

Monnit Wireless Sensors and Ethernet Gateway User's Guide

**For Use With iMonnit Online Software
and iMonnit Express PC Software**

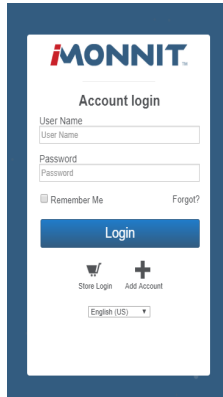
MonnitLink™ Ethernet Gateway Quick Start

- Create a Monnit user account with assigned wireless gateways and sensors.
- Attach the antenna to the antenna connector on the back panel of the Ethernet gateway (make sure the connection is snug, but do not overtighten).
- Plug an Ethernet cable with internet connectivity into the gateway.
- Plug the power supply into a power outlet then connect to the gateway.
- Once all three lights turn green, your network is ready to bring sensors online.

I. CREATE AN IMONNIT USER ACCOUNT

If this is your first time using the iMonnit online system site, you will need to create a new account. If you have already created an account, you can skip to the “Logging into the Online System” section. The following instructions will guide you through the account.

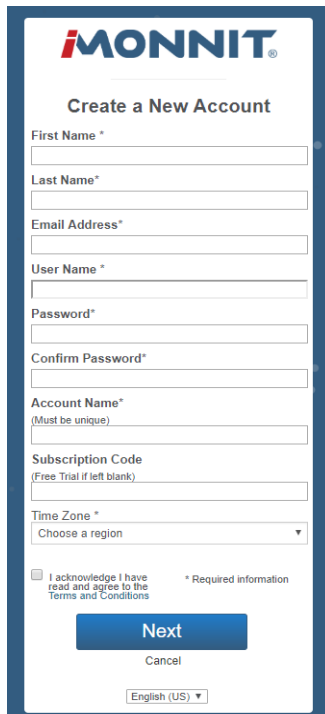
1. Open iMonnit in your mobile app or web browser.

The image shows the 'Account login' form on the iMonnit website. At the top is the iMONNIT logo. Below it is the title 'Account login'. There are two input fields: 'User Name' and 'Password'. Below these fields are two checkboxes: 'Remember Me' and 'Forgot?'. A blue 'Login' button is centered below the checkboxes. At the bottom, there are two icons: a shopping cart icon labeled 'Store Login' and a plus sign icon labeled 'Add Account'. Below these icons is a language dropdown menu showing 'English (US)'.

2. Navigate your cursor down to the bottom of the login box and select “Add Account”.

3. Next you will be asked to enter your account information in the following fields.

Note: If this is a Free Trial, you may not have recieved a subscription code yet. Leave the box blank and proceed.

The image shows the 'Create a New Account' form on the iMonnit website. At the top is the iMONNIT logo. Below it is the title 'Create a New Account'. There are several input fields: 'First Name *', 'Last Name *', 'Email Address *', 'User Name *', 'Password *', 'Confirm Password *', 'Account Name * (Must be unique)', 'Subscription Code (Free Trial if left blank)', and 'Time Zone * Choose a region'. Below these fields is a checkbox labeled 'I acknowledge I have read and agree to the Terms and Conditions' and a note '* Required information'. A blue 'Next' button is centered below the checkbox. Below the 'Next' button is a 'Cancel' link. At the bottom is a language dropdown menu showing 'English (US)'.

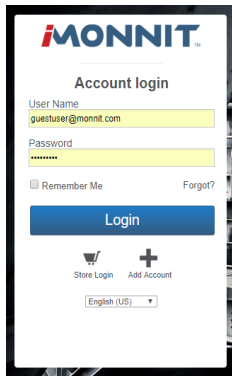
4. When completed, select the “Next” button.

5. This step will complete the user registration process and lead you into registering your device. You will be able to log out and log back in with your credentials to complete the setup at any time.

LOGGING INTO THE ONLINE SYSTEM

1. Open iMonnit in your mobile app or web browser.

2. Enter your user name and password.

The image shows the iMonnit Account login screen. At the top is the iMONNIT logo. Below it is the heading "Account login". There are two input fields: "User Name" with the text "guestuser@monnit.com" and "Password" with a masked password "*****". Below these fields are two checkboxes: "Remember Me" and "Forgot?". A blue "Login" button is centered below the checkboxes. At the bottom, there are two icons: a shopping cart icon labeled "Store Login" and a plus icon labeled "Add Account". A language dropdown menu shows "English (US)".

3. Select the “Login” button.

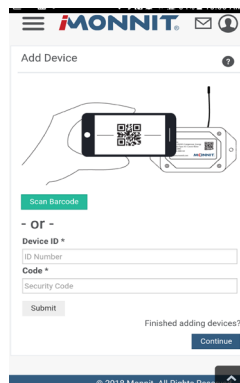
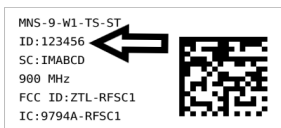
REGISTERING THE DEVICE

1. You will need to enter the Device ID and the Security Code from your device in the corresponding text boxes.

2. Use the camera on your smartphone to scan the QR code on your Gateway.

3. If you do not have a camera on your phone, or the system is not accepting the QR code, you may enter the Device ID and Security Code manually.

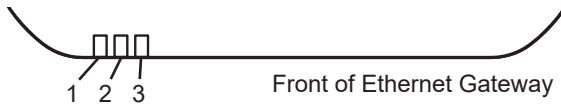
- The Device ID is a unique number located on each device label. It will be labeled as “ID” on your gateway.
- Next you’ll be asked to enter the Security Code (SC) on your device. A security code will be all letters, no numbers. It can also be found on the barcode label of your gateway.

The image shows the iMonnit Add Device screen. At the top is the iMONNIT logo and a menu icon. Below it is the heading "Add Device". There is a QR code scanner icon. Below the scanner are two input fields: "Device ID *" with the text "ID Number" and "Code *" with the text "Security Code". A "Submit" button is below the input fields. At the bottom, there is a "Continue" button and a copyright notice "© 2018 Monnit All Rights Reserved".

4. When completed, select the “Submit” button.

II. USING THE MONNITLINK™ ETHERNET GATEWAY

1. Understanding the Ethernet Gateway Lights



Light 1 - Indicates the Ethernet cable is plugged in. A green light indicates ready and working, a red light indicates there is a problem.

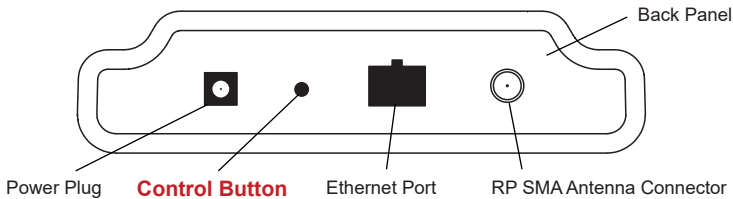
Light 2 - Indicates the Ethernet has internet connectivity and can reach the online monitoring system. A green light indicates ready and working, a red light indicates there is a problem. A flashing green light indicates network traffic to the internet.

Light 3 - Indicates sensor network activity. A green light indicates ready and working, a red light indicates there is a problem. A flashing green light indicates radio traffic from the sensors.

For help troubleshooting Ethernet gateway lights view:

<http://www.monnit.com/support/hardware/gateways/ethernet/troubleshooting-a-monnitlink-ethernet-gateway>

2. Ethernet Gateway Controls



Using the Control Button:

1) A short press will trigger the gateway to immediately send all stored sensor messages to the online system and download any pending system messages to deliver to the sensors. (The default heartbeat for the Ethernet gateway is 5 minutes.)

2) Press and hold to reset the gateway to factory settings. Factory settings will be reset to defaults, including the heartbeat setting of 5 minutes on both the gateway and in the online system. DHCP, server addressing and port are all restored to default settings, for example. You will need to login to the online system after resetting the gateway to reconfigure the gateway to your desired settings.

Note: If your gateway powers up with the lights scrolling from left to right, it has entered into boot loader mode accidentally. Make sure the button is free from obstruction and reboot the gateway by removing the power plug, waiting for 10 seconds then reinserting the power plug.

3. Configuring The Ethernet Gateway

The Ethernet Gateway collects data from all sensors within range and is preconfigured to batch deliver the sensor messages to the online system every 5 minutes.

The Ethernet Gateway uses DHCP (Dynamic Host Configuration Protocol) to automatically acquire a network address from the LAN (Local Area Network). In the event that it needs to have an address manually assigned to it, you can assign an IP address as well as a gateway mask and default DNS through the online interface. For more information on configuring the Monnit Ethernet Gateway please view the support documentation at http://www.monnit.com/pdf/Ethernet_Gateway_Configuration.pdf.

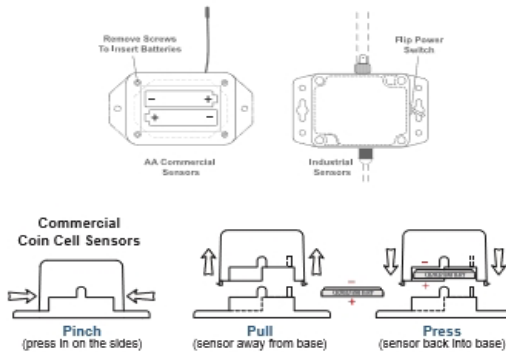
Note: This advanced configuration is NOT required in most instances. In the event that it is required, you can initialize the gateway on a network that uses the default DHCP settings, or you can follow the instructions for changing the configuration settings on a PC, which are included later in this User's Guide.

Upon logging into the online system as an administrator, select "My Account" then choose the edit icon next to your sensor network. From there you can alter the heartbeat of the Ethernet Gateway as well as edit any other configurations available. There is also a quick link to reset all gateway settings to factory defaults.

III. USING YOUR MONNIT SENSORS

Important: Make sure your sensors are at least 3ft. away from the wireless sensor adapter.

Insert batteries into commercial type sensors or use switch on industrial type sensors to power them on.



Note: It will take 10 - 20 seconds for the sensor to power up. Configurations for your sensors can be changed in iMonnit. Your new modifications will take effect on the next heartbeat. More immediate results can be achieved by power cycling the sensor. Power cycling is accomplished by removing then re-inserting batteries or using the power switch to cycle the power.

IV. USING THE IMONNIT ONLINE WIRELESS SENSOR SYSTEM

UNDERSTANDING THE ONLINE INTERFACE

When you log into the online system, the default view shows all of your sensors last recorded data.



Menu System

Details - Displays a graph of recent sensor data.

History - List of all past heartbeats and readings.

Events - List of all events attached to this sensor.




Settings - Editable levels for your sensor.

Calibrate - Reset readings for select sensors (Not available for all sensor types).

Scale - Change the scale of readings for your sensor (Not available for all sensor types).

Sensor Overview

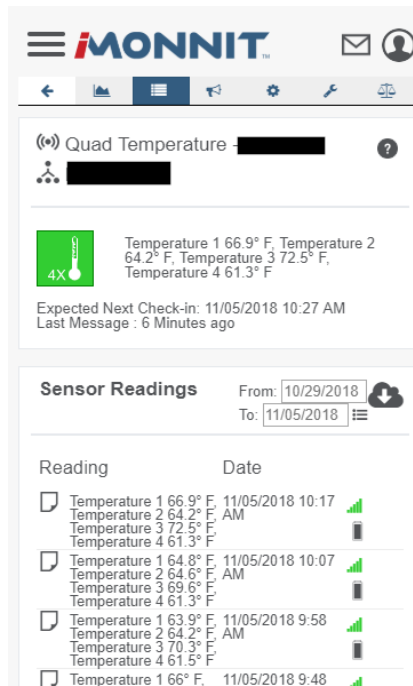
Directly under the tab bar is an overview of your sensor. This allows you to see the signal strength and the battery level of the selected sensor.

-  indicates the sensor is checking in and within user defined safe parameters.
-  indicates the sensor has met or exceeded a user defined threshold or triggered event.
-  indicates that no sensor readings are being recorded, rendering the sensor inactive.

Note: The data shown on the chart, event, history, and export file is based on the date range indicated on the upper right side of the sensor detail information. To change the date range, click the inside of the date box.

HISTORY VIEW

Clicking on the “History” tab within the tab bar allows you to view the sensor’s data history as time stamped data.



CONFIGURING SENSOR SETTINGS

To edit the operational settings for a sensor, choose the “Sensor” option in the main navigation menu then select the “Settings” tab to access the configuration page.

High Temperature Settings

Sensor Name: High Temperature

Heartbeat Interval: 120

Aware State Heartbeat: 120

Sensor is on: All Day

Assessments per Heartbeat: 1

Assessment frequency about 120 minutes

Use Aware State: Below (°F)

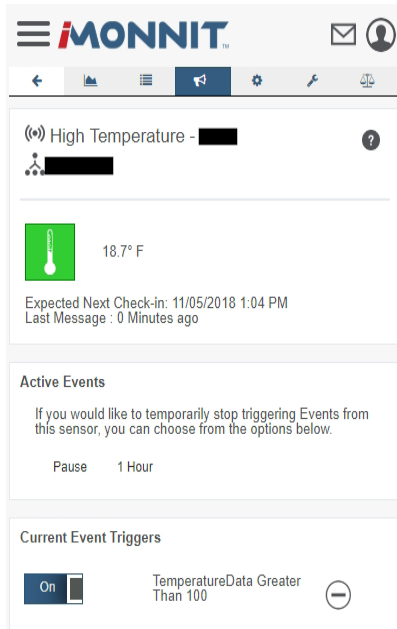
Below (°F): -148

The sensor edit panel allows you to set the primary configurations for the sensor. When you have finished making changes, press the “Save” button at the bottom of this section.

Note: Be sure to select the “Save” button anytime you make a change to any of the sensor parameters. All changes made to the sensor settings will be downloaded to the sensor on the next sensor heartbeat (check-in). Once a change has been made and saved, you will not be able to edit that sensor’s configuration again until it has downloaded the new setting.

SENSOR AND/OR GATEWAY NOTIFICATION(S)

Notifications for a single sensor or gateway can be created, deleted, and edited by clicking the “Events” tab in the sensor tab bar.

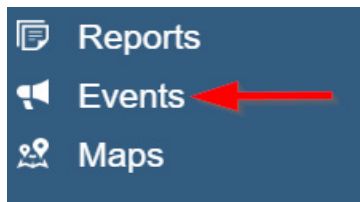


You can toggle the Event Trigger on or off by selecting the switch under Current Event Triggers.

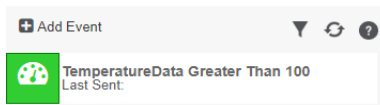
Creating an Event

Events are triggers or alarms set to let you know when a sensor reading identifies that immediate attention is needed. Types of events include sensor readings, battery level, device inactivity, and scheduled data. Any one of these can be set to send a notification or trigger an action in the system. This guide will walk you through creating two types of events. First a sensor reading notification for a temperature sensor, then an inactivity notification configured for all sensors.

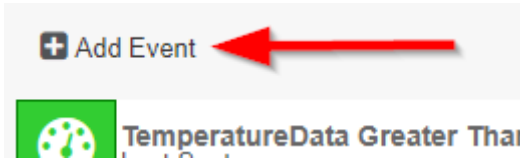
1. Select Events in the main navigation menu.



2. A list of previously created events will display on the screen. From here, you have the ability to filter, refresh, and add new events to the list.



3. From the Events page, tap “Add Event” in the left hand corner.



4. The dropdown menu will have the following options for Event Types:

- **Sensor Reading:** Set alerts based on sensor activity or reading.
- **Battery Level:** This is where you can set to be notified when the battery level drops below a percentage. 15% is the default setting.
- **Device Inactivity:** Alerts when the device doesn't communicate for an extended period of time.
- **Advanced:** Alerts based on advanced rules, such as comparing past data points with current ones.
- **Scheduled:** These are notifications that fire at a time set basis.

A screenshot of a dropdown menu titled 'Select Event Type'. The menu is open, showing a list of options: 'Select Event Type' (the header), 'Sensor Reading', 'Battery Level', 'Device Inactivity', 'Advanced', and 'Scheduled'. The 'Sensor Reading' option is highlighted in blue.

5. Select **Sensor Reading** from the dropdown menu.

6. A second dropdown menu will appear. From here, you will be able to see a list of the different type of sensors registered to your account. Choose **Temperature** in the dropdown menu.

A screenshot of a form titled 'Select Event Type'. It has two dropdown menus. The first dropdown is labeled 'Select Event Type' and has 'Sensor Reading' selected. The second dropdown is labeled 'Select Sensor Type' and has 'Temperature' selected. Below these is a section titled 'Trigger Settings' which contains a 'Trigger Conditions' box. Inside this box, there is a label 'Notify when temperature reading is', a dropdown menu with 'Less Than' selected, a text input field with '0' entered, a label 'degrees', and another dropdown menu with 'Fahrenheit' selected. At the bottom of the 'Trigger Conditions' box is a blue 'Save' button.

7. Next, you will be asked to input the trigger settings. You have the option of setting this trigger for greater than or less than a temperature reading

8. Press the “Save” button.

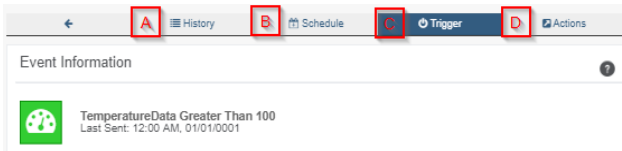
If you don't have a temperature sensor, the option in this example won't be available, select any variable output sensor and follow along.

Variable output sensors can have multiple event triggers created.

Example: A temperature sensor used in a freezer. You may want to be notified if the temperature goes below 0° or above 30° Fahrenheit. You would create two events.

- **Event 1 -** Trigger Set for temperatures LESS THAN 0°F.
- **Event 2 -** Trigger set for temperatures GREATER THAN 30° F.

9. The Event Information page has a series of tabs across the top.



A. History: A table of all past alert notifications for this specific event.

B. Schedule: Here you can schedule the event only to be active at certain times or certain days.

C. Trigger: This is where you can review your trigger settings.

D. Actions: Where you set the action you want to happen when an alert state is triggered.

10. Choose the **Trigger** tab.

11. The **Trigger Sensors** section sits below “**Trigger Conditions.**” If you have multiple sensors for the same type (**Example:** five temperature sensors), this is where they will be listed. There should be at least one sensor in this section.



12. By default, the sensor(s) will not be assigned to the event conditions you've just set. To assign a sensor, find the device(s) you want to designate for this event and select. Selected sensor boxes will turn green when activated. Choose the sensor box again to unassign the sensor from the event.

13. Continue toggling the sensor(s) corresponding to this new event until you are satisfied with your selection. These can be adjusted later by returning to this page.

14. Press the “Save” button.

15. Select the Actions tab.

16. Press the Add Action button under the Event Information header and available action types are presented in a select list.

- **Notification Action:** Specify account users to receive notifications when this event triggers.
- **System Action:** Assign actions for the system to process when this event triggers.

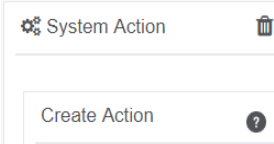
17. Choose **Notification Action** from the notification list.







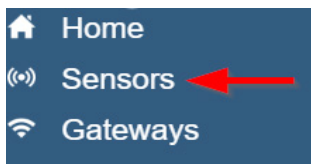
- Select the icon next to a user to configure how they will be notified
- Choose if you want notifications sent immediately when triggered or if you want a delay before it is sent and press **Set**.
- A **green** icon indicates the users that will not receive the notifications.
- If a delay has been selected, the delay time will display beside the icon.


18. Select System Action from the select list under the Event Information header.
 19. Scroll down to the System Action section.
 20. The Action to be Done select list has the following options.
- **Acknowledge:** Automatically signal that you have been notified of an event and take action. When an event has been triggered, actions will continue processing until the event returns to a value that no longer triggers an event.
 - **Full Reset:** Reset your trigger so it is armed for the next reading.
 - **Activate:** Enable an event trigger.
 - **Deactivate:** Disable an event trigger.
- 
- The screenshot shows the 'System Action' configuration page. It has a title bar with a gear icon and a trash icon. Below the title bar, there is a 'Create Action' button with a question mark icon. Underneath, there are three sections: 'Action to be done' with a dropdown menu showing 'Acknowledge', 'Delay' with a dropdown menu showing 'No Delay', and 'Target Notification' with a dropdown menu showing 'TemperatureData Greater Than 100'.

Add

EXPORTING SENSOR DATA

1. Select Sensors from the main navigation menu.



2. Choose the sensor you need an export for in the list.
3. Pick the **History** tab.
4. On the far right of the sensor history data is a cloud icon.  Selecting this icon will export an excel file for your sensor into your download folder.

Sensor Readings


From:

10/16/2018

To:

10/23/2018

☰



Note: Make sure you have the date range for the data you need input in the "From" and "To" text boxes. This will be the most recent week by default. Only the first 2,500 entries in the selected date range will be exported.

The data file will have the following fields:

- MessageID:** Unique identifier of the message in our database.
- SensorID:** If multiple sensors are exported you can distinguish which reading was from which using this number even if the names for some reason are the same.
- Sensor Name:** The name you have given the sensor.
- Date:** The date the message was transmitted from the sensor.
- Value:** Data presented with transformations applied but without additional labels.
- Formatted Value:** Data transformed and presented as it is shown in the monitoring portal.
- Battery:** Estimated life remaining of the battery.
- Raw Data:** Raw data as it is stored from the sensor.
- Sensor State:** Binary field represented as an integer containing information about the state or the sensor when the message was transmitted. (See "Sensor State Explained" below).
- Gateway ID:** The Identifier of the gateway that relayed the data from the sensor.
- Alert Sent:** Boolean indicating if this reading triggered a notification to be sent from the system.
- Signal Strength:** Strength of communication signal between the sensor and the gateway, shown as percentage value.
- Voltage:** Actual voltage measured at the sensor battery used to calculate battery percentage, similar to Received Signal you can use one or the other or both if they help you.

State

The integer presented here is generated from a single byte of stored data. A byte consists of 8 bits of data that we read as Boolean (True (1)/False (0)) fields.

Field	Length	Description
Test Active	1 bit LSB	Test state is active (1) or inactive (0)
Aware State	1 bit	Aware state is active (1) or inactive (0)
Sensor Disable	1 bit	Sensor is disable (communication still happens)
RSVD	1 bit	Currently not used
Sensor Specific	1 bit	
Sensor Specific	1 bit	
Sensor Specific	1 bit	
Sensor Specific	1 bit MSB	

Using a temperature sensor as an example.

If the sensor is using factory calibrations the Calibrate Active field is set True (1) so the bit values are 00010000 and it is represented as 16.

If the sensor is outside the Min or Max threshold, the Aware State is set True (1) so the bit values are 00000010 and it is represented as 2.

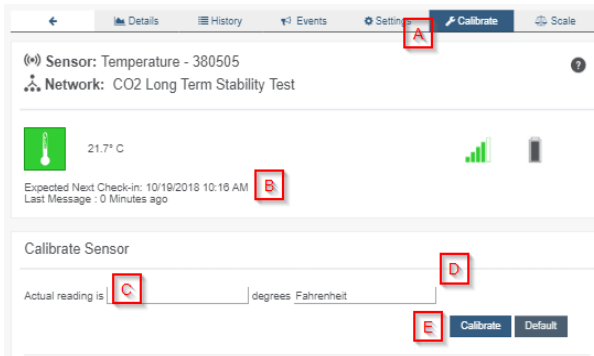
If the customer has calibrated the sensor this field the Calibrate Active field is set False (0) AND the sensor is operating inside the Min and Max Thresholds, the bits look like 00000000 this is represented as 0.

If the sensor is using factory calibrations and it is outside the threshold the bit values are 00010010 and it is represented as 18 (16 + 2 because both the bit in the 16 value is set and the bit in the 2 value is set).

Note: These two are the only bits that typically observed outside of our testing procedures.

CALIBRATING SENSOR DATA

Certain wireless sensors can be calibrated for more accurate readings (**Example:** For Temperature sensors). If calibration is possible for a sensor, the “Calibrate” tab will be visible in the tab bar.



A. Go to the tab to open the sensor calibration settings window.

B. To calibrate a sensor, you will want to ensure that the environment of the sensor and other calibration device is stable. Note the “Expected Next Check-in” time for the sensor you are calibrating and take a reading from your calibration device a few minutes prior to the sensors next check-in.

C. Enter the actual (accurate) reading from the calibration device into the text field.

D. If you need to change the unit of measurement you can do that here.

E. Press “Calibrate”.

To ensure that the calibration command is received prior to the sensors next check-in, press the control button on the back of the gateway, once, to force communication (Cellular and Ethernet gateways).

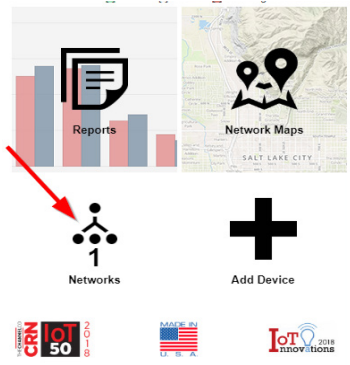
After pressing the “Calibrate” button and choosing the gateway button, the server will send the command to calibrate the specified sensor to the gateway. When the sensor checks-in, it will send the pre-calibration reading to the gateway, then receive the calibration command and update it’s configuration. When the process is completed, it will send a “Calibration Successful” message. The server will display the sensor’s last pre-calibrated reading for this check-in, then all future readings from the sensor will be based on the new calibration setting.

It is important to note that after calibrating the sensor, the sensor reading returned to the server is based on pre-calibration settings. The new calibration settings will take affect on the next sensor heartbeat.

Note: If you would like to send the changes to the sensor right away, please remove the battery(s) for a full 60 seconds, then re-insert the battery(s). This forces the communication from the sensor to the gateway and this the message to make a change from the gateway back to the sensor. (If the sensors are industrial sensors, turn the sensor off for a full minute, rather than removing the battery).

MANAGE SENSOR NETWORKS

To view or edit information about your wireless sensor network(s), select the Networks box in the account overview page.



The following network list page allows you to edit details, create new sensor tetworks, and manage wireless gateways and sensors for your network(s). Find the network you wish to modify in the list and select it to be taken to to the network edit page.

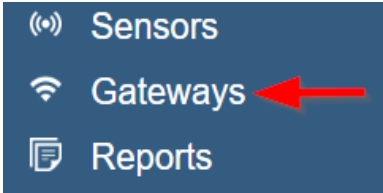
The network edit page will give the option of changing the name of your network, enable notifications, enable holding, and review the Install Tech Access Cut-off Date. Remember, you must press the “Save” button after making any changes in this section.

Below this section is a list of sensors and gateways attached to the account. Choosing the icon of a trashcan beside each sensor will delete it from the network. Selecting the icon directly above the sensor section will allow new devices to be added to the network. Review the steps on registering a new device on page 3 of this user guide.

Note: A sensor or gateway cannot be recovered once it has been deleted from the network. It is recommended that you export a sensor’s data history before clearing it from the list.

V. Advanced Settings and Interfacing with the Monnit Ethernet Gateway Through iMonnit.

1. Navigate to the main menu and select “Gateways.”



When you enter the gateway page, you will see all the gateways registered to your account. The settings for any of these can be adjusted and edited by choosing the gateway you wish to edit.

2. Choose the Enterprise Gateway.

The page will open to the history tab. This is where you can view all previously recorded data for the Enterprise Gateway.

3. Select the “Settings” tab.

A screenshot of the 'Settings' page in the iMonnit application. At the top, there's a 'Settings' header with a help icon. Below it are tabs: 'General', 'Local Area Network', 'Commands', and 'Interface Activation'. The 'General' tab is selected. It contains several settings: 'Gateway Name' with a text input field; 'Heartbeat Minutes (default: 5)' with a value of '5' and a menu icon; 'Poll Rate Minutes (default: 0)' with a value of '0' and a menu icon; 'Force Transmit on Aware' with a 'Yes' button and a toggle switch; 'Primary Server' and 'Secondary Server' with redacted text fields. A blue 'Save' button is at the bottom left.

General Settings will be the first fields open for editing. The gateway name can be changed to whatever you prefer. The heartbeat and poll rate minutes are also adjustable here. This will automatically be set to force transmit on an Aware State. The heartbeat is the interval in minutes when your Enterprise Gateway communicates with the server. Exceptions to this include Aware State messages received from your sensors. Remember to press the “Save” button after making your changes or they will not take effect.

The Local Area Network is where you can view the MAC Address and change your IP Address. Your IP Address will be set to “Dynamic” by default. To set it to “Static” drag the switch to the left, then fill in the text boxes for Static IP, Network Mask, Default Gateway, and Default DNS Server. Then press the “Save” button.

A screenshot of the 'Settings' page, specifically the 'Local Area Network' sub-tab. It shows the 'MAC Address' as '70:B3:D5:02:E6:8D'. Under 'DHCP', the 'Static' option is selected with a radio button. Below this are text input fields for 'Static IP (Use DHCP: 0.0.0.0)', 'Network Mask', 'Default Gateway', and 'Default DNS Server'. A blue 'Save' button is at the bottom.

Settings



- General • Local Area Network
- Commands • Interface Activation

Queue Expiration

Activate SNMP Interface

☐ Off

Activate Modbus Interface

☐ Off

Activate Real Time Interface

☐ Off

Interface Activation is where SNMP, Modbus, and Real Time TCP Interfaces can be activated. Upon activation, settings for these will appear in the above menu. Multiple interfaces can be active at one time. All interfaces require the DHCP to set to a static IP address.

Real Time TCP Interface

Poll on the gateway's assigned port to retrieve gateway and sensor data. The default port is 3500, but can be edited.

Modbus TCP Interface

Use Modbus TCP software to pull in gateway and sensor data. Monnit provides a register map. The Modbus TCP Interface will store all data values in 16-bit registers. The registers and their data fields are mapped below:

	Field	Description	Register	Data Address
GATEWAY	Gateway ID_High	The first 16 bytes of a 32 byte serial ID number	40001	0
REGISTERS	Gateway ID_Low	The last 16 bytes of a 32 bytes serial ID number	40002	1
	Gateway Version	The version of gateway firmware on the device	40003	2
	Gateway Device Count	The number of devices (sensors & gateways) in its network	40004	3
SENSOR	Sensor ID_High	The first 16 bytes of a 32 byte serial ID number	40101	100
REGISTERS	Sensor ID_Low	The last 16 bytes of a 32 bytes serial ID number	40102	101
	Device Type	The unique type identifier for the sensor profile	40103	102
	Data Age	The number of seconds that have elapsed since the last data was retrieved	40104	103
	Is Device Active	0 indicates no data for this slot	40105	104
	Is Aware	Becomes aware when a sensor threshold has been breached	40106	105
	Voltage	Battery voltage	40107	106
	RSSI	Signal Strength indicator 0-100%	40108	107

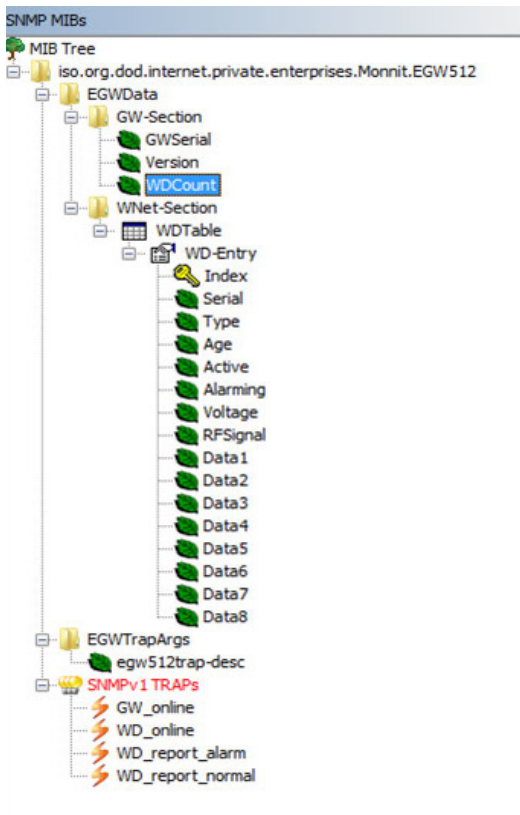
	Data 1	Sensor Data Field 1	40109	108
	Data 2	Sensor Data Field 2	40110	109
	Data 3	Sensor Data Field 3	40111	110
	Data 4	Sensor Data Field 4	40112	111
	Data 5	Sensor Data Field 5	40113	112
	Data 6	Sensor Data Field 6	40114	113
	Data 7	Sensor Data Field 7	40115	114
	Data 8	Sensor Data Field 8	40116	115

SNMP Poll and Trap Interface

Use SNMP software to pull in gateway and sensor data. Monnit provides a .MIB file. There are four available interfaces. Set the SNMP Interface Address for each one the address of the device sending the SNMP request). Mark the interface Active and Save.

The MIB file is available through here:

resources.monnit.com/content/downloads/MonnitEGW-MIB_v1



Ethernet Gateway MIB tree with a short description of each field:

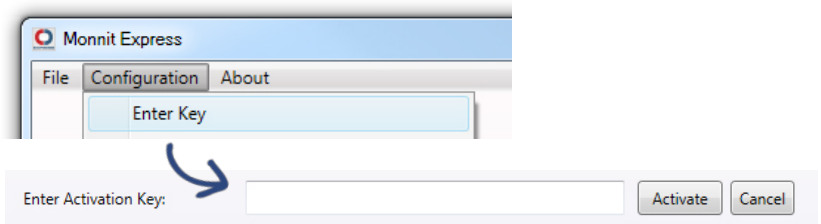
EGW Data			Description
	*GW Section		Gateway Section
		*GW Serial	Gateway Serial ID
		*Version	Gateway Firmware Version
		*WD Count	Wireless Device Count
	*WNetSection		Wireless Network Section
		*WD Entry	Wireless Device Entry
		*Index	Index Number
		*Serial	Wireless Device Serial ID
		*Type	Device Type (eg temp, water, motion sensor, etc)
		*Age	Number of seconds since last data recording
		*Active	Indicates if the wireless device is reporting in as expected
		*Alarming	Indicates if the wireless device has detected data that is urgent or breaches a threshold
		*Voltage	Battery voltage recorded at the time of data reading
		*RFSignal	Signal Strength recorded on data reading delivery
		*Data1	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)
		*Data2	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)
		*Data3	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)
		*Data4	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)
		*Data5	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)
		*Data6	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)
		*Data7	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)
		*Data8	Data recorded by wireless device (eg temperature, water detected, motion detected, etc)

VI. Setting up the Ethernet gateway for use with iMonnit Express

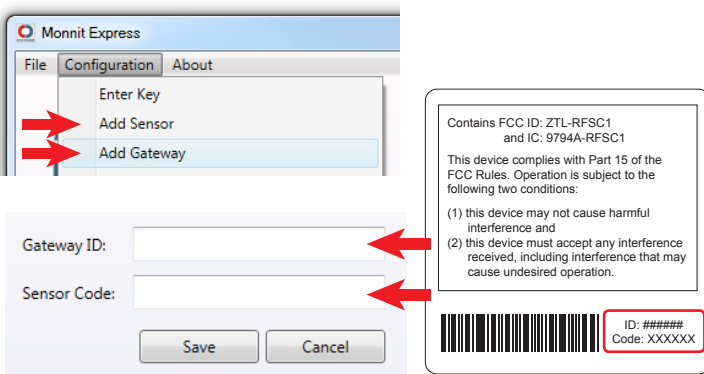
iMonnit Express (PC Software) Setup

Visit <http://www.monnit.com/support/downloads/> to download and install the iMonnit Express software.

- Launch the iMonnit Express installer and follow the on-screen instructions.
- Launch the iMonnit Express program.
- Activate the Express software with the code you received when purchasing.



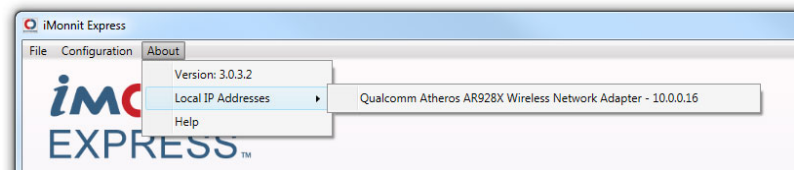
- Add the gateway(s) and wireless sensors to the software.



- Verify that the gateway was added successfully by checking the Gateways list.



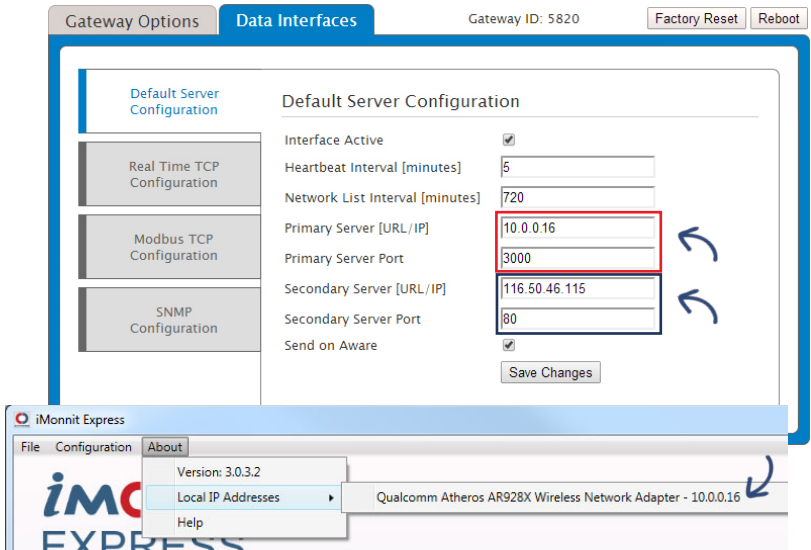
- Click on “About”, then “Local IP Addresses” and make note of the IP address that your computer is using on your network.



- Connect the Ethernet Gateway directly to the Ethernet port of your PC using a standard Ethernet cable. Confirm that the PC has no other internet connection (turn off Wi-Fi). Confirm the PC firewall does not prohibit an inbound connection. Plug power cable into the Ethernet gateway.
- Plug in the power cable.
- While the device is booting, press and hold the Reset Button on the back of the gateway. The button must be held in the down position by the time the third green light illuminates, or else another attempt will need to be made. When the device finishes booting, all three lights will toggle red, green. Release the button and the device is in local configuration mode. Do not hold the Reset button for more than four seconds (that will factory reset the device).

The lights will flash green once every other second while the device attempts to resolve Ethernet Link State. The lights will flash green once every second while the device attempts to resolve IP addresses with the host PC. Finally, the lights will flash green twice every second when device is waiting for valid web traffic.

- Once the PC has setup the direct network, use a web browser (e.g. Chrome) and go to “192.168.100.1”. The Ethernet gateway Setup screen should now be displayed. Note: The lights will all turn solid green once this connection has been established.
- Click on the “Data Interfaces” tab.
- Under “Default Server Configuration” enter the IP address that you noted from the iMonnit Express software into the primary and secondary server [URL/IP] boxes, and use 3000 as the default communication port, then click “Save Changes”.



- When finished, click the "Reboot" button on the top right side of the page to restart the gateway.
- When the lights begin flashing on the gateway, you can unplug the power to the gateway and disconnect it from the computer.
- Reactivate the Wi-Fi or other Internet connection for the computer, so it can connect to the network.
- Plug your Ethernet gateway into your Internet router and power up the Ethernet gateway. All three lights should go green now, and your gateway should report into Monnit Express.

If it does not, check that the PC has the internet connection turned on, recheck your IP Address, power up your gateway and make sure the gateway is added into Monnit Express. (If you left your secondary set to point to sensorgateway.com (which is iMonnit) and the lights on your gateway are green, check iMonnit to see if the gateway is reporting in there. If so, power cycle the gateway and try again.)

Error Reporting, Troubleshooting and Support

For technical support and troubleshooting tips please visit our support library online at <http://www.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 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 after Monnit receives from 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 non-conforming 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 after Monnit receives from 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. Customer must obtain from Monnit a Return Material Authorization Number (RMA) prior to returning any Products to Monnit. Products returned under this Warranty must be unmodified.

Customer may return all Products for repair or replacement due to defects in original materials and workmanship if Monnit is notified within ninety (90) days 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 Return Material Authorization Number (RMA) 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 ninety-day 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, 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. Customer shall bear the risk of loss for such return shipment and shall bear all shipping costs. Monnit shall deliver replacements for Products determined by Monnit to be properly returned, shall bear the risk of loss and such costs of shipment of repaired products or replacements, and shall credit Customer's reasonable costs of shipping such returned Products against future purchases.

(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 Customer. Monnit's warranty obligations shall run solely to Customer, and Monnit shall have no obligation to customers of Customer or other users of the Products.

Limitation of Warranty and Remedies.

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 a 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 that to which 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, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance are not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.

Monnit Wireless Sensors and Ethernet Gateway Contain: FCC ID: ZTL-RFSC1

This device has been designed to operate with an approved antenna listed below, and having a maximum gain of 5.1 dBi. Antennas not included in this list or having a gain greater than 5.1 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

Approved Antennas

The following antennas are approved for use with Monnit devices.

- *Hyperlink HG905RD-RSP (5.1 dBi Rubber Duck)*
- *Pulse W1063 (3.0 dBi Rubber Duck)*
- *ChangHong GSM-09 (2.0 dBi Rubber Duck)*
- *Specialized Manufacturing MC-ANT-20/4.0C (4" whip)*

Approved Antennas

The following antennas are approved for use with Monnit devices.

- 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)

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 transmitter G2SC (IC: 9794A-G2SC1) has been approved by Industry Canada to operate with the antenna types listed below 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 licence-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 équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio G2SC (IC: 9794A-G2SC1) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous 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, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Additional Information and Support

For additional information or more detailed instructions on how to use your Monnit Wireless Sensors or the iMonnit Online System, please visit us on the web at <http://www.monnit.com/support/>.



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