

# sensor & calibration tips



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Greetings,

## Welcome to Issue #55

You know that saying...? "There is no rest for the weary." I'm at a meeting in beautiful Clearwater, Florida and while the throngs of spring break revelers are a stones throw from my hotel room, we need to catch up on the latest in dynamic sensing and calibration.



Before starting this month's learning, I want to thank the many readers who sent in kind words regarding the [loss of our team member Karin Schonthal](#), as we miss our dear friend daily. Life is short, try to make a little bit of a difference as you live each day.

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## Tip of the Month

Back-to-back reference accelerometers typically have a ¼-28 or 10-32 mounting thread. Sensors under test (SUT) often require a different thread interface. In these cases, mechanical adapters must be used to allow for an appropriate mate. Unfortunately, adding this mechanical adapter also adds mass and reduces stiffness between the reference and SUT, which effectively reduces the mounted resonant frequency. The result may be an out of tolerance condition in the upper frequency range, say 10 kHz. The best practice is to avoid using adapters if possible. As this may be unreasonable with certain

## Interview with Technical Engineer, Dave Lally

We had a great deal of interest with our article last month with Professor Dave Brown. Therefore, this month we decided to get an interview on general trends of vibration with Vice President of Engineering at PCB Piezotronics, Dave Lally.



Dave has spent 20+ years at PCB in various roles as Senior Design Engineer, Product Manager of Industrial Monitoring Instrumentation and Marketing Manager. I asked Dave what his observations were on...

[Click here to read more](#)

<http://www.modalshop.com/calibration.asp?ID=689>

## The Key is First Time Quality

I couldn't help but rebroadcast and share this article from Quality Digest. As most of you know, [The Modal Shop](#) and PCB Group are fanatical about customer service and our mission of Total Customer Satisfaction. This interesting article looks at the [cutting edge use of standard quality tools](#) (FTR - First Time Right, also called FTQ - First Time Quality) in the softer side of business as applied to customer satisfaction.

Wouldn't we all love it if companies paid as much attention to the quality of the sales process and sales force as they do the design and



SUT's, the next best practice is to use as small an adapter as possible, with proper torque and ample silicone lubricant at each mating point. Keep in mind that if you are having trouble comparing calibration data at higher frequencies with the OEM or another calibration laboratory, it is important to know if both labs are using similar mounting conditions. If not, this may be a substantial contributor to measurement uncertainty.

#### Quick Links

[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

[SAVIAC](#)

[Vibration Institute](#)

[Equipment Reliability Institute \(ERI\)](#)

[TMS Video Vault](#)

[Learn More Calibration](#)

#### Previous Newsletters

[sensor & cal tips #54](#) -

Do's and Don'ts of Excitation Techniques; Interview with Professor David Brown

[sensor & cal tips #53](#) -

What's Wrong with My Accelerometer; Industrial Vibration Accelerometer Performance

#### 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 website](#)

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[IMI website](#)

manufacturing processes?!? Can you imagine the specification and buying process as pleasurable, seamless and as elegant as using an iPad...?

[Click here to read more](#)

<http://www.modalshop.com/calibration.asp?ID=690>

### Blast from the Past - The Trouble with Signal Cables

For those who may be new to our newsletter, we wanted to highlight an article from a previous sensor & cal tips - "[The Trouble with Signal Cables](#)"...

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 read more](#)

<http://www.modalshop.com/calibration.asp?ID=204>

Thanks for spending a little time with us each month. We're here to serve your dynamic sensing and calibration needs. And about the beach outside my window... don't feel too bad for me missing the sun, as I'm planning a nice seafood dinner for this Midwestern landlocked author! Bye, until next time... and remember we're only a call or [click away](#) when you need us.

Sincerely,

Michael J. Lally  
The Modal Shop

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