



## Remote Monitoring for Business



# Wireless Differential Pressure Sensors

### General Description

The ALTA Wireless Differential Pressure Sensor measures the pressure difference between two input ports and transmits the measurement to iMonnit.

- Measurement range: -500 Pa to 500 Pa
- Calibrated and temperature compensated

### Principle of Operation

The Differential Pressure Sensor measures the pressure difference between two ports. When viewing the sensor from the top, the right inlet port is the positive or high-side pressure input. When the pressure on this port is greater than the left port, the sensor produces a positive pressure reading. When the pressure is greater on the left port, the sensor produces a negative pressure reading.

### Example Applications

- Building/Room Pressure
- Air Flow
- Variable Air Volume Filter Status
- Duct Pressure
- Clean Rooms
- Hospitals
- Fume Hoods
- Computer Rooms
- Additional applications

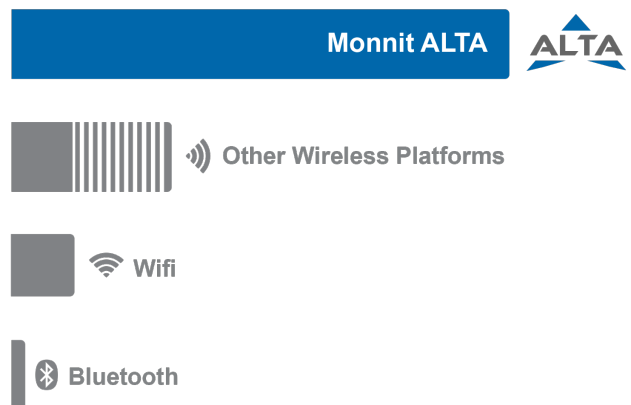
### Features of Monnit ALTA Sensors

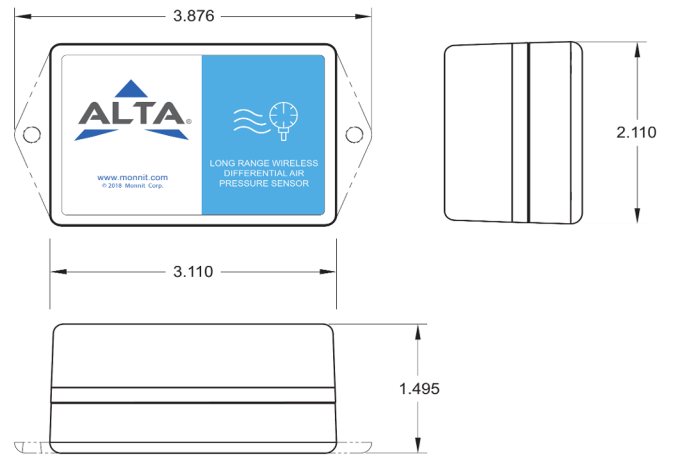
- Wireless range of 1,200+ feet through 12+ walls<sup>1</sup>
- Frequency-Hopping Spread Spectrum (FHSS)
- Best-in-class interference immunity
- Best-in-class power management for longer battery life<sup>2</sup>
- Encrypt-RF<sup>®</sup> Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Data logs 2000 to 4000 readings if the gateway connection is lost (non-volatile flash, persists through the power cycle):
  - 10-minute heartbeats = ~ 22 days
  - 2-hour heartbeats = ~ 266 days
- Over-the-air updates (future-proof)
- Free iMonnit Basic Online Wireless Sensor Monitoring and Notification System to configure sensors, view data, and set alerts to be sent via SMS text and email

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



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

### Wireless Range Comparison



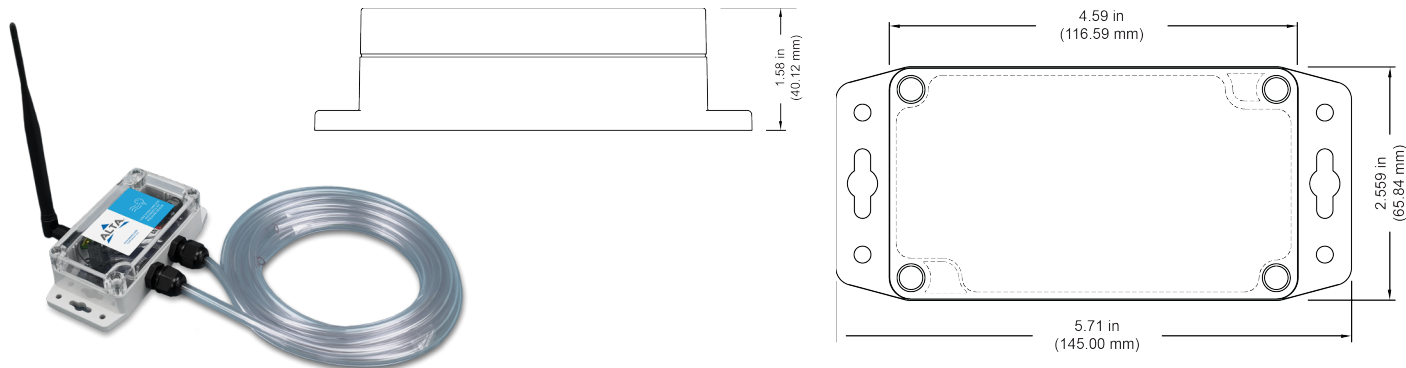


## ALTA Differential Pressure Sensor | Technical Specifications



Supply voltage	2.7–3.8 VDC (3.0–3.8 VDC using power supply) <sup>1</sup>
Current consumption	0.2 $\mu$ A (sleep mode), 0.7 $\mu$ A (RTC sleep), 570 $\mu$ A (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating temperature range (commercial version) <sup>2</sup>	-18°C to 55°C (0°F to 130°F) with Alkaline Batteries -40°C to 85°C (-40°F to 185°F) with Lithium Battery
Power	Line Power with Battery Backup and Switch
Lead Tubing	3 ft. (91.5 cm.) 3/16" ID x 5/16" OD x 1/16" Wall Non-DEHP & phthalate-free PVC material
Pressure range	-500 Pa to 500 Pa
Allowable overpressure	100 kPa
Rated burst pressure	500 kPa
Max humidity for long-term exposure	40°C dew point
Accuracy	3% of reading +/- 0.1 Pa
Span repeatability	0.5% of reading
Span shift due to temperature variation	< 0.5% of reading per 10°C
Offset stability	< 0.05 Pa/year
Calibrated for	Air, N <sub>2</sub>
Media compatibility	Air, N <sub>2</sub> , O <sub>2</sub> , non-condensing
Temperature measurement range	-40°C to 85°C (-40°F to +185°F)
Calibrated temperature measurement range	-20°C to 85°C (-4°F to +185°F)
Temperature resolution	0.1°C
Temperature accuracy	+/- 2°C (-10°C to +60°C), +/- 3°C (-40°C to +85°C)
Temperature repeatability	+/- 0.1°C
Integrated memory	Up to 4000 sensor messages
Wireless range	1,200+ ft non-line-of-sight
Wireless operation	900 MHz—Frequency-Hopping Spread Spectrum 868 MHz and 433 MHz—Frequency-Agile Wireless
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	3.7 ounces
Certifications	  Industry Canada 900 MHz product; FCC ID: ZTL-G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz product tested and found to comply with: EN 300 220-2 V3.1.1 (2017-02), EN 300 220-2 V3.1.1 (2017-02), and EN 60950

<sup>1</sup> Hardware cannot withstand negative voltage. Please take care when connecting a power device.

<sup>2</sup> At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.



## ALTA Industrial Wireless Differential Pressure Sensor | Technical Specifications

Supply voltage		2.7–3.8 VDC (3.0–3.8 VDC using power supply) <sup>1</sup>
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) <sup>2</sup>
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)
	Solar efficiency	Optimized for high and low-light operation
Pressure range		-500 Pa to 500 Pa
Lead Tubing		3 ft. (91.5 cm.) 3/16" ID x 5/16" OD x 1/16" Wall Non-DEHP & phtalate-free PVC material
Allowable overpressure		100 kPa
Rated burst pressure		500 kPa
Max humidity for long-term exposure		40°C dew point
Accuracy		3% of reading +/- 0.1 Pa
Span repeatability		0.5% of reading
Span shift due to temperature variation		< 0.5% of reading per 10°C
Offset stability		< 0.05 Pa/year
Calibrated for		Air, N2
Media compatibility		Air, N2, O2, non-condensing
Temperature measurement range		-40°C to 85°C (-40°F to +185°F)
Calibrated temperature measurement range		0.1°C
Temperature resolution		0.1°C
Temperature accuracy		+/- 2°C (-10°C to +60°C), +/- 3°C (-40°C to +85°C)
Temperature repeatability		+/- 0.1°C
Integrated memory		Up to 4000 sensor messages
Wireless range		1,200+ ft non-line-of-sight
Security		Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight		4.7 ounces
Enclosure rating		NEMA 1, 2, 4, 4x, 12, and 13 rated, sealed and weatherproof
UL rating		UL Listed to UL508-4x specifications (File E194432)
Certifications	  Industry Canada	900 MHz product; FCC ID: ZTL-G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz product tested and found to comply with: EN 300 220-2 V3.1.1 (2017-02), EN 300 220-2 V3.1.1 (2017-02), and EN 60950

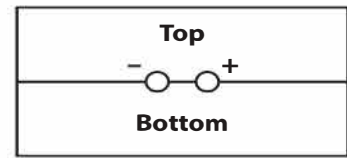
<sup>1</sup> Hardware cannot withstand negative voltage. Please take care when connecting a power device.

<sup>2</sup> At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

## Note

Do not connect any tubing to the pressure ports without the sensor lid securely installed. The lid helps keep sensor in place and stabilizes and supports the pressure ports.

Pressurizing the positive side will produce a positive reading. Pressurizing the negative side will produce a negative reading.



## 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 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.

- 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