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# User's Guide



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## **GW-001 Series**

# **Long Range Omega Link Ethernet Gateway**



**omega.com    info@omega.com**

**Omega Engineering, Inc:**

Omega Engineering, Inc.

800 Connecticut Ave. Suite 5N01, Norwalk, CT 06854 Toll-  
Free: 1-800-826-6342 (USA & Canada only) Customer Service:  
1-800-622-2378 (USA & Canada only)

Engineering Service: 1-800-872-9436 (USA & Canada only)

Tel: (203) 359-1660

Fax: (203) 359-7700

e-mail: info@omega.com

**Omega Engineering,  
Limited:**

1 Omega Drive, Northbank,  
Irlam Manchester M44 5BD  
United Kingdom

**Omega Engineering,  
GmbH:**

Daimlerstrasse 26 75392  
Deckenpfronn Germany

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## 1 Notes, Cautions, and Warnings

If the equipment is used in a manner not specified in this manual, the protection by the equipment may be impaired.

Do not operate the equipment in flammable or explosive environments.

It is important to read and follow all precautions and instructions in this manual before operating or commissioning this device as it contains important information relating to safety and EMC. Failure to follow all the safety precautions may result in injury and/or damage to the equipment.

The following labels identify information that is especially important to note:



**Note:** Provides information that is important to successfully set up and use the Omega Link Gateway.




**Caution, Warning, or Important:** Informs of circumstances that can affect the functionality of the instruments and must refer to accompanying documents.

## 2 Introduction


The Omega Link Ethernet Gateway (GW-001 Series) is a high-performance gateway that allows for seamless, wireless, connection to up to 100 long-range Omega Link Smart Sensor Devices. The Ethernet-enabled RJ45 connectivity ensures a direct connection to the Omega Link Cloud or to a local-area enterprise network. The local built-in web server is also accessible through the RJ45 port. The different GW-001 series models support multiple device connection types including Modbus TCP/RTU RS232/RS485 and USB ports to enable local smart probe connections.

Omega Link Cloud and OEG subscription tiers can be purchased on the Omega website.

 **Important:** Users who will only be connecting to a local-area, enterprise ecosystem with Omega Enterprise Gateway (OEG) do not need to create an Omega Link Cloud account to use the Omega Link Gateway in Enterprise Mode.

Refer to the following LED Status Indicator table to identify the different Gateway behaviors and statuses.

| LED Color                                            | Status Description                                                |
|------------------------------------------------------|-------------------------------------------------------------------|
| Amber/Orange (solid)                                 | Gateway is powered on; no network connection                      |
| Green (blinking repeatedly)                          | Gateway is in Pairing Mode or Firmware Upgrade was successful     |
| Amber/Orange (blinking + reboot)                     | Gateway firmware automatic update                                 |
| Red (blinking)                                       | Gateway is powering on or Firmware Upgrade in progress            |
| Amber/Orange (blinking 3 times and a 3 second pause) | Enterprise Mode enabled                                           |
| Green (solid)                                        | IP Address successfully obtained or network connection successful |
| No Light                                             | Unit is off or in Sleep Mode                                      |

 **Important:** Do not power on the Omega Link Gateway or Omega Link Smart Sensor before the Gateway registration is complete for Omega Link Cloud connections. Refer to section 4.1 Registering your Gateway to Omega Link Cloud for more information.

### 3 GW-001 Hardware Overview

GW-001 series gateways offer the following connector and pairing options to pair sensing devices to the Gateway (connector options vary per model):

- Smart Sensor one-button pairing
- USB 2.0 Connector
- Serial Data and Alarm 5-pin screw terminal
- RJ45 connector for local network and Internet access

#### 3.1 Smart Sensor Pairing

Pairing an Omega Link Smart Sensor to your Omega Link Gateway is made easy with one-button pairing. Simply press the pairing button on your gateway and press the pairing button on your Smart Sensor to connect the two. Your Smart Sensor will now be visible on your Omega Link Cloud or OEG web interface.

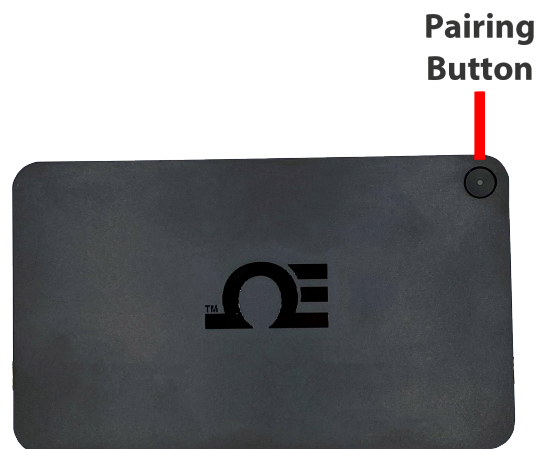


Figure 1: Smart Sensor to Gateway pairing button

#### 3.2 USB 2.0 Connectors

The USB 2.0 connector is used to connect Omega Link Smart Probes with an Omega Link IF-001 Smart Interface Cable directly to your gateway.

#### 3.3 Serial Data and Alarm Connector

The 5-pin terminal can accept RS232 or RS485 inputs from authorized Omega accessories and devices such as OM240, CN616A, and DP612. The 5-pin screw connector on the gateway is labeled as follows:

| Pin   | Description |
|-------|-------------|
| Pin 1 | TX (D+)     |
| Pin 2 | RX (D-)     |
| Pin 3 | GND         |
| Pin 4 | Alarm (N/O) |
| Pin 5 | Alarm (N/O) |

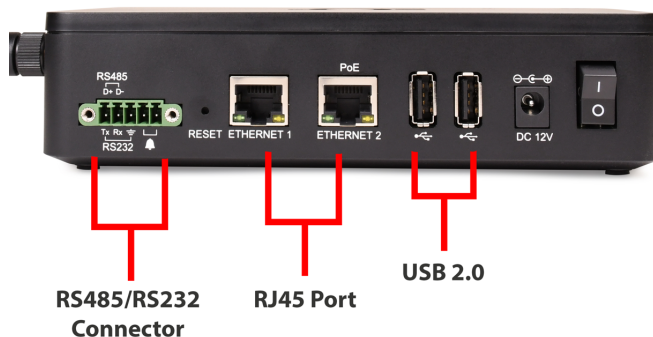


Figure 2: GW-001 Series input connectors (varies by model)

Contact Omega or visit our website to see other compatible devices.

##### 3.3.1 Alarm Relay Wiring

The 5-pin screw terminal can be used to connect a peripheral alarm relay that will be triggered if the gateway loses network connection to the Omega Link Cloud or OEG.



**Note:** This alarm will not detect a cabling or wiring issue. The alarm will sound if the Gateway cannot reach the Omega Link Cloud or OEG network.

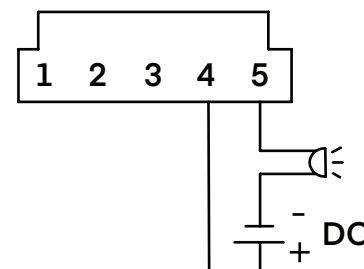


Figure 3: Alarm relay wiring diagram


#### 3.4 RJ45 Port

An RJ45 port is provided for local-network and Internet access, can be used for ModBus TCP devices, and some models offer a Power over Ethernet feature.

## 4 Omega Link Gateway First-Time Setup

Refer to the LED color status table below and follow these instructions to power on the GW-001 unit:

| LED Color                                            | Status Description                                                |
|------------------------------------------------------|-------------------------------------------------------------------|
| Amber/Orange (solid)                                 | Gateway is powered on; no network connection                      |
| Green (blinking repeatedly)                          | Gateway is in Pairing Mode or Firmware Upgrade was successful     |
| Amber/Orange (blinking + Reboot)                     | Gateway firmware automatic update                                 |
| Red (blinking)                                       | Gateway is powering on or Firmware Upgrade in progress            |
| Amber/Orange (blinking 3 times and a 3 second pause) | Enterprise Mode enabled                                           |
| Green (solid)                                        | IP Address successfully obtained or network connection successful |
| No Light                                             | Unit is off or in Sleep Mode                                      |

 **Important:** For setups that will use Omega Link Cloud, do not power on the Omega Link Gateway or Omega Link Smart Sensor before the Gateway has been registered to an Omega Link Cloud account. Refer to section 4.1 Registering your Gateway to Omega Link Cloud for more information.

**Step 1:** Connect the antenna included with the gateway to the side of the device housing.

**Step 2:** Connect the DC 12 V adapter to the back of the gateway.

**Step 3:** Connect an RJ45 Ethernet cable to the port labeled **Ethernet 1** on the gateway.

**Step 4:** Connect the other end of the Ethernet cable to a DHCP-enabled router with Internet access for first-time setup.

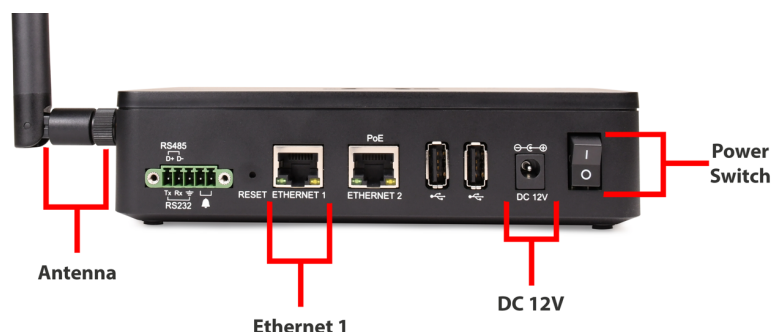



Figure 4: GW-001 connector overview

 **Important:** The GW-001 must be connected to a router with internet access when setup for the first time to ensure the latest firmware is automatically downloaded onto the device.

**Step 5:** Turn the power switch on the gateway to the ON position.

**Step 6:** The LED light on the Pairing Button will blink red to indicate that the device is booting up and updating firmware.

Once the gateway is connected to the Internet, the Omega Link Gateway unit will automatically download the latest available firmware and the LED status indicator will stay a solid green when the update is complete.



## 4.1 Registering your Gateway to Omega Link Cloud



**Note:** Users who will not be creating an Omega Link Cloud account and will be connecting to Omega Enterprise Gateway (OEG) in a non-internet environment should refer to section 5 First-Time Gateway Internal UI Access

The Omega Link Cloud provides device management, state and status monitoring, data logging, and analytics on all connected Omega Link Smart Sensing devices and compatible 3<sup>rd</sup> party sensing devices through a robust web user interface. Accounts can be created and accessed by visiting: <http://cloud.omega.com>. Subscriptions can be purchased by visiting: <https://www.omega.com/en-us/omega-link-cloud>.

To register your Omega Link Gateway with Omega Link Cloud, you must first create and register an Omega Link Cloud account. Using any device with a web browser, complete the following steps:

**Step 1:** Open the web browser to **cloud.omega.com**.

**Step 2:** Click **Sign Up** and complete the registration process. This will require a valid email address.

Once the user credentials are verified, the user can sign in and will be presented with the Omega Link Cloud homepage. For more information, refer to the Omega Link Cloud User's Manual.

**Step 3:** From the Omega Link Cloud homepage, click **Add Gateway**.

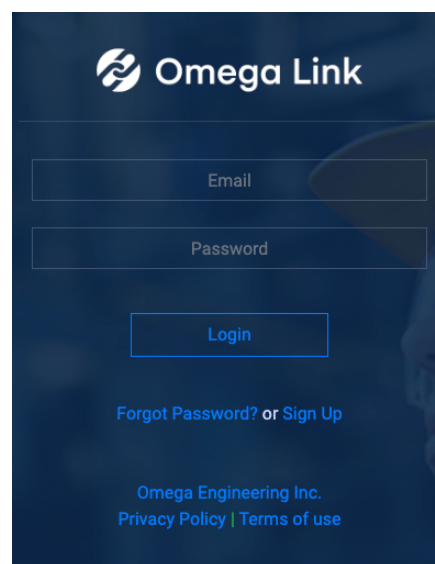


Figure 5: Omega Link Cloud login

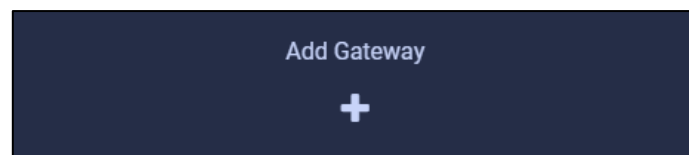


Figure 6: Omega Link Cloud Add Gateway button

**Step 4:** Type in the **Gateway ID (GID)** from the label on your GW-001 device.

**Step 5:** Type in the **Registration ID (RID)** from the label on your gateway and click **Register**.



**Important:** The label containing your Gateway ID and Register ID is located on the bottom of the gateway unit.

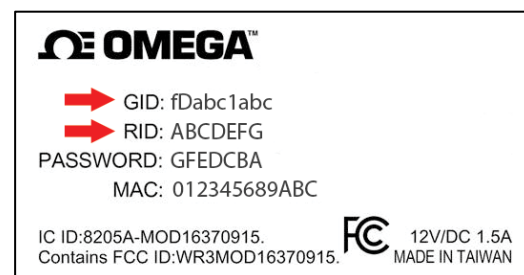




Figure 7: SAMPLE Omega Link Gateway label


**Step 6:** Once you have successfully registered your gateway, an  icon may appear next to the registered device.



**Note:** The  icon indicates incomplete device provisioning between the Omega Link Gateway (GW-001) and the Omega Link Cloud. If the icon persists for more than 5 minutes after the gateway registration, power cycle the GW-001 device by powering the device off and then on again to reattempt device provisioning. Users can access the internal GW-001 User Interface to check the status log of the device if the issue persists.


The user will be presented with the connected device readings being transmitted to the GW-001 once properly paired and connected to the Omega Link Cloud.

## 5 First-Time Gateway Internal UI Access

 **Important:** A firmware update for the GW-001 is required to access the internal UI as listed below. The latest firmware is automatically installed when the GW-001 is connected directly to a router with Internet access.

All Omega Link Gateway models contain an internal user interface (UI) that is used to manually upgrade firmware, add wired sensing devices to the gateway, and add other external accessories and peripherals. When accessing the gateway UI for the first time, with the Gateway still plugged in to the DHCP-enabled router with Internet access, follow the steps below:

**Step 1:** Using a PC or a device with a web browser on the same network as the connected GW-001, type the following URL:  
<http://omegaiotgatewayXXXX.local>  
(Where the XXXX are the last 4 digits of the GW-001 MAC address printed on the rear label).

 **Important:** If the user is unable to access the Gateway UI using the DHCP-router method, the Bonjour Service may need to be installed. The service can be downloaded from the following URL:  
<http://omegaupdates.azurewebsites.net/software/bonjour>

**Step 2:** From the gateway UI login screen, enter the password on the rear label of the unit. When entered successfully, the user will be prompted to create a new password.

Once the user has accessed the UI for the first time, they may leave the network settings as DHCP, or they may choose a Static IP under the Network Settings menu. Additionally, after the first-time setup, the user may choose to enable Enterprise Mode to pair the GW-001 to an Omega Enterprise Gateway (OEG) account. Refer to the section titled **6 Registering your Gateway to OEG (Enterprise Mode)** to learn more about how to enable Enterprise Mode and to pair a GW-001 to OEG, or continue below for an explanation of the different menus available in the GW-001 internal UI.

### 5.1 Connected Devices – Main Interface

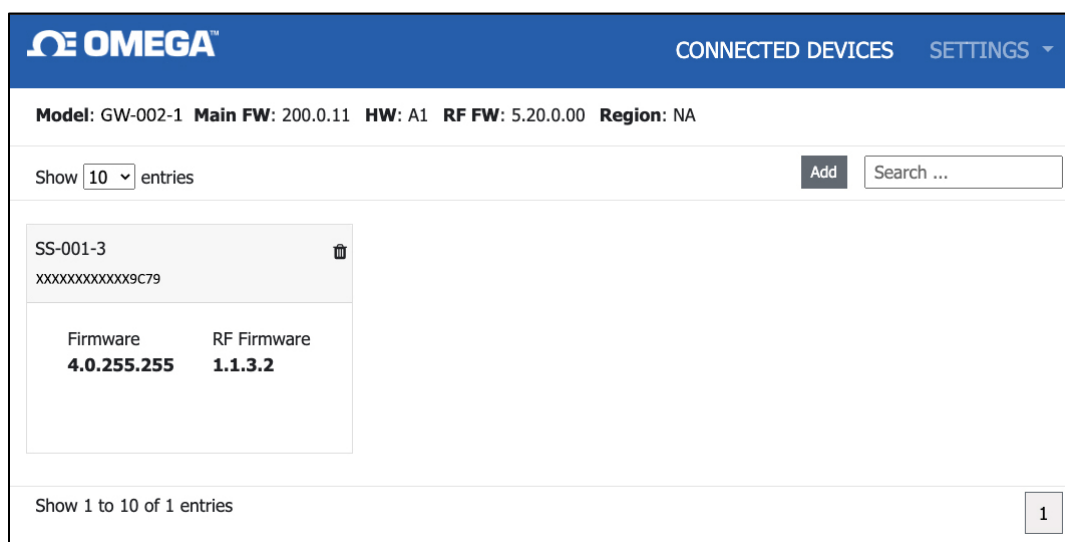



Figure 8: Gateway web UI main page - Connected Devices

The **Connected Devices** tab is the default page that appears when a user has successfully signed in to the internal gateway UI. From here, users can add wired devices to the gateway to have them appear in your Omega Link Cloud or OEG account. Wirelessly paired devices will appear here as well. To pair a wired device to your gateway from the

internal gateway web UI, begin by clicking the  button at the top right of the web page. For more information on how to pair a wireless sensing device such as an Omega Link Smart Probe or Smart Sensor, refer to section: **7 How to Pair a Sensing Device to an Omega Link Gateway.**

## 5.1.1 Controller

When adding a controller, ensure the **Product Family** dropdown is set to **Controller**, and choose your controller type from the **Product Model** dropdown. You can then set the communication parameters for your device including the interface type, baud rate, data bits, stop bits, parity, device ID, and reading interval.

1. Specify Product

Product Family

Controller

Product Model

CN616A

Name

Name

2. Specify Connection Parameters

Interface

RS232

Device ID

1

Baud

9600

Data bits

8

Stop bits

1

Parity

None

3. Specify How Often

Reading Interval (seconds)

20

Figure 9: Add Device – Controller Setup

### 5.1.1.1 Omega Platinum

Omega Platinum controllers being added to the GW-001 require users to identify the IP address and Port number of the Controller device.

1. Specify Product

Product Family

Controller

Product Model

Platinum

Name

Name

2. Specify Connection Parameters

Interface

TCP

IP Address

0.0.0.0

Port

502

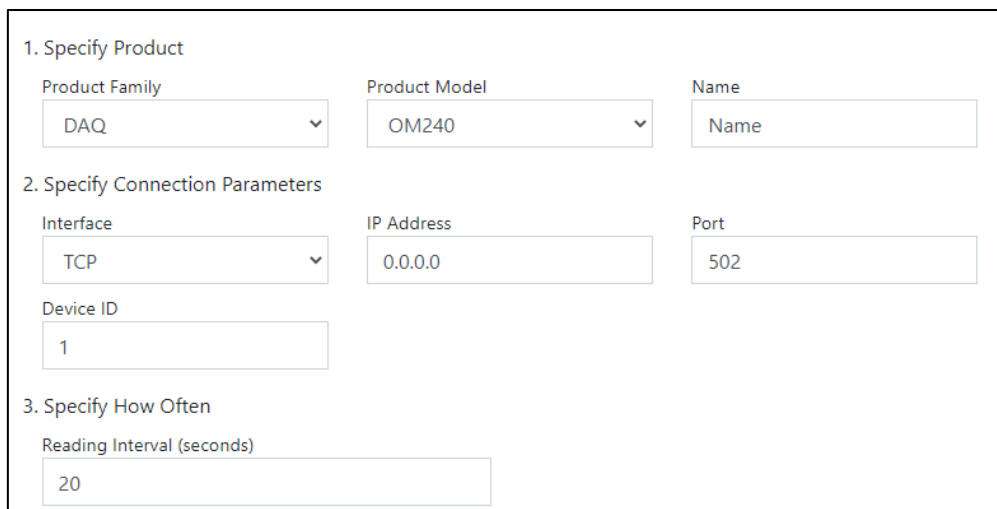
Device ID

1

Figure 10: Platinum series controller Add Device interface

## 5.1.2 DAQ

To add a DAQ device, select it from the **Product Family** dropdown and select your **Product Model** from the dropdown. You can then set the communication parameters for your device including interface type, IP address, port number, device ID, and reading interval.



1. Specify Product

Product Family: DAQ (dropdown)  
Product Model: OM240 (dropdown)  
Name: (text field)

2. Specify Connection Parameters

Interface: TCP (dropdown)  
IP Address: 0.0.0.0 (text field)  
Port: 502 (text field)  
Device ID: 1 (text field)

3. Specify How Often

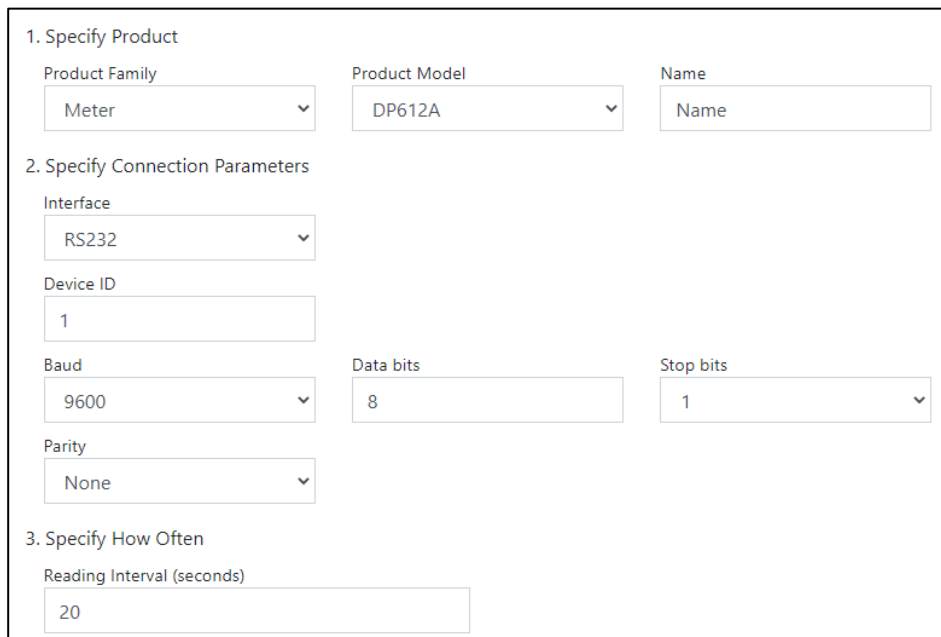
Reading Interval (seconds): 20 (text field)

Omega DAQ devices require users to know the IP address of their controller device. An IP scanner software can be used to identify the DAQ IP address.

Figure 11: DAQ series Add Device interface

## 5.1.3 Meter

To add a Meter device, select it from the **Product Family** dropdown and select your **Product Model** from the dropdown. You can then set the communication parameters for your device including the interface type, baud rate, data bits, stop bits, parity, device ID, and reading interval.



1. Specify Product

Product Family: Meter (dropdown)  
Product Model: DP612A (dropdown)  
Name: (text field)

2. Specify Connection Parameters

Interface: RS232 (dropdown)  
Device ID: 1 (text field)  
Baud: 9600 (dropdown)  
Data bits: 8 (text field)  
Stop bits: 1 (dropdown)  
Parity: None (dropdown)

3. Specify How Often

Reading Interval (seconds): 20 (text field)

Figure 12: Meter Add Device interface

### 5.1.4 Probe

To add a Smart Probe, select it from the **Product Family** dropdown and select your **Product Model** from the dropdown. You can then set the communication parameters for your device including the interface type, device ID, and reading interval.

1. Specify Product

Product Family

Probe

Product Model

SPXXX

Name

Name

2. Specify Connection Parameters

Interface

USB

Device ID

1

3. Specify How Often

Reading Interval (seconds)

20

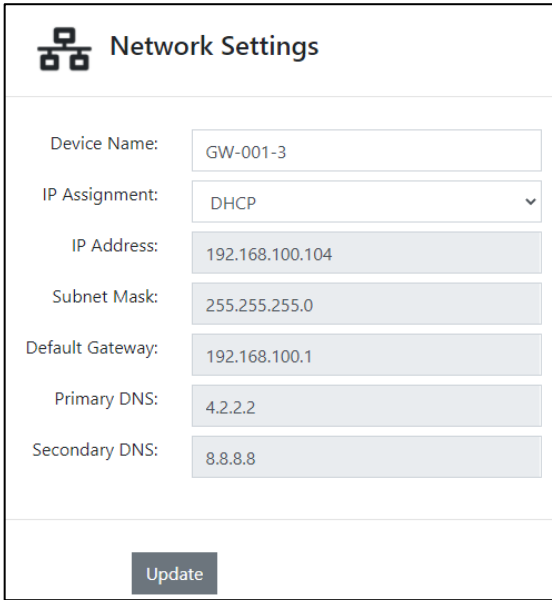
Figure 13: Omega Link Smart Probe Add Device interface

## 5.2 GW-001 Settings

Click the settings tab to view log data, update gateway firmware versions, change security passwords, and view current network settings.

### 5.2.1 Network Settings

To view and change the Network settings, select it from the **Settings** dropdown at the top right of the webpage UI. From here, you can change your gateway device name and change your **IP Assignment** between DHCP and Static IP.

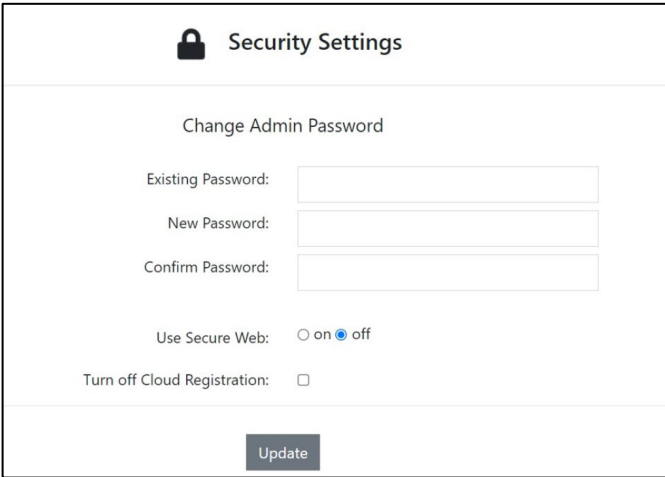


The screenshot shows the 'Network Settings' page of the Gateway UI. It features a header with a network icon and the title 'Network Settings'. Below the header, there are several input fields for configuration: 'Device Name' (text box with 'GW-001-3'), 'IP Assignment' (dropdown menu with 'DHCP' selected), 'IP Address' (text box with '192.168.100.104'), 'Subnet Mask' (text box with '255.255.255.0'), 'Default Gateway' (text box with '192.168.100.1'), 'Primary DNS' (text box with '4.2.2.2'), and 'Secondary DNS' (text box with '8.8.8.8'). At the bottom right, there is an 'Update' button.

Figure 14: Gateway UI Network Settings

### 5.2.2 Security Settings

To manage the password required to access your gateway web UI, select the **Security** option from the **Settings** dropdown at the top right of the webpage UI. From here, users can turn off the cloud registration to enable Enterprise Mode. For more information, refer to section 6 **Registering your Gateway to OEG (Enterprise Mode)**.




The screenshot shows the 'Security Settings' page of the Gateway UI. It features a header with a lock icon and the title 'Security Settings'. Below the header, there is a section titled 'Change Admin Password' with three input fields: 'Existing Password', 'New Password', and 'Confirm Password'. Below these fields, there are two options: 'Use Secure Web' with radio buttons for 'on' and 'off' (where 'off' is selected), and 'Turn off Cloud Registration' with a checkbox. At the bottom right, there is an 'Update' button.

Figure 15: Gateway UI Password and Security Settings

## 5.2.3 System Settings

To update your gateway firmware version, factory reset your device, or soft reboot your device, select **System** from the **Settings** dropdown at the top right of the webpage UI. When updating the firmware version, click **Check Online** to download the latest firmware version

available for your gateway. Then, click the  icon to find the file on your computer. Finally, click **Upload** to get the latest firmware on your gateway.



**Warning:** Clicking the Factory Reset button erases all saved data and configurations. Your gateway will be changed back to the default, out-of-the-box settings.

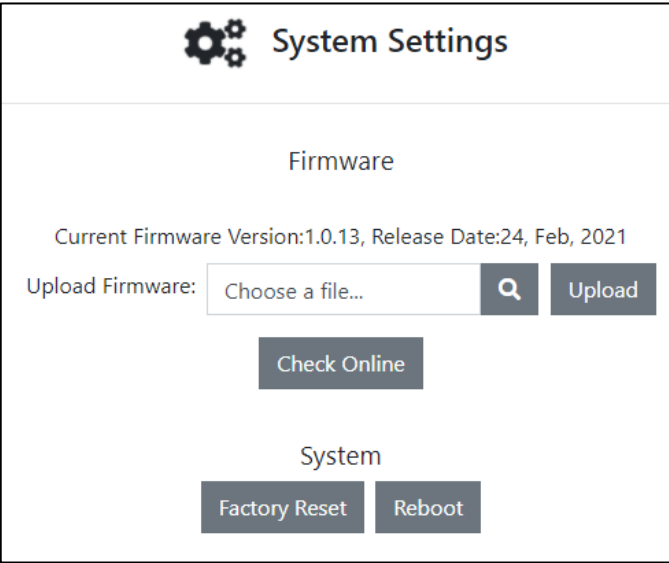


Figure 16: Gateway UI System Setting, Firmware update, and Factory Reset interface

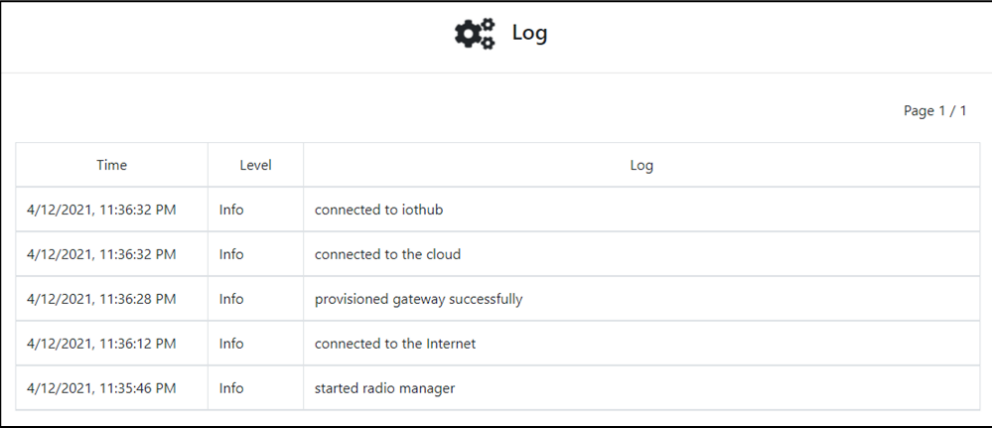
### 5.2.3.1 How to Update the Firmware on an Omega Link Gateway

Once in the **System Settings**, the user may click the magnifying glass icon accompanying the **Upload Firmware** box to open the **File Explorer**. Select the new firmware file and click **Open**. Click **Upload** to confirm the firmware upgrade. A red LED on the gateway will indicate that the upgrade is in process.

Once the update process is complete, log out and log back in. The new firmware version will appear on the main page of the internal gateway interface.

## 5.2.4 Log

Select **Log** from the **System** dropdown to view a time-stamped report of the events that have occurred with your gateway.



| Time                   | Level | Log                              |
|------------------------|-------|----------------------------------|
| 4/12/2021, 11:36:32 PM | Info  | connected to iothub              |
| 4/12/2021, 11:36:32 PM | Info  | connected to the cloud           |
| 4/12/2021, 11:36:28 PM | Info  | provisioned gateway successfully |
| 4/12/2021, 11:36:12 PM | Info  | connected to the Internet        |
| 4/12/2021, 11:35:46 PM | Info  | started radio manager            |

Figure 17: Gateway UI Log table

## 6 Registering your Gateway to OEG (Enterprise Mode)

An Omega Link Gateway can be added to Omega Enterprise Gateway (OEG) in a non-internet environment by enabling **Enterprise Mode** on the Gateway unit. To add an Omega Link Gateway to OEG, the **Cloud Registration** option needs to be disabled by accessing the **System Settings** in the Gateway web UI. Once disabled, the gateway will be in **Enterprise Mode**.



**Important:** If the OEG License being used has not been activated, an internet connection will be needed for a one-time license activation before proceeding. Adding an Omega Link Gateway as a Device to OEG is only available on non-trial licenses of OEG.

**Step 1:** Navigate to the Security Settings in the Gateway UI.

**Step 2:** Click the Turn Off Cloud Registration checkbox to disable the feature and set the GW-001 to Enterprise Mode.

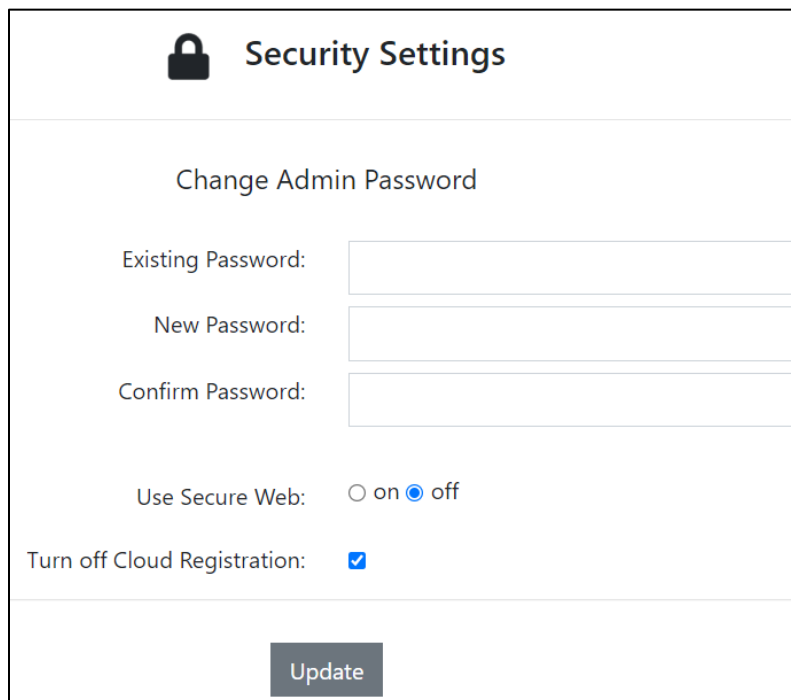


Figure 18: Gateway UI Security Settings – Turn off Cloud Registration

**Step 3:** Click the Update button to save the setting change. The gateway LED will flash orange 3 times indicating the device is in Enterprise Mode.




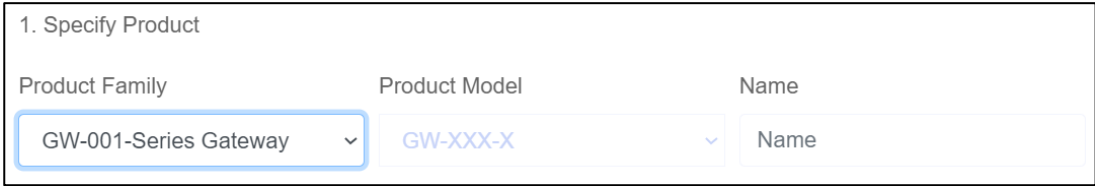
**Note:** The GW-001 may be configured to use a Static IP rather than the default DHCP. If these settings are changed, the PC or local-area network router must be on the same local-area network as the Static IP address assigned to the GW-001 unit.

If the GW-001 will be moved and connected to a local-area network, it should be moved now and connected directly to a DHCP-enabled, local-area network router or local-area network PC.

**Step 4:** Launch and log in to your Omega Enterprise Gateway account.



**Step 5:** Click the  icon or Add Devices. Then select GW-001-Series Gateway from the Product Family dropdown and GW-XXX-X from the Product Model dropdown.




*Figure 19: OEG interface Add Device menu – Omega Link GW-XXX-X*

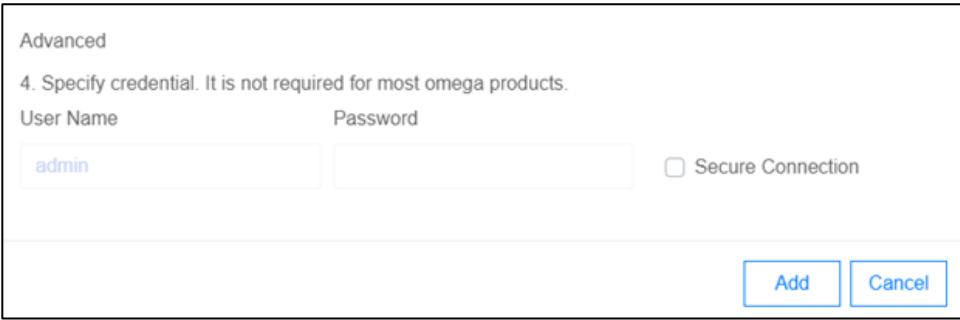
**Step 6:** Input the IP Address of the connected Omega Link Gateway as it appears in your local-area network.



*Figure 20: OEG interface Add Device menu – Connection Parameters*

 **Important:** If the DHCP-enabled GW-001 unit has been disconnected and moved to a separate DHCP-enabled, local-area network router or PC, the user must log back into the gateway internal UI to identify the new IP Address that the unit has been assigned under the local-area network.

**Step 7:** Click Advanced to reveal the text field for Username and Password. The Username will automatically populate to “admin.” Input the password required to access the gateway internal UI in the Password textbox.



*Figure 21: OEG Interface Add Device menu – Gateway Username and Password input*

**Step 8:** Click Add to finalize your configuration.

All devices connected to the Omega Link Gateway will appear, including those that are offline. The readings from offline units will display NaN. For more information on how to navigate OEG, refer to the OEG Software User's Manual.

**Note** The maximum reading interval is 120 seconds for Omega Link Gateway. After switching to Enterprise Mode from Cloud Mode, the Omega Link Gateway device should be manually powered off and on again. Omega Enterprise Gateway should also be restarted from the Windows OS Services application. In the future, if users will be using the Omega Link Cloud service, they must navigate to the Gateway web UI again to uncheck the Turn off Cloud Registration box.

## 6.1 Configuring Sensing Devices after Pairing with OEG

If a sensing device paired wirelessly or wired directly to the Omega Link Gateway has been configured or modified after the Omega Link Gateway has been added to OEG, the user must reboot the Omega Link Gateway and restart the OEG software to sync with the configuration made to the connected device.

## 7 How to Pair a Sensing Device to an Omega Link Gateway

Refer to either the Wireless Pairing or Wired Pairing instructions as applicable.

### 7.1 Wireless Pairing

Pairing your wireless Smart Interface (IF-006) or Smart Sensor is made easy with a one-button pairing system between the IF-006 or Smart Sensor and the Omega Link Gateway.



**Important:** The pairing instructions for the SS-001-RUG differ from the standard wireless pairing procedure. Refer to section 7.1.1 SS-001-RUG Pairing to pair an SS-001-RUG to your Omega Link Gateway.

**Step 1:** Push the pairing button once on your Smart Sensor or IF-006 device. The LED Status Indicator will blink green indicating it is in Pairing Mode.

**Step 2:** Quickly push the pairing button on the Omega Link Gateway. The LED on the Gateway will blink green indicating the Gateway is in Pairing Mode.

When the IF-006 or Smart Sensor has been successfully paired to the Omega Link Gateway, the LED will stop blinking on both devices.

#### 7.1.1 SS-001-RUG Pairing

To pair an SS-001-RUG sensor to an Omega Link Gateway, follow the instructions below:

**Step 1:** Locate the small pinhole on the underside of the SS-001-RUG unit and insert a paperclip to press the button once. The LED Status Indicator at the top of the unit will blink green once when successfully completed.

**Step 2:** Quickly push the pairing button on the Omega Link Gateway. The LED on the Gateway will blink green indicating the Gateway is in Pairing Mode.

When the SS-001-RUG has successfully been paired to the Gateway, the LED status indicator will briefly flash orange before flashing green one more time.



**Note:** Holding the pinhole button on the underside of the unit for longer than 5 seconds will reset the sensor to its factory default settings.

## 7.2 Wired Pairing

Wired Smart Probes connected directly to an Omega Link Gateway with an IF-001 cable will need to add the device to the Gateway Internal User Interface.

The **Connected Devices** tab is the default page set once you are signed in to the internal gateway UI. From here, you can add devices to your gateway to have them appear in your Omega Link Cloud account.

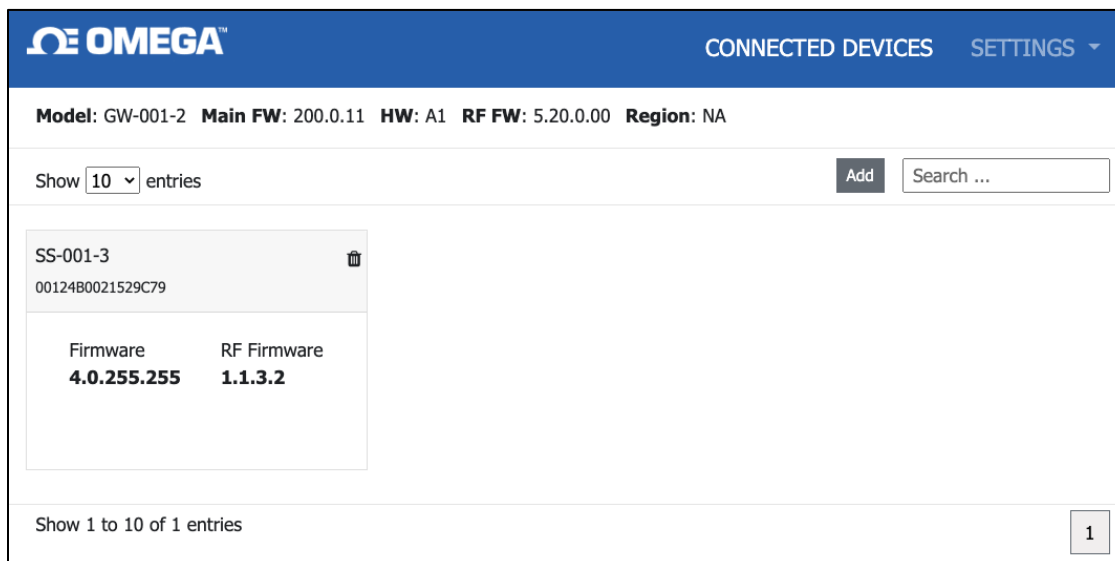


Figure 22: Gateway Internal User Interface

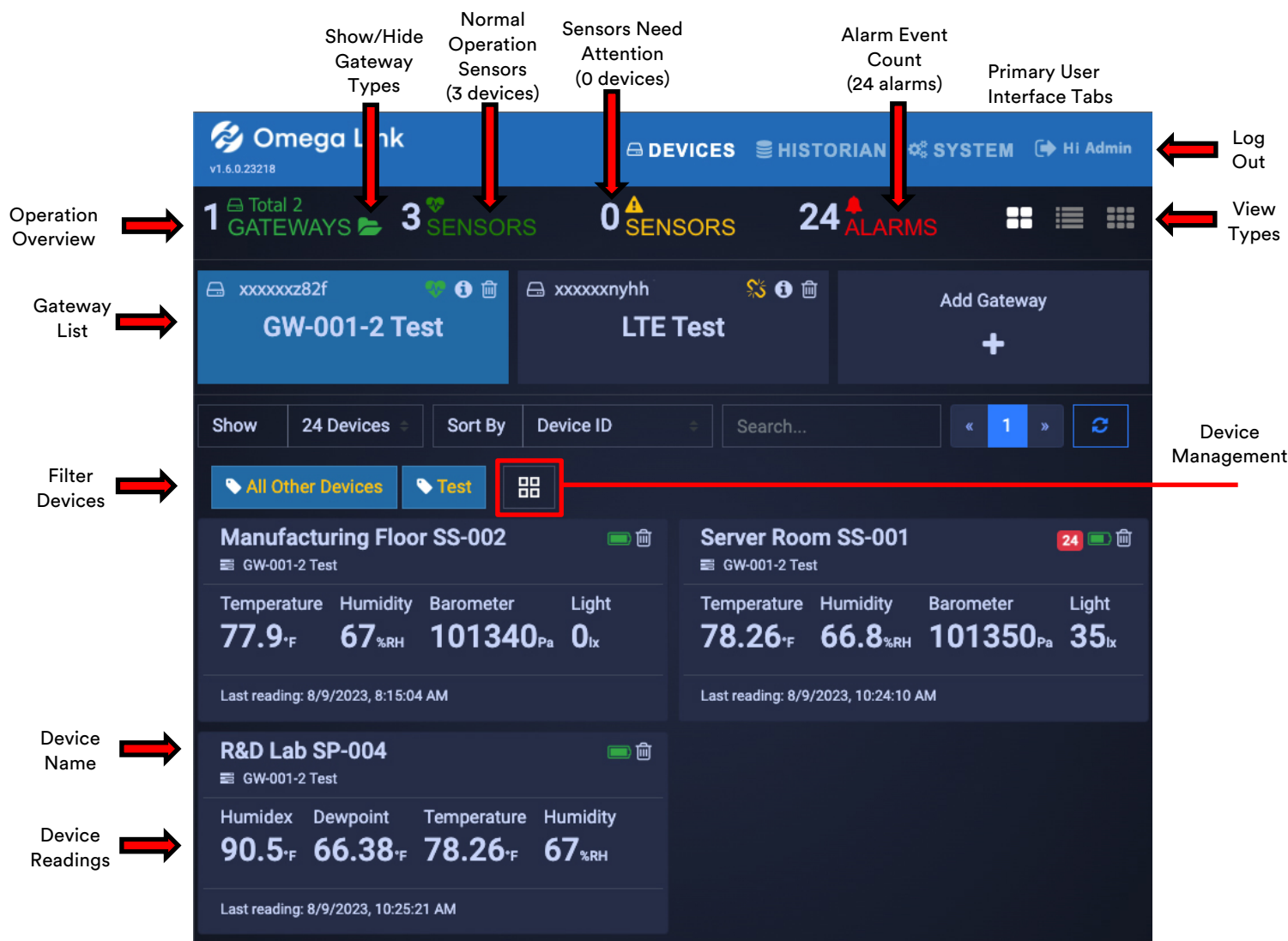
To add a device to your gateway from the internal gateway web UI, begin by clicking the  button at the top right of the web page. Refer to section **5.1 Connected Devices – Main Interface** for more information.

## 8 Navigating Omega Link Cloud

The primary user interface tabs (**Devices**, **Historian**, and **System**) and their functionality are described in the sections that follow.

### 8.1 Devices


After signing in, the **Devices** tab immediately presents the readings of all registered Omega Link Gateways and their connected sensing devices. From here, you may access your gateway details, add additional gateways to your cloud account, monitor device health, and access specific sensor analytics.






The screenshot displays the Omega Link Cloud interface for the **DEVICES** tab. At the top, the navigation bar includes the **DEVICES**, **HISTORIAN**, and **SYSTEM** tabs, along with a user profile and **Log Out** option. Below the navigation bar, a summary section shows **1** Total **2** GATEWAYS, **3** SENSORS, and **24** ALARMS. The main content area lists devices, including **GW-001-2 Test** and **LTE Test**. A **Filter Devices** dropdown is set to **All Other Devices**. The **Device Management** section shows a grid of device cards, such as **Manufacturing Floor SS-002** and **Server Room SS-001**, each displaying sensor readings (Temperature, Humidity, Barometer, Light) and the last reading time. The **Device Name** and **Device Readings** are highlighted with red arrows.

Figure 23: Omega Link Cloud main interface - Devices

## 8.1.1 Gateway Details

To view your gateway details or change the name of your device, click the  icon associated with the gateway you wish to view. From here, you will be able to change your gateway name and view your gateway ID, firmware version, model number, initial boot-up date and time, hardware type, manufacturer, and last recorded device heartbeat.

When a GW-001 device firmware update is available, the blue  icon will become yellow  to indicate that an update is available. This update can then be completed through the cloud by clicking the yellow  icon.


|                                                                         |                        |
|-------------------------------------------------------------------------|------------------------|
| Gateway ID: xxxxxxz82f                                                  |                        |
| Gateway Name                                                            |                        |
| <input type="text" value="GW-001-2 Test"/>                              |                        |
| Firmware                                                                | Hardware               |
| 1.2.0                                                                   | A1                     |
| Model                                                                   | Manufacturer           |
| GW-001-2                                                                | Omega Engineering Inc. |
| Boot Up                                                                 | Last Heart Beat        |
| 8/5/2023, 10:36:56 AM                                                   | 8/9/2023, 11:33:43 AM  |
| <input type="button" value="Cancel"/> <input type="button" value="Ok"/> |                        |

Figure 24: Omega Link Cloud registered gateway details

### 8.1.1.1 Situational Amber LED Status Indicator During Initial Boot-Up

Occasionally, the LED status indicator of the Omega Link Gateway will display a solid amber light. This solid amber light indicates that there is no internet connection to the Omega Link Gateway. This can be verified by navigating to the internal gateway user interface using a web browser (refer to the Omega Link Gateway user's manual for more information on accessing the internal gateway user interface). Should this occur, the user or company's IT department must open firewall ports and IP addresses to allow the connection to occur.

## 8.1.2 Management

Clicking the management  icon allows users to create customizable groups of gateways, assign gateways to admins, and assign gateway alarm notifications to other users. The "Group" feature allows admin users to group gateway devices and organization users. Groups of users will have permission to view, change, and/or receive alarm notifications from the sensors associated with the gateways in the group.

### 8.1.2.1 Creating a Device Group and Adding Devices

To create a **Device Group** and add sensing devices to that group, follow these instructions:

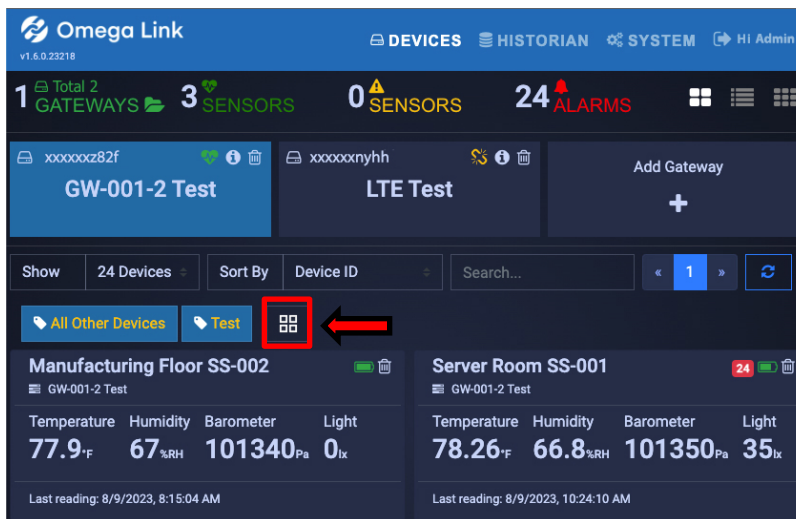
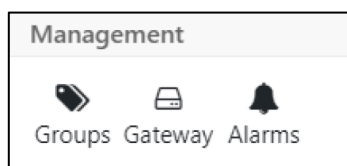


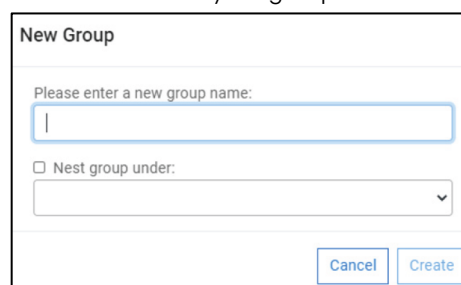
Figure 25: Omega Link Cloud devices homepage

**Step 1:** On the Omega Link Cloud homepage, click on the management icon .

**Step 2:** Click **Groups**, then click **Add Group** and create a name for your group. Click **Create** to finalize.





*Figure 26: Device Management options*



*Figure 27: New Group Interface*

**Note**  **Note:** The dropdown for **Nest Group Under** can be disregarded.

**Step 3:** Once your group is created, a pop-up window will appear with the title **Manage Device Groups**. Click the  icon to add a user's email address and grant them access to the group. Click **OK** to finalize the changes.

**Note**  **Note:** Before adding a user to a group, the user must be granted access to the Omega Link Cloud account by completing the steps outlined in section 0

How to Add **Users**.

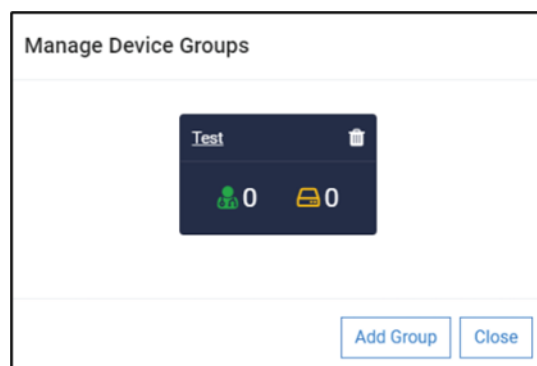



Figure 28: Device group management interface

**Step 4:** Once back on the **Manage Device Groups** window, click the  icon to add sensing devices to your newly created group. Click **OK** to finalize the changes.

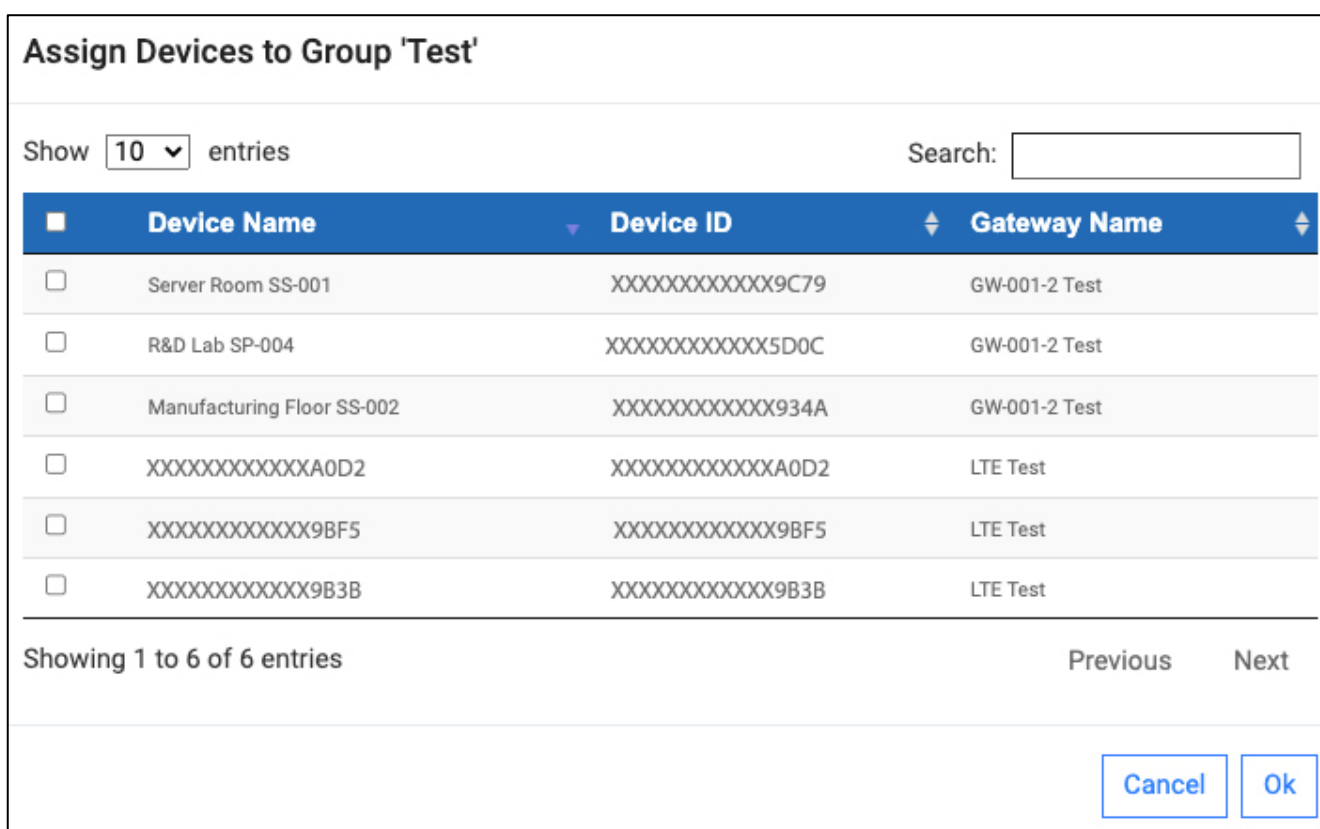



Figure 29: Assigning a device to a specific group

### 8.1.2.1 User and Device Assignment

To assign users to devices, click the  icon, and click **Add Group**. After naming your group, you can click on these icons to add users and devices to your group.

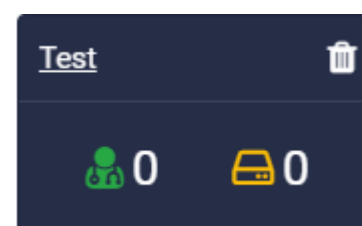




Figure 30: Omega Link Cloud Users and Groups

### 8.1.2.2 Assign Gateway to Admin (Admin Only)



To assign a gateway to an admin, click the Gateway icon. Enter the admin's email address and select the gateway that will be assigned to them. Click **Assign Gateway** to finalize.

### 8.1.2.3 Assign Alarm Notifications



To assign gateway alarms to other users, click the Alarms icon. Select your gateway, select the users to be assigned the alarm notifications, and click **Confirm Assign** to finalize.

## 8.1.3 Sensor Analytics

To access the analytics of a specific sensor, click on the measurements of the sensor you wish to view.

### 8.1.3.1 Measurements

The measurements tab displays graphs of the readings recorded by your sensor. It allows users to change between live readings and specified ranges of time. All data points, except for **Real Time**, are downsampled to 10 minutes for 24 hours and 1 hour for 7 days and 30 days. Custom range downsampling will be based on the Reporting Interval when plotted on the Omega Link Cloud interface regardless of the Cloud subscription level. All Real Time logged data fully remains in the Historian. See section **6.2 Historian** for more information.

**Note**

**Note:** Data backfilled from offline sensor devices will not have the subscription level downsampling rate appear in the Measurements chart if the custom range is greater than 24 hours. However, the data gathered while the sensor was offline (but still powered on) is preserved as long as there is still space in the internal memory. In case the sensor memory is full, the oldest data will be overwritten first.

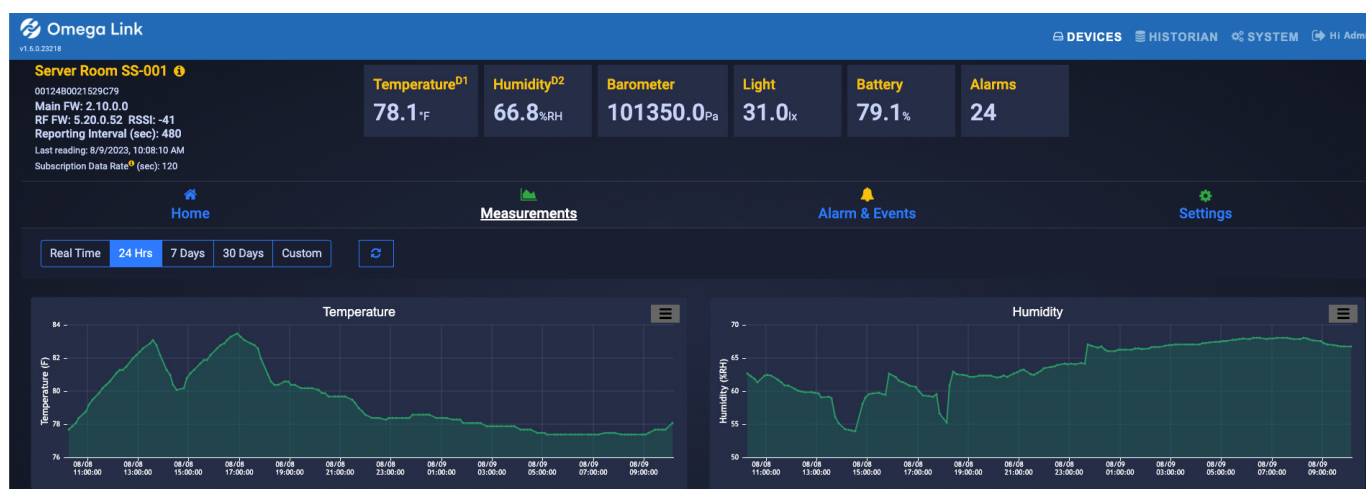


Figure 31: Omega Link Cloud sensor measurements – Graph View

### 8.1.3.2 Alarms and Events

The Alarms and Events tab displays all alarms and events that were triggered by this device. Each alarm and event include a short message describing the nature of the alarm or event.

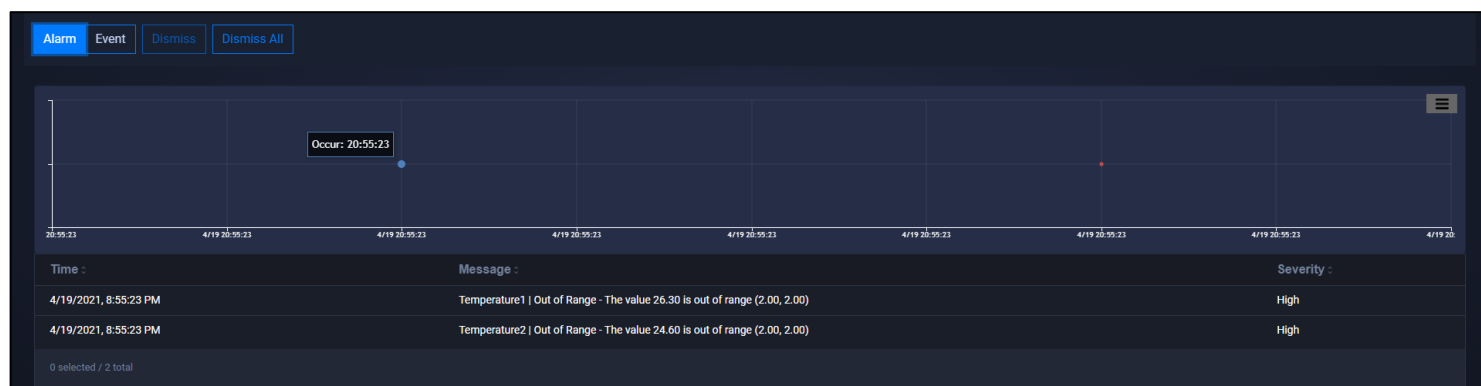


Figure 32: Omega Link Cloud Alarms and Events interface

### 8.1.3.3 Settings (Define Alarms and Events)

The Settings tab allows users to change all settings relevant to how the device interacts with the Omega Link Cloud. Users can customize the device name, alarm/event thresholds, and sensor reporting properties.

To set a local alarm output once you are in the **Settings** tab, define the parameters of the alarm by defining the threshold. Your alarm can be configured to trigger when readings go **Above**, **Below**, or **Out of Range** of your defined threshold. Once you have defined your alarm parameters, click **Update** to finalize your changes.

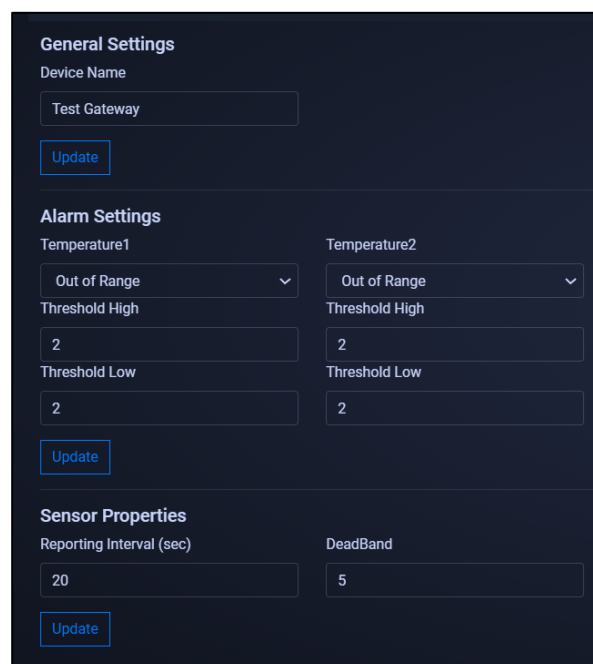


Figure 33: Omega Link Cloud Settings

### 8.1.3.4 What is Deadband in Settings?

It is standard to establish the desired threshold or setpoint to trigger an alarm when a condition is met. Triggering an alarm repeatedly in a short period, however, can produce unwanted results, such as having the alarm flip between inactive and active several times and triggering unwanted actions tied to that alarm as a result. Additionally, the constant alarm email notifications may result in an email service shut down.

To solve the alarm chattering issue, Omega has implemented a Deadband feature into the Omega Link Cloud. Also known as hysteresis, the deadband establishes a range, or threshold, of values from the setpoint that the Omega Link Cloud will accept before the alarm is triggered. The deadband threshold can either be defined as an absolute value or as a percentage of the setpoint value.

In the Omega Link Cloud, the deadband feature in the alarm settings is expressed as a percentage. For example, if a user enters a value of 5 in the deadband text box, a range of +5% to -5% from the threshold has been established and the alarm will not be triggered within that region.

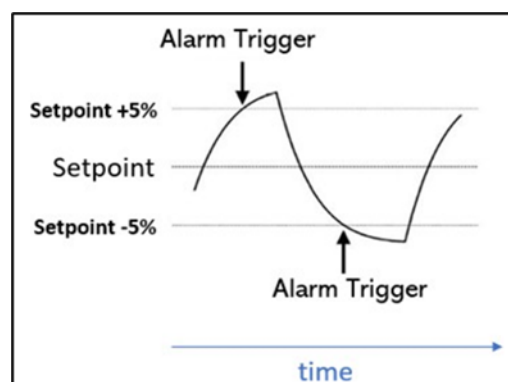


Figure 34: Setpoint as a percentage

In OEG, the deadband feature in the alarm settings is expressed as an absolute value. For example, if a user enters a value of 5 in the Deadband text box, a range of +5 to -5 from the threshold has been established and the alarm will not be triggered within that region.

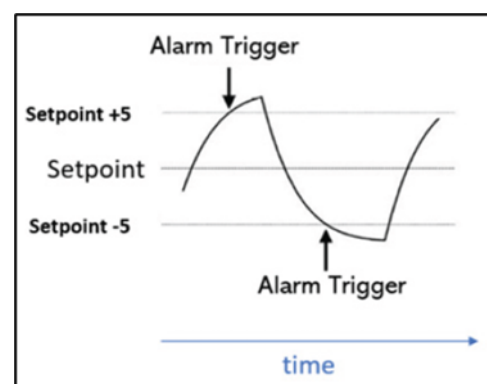


Figure 35: Setpoint as an absolute value

## 8.2 Historian

The Historian tab allows users to create reports of past readings within a range of time and presents them as a graph. Through the Historian tab, users can export their chart data as a .csv file. Begin by clicking **Select Devices** and making your selection. Select the range of time your wish to view and choose a graph type from the selection. Your data will then be displayed and ready for export.



Figure 36: Omega Link Cloud Historian interface

### 8.2.1 How to Generate a Historical Data Report

The Historian tab allows users to create reports of past readings within a range of time and presents them as a graph. Through the Historian tab, users can export their chart data as a .csv file. Begin by clicking **Select Devices** and making your selection. Select the range of time your wish to view and choose a graph type from the selection. Your data will then be displayed and ready for export.

Users can begin to generate a *Historical Data Report* by clicking the **Select Devices** button.

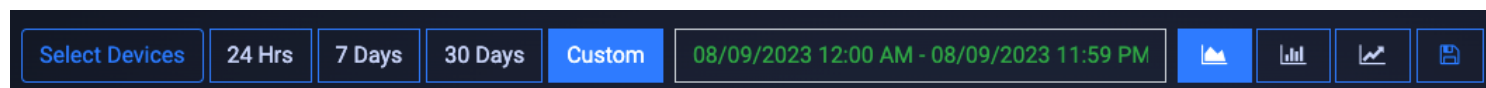


Figure 37: Historical Data Report parameters

Users can then select the desired device(s) to add to the report by clicking the associated checkboxes. Click **OK** to finalize the selection.

### Select Devices

Show  entries Search:

|                          | Gateway Name  | Device Name                | Device ID        | Gateway ID |
|--------------------------|---------------|----------------------------|------------------|------------|
| <input type="checkbox"/> | GW-001-2 Test | Manufacturing Floor SS-002 | XXXXXXXXXXXX934A | xxxxxxz82f |
| <input type="checkbox"/> | GW-001-2 Test | R&D Lab SP-004             | XXXXXXXXXXXX5D0C | xxxxxxz82f |
| <input type="checkbox"/> | GW-001-2 Test | Server Room SS-001         | XXXXXXXXXXXX9C79 | xxxxxxz82f |


Figure 38: Historical Data Report Select Devices interface

### Select a period or a range of dates

To specify the range of time the report will cover, users can select *Today*, *This Week*, or *Custom* date and time. Click **Apply** to finalize the changes.

Custom

11/01 12:00 AM - 11/08 11:59 PM



Time

<

Feb 2022

>

Su

Mo

Tu

We

Th

Fr

Sa

30

31

1

2

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4

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9

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23

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25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

12

:

00

AM

11

:

59

PM


11/01 12:00 AM - 11/08 11:59 PM

Cancel

Apply

Figure 39: Custom date range calendar interface

### Save the Result/Export Chart Data

Users can save and export the generated data by clicking the save icon . A .csv file of the data will be generated and the user will be prompted to download the file.

## Graph Data Presentation

The Historian interface provides three methods of presenting graphed data: *Plot Time Series*, *Plot Histogram*, and *Plot Prediction*.

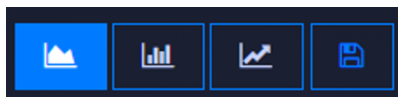


Figure 40: Graph data viewing options

### Plot Time Series



Figure 41: Plot time series graph view

### Plot Histogram

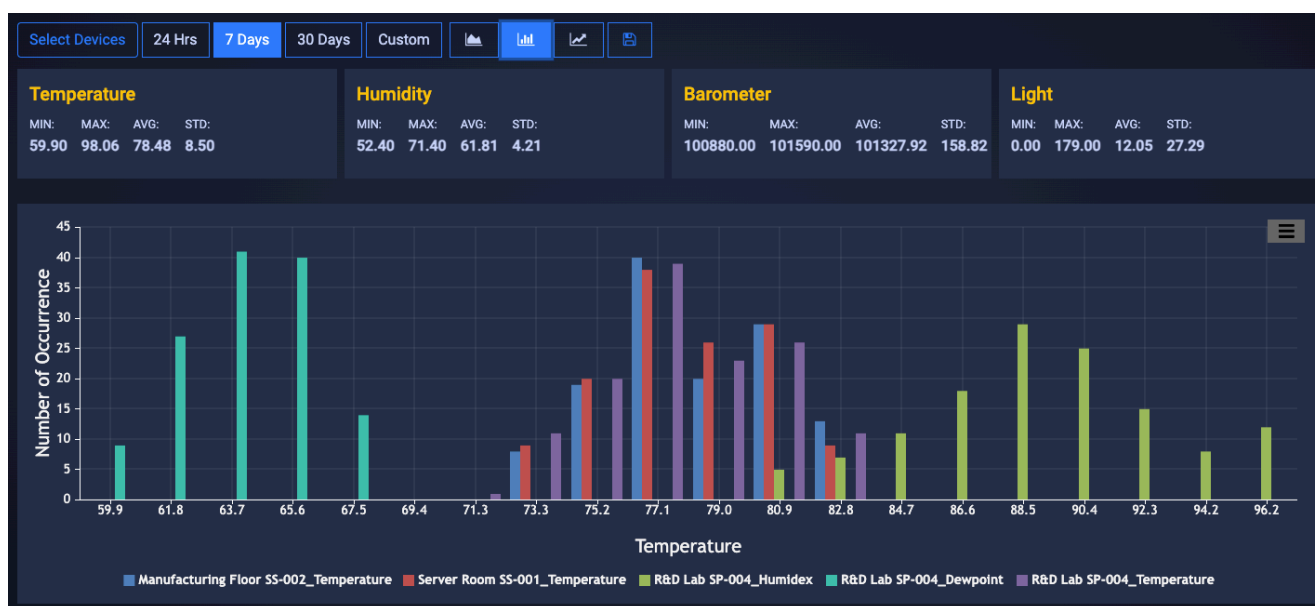


Figure 42: Plot Histogram graph view

### Plot Prediction

To utilize the *Plot Prediction* feature, enter the date and time of the value you would like to predict and click the *Predict Future Values* button to display the data.



Figure 43: Plot Prediction graph view



## 8.3 System Settings

The System settings for the Omega Link Cloud allow you to customize your profile information, the units of measure displayed, user access permission, subscription management, and includes contact information for technical support and feedback.

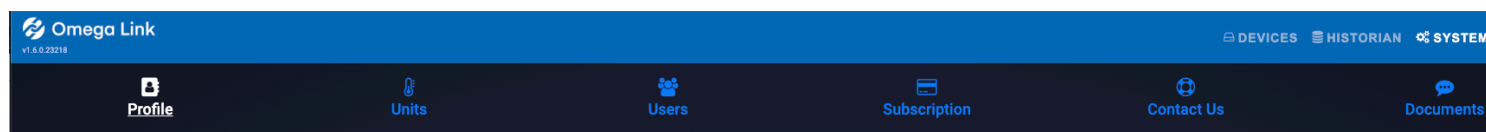


Figure 44: Omega Link Cloud UI System Tabs

### 8.3.1 Profile

The Profile tab allows users to configure settings such as associated email addresses, passwords, security questions, and notifications.

Using the email address associated with the account or by providing an SMS email address, users can receive notifications directly whenever an alarm or event is triggered.

Passwords can be updated by entering the old password in the text box then entering and confirming the new password as directed on the webpage. Security questions can be configured at the bottom of the Profile webpage.

User Information

Email:

Name:

SMS Email:

Time Zone:

Notification

☒ Alarm
 ☒ Event

Change Password

Old Password

New Password (8 or more characters, including at least one lowercase, one uppercase, one number and one of these special characters: @!#\$%&\*?)

Figure 45: Omega Link Cloud UI Profile settings

## 8.3.2 Units

The units tab allows users to set their preferred units of measure as they appear on the Omega Link Cloud. Changing the units here does not change the units of your sensing devices. It only changes the unit of measure as it appears on the Omega Link Cloud.

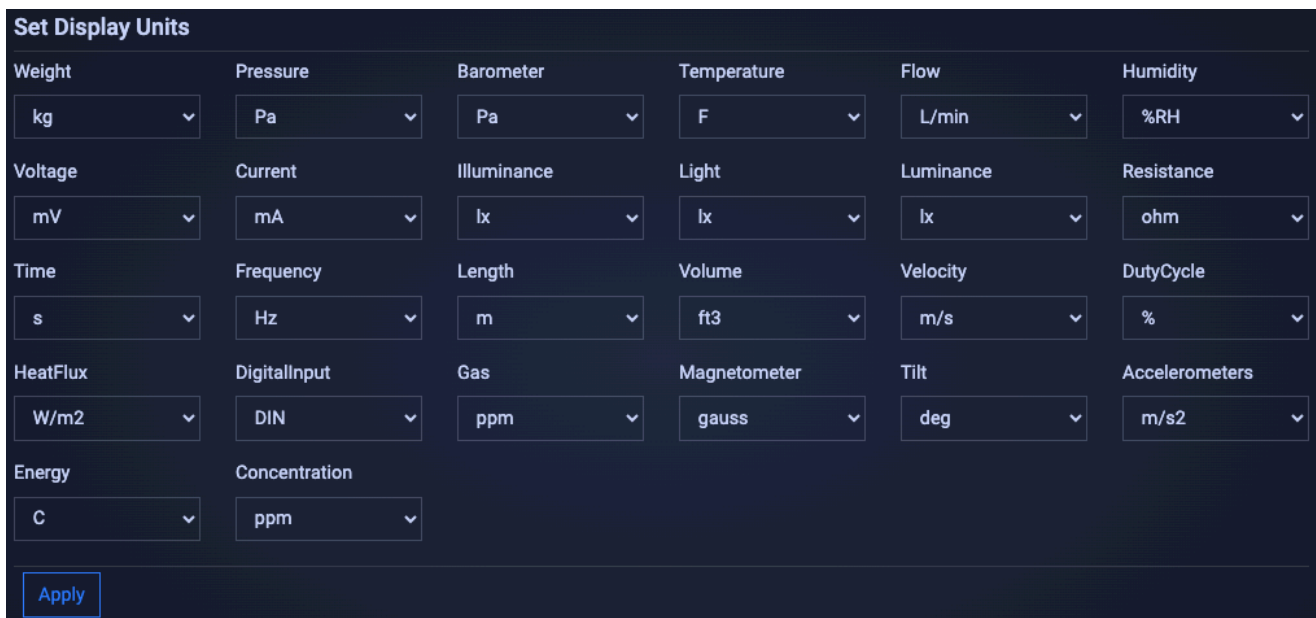


Figure 46: Omega Link Cloud local display units

## 8.3.3 Users

The Users tab allows you to give others access to view the data for your gateway on their Omega Link Cloud accounts. To add a user, enter their email address in the text box and choose **Can Change** or **Can View** to grant full access or restrict access, respectively.

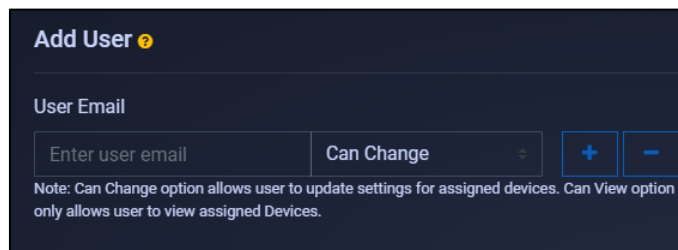


Figure 47: Omega Link Cloud Add or Remove user access

### 8.3.3.1 How to Add Users

To add users to your Omega Link Cloud account, follow these steps:

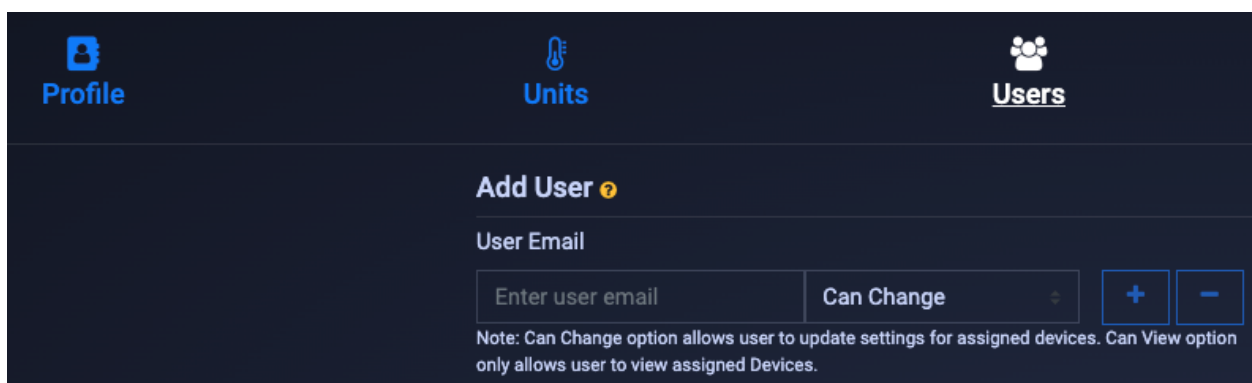



Figure 48: Omega Link Cloud Users tab


- Step 1:** On the Omega Link Cloud homepage, click on the **SYSTEM** tab, and click on **Users**. Enter the email address of the user you want to add.
- Step 2:** Click the dropdown next to the email address text box and select the level of access the new user will have: **Can Change** or **Can View**.
- Step 3:** Click the  icon to add the user. The email address of the new user will appear on the **Existing Users** table.
- Step 4:** Once the previous steps are complete, the new user will receive an email prompting them to register an Omega Link Cloud account. If no email is received within 10 minutes, the email may be in the user's spam folder.

### 8.3.4 Subscription

The Subscription tab shows your current subscription tier and provides a link to the Omega website should you choose to upgrade your subscription plan. If you purchased the subscription with a billing email different than your Omega Link Cloud account email, you may link the two here.

### 8.3.5 Contact Us

The Contact Us tab provides an email address link for direct engineering technical support. It also provides a text field for user feedback and comments.

**Note**  **Note:** Changing the units of measurement only affects the readings displayed on the Omega Link Cloud. Omega Link sensing devices interpret data in SI.

## 8.4 How to Remove a Paired Smart Sensor from a Gateway

To remove a paired Smart Sensor (such as the SS-001) from a Gateway, follow the steps below:

**Step 1:** Log in to the Omega Link Cloud account associated with the paired devices.



**Step 2:** From the Omega Link Cloud device readings page, identify the Smart Sensor that will be removed, and click the Trash Can icon .



Figure 49: Omega Link Cloud UI Smart Sensor readings


### 8.4.1 How to Move a Paired Smart Sensor to a Different Gateway

To move a paired Smart Sensor (such as the SS-001) to a different Gateway, follow the steps below:

**Note**  **Note:** When moving a paired Smart Sensor to a different Gateway, alarm and event thresholds may be triggered and notifications based on user preference may be delivered. Notifications sent as a result of the re-pairing process may be disregarded.

**Step 1:** Navigate to the Omega Link Cloud Portal that is associated with the Smart Sensor and remove the Smart Sensor from the account.

**Step 2:** Ensure the unit is being powered with either a USB connection or batteries. Press and hold the Pairing Button on their Smart Sensor for 8 seconds so that the LED Status Indicator blinks red to factory reset the device, then release the pairing button.

**Note**  **Note:** The Pairing Button for the SS-001-RUG is in a pinhole on the underside of the device. Use a paperclip to press and hold the pairing button for 8 seconds so that the LED Status Indicator blinks red to factory reset the device, then release the pairing button.

After the factory reset, the LED Status Indicator on the Smart Sensor will turn Amber/Orange indicating the device is in pairing mode and is ready to be paired to a new Gateway.

## 9 Certification

|                |                                            |
|----------------|--------------------------------------------|
| <b>Safety:</b> | EN 61010-1:2010                            |
| <b>EMC:</b>    | EN 301 489-1 V2.2.0<br>EN 301 489-3 V2.1.1 |
| <b>Radio:</b>  | EN 300 320-1 V3.1.1<br>EN 300 220-2 V3.1.1 |

## 10 General Public License Statement

This product contains software that is subject to an open-source license agreement including GNU General Public License ("GPL") or GNU Lesser General Public License ("LGPL"). With respect to the free/open-source terms, customers of this product have rights to acquire, modify and redistribute the source code in accordance of the terms of the GPL and LGPL. If you have any questions or wish to receive a copy of any source code that you may be entitled under the term, please contact us at:

**iiot-opensource@omega.com**

Please include the SKU of this product in your request.

The subject should be: **GW001 GPL license statement request**

The original source code is available on the corresponding hosting website.

GNU General Public License:

**<https://www.gnu.org/licenses/gpl-3.0.en.html>**

GNU Lesser General Public License:

**<https://www.gnu.org/licenses/lgpl-3.0.en.html>**

## 11 Specifications

### Wireless Communication

**Frequency\***: 915 MHz (-NA)  
868 MHz (-EU)

**Range\*\***: 1.2 km or up to 3.2 km for -NA models

*\*Wireless communication is only available on qualifying variants*

*\*\*Maximum range possible when Smart Sensor is powered by USB and without obstruction*

### Power

**AC Adapter**: DC 12 V @ 2A

### Interface\*

**RJ45**: 2x port

**USB**: 2x USB 2.0

**DC Jack**: DC 12V power input

**Serial Port**: RS232/RS485

**Alarm**: SSR 36 V DC 100 mA

**Antenna**: 1x Antenna for Sub-1G (on qualifying models)

*\*Available interfaces vary by model of Gateway*

### Environmental

**Rating**: IP40

**Operating Temperature**: -20°C to 65°C (-4°F to 149°F,) non-condensing

### Mechanical

**Dimensions**: 170 mm L x 100 mm W x 42 mm H (6.69" x 3.93" x 1.65")

### Certifications

**Contains FCC ID**: WR3-MOD16370915

**Contains IC ID**: 8205A-MOD16370915

**Emission & Immunity for EMI/EMS**

**FCC**: FCC Part 15B

**CE**: Radio Equipment Directive 2014/53/EU, EMC Directive 2014/30/EU, RoHS Directive EU 2015/863

**UKCA**: Radio Equipment Regulations 2017, Electromagnetic Compatibility Regulations 2016, RoHS Regulations 2012

### Radio Frequency & Human Exposure/SAR

**FCC**: FCC Part 15C (15.247) FCC MPE

### Safety

**LVD**: EN 62368-1

### General

**Max number of Smart Sensors**: Up to 40 Smart Sensors can connect to the Gateway unit.

All specifications are subject to changes without prior notifications. Please visit [Omega.com](http://Omega.com) for the latest information.

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.**

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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