Remote Monitoring for Business

Wireless Temperature Sensors

General Description

The ALTA Wireless Temperature Sensor uses a type NTC thermistor to measure temperature.

- Accurate to ± 1° C (± 1.8° F)
- Increased accuracy by user calibration to ± 0.25° C (± 0.45° F)

Principle of Operation

The ALTA Wireless Temperature Sensor outputs the ambient temperature in degrees Fahrenheit. It is programmed to sleep for a user-given time interval (heartbeat) and then wakeup, send power to the NTC Thermistor and wait for it to stabilize, and convert the analog data, mathematically compute the temperature and transmit the data to the gateway. To stay within the abilities of the processor, the temperature is computed off a data table provided by the manufacturer. To reduce error, a variable resistor configuration is implemented over specified temperature ranges.

Industry-leading 25 month NIST certification available on Monnit temperature sensors.

Example Applications

- Ambient temperature monitoring
- Environmental monitoring
- Smart machines & smart structures
- HVAC operation & testing
- Data center monitoring
- Additional applications

### Features of Monnit ALTA Sensors

- Wireless range of 1,200+ feet through 12+ walls *
- Frequency-Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Improved power management for longer battery life **
- Encrypt-RF® Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Onboard data memory stores up to 512 readings per sensor:
    - 10-minute heartbeats = 3.5 days
    - 2-hour heartbeats = 42 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 via SMS text and email

*Actual range may vary depending on environment.

**Battery life is determined by sensor reporting frequency and other variables. Other power options are also available.

Wireless Range Comparison

1.125 in
(28.575 mm)

2.0 in
(50.8 mm)

0.875 in
(22.225 mm)
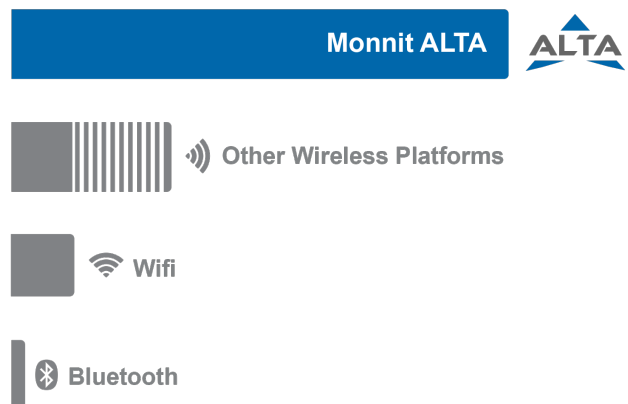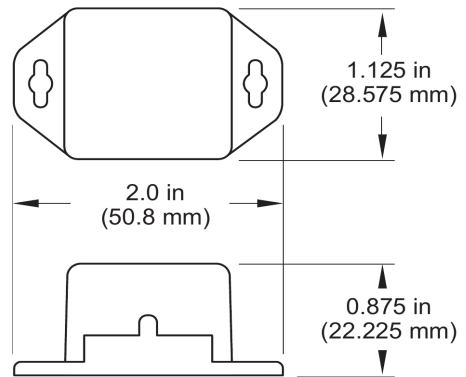
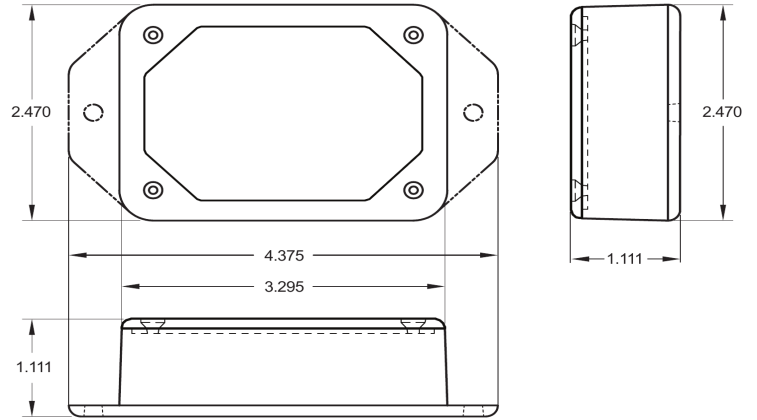| ALTA Commercial Coin Cell Wireless Temperature Sensor | Technical Specifications	
Supply voltage	2.0–3.8 VDC *
Current consumption	0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating temperature range (board circuitry 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)
External Probe and Lead Operating Range	-40°C to +125°C (-40°F to +257°F) Waterproof
Accuracy @ 25°C	+/- 1% (1° C or 1.8° F)
User-calibrated accuracy	+/- 0.25° C (± 0.45° F)
Time constant @ 25°C	30 sec
Datalogging	Datalogs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through the power cycle): - 10-minute heartbeats = ~ 22 days - 2-hour heartbeats = ~ 266 days
Wireless range	1,200+ ft non-line-of-sight
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	0.4 oz. (11.34 g) - No lead | 1.34 oz. (37.99 g) - with 3 ft. (0.91 m) lead
Lead	Probe: 316 stainless steel. Dimensions: 4.8 mm x 25 mm Waterproof Length Options: 3 ft. (0.91 m) 10 ft. (3.04 m) 25 ft. (7.62 m) 50 ft. (15.24 m) 100 ft. (30.48 m)
Certifications	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

* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

PinchPower™ Enclosures

Pinch
(press in on the sides)

Pull
(sensor away from base)

Press
(sensor back into base)
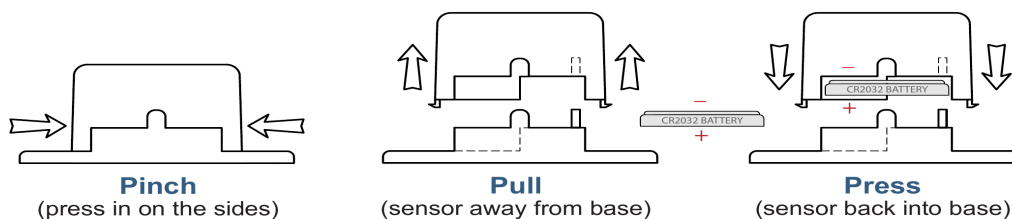
ALTA Commercial AA Wireless Temperature Sensor | Technical Specifications

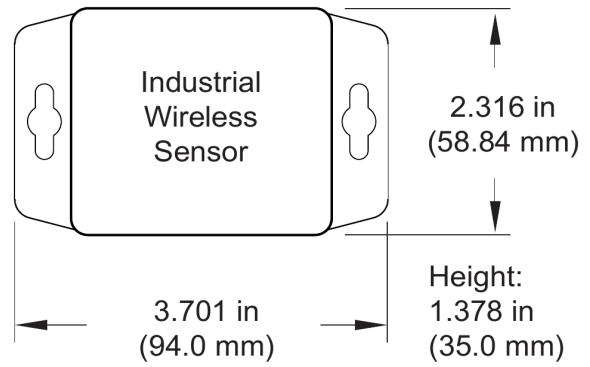|	
Supply voltage	2.0–3.8 VDC (3.0–3.8 VDC using power supply) *
Current consumption	0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating temperature range (board circuitry and batteries)	-18°C to 55°C (0°F to 130°F) 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)
External Probe and Lead Operating Range	-40°C to +125°C (-40°F to +257°F) Waterproof
Accuracy @ 25°C	+/- 1% (1° C or 1.8° F)
User-calibrated accuracy	+/- 0.25° C (± 0.45° F)
Time constant @ 25°C	15 sec max
Datalogging	Datalogs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through the power cycle): - 10-minute heartbeats = ~ 22 days - 2-hour heartbeats = ~ 266 days
Wireless range	1,200+ ft non-line-of-sight
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	3 oz. (85.05 g) - No lead	3.7 oz. (105 g) - with 3 ft. (0.91 m) lead
Lead	Probe: 316 stainless steel. Dimensions: 4.8 mm x 25 mm Waterproof Length Options: 3 ft. (0.91 m) 10 ft. (3.04 m) 25 ft. (7.62 m) 50 ft. (15.24 m) 100 ft. (30.48 m)
Certifications	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

*Hardware cannot withstand negative voltage. Please take care when connecting a power device.

Power Options

The standard version of this sensor is powered by two replaceable 1.5 V AA sized batteries (included with purchase).

This sensor is also available with a line power option. The line powered version of this sensor has a barrel power connector allowing it to be powered by a standard 3.0–3.6 V power supply. The line powered version also uses two standard 1.5 V AA batteries as backup for uninterrupted operation in the event of line power outage.

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.

Industrial Wireless Sensor

2.316 in (58.84 mm)

3.701 in (94.0 mm)

Height: 1.378 in (35.0 mm)

ALTA Industrial Wireless Temperature 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)
Included battery — Capacity	1500 mAh
Optional solar feature — Solar panel	5VDC/30mA (53mm x 30mm)
Optional solar feature — Charging temperature range	0° to 45°C (32° to 113°F)
Optional solar feature — Max temperature range	-20° to 60°C (-4° to 140°F)
Optional solar feature — Included rechargeable battery	600 mAh/>2000 charge cycles (80% of initial capacity)
Optional solar feature — Solar efficiency	Optimized for high and low-light operation **
Optional solar feature — Charging efficiency	40% ***
Optional solar feature — Luminous sustainability	Minimum of 250 LUX ***
External Probe and Lead Operating Range	-40°C to +125°C (-40°F to +257°F) (Limited to main-unit circuitry, -40°C to +85°C)
Accuracy @ 25°C	+/- 1% (1° C or 1.8° F)
User-calibrated accuracy	+/- 0.25° C (± 0.45° F)
Time constant @ 25°C	30 sec
Datalogging	Datalogs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through the power cycle): - 10-minute heartbeats = ~ 22 days - 2-hour heartbeats = ~ 266 days
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 weather proof
UL rating	UL Listed to UL508-4x specifications (File E194432)
Lead	Probe: 316 stainless steel. Dimensions: 4.8 mm x 25 mm Waterproof Length Options: 3 ft. (0.91 m) 10 ft. (3.04 m) 25 ft. (7.62 m) 50 ft. (15.24 m) 100 ft. (30.48 m)
Certifications	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

FC   Industry Canada

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**Light present 25% of day yields 125% of operating power to support 10-minute heartbeats.

***Solar feature's energy harvesting circuitry works indoors with low light.

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 oxides 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 (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

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Change Log

Date	Change	Reason	Modified By
2/26/21	Change Log Created	Manager Request	Dillon F