

ALTA Wireless IoT Sensors Kit Pharmaceutical / Lab



Kit Data Sheet

“Things” are talking.

ALTA Remote Monitoring Systems enable “things” to speak. Wireless sensors, gateways and software give a voice to the IoT (Internet of Things) and allow businesses to leverage data, protect resources & save money.

For example, “things” can speak up when conditions are met that indicate an asset is at risk. The Monnit ecosystem (50+ sensor types) detects changes in variables (such as a temperature, water presence, door position, electrical current and voltages) to employ an **autonomous wireless sensing** solution that protects your bottom line.

Kit Components

Sensors



Temperature (QTY 2)
AA Battery, 3' Leaded Probe, +/- 1% accuracy @25° C

Gateway (choose from the following types)



3G Cellular
AT&T (USA), Rogers (Canada), w/ Battery Backup



Ethernet (pictured in the kit on top of page)
100% Comprehensive - no PC or subscription req'd

Software



iMonnit Premiere Software
(45 days free trial,
basic version always free)

Accessories

Quick Start Guide, Mounting Hardware,
Power supplies, Antennas

FAST System Setup

15 min.
< or less

Build an IoT sensor network in 15 minutes or less!
Monnit IoT & RF experts are standing by to help you quickly establish your monitoring system.

Email: info@monnit.com, Phone: 801-561-5555,
Web: www.monnit.com

The only 1000' / 10-yr. IoT Sensors Platform in the World

1000'+ Wireless Range
/ 10-yr. Battery Life

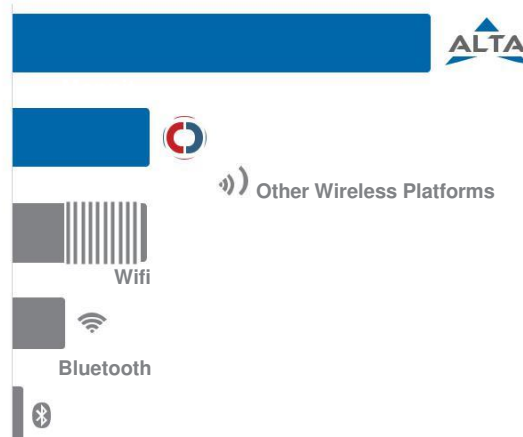


Enterprise-grade Performance

- ◆ 1,000+ ft. Wireless Range (through 12+ walls or ceilings, non line-of-sight)*
- ◆ Frequency Hopping Spread Spectrum (FHSS) / Interference Immunity
- ◆ Improved power management for longer battery life.** (10+ years on AA batteries or Industrial)
- ◆ Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages).
- ◆ Onboard data memory - up to 512 readings / sensor
 - 10 minute heartbeats = 3.5 days
 - 2 hour heartbeats = 42 days
- ◆ Over-the-air updates (future proof)
- ◆ Free iMonnit basic online monitoring and notification software (configure sensors, view data and set alerts via SMS text, email and/or voice calls)

* Wireless range may vary according to environment.

** Battery life determined by sensor reporting & other variables



ALTA Wireless TEMPERATURE Sensors





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

- ◆ Accurate to $\pm 1^\circ\text{C}$ ($\pm 1.8^\circ\text{F}$)
- ◆ Increased accuracy by user calibration to $\pm 0.25^\circ\text{C}$ ($\pm 0.45^\circ\text{F}$)

[Data Sheet \(short version\)](#)

[click here for long version](#)

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) |
| Temperature Sensor | Thermistor Temperature Range (Thermistor Only) | -40° to +125°C (-40° to +257°F) Limited to Main Unit Circuitry, -7° to +60°C unless thermistor leads being used |
| | Accuracy @ 25°C | +/- 1% (1° C or 1.8° F) |
| | User Calibrated Accuracy | +/- 0.25° C ($\pm 0.45^\circ\text{F}$) |
| Wireless Range (900 MHz) | 1,000'+ (through 12+ walls or ceilings / non line-of-sight) | |
| Security | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) | |
| Integrated Memory | Up to 512 sensor messages | |
| Certifications |   | 900 MHz product: FCC ID: ZTL- G2SC1 IC: 9794A-G2SC1 UL Listed (Industrial): UL508-4x specifications (File E194432) |

| Power Options / Form Factors | AA Batteries | Coin Cell | Industrial 3.6V Lithium (1800 mAh capacity) |
|--|--|---|--|
| Time Constant @ 25°C | 15 sec max | 30 seconds | |
| Operating Temperature Range ** (board circuitry + batteries) | 0° to 130°F (-18°-55°C) alkaline, -40° to 185°F (-40° - 85°C) lithium | 20° to +140°F, (-7° - 60°C) ** | -40° to +185°F (-40° - 85°C)** |
| Optimal Operating Temperature Range (batteries) ** | +10° to +50°C (+50° to +122°F) | | -40° to +85°C (-40° to +185°F) |
| Weight | 3.7 oz. | 0.7 oz. | 4.7 oz. |
| Enclosure | High impact ABS Plastic | High impact ABS Plastic (w/ PinchPower enclosure) | IP65, NEMA 4X, CE, sealed, weather & shock proof |
| Dimensions (click #s to view dimensional drawings) | 4.375" x 2.470" x 1.120" | 2.000" x 1.125" x 0.875" | 3.701" x 2.316" x 1.378" |

* 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.

[Solar-Powered Option \(available with "Industrial" version only\)](#)

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)

Rechargeable Battery (Included): 600 mAh / >2000 Charge Cycles (80% of initial capacity)

Principle of Operation



Sensor outputs ambient temperatures in degrees Fahrenheit. It is programmed to sleep for a user-given time interval (heartbeat); then wakeup, send power to the NTC Thermistor, wait for it to stabilize, 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.

Get IoT Started

801-561-5555

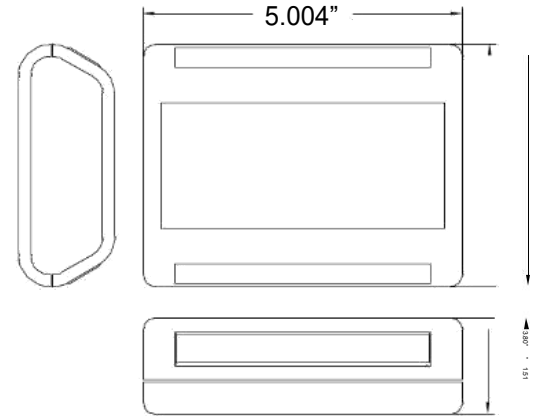
info@monnit.com

www.monnit.com

ALTA 3G Cellular Gateway



True plug & play, no hassles for Internet configuration setup
 No PC required for operation
 Low-cost cellular service packages
 Local status LEDs with transmission and online status indicators



Technical Specifications

Cellular

| | |
|------------------------|--|
| Carriers Support | AT&T (USA), Rogers (Canada) |
| Cellular Technology | UMTS Frequency Range: 850 / 1700 / 1900 MHz |
| Antenna | Connector: SMA Gain (dBi): 1.5 |
| SIM Card Compatibility | Mini-SIM (2FF) 25 mm x 15 mm x 0.76 mm |

Power

| | |
|-------------------------|--|
| Input Power | 5.5 VDC @ 2.5 A |
| Optional Battery Backup | Battery Type: Rechargeable Lithium Polymer |
| | Battery Duration: Up to 24 hours |
| | Battery Cycle Life: 500 times |

Mechanical

| | |
|----------------|--|
| LEDs | Cellular Status LED, Online Status LED, Sensor Network Status LED |
| Device Memory: | 50,000 sensor messages (Sensor messages will be stored in the event of Internet outage and transferred when connection is restored) |
| Enclosure | ABS |
| Dimensions | 5.004 x 3.8 x 1.51 in. |
| Weight | 7 ounces |

Environmental

| | |
|-----------------------|------------------------------|
| Operating Temperature | -10 to +70 °C (14 to 158 °F) |
| Storage Temperature | -20 to +85 °C (-4 to 185 °F) |

Wireless

| | |
|----------------|---|
| Wireless Range | 1,000+ ft. (through 12+ walls or ceilings / non-line-of-sight) |
| Security | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) |
| Certifications | FCC: ZTL- G2SC1, FCC: RI7HE910 IC: 9794A-G2SC1 and IC: 5131A-HE910 |



Principle of Operation

The ALTA Cellular Gateways are based on the latest Dual-band CDMA and 3G wireless protocols and come integrated with Monnit's wireless access point network (WAN) for use with all Monnit wireless sensors.

The ALTA Cellular Gateway is an advanced all wireless M2M gateway that enables fast time-to-market solutions for a wide range of M2M and partner applications as well.

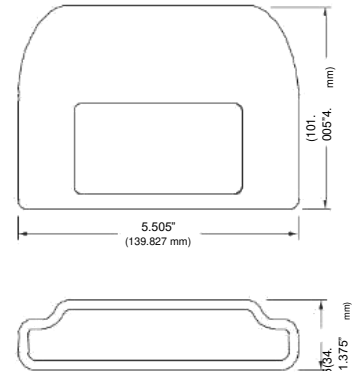
Options & Add-ons

| Carriers | Protocol |
|--------------------|---------------------|
| ◆◆ CDMA | ◆◆ Cellular |
| ◇◇ Sprint | ◇◇ CDMA |
| ◇◇ US Cellular | ◇◇ 3G |
| ◆◆ 3G | ◆◆ Ethernet |
| ◇◇ AT&T (USA) | ◆◆ USB |
| ◇◇ Rogers (Canada) | Operating Frequency |
| | ◆◆ 900 MHz |

ALTA Ethernet Gateway



The ALTA Ethernet gateway allows your ALTA Wireless Sensors to communicate with the iMonnit™ Online Wireless Sensor Monitoring and Notification System without requiring a PC. Simply plug this device into any open network port with internet connection and it will automatically connect with online servers. With the graphical iMonnit software, you can easily configure your network, view collected sensor data and set alarms through SMS or e-mail.



Technical Specifications

Ethernet

| | |
|--------------------------|---|
| Ethernet Types | Standard, POE |
| Antenna | Connector: SMA Gain: 5.0 dBi (900 MHz Product) 3.0 dBi (868 and 433 MHz Product) |
| Hardware | 10/100 Ethernet Controller |
| IEEE Standard Compliance | 802.3-2002 |
| Operation: | Full- and Half-Duplex |
| Cross-Over Correction | Automatic MDI/MDI-X |
| Addressing | Pre-programmed MAC Address |
| Host Address | t1.sensorsgateway.com |
| Default Port | 3000 |
| Protocols Supported | UDP, DHCP, TCP, SNMP, MODBUS |
| Cable Connector | Cat 5 |
| Device Memory | 16,000 sensor messages (Sensor messages will be stored in the event of Internet outage and transferred when connection is restored) |

Power

| | |
|--------------|---|
| Power Supply | 5.5 V AC adapter or 5.5 V Power-Over-Ethernet adapter * |
|--------------|---|

Mechanical

| | |
|------------|---|
| LEDs | H/W status, iMonnit connection status, sensor data activity |
| Enclosure | ABS plastic |
| Dimensions | 4.0 in x 5.5 in x 1.375 in (139.85 mm x 101.75 mm x 34.95 mm) |
| Weight | 12.6 ounces |

Environmental

| | |
|-----------------------|---------------------------------|
| Operating Temperature | -10 to +70 °C (14 to 158 °F) ** |
| Storage Temperature | -20 to +85 °C (-4 to 185 °F) |

Wireless

| | |
|----------------|--|
| Wireless Range | 1,000+ ft. (through 12+ walls or ceilings, non line-of-sight)*** |
| Security | Encrypt-RF™ (256-bit key exchange and AES-128 CTR) |
| Certifications | 900 MHz product - FCC ID: ZTL- G2SC1 and IC: 9794A-G2SC1. |



Industry
Canada

* 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.

*** Actual range may vary depending on environment.

Data Capturing Options - Data collected by the Ethernet Gateway from the sensors in the network can be accessed when these interfaces are turned on. Multiple interfaces can be active at the same time. All interfaces require that the Ethernet gateway be set to a Static IP address. (By default, the unit uses DHCP). The following data capturing options are supported:

SNMP Poll and Trap Interface • MODBUS TCP Interface • Real Time TCP Interface

Durability Grades

Commercial Grade

If not specified as “Industrial Grade”, all ALTA sensors are commercial grade and 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 or cause failures.

- ◆◆ Corrosive gas / De-oxidizing gas (chlorine, hydrogen sulfide, ammonia, sulfuric acid, nitric oxides, 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 hazardous conditions exist

Use these product within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality.

Industrial Grade

Type 1, 2, 4, 4X, 12 and 13 NEMA Rated Enclosure

ALTA 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 info@monnit.com or 801-561-5555.

Visit us on the web at www.monnit.com.

Options & Add-ons

Sensor Power Sources

AA Battery

AA battery powered sensors are commercial grade and are ideal for indoor sensor networks. AA sensors are able to achieve up to a 10-year battery life.

Line Power (w/ AA Battery Backup)

AA battery powered sensors can be upgraded to support line-powered operations.

Coin Cell Battery

Coin cell battery powered sensors offer the smallest form factor of all power options. Coin cell sensors are able to achieve up to a 5-year battery life.

Industrial Lithium Battery

Industrial sensors are powered by a replaceable lithium battery. Industrial sensors are ideal for indoor sensor networks. Industrial sensors are able to achieve up to a 10-year battery life.

Solar

Industrial Grade Sensors can be upgraded to support solar powered operations.

RF Operating Frequency

In North America, ALTA wireless products operate using the license-free 900 MHz ISM band. Contact Monnit regarding products requiring 868 MHz, 433 MHz or 920 MHz operating frequencies.



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