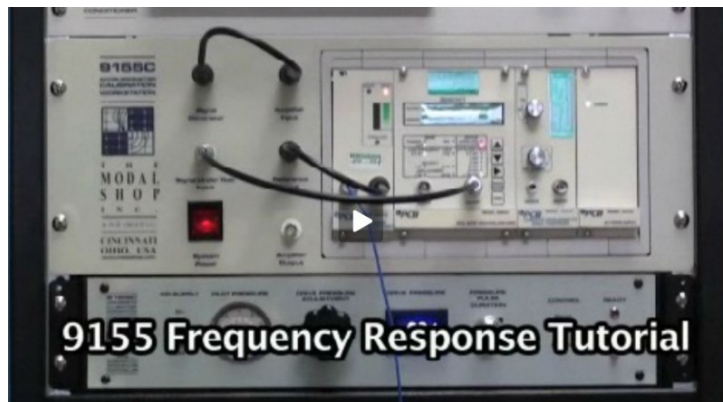
Test" or SUT. This sensor is sometimes called the "Device Under Test" or DUT. The device that calibrates the SUT-level sensor will be called the "working standard" -- in conversation "reference sensor" is typically used interchangeably. Above this type of sensor in the calibration chain is a "transfer standard" or "gold standard." This is a sensor that has been primary calibrated and serves to calibrate the working standard(s). Now that we have common terminology, we can address the aforementioned question: "How can I reduce the uncertainty of my calibration?"...

[Click to read full article](#)

[modalshop.com/calibration.asp?ID=1105](http://modalshop.com/calibration.asp?ID=1105)

**Blast from the Past: Video Tutorial of Accelerometer Calibration**

This video tutorial describes a short presentation on dynamic accelerometer frequency response and basic operation of the Model 9155 Automated Accelerometer Calibration System.



[Click to watch video](#)

[modalshop.com/calibration.asp?ID=334](http://modalshop.com/calibration.asp?ID=334)

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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