

G-Link®-LXRS® Wireless Accelerometer Node Factory Calibration Options

OVERVIEW

The G-Link -LXRS is available in three versions based on the user-selected calibration option. The products each look and perform a little differently and should be selected based on the application. The three calibration options are Standard, NIST, and ASTM.

WHAT ARE THE DIFFERENCES?

1. Calibration options:

- **Standard** calibrations normalize each sensor channel to the rotation of the Earth's gravitational field.
- **NIST** traceable calibrations normalize each sensor channel to a reference accelerometer that is traceable to the National Institute of Standards and Testing (NIST) criteria.
- **ASTM** traceable calibrations normalize each sensor channel to a reference accelerometer that is traceable to the American Society for Testing and Materials (ASTM) F2137 criteria. This criteria was developed by ASTM specifically for measuring the dynamic characteristics of amusement park rides. This is the most accurate calibration option.

2. **Frequency filter** - The measurement anti-aliasing filter bandwidth also varies between the two configurations. The standard and NIST versions utilize a single-pole Butterworth filter with a -3 dB cutoff at 500 Hz. The ASTM version uses a steep, low pass, 6-pole Chebyshev filter at a user-specified cutoff frequency. A common value is 37 Hz.

3. **Physical configuration** - The standard and NIST versions look the same and have an internal antenna. The ASTM version has an external antenna. There is no significant difference between the radio communication range with the different antennas.



Node with internal antenna



Node with external antenna

WHICH OPTION BEST FITS MY APPLICATION?

The two primary considerations for the application are the frequency of the signal being measured and the accuracy traceability required for the data. While all G-Link -LXRS nodes meet or exceed the specified accuracy specifications listed, the NIST and ASTM calibrations offer industry standard reassurance on the absolute accuracy of the measurement within the standard's criteria. Additionally, the ASTM option offers a different anti-aliasing filter roll-off frequency designed for the requirements of ASTM amusement park ride certification. Refer to the G-Link -LXRS datasheet for the anti-aliasing filter specifications for each option.