

## Wireless Accelerometer - Vibration Meters

### General Description

The ioX Wireless Vibration Meter Sensor uses an accelerometer to measure vibration speed and frequency and report on 3 axes.

- Reports data as speed (mm/s) and frequency (Hz) on all three axes, and how long the sensor was measuring during the interval.
- Adjustable measurement methods: RMS, peak data only, and absolute mean.

### Principle of Operation

The ioX Vibration Meter uses an accelerometer to measure g-force on all axes and then determine speed and frequency. It can be set to only capture when a vibration occurs and sleep when no vibrations are present, or it can be set to measure at a given assessment interval regardless of whether a vibration has occurred. If it is set to always measure, the sensitivity can be further adjusted to filter out noise. The Vibration Meter will also report the duty cycle, or how long the sensor was measuring vibrations throughout the heartbeat.

### Example Applications

- Vibration Monitoring
- Smart Machines, Smart Structures & Smart Materials
- Bridge and Building Seismic Activity Monitoring
- Assembly Line Monitoring
- And many more...

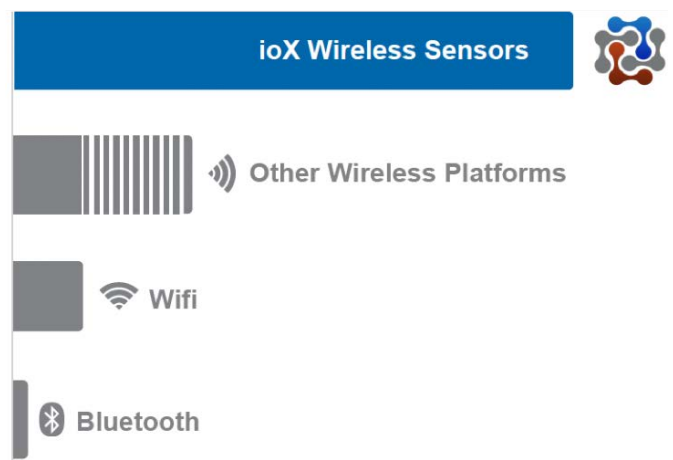
### Features of ioX-Connect Sensors

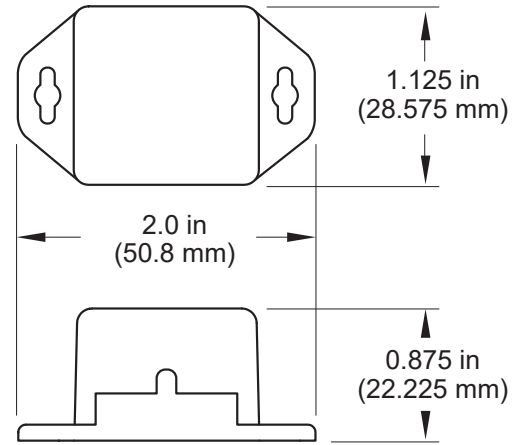
- Wireless range of 1,000+ feet through 12-14 walls.\*
- Frequency Hopping Spread Spectrum (FHSS).
- Improved interference immunity.
- Improved power management for longer battery life.\*\* (10+ years on AA batteries)
- Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages).
- Onboard data memory / storage (up to 512 readings per sensor).
  - 10 min heartbeats = 3.5 days
  - 2 hour heartbeats = 42 days
- Over-the-air updates (future proof).

\* Actual range may vary depending on environment.




\*\* Battery life is determined by sensor reporting frequency and other variables. Other power options are also available.

### Wireless Range Comparison





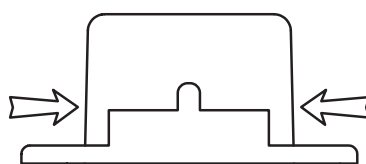
## ioX Commercial Coin Cell Wireless Accelerometer - Vibration Meter - Technical Specifications

|   |   |
|---|---|
| Supply Voltage  | 2.0 - 3.8 VDC *   |
| Current Consumption   | 0.2 $\mu$ A (Sleep Mode)<br>0.7 $\mu$ A (RTC Sleep)<br>570 $\mu$ A (MCU Idle)<br>2.5 mA (MCU Active)<br>5.5 mA (Radio RX Mode)<br>22.6 mA (Radio TX Mode)   |
| Operating Temperature Range (Board Circuitry and Coin Cell) | -7°C to +60°C ( 20°F to +140°F ) **   |
| Optimal Battery Temperature Range (Coin Cell)               | +10°C to +50°C ( +50°F to +122°F )  |
| Speed Measurement Range                                     | 0 to 25.5 mm/s  |
| Speed Measurement Resolution                                | 0.1 mm/s  |
| Frequency Measurement Range                                 | 0 to 256 Hz   |
| Frequency Measurement Resolution                            | 1.5625 Hz rounded down to nearest 1 Hz  |
| Vibration Intensity Threshold Range                         | 0 to 1.701 g  |
| Vibration Intensity Threshold Resolution                    | 0.063 g   |
| Integrated Memory   | Up to 512 sensor messages   |
| Wireless Range  | 1,000+ ft. non-line-of-sight  |
| Security  | 256-bit key exchange and AES-128 CTR  |
| Weight  | 0.7 Ounces  |
| Certifications  | <div style="display: flex; align-items: center; gap: 10px;">    <div> Industry<br/>Canada </div> </div> 900 MHz product; FCC ID: ZTL- G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz product tested and found to comply with: EN 300 220-2 V3.1.1 (2017-02), EN 300 220-2 V3.1.1 (2017-02) and EN 60950. |

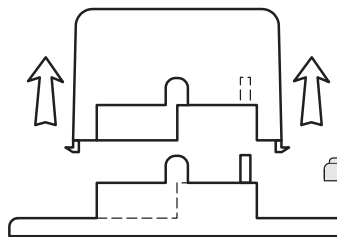
\* Hardware can not withstand negative voltage. Please take care when connecting a power device.

\*\* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

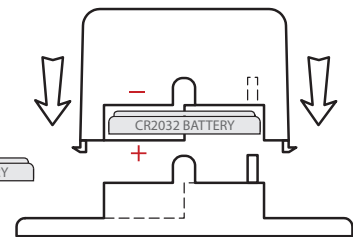
## Upgraded Enclosures



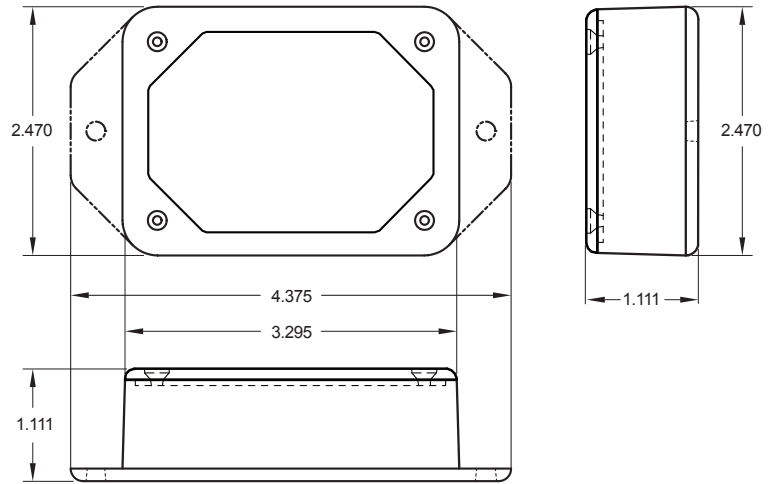
**Pinch**  
(press in on the sides)






**Pull**  
(sensor away from base)



**Press**  
(sensor back into base)



## ioX Commercial AA Wireless Accelerometer - Vibration Meter - Technical Specifications

|   |   |
|---|---|
| Supply Voltage  | 2.0 - 3.8 VDC (3.0 - 3.8 VDC Using Power Supply) *  |
| Current Consumption   | 0.2 $\mu$ A (Sleep Mode)<br>0.7 $\mu$ A (RTC Sleep)<br>570 $\mu$ A (MCU Idle)<br>2.5 mA (MCU Active)<br>5.5 mA (Radio RX Mode)<br>22.6 mA (Radio TX Mode)   |
| Operating Temperature Range (Board Circuitry and Batteries) | -18°C to 55°C (0°F to 130°F) using alkaline<br>-40°C to 85°C (-40°F to 185°F) using lithium **  |
| Optimal Battery Temperature Range (AA)                      | +10°C to +50°C ( +50°F to +122°F )  |
| Speed Measurement Range                                     | 0 to 25.5 mm/s  |
| Speed Measurement Resolution                                | 0.1 mm/s  |
| Frequency Measurement Range                                 | 0 to 256 Hz   |
| Frequency Measurement Resolution                            | 1.5625 Hz rounded down to nearest 1 Hz  |
| Vibration Intensity Threshold Range                         | 0 to 1.701 g  |
| Vibration Intensity Threshold Resolution                    | 0.063 g   |
| Integrated Memory   | Up to 512 sensor messages   |
| Wireless Range  | 1,000+ ft. non-line-of-sight  |
| Security  | 256-bit key exchange and AES-128 CTR  |
| Weight  | 3.7 Ounces  |
| Certifications  | <div>    Industry Canada </div> 900 MHz product; FCC ID: ZTL- G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz product tested and found to comply with: EN 300 220-2 V3.1.1 (2017-02), EN 300 220-2 V3.1.1 (2017-02) and EN 60950. |

\* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

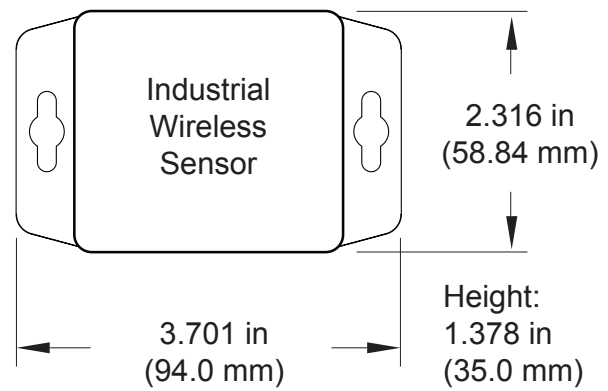
\*\* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

## Power Options




The standard version of this sensor is powered by two replaceable 1.5 V AA sized batteries (included with purchase).

This sensor is also available with a line power option. The line powered version of this sensor has a barrel power connector allowing it to be powered by a standard 3.0 - 3.6 V power supply. The line powered version also uses two standard 1.5 V AA batteries as backup for un-interrupted operation in the event of line power outage.

Power options must be selected at time of purchase, as the internal hardware of the sensor must be changed to support the selected power requirements.



### ioX Industrial Wireless Accelerometer - Vibration Meter - Technical Specifications

|  |                                |  |
|--|--------------------------------|--|
| Supply Voltage   |                                | 2.0 - 3.8 VDC (3.0 - 3.8 VDC Using Power Supply) *   |
| Current Consumption  |                                | 0.2 $\mu$ A (Sleep Mode)<br>0.7 $\mu$ A (RTC Sleep)<br>570 $\mu$ A (MCU Idle)<br>2.5 mA (MCU Active)<br>5.5 mA (Radio RX Mode)<br>22.6 mA (Radio TX Mode)                                    |
| Operating Temperature Range (Board Circuitry and Battery)  |                                | -40°C to +85°C ( -40°F to +185°F ) **  |
| Included Battery   | Max Temperature Range:         | -40° to +85°C ( -40° to +185°F )   |
|  | Capacity:                      | 1800 mAh   |
| Optional Solar Feature   | Solar Panel:                   | 5VDC / 30mA (53mm x 30mm)  |
|  | Charging Temperature Range:    | 0° to 45°C (32° to 113°F)  |
|  | Max Temperature Range:         | -20° to 60°C (-4° to 140°F)  |
|  | Included Rechargeable Battery: | 600 mAh / >2000 Charge Cycles (80% of initial capacity)  |
| Speed Measurement Range  |                                | 0 to 25.5 mm/s   |
| Speed Measurement Resolution   |                                | 0.1 mm/s   |
| Frequency Measurement Range  |                                | 0 to 256 Hz  |
| Frequency Measurement Resolution   |                                | 1.5625 Hz rounded down to nearest 1 Hz   |
| Vibration Intensity Threshold Range  |                                | 0 to 1.701 g   |
| Vibration Intensity Threshold Resolution   |                                | 0.063 g  |
| Integrated Memory  |                                | Up to 512 sensor messages  |
| Wireless Range   |                                | 1,000+ ft. non-line-of-sight   |
| Security   |                                | 256-bit key exchange and AES-128 CTR   |
| Weight   |                                | 4.7 Ounces   |
| Enclosure Rating   |                                | NEMA 1, 2, 4, 4x, 12 and 13 rated, sealed and weather proof  |
| UL Rating  |                                | UL Listed to UL508-4x specifications (File E194432)  |
| Certifications    Industry Canada |                                | 900 MHz product; FCC ID: ZTL- G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz product tested and found to comply with: EN 300 220-2 V3.1.1 (2017-02), EN 300 220-2 V3.1.1 (2017-02) and EN 60950. |

\* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

\*\* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

## Commercial Grade Sensors:

ioX commercial grade sensors are designed for applications in ordinary environments (normal room temperature, humidity and atmospheric pressure). Do not use these sensors under the following conditions as these factors can deteriorate the product characteristics and cause failures and burn-out.

- Corrosive gas or deoxidizing gas - chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxides gas, etc.).
- Volatile or flammable gas.
- Dusty conditions.
- Under low or high pressure.
- Wet or excessively humid locations.
- Places with salt water, oils chemical liquids or organic solvents.
- Where there are excessively strong vibrations.
- Other places where similar hazardous conditions exist.

Use these product within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality.

## Industrial Grade Sensors - Type 1, 2, 4, 4X, 12 and 13 NEMA Rated Enclosure:

ioX's Industrial sensors are enclosed in reliable, weatherproof NEMA rated enclosures. The NEMA rated enclosures are constructed for both indoor or outdoor use and protect the sensor circuitry against the ingress of solid foreign objects like dust as well as the damaging effects of water (rain, sleet, snow, splashing water, and hose directed water).

- Safe from falling dirt.
- Protects against wind blown dust.
- Protects against rain, sleet, snow, splashing water, and hose directed water
- Increased level of corrosion resistance
- Will remain undamaged by ice formation on the enclosure



For more information about our products or to place an order, please contact our sales department at [sales@iox-connect.com](mailto:sales@iox-connect.com)

Visit us on the web at [www.iox-connect.com](http://www.iox-connect.com)

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