sensor & calibration tips

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Dear Scott,

Welcome to our second issue -

The goal of this monthly 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 will contain liberal links to further information should you desire a deeper dive into the technology.

Tip of the Month

Mounting accelerometers for calibration using silicon grease versus super glue....

For 1g calibration of smaller adhesive mount sensors, like the common piezoelectric "tear drop" accelerometers, **try simply using a little silicon grease electrical compound instead of cyanoacrylate super glue**. This grease - the same stuff used to supplement a stud mount - provides exceptionally strong perpendicular adhesion between two finely machined surfaces, yet slides right off side-to-side. If the adhesive mount sensor has minimal transverse load (big, bulky cables can be a problem here), then the grease "bond" provides excellent calibration results to very high frequencies (> 10 kHz). And... no tough cyanoacrylate glue to break free and scrape off!

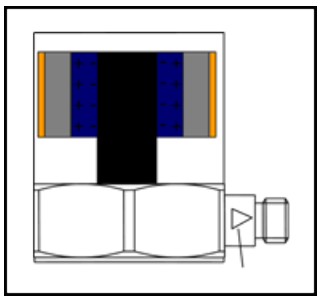
Quick Links

NCSL metrology symposium
International metrology conf
Int'l measurement confed
Calibration Management of an ISO17025 Accredited Lab
The Basics of Internal Auditing
Vibration Defined

Video

Catastrophic Wing Test

Accelerometer internal structure...



Last month we discussed the basic function and structure of piezoelectric accelerometers and saw that the output of an ideal performing accelerometer is "straight-line" behavior. This means a flat frequency response in terms of amplitude and phase, as well as amplitude linearity. This month we'll look at a few of the common designs for a piezoelectric accelerometer's internal sensing element construction. Both the piezoelectric material (**quartz** or **ceramic**) and geometry (**Shear**, **Compression**, **Inverted Compression** or **Flexure Beam**) are discussed. These designs are applicable whether the accelerometer is ICP® or charge mode operation. More detailed information on the structure of accelerometers can be found on the PCB web site under the technical reference section.

Click here for the rest of this article about quartz v. ceramic and shear, compression and flexure accelerometer construction.

Discussing the standards...

...ISO 16063 - Methods for the calibration of vibration and shock transducers

Last month we talked about how three major standards apply to the world of dynamic sound and vibration measurement. While most are familiar with the sweeping implications of ISO 9000, many users are not aware of the level of detail available in ISO16063 specifically covering accelerometer calibration. This month we'll cover a basic **overview of the framework of ISO16063** governing Methods for the Calibration of Vibration and Shock Transducers.

Click here to read a basic overview of ISO16063 ...

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Newsletter Archive

May 2007 - Basics of Accelerometer Function; How Standards Link Together

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

Sincerely,

Michael J. Lally
The Modal Shop
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