Remote Monitoring for Business

ALTA Wireless Sensor Adapter
USER GUIDE

Before You Plug In Your ALTA® Wireless Sensor Adapter
- Unpack the contents of your kit(s) and become familiar with the types of ALTA Sensors that are included. Double check that all packaged components of the Wireless Sensor Adapter and sensors are present.
- Before connecting the ALTA Wireless Sensor Adapter to your computer, you will need to create an iMonnit account, add the Wireless Sensor Adapter to your account. Then install the Wireless Sensor Adapter gateway software.

System Requirements
- Windows 11,10, 8, or 7
- 512 MB memory
- 300 MB free disk space
- An available USB 3.0 or 2.0 port

Table of Contents

I. ABOUT THE SENSOR ADAPTER

The ALTA® Wireless Sensor Adapter (WSA) allows long-range ALTA Wireless Sensors to communicate with local or online wireless sensor monitoring systems by connecting to a Microsoft® Windows® PC via a USB connection.

You get easy plug and play (PnP) support for PC use. If the PC has an active Internet connection and you want to use it with iMonnit Software, install the free Monnit WSA gateway application to pass the sensor data to iMonnit.

With iMonnit, you can easily configure your network, view collected sensor data, and set alarms or alerts, all from any browser. You can completely configure and customize at a sensor, local, or client-wide network level in iMonnit. Custom IoT system designers can use the ALTA WSA to integrate ALTA Wireless Sensors into their other wired and wireless IoT platforms or networks.

Use your wireless sensors locally to collect and store sensor data on your PC with iMonnit Express. You can export sensor data in a CSV format spreadsheet, and iMonnit Express can send SMS text and email alerts if the host computer has an active Internet connection.

Enjoy reliable, wireless monitoring of your facilities or specific industry applications with Monnit Wireless Sensor networks.

ALTA WIRELESS SENSOR ADAPTER FEATURES

- Wireless range of 1,200+ feet through 12+ walls[1]
- 900 MHz Frequency-Hopping Spread Spectrum (FHSS), 868 and 433 MHz Frequency Agile
- Best-in-class frequency interference immunity
- Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Powered by USB
- Use with iMonnit Basic, Premiere, or Express
- Standard FTDI driver so no driver installation is required
- External USB cable allows it to be positioned for improved communication range
- Programmable Heartbeat control
- Supports up to 100 wireless sensors per USB
- Compatible with Windows 11, 10, 8, or 7
  [1]Actual range may vary depending on environment.

EXAMPLE APPLICATIONS

- Facilities / Building Operations
- Pest Control / Extermination
- Restaurants / Food Service
- Server Rooms / Data Closets
- Pharmaceutical / Labs
- Heating and Cooling
- Agriculture Monitoring
- Additional applications

CAUTION SYMBOL EXPLANATION

The following caution symbol may appears on the product. This symbol indicates caution and a potential risk of danger. Please follow all noted instructions when this symbol is used.
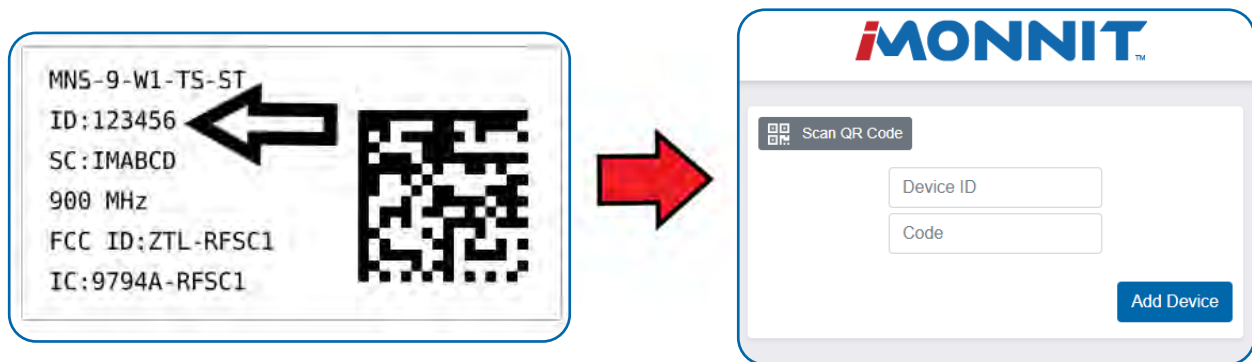
II. ALTA WIRELESS SENSOR ADAPTER REGISTRATION

If this is your first time using iMonnit, you'll need to create a new account. If you have already created an account, start by logging in. For instructions on registering for an iMonnit account, please consult the iMonnit User Guide at https://www.monnit.com/support/documentation/.

REGISTERING THE ALTA WIRELESS SENSOR ADAPTER

You will need to enter the **Device ID** and the **Security Code (SC)** from your ALTA Wireless Sensor Adapter (WSA) in the corresponding text boxes. Use the camera on your smartphone to scan the QR code on the WSA housing. If you don't have a camera on your phone, or you're accessing iMonnit through a desktop computer, you may enter the **Device ID** and **SC** manually.

- The **Device ID** is a unique number located on each device label.
- Next you'll be asked to enter the **SC** on your device. An SC will be all letters, no numbers. It can also be found on the barcode label of your gateway.

When completed, select the "**Submit**" button.

III. INSTALLING THE ALTA WIRELESS SENSOR ADAPTER SOFTWARE

The WSA application uses your computer's Internet connection to pass wireless sensor data to iMonnit.

To install the WSA software:
1. Select **Support** on the main navigation bar or visit www.monnit.com/support/downloads/.
2. Click **USB Gateway Installer** on the **Downloads** page to launch the web installer.
3. If prompted to save the file by selecting an easily accessible location and click **Save**.

When the file has completed downloading:
1. Navigate to the folder where the file was saved.
2. Double click **ALTA_WSA_Setup_vXX.exe**.
3. Select **Run** when prompted, follow the on-screen instructions to complete the installation.

When installation is complete, the program will automatically launch. You can now begin using your wireless sensors online.

> **Note: The ALTA WSA application will run as a service on your computer for the sensor data to transmit to iMonnit. If the WSA service is not running, your sensor data won't record in iMonnit, and notifications based on sensor data can't be sent from iMonnit.**

IV. USING YOUR ALTA WIRELESS SENSOR ADAPTER

1. Check the status of the WSA:

Double click on the **iMonnit Gateway** link on your desktop or open a web browser and navigate to http://localhost:5000. The software runs as a service, so it will auto start with the reboot of your computer.

> **Note: Sensor data will only be transmitted to iMonnit when the ALTA WSA gateway service is running.**
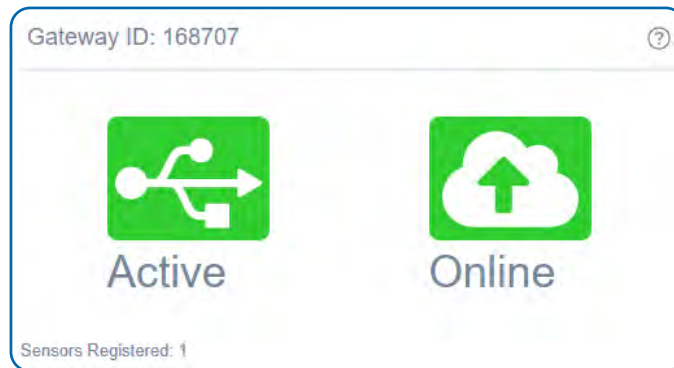
2. Connect Your WSA

Connect the WSA to your computer via the USB cable.
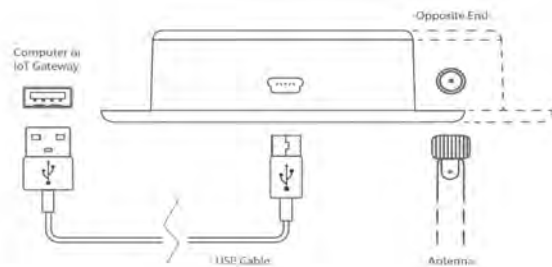
When the gateway status icon turns green, your WSA is running and you're ready to set up your sensors.

Note: If the status doesn't change after a minute or two, try unplugging and reinserting the USB gateway.

3. Troubleshooting

If your browser says it is unable to connect, first check the URL. (http://localhost:5000)

- Verify you are using http, not https.
- Verify it says (localhost) as the domain.
- Verity you have (:5000) after the domain.

If all of those check out, verify that the service is running.

- Open the services app by clicking **Start**, type "Services," and open the app.
- Scroll down to "ALTA WSA" and click on it.
- Click **Start Service**, if it is not running.

V. USER INTERFACE

Status Section

A. The numeric identifier of the wireless sensor network
B. The current state of the wireless sensor network
C. The current state of communication with the cloud
D. The current sensor count registered in the WSA whitelist
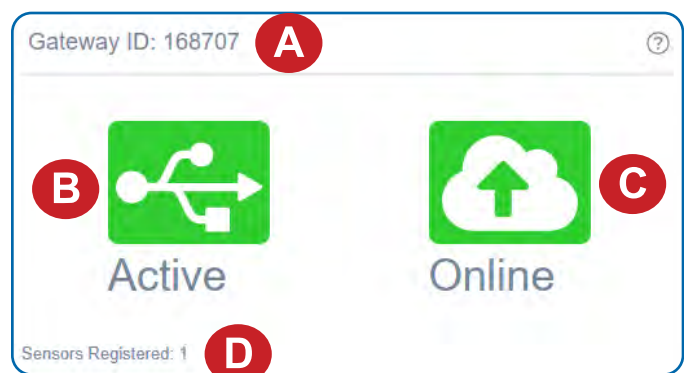
Note: This section refreshes automatically so the data displayed is accurate without having to refresh the page.

Command Section

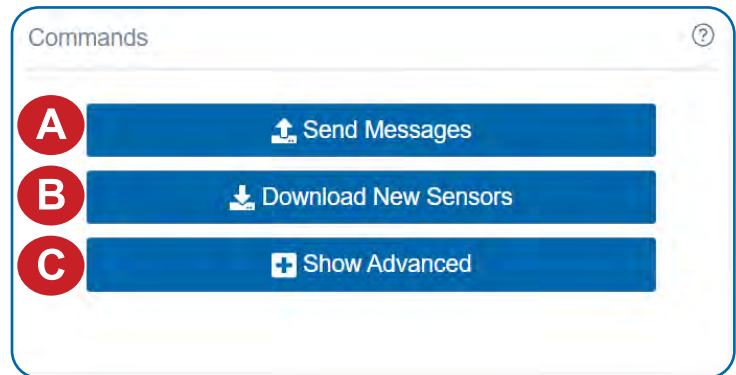**A. Send Messages** causes queued sensor messages to be sent to the cloud server.
B. Download New Sensors downloads all sensors assigned from the cloud and registers to the WSA whitelist.
**C. Show Advanced** enables advanced troubleshooting commands.

Commands

A ⬆ Send Messages
B ⬇ Download New Sensors
C ➕ Show Advanced

Command Section - Advanced

A. Reform Network allows the WSA to reform its network, meaning it removes all sensors from its whitelist, and then downloads a fresh sensor list from the cloud.
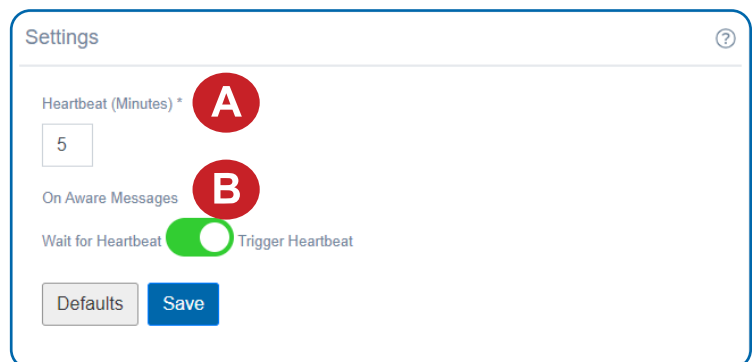**B. Erase Memory** clears all sensor messages and queued sensor configurations from WSA.

Commands

⬆ Send Messages
⬇ Download New Sensors
A ⊹ Reform Network
B ⟳ Erase Memory
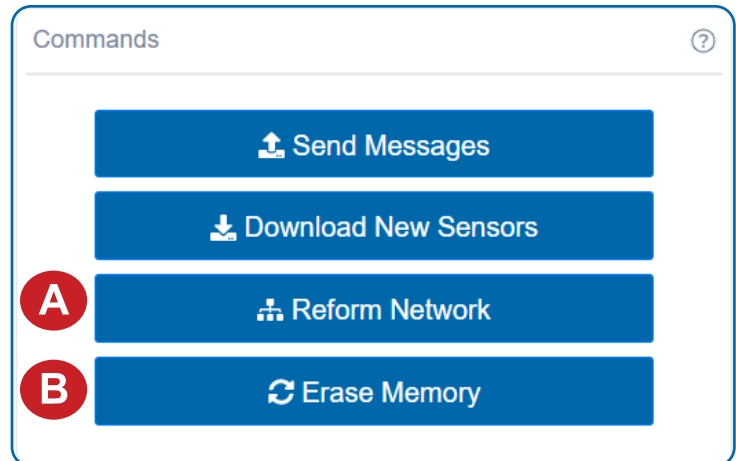
Settings Section

A. Heartbeat is the frequency in minutes that the WSA will communicate queued messages to the cloud server. The WSA stores all messages from a sensor into a RAM queue and then pushes them together on the Heartbeat.

B. On Aware Messages determines if the server communication is triggered by aware messages before the Heartbeat elapses. Example: If an ALTA Temperature Sensor has a threshold of 80°F and that threshold is breached, instead of waiting for the Heartbeat time, the WSA gateway delivers messages immediately.

Settings

Heartbeat (Minutes) * A
5
On Aware Messages B
Wait for Heartbeat ⬤ Trigger Heartbeat
Defaults   Save

History Section
The History section displays recent actions and data coming to and from the WSA.

History

5/17/2022 11:26:44 AM Send Message command received
5/17/2022 11:26:33 AM DeviceID: 646744, Urgent: True, Message: C99F4617C512025658DE0900C89F4617EBEB42020023F2D846
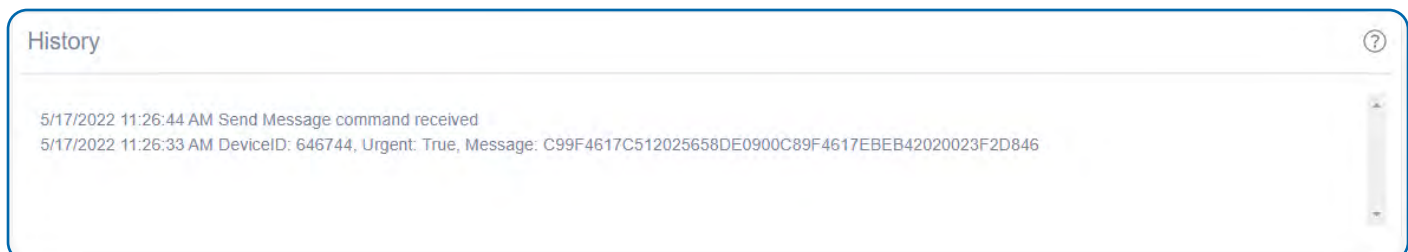
V. SECURITY

The ALTA Wireless Sensor Adapter (WSA) is designed and built to securely manage data. Monnit works to ensure your data security is handled with the utmost care. The same methods utilized by financial institutions to transmit data are also used in Monnit's security infrastructure. Security features from sensors to gateways or WSAs include tamper-proof network interfaces, data encryption, and bank-grade security.

Monnit's proprietary sensor protocol uses low power and specialized radio equipment to transmit application data. Wireless devices listening on open communication protocols cannot eavesdrop on sensors or WSAs. Packet-level encryption and verification is key to ensuring data traffic isn't altered between sensors and WSAs. Paired with a best-in-class range and power consumption protocol, all data is transmitted securely from your devices, ensuring a smooth, worry-free experience.

SENSOR COMMUNICATION SECURITY

Monnit's sensor-to-gateway, secure wireless tunnel, **Encrypt-RF**™, is generated using ECDH-256 (Elliptic Curve Diffie-Hellman) public key exchange to generate a unique symmetric key between each pair of devices. Sensors and WSAs use this link-specific key to process packet-level data with hardware-accelerated 128-bit AES encryption, which minimizes power consumption to provide better battery life. Thanks to this combination, Monnit proudly offers robust bank-grade security at every level.


How Monnit Encrypt-RF™ Works

DATA SECURITY ON THE WSA

ALTA WSAs are designed to prevent prying eyes from accessing the data that is stored on the sensors and WSAs. WSAs do not run on an off-the-shelf, multi-function operating system. Instead, they run on a purpose-specific, real-time, and embedded state machine that cannot be hacked to run malicious processes. There are also no active interface listeners that can be used to gain access to the device over the network. The fortified WSA secures your data from attackers and is safeguarded from becoming a relay for malicious programs. Securing the host computer that the WSA is connected to is the responsibility of the user.

OPTIONAL DATA AUTHENTICATION

SensorPrints is the industry's only end-to-end Internet of Things (IoT) data authentication platform for low-power wireless sensors. SensorPrints authenticates data by issuing a unique fingerprint for each device within the IoT. Data is secured from the point of generation to the point of consumption. Easy to install and use, SensorPrints is is the definitive IoT security solution for any enterprise.

SensorPrints authenticates data at both the point of generation and consumption, creating trust between the sensor and server levels. Implementing 256-bit SHA 3 authentication, SensorPrints creates a "fingerprint" for a Monnit Wireless Sensor that contains an authenticated sensor message. When data is transmitted from the sensor, it is accompanied by a generated authentication token. Upon receipt by the application, the token is evaluated via cryptographic hash function against a unique per sensor secret key. This step provides an unprecedented level of full-coverage security for any Monnit user wishing to secure their IoT devices and data. More information can be found at https://www.monnit.com/products/software/sensorprints-data-authentication/.
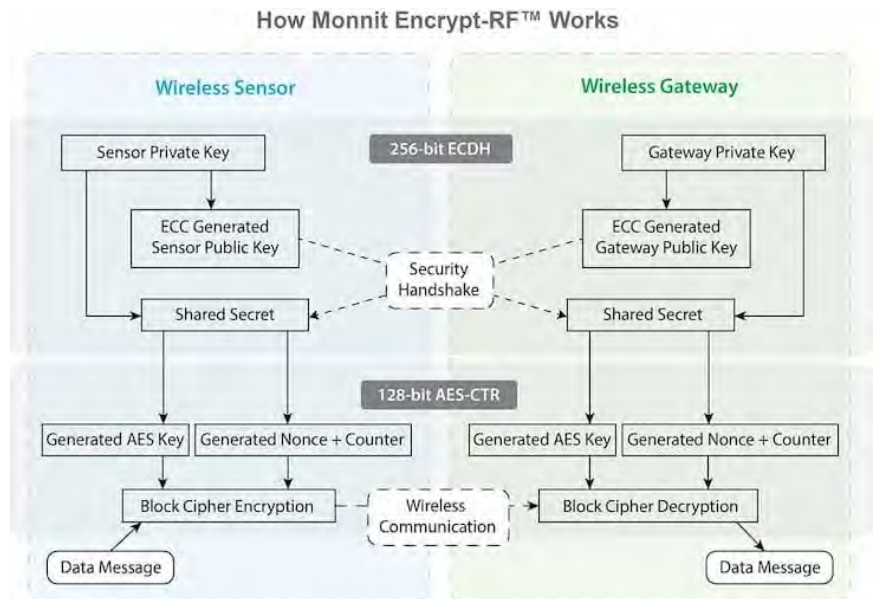
SUPPORT

For technical support and troubleshooting tips please visit our support library at monnit.com/support/. If you are unable to solve your issue using our online support, email Monnit support at support@monnit.com with your contact information and a description of the problem, and a support representative will call you within one business day.

For error reporting, please email a full description of the error to support@monnit.com.

WARRANTY INFORMATION

(a) Monnit warrants that Monnit-branded products (Products) will be free from defects in materials and workmanship for a period of one (1) year from the date of delivery with respect to hardware and will materially conform to their published specifications for a period of one (1) year with respect to software. Monnit may resell sensors manufactured by other entities and are subject to their individual warranties; Monnit will not enhance or extend those warranties. Monnit does not warrant that the software or any portion thereof is error-free. Monnit will have no warranty obligation with respect to Products subjected to abuse, misuse, negligence, or accident. If any software or firmware incorporated in any Product fails to conform to the warranty set forth in this section, Monnit shall provide a bug fix or software patch correcting such non-conformance within a reasonable period. This correction will be completed after Monnit receives from the Customer (i) notice of such non-conformance, and (ii) sufficient information regarding such non-conformance so as to permit Monnit to create such bug fix or software patch. If any hardware component of any Product fails to conform to the Warranty in this section, Monnit shall, at its option, refund the purchase price less any discounts, or repair or replace nonconforming Products with conforming Products or Products having substantially identical form, fit, and function and deliver the repaired or replacement Product to a carrier for land shipment to customer within a reasonable period. This will take place after Monnit receives from the Customer (i) notice of such non-conformance, and (ii) the non-conforming Product provided; however, if, in its opinion, Monnit cannot repair or replace on commercially reasonable terms, it may choose to refund the purchase price. Repair parts and replacement Products may be reconditioned or new. All replacement Products and parts become the property of Monnit. Repaired or replacement Products shall be subject to the warranty, if any remains, originally applicable to the Product repaired or replaced. The Customer must obtain from Monnit a Return Merchandise Authorization (RMA) number prior to returning any Products to Monnit. Products returned under this Warranty must be unmodified.

The Customer may return all Products for repair or replacement due to defects in original materials and workmanship if Monnit is notified within one year of customer's receipt of the Product. Monnit reserves the right to repair or replace Products at its own and complete discretion. Customer must obtain from Monnit a RMA number prior to returning any Products to Monnit.

Products returned under this Warranty must be unmodified and in original packaging. Monnit reserves the right to refuse warranty repairs or replacements for any Products that are damaged or not in original form. For Products outside the 1-year warranty period, repair services are available at Monnit at standard labor rates for a period of one year from the Customer's original date of receipt.

(b) As a condition to Monnit's obligations under the immediately preceding paragraphs, the Customer shall return Products to be examined and replaced to Monnit's facilities, in shipping cartons which clearly display a valid RMA number provided by Monnit. Customer acknowledges that replacement Products may be repaired, refurbished, or tested and found to be complying. Please visit Monnit.com/policy/returns/ for Monnit's return policy and instructions.

(c) Monnit's sole obligation under the Warranty described or set forth here shall be to repair or replace non-conforming products as set forth in the immediately preceding paragraph, or to refund the documented purchase price for non-conforming Products to the Customer. Monnit's Warranty obligations shall run solely to the Customer, and Monnit shall have no obligation to customers of the Customer or other users of the Products.

<div align="center">Limitation of Warranty and Remedies</div>

THE WARRANTY SET FORTH HEREIN IS THE ONLY WARRANTY APPLICABLE TO PRODUCTS PURCHASED BY CUSTOMER. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. MONNIT'S LIABILITY WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE OR OTHERWISE SHALL NOT EXCEED THE PURCHASE PRICE PAID BY CUSTOMER FOR THE PRODUCT. UNDER NO CIRCUMSTANCES SHALL MONNIT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES. THE PRICE STATED FOR THE PRODUCTS IS A CONSIDERATION IN LIMITING MONNIT'S LIABILITY. NO ACTION, REGARDLESS OF FORM, ARISING OUT OF THIS AGREEMENT MAY BE BROUGHT BY CUSTOMER MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED.

IN ADDITION TO THE WARRANTIES DISCLAIMED ABOVE, MONNIT SPECIFICALLY DISCLAIMS ANY AND ALL LIABILITY AND WARRANTIES, IMPLIED OR EXPRESSED, FOR USES REQUIRING FAIL-SAFE PERFORMANCE IN WHICH FAILURE OF A PRODUCT COULD LEAD TO DEATH, SERIOUS PERSONAL INJURY, OR SEVERE PHYSICAL OR ENVIRONMENTAL DAMAGE SUCH AS, BUT NOT LIMITED TO, LIFE SUPPORT OR MEDICAL DEVICES OR NUCLEAR APPLICATIONS. PRODUCTS ARE NOT DESIGNED FOR AND SHOULD NOT BE USED IN ANY OF THESE APPLICATIONS.

CERTIFICATIONS

United States FCC

This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and receiver.*
- *Connect the equipment into an outlet on a circuit different from the one the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

Warning: *Changes or modifications not expressly approved by Monnit could void the user's authority to operate the equipment.*

RF Exposure

WARNING: To satisfy FCC RF exposure requirements for mobile transmitting devices, the antenna used for this transmitter must not be co-located in conjunction with any antenna or transmitter.

Monnit and ALTA Wireless Sensors, Wireless Sensor Adapters and Ethernet Gateways:

This equipment complies with the radiation exposure limits prescribed for an uncontrolled environment for fixed and mobile use conditions. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and the body of the user or nearby persons.

All ALTA Wireless Sensors and Gateways Contain FCC ID: ZTL-G2SC1.

Approved Antennas

ALTA devices have been designed to operate with an approved antenna listed below, and having a maximum gain of 14 dBi. Antennas having a gain greater than 14 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

- *Xianzi XQZ-900E (5 dBi Dipole Omnidirectional)*
- *HyperLink HG908U-PRO (8 dBi Fiberglass Omnidirectional)*
- *HyperLink HG8909P (9 dBd Flat Panel Antenna)*
- *HyperLink HG914YE-NF (14 dBd Yagi)*
- *Specialized Manufacturing MC-ANT-20/4.0C (1 dBi 4" whip)*

Monnit ALTA IoT Gateway models starting with MNG2-9-CME-CCE also contain module: FCC ID: XMR202007BG95M6

The system antenna(s) used with the device must not exceed the following levels:

- *4 dBi in 700 MHz, i.e. LTE FDD-12 band*
- *4 dBi in 850 MHz, i.e. LTE FDD-5 band*
- *7 dBi in 1700 MHz, i.e. LTE FDD-4 band*
- *7 dBi in 1900 MHz, i.e. LTE FDD-2 band*

Canada (IC)

English

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the Equivalent Isotropically Radiated Power (E.I.R.P.) is not more than that necessary for successful communication.

The radio transmitters (IC: 9794A-G2SC1, IC: 10224A-2020BG95M6) have been approved by Industry Canada to operate with the antenna types listed on previous page with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

French

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la Puissance Isotrope Rayonnée Èquivalente (P.I.R.È) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteurs radio (IC: 9794A-G2SC1, IC: 10224A-2020BG95M6) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne figurant sur la page précédente et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, méme si le brouillage est susceptible d'en compromettre le fonctionnement.

European Union - Directive 2014/53/EU

ALTA WSA model starting with MNG2-9-WSA-USB has been evaluated against the essential requirements of the 2014/53/EU Directive. The gateway is compliant with the following standards:

Article 3.1(a): Electrical safety	62368-1, 62368-1/A11
Article 3.1(a): Exposure to electromagnetic fields	62311:2020
Article 3.1(b): EMC	301 489-1 (V2.2.3), -19 (V2.1.1), -52 (V1.1.0) 301 908-1 (V13.1.1), -13(V13.1.1) 303 413 (V1.1.1) 50665:2017 55032:2015+A11:2020
Article 3.2: Radio spectrum use	EN 301 511 V9.0.2

The conformity assessment procedure referred to in Article 10 and detailed in Annex IV of Directive 2014/53/EU has been followed with the involvement of the following Testing Body.

Testing Body:
NEMKO CANADA INC
303 River Road
Ottawa, ON, Canada

Manufacturer:
Monnit Corp.
3400 South West Temple
Salt Lake City, UT 84115

There is no restriction for the commercialization of Monnit and ALTA 868MHz and 433MHz wireless products in all the countries of the European Union.

WARNING: ISM and WCDMA/HSPA/GSM/GPRS/EDGE antennas are considered integral to the ALTA WSA and should remain fixed within 3 meters of the device during operation.

⚠ It is the responsibility of the user to enforce the country regulation and the specific environment regulation.

⚠ Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and has to be avoided in the following areas:

- *Where it can interfere with other electronic devices in environments such as hospitals, airports, aircraft, etc.*

- *Where there is risk of explosion such as gasoline stations, oil refineries, etc.*

⚠ IF THE SENSOR IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED. *Do not disassemble the product; any mark of tampering will compromise the warranty validity. We recommend following the instructions of this user guide for correct setup and use of the product. Please handle the product with care, avoiding any dropping and contact with the internal circuit board as electrostatic discharges may damage the product.*

⚠ The gateway has a mechanical stress rating of **IK06**, meaning its housing and/or its readings could be compromised by an impact with greater energy than one Joule. **DO NOT** rely solely on the gateway to prevent: (1) one or more fatalities; (2) disabling injury or illness; (3) chemical release with acute or public health impact; (4) chemical release with temporary environmental or public health impact; (5) system or facility loss; and/or, (6) major subsystem loss.

Justification of a mechanical impact rating less than five Joules exists by: (1) a documented Risk Analysis maintained performed by Monnit; (2) installation of the sensor in locations that cannot easily be touched by unauthorized persons or the general public; (3) the equipment being only accessible in normal use for occasional operations such as adjustment, programming, or maintenance.

Every device has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed with care in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (23 cm). In case this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

The European Community provides some Directives for the electronic equipment introduced on the market. All the relevant information is available on the European Community website:

http://ec.europa.eu/enterprise/sectors/rtte/documents/

The text of the Directive 99/05 regarding telecommunication equipment is available, while the applicable Directives (Low Voltage and EMC) are available at: http://ec.europa.eu/enterprise/sectors/electrical

Additional Information and Support

For additional information or more detailed instructions on how to use your WSA, Monnit Sensors, or iMonnit, please visit us on the web at https://www.monnit.com/support/documentation.

MONNIT

Monnit Corporation
3400 South West Temple ● Salt Lake City, UT 84115 ● 801-561-5555
www.monnit.com