

# sensor & calibration tips



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Your one-stop sound & vibration shop

## Greetings!

### Welcome to issue #20-

If you are new to our newsletter, please enjoy this short communication, share it with a colleague and have a look at the archive links below where you'll find all the back issues with their wealth of information. We're glad to have you on board!

[Join Our Mailing List!](#)

### Tip of the Month

#### Use a transfer standard

Consider using a laser calibrated transfer standard accelerometer to calibrate your calibration system's working standard each year. This allows you to keep your system operational full time, just sending the transfer standard in each year and reduces your uncertainty. The Modal Shop now has ISO 17025 / A2LA certified laser primary calibration services available to support this directly in technology center in Cincinnati.

### Quick Links

[NCSL](#)  
[IMEKO](#)  
[NIST](#)  
[PTB](#)

[NIST uncertainty guideline](#)  
[Wiki on uncertainty](#)

[Industrial Vibration Sensors](#)  
[Vibration Institute](#)

[The Modal Shop website](#)  
[PCB Piezotronics website](#)

### Newsletter Archive

[sensor & cal tips #16](#) -  
New developments in accel cal;  
Introduction to industrial accels

### Motion in the ocean...

(and low frequency calibration)

It is that time of year again when those of us in the northern climates let our thoughts drift from the chill of the winter season (including this darn economy!) to dream of sunshine and tropical breezes. One



way to feed this need is a spring break adventure on an ocean cruise. The ships are a fun ride with a little bit of roll at elevated sea states (in addition to being a great way to corral and entertain my teenagers during spring break). The period (3 to 8 sec) of some midsized ship can be in a nauseous range of 0.13 to 0.33 hz, while the period of the largest (about 10 sec) provides an extremely low natural frequency of 0.1 hz and very little motion at normal sea states. Just as travel with teenage children presents its own unique challenges, measurements and calibrations at these very low frequencies do too. A few months ago we introduced an innovative new technique for very low frequency calibration. This month we will discuss this new low frequency calibration method in more detail as presented through our recent IMAC paper...

[Click to read more about low frequency calibration](http://www.modalshop.com/filelibrary/Improved_low_frequency_accelerometer_calibration.pdf)  
([http://www.modalshop.com/filelibrary/Improved\\_low\\_frequency\\_accelerometer\\_calibration.pdf](http://www.modalshop.com/filelibrary/Improved_low_frequency_accelerometer_calibration.pdf))

### Cable considerations and constant current level

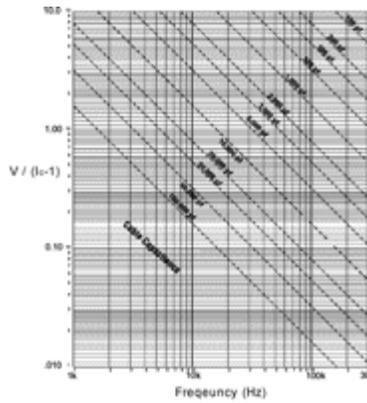
Operation over long cables may affect frequency response and introduce noise and distortion when an insufficient current is available to drive cable capacitance.

[sensor & cal tips #17](#) - Improving your accel calibration reference measurement at low frequencies; ICP® options

[sensor & cal tips #18](#) - Why calibrate; Accelerometer selection considerations

[sensor & cal tips #19](#) - Linearity and the small world

[Archived sensor & cal tips](#) - all the back issues



Unlike charge output systems, where the system noise is a function of cable length, ICP

sensors provide a high voltage, low impedance output well-suited for driving long cables through harsh environments.

While there is virtually no increase in noise with ICP sensors, the capacitive loading of the cable may distort or filter higher frequency signals depending on the supply current and the output impedance of the sensor...

[Click to read more about cable considerations](http://pcb.com/techsupport/tech_longcables.php)  
([http://pcb.com/techsupport/tech\\_longcables.php](http://pcb.com/techsupport/tech_longcables.php))

We appreciate your interest and are glad to be providing you information on a regular basis to help with your dynamic testing and calibration needs. If you have any questions you would like answered or have a topic you would like to see covered, please contact us and we'll be glad to help out.

Sincerely,

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