MONNIT®

The Leader in Low-Cost, Remote Monitoring Solutions

Wireless Temperature Sensor

General Description

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

Features

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

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 Temperature Sensor measures the ambient thermal conditions of your environment. These sensors accurately monitor temperature changes in your physical location. Settings including notifications, alerts, reports, and maps are customizable in the online interface of iMonnit. The temperature sensor is built to be out of the box and running in minutes.

Industry leading 25 month NIST certified product included on leaded temperature sensors.

⚠ The Temperature Sensor is not meant for wet, damp, high humidity environments. This sensor should only be operated in dry, low humidity environments. Should you need a temperature sensor that operates at extreme temperatures and can withstand getting wet or condensed on, please consider our Thermocouple Sensors.

Example Applications

- Ambient Temperature Monitoring
- Environmental Monitoring
- Smart Machines & Smart Structures
- HVAC Operation & Testing
- Data Center Monitoring

And many more...

Monnit Sensor Core Specifications

- Wireless Range: 250 - 300 ft. (non-line-of-sight / indoors through walls, ceilings & floors) *
- RF Communication: 900, 920, 868 and 433 MHz
- Power: Replaceable batteries (optimized for long battery life, line-power and solar (Industrial only) options are available)
- Battery Life (at 1 hour heartbeat setting): **
  - Coin Cell > 2-3 years.
  - AA battery > 4-8 years
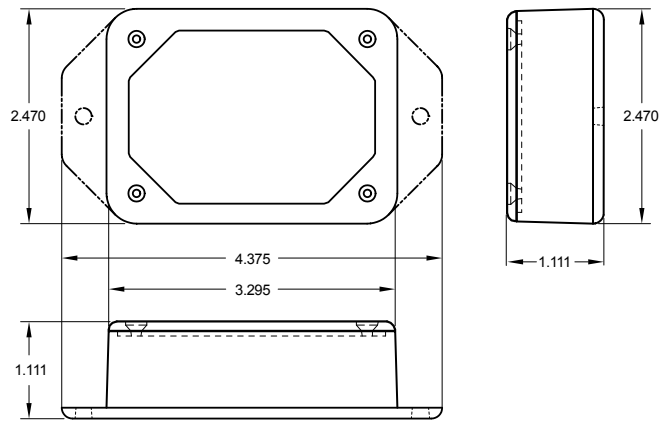 - Industrial > 4-8 years
  - Wifi > Up to 5 years

 * Actual range may vary depending on environment. (Wi-Fi sensor typical range up to 100 ft.)
 ** Battery life is determined by sensor reporting frequency and other variables.

Sensor Types & Options

Wireless Temperature Sensor (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 **
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)
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
Weight	3.6 oz. (3.7 oz w/ 3' probe)
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).

*   Circuits cannot withstand negative voltage. Please take care when installing batteries.
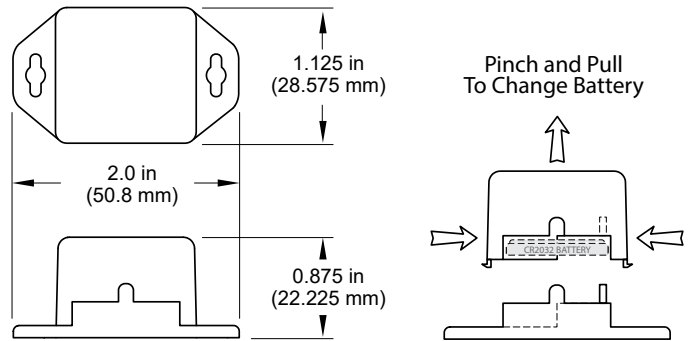**   At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

Power Options

Two replaceable 1.5V AA sized batteries are included with the stanadard 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.
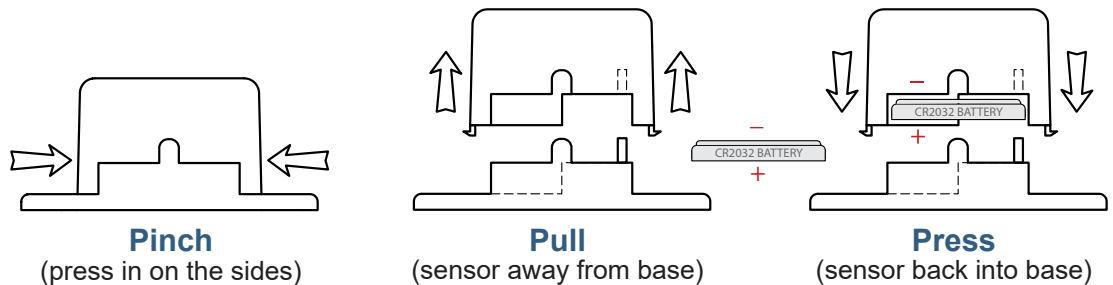
Wireless Temperature Sensor (Coin Cell)

1.125 in
(28.575 mm)

2.0 in
(50.8 mm)

0.875 in
(22.225 mm)

Pinch and Pull
To Change Battery

CR2032 BATTERY

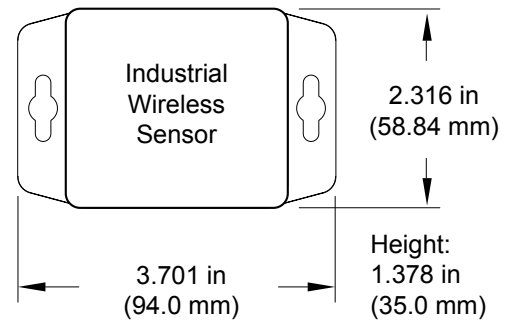| Technical Specifications	
Supply Voltage	2.0 - 3.6 VDC *
Current Consumption	0.7 µA (sleep mode) 2 mA (radio idle/off mode) 2 mA (measurement mode) 25 mA (radio RX mode) 35 mA (radio TX mode)
Operating Temperature Range (Board Circuitry and Coin Cell)	-7°C to +60°C (20°F to +140°F)**
Optimal Battery 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)
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
Weight	0.7 oz.
Wireless Range	250 - 300 ft. (Through walls, ceilings and floors) Range may vary according to environmental variables.
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).

*   Circuits cannot withstand negative voltage. Please take care when installing batteries.
**   At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

PinchPower™ Enclosure

CR2032 BATTERY

CR2032 BATTERY

Pinch
(press in on the sides)

Pull
(sensor away from base)

Press
(sensor back into base)

Wireless Temperature Sensor (Industrial)

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)
	Charging efficiency	5% ***
	Luminous sustainability	Minimum of 10,000 LUX ***
External Probe and Lead Operating Range		-40°C to +125°C (-40°F to +257°F)
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
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)
Weight		4.7 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).

*   Circuits cannot withstand negative voltage. Please take care when installing batteries.

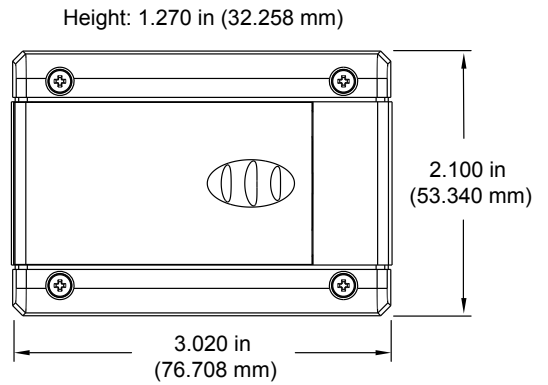**   At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

***   Solar Feature is only chargeable outside on full sunlight.

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.

MOWI Wireless Temperature Sensor (Wi-Fi)

Height: 1.270 in (32.258 mm)

2.100 in (53.340 mm)

3.020 in (76.708 mm)

Technical Specifications	
Networking Standards	IEEE 802.11 b/g
Operating Frequency	802.11 b/g (2.412 - 2.484 GHz)
Wi-Fi Security Standards	Open, WEP, WPA, WPA2
Wi-Fi Security Programming	Via PC software using USB cable. (Can be changed through iMonnit online software.)
Network Settings	Auto DHCP/DNS or Static
Data Logging	Standard - On Wi-Fi disruption, unit will log the first 50 readings and transmit when Wi-Fi connection is re-established. Premiere - Unit can record up to 50,000 readings and transmit when Wi-Fi is available.
Power consumption	4uA sleep, 35mA active RX, 180mA TX (at +12dBm)
Battery Life	Up to 5 years depending on sensor type, Wi-Fi security, distance from Wi-Fi router, reporting frequency and other variables. (Testing surpassed 90,000 transmissions until battery depletion.)
Wi-Fi Data Rate	Auto configures to best rate for maximum range.
Wireless Range	Up to 100 ft. device range (typical to standard Wi-Fi devices).
Electronics Operating Temperature	Using Alkaline Batteries: -18°C to +55°C (0°F to +130°F) Using Lithium Batteries: -40°C to +85°C (-40°F to +185°F)
LED Light	Status / activity
Weight	3.8 oz.
Certifications	FC CE ▮Industry Canada FCC ID: T9J-RN171. IC: RSS-210 low-power communication device. CE ID: 0681.

*   Circuits cannot withstand negative voltage. Please take care when installing batteries.
**   At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

Thermistor Specifications	
Thermistor Operating Range	-40°C to 125°C
Accuracy @ 25°C	+/- 1%
Resistance @ 25°C	10K ± 1%
B-Constant (25°C – 50°C)	3380 ± 1%
Permissive Operating Current @ 25°C	0.38 mA
Rated Electric Power @ 25°C	15 mW
Dissipation Constant @ 25°C	1.5mW/°C
Time Constant @ 25°C	7 sec

High Gain Antenna Option

Monnit Wi-Fi sensors are also available with a detachable high gain antenna to provide a 20-30% increase in range over the standard Wi-Fi sensor. Option uses a different hardware configuration and must be choosen at time of purchase.

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

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.