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## Panduit SynapSense<sup>®</sup> 900 Series

Cloud User Guide

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**Cloud User Guide**

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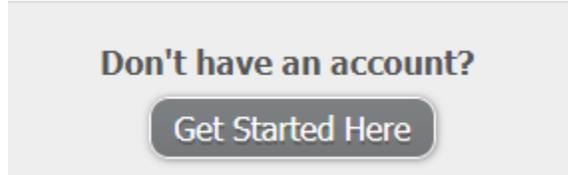
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# 1. Create a Panduit User Account and Setup Sensor Network

If this is your first time using the SynapSense900 online system, 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 creation process.

- In a web browser, navigate to <https://www.synapsense900.com>.
- Click the “Get Started Here” button to create an account.
- Follow the on-screen instructions to enter your account and contact information.



- After entering your account and contact information, you will be prompted to create your first sensor network. Simply enter a name for this network.
- Add the information from your gateway then click the “Assign Gateway” button.

Please enter your Gateway ID and Gateway Serial.

Gateway ID 

Gateway Serial 

Assign to Network



Gateway Back Label

Using Wi-Fi Sensors? Skip This Step

- Add the information from your first wireless sensor then click the “Assign Sensor” button.  
**WARNING: DO NOT** insert batteries at this step.

Please enter your Sensor ID and Sensor Serial.

Sensor ID 

Sensor Serial 

Assign to Network



Sensor Back Label

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- On the next screen, enter a name for the wireless sensor and use the drop down to tell us how you are going to be using the wireless sensor. (This allows us to suggest settings for your sensor.) When finished, click the “Continue” button.

Enter a Name for your sensor.

Sensor Name	<input type="text" value="Filtered Pulse Counter - #####"/>	= <input checked="" type="checkbox"/> = Filtered Pulse Counter - #####
How will sensor be used?	<input type="text" value="Select One"/>	
Other Application	<input type="text"/>	

Continue

- Confirmation Screen
  - When you have finished adding the sensor, you will see a confirmation screen. At this point you can assign notifications to the sensor (See Section 6: Using the Panduit Online Wireless Sensor System), assign additional sensors to your account, or click “Done” to go to your sensors overview page.

Sensor was assigned successfully

**Congratulations! This sensor has been added to your account.**

You can assign notifications to this sensor by clicking the button below.

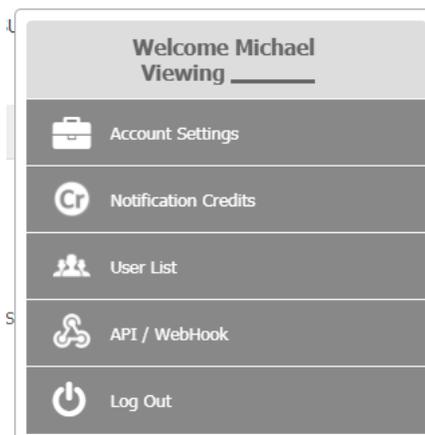
Assign Notifications to Sensor

If you are finished adding sensors, you can click the “Done” button to go to your wireless sensor network overview. To add another sensor, click the “Assign Another Sensor” button.

Assign Another Sensor

Done

- Enter subscription information
  - Click on the gear in the upper right to open the administration menu, then click on account settings.



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- In the account page, enter your subscription code in the field “Premier Subscription Code”

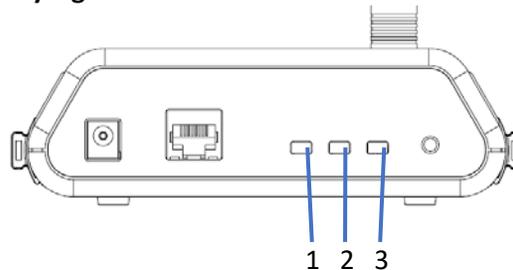
Add Premier Subscription 

Premier Subscription Code

- If you do not have a subscription code, contact Panduit (see page 1 or Section 8 for contact information).

## 2. Using the Panduit Ethernet Gateway

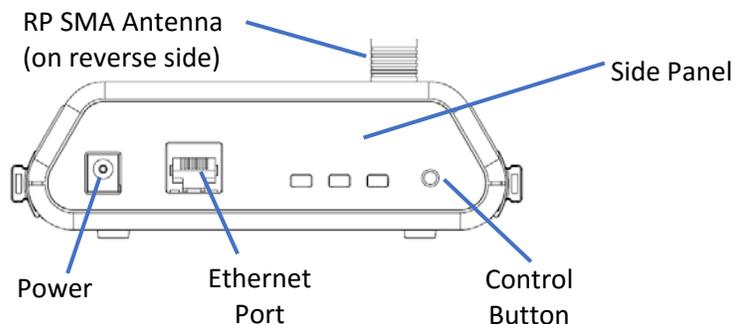
### Understanding the Ethernet Gateway Lights



- Light 1 (Network Service) – Indicates the Ethernet cable is plugged in. A green light indicates ready and working; a red light indicates there is a problem.
- Light 2 (Internet Servers) - 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 (Sensor Data) - 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, read Appendix A of this User Guide.

### Ethernet Gateway Controls



### Using the Control Button

- 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. The heartbeat defines how often the gateway communicates with the server.
- 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. After resetting the gateway, you may reconfigure it to your desired settings (See Section 7: Advanced Settings and Interfacing with the Panduit Ethernet Gateway through SynapSense900).

**Note:** If your gateway powers up with the lights scrolling from left to right, it has entered bootloader 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. Using Your Panduit Wireless Sensors

**Insert Batteries into Wireless Sensors (once sensor has been configured as shown in Section 1)**

**Important:** Make sure your sensors are at least 3ft. away from Ethernet Gateway.

Remove sticker covering the sensor's AA battery compartment and insert two AA batteries as indicated by the battery compartment. The sensor should power on within 10-20 seconds. Once online, your sensor is ready to be deployed. If you wish to change a sensor configuration, change the parameter in the software. The new parameters will be transmitted to the sensor on the next heartbeat. If you need a more immediate response from the sensor, power cycle the sensor by removing, then re-inserting the batteries.

### Manual Sensor Reset Process:

- Push the batteries out of the sensor
- Change the sensor heartbeat through the online system
- Re-insert the batteries into the sensors

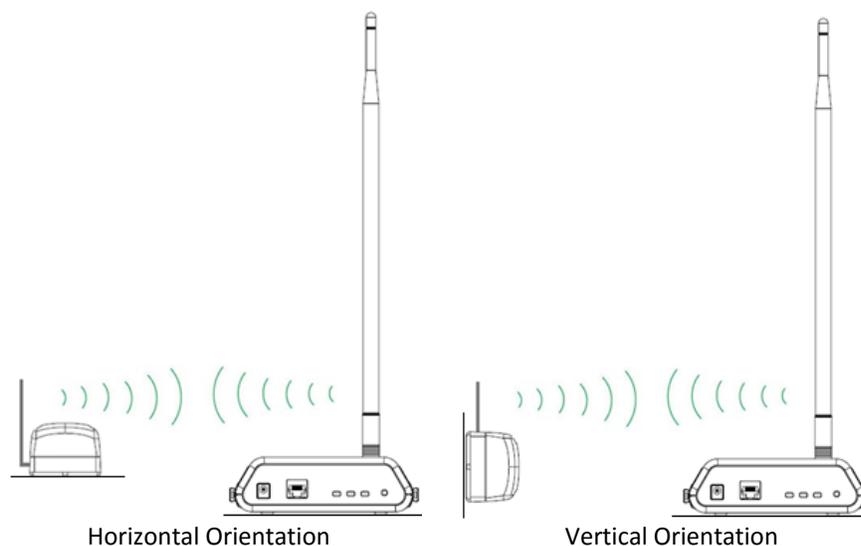
## 4. Proper Orientation of Wireless Antennas and Sensor Position

To get the best performance out of the SynapSense 900 Wireless Sensors, it is important to note proper antenna orientation and sensor positioning. Antennas should all be oriented in the same direction, pointing vertically out of the sensor. If the sensor is mounted flat on a horizontal surface, you should bend the antenna as close to the sensor housing as possible giving you the most amount of antenna pointing vertical. You should make the antenna wire as straight as possible, avoiding any kinks and curving of the wire.

For optimum signal strength, determine the height at which most of your sensors will be mounted and position the gateway at the same height. The sensor signal strength will reduce if the sensors are positioned higher than the gateway. Also, the distance each sensor needs to be from the gateway and other sensors depends on antenna type.

### Correct Antenna Orientation

Antennas should all be pointing vertically

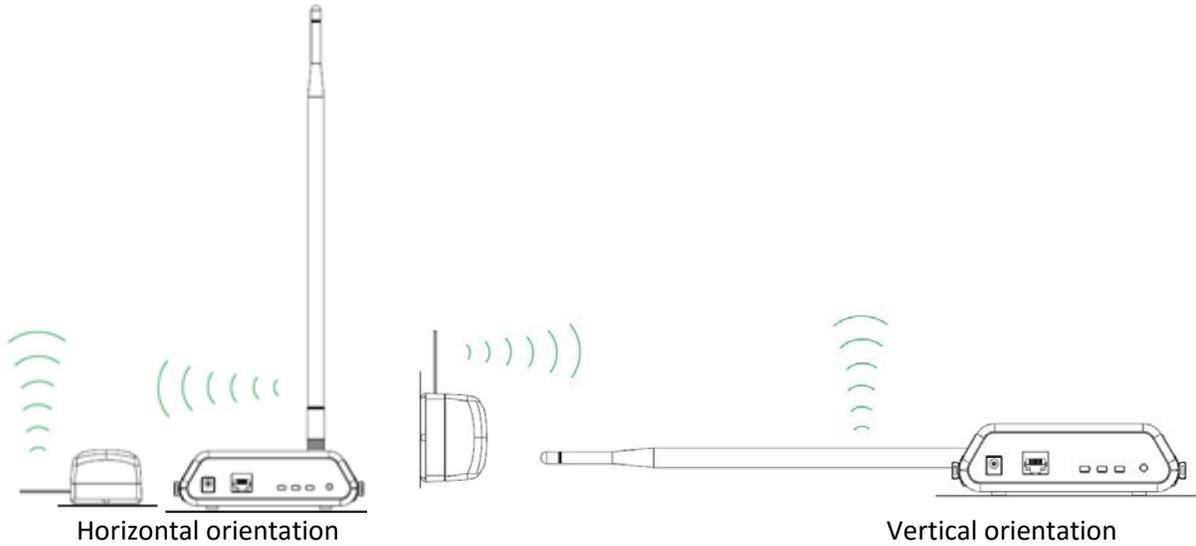


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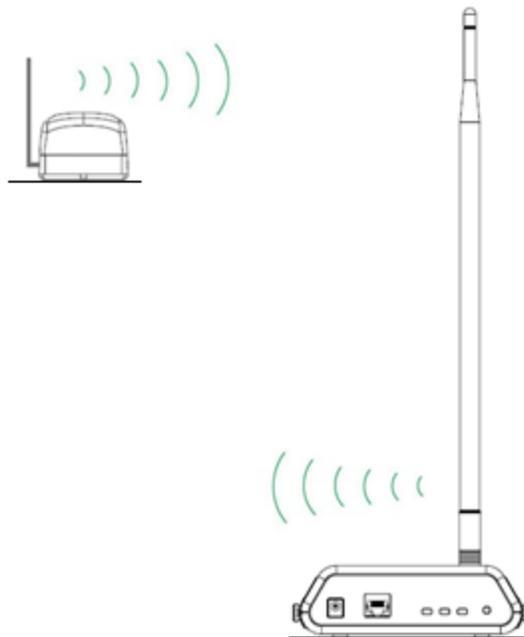
**Incorrect Antenna Orientation**

Antennas should not be pointing vertically and horizontally



**Incorrect Sensor Positioning**

Sensors should not be mounting high with gateways mounted low. Also, avoid positioning sensors or gateways on the floor.



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## 5. Sensor and Gateway Distance

The strength of the signal between a sensor and a gateway can vary depending on the antenna equipped. Those sensors which can transmit long distances can sometimes have more difficulty up close. The nearer the sensor to the gateway, depending on the strength of the signal, the more garbled the signal can be. The analogy we like to use is if you have a bullhorn and are right next to someone, they will hear you, but they may not be able to understand what you are saying because the signal is too loud. If you move away from the person, they will be able to hear you and understand what you are saying. The following are suggested distances the sensors should be from the gateway and each other.

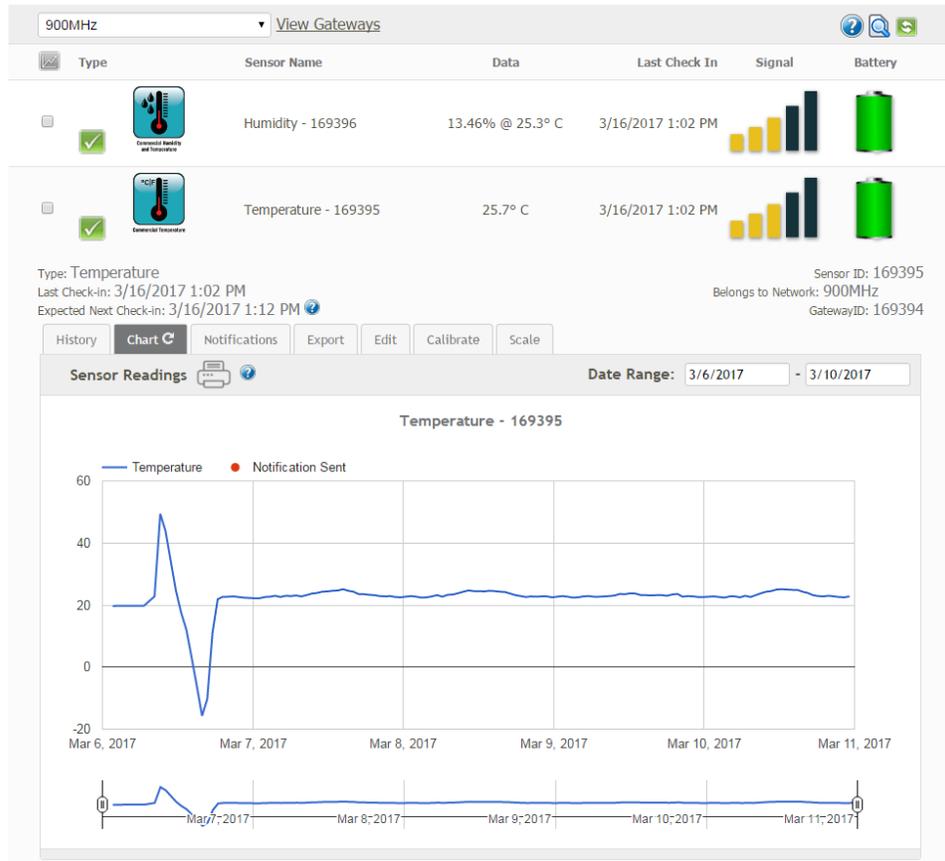
- Sensors need 5 to 7 feet between them and the gateways for effective close transmission.

**Note:** This distance is particularly important during initial set up when the sensors are trying to connect with the gateway. The sensor begins actively scanning the moment the batteries are inserted.

## 6. Using the Panduit Online Wireless Sensor System

### Online System Overview

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



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### Menu System

infrastructure for a connected world



[OVERVIEW](#)

[NOTIFICATIONS](#)

[MANAGE](#)

[REPORTS](#)

[SENSOR MAPS](#)

[SUPPORT](#)

[ADMINISTRATION](#)



- *Overview* - Shows all sensors in the account and their last readings.
- *Notifications* - Manage sensor notifications and show all sent notifications.
- *Manage* - Manage networks, sensors, and gateways.
- *Reports* - Printable account and sensor network reports.
- *Sensor Maps* - Visual maps to help you track sensor placement.
- *Support* - Support information for using sensors and software.

### View / Sort Features

This section allows you to sort the sensors/gateways being viewed and search for sensors/gateways on your account.

### Sensor Overview

Displays sensors on your account with their last reading and status information. Clicking on a sensor row expands the “Sensor Detail View” allowing you to view detailed information for the selected sensor.

To the left side of each sensor row is an indicator to help you understand the current status of the sensor.

	Sensor is checking in and within user defined safe parameters.
	Sensor has met or exceeded a user defined threshold or triggered event.
	Sensor has not checked in (inactivity alert sent).
	No sensor readings will be recorded (Inactive)

### Sensor Details View

Clicking on a sensor row on the “Overview” page expands the row to include a detailed sensor view for the selected sensor. Select a tab to change between:

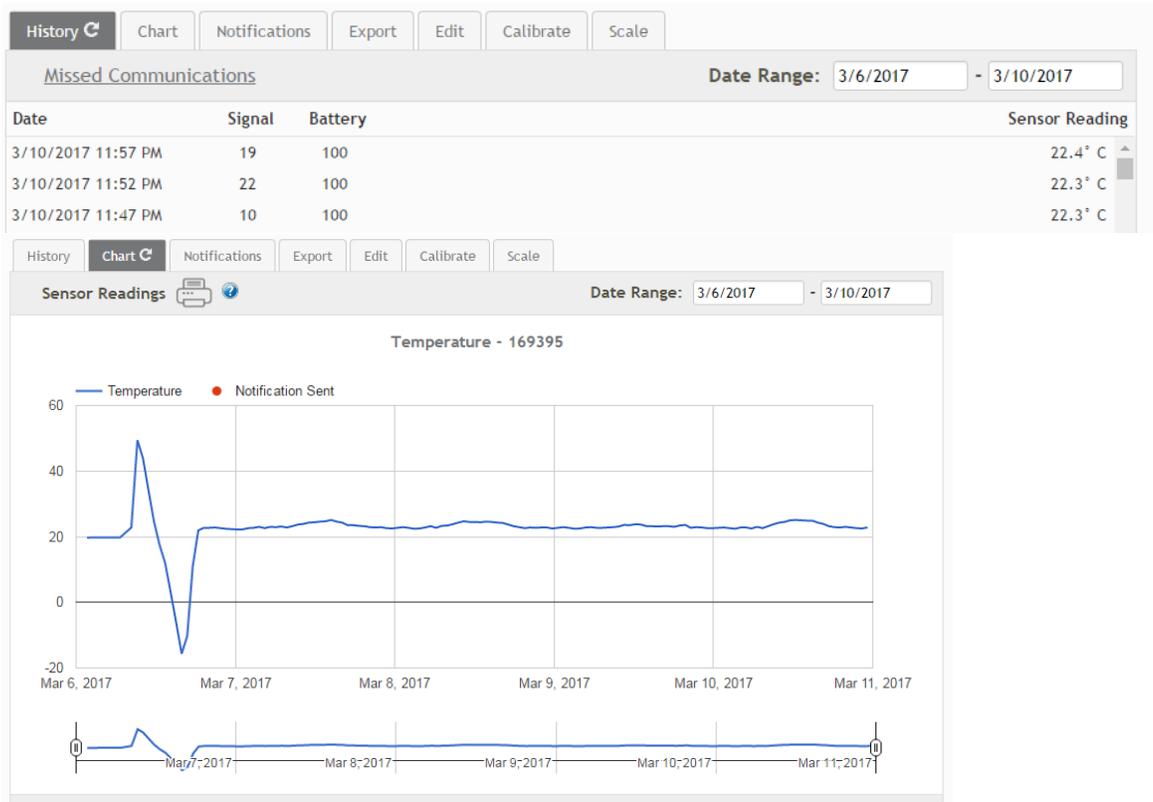
- **History** - Displays a history of the selected sensor’s data.
- **Chart** - Displays a graphical view of the selected sensor’s data.
- **Notifications** - Allows you to manage notifications for the sensor.
- **Export** - Allows you to archive data by exporting as a .csv file.
- **Edit** - Allows you to manage sensor settings.
- **Calibrate** - Available on certain sensor types to provide more accurate data.

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

### History and Chart Views

Clicking on the “History” or “Chart” tabs within the sensor detail panel allows you to view the sensor’s data history as time **stamped data or in a graphical chart format.**

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**Configuring Sensor Settings**

To edit a sensor’s operation settings, click on the sensor overview row to display the details view. Click on the “Edit” tab to access the sensor configuration panel.

The sensor edit panel allows you to set the primary configurations for the sensor. Hovering over the question mark icon by each setting with your mouse will provide an explanation of that setting. When you have finished making changes, press the “Save” button at the bottom of this section.

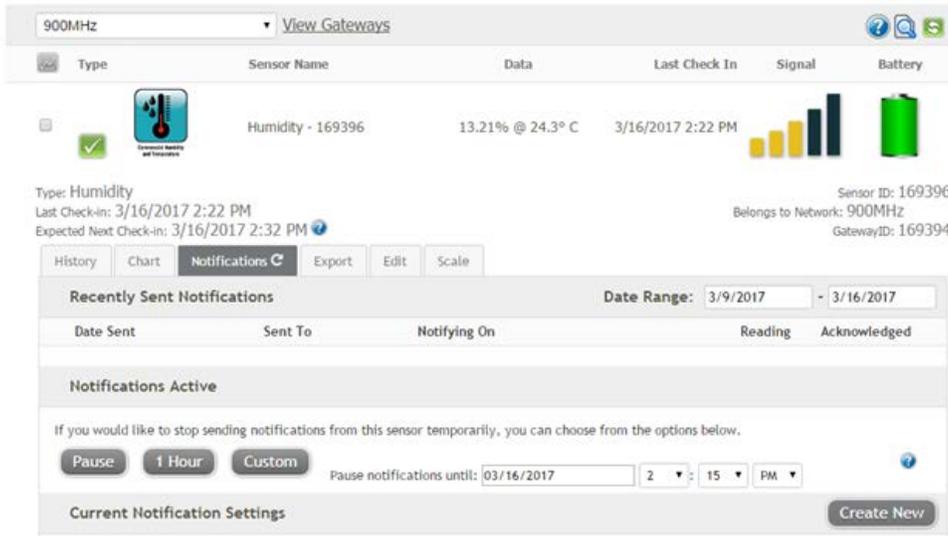
**Note:** Be sure to click the “Save” button anytime you make a change to any of the sensor parameters.

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 configurations again until the sensor has downloaded the new setting.

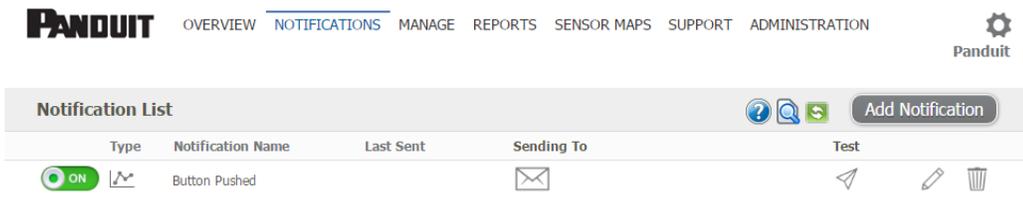
**Sensor and/or Gateway Notification(s)**

Notifications for a single sensor can be created, deleted or edited by clicking the “Notifications” tab in a sensor’s detail view.

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Notifications can be created, deleted or edited for any sensor or group of sensors by clicking on “Notifications” in the main menu.



When creating a notification, you will need to select the type of notification to create.

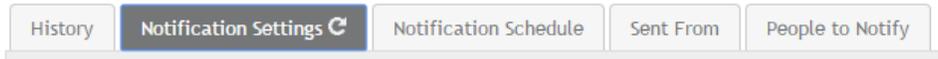


- **Sensor Reading Notification** - Reading notifications are sensor specific (i.e. water sensor = trigger alert when water present, temp sensor = trigger alert when temp is above 70F, etc.). When a sensor reading notification is created, you will need to choose the sensor type you are creating the alert for. The select box will only show sensor types that are currently being used on your sensor network.
- **Battery Notification** - Allows users to define a battery power percentage level that will trigger an alert from the system, warning them to replace batteries.
- **Inactivity Notification** - Set-up “Inactivity” notifications to alert you when your sensors have stopped communicating with the servers. Failure to set up an “Inactivity” notification will result in no email/SMS text being sent should your sensors stop communicating with the servers.
- **Advanced Notifications** - Allows the user to set notifications based on advanced rules, such as comparing past data points with the current one to determine if a notification should be sent.

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### Notification Settings

This area allows the user to set notification parameters such as naming the notification, customizing the notification message and setting sensor conditions that will trigger the notification.



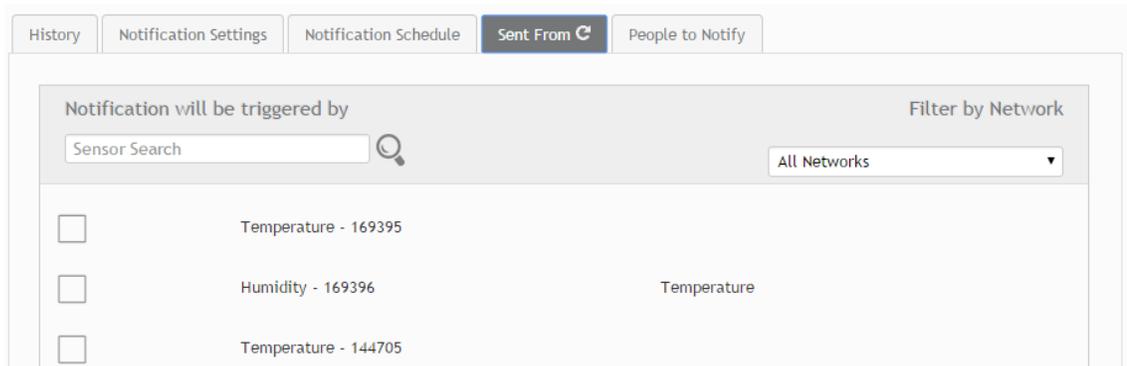
### People to Notify

The list on the left shows all available users on the account. You can type into the search box to filter large lists of users. Select the user(s) to receive the notification and click the arrow button to add them to the recipient list. By default, email notifications are activated. Clicking the notification delivery method icon toggles them on and off (green is on, grey is off). If the user should receive text message notifications, click on the phone icon to turn it green.



### Sent From

Allows you to assign devices (sensors and gateways) that will cause the notification to be sent. When a notification is sent from the system, it will automatically include the device name and the data that caused the notification to be sent. A single notification can be assigned to multiple sensors or gateways. Sensor reading notifications can only be assigned to sensors of the same type. General notifications such as “battery status”, can be assigned to any or all sensors.



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**Exporting Sensor Data**

Clicking on the “Export” tab within the sensor data window allows you to export sensor data to a comma separated value (.csv) file or send the sensor data to an external web source.

To export sensor data, you must first select the date range for the data you want to export. Once the date range is selected, determine whether you want sensor data from the selected sensor, from all sensors in the network, or all sensors assigned to the account. When you are finished, click on “Export Data” at the bottom of this window. The data will be exported to a comma separated value (.csv) file format.

**Note:** Only the first 2,500 records within the selected date range will be exported.

You can alternately send your sensors’ incoming data to a 3rd party by clicking on the “Configure data push” button at the bottom of the window. From this area, you can pass data from your wireless sensor network devices to another service in real time. This is done by coding the data into a URL query then sending the data via an http GET request at the time data is received. There is an extensive list of parameters that can be passed, as listed in the viewed window, that allow you to send detailed information about both the data and the sensor.

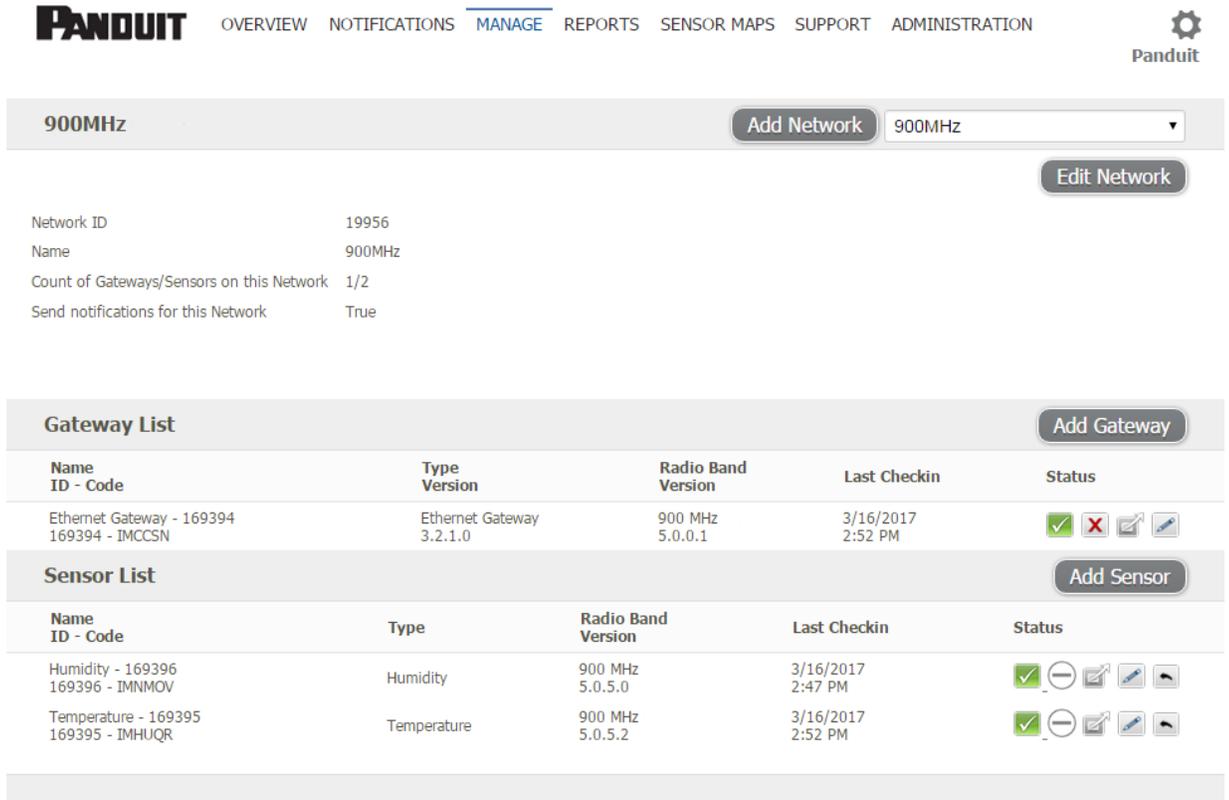
**Calibrating Sensor Data**

Certain wireless sensors can be calibrated for more accurate readings (ex. temperature sensors). If calibration is possible for a sensor, the “Calibrate” tab will be visible in the detail view. To calibrate a sensor, replace the last reading with the more accurate reading and click “Calibrate”. All future readings from the sensor will be based off the new calibration setting.

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Manage Sensor Networks

To view or edit information about your wireless sensor network(s), click on “Manage” in the main navigation. This area allows you to edit network details, create new sensor networks, and manage wireless gateways and sensors for your network(s).



**900MHz** Add Network 900MHz Edit Network

Network ID: 19956  
 Name: 900MHz  
 Count of Gateways/Sensors on this Network: 1/2  
 Send notifications for this Network: True

Gateway List				
Name ID - Code	Type Version	Radio Band Version	Last Checkin	Status
Ethernet Gateway - 169394 169394 - IMCCSN	Ethernet Gateway 3.2.1.0	900 MHz 5.0.0.1	3/16/2017 2:52 PM	<span>✓</span> <span>✗</span> <span>📄</span> <span>🔧</span>

Sensor List				
Name ID - Code	Type	Radio Band Version	Last Checkin	Status
Humidity - 169396 169396 - IMNMOV	Humidity	900 MHz 5.0.5.0	3/16/2017 2:47 PM	<span>✓</span> <span>⊖</span> <span>📄</span> <span>🔧</span> <span>🗑️</span>
Temperature - 169395 169395 - IMHUQR	Temperature	900 MHz 5.0.5.2	3/16/2017 2:52 PM	<span>✓</span> <span>⊖</span> <span>📄</span> <span>🔧</span> <span>🗑️</span>

**Note:** Some buttons and features are only visible if there is more than one sensor network setup on the account, such as the network selection box in the upper right corner.

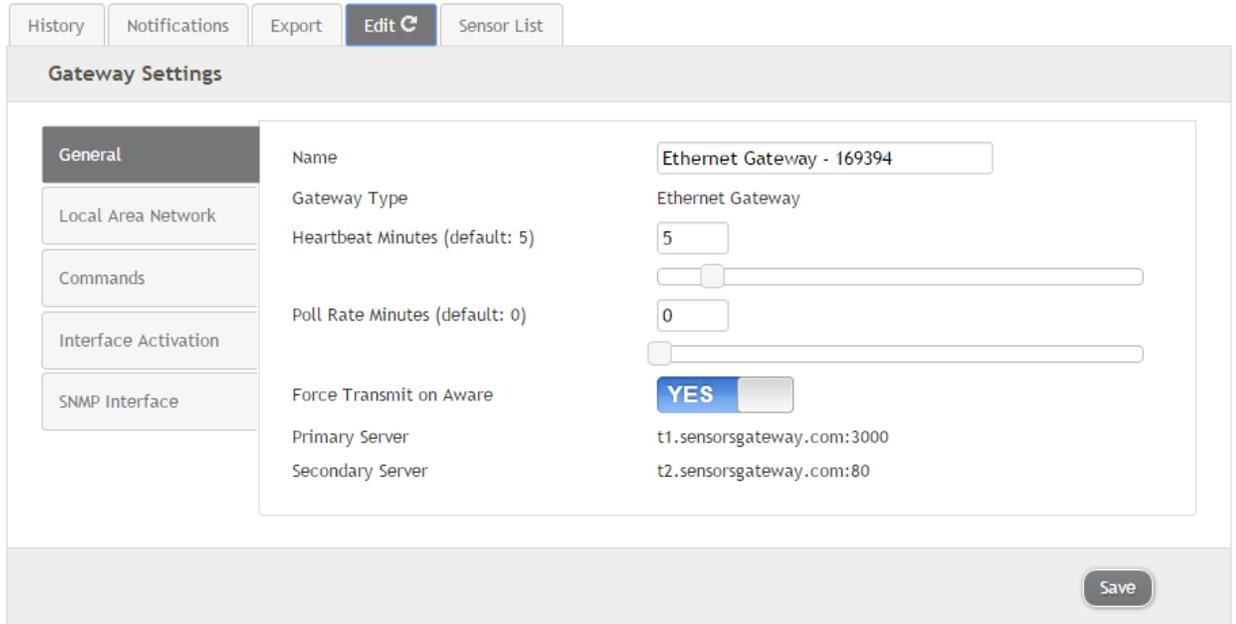
If more than one sensor network is setup on the account, you can easily move gateways and sensors from one network to another by clicking on the “Move Device” button at the far right of the device’s “Status” section.

If you clear a sensor’s data, the data history is deleted from the entire system and cannot be recovered. We recommend exporting a sensor’s data history using the export function in the sensor details view (“Overview” page) before clearing the sensor’s data if you want to have a record of the data.

## 7. Advanced Gateway Settings

### Ethernet Gateway Edit Screen

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



The screenshot shows the 'Gateway Settings' interface with the 'Edit' tab selected. The 'General' tab is active, displaying the following settings:

- Name: Ethernet Gateway - 169394
- Gateway Type: Ethernet Gateway
- Heartbeat Minutes (default: 5): 5
- Poll Rate Minutes (default: 0): 0
- Force Transmit on Aware: YES
- Primary Server: t1.sensorsgateway.com:3000
- Secondary Server: t2.sensorsgateway.com:80

A 'Save' button is located at the bottom right of the settings panel.

The name can be edited to whatever you prefer.

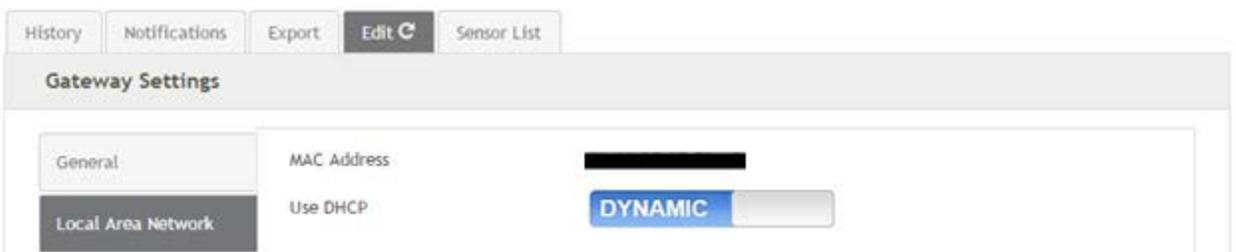
The gateway type should NOT be edited, unless you are directed to do so by a Panduit Technical Support Representative.

The unit's MAC Address is viewable here, should you need to access it.

The heartbeat dictates how often the gateway communicates with the server. This is both for communication passed up to the server from the gateway and the communication passed to the gateway from the server. Exceptions to this interval include Aware messages from sensors.

The Enterprise Server Host address and Communication Port will always be one of Panduit's servers and ports by default. Should you require that the gateway be pointed to your private servers, the gateway can be configured to do so. Make sure to set the appropriate port as well, if port 3000 will not be used.

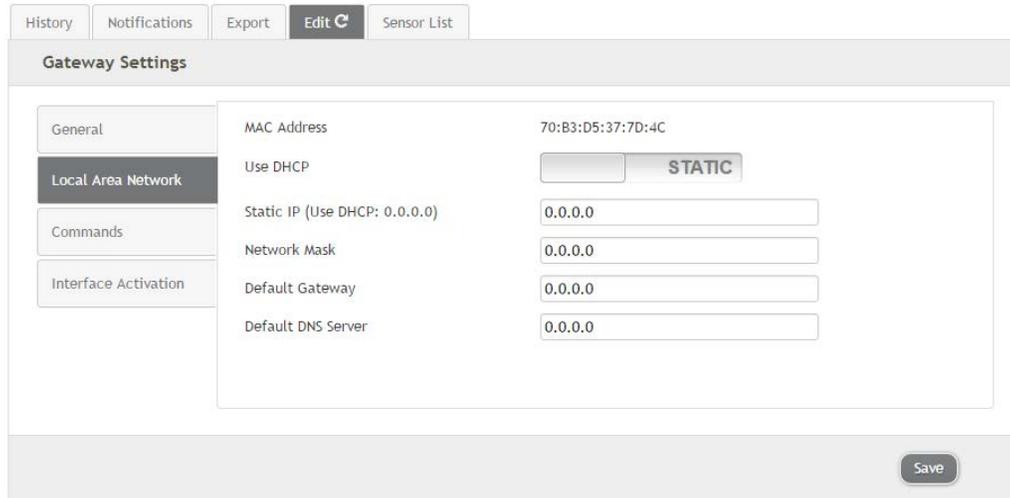
To set the Static IP, click the toggle (which is set to Dynamic by default):



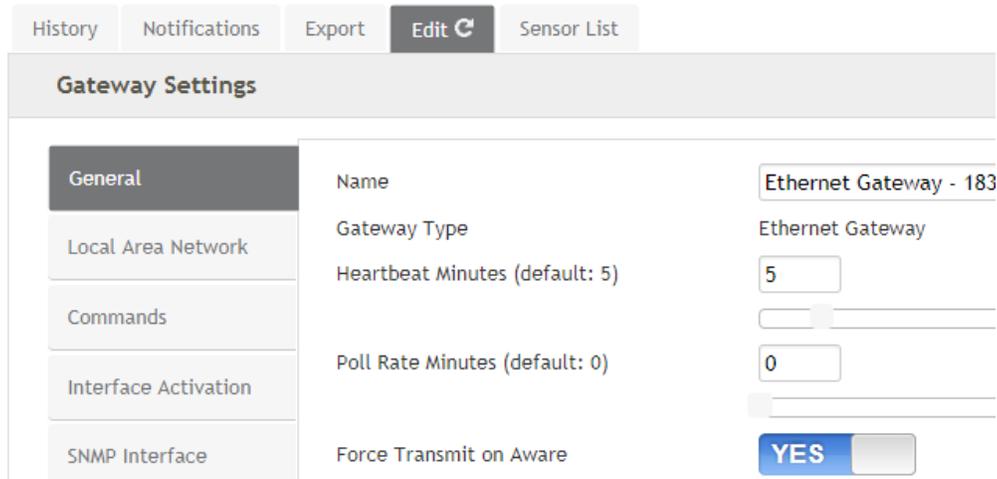
The screenshot shows the 'Gateway Settings' interface with the 'Local Area Network' tab selected. The following settings are visible:

- MAC Address: [Redacted]
- Use DHCP: DYNAMIC

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The force transmit on Aware box tells the gateway to deliver immediately the messages marked as Aware from the sensors. If this box is unchecked and the setting is saved, then the gateway only dumps the sensor messages it has been collecting on the Heartbeat Interval. This allows for controlled communication when sporadic communication from the gateway is either unacceptable or not ideal.



The force transmit on Aware box tells the gateway to deliver immediately the messages marked as Aware from the sensors. If this box is unchecked and the setting is saved, then the gateway only dumps the sensor messages it has been collecting on the Heartbeat Interval. This allows for controlled communication when sporadic communication from the gateway is either unacceptable or not ideal.

**External Interfaces:**

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). These interfaces are hidden by default. To enable, go to the “Interface Activation” tab in the Edit Screen and click the corresponding check box to enable that specific interface.

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History Notifications Export **Edit** Sensor List

**Gateway Settings**

General Queue Expiration (default: 720 minutes)

Local Area Network Activate SNMP Interface

Commands Activate Modbus Interface

**Interface Activation** Activate Real Time Interface

Save

**Real Time TCP Interface**

Poll on the gateway's assigned port to retrieve gateway and sensor data.

History Notifications Export **Edit** Sensor List

**Gateway Settings**

General TCP Timeout Seconds (default: 1.17 seconds)

Local Area Network Port (default: 3500)

Commands

Interface Activation

SNMP Interface

Modbus Interface

**Real Time Interface**

Save

Mark the interface active and click "Save". The default port is 3500, but can be edited.

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**MODBUS TCP Interface**

Use MODBUS TCP software to pull in gateway and sensor data. Panduit provides a register map. Check the box to make the interface Active and click “Save”.

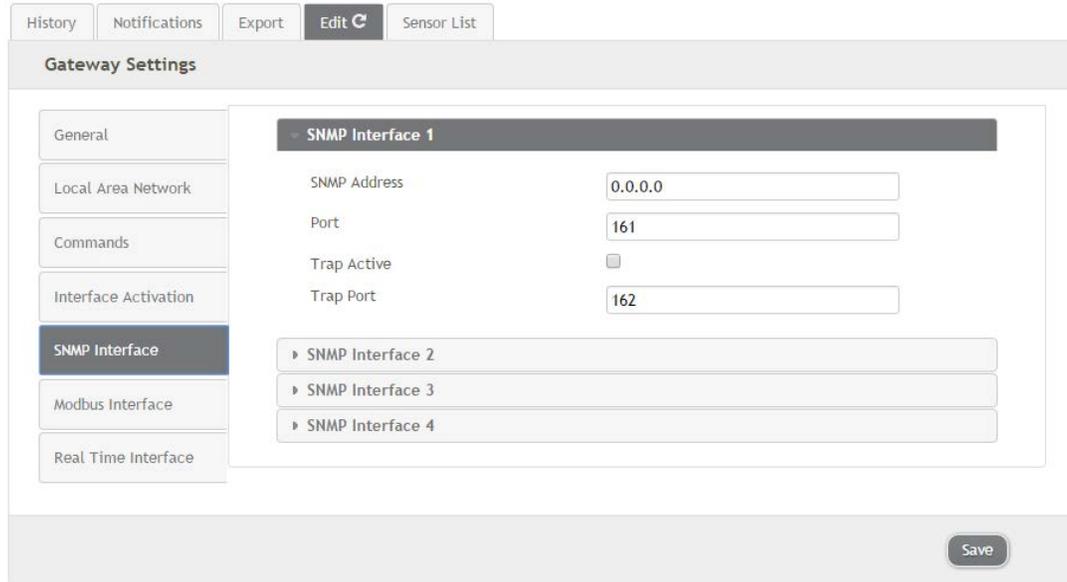
The MODBUS TCP Interface will store all data values in 16-bit registers. The registers and their data fields are mapped below:

	FIELD	DESCRIPTION	REGISTER	DATA ADDRESS
<b>GATEWAY REGISTERS</b>	Gateway ID High	The first 16 bytes of a 32-byte serial ID number	40001	0
	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 County	The number of devices (sensors & gateways) in its network	40004	3
<b>SENSOR REGISTERS</b>	Sensor ID High	The first 16 bytes of a 32-byte serial ID number	40101	100
	Sensor ID Low	The last 16 bytes of a 32-byte 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	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	

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**SNMP Poll and Trap Interface**

Use SNMP software to pull in gateway and sensor data using the Panduit provided 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 click “Save”.



The MIB file is available upon request from Panduit technical support.

Ethernet Gateway MIB tree with a brief 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 (e.g. 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
*Data 1	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)
*Data 2	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)
*Data 3	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)
*Data 4	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)
*Data 5	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)
*Data 6	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)
*Data 7	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)
*Data 8	Data recorded by wireless device (e.g. temperature, water detected, motion detected, etc.)

## 8. Panduit Technical Support

### Severity 1 & 2 Issues:

- North America:
  - Phone: +1-866-405-6654
  - Email: [techsupport@panduit.com](mailto:techsupport@panduit.com)
- EMEA:
  - Phone: +44(0) 208-6017251
  - Email: [techsupportemea@panduit.com](mailto:techsupportemea@panduit.com)
- ASIA PAC:
  - Phone: +65 6305 7575
  - Email: [techsupportap@panduit.com](mailto:techsupportap@panduit.com)

### Severity 3 & 4 Issues:

- North America
  - Phone: +1-866-721-5302
- EMEA
  - Phone: 44-1291-674-661
- ASIA PAC
  - Phone: 65-6305-7044
- Email: [systemsupport@panduit.com](mailto:systemsupport@panduit.com)

### Severity Definitions:

Computer Network – Consists of Customer’s existing routers, switches, servers, clients, applications and services

Monitoring Network – Consists of Panduit’s SynapSense Wireless gateways, sensors and software.

- Severity 1 (Critical) – Complete failure of the Computer Network due to the Monitoring Network and no existing workaround is present; this may include executable crashes or situations where a major feature of the Computer Network is inoperable.
- Severity 2 (High) – Complete failure of the Computer Network due to the Monitoring and an existing workaround is present; failure of a non-critical feature.
- Severity 3 (Medium) – Failure of a minor feature or a Monitoring Network usability problem.
- Severity 4 (Low) – Non-performance related issues, i.e. appearance of Monitoring Network.

## 9. Appendix B – Troubleshooting the Ethernet Gateway

The process for setting up your Panduit Ethernet Gateway should be as simple as plugging in the Ethernet cable and power plug then watching as the lights flash a little then turn solid green. Sometimes the lights may continue to flash red, indicating that there may be a connection or settings issue. We have compiled this troubleshooting information to help you determine what the issue may be.

### For any initial Ethernet Gateway issue:

Try unplugging the power to the gateway, wait 10 seconds, then plug it back in. If that doesn't work, please use a small tool, like a toothpick or paperclip, to press and hold the reset button on the back of the gateway. Press and hold the button for 5 seconds, until you see the LEDs begin to flash.

### If the Ethernet Gateway 1st LED (on left) stays red or is flashing, potential causes are:

- There is no internet access available.
- Port 3000 is blocked.
- DHCP is not enabled. If it is not enabled, you can configure the gateway to use a static IP address.
- DNS cannot be resolved.
- IP address is invalid.

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- The Ethernet cable is not connected.
  - The Ethernet cable is broken/damaged.
  - The Ethernet jack is broken/damaged.
- There is an issue with the device MAC address.

View the Ethernet Gateway configuration documentation for more information on correctly setting the gateway parameters to address these issues.

If the Ethernet network that the gateway is plugged into is not allowing the gateway to connect, put the gateway on a different network, i.e. at home, at work, or another network. See if the gateway comes online. If it does, then the original network that was attempted must be blocking the Ethernet gateway. Troubleshooting at that point would have to be done on the network that is blocking the gateway, not the gateway itself.

### If the Ethernet Gateway 2nd LED (middle) flashes red:

The gateway cannot connect to the server.

- The gateway configuration settings are not correctly configured. Set the gateway back to the defaults by pressing and holding the reset button.
- There is a firewall blocking the port.
- The gateway cannot download a sensor list because it is deleted from a network
- The Ethernet gateway has been able to contact the server and gets a response; however, the APN is not going from Idle to Active. There may be a problem with the hardware, contact Panduit technical support

### If the Ethernet Gateway 3rd LED (on right) is red:

- Check that there are sensors added to the network.

If you are still experiencing any issues that you are unable to troubleshoot with these tips, please contact Panduit technical support

## 10. Appendix C – Sensor Part Numbers

### Sensor Part Numbers and Descriptions currently available:

- 900 MHz (America's)
  - IOT-9GWPOE – POE Ethernet Gateway
  - IOT-9CVM – Vibration Sensor
  - IOT-9CTHL03 – Temperature & Humidity Sensor with 3-foot probe
  - IOT-9CTL03 – Temperature Sensor with 3-foot probe
  - IOT-9CT – Temperature Sensor
  - IOT-9PC01 – 1-input Pulse Counter Sensor
  - IOT-9PC04 – 4-input Pulse Counter Sensor
  - IOT-9OC – Open/Close Sensor
  - IOT-9DC – Dry Contact Sensor
  - IOT-9CM20 – 20A AC Current Meter Sensor
  - IOT-9CM20M – 20 mA DC Current Meter Sensor
  - IOT-9VM5 – 5 VDC Voltage Sensor
  - IOT-9PS300 – Pressure Sensor (300 PSIG)
  - IOT-9PB – Push Button Sensor
  - IOT-9CM150 – 150A AC Current Meter Sensor
  - IOT-9CHT – High Temperature Sensor
  - IOT-9WD – Water Detection Sensor
- 920 MHz (Japan, Colombia, Costa Rica)
  - IOT-9GWPOE-2 – POE Ethernet Gateway
  - IOT-9CVM-2 – Vibration Sensor
  - IOT-9CTHL03-2 – Temperature & Humidity Sensor with 3-foot probe
  - IOT-9CTL03-2 – Temperature Sensor with 3-foot probe

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- IOT-9CT-2 – Temperature Sensor
- IOT-9PC01-2 – 1-input Pulse Counter Sensor
- IOT-9PC04-2 – 4-input Pulse Counter Sensor
- IOT-9OC-2 – Open/Close Sensor
- IOT-9DC-2 – Dry Contact Sensor
- IOT-9CM20-2 – 20A AC Current Meter Sensor
- IOT-9CM20M-2 – 20 mA DC Current Meter Sensor
- IOT-9VM5-2 – 5 VDC Voltage Sensor
- IOT-9PS300-2 – Pressure Sensor (300 PSIG)
- IOT-9PB-2 – Push Button Sensor
- IOT-9CM150-2 – 150A AC Current Meter Sensor
- IOT-9CHT-2 – High Temperature Sensor
- IOT-9WD-2 – Water Detection Sensor
- 868 MHz (EMEA)
  - IOT-9GWPOE-8 – POE Ethernet Gateway
  - IOT-9CVM-8 – Vibration Sensor
  - IOT-9CTHL03-8 – Temperature & Humidity Sensor with 3-foot probe
  - IOT-9CTL03-8 – Temperature Sensor with 3-foot probe
  - IOT-9CT-8 – Temperature Sensor
  - IOT-9PC01-8 – 1-input Pulse Counter Sensor
  - IOT-9PC04-8 – 4-input Pulse Counter Sensor
  - IOT-9OC-8 – Open/Close Sensor
  - IOT-9DC-8 – Dry Contact Sensor
  - IOT-9CM20-8 – 20A AC Current Meter Sensor
  - IOT-9CM20M-8 – 20 mA DC Current Meter Sensor
  - IOT-9VM5-8 – 5 VDC Voltage Sensor
  - IOT-9PS300-8 – Pressure Sensor (300 PSIG)
  - IOT-9PB-8 – Push Button Sensor
  - IOT-9CM150-8 – 150A AC Current Meter Sensor
  - IOT-9CHT-8 – High Temperature Sensor
  - IOT-9WD-8 – Water Detection Sensor
- 433 MHz (ASIA PAC)
  - IOT-9GWPOE-4 – POE Ethernet Gateway
  - IOT-9CVM-4 – Vibration Sensor
  - IOT-9CTHL03-4 – Temperature & Humidity Sensor with 3-foot probe
  - IOT-9CTL03-4 – Temperature Sensor with 3-foot probe
  - IOT-9CT-4 – Temperature Sensor
  - IOT-9PC01-4 – 1-input Pulse Counter Sensor
  - IOT-9PC04-4 – 4-input Pulse Counter Sensor
  - IOT-9OC-4 – Open/Close Sensor
  - IOT-9DC-4 – Dry Contact Sensor
  - IOT-9CM20-4 – 20A AC Current Meter Sensor
  - IOT-9CM20M-4 – 20 mA DC Current Meter Sensor
  - IOT-9VM5-4 – 5 VDC Voltage Sensor
  - IOT-9PS300-4 – Pressure Sensor (300 PSIG)
  - IOT-9PB-4 – Push Button Sensor
  - IOT-9CM150-4 – 150A AC Current Meter Sensor
  - IOT-9CHT-4 – High Temperature Sensor
  - IOT-9WD-4 – Water Detection Sensor

## 11. Appendix C – 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 Panduit 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 other antenna or transmitter.

**Panduit Wireless Sensors and Ethernet Gateway Contain: FCC ID: U62-900M**

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 Panduit 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)

### 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 (EIRP) is not more than that necessary for successful communication.

The radio transmitter (IC: 7265A-900M) 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.

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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 équivalente (PIRE) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio (IC: 9794A-RFSC1) 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.

### Japan (ARIB)

All Panduit 920 MHz products have been tested and found to comply with ARIB STD-T108 standards.



**R** 210-103733

### México – IFETEL Warning

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.







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