

# sensor & calibration tips



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Greetings,

## Welcome to Issue #46

Thanks for joining us for another month! Summer has arrived here in Cincinnati - our team is on the road both visiting customers and taking a little well deserved time to enjoy the sun. In the midst of a busy summer, it is important to think about the equipment that stays behind in your offices and laboratories. While you are away, your trusted equipment should be looked after for up-to-date calibrations and required maintenance. Check out the articles below to find out more about these important topics.

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### Tip of the Month

When participating in interlaboratory comparisons (ILC), be sure the test definition is clear from the start and calibrations are performed at the same frequencies. This avoids the possibility of additional error due to interpolation. For example, if the ILC calls for reporting results at 5, 7 and 10 Hz and the participating lab calibrates at 5, 8 and 10 Hz, interpolation must be used to estimate the sensitivity at 7 Hz. If this falls in a region where the sensor's frequency response is not flat, this can lead to an interpolation error on the order of 1% which could cause the participating lab's results to fall outside acceptable criteria.

Quick Links

### Handling Out-of-Calibration Equipment...

As we have discussed a number of times, calibration is all about control and confidence. Once your calibration system is assembled, operating and validated, you can expect trouble free operation... that is, if you keep it under your control.



Proper use, storage and environment are critical to maintaining your best uncertainties and trouble free system operation for calibration.

As such, it is unwise to lend calibration system components (especially the tempting data acquisition portion) for use outside of the metrology lab. Such "double-duty" work on a precision calibration system is a recipe for potential disaster. Even with moderate problems, simple errors can be introduced in re-assembling the system after someone has borrowed components, and thus, it is mandatory to execute a full re-validation of the system and uncertainties if your system is moved outside of your control. In extreme cases, the borrowed/loaned data acquisition equipment can be treated roughly and damaged via environment, impact or electrical abuse. This can irreparably damage an entire measurement channel. Given the importance of the product designs and safe/efficient operations that depend on our reliable calibrations, it's best not to risk the loss of control. Last weekend, I came across the following article on "[Appropriate Handling of Out-of-Calibration Equipment](#)" which was authored by Miriam Boudreaux on the Quality Digest site. Let me know if you have any questions...

[Click here to read more](#)

<http://www.modalshop.com/calibration.asp?ID=597>

How long should an accelerometer cable last?

[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

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#### Previous Newsletter

[sensor & cal tips #45](#) - High Frequency Accelerometer Measurements

[sensor & cal tips #44](#) - Sensing Calibration News; Evolution of Calibration Reference Accelerometer

#### Select Newsletter Articles by Topic

[Function and Structure of Accelerometers](#)

[Similarities Between Charge and ICP Operation](#)

[Selecting Accelerometers for Mechanical Shock](#)

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"[How long should a cable last?](#)" This question is often asked by test engineers making vibration measurements. In the past, we have discussed the "Trouble with Data

Acquisition Cables". Length of life adds a new dimension to the conversation. So... should a cable last 2 minutes, 2 hours, 2 years or longer?

The answer: It depends a great deal on proper care when installing the cable and the nature of the operating environment. As a test engineer, you may be able to come up with an estimated life expectancy based on your experience with defined measurement parameters, operating environment and installation procedures used in your specific application.



[Click here to read more](#)

<http://www.modalshop.com/calibration.asp?ID=606>

#### Blast from the Past

For those who may be new to our newsletter, we wanted to highlight an article from a previous *sensor & calibration tips* - "[Calibration Traceability](#)"...

In both business and life 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 measurement traceability, which is each measurement component's chain or link to a national standard or physical constant.



[Click here to read more](#)

<http://www.modalshop.com/calibration.asp?ID=205>

#### Training Courses with Dr. Walter

Last month, Dr. Pat Walter taught a sold out course in dynamic shock, vibration, pressure and force measurement theory and practice at PCB in Buffalo, NY. Click below for details and more information on upcoming courses.

[Click here for upcoming courses](#)

[http://pcb.com/docs/Pat\\_Walter\\_August\\_2011\\_registration.pdf](http://pcb.com/docs/Pat_Walter_August_2011_registration.pdf)

Thanks again for joining us this month. We're busy traveling, staffing shows, hosting visitors and continuing to develop innovative solutions for your toughest calibration and measurement challenges. Please don't hesitate to contact us if you have any questions...

Sincerely,



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