Monnit WIT™
Wireless Accelerometer

Technical Overview

General Description

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

Features and Principles 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, ±2 G, ±4 G, or ±8G. The data displayed is the g-force on each axis, e.g. –> X: 0.001 Y: 0.031 Z: 1.01

Profile 2 - Accelerometer samples at 800 Hz over a 10 second period, 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 AA power source available only in the WIT2 packaging.) This sensor reports in every 10 seconds with this data. Other sampling periods can be configured , down to one second and up to 10 minutes*. 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.

* Customer cannot configure sampling period on their own. They will need to contact Monnit to reset the period to be monitored.

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.

Power Options

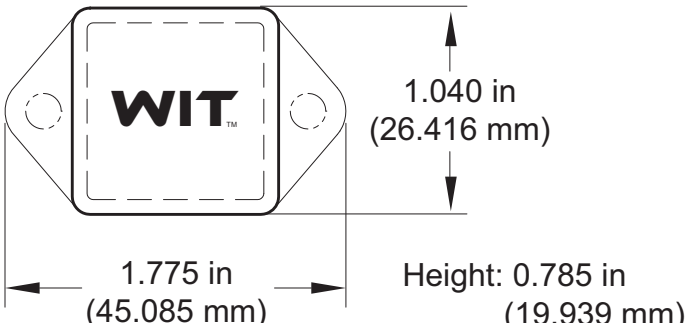
Sensors are powered by a replaceable 3.0 V coin cell battery. Optional AA battery powered sensors are available. The AA version of these sensors are larger in size (3" [L] x 2.1" [W] x 1.2" [H]) and include two long-life AA batteries.

It is recommended that unless you are using the AA battery solution, you set heartbeat to no faster than one hour to preserve battery life.

Monnit WIT Sensors Core Specifications

- Power: Replaceable 3.0 V coin cell battery
- Communication: RF 900, 868 and 433 MHz
- Dimensions: 1.775" x 1.040" x 0.785"
- Antenna: 4" wire antenna
- Operating Temperature: -20° to 60°C (-4° to 140°F)
- Device Range: 250 - 300 ft. non-line-of-sight*
- Battery Life: At 1 hour heartbeat setting, coin cell battery will last ~ 1-2 years.**

* Actual range may vary depending on environment.
** Battery life is determined by sensor reporting frequency and other variables.



Example Applications

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

The Leader in Low Cost Wireless Sensors

Technical Specifications	
Supply Voltage	2.0 - 3.6 VDC *
Current Consumption	0.7 µA (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 (Board Circuitry and Battery)	-20°C to +60°C (-4°F to +140°F) **
Optimal Battery Temperature Range (Coin Cell)	+10°C to +50°C (+50°F to +122°F)
Sensitivity	4096 count/g
Sensitivity Range Selections	+/-2 G, +/-4 G, +/-8 G
Measurement Accuracy	±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

* 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.

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	±8 G	±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

Caution/Notice:

This product is designed for application in an ordinary environment (normal room temperature, humidity and atmospheric pressure). Do not use this sensor 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 this product within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality of this product.

For more information about our products or to place an order, please contact our sales department at 801-561-5555. Visit us on the web at www.monnit.com.

Monnit Corporation
7304 South Cottonwood
Suite 204
Midvale, Utah 84047
801-561-5555
www.monnit.com