SenSpot™ Wireless 1D/3D Vibration

Ultra-Low Power Precision Sensing & Wireless Communication

Typical Applications

- Bridge health monitoring
- General structural integrity monitoring (buildings, dams, tunnels, levies, etc.)
- Seismic monitoring
- Detection of vehicular or barge collision against bridge piers fender systems

Features & Benefits

- **Long lifetime** (battery life of 10 years)
- **Wireless communication** (IEEE 802.15.4)
- **Lightweight,** 215 grams (7.6 ounce)
- **Easy mounting**
  - Self-adhesive, no drilling is required (e.g., steel)
  - Flange-mount, drilling is required (e.g., concrete)
- **Quick installation**, 1-2 minutes
- **Adjustable sampling interval:** can be adjusted by user from 50 to 500 samples per second (The lower range is customizable).
- **Adjustable sensitivity threshold:** can be adjusted by user from 8mg to 512mg.
- **Number of samples per triggered event:** two options
  - short waveform: 1024 samples
  - Long waveform: 4096 samples
- **Full range:** ±8g ("g" is the acceleration of gravity)

- **Resolution:** 62.5 ug
- **Noise Level:** X & Y &Z Direction: $25\mu g/\sqrt{Hz}$
- **Work temperature:** -40°C to +125°C (-40 to +150°F)
- **Shock survival:** 5000g, 0.1s, no damage to the electronics.
- **Communication range:** 300m (980ft) for reliable communication.
- **Small size:** 59mm (2.32")×64.9mm (2.56")×35mm (1.38").
- **Power source:** CR123 battery **(**non-rechargeable Lithium Manganese Dioxide).
- **Ingress Protection:** IP67, waterproof. Survives short-term submersion.

Description

SenSpot™ is designed to operate maintenance-free for decades. After installation, SenSpot™ does not need calibration, battery replacement, or any other maintenance during its service life. Due to small size and light-weight, adhesive-mount SenSpot™ sensors can be applied easily to as many critical spots on a structure as needed, with minimal installation effort. SenSpot™ accelerometer can be used on different elements of a structure to monitor vibration. Whenever the change of acceleration in any direction exceeds the defined threshold, in other words, when it detects a vibration event, the SenSpot™ starts sampling and transmitting the acceleration values in all directions.

Dimensions

Accelerometer SenSpot™ comes in either self-adhesive or flange-mount form factors. A general diagram of this unit is shown below.

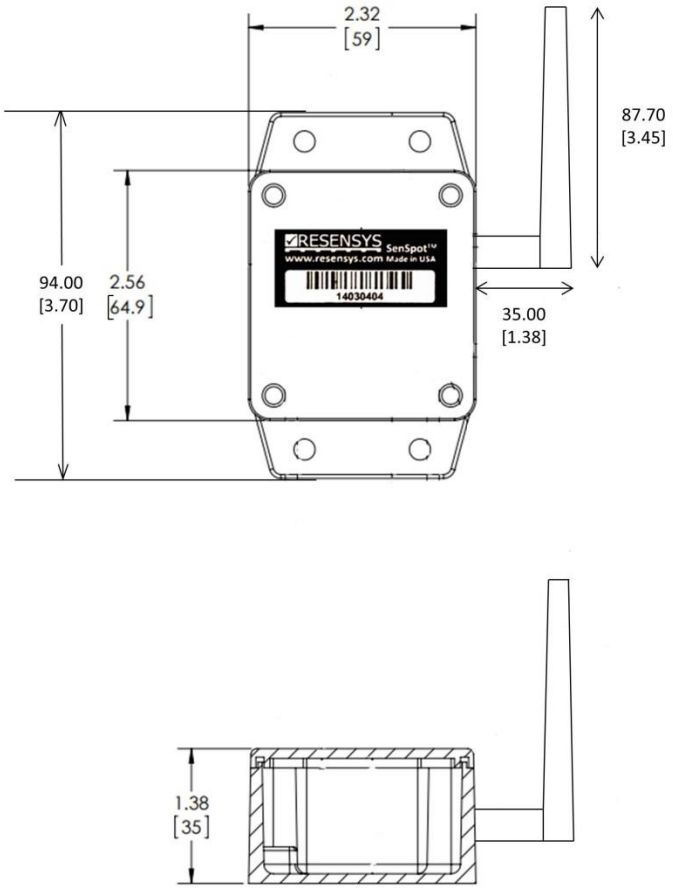

Figure 1: High Performance Accelerometer SenSpot™ dimensions. All dimensions are in mm [inch].

Direction Diagram

For SenSpot™ Wireless 1D Vibration, **ONLY** the acceleration in the Z direction is measured.

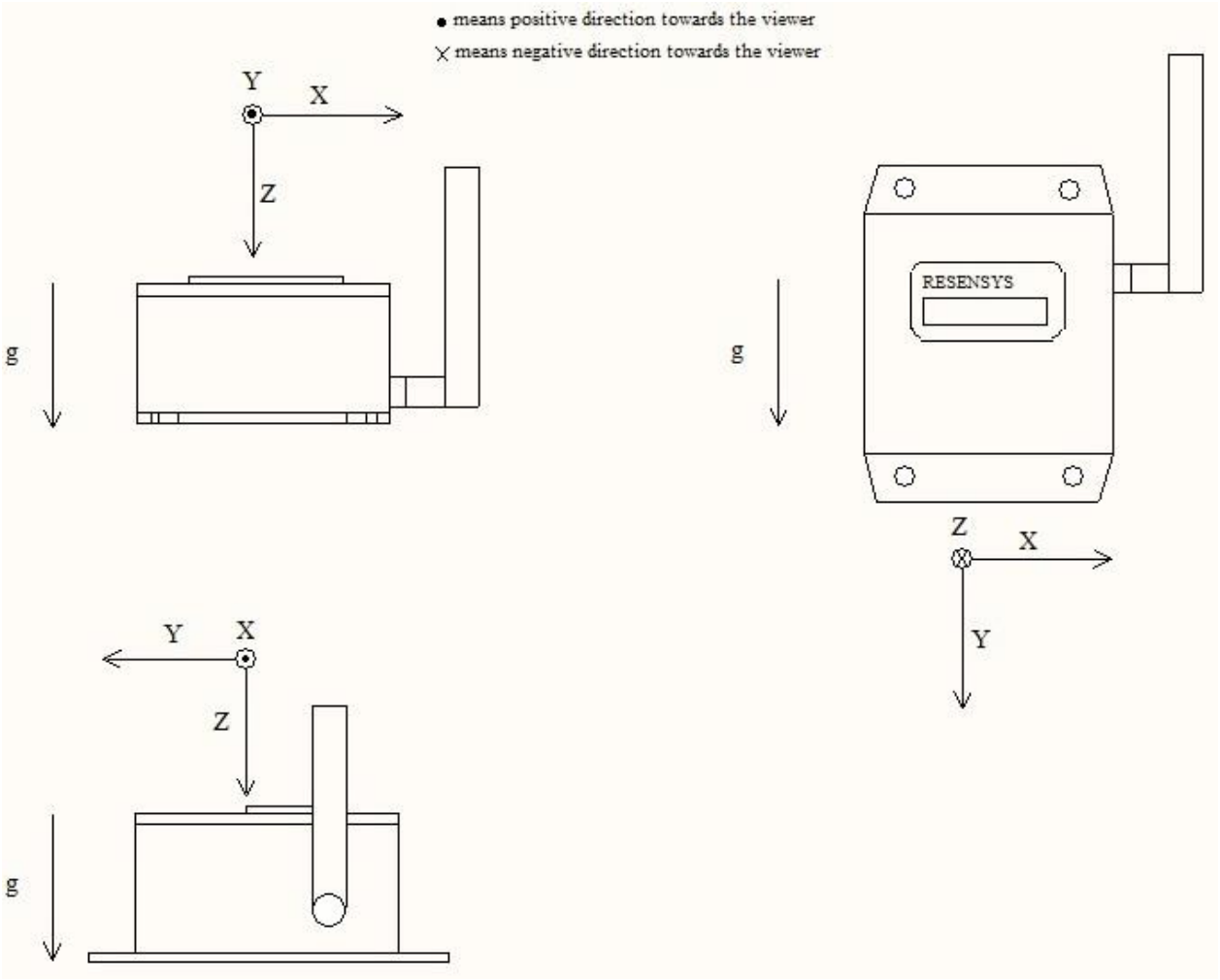

Figure 2: X, Y and Z axis orientations

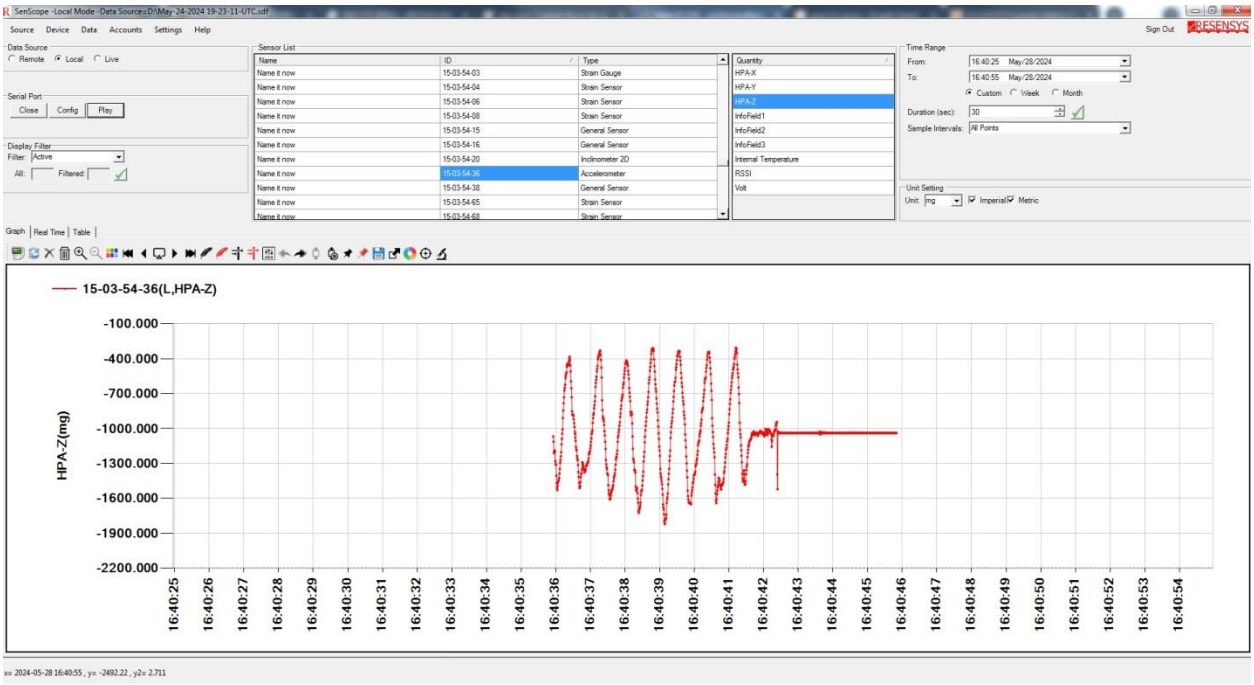

Figure 3: Z axis acceleration measurements of an event for a High Performance Acceleration SenSpot™ (HPA)

Figure 4: Resensys High Performance Accelerometer (HPA) SenSpot™ sensors installed on structures