MONNIT®

The Leader in Low-Cost, Remote Monitoring Solutions

G-FORCE

Wireless Accelerometer - G-Force Snapshot Sensor

General Description

The Monnit Wireless Accelerometer - G-Force Snapshot Sensor is a digital, low power, low profile, capacitive sensor that is able to measure acceleration on three axes to determine inclination.

- Takes 3-Axis G-Force Measurements
- 4096 count/g Sensitivity

Free iMonnit basic online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email.

Principle of Operation

The Wireless Accelerometer - G-Force Snapshot Sensor 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 is displayed as g-force on each axis.

Example: X: 0.001 Y: 0.031 Z: 1.01

Example Applications

- Inclination and vibration testing
- Orientation sensing
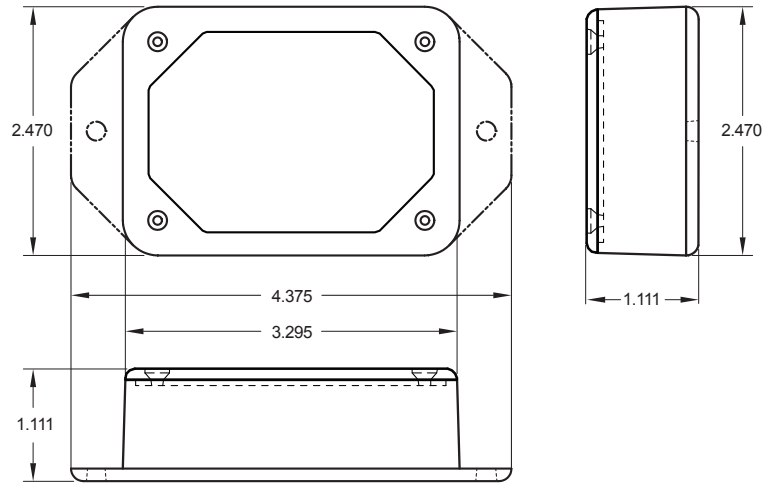- Smart machines, smart structures and smart materials
- And many more...

Monnit Sensor Core Specifications

- Wireless Range: 250 - 300 ft. (non line-of-sight / indoors through walls, ceilings & floors) *
- Communication: RF 900, 920, 868 and 433 MHz
- Power: Replaceable batteries (optimized for long battery life - Line-power (AA version) and solar (Industrial version) options available
- Battery Life (at 1 hour heartbeat setting): **
    - AA battery >   4-8 years
    - Coin Cell >   2-3 years.
    - Industrial >   4-8 years

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

Sensor Types & Options

Commercial AA Wireless Accelerometer - G-Force Snapshot Sensor - Technical Specifications

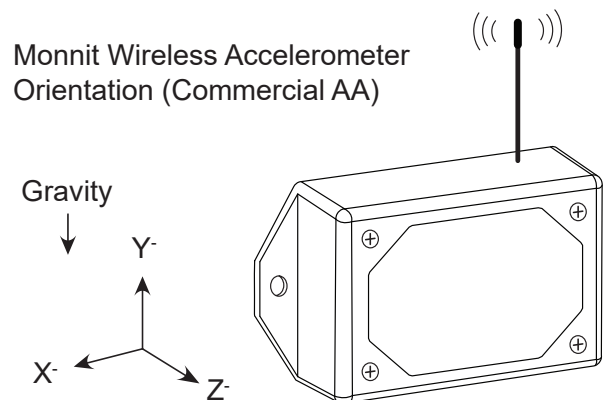|	
Supply Voltage	2.0 - 3.8 VDC (3.0 - 3.8 VDC Using Power Supply) *
Current Consumption	0.2 µA (Sleep Mode) 0.7 µA (RTC Sleep) 570 µA (MCU Idle) 2.5 mA (MCU Active) 5.5 mA (Radio RX Mode) 22.6 mA (Radio TX Mode)
Operating Temperature Range (Board Circuitry and Batteries)	-18°C to 55°C (0°F to 130°F) using alkaline -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)
Sensitivity	4096 count/g
Sensitivity Range Selections	+/-2 G, +/-4 G, +/-8 G
Measurement Accuracy	±2.5 % (Force: X, Y, Z)
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
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables.
Weight	3.7 Ounces
Certifications	900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 920 MHz product; ARIB STD-T108 R210-103733. 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 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.

Line-Power Option

Two replaceable 1.5V AA sized batteries are included with the standard model. A line-power version with battery backup is also available - allowing it to be powered by a standard 3.0 - 3.6V power supply and use the internal batteries if there is a power interruption.

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.

Monnit Wireless Accelerometer Orientation (Commercial AA)

Gravity
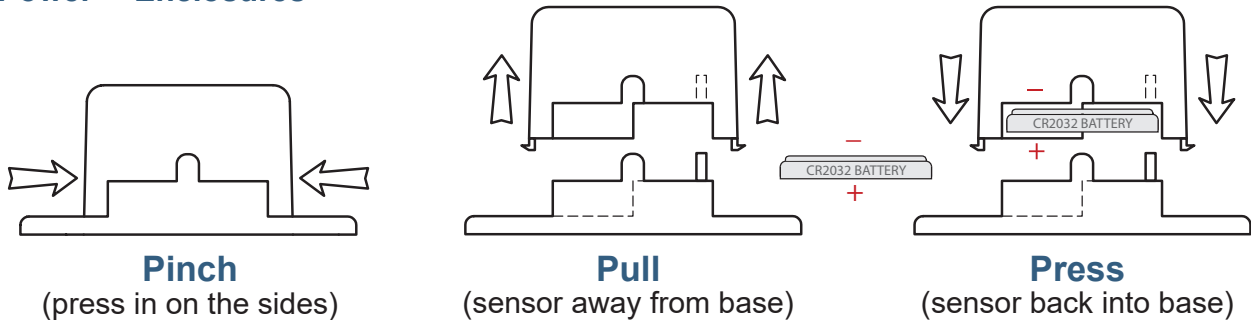
Monnit Wireless Accelerometer Orientation (Commercial Coin Cell)

Gravity

X+

Y+   Z+

1.125 in
(28.575 mm)

2.0 in
(50.8 mm)

0.875 in
(22.225 mm)
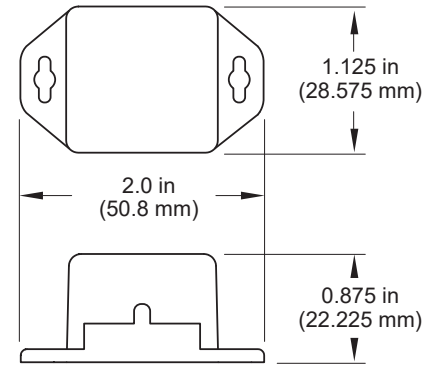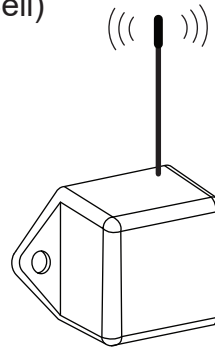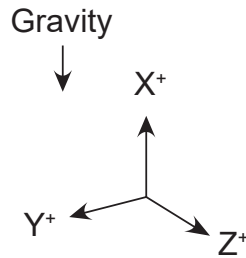
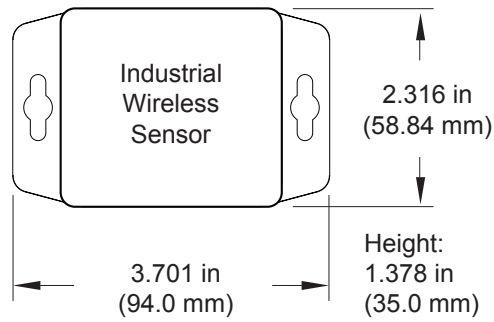| Commercial Coin Cell Wireless Accelerometer - G-Force Snapshot Sensor - Technical Specifications	
Supply Voltage	2.0 - 3.8 VDC *
Current Consumption	0.2 µA (Sleep Mode) 0.7 µA (RTC Sleep) 570 µA (MCU Idle) 2.5 mA (MCU Active) 5.5 mA (Radio RX Mode) 22.6 mA (Radio TX Mode)
Operating Temperature Range (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)
Sensitivity	4096 count/g
Sensitivity Range Selections	+/-2 G, +/-4 G, +/-8 G
Measurement Accuracy	±2.5 % (Force: X, Y, Z)
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
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables.
Weight	0.7 Ounces
Certifications FC CE Industry Canada	900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 920 MHz product; ARIB STD-T108 R210-103733. 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.
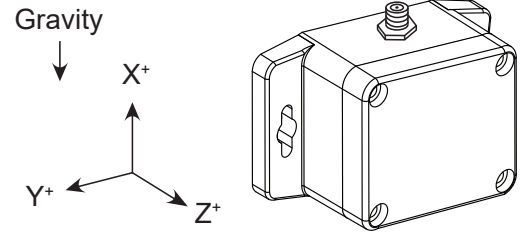** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

PinchPower™ Enclosures

Pinch
(press in on the sides)

Pull
(sensor away from base)

CR2032 BATTERY

Press
(sensor back into base)

CR2032 BATTERY

Monnit Wireless Accelerometer Orientation (Industrial)

Gravity

X+
Y+
Z+

Industrial Wireless Accelerometer - G-Force Snapshot Sensor - Technical Specifications		
Supply Voltage	2.0 - 3.8 VDC (3.0 - 3.8 VDC Using Power Supply) *	
Current Consumption	0.2 µA (Sleep Mode) 0.7 µA (RTC Sleep) 570 µA (MCU Idle) 2.5 mA (MCU Active) 5.5 mA (Radio RX Mode) 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:	1500 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)
	Charging Efficiency:	5% ***
	Luminous Sustainability:	Minimum of 10,000 LUX ***
Sensitivity	4096 count/g	
Sensitivity Range Selections	+/-2 G, +/-4 G, +/-8 G	
Measurement Accuracy	±2.5 % (Force: X, Y, Z)	
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	
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables.	
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	900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 920 MHz product; ARIB STD-T108 R210-103733. 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 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.
 *** Solar feature only chargable outside in full sunlight.

Commercial Grade Sensors:

Monnit 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:

Monnit's Industrial sensors are enclosed in reliable, weatherproof NEMA rated enclosures. Our 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

MONNIT®

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.