

sensor & calibration tips



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Dear Scott,

Welcome to our next issue (#7)-

The goal of this communication is to provide technical information and tips about the calibration and use of dynamic sensors in vibration, pressure and force. The information is provided by the PCB Group of companies, as well as industry experts from research, government and academia. Technical information is presented in a short, easy to read format and contains liberal links to further information should you desire a deeper dive into the technology.

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Tip of the Month

Validate your measurements with proficiency testing

Participation in regular proficiency testing with other independent calibration labs provides assurance and objective evidence in measurement accuracy. It is important to validate multiple sensor types (ICP®, charge, PR, etc. using different paths) across the entire frequency range within a given lab's scope. Make certain to consider measurement uncertainties from both labs by applying E_n properly.

If you are interested, we can help set up a program for you. Give us a call.

Quick Links

[NCSL](#)
[NIST](#)

[The Modal Shop website](#)
[PCB Piezotronics website](#)

Newsletter Archive

[sensor & cal tips #1](#) - Basics of Accelerometer Function; How Standards Link Together

The Trouble with Cables...

...weak link or least of your worries

The reliability of the measurement system is no better than that of the input cable, whose primary function is to transmit electrical signals from the accelerometers to the data acquisition system.



Ideally, the electrical characteristics and length of the cable should have no effect on signal quality. The cable and connectors should be physically durable to ensure reliable operation in the same vibration or shock environment the accelerometer is operating in. Cables should also be able to withstand about any imaginable combination of environmental conditions including temperature extremes, humidity, dust, oil, radiation, EMI and RFI, salt spray, and vacuum. But, just as one type of accelerometer cannot be expected to meet all these environmental conditions, neither can one type of cable or connector.

[Click here](#) to learn more about the trouble with cables.
(http://www.modalshop.com/test_calibration.asp?ID=204)

Calibration Traceability...

...and why it is important

In both life and business we are often looking to sort out our relationships by an estimate of integrity. We want vendors who price fairly and deliver on their promises... We want friends who are of good character and who will stick by us both in up times and in down times... and we continually assess our view of integrity through our interactions each day. In the calibration world, integrity hinges on a proven, repeatable process (through following procedures with diligence and documented uncertainty calculations) and by

[sensor & cal tips #2](#) - Shear, Compression, Flexure; ISO 16063 Overview

[sensor & cal tips #3](#) - Accelerometer Transduction Types (PE, PR, VC); Laser Primary Calibration

[sensor & cal tips #4](#) - Quartz v Ceramic; Piggyback Calibration

[sensor & cal tips #5](#) - Similarities between ICP & Charge, Shock calibration method

[sensor & cal tips #6](#) - Ideal v Real World Accelerometer Behaviors; Primary v Transfer Calibration

measurement traceability, which is each measurement component's chain or link to a national standard or physical constant.



[Click here](#) for more information on calibration traceability.
(http://www.modalshop.com/test_calibration.asp?ID=205)

As always, your satisfaction is at the pinnacle of our work. If you have questions you would like answered, please contact us and we'll be glad to help out. Your question may even be featured in a future newsletter...

Sincerely,

Michael J. Lally
The Modal Shop
A PCB Group Company

[Forward email](#)