

## Wireless Accelerometer



### Technical Overview

#### General Description

The OEM RF Wireless Accelerometer is a digital, low power, low profile, capacitive sensor that is able to measure acceleration on three axes.

#### Features

- 3 unique sensor profiles available.

#### Principle of Operation

**Profile 1** - Accelerometer activates at a set time interval (defined by user) and measures g-force along X, Y and Z axes. Primary use is as an inclinometer or tilt sensor. There are three operating modes,  $\pm 2$  G,  $\pm 4$  G, or  $\pm 8$  G. The data displayed is the g-force on each axis, e.g.  $\rightarrow$  X: 0.001 Y: 0.031 Z: 1.01

**Profile 2** - Accelerometer samples at 800 Hz over a 10 second period at the check-in frequency, and reports the measured MAXIMUM value for each axis in g-force and the AVERAGE measured g-force on each axis over the same period, for all three axes. (Requires a power source stronger than your typical coin cell, AA batteries work well for this profile.) This sensor reports in every 10 seconds with this data. The user can alter the 10 second interval as desired, down to one second. The data reported is useful for tracking periodic motion. Sensor data is displayed as:

- Max X: 0.125
- Max Y: 1.012
- Max Z: 0.015
- Avg X: 0.119
- Avg Y: 1.005
- Avg Z: 0.007

**Profile 3** - Accelerometer activates when g-forces are exceeded by a user defined threshold – up to 8 g-force. The user can key in the desired threshold for the g-force trigger. This sensor has two operation modes that can be also selected by the user: High Performance and Low Power. High Performance has an output data rate of 800 Hz with the High Pass Filter cutoff at 16 Hz while the Low Power has an output data rate of 12.5 Hz with the High Pass Filter cutoff at 0.25 Hz.


#### OEM Sensor Core Specifications

- Power: 3.0 V coin cell battery
- Communication: RF 900, 868 and 433 MHz
- Antenna: 4" wire antenna
- Operating Temperature:  $-40^{\circ}$  to  $85^{\circ}$ C ( $-40^{\circ}$  to  $185^{\circ}$ F)
- Device Range: 250 - 300 ft. non-line-of-sight\*
- Only 1 inch by 1 inch

\* Actual range may vary depending on environment.

#### Applications

- Inclination & Vibration Testing
- Assembly Line Monitoring
- Smart Machines, Smart Structures, & Smart Materials
- Orientation Sensing
- Impact Load Sensing

Specifications	
Supply Voltage	2.0 - 3.6 VDC *
Current Consumption	0.7 $\mu$ A (sleep mode) 2 mA (radio idle/off mode) 2 mA (measurement mode) 25 mA (radio RX mode) 35 mA (radio TX mode)
Operating Temperature Range	-40°C to +85°C ( -40°F to +185°F ) **
Available Operating Frequencies	900 MHz (25 Ch.), 868 MHz (5 Ch.) and 433 MHz (15 Ch.)
Sensitivity	4096 count/g
Sensitivity Range Selections	+/-2 G, +/-4 G, +/-8 G
Measurement Accuracy	$\pm$ 2.5 %
Minimum G Force to Turn On/Wake Up	0.050 g - 0.100 g
Fastest Update Interval/Heart Rate in Any Configuration	Heartbeat: 1 Minute
Bandwidth for Data Measurement	800 Hz
Certifications	 900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 868 and 433 MHz product tested and found to comply with: CISPR 22:2008-09 / EN 55022:2010 - Class B and ETSI EN 300 220-2 V2.4.1 (2012-05).

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

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

High Performance / Low Power Comparison		
	High Performance	Low Power
Output Data Rate	800 Hz	12.5 Hz
Noise	Normal	Normal
Oversampling Mode	Low Power	Low Power
High Pass Filter	ON	ON
Dynamic Range	$\pm$ 8 G	$\pm$ 8 G
High Pass Filter Cutoff	16 Hz	0.25 Hz
Transient Detection	X,Y, & Z axis detection	X,Y, & Z axis detection
Dynamic Transient Threshold	User Set, 0.063 G – 8.0 G	User Set, 0.063 G – 8.0 G
Dynamic Transient Debounce Count	0	0

For more product information, to get a quote, or to place an order, please contact our sales department at 801-561-5555. Visit us on the web at [www.oemsensors.com](http://www.oemsensors.com).

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