

sensor & calibration tips



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Dear Scott,

Welcome to our next 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.

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Tip of the Month

Importance of mounting conditions when calibrating...

A smooth, clean mounting surface is critical to getting good results when calibrating accelerometers. Make certain that BOTH mounting surfaces (the reference and the sensor under test) have been prepared properly. Eliminate all adhesive residue at the interface and always use a little silicone compound with threaded mounts. Even a human hair can prevent good results at high frequencies - try experimenting with a stud mount accelerometer with and without to see the difference.

Quick Links

[International metrology conf](#)
[Int'l measurement confed](#)

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[PCB Piezotronics website](#)

[Airplane crash test video](#)

Newsletter Archive

Similarities between...

...ICP and charge.



Piezoelectric accelerometers can be broken down into two categories, defined by their mode of operation: traditional **charge mode** operation and the now standard **ICP®** mode operation. These two approaches accomplish the same end function of supplying a low impedance varying voltage signal suitable for data

acquisition. Internally amplified, ICP accelerometers contain built-in microelectronic signal conditioning rather than an external amplifier box. Accordingly, the ICP approach accomplishes these same basic functions of a charge mode vibration channel while it also simplifies the measurement with a robust, noise immune, low impedance signal and reduces the risk of a myriad of common measurement challenges. Charge mode accelerometers contain only the piezoelectric crystal sensing element with no electronics. In charge mode vibration systems, the conversion of the high impedance signal output from the crystals is accomplished remotely in an expensive laboratory charge amplifier. Other than a few very high temperature applications requiring remote location of the electronics, most vibration measurement challenges are better served by the simplified and lower cost operation of modern ICP accelerometers.

[Click here](#) to learn more about the similarities of charge output and ICP/voltage output accelerometers. Adapted from an application note by James F. Lally, co-founder of PCB Piezotronics, Inc.

(http://www.modalshop.com/test_calibration.asp?ID=197)

Basics of ISO-16063-22...

...Shock Calibration via Reference Standard

Part 22 of the vibration and shock

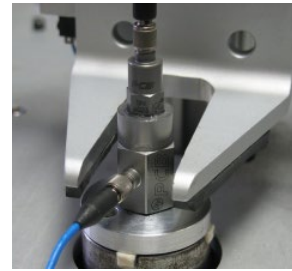
[May 2007](#) - Basics of Accelerometer Function; How Standards Link Together

[June 2007](#) - Shear, Compression, Flexure; ISO 16063 Overview

[July 2007](#) - Accelerometer Transduction Types (PE, PR, VC); Laser Primary Calibration

[August 2007](#) - Quartz v Ceramic; Piggyback Calibration

calibration standard covers **"Shock calibration by comparison to a reference transducer"**. Compared to the general accelerometer calibration techniques discussed last month, shock calibration is a specialty method. As such, there are a number of accepted apparatus and methods depending on the desired shock acceleration magnitude and pulse width.



[Click here](#) to learn more about the different techniques available for shock calibration...

(http://www.modalshop.com/test_calibration.asp?ID=198)

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
A PCB Group Company

