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USER'S GUIDE

Omega Enterprise Gateway (OEG)

Data Logging and Monitoring Software

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1 YEAR™ WARRANTY

CONTACT

Omega Engineering, Inc.

omega.com/contact-us

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)

Telephone:
(203) 359-1660

Fax:
(203) 359-7700

Email: info@omega.com

For other locations visit:
omega.com/worldwide

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1. Introduction

OMEGA Enterprise Gateway (OEG) is replacement software for the OMEGA OPC Server, iCONNECT, iLOG HTTPGet, iPort, Mail Notifier, Virtual Coordinator, and OMEGA Dashboard. Users currently using the aforementioned software, are encouraged to install OEG. OEG supports the following OMEGA products:

- Legacy OMGEA Probes/Sensors
- Wireless Transmitters
- Smart Probes
- Smart Interfaces

The OEG server can be installed on the following OS/Platforms: Windows 7, 8, 9, 10, & 11. Windows Server 2008, 2012, & 2016. All OS are 64-bit. OMEGA does not recommend operating OEG on 32-bit OS. The OEG web client is platform-independent. The minimum hardware requirements for server installation are: Dual Core: CPU 2.4 GHz or higher; Memory: 16 GB or higher, hard drive 500 GB or higher.

Disclaimer: Functions described in this document are subject to the features outlined in the license tier the user has purchased.

1.1. Use Scenarios

OMEGA Enterprise Gateway is a bridge between OMEGA sensing devices and industrial applications. It is a standalone IIoT sensing software that delivers device provisioning, state and status monitoring, data logging, visualization, and analytics. A variety of OMEGA devices are supported by this Gateway software. Typical application deployment scenarios are shown below:

1.1.1. Integrated with Enterprise Applications

OMEGA Enterprise Gateway can feed sensing data to the OPC UA compliant applications such as SCADA, HMI, MES, etc. via the OPC UA server (licensed). Once the user adds OMEGA devices to the Gateway, the Gateway automatically exposes all sensing data as OPC UA nodes. The Enterprise application can then pull all OPC UA node values and display them on the screen.

1.1.2. Standalone Solution for Sensing, Archiving, and Analytics

In many environment sensing applications such as hotel room temperature monitoring a building temperature/humidity monitoring, OMEGA Enterprise Gateway can provide real-time monitoring, alarms, notifications, archiving, and analytics that are required in these applications.

2. Installation

The OEG zip file contains the installer package for the software. Follow these steps to complete the installation process:

Step 1: Unzip and open the Omega Enterprise Gateway file downloaded from the Omega website.

Note: Included in the installer package are the OEG Application Files, .msi installer file, User's Manual, Release Notes, License, Copyright Notice, and End User License Agreement.

Step 2: Click the **OEGOneClickInstall.msi** file and proceed through the setup to launch Omega Enterprise Gateway for the first time.

Note: A desktop shortcut icon of Omega Enterprise Gateway is created after the installation. This shortcut will launch OEG after the initial installation.

Step 3: During the Omega Enterprise Gateway Setup process, the user will be prompted to complete the OPC UA Local Discovery installation wizard.

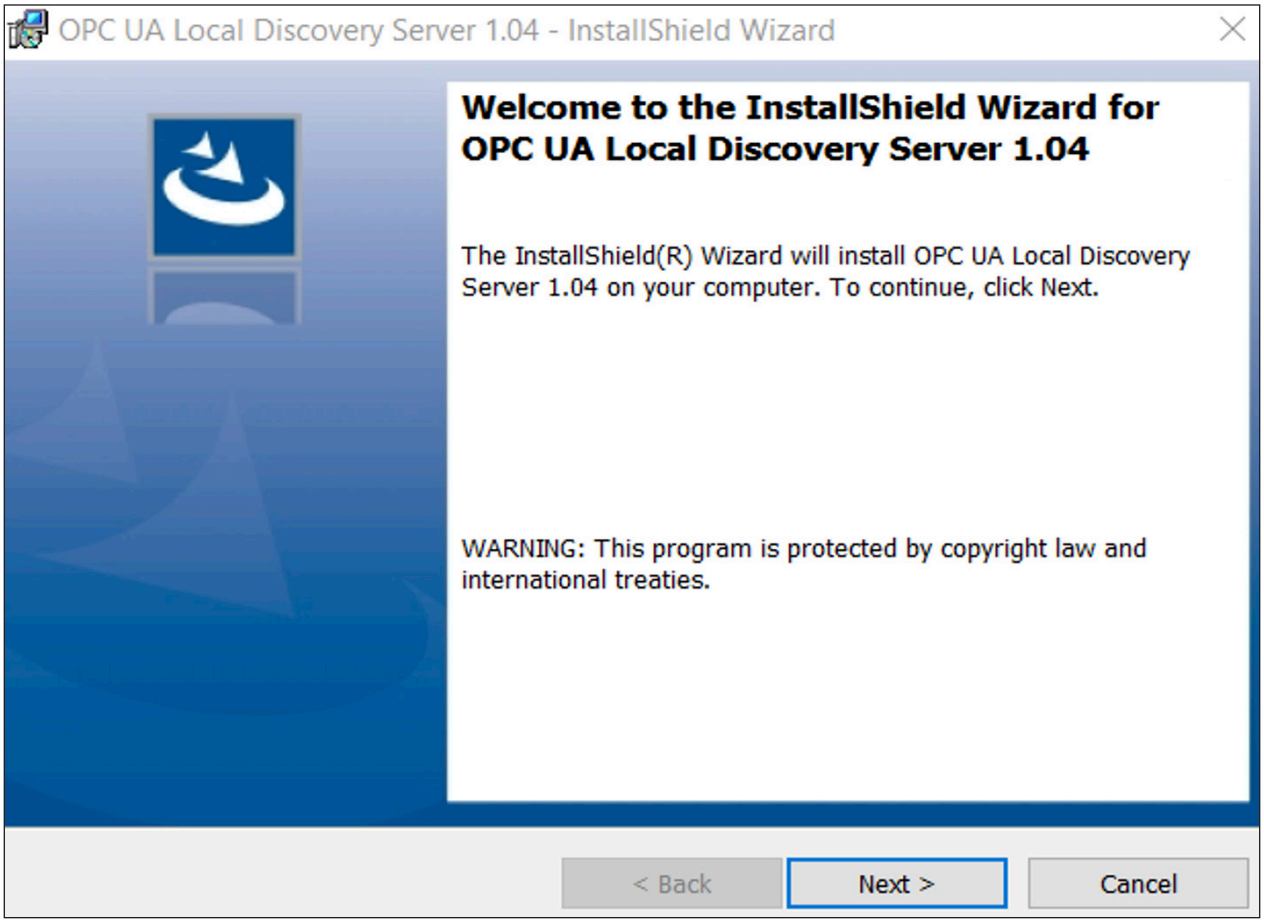

Figure 1: OPC UA Local Discovery Server Installation

Step 4: Once the installation process is complete, OEG will launch automatically.

3. Logging In

3.1. First Time Log-In

When logging into Omega Enterprise Gateway for the first time, click **Need Help?** to be presented with a one-time Username and Password.

Username: **admin**

Password: **Omega**

Users will be prompted to create a new password upon a successful first-time login. The Username can be changed by navigating to the **System Settings**.

If first-time login is not possible, the Omega Enterprise Gateway may need to be power cycled. To power cycle the OEG software, navigate to the **Windows OS Services** application on the computer, locate **Omega Enterprise Gateway** in the list of items, right-click Omega Enterprise Gateway, click **Stop**, and then click **Start** to complete the power cycle. Users may then attempt first-time login again. This may require Administrator access to the PC or laptop being used.

3.1.1. Run OEG Software with Windows Administrator Access

On occasion, users may need to run OEG with Windows Administrator credentials to check for software updates and control aspects of the OEG web server settings for troubleshooting. To run OEG as a Windows Administrator, right-click the OEG software application icon and select Run as Administrator from the list that appears.

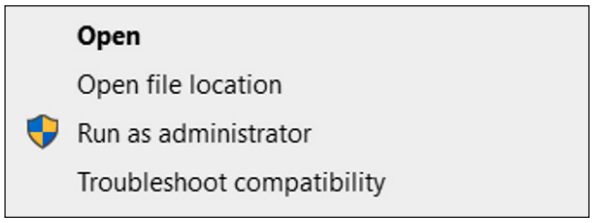

Figure 2: Run OEG as Administrator

The OEG software application will launch with administrator access to the OEG controls and software updates made available.

Figure 3: Update and Control OEG

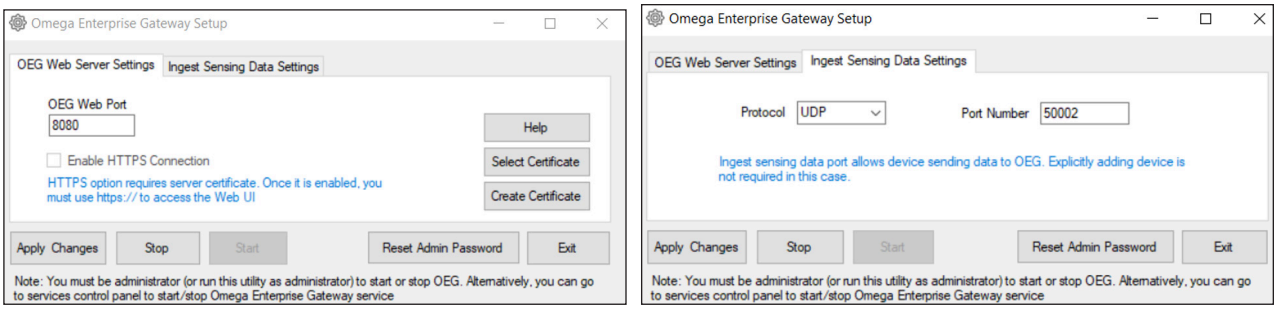

Figure 4: OEG Web Server and Ingest Sensing Data Settings

4. Device Management

Once logged in, users will be directed to the **Devices** tab of OEG. From this interface, users will be able to manage the devices connected to OEG.

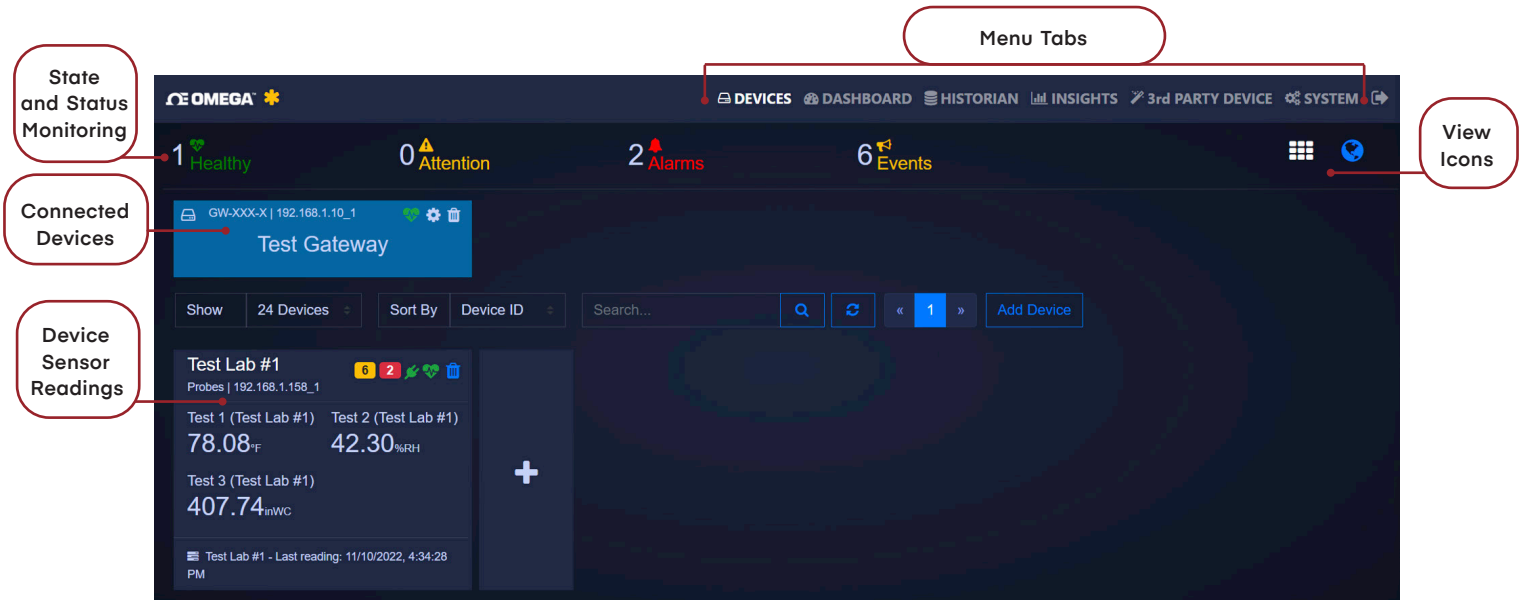

Figure 5: OEG Home Interface

Important: Devices connected directly to OEG through a USB, Serial, or TCP connection must be removed from OEG if they will be used with another application such as SYNC configuration software.

4.1. Add Device

To add a device, click the  icon to the right of the device readings or click the **Add Device** and fill out the product details, connection parameters, and reading interval of the device that will be added.

4.1.1. Add Device Example (Omega Platinum Series PID Controller)

When adding a device to OEG, the user must manually fill out the parameters of the device to be connected. For this example, the user is attempting to connect an Omega Platinum Series PID Controller to a PC running OEG. There are four categories of information that are required:

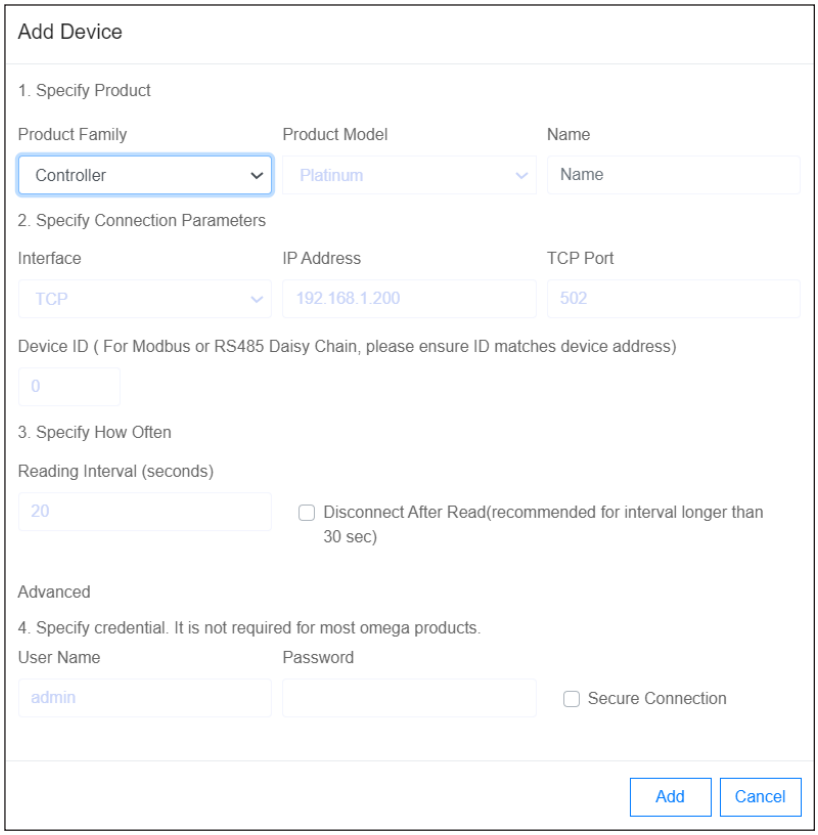

Figure 6: Add Device - PID Controller

1. **Specify Product** – The user will need to first select the **Product Family** type from the drop-down of options under **Product Family**; in this example, the device is considered a **Controller**. The user will then need to select the product model from the **Product Model** drop-down; in this case, the model is **Platinum**. Finally, a personalized name for the device can be assigned in the **Name** text box.

2. **Specify Connection Parameters** – The user will then need to specify the connection parameters for the device. The **Interface** drop-down will allow the user to select the method in which the device is being connected to OEG; in this case, the device is being connected via TCP. Depending on the kind of interface, the options that follow in this category will change; in this example, the user must also provide the **IP address** of the device as it appears when connected to the local-area network of the PC as well as the associated **Port** number. Additionally, in this example, a **Device ID** number will need to be assigned to distinguish the connected device from other connected devices.

3. **Specify How Often** – The user will need to specify the **Reading Interval** which determines how often data is transmitted from the device to OEG in seconds. In this example, the user has set the **Reading Interval** to **20 seconds**.

4. **Advanced** – The last fields allow the user to enter any User Name or Password associated with the device being connected.

4.2. Delete Device

To delete a device, locate the  icon located next to the **Connected Device** that will be deleted.

4.3. Rename Device

Clicking the  icon allows users to rename the device.

4.4. Refresh

To refresh the list of devices, click the  icon located near the device search bar.

4.5. View Icons

The View icons  offers options regarding how data will be displayed.

4.5.1. Tile View

Provides a standard tile view of the interface.

4.5.2. Map View

Provides a map view of the connected devices by displaying their location.

Note: Map View is only available on **OEG Pro**, **OEG Business**, and **OEG Business Pro**.

4.6. Device Settings

By clicking on the Device Readings, OEG will display live readings, alarms and events, and settings for that device.

4.6.1. Measurements

Figure 7: Device Readings and Measurements

The **Measurements** tab displays live readings for the device. It allows users to change from live readings to a specified range of time.

4.6.2. Historic Alarms and Events

Figure 8: Historic Alarms and Events Interface

The **Alarms and Events** tab displays all alarms and events that were triggered by this device. It includes a short message describing the nature of the alarm/event.

Note: Historic Alarms and Events are only available on **OEG Pro**, **OEG Business**, and **OEG Business Pro**.

4.6.3. Settings (General, Alarm, and Value Scaling)

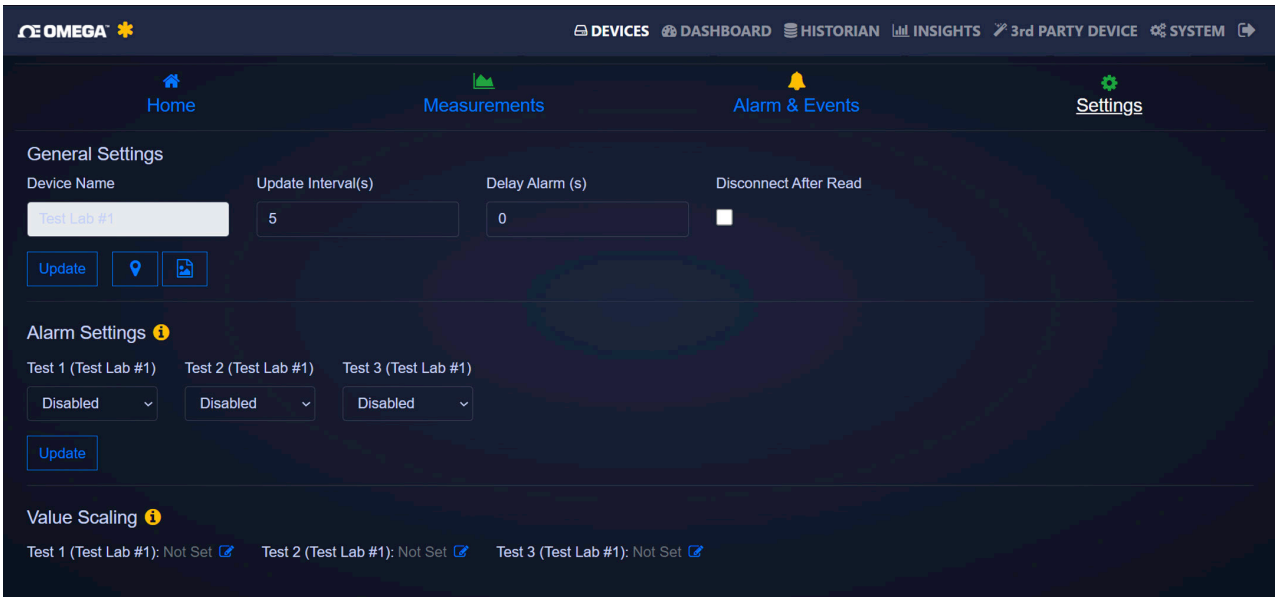

Figure 9: Device Settings (General, Alarm, and Value Scaling)

The **Settings** tab allows users to change all settings relevant to how the device interacts with OEG. Users can customize device name, device location, and all settings relevant to alarm and event thresholds.

Note: Value Scaling is only available on **OEG Pro**, **OEG Business**, and **OEG Business Pro**.

4.6.4. Setting a Device Location

OEG allows users to assign a **Location** to any device connected to OEG. Device locations can be viewed by switching from the default **Tile View** to the **Map View** in the **Devices** menu tab. To set a device location, follow these steps:

Step 1: Click the **Device Tile** of the device that will have its location changed.

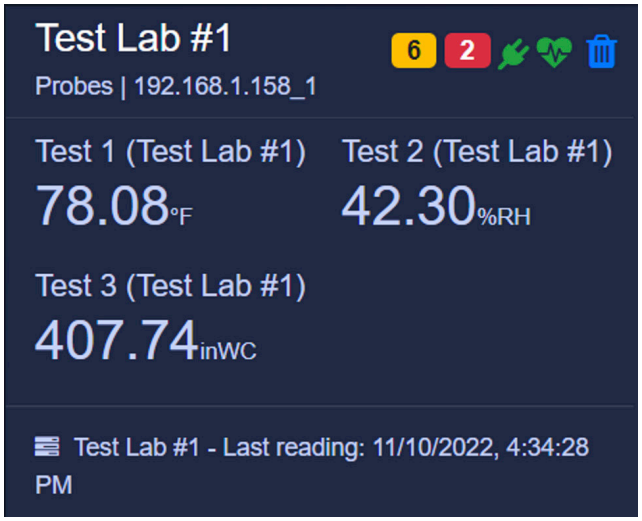

Figure 10: Device Tile as it Appears in the OEG UI

Step 2: Click on the device **Settings** tab and click the **Location** icon. A **Set Device Location** pop-up will appear.

Step 3: The user can either drag-and-drop the blue pin to the desired location or click on the **Move to your location** button to use the current location associated with the PC. Using the Move to your location button requires permission to share the location of the PC. Click **Ok** when finished.

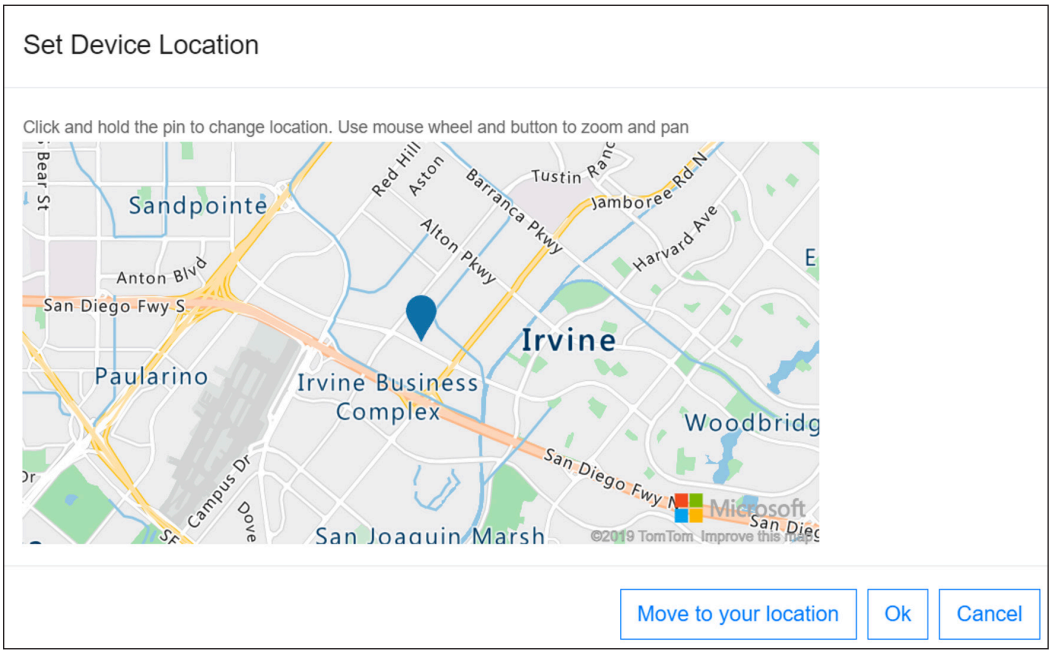

Figure 11: Set Device Location Pop-Up Window

Step 4: Navigate to the **Map View** from the **Devices** main menu tab and the device will appear at the updated location.

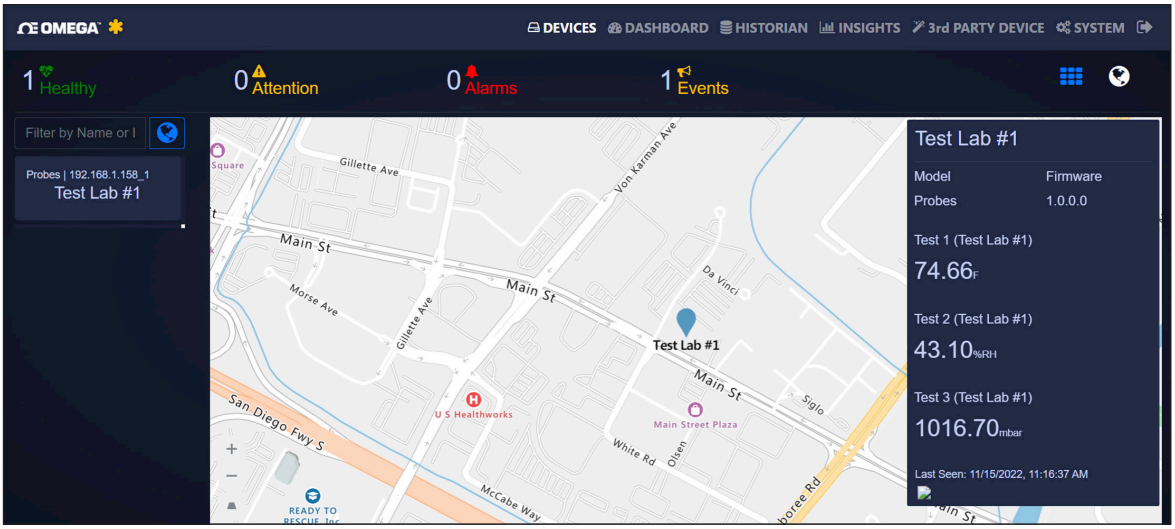

Figure 12: OEG Map View

5. Dashboard

Note: Dashboard features are only available on **OEG Pro**, **OEG Business**, and **OEG Business Pro**.

5.1. Creating a Monitoring Page

OEG offers a fully customizable **Dashboard** to monitor live device data.

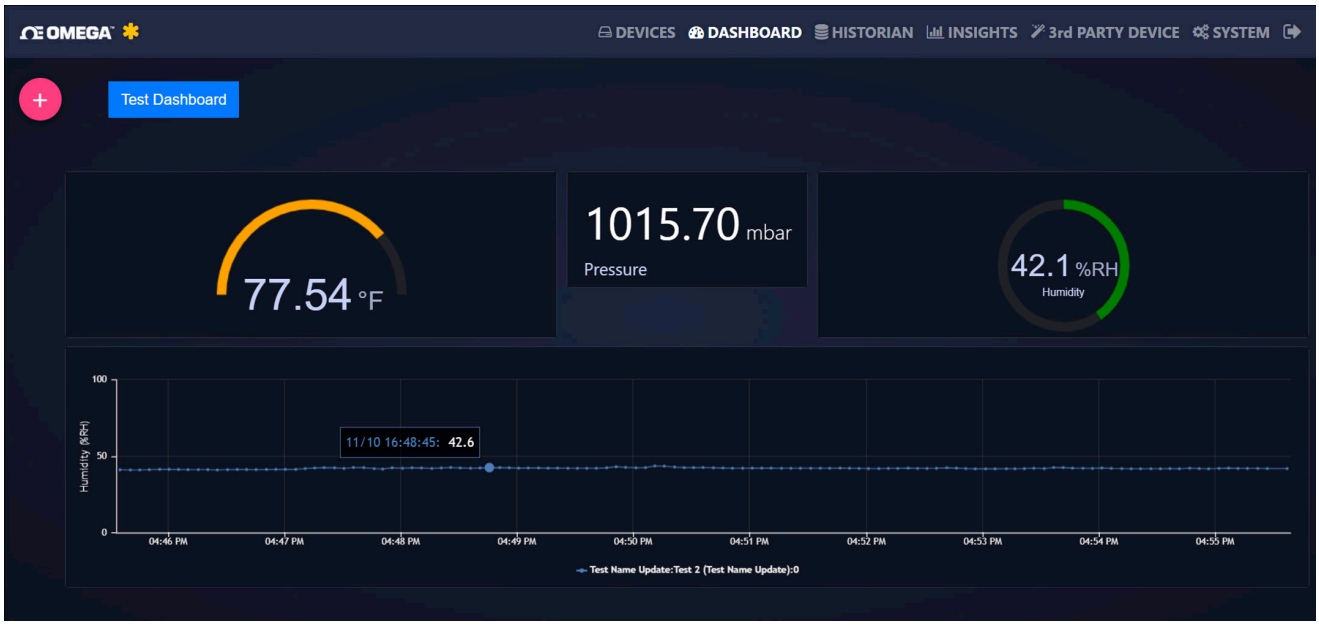

Figure 13: OEG Dashboard Interface

Click the + icon to create a new dashboard. Once users have named their dashboard, they can begin to add widget displays that will display their transmitted data as a meter, a graph, or as text. A device must be assigned to the widget so that it will begin to display readings from that device. Any combination of widgets and devices can be added and customized to create unique dashboards.

Step 1: Create and name the dashboard

Step 2: Choose the preferred widget to display device data.

Step 3: Assign a device to the widget.

6. Historian

The Historian creates a report of past readings within a range of time and presents them as a graph. Through the Historian tab, OEG allows users to export their chart data as a .csv file. To view past readings, start by clicking Select Data Points.

Figure 14: OEG Historian Interface

Note: The Historian is only available on OEG Pro, OEG Business, and OEG Business Pro.

6.1. Select Data Points

The Select Data Points tab allows users to specify what device(s) will be displayed in the historian. The data will then be displayed in a graph.

6.2. Graph Types

OEG currently offers three standard graph views when displaying data. Of the three, only the  graph style can predict future values. To utilize the Predict Future Value feature, enter the date and time of the value that will be predicted and click the Predict Future Values button to display the data.

7. Insights

The Insights interface provides analytics on the health and activity of the device ecosystem. Analytics include operation activities, measurement alarms, communication errors, battery history, and signal history.

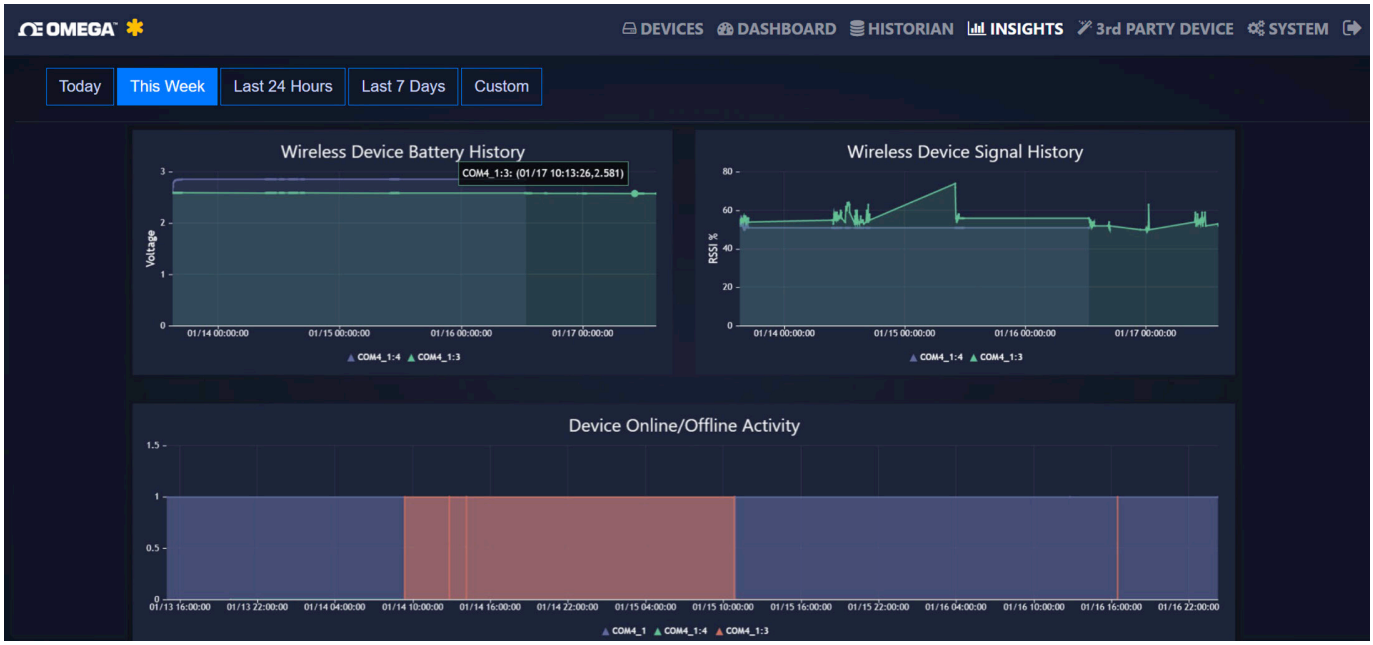

Figure 15: OEG Insights Interface

Note: The Insights interface is available on **all versions** of OEG.

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8. Third-Party Devices

Omega Enterprise Gateway allows for 3rd Party Device integration through MODBUS or ASCII. To add a 3rd party device, follow these steps:

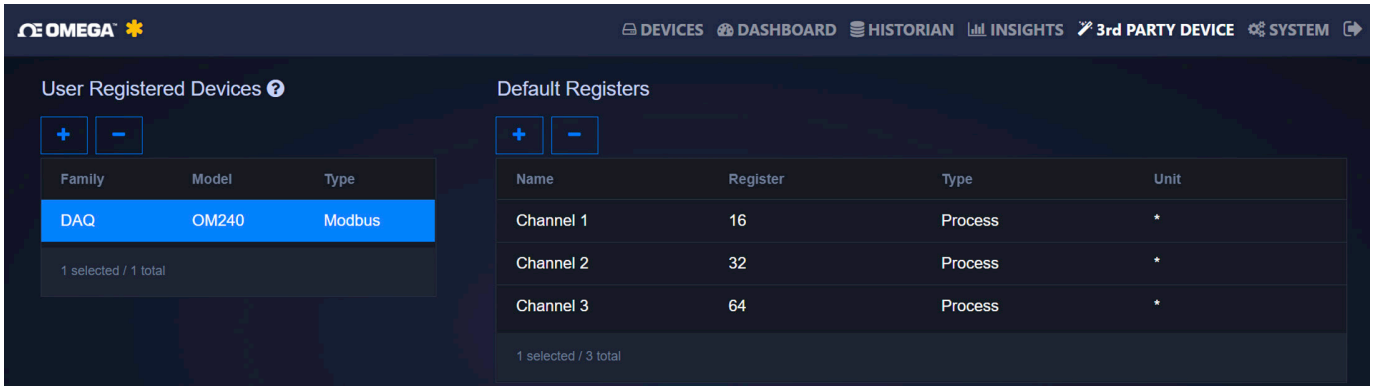

Figure 16: Third-Party Device Interface

Step 1: Click the + icon under **User Registered Devices** and register the device.

Step 2: Click the + icon under **Default Registers** to create and define registers for the device.

To delete a 3rd party device or register from OEG, click the device or register to highlight it, and click the − icon under **User Registered Devices** to delete a device or click the − icon under Default Registers to delete a register.

Note: Third-Party Device integration is only available on **OEG Business Pro**.

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9. System Settings

The **System Settings** for OEG allow users to customize their profile, the units displayed, other users who can access and view the Dashboard, data update rate, license status, and firmware management.

9.1. Profile

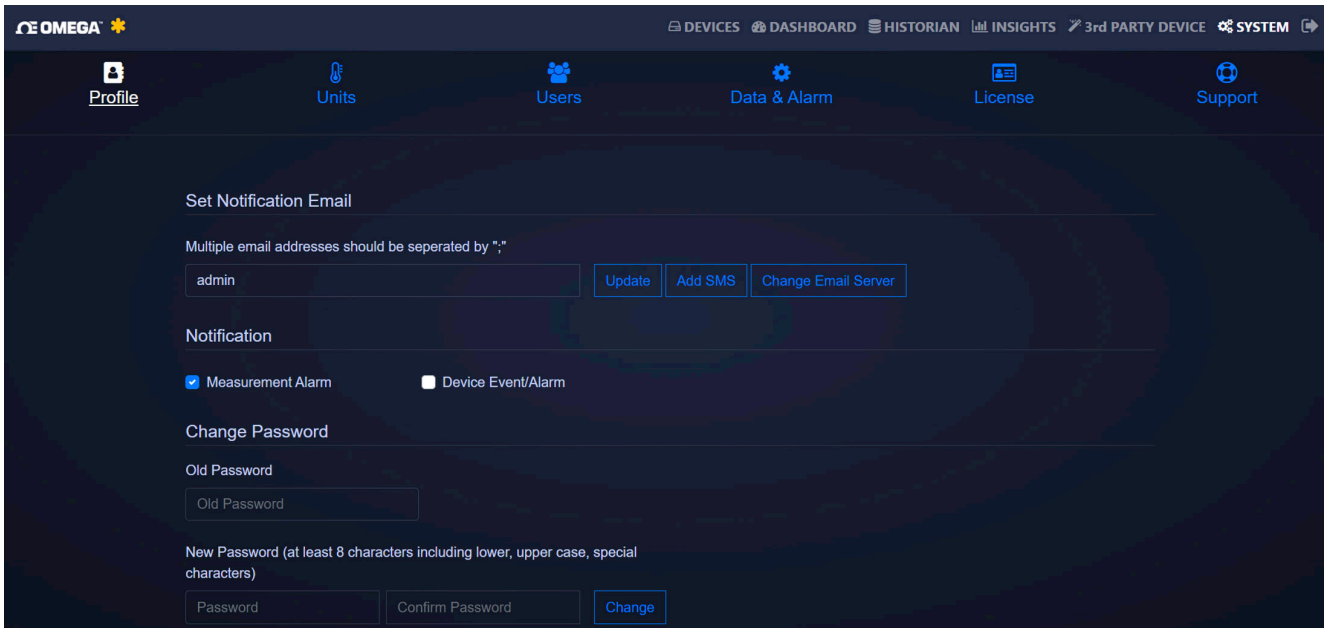

Figure 17: OEG System Profile Settings

From the **Profile** tab, users can create a list of email addresses that will receive notifications when alarms or events are triggered and change their password.

9.1.1. Change Email Server

Users can change the default email server to their preferred service by clicking **Change Email Server**.

Important: Administrator access is required. OEG must be run as an administrator when using an alternative email server. It is recommended that users seek troubleshooting solutions for email notifications from the alternative email service provider being used.

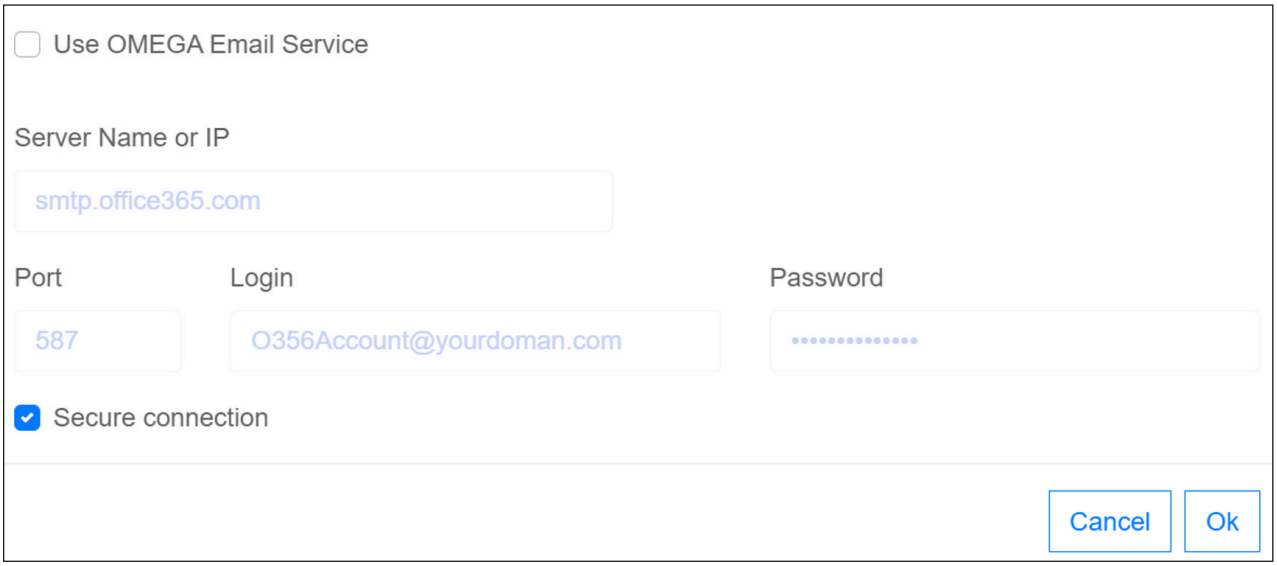

Figure 18: Change Email Server Configuration

9.2. Units

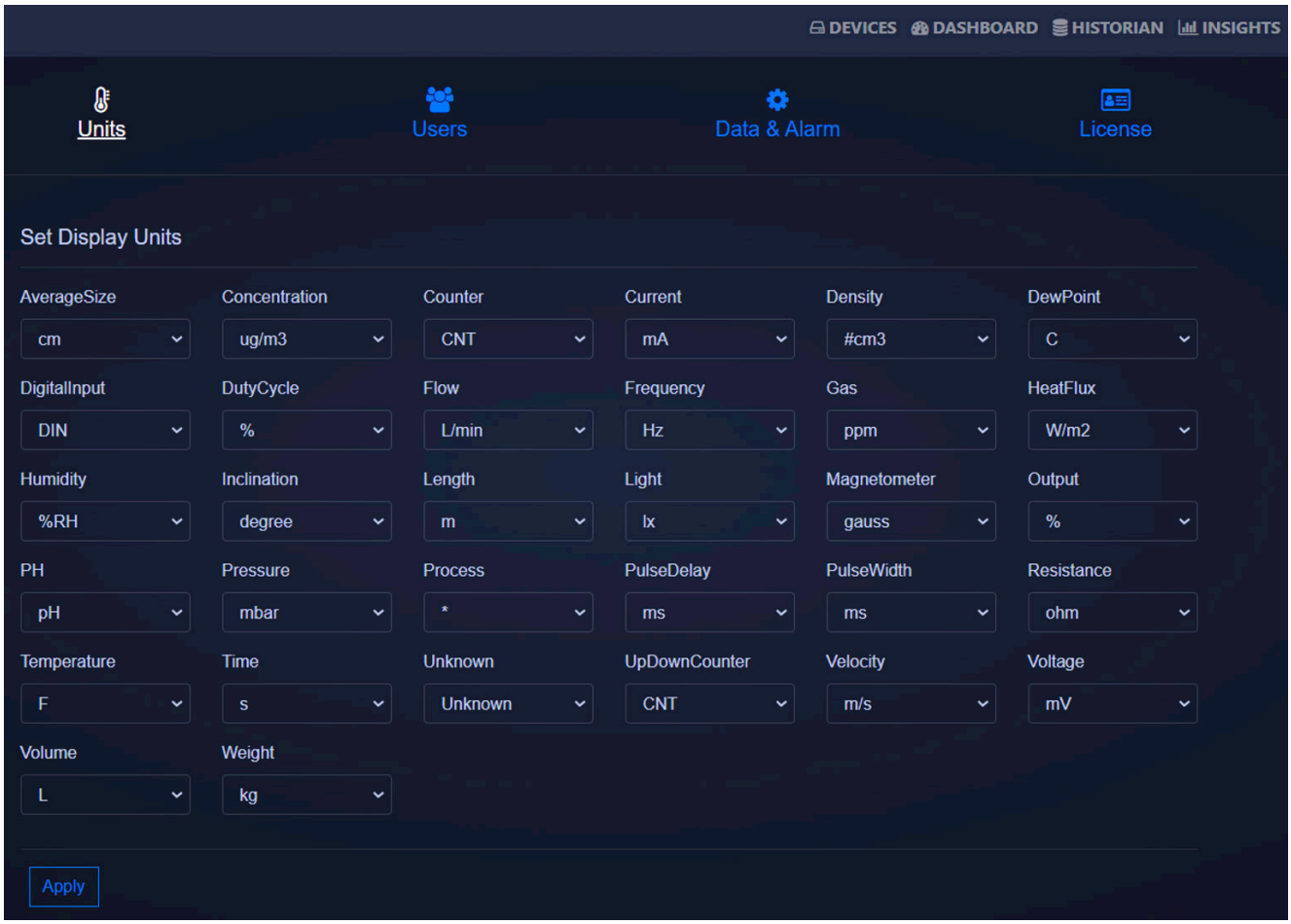

Figure 19: OEG System Units Settings

The **Units** tab allows users to change the units of measurement that are displayed on OEG.

Note: Changing the units of measurement only affects the readings displayed on Omega Enterprise Gateway. Smart Sensors interpret data in SI.

9.3. Users

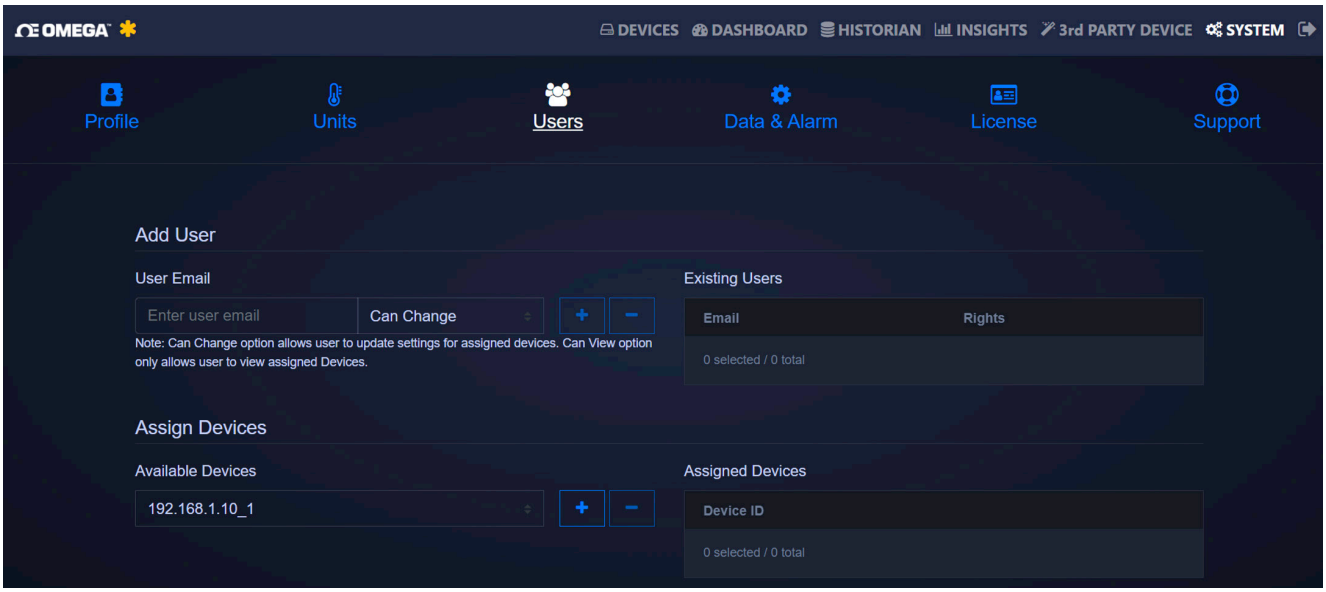

Figure 20: OEG System Users Settings

In the **Users** tab, access to the OEG account can be managed by typing the email address of the users who will have access to either change, or view, the readings of the devices connected to the account. Users who are added here will only have access to devices that have been added in the **Assigned Devices** section. Additionally, they can restrict access to **View Only** or **Can Change**.

Note: Multi-Level Access is only available on **OEG Business Pro**. Additional user access is only possible when the admin OEG account is still actively running. If the admin OEG account is not actively running, additional users may not have access to the account.

9.3.1. Add a User

To add a user, type the email address in the **User Email** textbox, then determine whether the user should have access to change or only view the assigned devices. Click the + icon to send an invitation link to the provided email address. The email will come with a URL associated with the OEG account along with a one-time, temporary password. Once the new user has logged in for the first time, they will be prompted to enter a new password and will be able to access the same data as the admin of the OEG account.

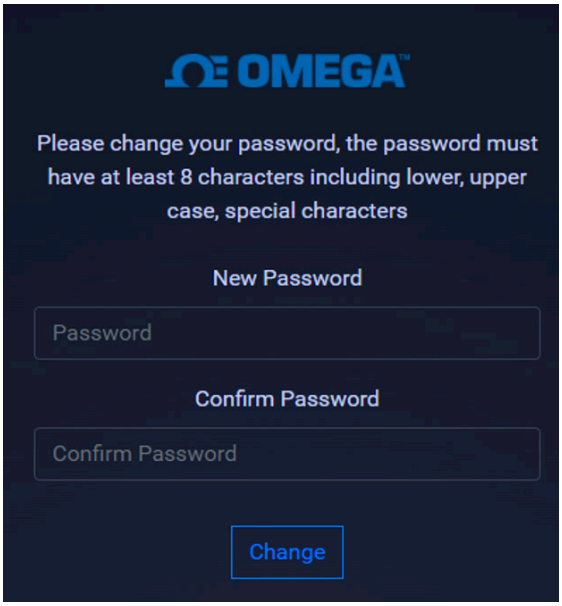

Figure 21: OEG Adding a User - New Password

9.3.2. Remove a User

To remove a user, simply highlight the email address of the user and click the − icon.

9.4. Data & Alarm

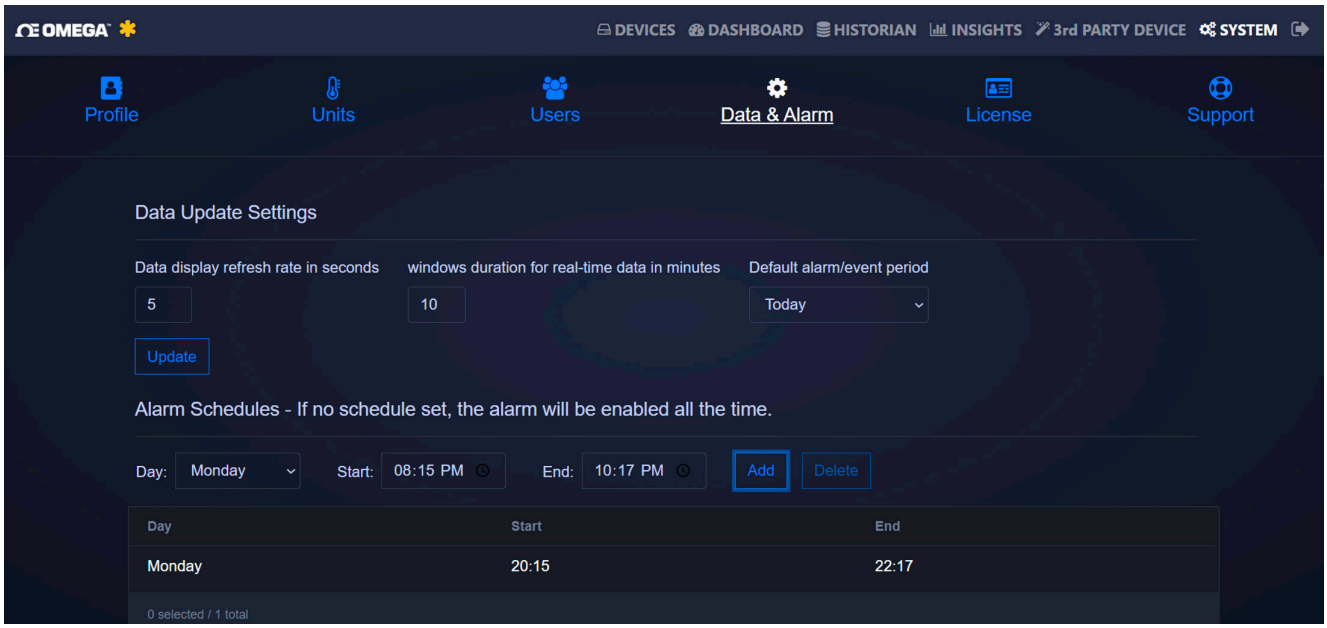

Figure 22: OEG System Data and Alarm Settings

The **Data & Alarm** Tab allows users to configure the frequency at which data is updated within the OEG interface.

9.5. License

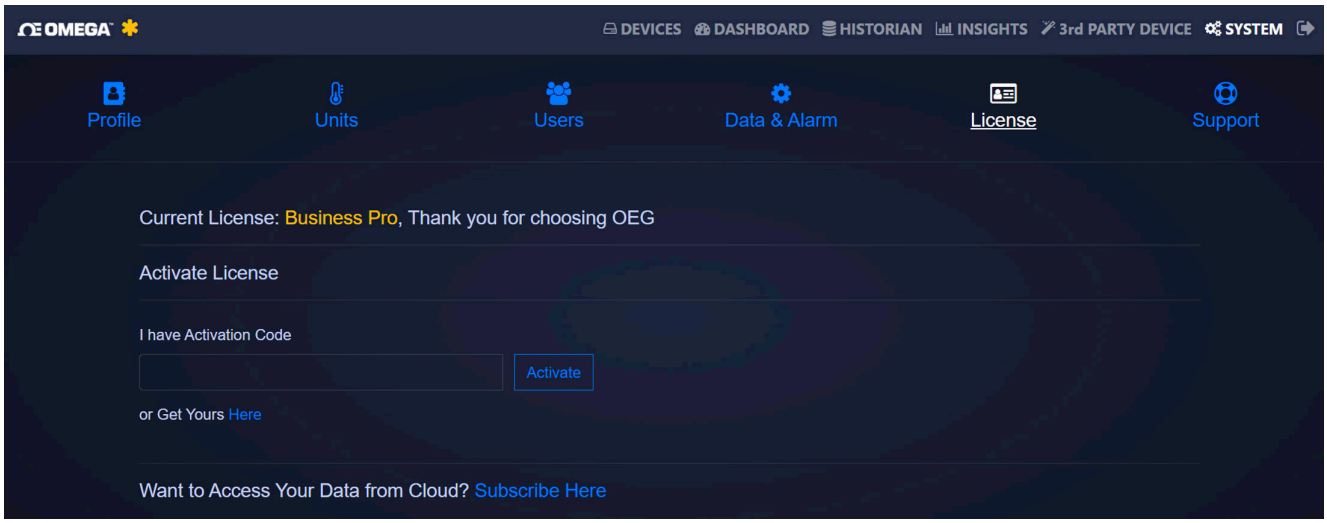

Figure 23: OEG System License Settings

The **License** tab displays information regarding the user's current OEG license. From this section, an activation code can be entered to activate a license. Users may also subscribe to Omega Link Cloud from this section to have access to their data anywhere.

10. Remote Access

Note: Remote Access is available on all versions of OEG.

OEG allows users to access their data from any device connected to the same local network with web browser access. To access data remotely, click on the automatically generated URL at the bottom of the OEG interface. The URL will begin with HTTP:// and will be based on the local network settings. By navigating to the URL on a separate device that is connected to the same local network, data can be access remotely.

Note: Only devices with web browsers on the same network as the one hosting the OEG data will be able to access the data remotely. OEG data cannot be accessed if the web browser is on a different network.

Alternatively, parameters for **Remote Access** can be accessed by closing the OEG software application, right-clicking the desktop shortcut for OEG, and clicking **Run as Administrator**. Two parameters can be set for web server access at the bottom of the screen:

1. The web server port number. The default HTTP port for OMEGA Enterprise Gateway is 8080. Users can change it to any port.

2. The option to turn on/off the HTTPS connection.

Note: A server has multiple usages, therefore the default HTTP port 8080 might be occupied. If the PC running OEG has a conflicting web port 8080, the user will need to change the web port will need to be changed to a different, non-conflicting web port (i.e. 8081). This can be done by running OEG as an Administrator (as shown in **Section 3.1.1.** of this manual), clicking the **Stop** service button, changing the web port number to a compatible value other than 8080 (i.e. 8081), clicking the **Apply Changes** button, and finally clicking the **Start** service button to finalize the changes.

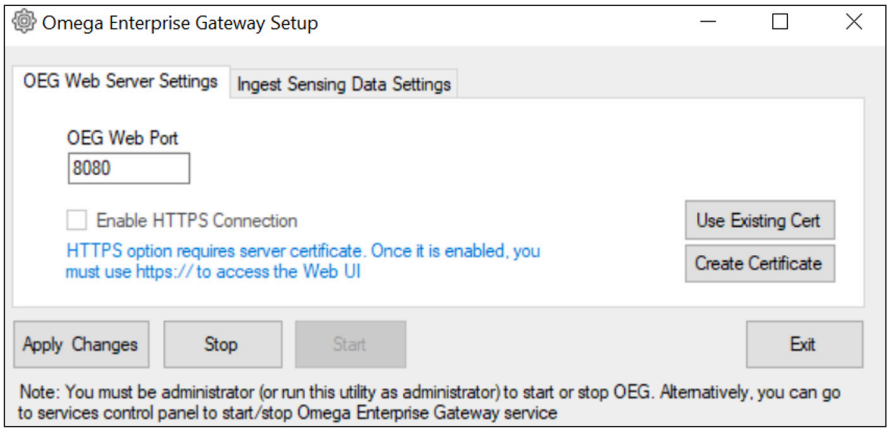

Figure 24: OEG Remote Access Setup

If users want to use a secure connection for web browsing or calling APIs, they can turn on the HTTPS connection by selecting the checkbox **Enable HTTPS Connection**. To secure the connection, a certificate must be provided. The default self-signed certificate can be used by clicking **Create Certificate** or users can select an existing certificate. When users select an existing certificate, ensure that the certificate can be used for remote machine authentication. Users who will create a certificate on their own must be aware that they will need to use the correct IP Address to access the Gateway web page.

Note: If the utility detects a user-created certificate on a local machine, the **Create Certificate** button will be grayed out to prevent duplicated creation.

11. Connecting to Omega Link Cloud

Note: The following section will outline how to connect Omega Enterprise Gateway to Omega Link Cloud. An active, registered Omega Link Cloud account is necessary to connect the two accounts. Although OEG does not require Internet connection to operate, if the account is added to the Omega Link Cloud as a gateway, an Internet connection will be required.

To connect an OEG account to an Omega Link Cloud account, follow these steps:

Step 1: Click the icon at the top right of the OEG interface.

Step 2: Take note of the unique **ID** and the **Secure Code for Cloud Registration** that appears in the pop-up.

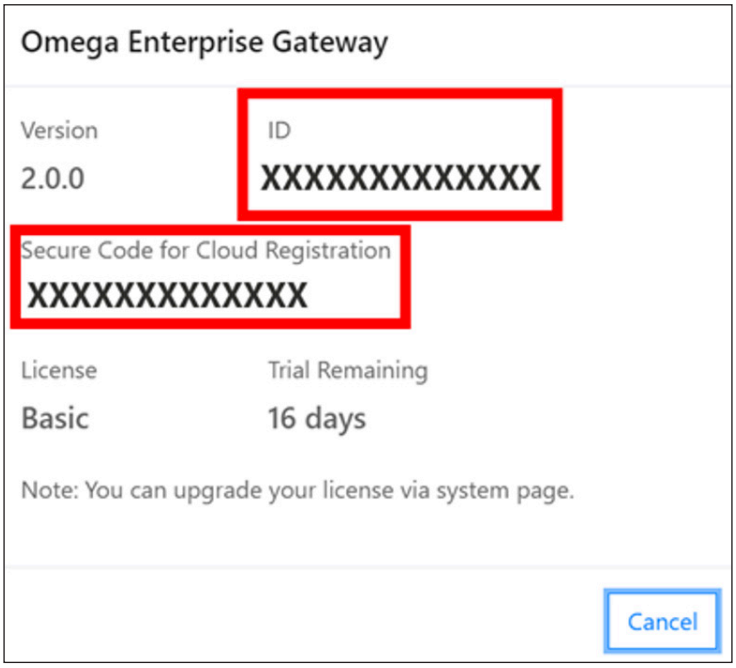

Figure 25: OEG Unique ID and Secure Code for Cloud Registration

Step 3: Open a web browser and navigate to cloud.omega.com.

Step 4: Sign in to the Omega Link Cloud account.

Note: Users who don't have an account can create one by clicking **Sign Up**.

Step 5: After signing in, click **Add Gateway**.

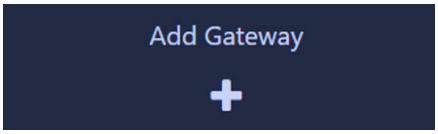

Figure 26: Omega Link Cloud Add Gateway Button

Step 6: Enter the ID and Secure Code for Cloud Registration that from the OEG account (Gateway) and assign a name to the new Gateway.

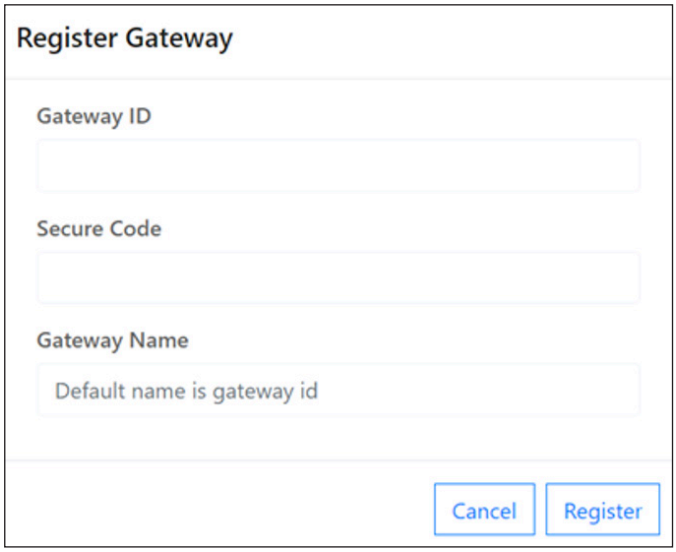

Figure 27: Omega Link Cloud Gateway Registration

Important: Once users have registered their OEG ID to their Omega Link Cloud account, they must power cycle the OEG software. To power cycle the OEG Software, navigate to the Windows OS Services application on the computer, locate Omega Enterprise Gateway in the list of items, right-click Omega Enterprise Gateway, and click Restart.

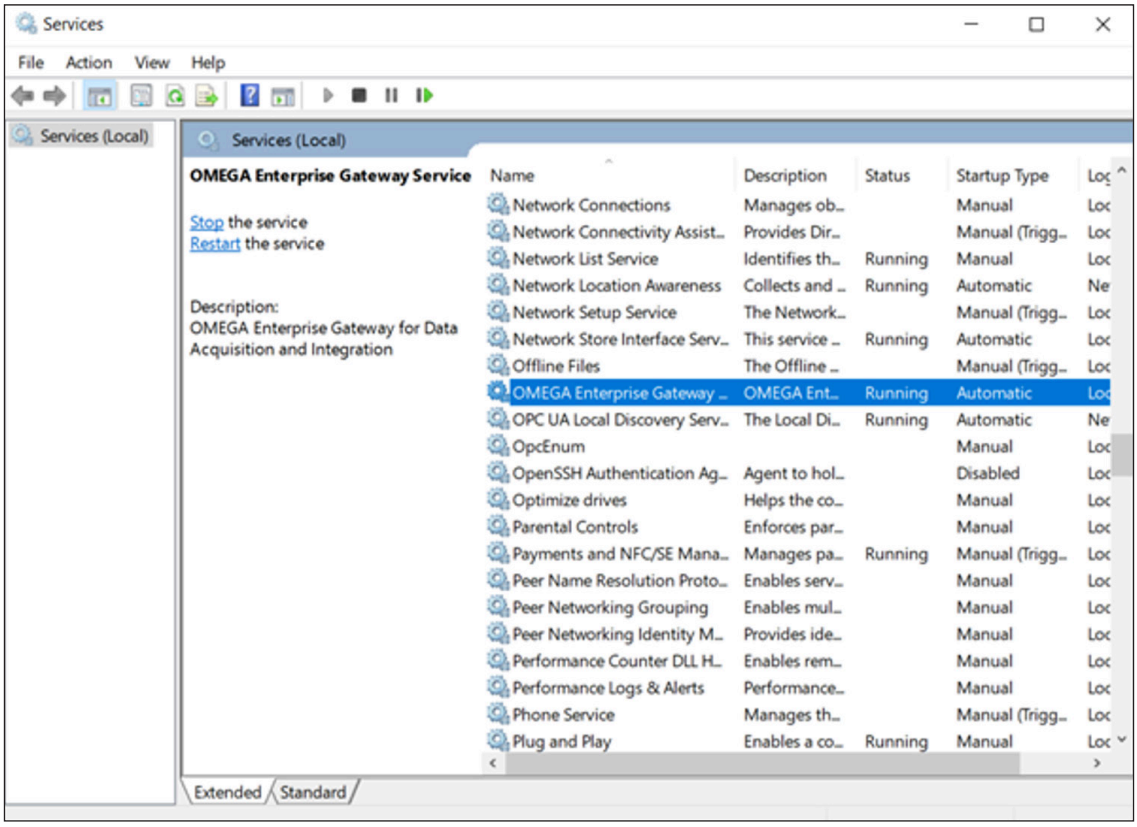

Figure 28: Windows OS Services Menu

Once these steps are complete, the user will have successfully connected their Omega Enterprise Gateway to Omega Link Cloud.

11.1. Limitations

When an OEG account is added to the Omega Link Cloud, some devices connected to OEG may not be displayed properly on the Omega Link Cloud user interface. Omega Engineering is constantly working on bringing its extensive catalogue of devices to the Omega Link Cloud.

12. Adding an Omega Link Gateway to OEG (Enterprise Mode)

Omega Enterprise Gateway software (OEG) supports Omega Link GW-001 models in local-area network environments with the addition of the Enterprise Mode feature in Omega Link GW-001 models with firmware version 1.10 or higher. The Enterprise Mode feature provides a local-area solution to sensing and data logging by bringing the advanced sensing suite of Omega Link Smart devices to the following paid tiers of OEG:

- Omega Enterprise Gateway Pro
- Omega Enterprise Gateway Business
- Omega Enterprise Gateway Business Pro

12.1. 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**, then **Stop** and **Start** OEG software by running the software as a Windows Administrator (See section **3.1.1. Running OEG with Windows Administrator Access**) to sync with the configuration made to the connected device.

12.2. What is Needed?

The following materials are required to download OEG, upgrade the GW-001 firmware, and to add the Gateway to OEG.

- **A Windows 7, 8, 9, 10, or 11 OS PC** to purchase, download, and run OEG. The PC will also be used check for the latest GW-001 firmware and will provide access to the internal Gateway UI to upgrade the firmware and enable Enterprise Mode.

- **A DHCP-enabled router with Internet access** and an open RJ45 Ethernet port to upgrade the firmware of the GW-001 for first time setup; also needed if the GW-001 firmware version is outdated.

- **One RJ45 Ethernet cable** to connect the Gateway to the DHCP-enabled router and to connect to the local area network PC or router after the Enterprise Mode process is complete.

- **An assembled GW-001 device**

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.

12.3. Download a Qualifying OEG license Tier

A qualifying OEG license tier can be purchased and downloaded from the OMEGA Engineering website at the following URL:

https://www.omega.com/en-us/oeg

Note: Omega Link compatibility is only available for OEG Pro, OEG Business, and OEG Business Pro license tiers.

Once a qualifying license tier has been purchased and downloaded on a Windows PC, users may proceed by installing the software on the PC that will run OEG. Exit the software once the download process is complete.

12.4. Navigate to the GW-001 User Interface

A successful connection between a GW-001 and OEG requires the GW-001 to run on firmware version 1.10 or higher. Users can check for the latest firmware by navigating to the GW-001 User Interface (UI) on a PC with a web browser.

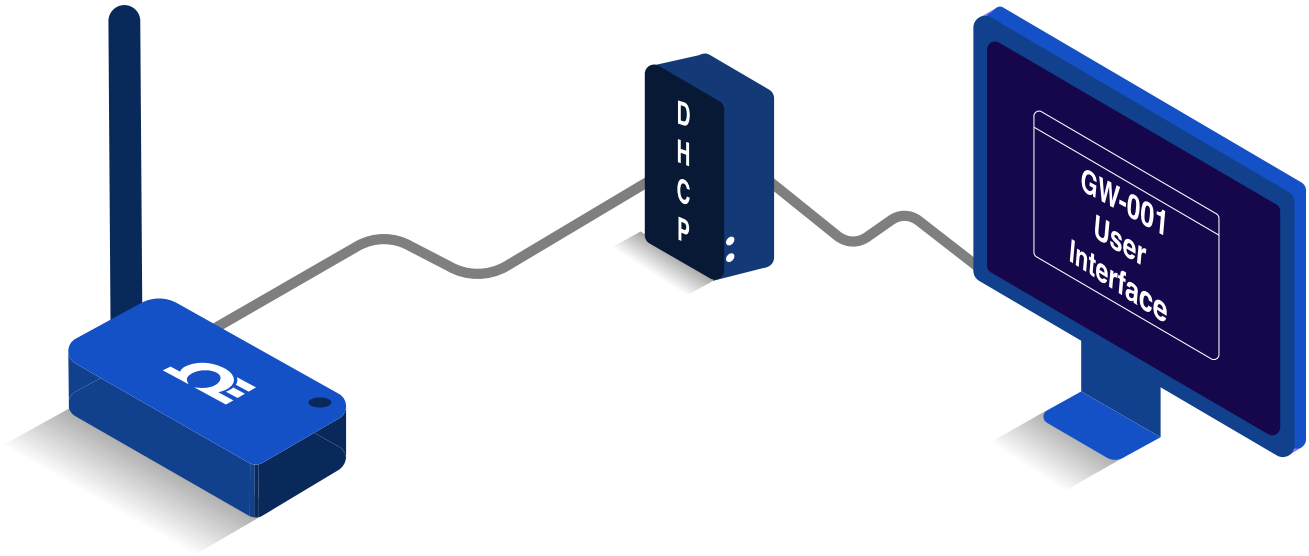

Figure 29: GW-001 First-Time UI Access Setup

To access the GW-001 UI for the first time, use an **RJ45 Ethernet Cable** to plug the GW-001 device to a **DHCP-enabled router with Internet access** and follow the steps below:

Step 1: Using a Windows PC on the same network as the connected GW-001, type the following URL:

http://omegaiotgatewayXXXX.local

(**XXXX** should be replaced with the last 4 digits of the GW-001 **MAC address** printed on the label located on the underside of the GW-001 device).

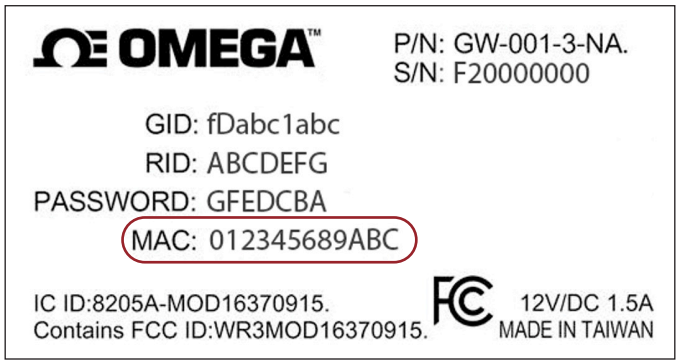

Figure 30: GW-001 Underside Label with MAC Address

Step 2: From the GW-001 UI login screen, enter the password for the GW-001 (if this is a first-time login, enter the password located on the underside label of the GW-001 device.) When entered successfully, the user will be granted access to the GW-001 UI.

Important: If the user is unable to access the GW-001 UI using the DHCP-enabled router method, the Bonjour service may need to be installed on the PC. The service can be downloaded from the following URL:

https://omegaupdates.azurewebsites.net/software/bonjour

12.5. Download and Install the Latest GW-001 Firmware

From the main page of the GW-001 UI, click the **Settings** tab then click the **System** tab.

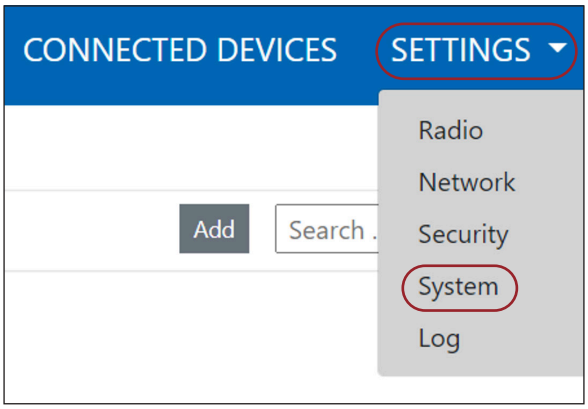

Figure 31: GW-001 UI Systems Settings Tab

When presented with the System Settings menu, users may click the Check Online button to check for the latest GW-001 firmware version available.

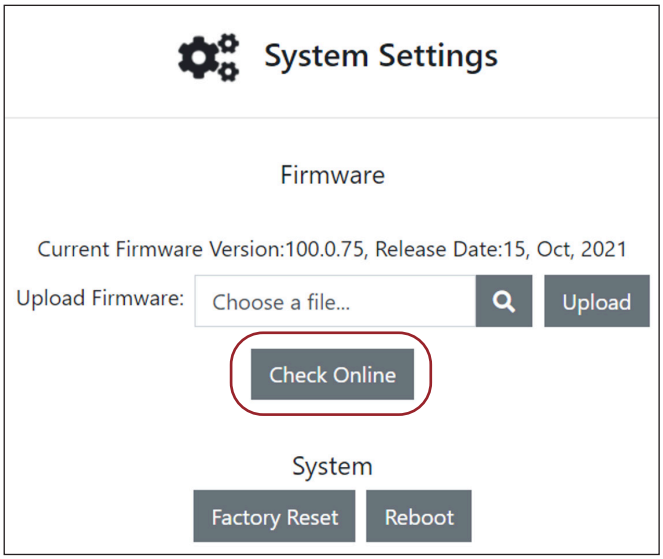

Figure 32: GW-001 UI System Settings Menu

The user may then download the latest version and upload it to the GW-001 device by clicking the **Upload Firmware** search bar and selecting the firmware file from the **File Explorer**. A **red** LED will appear on the GW-001 indicating the upgrade is in progress.

Once the update process is complete, the LED on the GW-001 will blink **green**. The GW-001 will reboot and the user will need to log back into the GW-001 UI. The new firmware version will appear on the main page of the GW-001 UI once logged back in.

12.6. Enable Enterprise Mode

When the GW-001 has been upgraded to the latest firmware version, Enterprise Mode will be made available in the **Security Settings**. Click the **Settings** tab in the upper right corner of the screen and clicking **Security** from the dropdown.

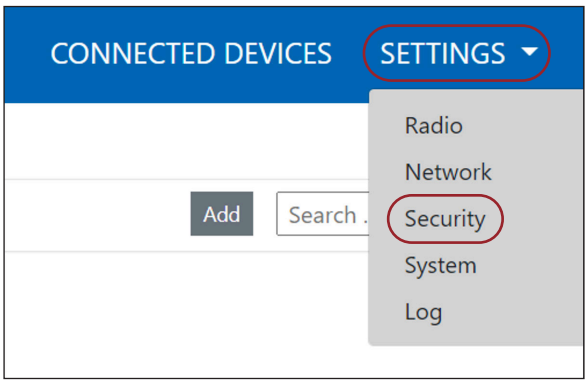

Figure 33: GW-001 UI Security Settings Tab

From the **Security Settings** menu, users will be able to disable the cloud registration requirement thus enabling Enterprise Mode. Click the **Turn Off Cloud Registration** checkbox to disable the feature and to set the GW-001 to Enterprise Mode. Click the **Update** button to save the change. The GW-001 LED will repeatedly blink amber/orange to indicate the device is in **Enterprise Mode**.

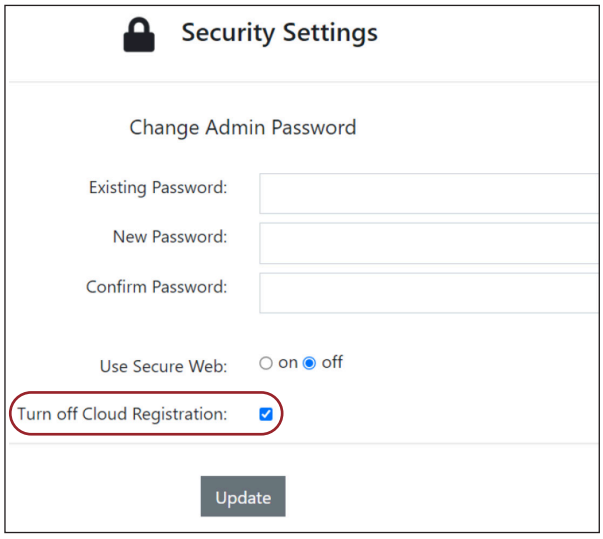

Figure 34: GW-001 UI Security Settings Menu

12.7. Add the GW-001 to OEG as a Device

If the GW-001 will be moved and connected to a local area network, it should be moved at this point and connected directly to a DHCP-enabled, local-area network router or directly to the local-area network Windows PC that has OEG installed. Both methods require a connection via RJ45 Ethernet cable.

Local-Area Network DHCP Router Setup

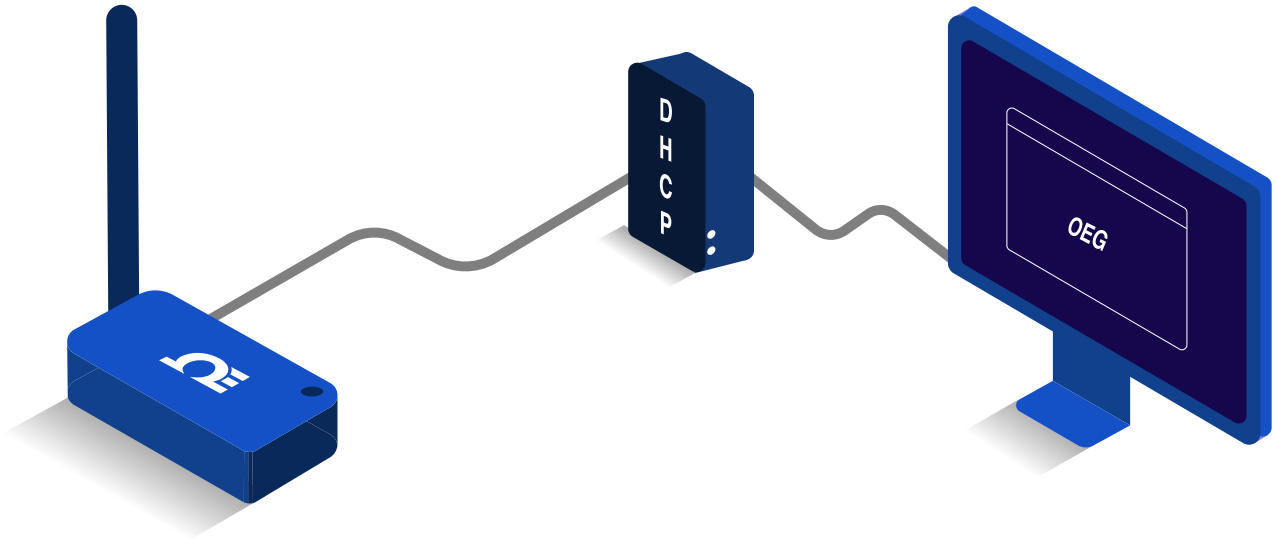

Figure 35: Local-Area Network DHCP Router Setup Overview

Local-Area Network Direct-to-PC Setup

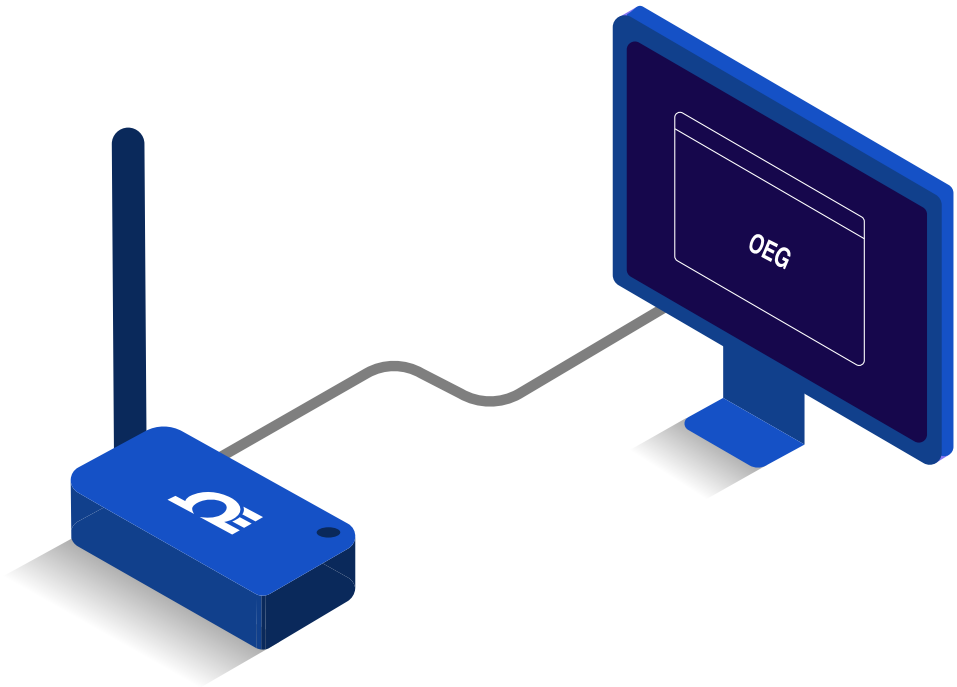

Figure 36: Local-Area Network Direct-to-PC Setup Overview

Once the GW-001 has been connected to a local-area network router or local-area network PC, launch OEG and log in to the OEG account. Follow the steps below to add a GW-001 to OEG as a device:

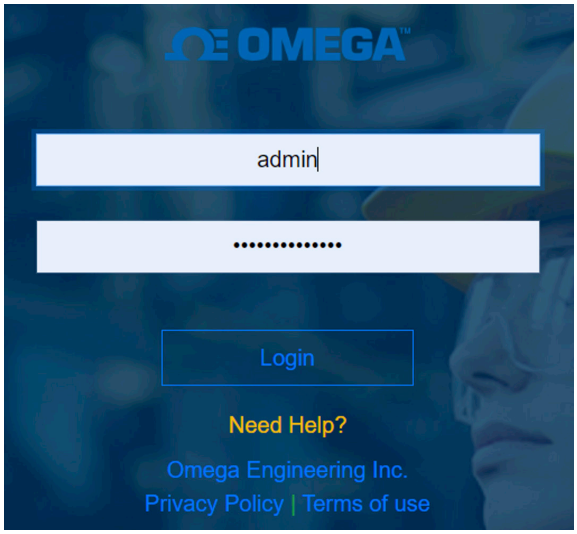

Figure 37: OEG Login Page

Step 1: After logging in to the OEG account, from the homepage, click the + icon or the **Add Devices** button. Then select **GW-001-Series Gateway** from the **Product Family** dropdown and **GW-XXX-X** from the **Product Model** dropdown.

Figure 38: OEG Interface Add Device Menu - Omega Link GW-XXX-X

Step 2: Input the **IP Address** of the connected GW-001 **as it appears in the local-area network**.

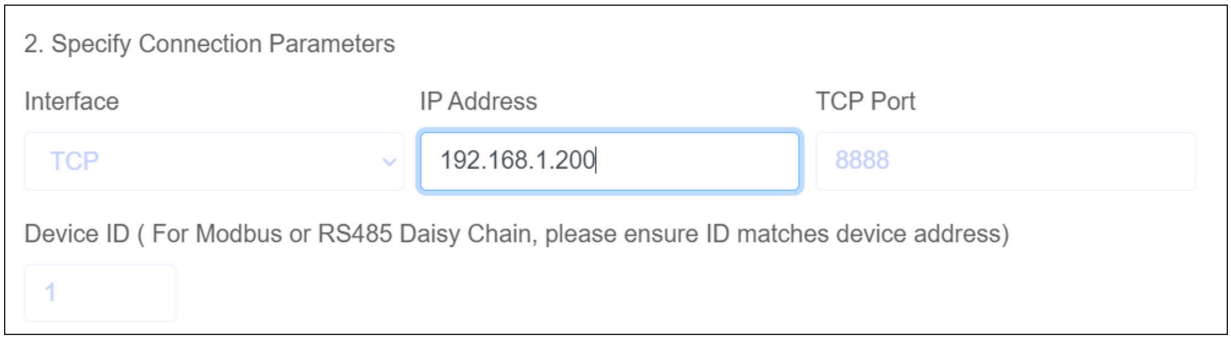

Figure 39: OEG Interface Add Device Menu - Connection Parameters

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Important: If the 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 device has been assigned under new the local-area network.

Step 3: 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 text box.

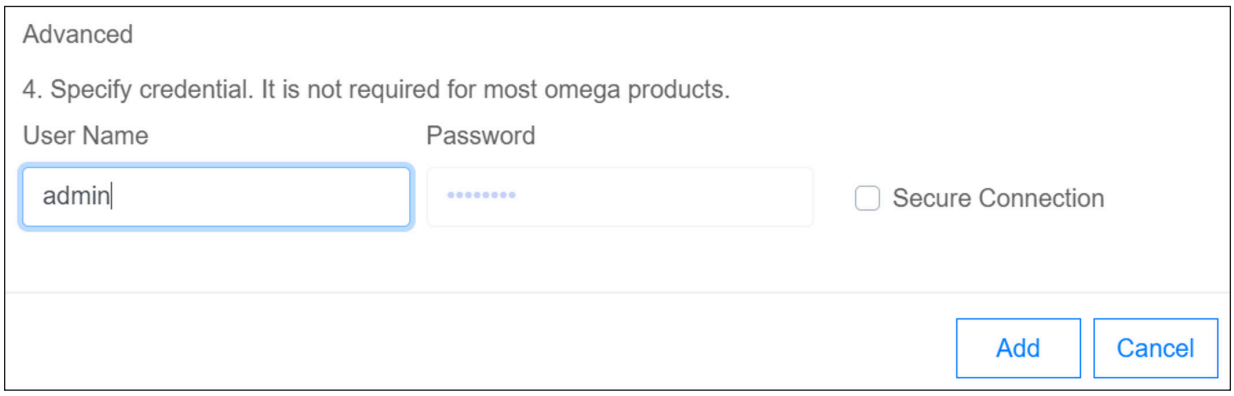

Figure 40: OEG Interface Add Device Menu - Gateway Username and Password Input

Step 4: Click Add to finalize your configuration.

All devices connected to the GW-001 will appear, including those that are offline. The readings from offline units will display as NaN.

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.

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13. Adding an iServer 2 to Omega Enterprise Gateway (OEG)

iServer 2 devices can be added to Omega Enterprise Gateway (OEG) in a non-Internet environment by adding the iServer 2 to OEG as a device. There are two methods to connect the iServer 2 to OEG:

- The first method requires the iServer 2 to be set to the default DHCP network setting and requires access to a DHCP-enabled router with an open port and an RJ45 Ethernet cable.
- The second method requires Administrator access to the Windows OS PC running OEG and requires the iServer 2 to be set to the Static IP network setting and the iServer 2 unit to be plugged in directly to the Windows PC.

13.1. Method 1: DHCP Router Method

To add an iServer 2 to OEG using the DHCP router method, begin by ensuring the iServer 2 is set to the default DHCP network settings and follow the steps below.

Step 1: Connect the iServer 2 unit to a DHCP-enabled router using an RJ45 Ethernet cable.

Step 2: Ensure the Windows PC that will run OEG is on the same network as the connected iServer 2.

Step 3: Launch and log in to your OEG account.

Step 4: Click the  icon or **Add Devices**. Then select **iServer 2** from the **Product Family** dropdown and click **TC** or **Probe** from the **Product Model** dropdown, depending on the model of iServer 2 being connected.

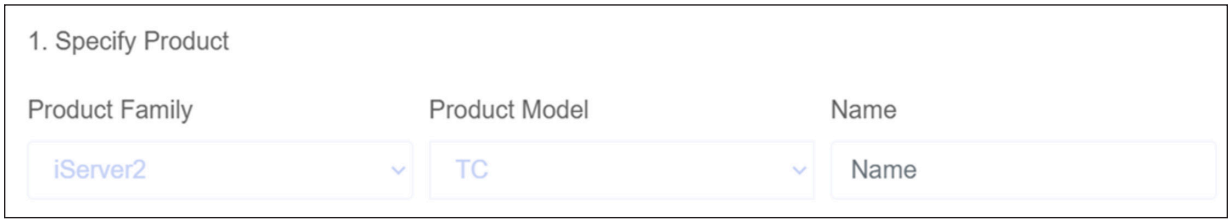

Figure 41: OEG Add Devices Menu - iServer 2 Model

Step 5: Input the IP Address of the connected iServer 2 **as it appears in your local-area network**.

Figure 42: OEG Add Devices Menu - Connection Parameters

Important: If the DHCP-enabled iServer 2 unit has been disconnected and moved to a separate DHCP enabled, local-area network router or PC, the user must identify the new IP Address that the unit has been assigned under the local-area network. For models with a display, the new IP Address will appear on the unit display. For models without a display, users can access the iServer 2 web UI to check the new IP Address.

Step 6: Click **Add** to finalize your configuration.

All sensing devices connected to the iServer 2 will appear on OEG after the pairing is successful. The readings from offline units will display NaN. For more information on how to navigate OEG, refer to the OEG Software User's Manual.

13.2. Method 2: Static IP (Direct to PC) Method

To add an iServer 2 to OEG using the Static IP (direct to PC) method, begin by ensuring the iServer 2 is set to the Static IP network settings and confirm the Static IP address is set to the preferred address. The Windows PC network settings will need to be configured to properly pair the iServer 2 and OEG. Follow the steps below:

Important: Administrator access to the Windows PC is required to configure the Network settings of the PC.

Step 1: Navigate to the iServer 2 web UI and assign a Static IP address to the iServer 2 unit. Then exit the web UI.

Step 2: Connect the iServer 2 unit directly to the Windows PC with OEG using an RJ45 Ethernet cable.

Step 3: Navigate to the **Windows Control Panel** and click **Network and Sharing Center**.

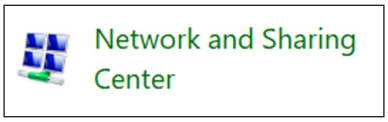

Figure 43: Windows Network and Sharing Center

Step 4: Click the **Unidentified Network Connection**.

Figure 44: Network and Sharing Center - Unidentified Network

Step 5: Click **Properties**.

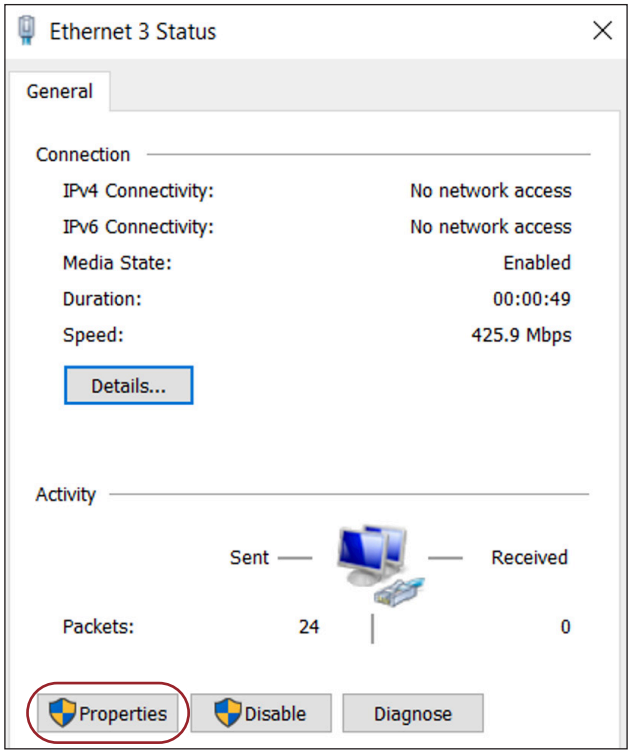

Figure 45: Unidentified Network Status

Step 6: Click **Internet Protocol Version 4 (TCP/IPv4)** to highlight the selection and then click **Properties**.

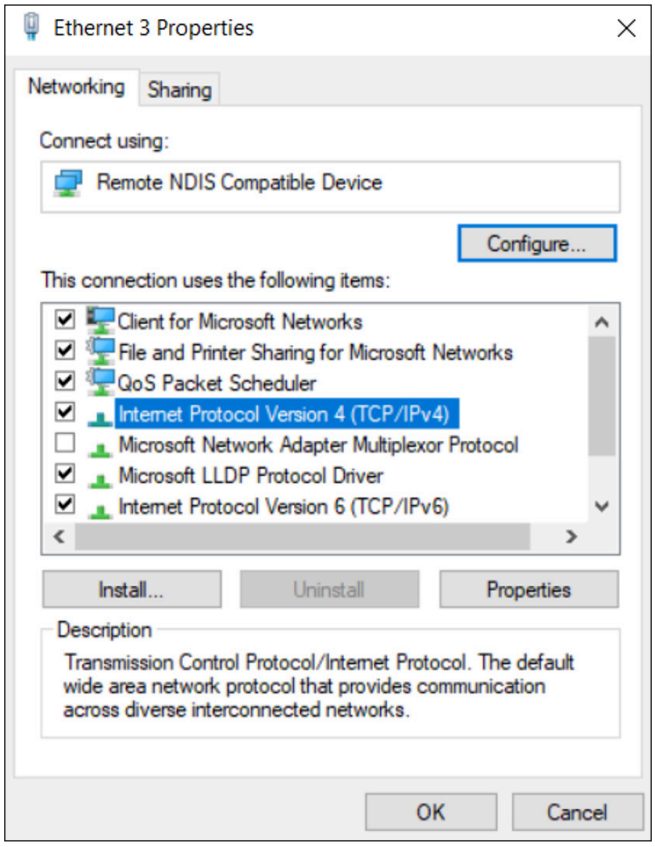

Figure 46: Unidentified Network Properties

Step 7: Click **Use the following IP address** and enter an IP address that uses the same network part (the first nine digits of the IP address) but with a unique host part (the last three digits of the IP address) as the static IP Address assigned to the iServer 2 in Step 1.

For example, if the Static IP assigned to the iServer 2 is: **192.168.3.200**, then the IP address entered in the text box should be: **192.168.3.XXX** (the XXX should be any value that is **NOT** 200)

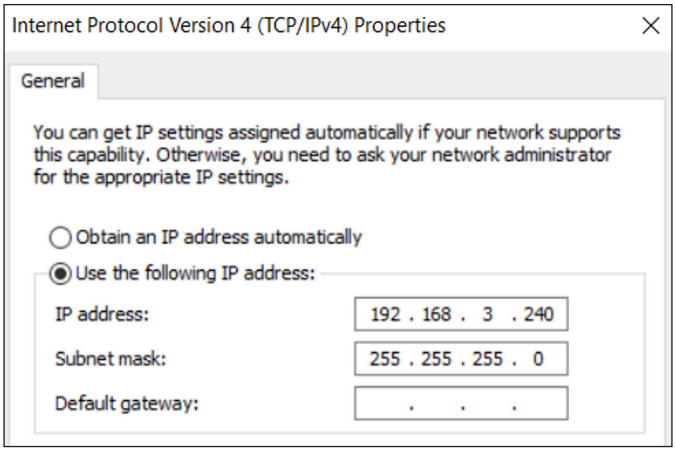

Figure 47: TCP/IPv4 and Subnet Mask Propertieis for Micro-USB 2.0 Connection

Step 8: Click **OK** to finalize

Step 9: Launch and log in to your OEG account.

Step 10: Click the  icon or **Add Devices**. Then select **iServer 2** from the **Product Family** dropdown and click **TC** or **Probe** from the **Product Model** dropdown, depending on the model of iServer 2 being connected.

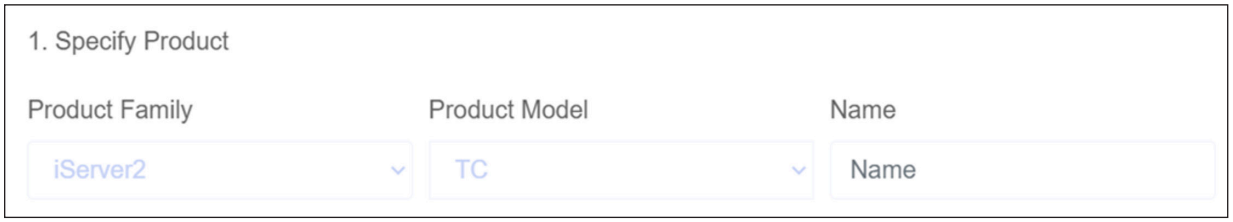

Figure 48: OEG Add Devices Menu - iServer 2 Model

Step 11: Input the static IP Address of the connected iServer 2.

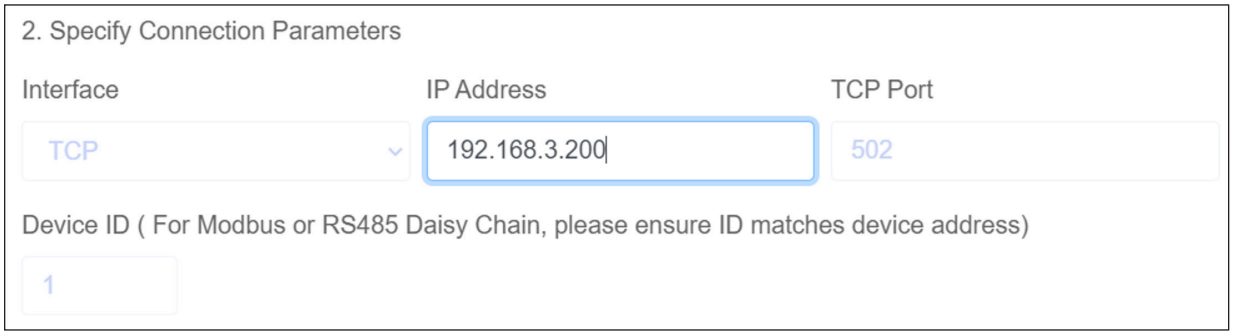

Figure 49: OEG Add Devices Menu - Connection Parameters

Step 12: Click **Add** to finalize your configuration.

All sensing devices connected to the iServer 2 will appear on OEG after the pairing is successful. The readings from offline units will display NaN.

13.3. Configuring Sensing Devices after Pairing with OEG

If the device name, sensor name, meta data, or sensor units of the iServer 2 are modified or configured after the device has been paired to OEG, it may take up to 5 minutes for the changes to be reflected correctly in the OEG user interface. It is highly recommended that users reboot OEG or delete and re-add the iServer 2 device to OEG if the user has made changes to the iServer 2 sensor units after the device has been paired to OEG to ensure the collected sensor data remains consistent.

14. Integrating to Another Enterprise Software

Note: OPC UA/DA integration is only available on **OEG Business** and **OEG Business Pro**.

Omega Enterprise Gateway provides two ways to integrate sensing data into other enterprise applications.

1. OPC UA Server (requires license)
2. OPC DA Server (requires license)

14.1. OPC UA Server

Omega Enterprise Gateway comes with an embedded OPC UA server. This OPC UA server allows the OPC UA compliant enterprise application to connect to OEG and retrieve sensing data. Once OEG is running, the OPC UA server will also run and become exposed through the following URL:

opc.tcp://hostname:51210/OMEGA/OPCServer

Note: The hostname will either be the DNS name or IP Address of the machine that the Gateway is installed on.

For example, using OPC UA Foundation's sample client tool, users may browse supported protocols in the server configuration dialog and select one to connect to. Click OK and use an anonymous login.

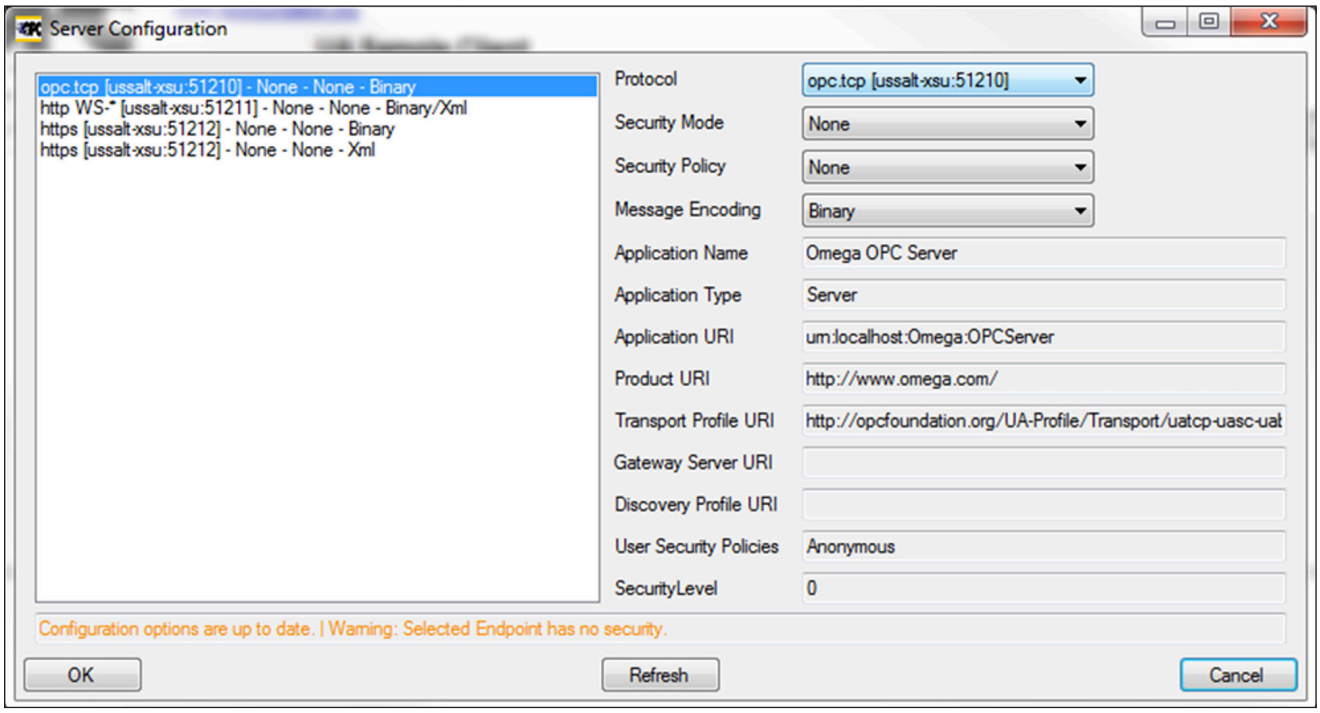

Figure 50: OPC UA Server Configuration

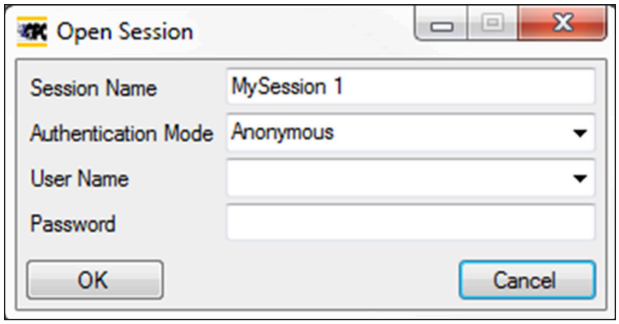

Figure 51: OPC UA Server Session Login

Once signed in, users can browse the measurements in the tree structure.

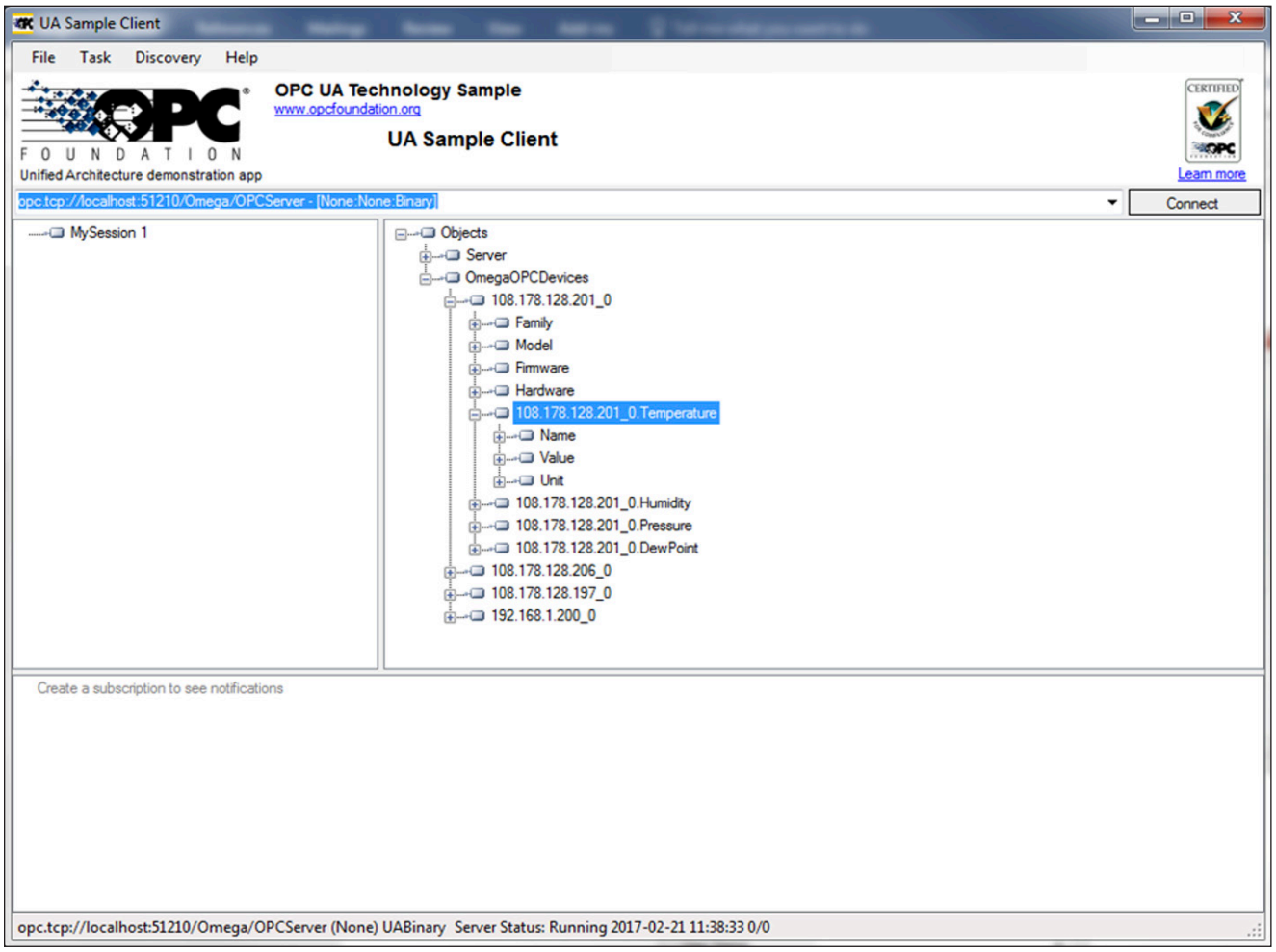

Figure 52: OPC UA Sample Client Tree Structure

Each measurement is presented as a tree node and has three attributes: Name, Value, and Unit. To display the most current readings, right-click the measurement node and click Browse in the pop-up menu.

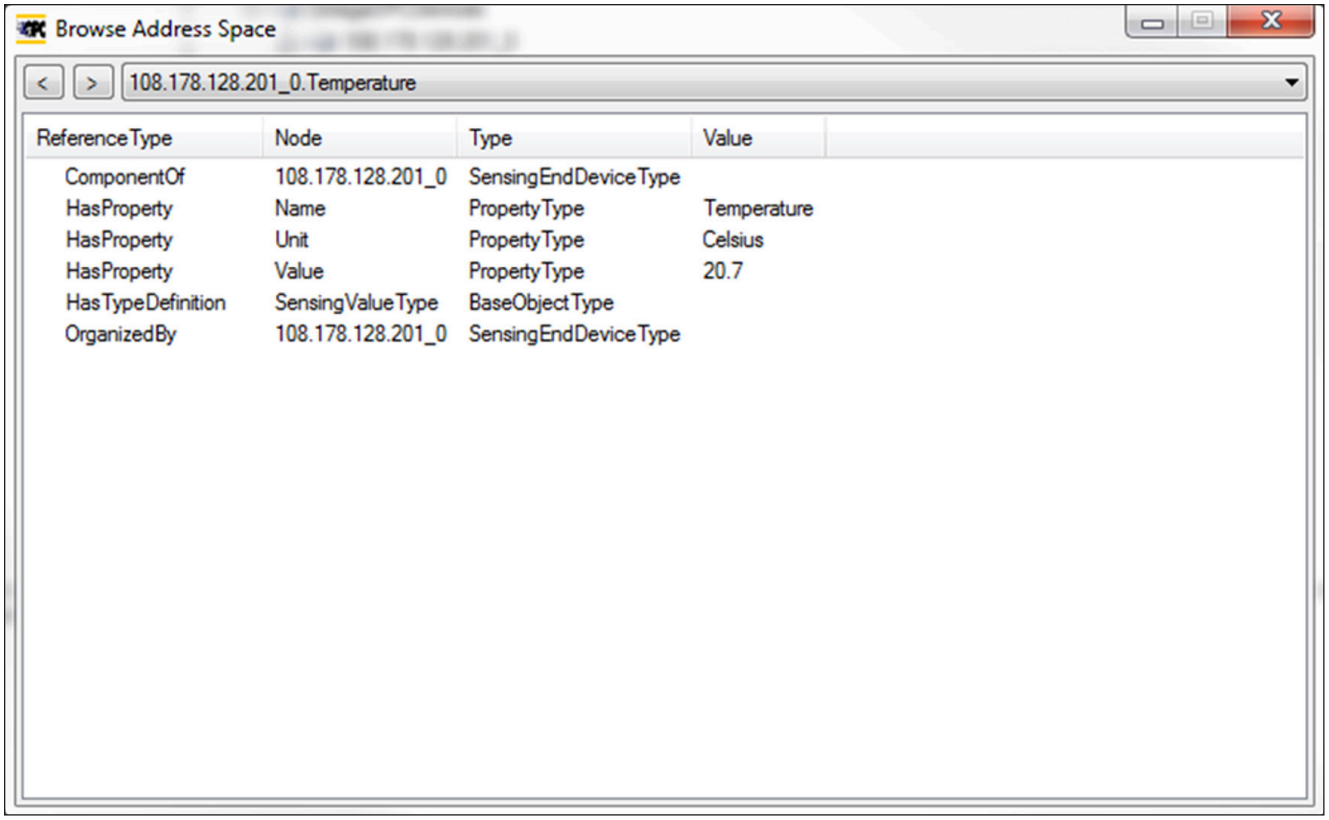

Figure 53: OPC UA Server Address Space Browser

Different OPC client applications, such as Enterprise application, have a different UI to access the OPC server. Please refer to the user manual of the software you are using.

14.2. OPC DA Server

Omega Enterprise Gateway exposes the OPC DA 2.0 and 3.0 compatible server that allows the OPC DA client to connect. Below is an example of using Matrikon's free OPC DA Explorer to test the OPC Server. You can download the OPC Explorer from their website.

Once the software is started, you can navigate to OMEGA Enterprise Gateway DA OPC Server and click the **Connect** button to connect to the OPC server.

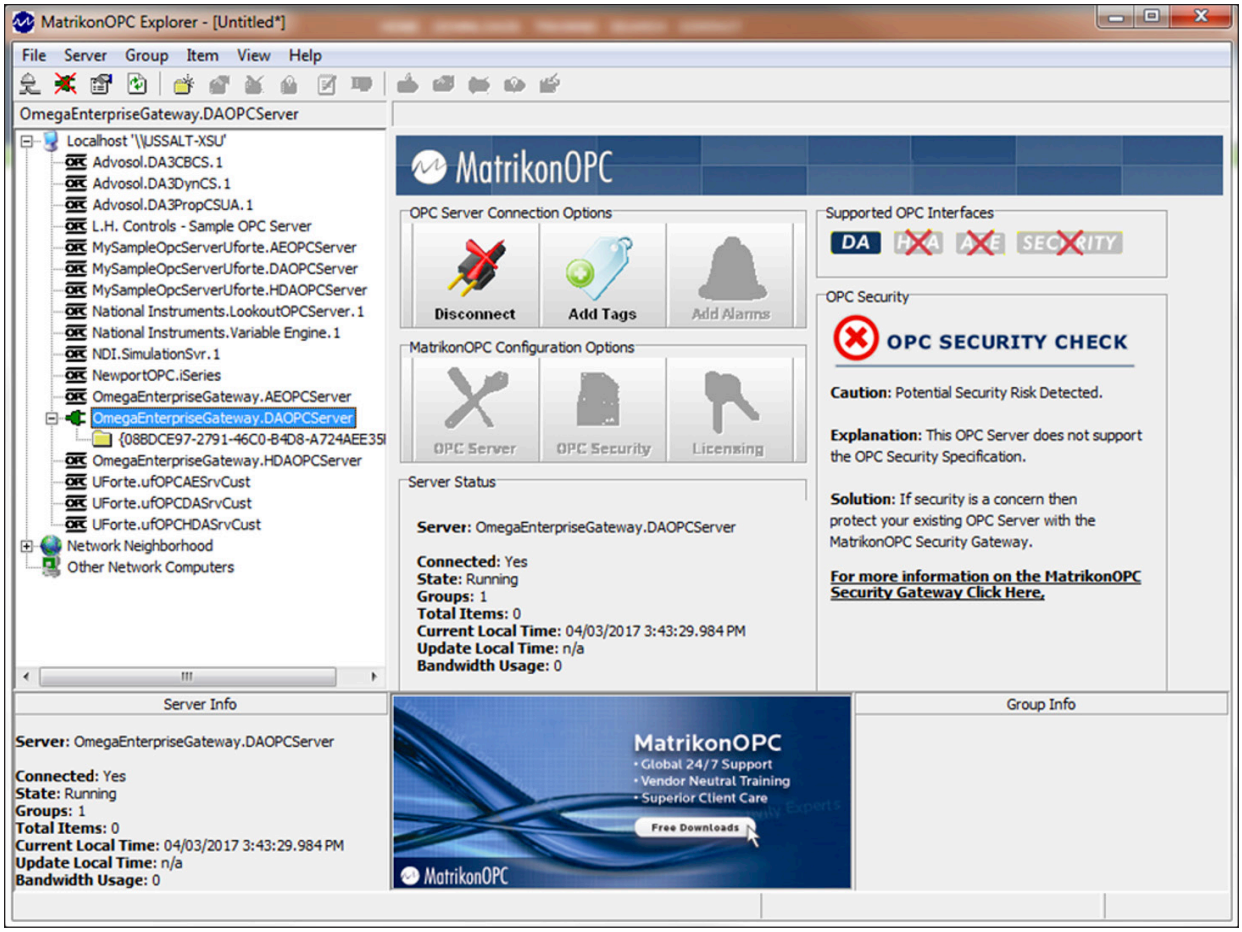

Figure 54: Matrikon OPC DA Explorer

Once the server is connected, you can browse the items from the available items list box. Items are automatically populated once you have added a device to the Omega Enterprise Gateway.

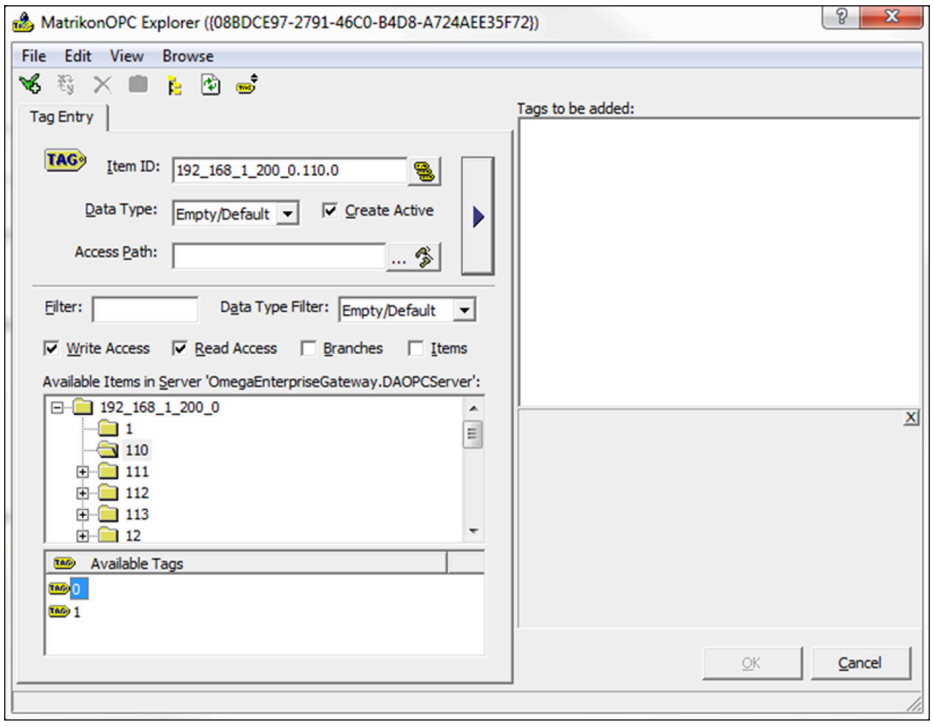

Figure 55: Matrikon OPC DA Explorer Available Items List

15. Exporting Data with the OEG Data Tool

The Omega Enterprise Gateway (OEG) Data Tool allows users to backup, restore, clean, and export OEG data. The OEG Data Tool can be utilized to accomplish the following tasks:

- **Backup Data** – The Backup Data function provides an efficient way to back up critical OEG user data collections. This feature is a critical step when migrating OEG from one computer to another computer.
- **Restore Data** – The Restore Data function allows users to restore all previously backed up OEG data collections. When coupled with the Backup Data function, users can migrate OEG from one computer to another.
- **Clean Data** – The Clean Data function provides users with a tool to clean abnormal data by removing collections that have 0 data points due to misconfiguration. Some devices may occasionally read abnormal data due to environmental electromagnetic interference or other factors.
- **Export Data** – The Export Data function exports each sensor channel into a single .csv file. Users can utilize the OEG Data Tool to combine all selected measurements into a single .csv file.

Note: Omega Engineering is not responsible for data lost due to user error. The Data Tool is only available for users with **Pro**, **Business**, or **Business Pro** OEG license tiers.

15.1. Launching the OEG Data Tool

After downloading and installing OEG, navigate to the Windows OS search bar and type **OEG Data Tool** to find and open the OEG Data Tool application.

Important: When connecting to the OEG Database, users must enter the **OEG URL** and the **Admin Password**. The OEG URL is the same URL used to access the user's OEG web UI. The Admin Password is same as the OEG admin password.

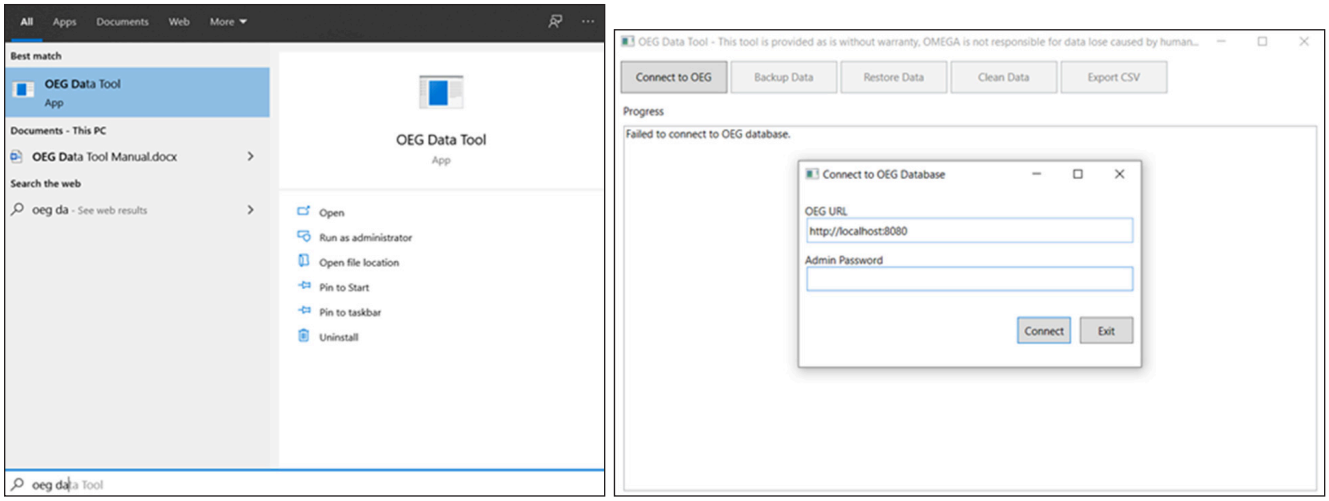

Figure 56: Launching the OEG Data Tool

15.2. Backup Data

Upon successful login, all function buttons are enabled. To begin the **Backup Data** process, follow these instructions:

Step 1: Click on the **Backup Data** button.

Step 2: Select a backup folder and specify time range, click **Ok** to start the backup process.

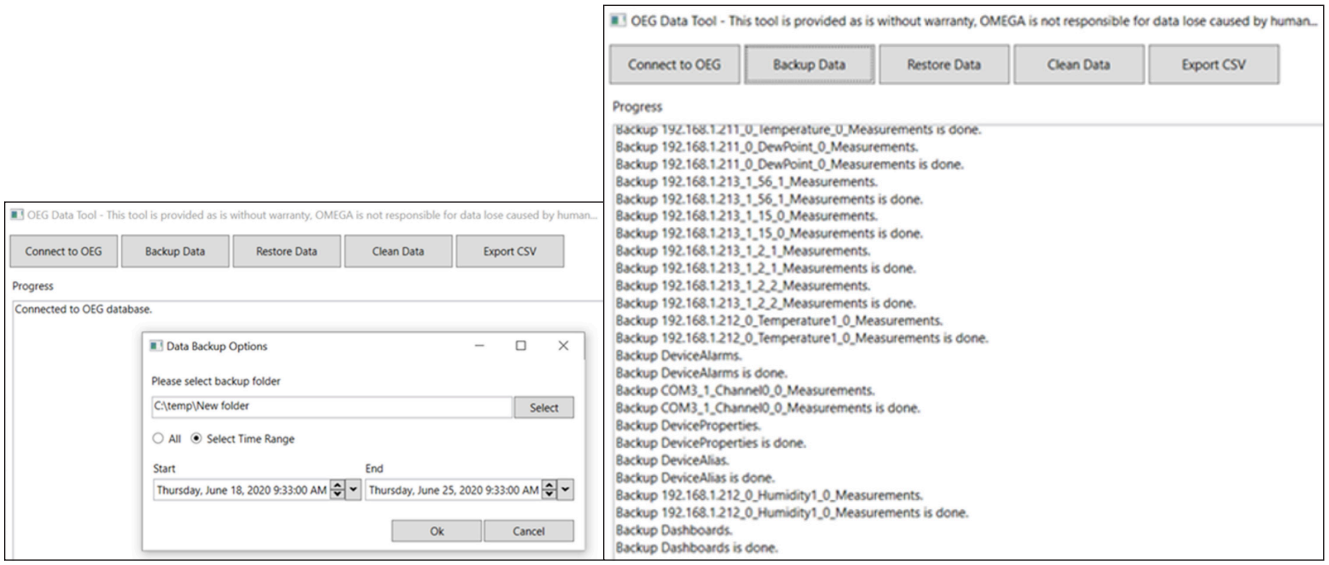

Figure 57: Data Backup Options Interface

The backup progress will be displayed in the Data Tool textbox.

15.3. Restore Data

To restore data from previously backed up data, click on the Restore Data button. Clicking Restore Data will open the file folder and allow users to select one or more backup files. After selecting the backup file, click Open to start the restoration process. Progress will be displayed in the Data Tool textbox. Depending on the number of files selected, the Data Tool may need time to complete the restoration process.

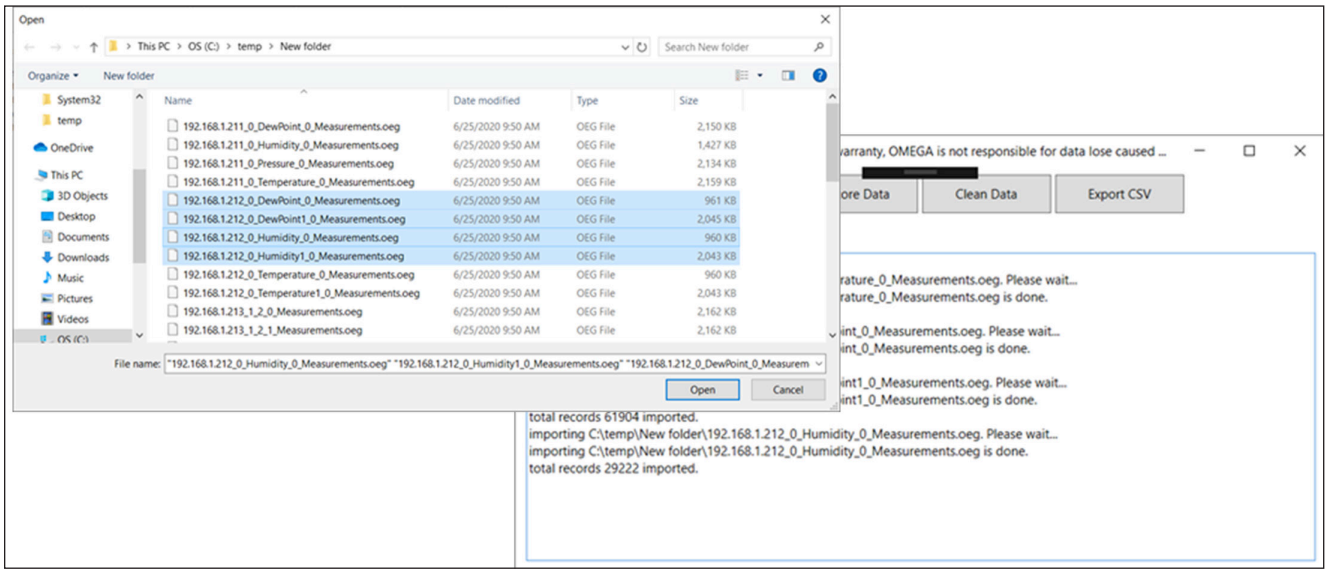

Figure 58: The User Selects the Backup Data Files that will be Restored

15.4. Cleaning Data

Caution: Once data has been cleaned or deleted, it cannot be recovered.

OEG can capture abnormal readings from devices due to environmental electromagnetic interference and/or other unknown factors. Users can utilize the Cleaning Data function to remove abnormal readings. To delete data points, simply click the data points to highlight them and click the Delete button.

The data cleaning dialog will display all available data points. Users can apply filters to quickly identify points of interest. To start the cleaning process, follow the instructions below:

Step 1: Click on the Clean Data button to bring up the data cleaning dialog box and select data points and a date range to load the data in the chart.

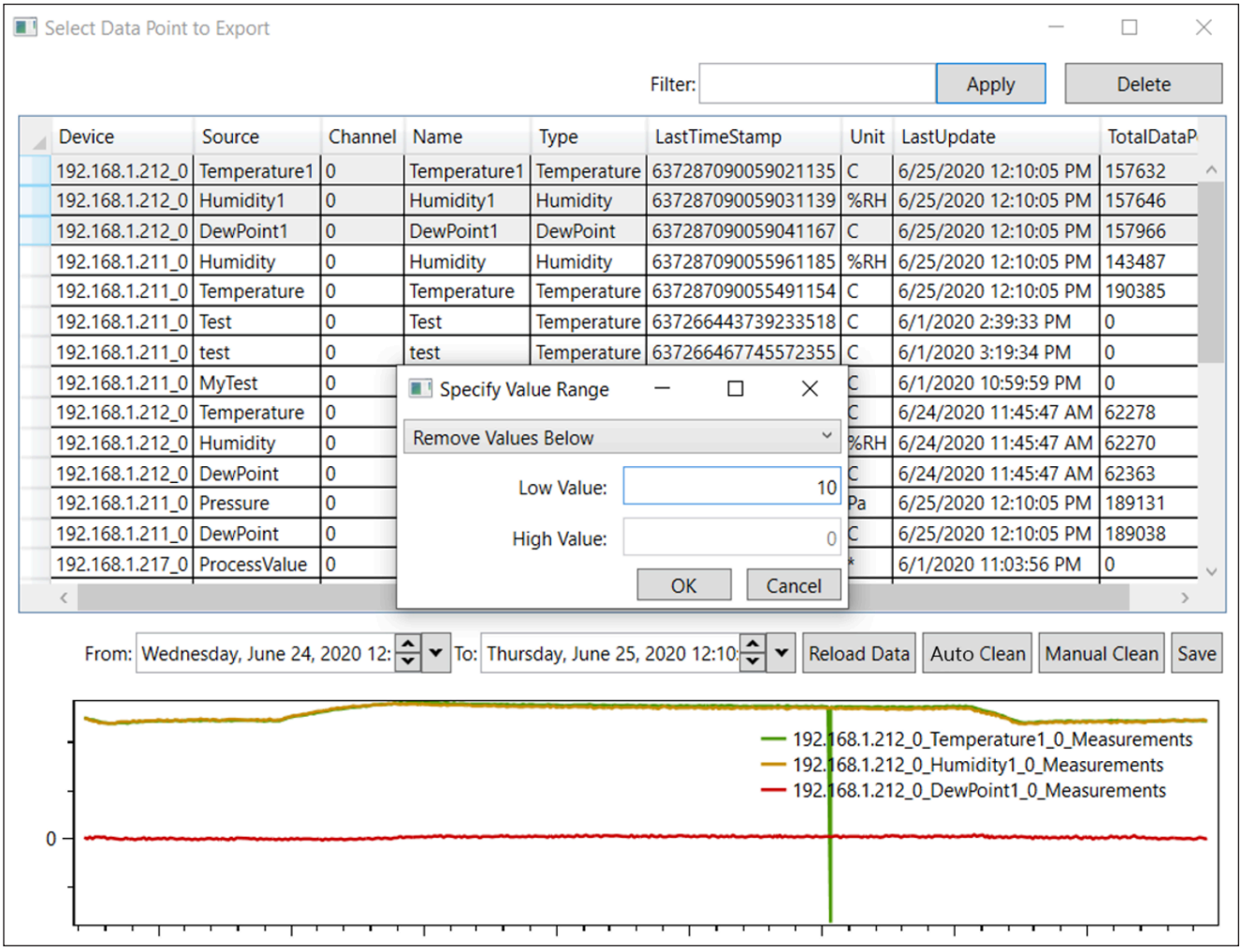

Figure 59: Users Will Select a Range of Data Points to be Cleaned

There are two methods to complete the data cleaning process. The **Auto Clean** function will try to detect abnormal data using running standard deviation check. The **Manual Clean** function allows users to specify outlier value ranges to remove the outliers.

Step 2: Choose **Auto Clean** or **Manual Clean** depending on your preference.

Step 3: After the data cleaning process is complete, click **Save** to save the cleaned data.

15.5. Export Data

The Export Data function allows users to combine multiple data points into a single .csv file. To utilize the Export Data function, follow these instructions:

Step 1: Click **Export CSV** and select the desired data, time range and file to export.

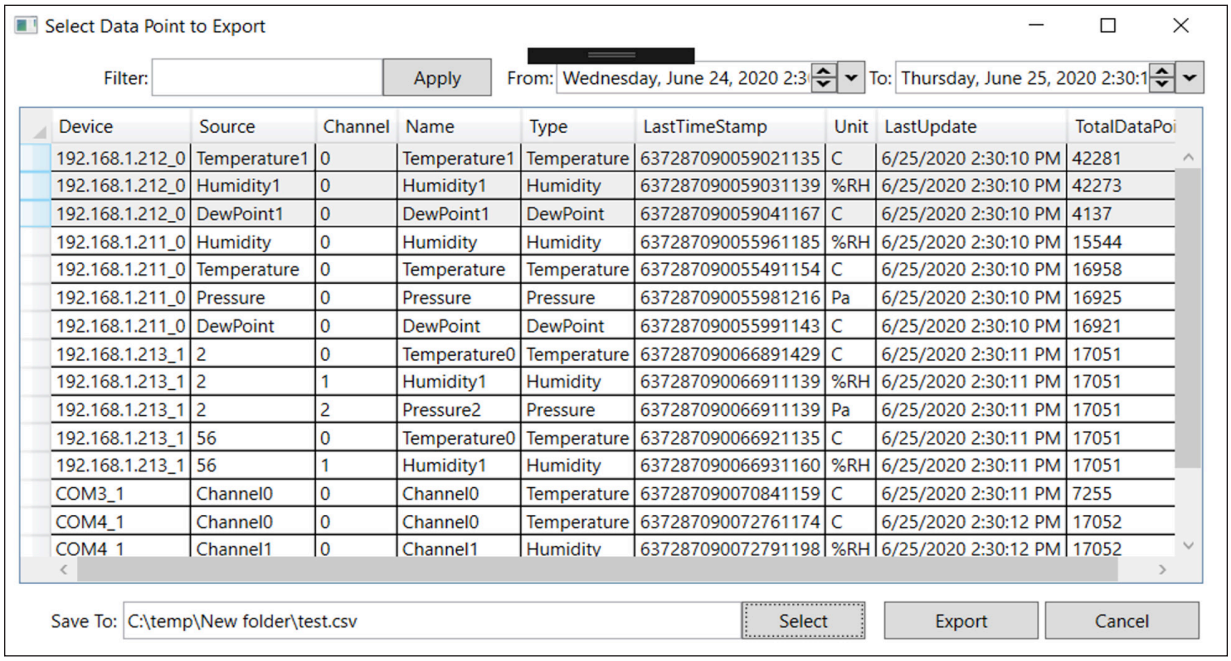

Figure 60: Users Must Define a Range Before Exporting Data

Step 2: Click the **Export** button to export the data.

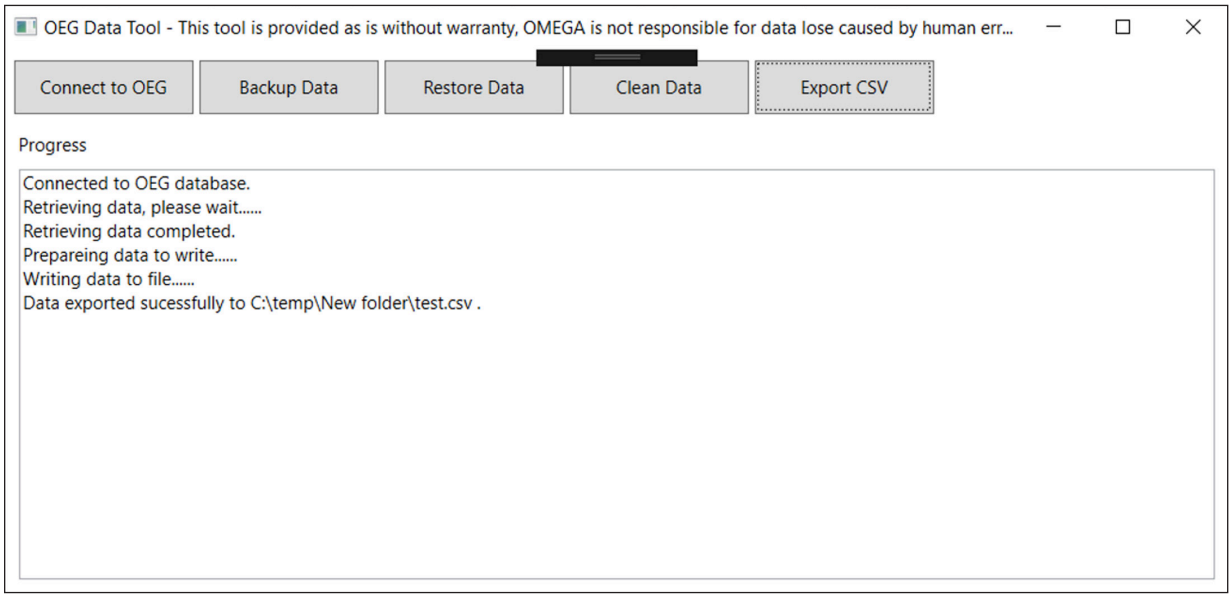

Figure 61: A Successful Export will be Displayed in the Data Tool Textbox

This process will take time depending on how many data to be exported. The exportation progress will be displayed in the Data Tool textbox.

16. User-Defined Sensor Unit of Measurement Conversion w/ Gain & Offset Scaling

The Omega Link ecosystem of products support the user-defined sensor unit of measurement conversion with gain and offset scaling. The following is an example application of the feature.

Compatible 4 to 20 mA process input sensing devices that are connected to SYNC can be scaled and configured to report accurate sensor readings in the Omega Enterprise Gateway user interface. To configure and scale the 4 to 20 mA process input of a compatible, connected, sensing device follow the steps below:

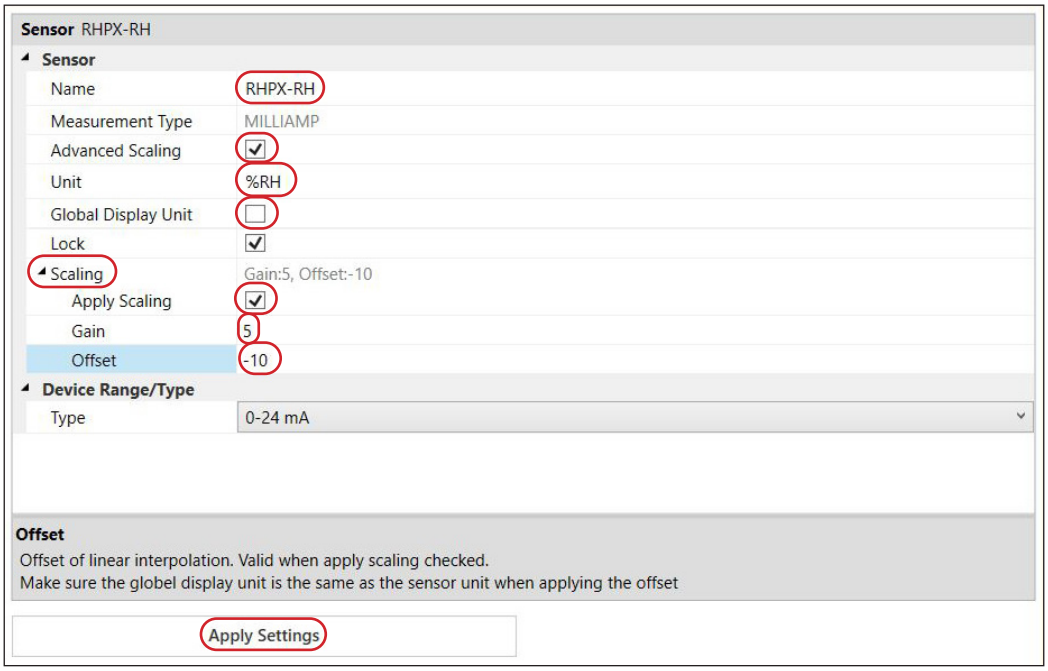

Figure 62: SYNC Advanced Scaling

Step 1: Launch SYNC configuration software and connect the compatible 4 to 20 mA sensor that will be configured

Step 2: From the **Inputs** tab, click the **Advanced Scaling** check box to **enable** it and display the advanced scaling options.

Step 3: Provide a name to the sensor in the Name text box (16-character limit) and enter the unit of measure associated with the device in the Unit text box (4-character limit).

Step 4: Click the **Global Display Unit** check box to **disable** the option.

Step 5: Click the **Scaling** sub-menu drop down and click the **Apply Scaling** check box to display and edit the **Gain** and **Offset** text boxes.

Step 6: Navigate to a 4 to 20 mA Scaling Calculator at the following url: https://omegaupdates.azurewebsites.net/4-20calculator.htm

Step 7: Enter the **Sensor Minimum** and **Sensor Maximum** process range values associated with the 4 to 20 mA sensor into the calculator and click **Calculate**.

Step 8: The calculator will then provide **Gain** and **Offset** values as a result.

Step 9: Back on SYNC configuration software, enter the newly received **Gain** and **Offset** values under the **Scaling** drop down from **Step 3**.

Step 10: Click **Apply Changes** to finalize and save the changes to the sensor.

When the configured 4 to 20 mA sensor is added to either an Omega Enterprise Gateway or Omega Link Cloud, the sensor values will display according to the configurations.

Figure 63: User Configured Sensor Units of Measure as they appear in OEG and Omega Link Cloud

17. Troubleshooting and Tips

Refer to the information below for any troubleshooting help and tips to ensure proper operation of Omega Enterprise Gateway software

Issue	Solution
Sensor connected to an Omega Link Gateway are not appearing after connected to Omega Enterprise Gateway.	Delete and re-add the Omega Link Gateway to Omega Enterprise Gateway. Wait 2 minutes after deleting the Omega Link Gateway before attempting to re-connect.
A sensor has been configured after the associated Gateway has already been connected to OEG.	The user must **reboot the Omega Link Gateway**, then **Stop** and **Start** OEG software by running the software as a Windows Administrator (See section **3.1.1. Running OEG with Windows Administrator Access**) to sync with the configuration made to the connected device.
There is a conflict with the default OEG Web Port of 8080.	If the PC running OEG has a conflicting web port 8080, the user will need to change the web port will need to be changed to a different, non-conflicting web port (i.e. 8081). This can be done by running OEG as an Administrator (as shown in **Section 3.1.1.** of this manual), clicking the **Stop** service button, changing the web port number to a compatible value other than 8080 (i.e. 8081), clicking the **Apply Changes** button, and finally clicking the **Start** service button to finalize the changes.
General Tips	
When swapping probes between an IF-006 with previously logged data, it is suggested to clear the previously logged data using Omega's SYNC configuration software.	
When updating a device name in OEG, it may take up to 2 minutes for the change to be reflected.	
When a device is being added to OEG, it is suggested that the reading interval be updated to no faster than 20 seconds.	

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.

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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.

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