MONNIT®

The Leader in Low-Cost, Remote Monitoring Solutions

Wireless Pulse Counter - 1 Input

General Description

The wireless pulse counter can be connected to the pulse output of a system (water meter, power meter, etc.) to count the number of actuations within a given time frame.

- Counts the number of pulses in given time frame, or aggregates pulses in an ongoing accumulation
- 3 filter settings: No filter, 4 Hz filter, and 40 Hz filter
- Capable of counting passive (open/closed switch) and active (Up to +15 VDC) pulses
- Capable of counting the positive edge, negative edge, or both edges of a pulse

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 Monnit wireless filtered pulse counter is an electronic counter capable of counting passive(open/closed switch) or active (Up to +15 VDC) pulses. The counter includes 3 software configurable low pass filter settings (No filter, 40 Hz filter, or 4 Hz filter). The pulse counter filters pulses with pulse widths greater than those designated in the technical specifcations. For example, if the 4Hz filter is set, the pulse counter will count a pulse if the pulse width is longer than 250 ms, if the pulse width is shorter than 250 ms it will be completely or partially filtered (See the Technical Specification table for detailed filtering information). The sensor can be set to send an alert through the iMonnit Online Sensor Monitoring and Notification System when a given number of pulses have been reached within a set time frame. Alerts from the iMonnit system are sent as they happen (in real time) via SMS text or email.

Example Applications

- Water, gas and air flow meters
- Door access counter
- Turn style counting
- Forklift seat switches
- Button or switch integration
- Production line tracking

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) **

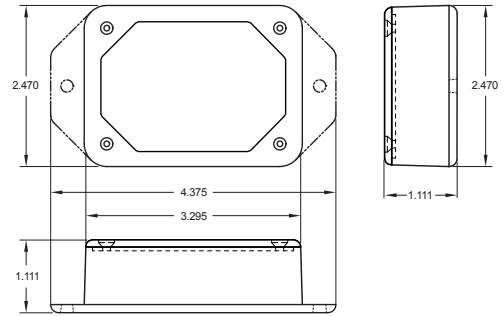 | | |
  |---|---|
  | AA battery > | 4-8 years |
  | Coin Cell > | 2-3 years. |
  | Industrial > | 4-8 years |

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

Sensor Types & Options

Wireless Pulse Counter - 1 Input (AA)

Technical Specifications	
Supply Voltage	2.0 - 3.6 VDC (3.0 - 3.6 VDC Using Power Supply) *
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 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 **
Weight	3.7 oz.
Wireless Range	250 - 300 ft. (Indoors / Through walls, ceilings & floors) Range may vary according to environmental variables.
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.

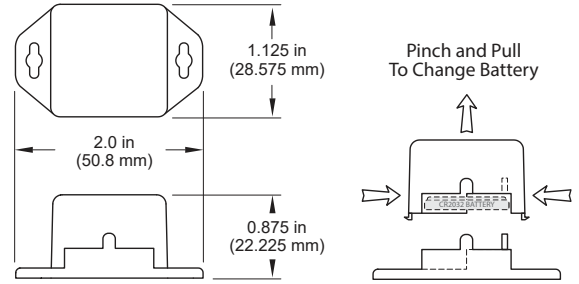| Pulse Counter Specifications			
Maximum Count	4294967296 (32 bit number)		
Input Voltage	0 to 15 Volts DC		
Detection Wires	High Impedance (2-Wire), 3 ft. length		
Counter Operation	Positive and / or Negative Edge Pulses		
Compatibility	Open Collector NPN Switches (Passive) Mechanical Switches (Passive) 0-15V Driven Source (Active)***		
Max Input Pulse Rate / Min Pulse Width with Passive Input****		Max Pulse Rate	Min Pulse Width*****
	No Filter	~ 2 KHz	~ 0.5 ms
	4 Hz Filter	~ 4 Hz	~ 250 ms
	40 Hz Filter	~ 40 Hz	~ 25 ms

 *** Low Pulse: 0 Volts to .2 * VBatt, H igh Pulse: .8 * VBatt to 15 Volts.
 **** High pulse count rates can impact battery life. AA battery powered sensors are recommended if counting pulses faster than 1x per second.
 ***** Input pulse rate must be less than specified Max Pulse Rate and input pulse width must be greater than specified Min Pulse Width to ensure the input pulse is counted.

Power Options

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.

Wireless Pulse Counter - 1 Input (Coin Cell)

1.125 in
(28.575 mm)

2.0 in
(50.8 mm)

0.875 in
(22.225 mm)

Pinch and Pull
To Change Battery

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 Batteries)	-7°C to +60°C (20°F to +140°F)**
Optimal Battery Temperature Range (AA)	+10°C to +50°C (+50°F to +122°F)
Weight	1.0 oz.
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables
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.

Pulse Counter Specifications			
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****   High pulse count rates can impact battery life. AA battery powered sensors are recommended if counting pulses faster than 1x per second.
*****   Input pulse rate must be less than specified Max Pulse Rate and input pulse width must be greater than specified Min Pulse Width to ensure the input pulse is counted.

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.
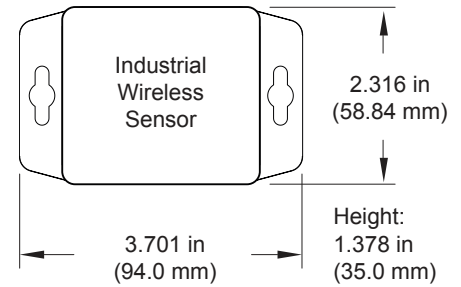
PinchPower™ Enclosure

Pinch
(press in on the sides)

Pull
(sensor away from base)

Press
(sensor back into base)
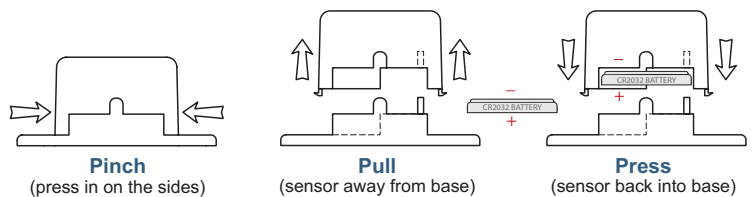
Wireless Pulse Counter - 1 Input (Industrial)

Solar Power Option

Monnit Industrial Sensors are powered by a replaceable 3.6V Lithium battery (included). An optional solar powered version is also available. The solar powered sensor uses a Lithium Iron Phosphate rechargeable battery in conjunction with a solar power cell to extend battery life.

Industrial Wireless Sensor

2.316 in (58.84 mm)

3.701 in (94.0 mm)

Height: 1.378 in (35.0 mm)

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)	

Included Battery	Max Temperature Range:	-40°C to +85°C (-40°F 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)

Enclosure Rating	NEMA 1, 2, 4, 4x, 12 and 13 rated, sealed & weather proof
UL Rating	UL Listed to UL508-4x specifications (File E194432)
Weight	4.7 oz. (solar option 5.1 oz.)
Wireless Range	250 - 300 ft. (Indoors / Through walls, ceilings & floors) Range may vary according to environmental variables.
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.

Pulse Counter Specifications

Maximum Count	4294967296 (32 bit number)
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Max Input Pulse Rate / Min Pulse Width with Passive Input****		Max Pulse Rate	Min Pulse Width*****
	No Filter	~ 2 KHz	~ 0.5 ms
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*** Low Pulse: 0 Volts to .2 * VBatt, H igh Pulse: .8 * VBatt to 15 Volts.
**** High pulse count rates can impact battery life. AA battery powered sensors are recommended if counting pulses faster than 1x per second.
***** Input pulse rate must be less than specified Max Pulse Rate and input pulse width must be greater than specified Min Pulse Width to ensure the input pulse is counted.

Notes

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 products 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.

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