

sensor & calibration tips



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Your one-stop sound & vibration shop

Greetings,

Welcome to Issue #57

Welcome to the May issue of our Sensors and Calibration Newsletter. We have been on our phones, laptops and around the world helping PCB Group customers with their toughest measurement challenges. We hope your business is blossoming too. One reminder is that next month, The Modal Shop and PCB Piezotronics are the participating organizers for the [ISO TC108/SC3 committee](#) (Use and Calibration of Vibration and Shock Measuring Instruments) and [ISO TC108/SC6 committee](#) (Vibration and Shock Generating Systems) meetings in Buffalo, New York. Hosting delegates from national standards labs around the world, we are interested if you have questions or directions you would like to see from the global dynamic metrology community. Please [contact us](#) and let us know...

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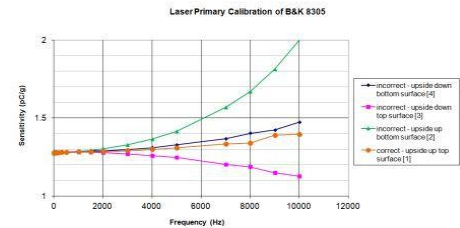
Tip of the Month

When calibrating or validating a handheld calibrator or portable vibration calibrator, be sure to use a single-ended transfer standard of sufficient frequency range for your device under test. Using a double-ended or piggyback transfer standard for this application will cause substantial measurement errors in the mid-to-high frequency range because this type of reference should not be mounted upside down to mate its calibrated surface with the calibrated surface of the device under test.

Quick Links

Double vs Single Ended Transfer Standard Reference Accelerometer

Vibration calibration methodologies are defined in various sections of ISO 16063. Within this standard, the measurement of accelerometer frequency response calibration can be performed using either primary or secondary means, as stated by ISO 16063 Part 11 (1999) and Part 21 (2003) respectively. Primary accelerometer calibration utilizes a laser interferometer as reference. Secondary calibration techniques use a transfer standard, typically another accelerometer, to calibrate the accelerometer under test and provide traceability to a primary standard.



The following article, authored by Rick Bono, Sales and Marketing Team Leader, explains the [design and application differences for double-ended and single-ended transfer standard reference accelerometers](#).

[Click here to read more](#)

<http://www.modalshop.com/calibration.asp?ID=720>

Video Tutorial on Transverse Motion in Calibration

How about a supplemental video demonstration?

Last month we offered a presentation, featuring Eric Seller, Calibration Product Group Manager, educating users on the effect transverse motion has on calibration. This month, we'd like to elaborate on the presentation and include a [supplemental video demonstration](#).

[NCSL](#)
[IMEKO](#)
[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

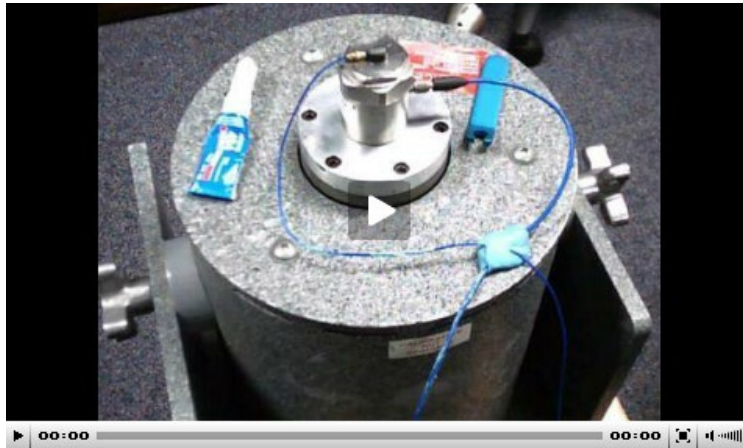
[SAVIAC](#)

[Vibration Institute](#)

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When considering accelerometer calibration and what effects uncertainty, it is important to analyze the exciter and the transverse sensitivity of accelerometers. The exciter acts as the heart of the calibration system, providing an accurate mechanical motion to the transducer.

[Click here to see the video demonstration](#)

<http://www.modalshop.com/calibration.asp?ID=713>

Blast from the Past - Triaxial Accelerometer Basics

Previous Newsletters

[sensor & cal tips #56](#) - Low Outgassing Accelerometers and Cables; Calibration Basics - The Exciter

[sensor & cal tips #55](#) - Q & A on General Trends in Vibration; First Time Quality

Select Newsletter Articles by Topic

[Function and Structure of Accelerometers](#)

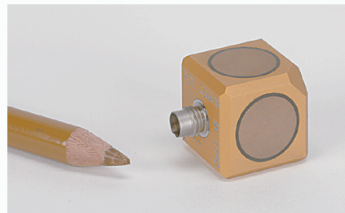
[Similarities Between Charge and ICP Operation](#)

[Selecting Accelerometers for Mechanical Shock](#)

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

For those who may be new to our newsletter, we wanted to highlight an article from a previous sensor & cal tips - "[Triaxial Accelerometer Basics](#)"...

By far, the most popular configuration of piezoelectric accelerometers for



large/multichannel users is the integral triaxial accelerometer. The implementation of a single 4 pin sensor signal connector allows for a common ground and overall 3 to 1 reduction in cabling. While on the surface this may seem trivial, consider that many typical users are now using hundreds of channels for standard vibration tests in

the automotive and aerospace industries. This is also relevant to the consumer appliance/durables market space where sound and vibration quality has moved to the forefront of marketability and customer preferences.

[Click here to read more](#)

<http://www.modalshop.com/calibration.asp?ID=216>

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Thanks for joining us once again. We are working hard to continue to develop technical content that is non-commercial and high in educational value. We are also continuing to evaluate the popularity of video as a training and communication medium.

Please, speak up and let us know what you like. [We appreciate all feedback](#), positive, critical or otherwise... Take care and enjoy the week!

Sincerely,



Michael J Lally

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