



## ALTA® Wireless Pulse Counter

### General Description

The [ALTA® Wireless Pulse Counter](#) connects to pulse output devices (water meter, power meter, etc.) directly recording the number of pulses counted.

### Key Features

- ▶ Counts the number of pulses in a given frame, or aggregates pulses in an ongoing accumulation.
- ▶ Robust filter options:
  - ▶ No filter - Ultra-fast counting, no noise rejection
  - ▶ 40 Hz filter - Fast counting, basic noise rejection
  - ▶ 4 Hz filter - Slow counting, superior noise rejection
- ▶ Counts either 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.

### Principles of Operation

The ALTA Wireless Pulse Counter counts active or passive pulses generated by common industry systems. The counter includes three software configurable low-pass filter settings (no filter, 40 Hz, and 4 Hz). When one of the filters is on, the pulse counter will filter out any pulses that are shorter than 1 / filter frequency. The sensor will record the number of pulses counted over a user-configurable time interval or Heartbeat. On every Heartbeat, the sensor will report the number of pulses counted to the gateway, making the data available in iMonnit or another approved data service.

The ALTA Pulse Counter can be configured to report urgently if the number of pulses counted in one Heartbeat is greater than specified threshold.

### Example Applications

- ▶ Water, gas, and air flow meters
- ▶ Door access counter
- ▶ Turnstyle counting
- ▶ Forklift seat switches
- ▶ Button or switch integration
- ▶ Production line tracking
- ▶ [Additional applications](#)

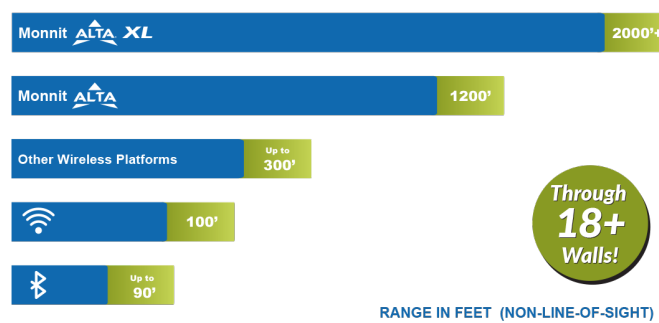
### Features of Monnit ALTA Sensors

- Wireless range of 2,000+ feet through 18+ walls<sup>1</sup>
- Frequency-Hopping Spread Spectrum (FHSS)
- Best-in-class interference immunity
- Best-in-class power management for longer battery life<sup>2</sup>
- Encrypt-RF® Security (Diffie-Hellman Key Exchange + Advanced Encryption Standard (AES)-128 Cipher Block Chaining (CBC) for sensor data messages)
- Sensor logs 2000 to 4000 readings if the gateway connection is lost (non-volatile flash, persists through power cycling):
  - 10-minute Heartbeats = ~ 22 days
  - 2-hour Heartbeats = ~ 266 days
- Automatic over-the-air updates to sensor firmware (future-proof)
- Free iMonnit Basic Online Wireless Sensor Monitoring and Notification System to configure sensors, view data, and send alerts via SMS text, email, and voice call

<sup>1</sup> Actual range may vary depending on the environment and gateway.

<sup>2</sup> Battery life is determined by the sensor reporting frequency and other variables. Other power options are also available.

### Wireless Range Comparison



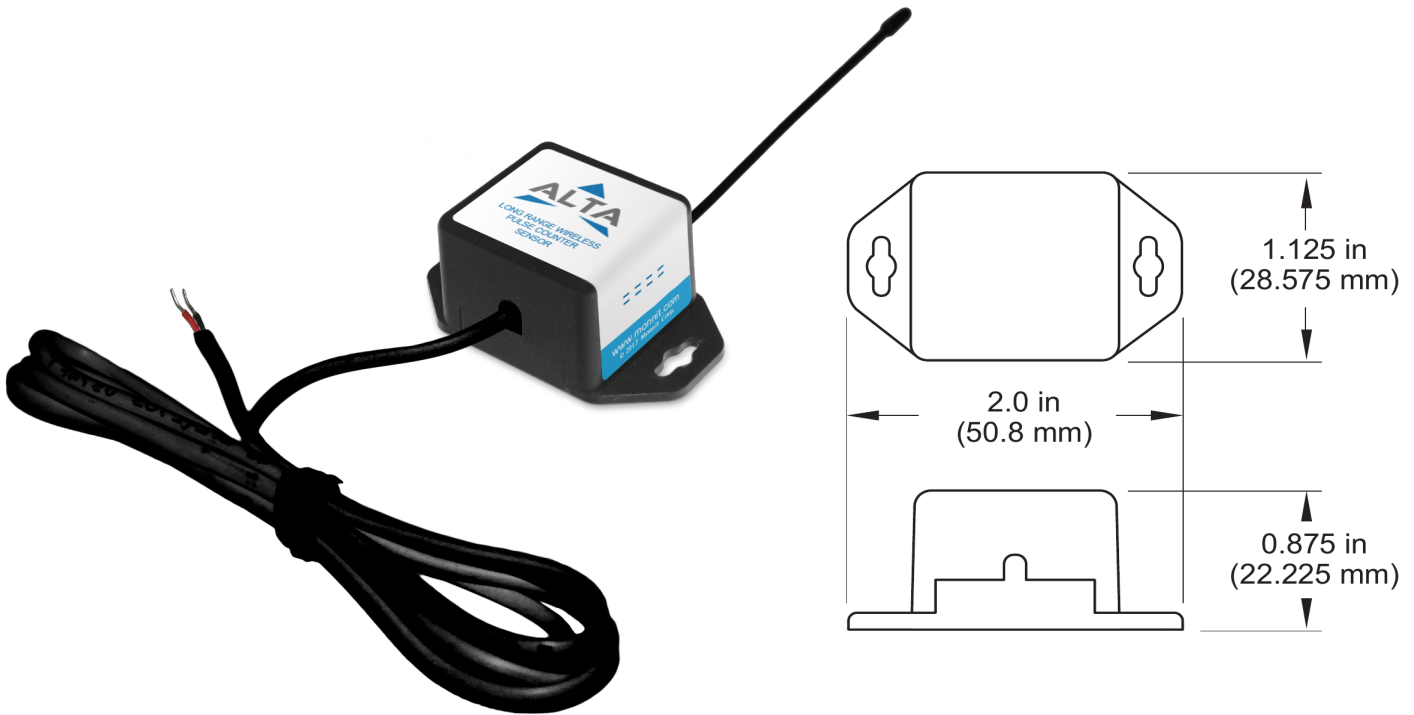
## Technical Specification | ALTA® Wireless Pulse Counter Sensors

Pulse Counter	Maximum count	1.84467 * 10 <sup>19</sup> (64-bit number)		
	Input voltage	0 to 15 Volts DC		
	Cable construction	High impedance (2-wire), 3 ft length		
	Counter operation	Positive and/or negative edge pulses		
	Input Impedance	> 2.4 MOhm +/- 1%		
	Compatibility	Open collector NPN switches (passive) Mechanical switches (passive) 0–15V driven source (active) <sup>1</sup>		
	Max input pulse rate/min pulse width with passive input <sup>2</sup>		Max Pulse Rate <sup>2</sup>	Min Pulse Width <sup>3</sup>
Lead		No Filter	~ 2 KHz	~ 0.5 ms
		4 Hz Filter	~ 4 Hz	~ 250 ms
		40 Hz Filter	~ 40 Hz	~ 25 ms
	Cable length	Standard: 0.3 m (1 ft)		
	Wire count	2-conductor (red/black)		
	Wire gauge	22 AWG		
	Conductor material	Stranded Copper 7/30		
	Insulation	PVC, 0.010"		
	Shield	No		
	Jacket	PVC (black)		
	Overall Diameter	4.2 mm (0.164")		
	Ratings / Approvals	NEC (UL) Type CM, UL AWM Style 2464, CSA AWM FT4, RoHS/Reach Compliant		
	Temperature Rating	-20°C to 85°C (-4°F to 185°F) <sup>4</sup>		
	Voltage Rating	300 V Max		
	Dielectric Strength	1500 V RMS		
ALTA Wireless	Data logging	Sensor logs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through power cycling): 10-minute Heartbeats = ~22 days - 2-hour Heartbeats = ~266 days		
	Wireless protocol	ALTA Proprietary Frequency-Hopping Spread Spectrum (FHSS)		
	Wireless transmission power (EIRP)	50 mW (900MHz), 25 mW (868 MHz), 10 mW (433 MHz)		
	Wireless range	2,000+ ft. through 18+ walls with the ALTA XL® Gateway		
	Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)		
General	Battery voltage range	2.0 to 3.8 VDC		
	Operating altitude (non-pressurized environments)	-15.2 to 1,982 m (-50 to 6,500 ft) <sup>5</sup>		
	Storage altitude (non-pressurized environments)	-15.2 to 3,048 m (-50 to 10,000 ft) <sup>5</sup>		
	Operating humidity	5 to 85% RH (non-condensing)		
	Certifications	900 MHz sensors: <b>FCC ID: ZTL-G2SC1</b> and <b>IC: 9794A-G2SC1</b> . 868 and 433 MHz sensors tested and comply with: <b>EN 55032</b> : 2015/A11:2020; <b>EN 55035</b> :2017/A11:2020; <b>ETSI EN 300 220</b> V3.2.1 (2018-06); <b>ETSI EN 301 489-3</b> V2.2.0. (2021-11); and <b>ETSI EN 303 645</b> . All sensors tested and comply with: <b>EN 61010-1</b> and <b>EN 60950</b> and meet <b>RoHS 2015/863</b> and <b>REACH 224</b> (June 2022), according to <b>IEC 63000</b> :2016/AMD1:2022.		

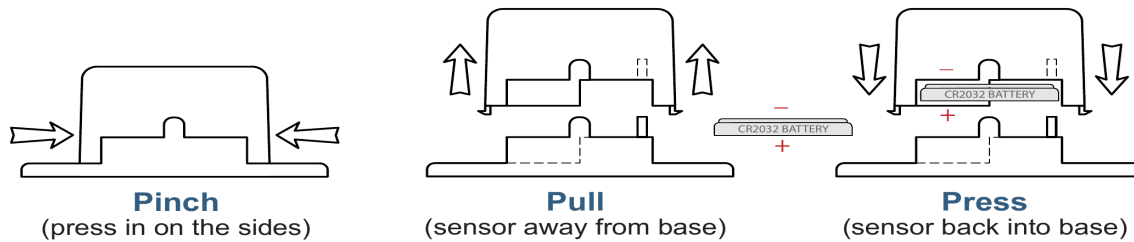
1. Low Pulse: 0 Volts to 0.2 \* VBatt, High Pulse: 0.8 \* VBatt to 15 Volts.
2. High pulse count rates can impact battery life. AA battery-powered sensors are recommended if counting pulses faster than 1x per second.
3. The input pulse rate must be less than the specified max pulse rate and the input pulse width must be greater than the specified min pulse width to ensure the input pulse is counted.
4. Temperatures colder than the rating are acceptable if the cable is not moving or vibrating.
5. Operating and storage altitude without DC power supply is -30.48 to 9144 m (-100 to 30000 ft).



The sensor reports the number of pulses.



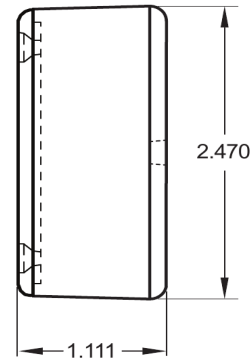
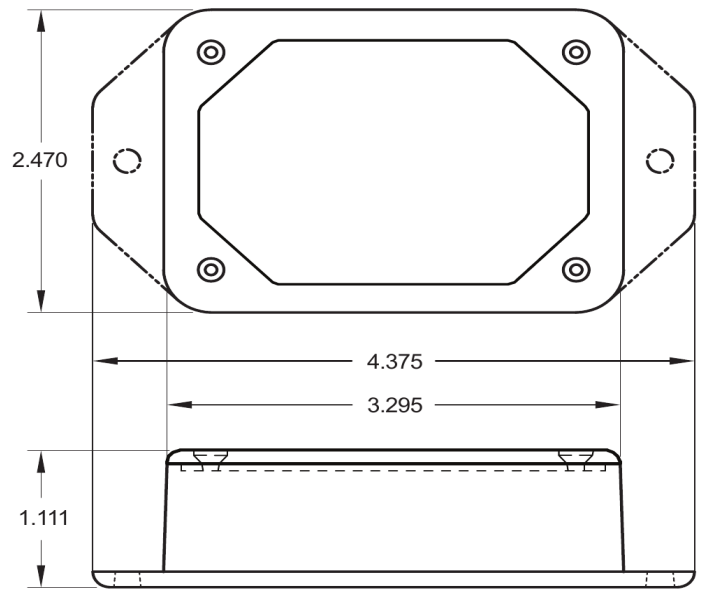
## PinchPower™ Enclosures



## Technical Specifications | ALTA® Commercial Pulse Counter

Battery <sup>1</sup>	1x 3.0V CR2032 Button Cell, 100 mAh
Battery Life	2+ years expected
Operating temperature range (non-leaded measurement range)	10°C to 50°C (50°F to 122°F)
Wireless antenna type	1/4-wave, 20 gauge wire whip, 3.5" (900/868MHz), 7" (433MHz)
Weight	0.7 oz. (19.84 g)

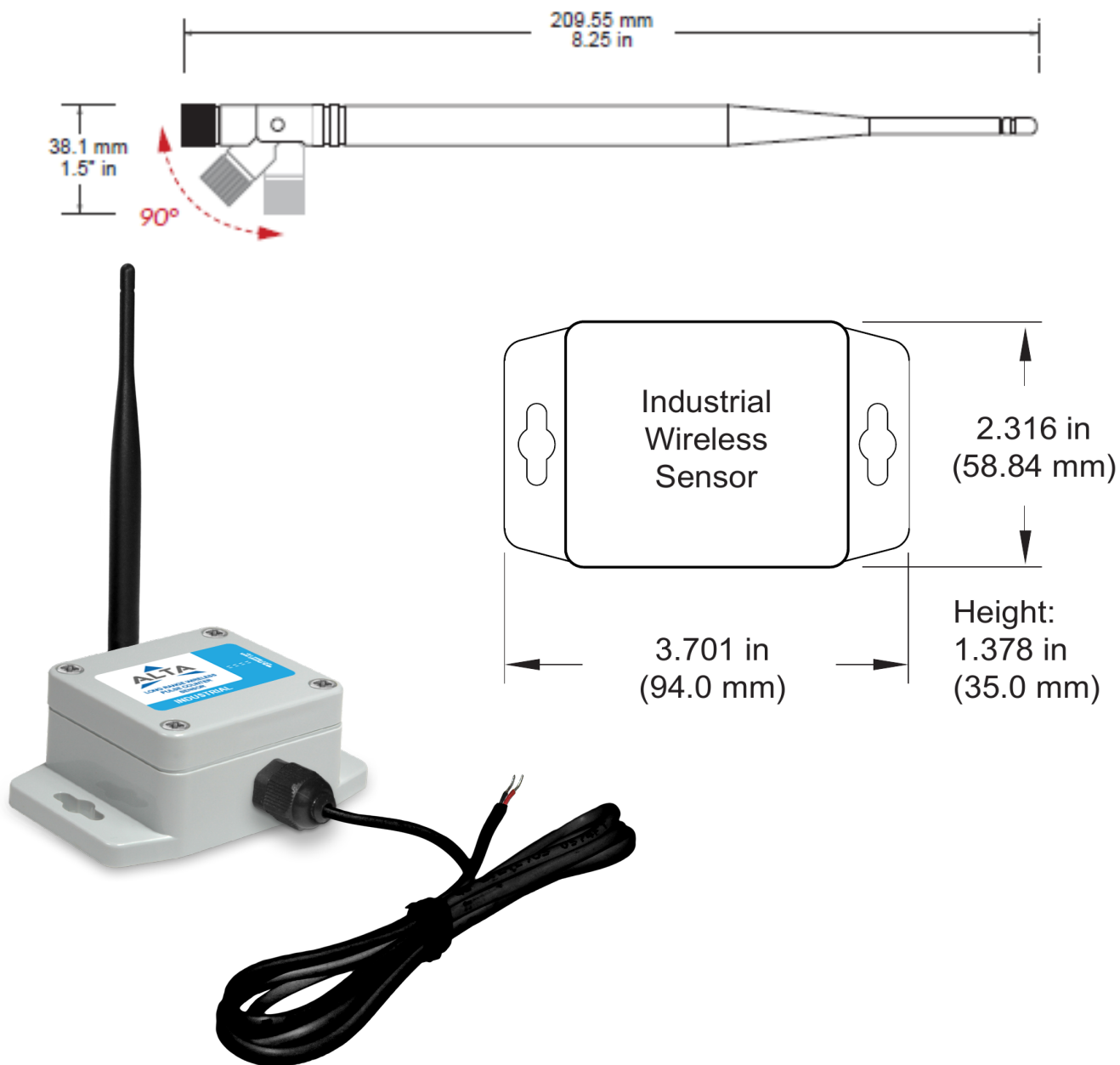
1. Hardware cannot withstand negative voltage. Please take care when inserting and removing battery.



## Technical Specifications | ALTA® Pulse Counter

Battery <sup>1</sup>	2x 1.5V AA Alkaline, 1500 mAh, (standard) 2x 1.5V AA Lithium, 3000 mAh, (optional)
Battery Life	10+ years expected
External line-power option <sup>2</sup>	Input voltage: 5.0-12.0 V Power jack: 2.1 x 5.5 mm barrel, center positive
Operating temperature range (non-leaded measurement range) <sup>3</sup>	-18°C to 55°C (0°F to 130°F) - AA Alkaline Batteries -25°C to 60°C (-13°F to 140°F) - AA Lithium L91 Batteries 0°C to 40°C (32°F to 104°F) - US 5V Power Supply 10°C to 40°C (50°F to 104°F) - International 5V Power Supply
Wireless antenna type	1/4-wave, 20 gauge wire whip, 3.5" (900/868MHz), 7" (433MHz)
Weight	3.7 oz. (105 g)

1. Hardware cannot withstand negative voltage. Please take care when inserting and removing batteries.
2. Batteries will provide backup power in the case the external power is removed.
3. Operating below 0° C (-32°F) degrees will reduce battery life.



Technical Specifications   ALTA® Industrial	
Battery	1x 3.6V AA Lithium Thionyl Chloride, 1500mAh, pre-installed
Battery Life	10+ years expected
Operating temperature range (non-leaded measurement range) <sup>1</sup>	-40°C to 85°C (-40°F to 185°F)
Wireless antenna type	1/2-wave waterproof dipole with RP-SMA connector and swivel neck; dBi of 3.0 (900/868MHz) or 2.5 (433 MHz); length of 8.27" (210mm) (900/868MHz) or 7.68" (195mm) (433 MHz); diameter at thickest point of 0.55" (14mm)
Weight	4.7 oz. (133 g)
Enclosure rating	IP-65 (dust-proof and waterproof but not submersible) NEMA 1, 2, 4, 4x, 12, and 13 rated, sealed, and weatherproof UL Listed to UL508-4x specifications (File E194432)

1. Operating below 0°C (-32°F) degrees will reduce battery life.

## 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 burnout.

- Corrosive gas or deoxidizing gas: chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxide gas, etc.
- Volatile or flammable gas
- Dusty conditions
- Low-pressure or high-pressure environments
- 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 temperatures 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 and the damaging effects of 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 Corporation**

3400 South West Temple • Salt Lake City, UT 84115 • 801-561-5555  
[www.monnit.com](http://www.monnit.com)