

PowerInsight

Quick Start Guide for Embedded Systems

December 2021 57010258-00A

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Understanding the PowerInsight Platform

The PowerInsight platform combines a microprocessor, network switch, and other hardware with software designed for monitoring, analyzing, and reporting on the performance of Advanced Energy® power delivery products. Users access the collected data via a web-based user interface and an Internet browser running on a user-supplied laptop or workstation computer. This interface makes performance data available via product-specific, graphical dashboards and supports a range of analytic tools. With these tools, you can:

- Visualize complex relationships
- Conduct rapid diagnostics using real-time and historical information
- Automate event correlation for rapid root cause analysis
- Detect anomalies in power delivery
- Use predictive analytics to drive maintenance cycles and reduce downtime
- Improve system configuration
- Use advanced data science and machine learning techniques to optimize systems and processes.

The PowerInsight microprocessor is either embedded—built into the Advanced Energy product—or supplied as a free-standing PowerInsight Explorer appliance that connects to a product that lacks the built-in processor.

This document outlines the procedures for connecting to and using the software on an embedded PowerInsight host system. If your product requires a PowerInsight Explorer appliance, contact your Advanced Energy representative.

Installing Communications Cables

The following procedure explains how you prepare the embedded PowerInsight hardware for communications with a user computer. The examples depict a representative Advanced Energy product, the Ascent® AP10 generator, so be sure to check your user manual for product-specific instructions.



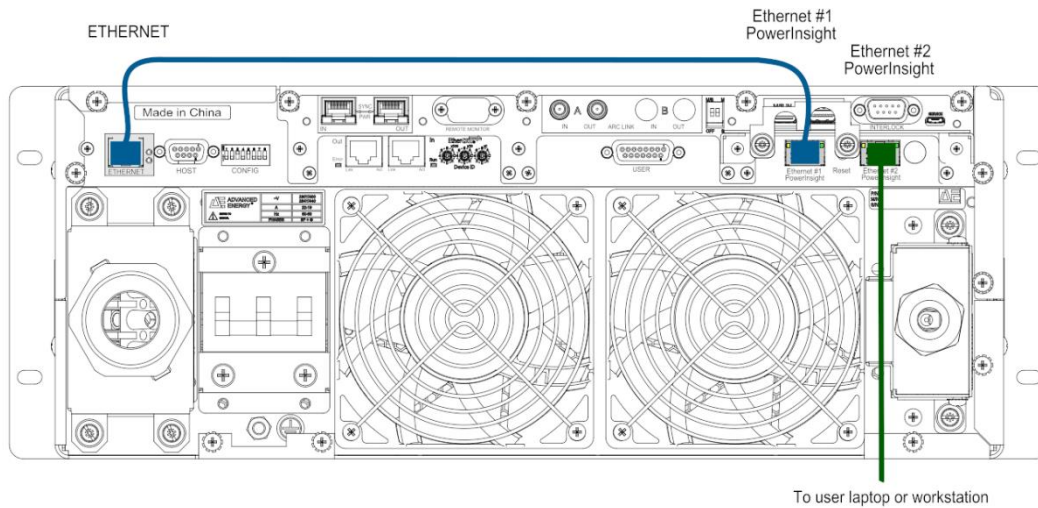
CAUTION:

Turn off AC supply power to your Advanced Energy product before connecting Ethernet cables to the embedded PowerInsight host. Never try to make connections to the rear of the unit while the equipment is operating.

Connect Ethernet Cables to the PowerInsight Hardware

1. If you are configuring a PowerInsight module that is embedded in production equipment, schedule this task for a time when the equipment can be offline and powered down.
2. Disconnect AC input power to the Advanced Energy product.
For safety reasons, you must not connect cables to the rear panel of your AE product while the AC power is on and the unit is operating.
3. In the ship kit that comes with the AE product, look for a short, RJ-45 cable.
4. On the back panel of the power supply, plug one end of the short cable into the RJ-45 socket labeled **ETHERNET** at left. Plug the other end into the RJ-45 socket labeled **Ethernet #1 PowerInsight** at right.

Figure 1: Embedded PowerInsight host connections on an Ascent AP10 generator



5. Select a convenient monitoring location where users can set up a laptop or workstation.
You can use a cart temporarily positioned in front of the equipment or a nearby bench top or desk in the work area.
6. Obtain an Ethernet cable that is long enough to reach from the right side of the product's rear panel to the chosen monitoring location.
7. Connect the second cable to the RJ-45 socket labeled **Ethernet #2 PowerInsight**, which is also on the upper right side of the rear panel of the product.
The **Ethernet #2 PowerInsight** input/output (I/O) port supports both PowerInsight and Virtual Front Panel (VFP) communications, so you only need one cable for both.
8. Route the cable to the monitoring location using your normal cable management practices.
You cannot connect or disconnect cables from the back panel of the product while the unit is powered on and running. So leave the cable in place for routine monitoring. You can then connect a computer to the cable whenever you need to access system data and can disconnect the computer when finished without risk of contact with energized system components.
9. Connect AC input power to the Advanced Energy product.
10. Next [connect to the PowerInsight Software](#),

Connecting to the PowerInsight Software

To work with the PowerInsight software, you connect a laptop computer or workstation to the PowerInsight host and access the user interface via a web browser. This section outlines the required tasks:

- [checking the web browser installed on your computer](#)
- [setting up Local Area Networking on your computer](#)
- [setting up login accounts](#) (during initial configuration).

Check the Web Browser Installed on Your Computer

1. Make sure that the selected laptop or workstation has a recent version of a compatible web browser installed.

The PowerInsight graphical user interface works with current versions of Mozilla Firefox, Google Chrome, Microsoft Edge, and other, standards-compliant browsers. It does not work with obsolete browsers, like Internet Explorer.

2. Next, [connect the computer to the PowerInsight I/O Cable](#)

Connect the Computer to the PowerInsight I/O Cable

1. Connect an Ethernet connector on the laptop or workstation computer to the Ethernet cable [installed on the embedded PowerInsight module](#).
2. Next, [set up local area networking](#) on your laptop or workstation.

Set Up Local Area Networking on Your Computer

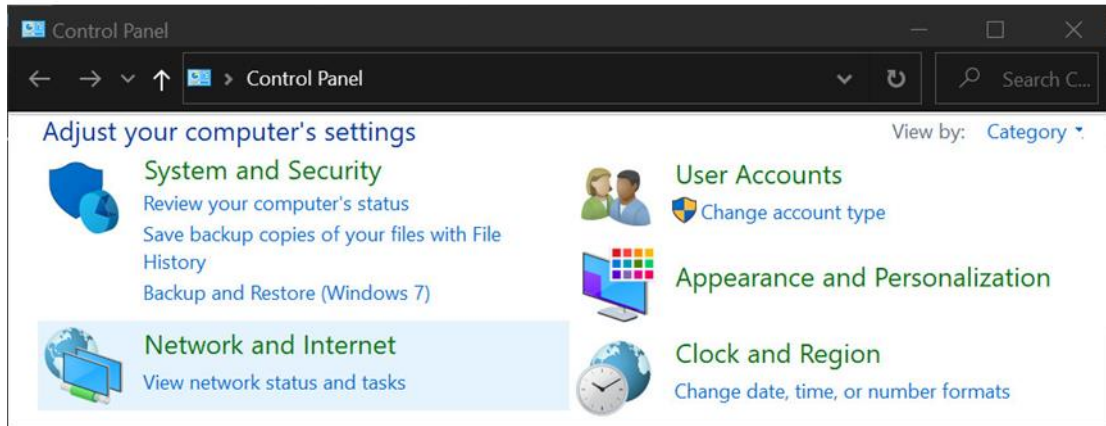
The embedded PowerInsight system includes a Dynamic Host Configuration Protocol (DHCP) server. So, when you set up your computer to use DHCP, the DHCP server can automatically assign a network address for you.

To configure your laptop or workstation to use DHCP or to check if DHCP is already enabled, proceed as follows.

3. Click the Microsoft Windows start icon.

4. In the list of applications, scroll down, click on **Windows System**, and select **Control Panel** from the drop list.

Figure 2: The Windows Control Panel



5. On the **Control Panel**, select **Network and Internet**.

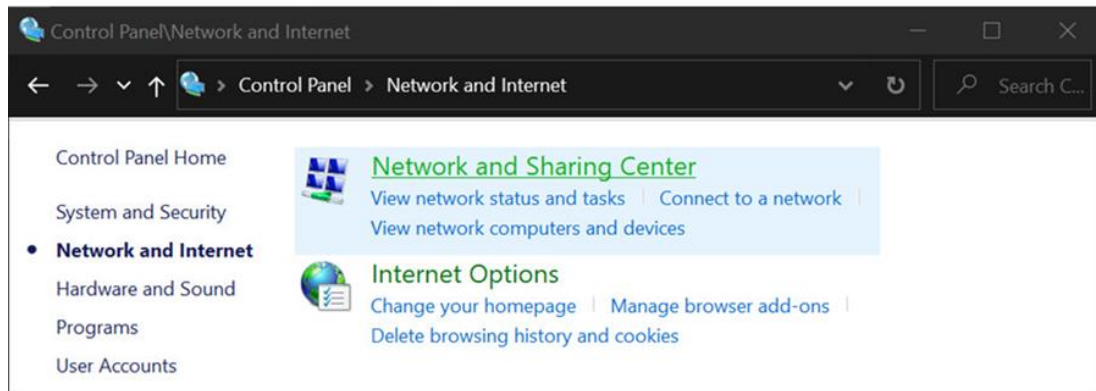
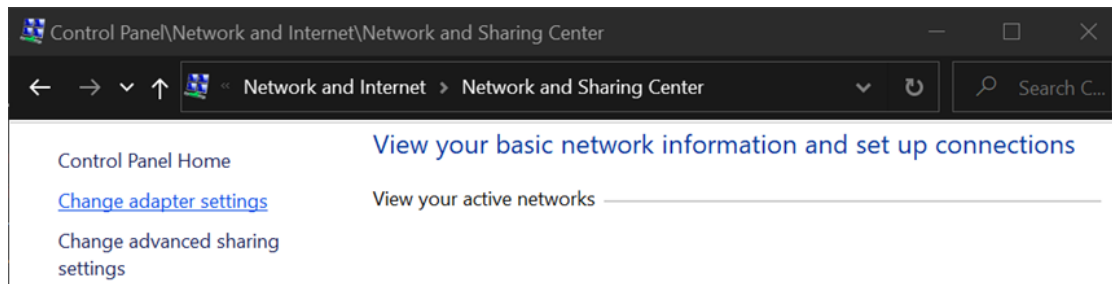


Figure 3: The Windows Network and Internet panel

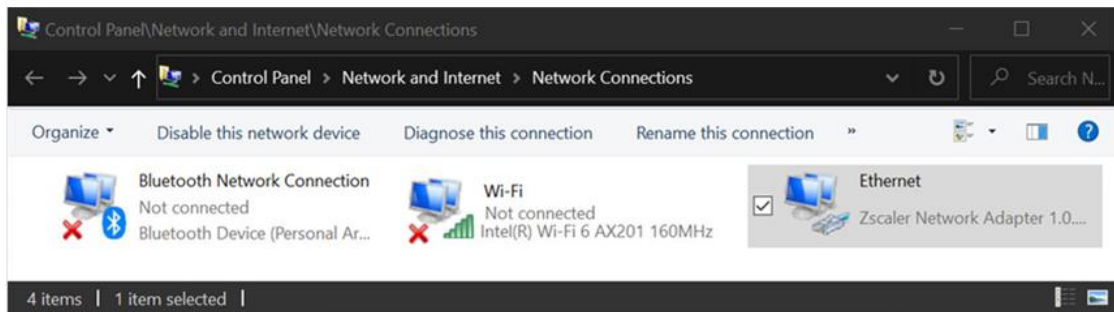
6. From the **Network and Internet** panel, select **Network Sharing Center**.

Figure 4: The Windows Network and Sharing Center



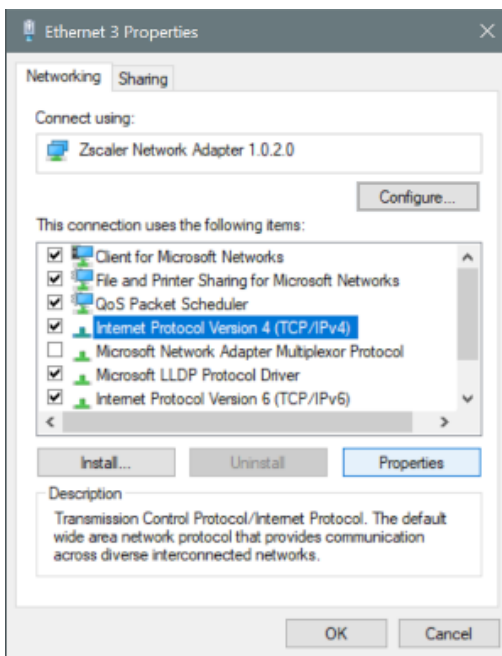
7. On the left side of the **Network Sharing Center** panel, select **Change adapter settings**.

Figure 5: The Windows Network Connections panel



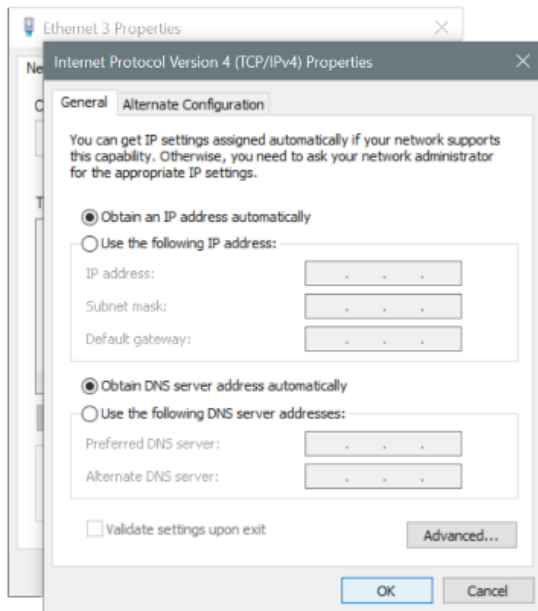
8. On the **Network Connections** panel, right-click on an Ethernet adapter (the adapter name may vary from that shown) and select **Properties** from the context menu.

Figure 6: The Windows Ethernet Properties sheet



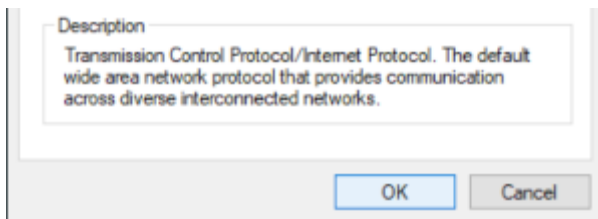
9. On the **Networking** tab, under **This connection uses the following items**, select **Internet Protocol Version 4 (TCP/IPV4)**.
10. Press the **Properties** button under the list on the right side.
11. When the **Internet Protocol Version 4 (TCP/IPV4) Properties** sheet appears, select the **General** tab.

Figure 7: The Windows Internet Protocol Version 4 (TCP/IPV4) Properties sheet



12. On the **General** tab, click the **Obtain an IP address automatically** radio button, if it is not already selected.
13. Press the **OK** button at the bottom of the properties sheet.
14. At the bottom of the Ethernet adapter properties sheet, press the **OK** button.

Figure 8: The Ethernet properties OK button



After a few seconds, Windows receives an IP address from the DHCP server on the PowerInsight host.

15. If you have not yet configured PowerInsight user accounts, [set up login accounts](#) now.
16. Otherwise, you are ready to start [using the PowerInsight software](#).

Set Up Login Accounts

If you have not previously set up user account, set them up now. There are only two: **Editor** and **Viewer**.

1. On your laptop, open a compatible web browser (see [Check the Web Browser Installed on the Computer](#), above).
2. In the address (URL) bar of the browser, enter the IP address of the PowerInsight host: **192.168.20.1**

The **Create Users** page opens.

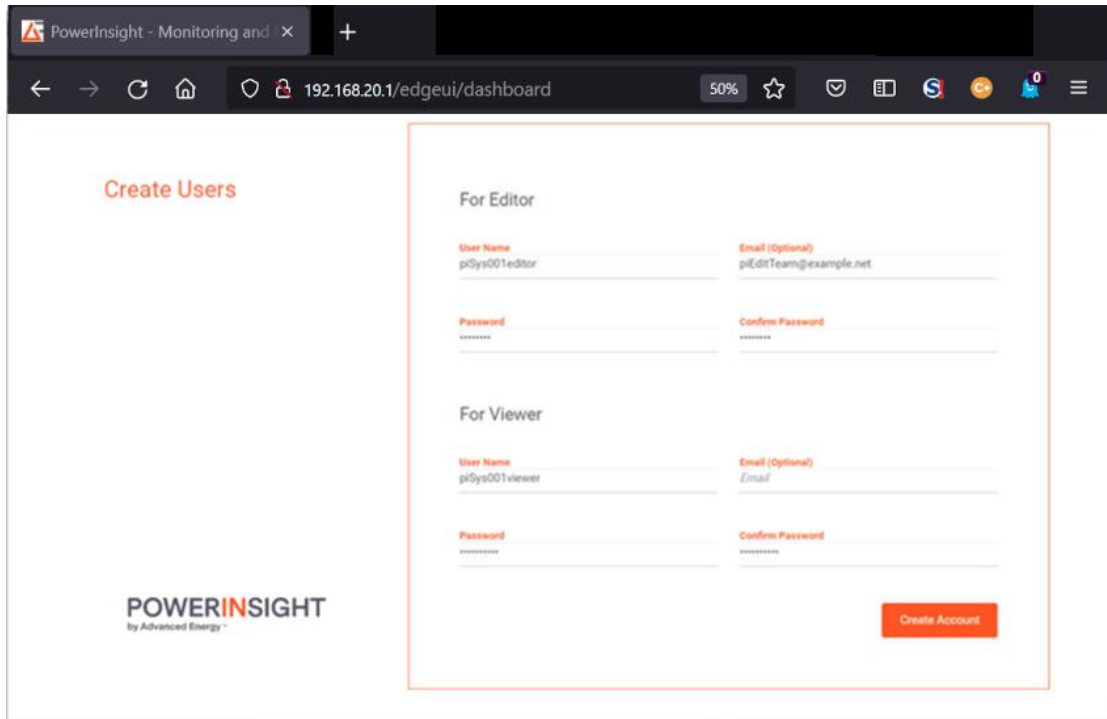
Figure 9: The Create Users page

The screenshot shows a web browser window with the address bar displaying '192.168.20.1/aaauthenticator/'. The page content includes a red heading 'Create Users' and a form with two sections: 'For Editor' and 'For Viewer'. Each section contains four input fields: 'User Name' (with a 'Name' label below), 'Email (Optional)' (with an 'Email' label below), 'Password' (with a masked password below), and 'Confirm Password' (with a masked password below). A red 'Create Account' button is located at the bottom right of the form area. The PowerInsight logo is visible in the bottom left corner.

3. In the **User Name** field of the **For Editor** part of the screen, enter a distinctive user name for the person who will be responsible for setting up and maintaining PowerInsight dashboards.
4. If you wish to include contact information for the editor, enter an email address in the **Email (Optional)** field of the **For Editor** part of the screen.
5. In the **Password** field of the **For Editor** part of the screen, enter a strong password.
6. In the **Confirm Password** field of the **For Editor** part of the screen, re-enter the editor's password.
7. In the **User Name** field of the **For Viewer** part of the screen, enter a distinctive user name for the person who will monitor the PowerInsight dashboards.

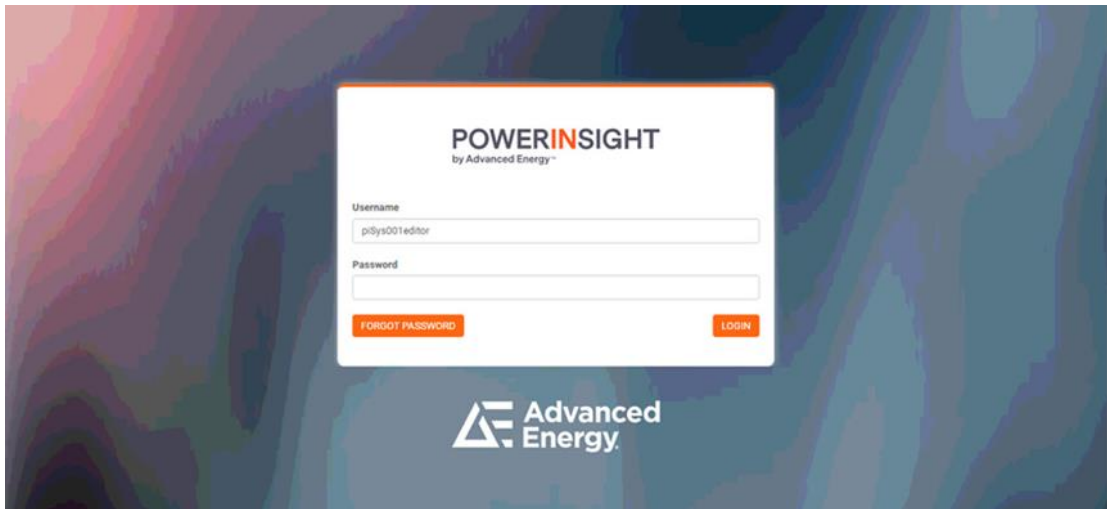
8. If you wish to include contact information for the viewer, enter an email address in the **Email (Optional)** field of the **For Viewer** part of the screen.
9. In the **Password** field of the **For Viewer** part of the screen, enter a strong password.
10. In the **Confirm Password** field of the **For Viewer** part of the screen, re-enter the viewer's password.

Figure 10: Creating the accounts



11. Press the **Create Account** button.
The PowerInsight Login screen appears.

Figure 11: The Login screen



12. Next, [log in](#) to each account to confirm that everything is set up correctly.

Using the PowerInsight Software

This section explains how you perform the following basic tasks using the PowerInsight browser-based user interface:

- [Log In](#)
- [View Live Data on the System Dashboard](#)
- [Configure the FastDAQ™ Data Acquisition Feature](#)
- [Work with FastDAQ™ Data](#)
- [Use the Menu](#)
- [Check for Alerts](#)
- [Open the Advanced Features Page](#)
- [Check Licensing](#)
- [Log Out.](#)

Log In

1. If you have not already done so,
2. On your laptop or workstation, open a compatible web browser (see [Check the Web Browser Installed on the Computer](#), above).
3. In the address (URL) bar of the browser, enter the IP address of the PowerInsight host: **192.168.20.1**
The PowerInsight Login screen appears.
4. In **Username** field of the PowerInsight login dialog, enter the user name of the editor or viewer.

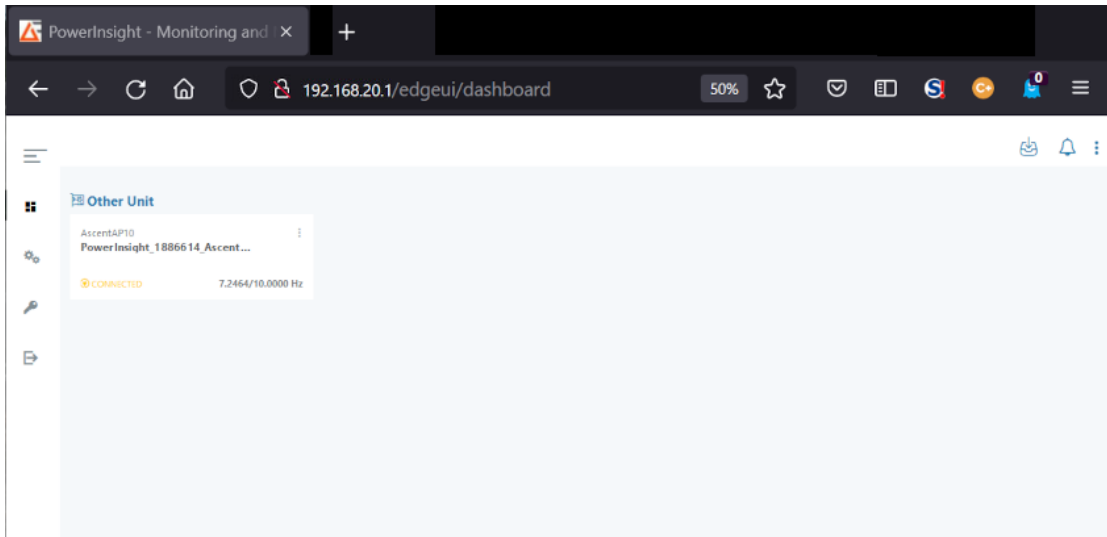
Figure 12: PowerInsight software login dialog



The login dialog features the PowerInsight logo at the top, followed by 'by Advanced Energy'. Below this are two input fields: 'Username' and 'Password'. At the bottom, there are two buttons: 'FORGOT PASSWORD' on the left and 'LOGIN' on the right.

5. In **Password** field, enter the password for this user.
The landing page displays when you log in.

Figure 13: A PowerInsight landing page

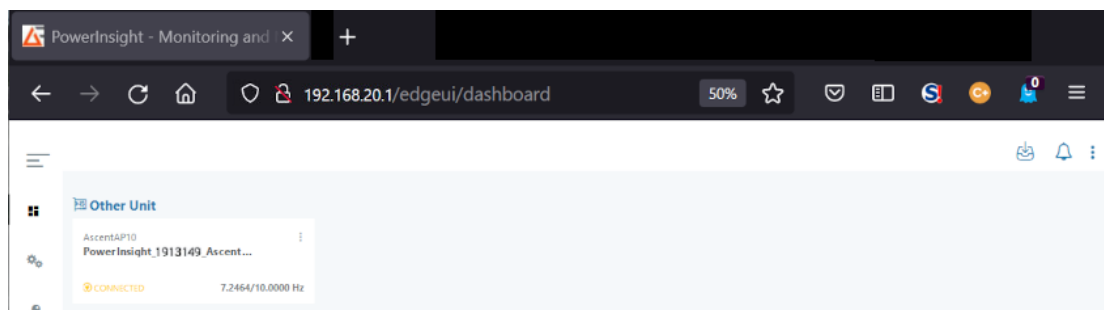


View Live Data on the System Dashboard

The exact data that PowerInsight provides varies with the equipment that it monitors. But you always view it in the same way. Proceed as follows.

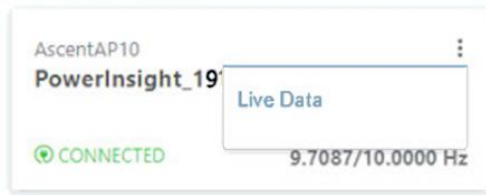
1. Locate the tile for the Advanced Energy product.
In the example, the product is an Advanced Energy Ascent AP10 generator.

Figure 14: The dashboard tile for the Advanced Energy product



2. Click the three vertical dots in the upper right corner of the tile.

Figure 15: Opening the Data Dashboard



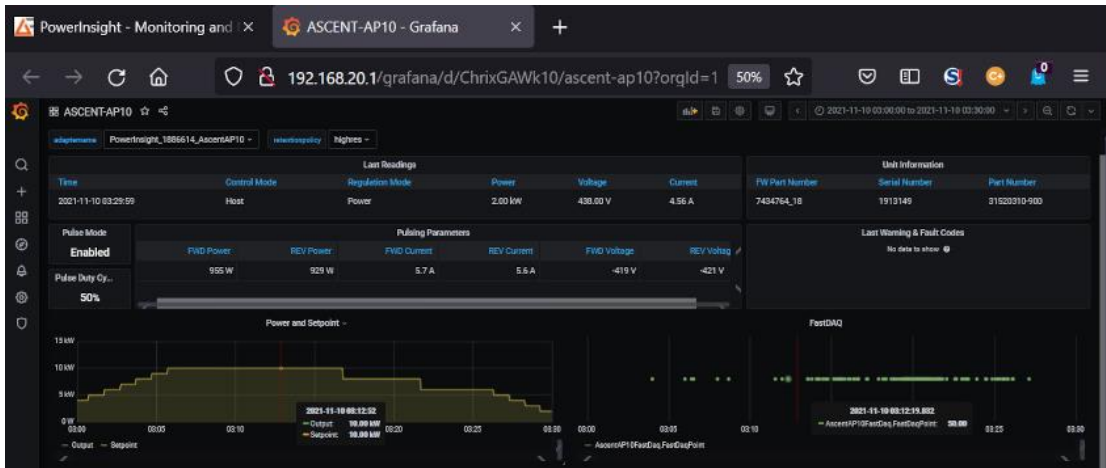
3. When the drop-down control appears, click on **Live Data**.
The data dashboard for your product appears in a new browser tab.

Figure 16: A representative data dashboard



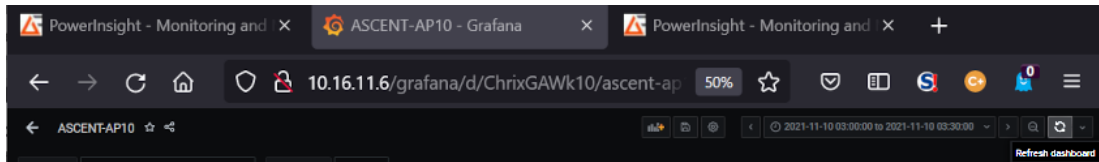
- To view a pop-up window displaying details for a particular data point in a series, right-click on the point.

Figure 17: Viewing point-in-time data



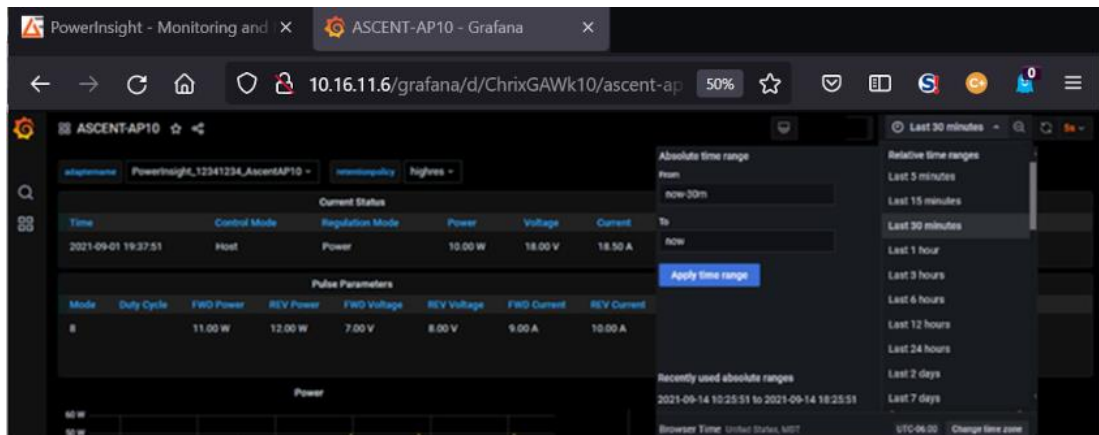
- To manually update the data displayed on a dashboard, click the **Refresh dashboard** icon on the right side of the dashboard header bar.

Figure 18: Manually refreshing the data



- To set a time interval, click the time picker control on the right side of the dashboard header bar, and specify a relative or absolute time interval using the drop-down.

Figure 19: Setting a time interval



- To view a wider time range, click the **Time range zoom out** icon on the right side of the dashboard header bar.

Figure 20: Zooming out to view a wider time range

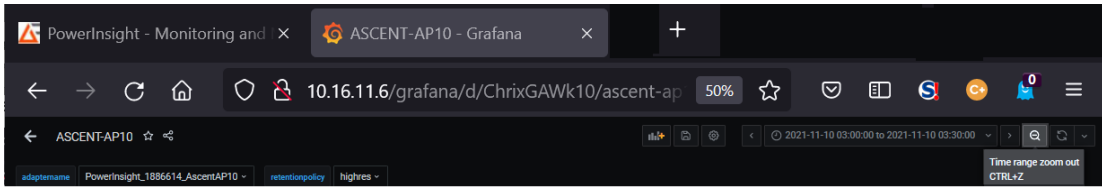
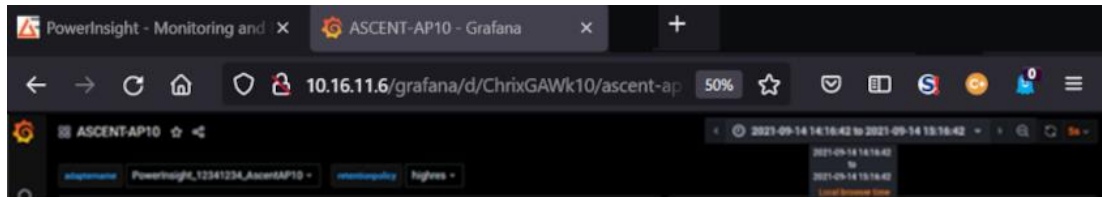


Figure 21: The expanded time range displays in the control



9. When you are finished viewing the data, close the tab.

Configure the FastDAQ™ Data-Acquisition Feature

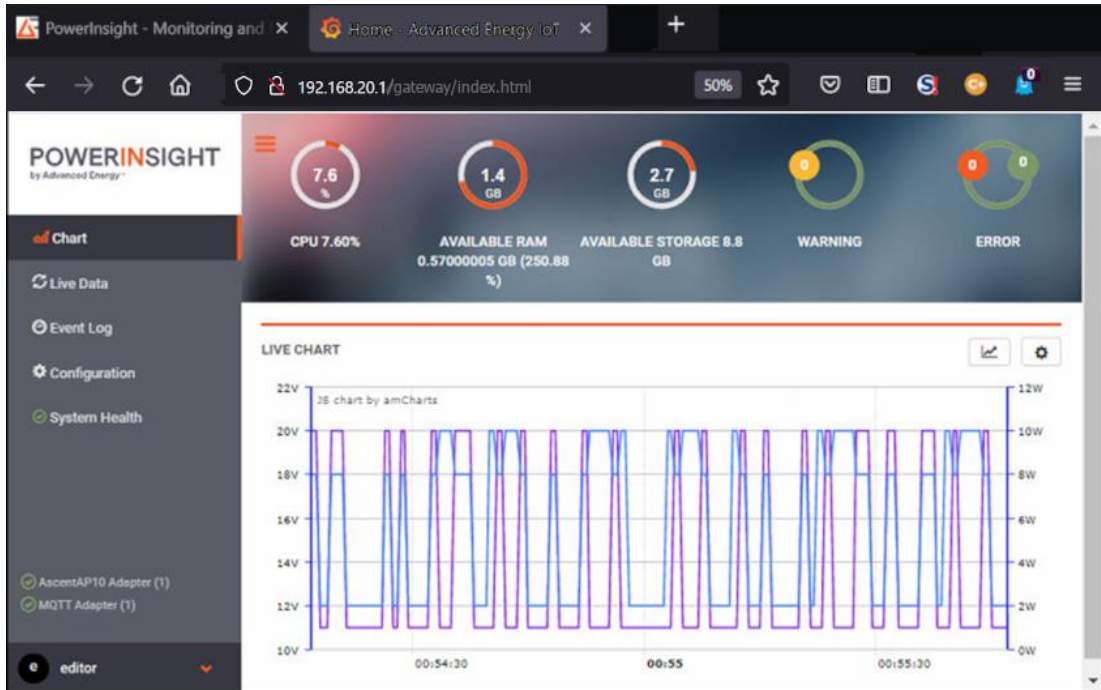
Advanced Energy products provide a FastDAQ high-speed data-acquisition feature that provides a comprehensive range of system status and performance information. The PowerInsight software lets you easily define FastDAQ data-acquisition parameters, view and assess data in intuitive, graphical interfaces and downloadable spreadsheets, and save data for long-term historical analysis.

To use the FastDAQ feature, start by defining the types of data that you want to collect.

1. [Log in](#) as the PowerInsight editor.
2. Open a new browser tab or window to the PowerInsight gateway, **192.168.20.1/gateway/**.

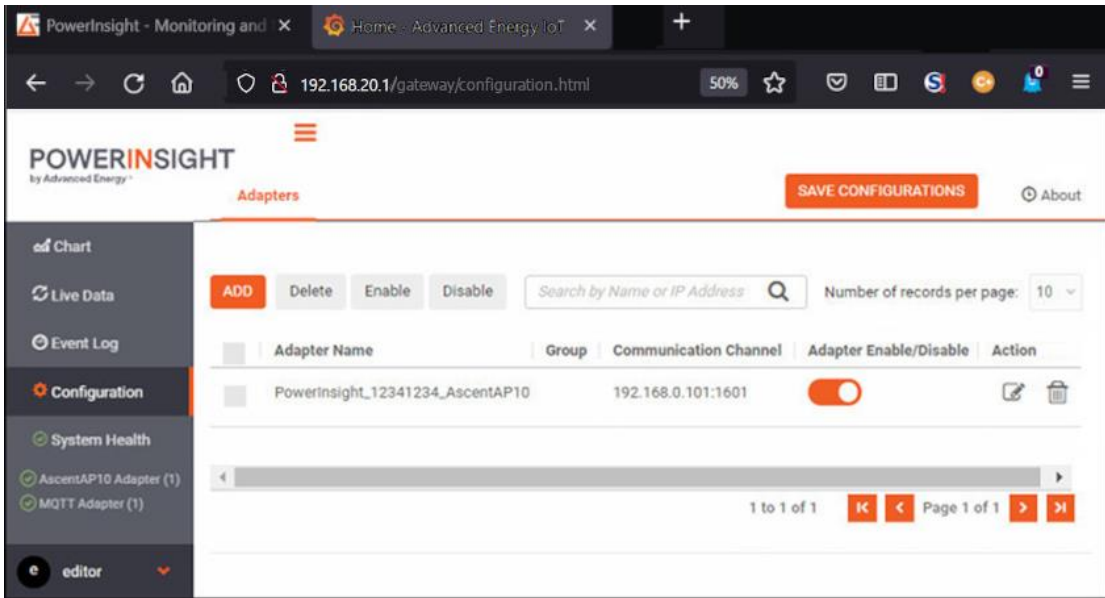
The gateway index page appears.

Figure 22: The PowerInsight gateway



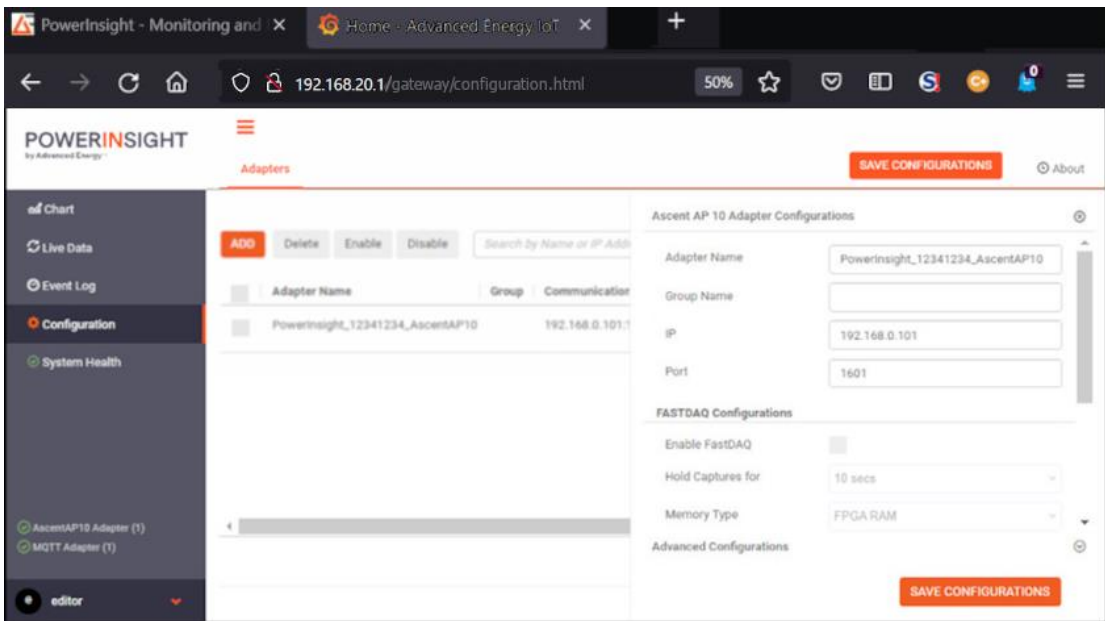
3. Select **Configuration** from the menu at left.
The **Configuration** page appears.

Figure 23: The PowerInsight Configuration page



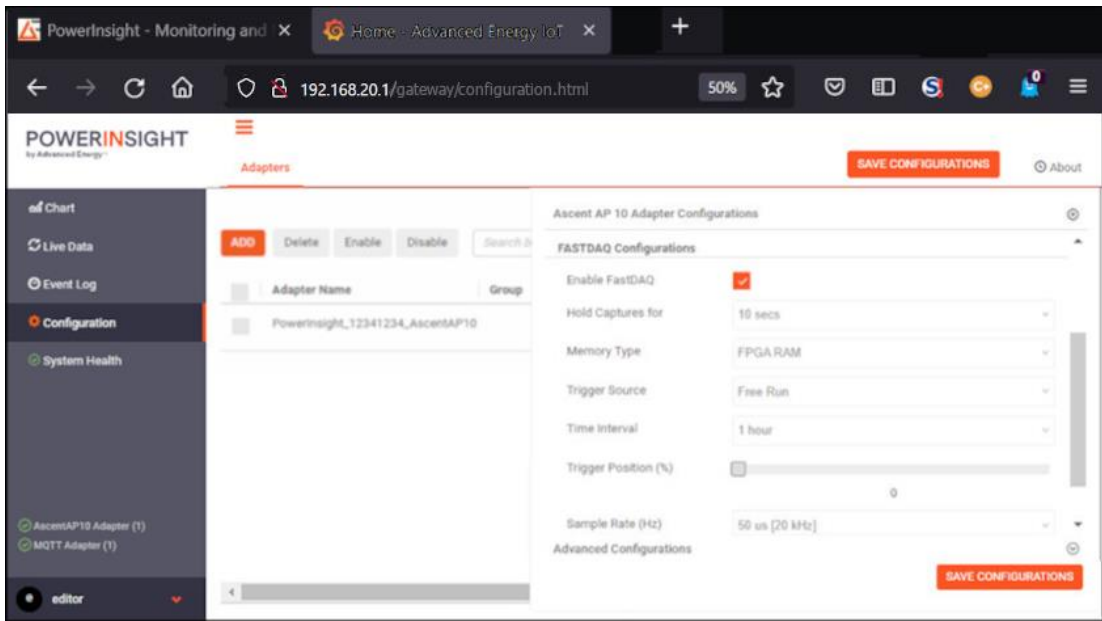
4. On the right side of the **Configuration** page, click the box under the heading **Action**. The **Adapter Configuration** menu appears on the right side of the page.

Figure 24: The Adapter Configuration menu



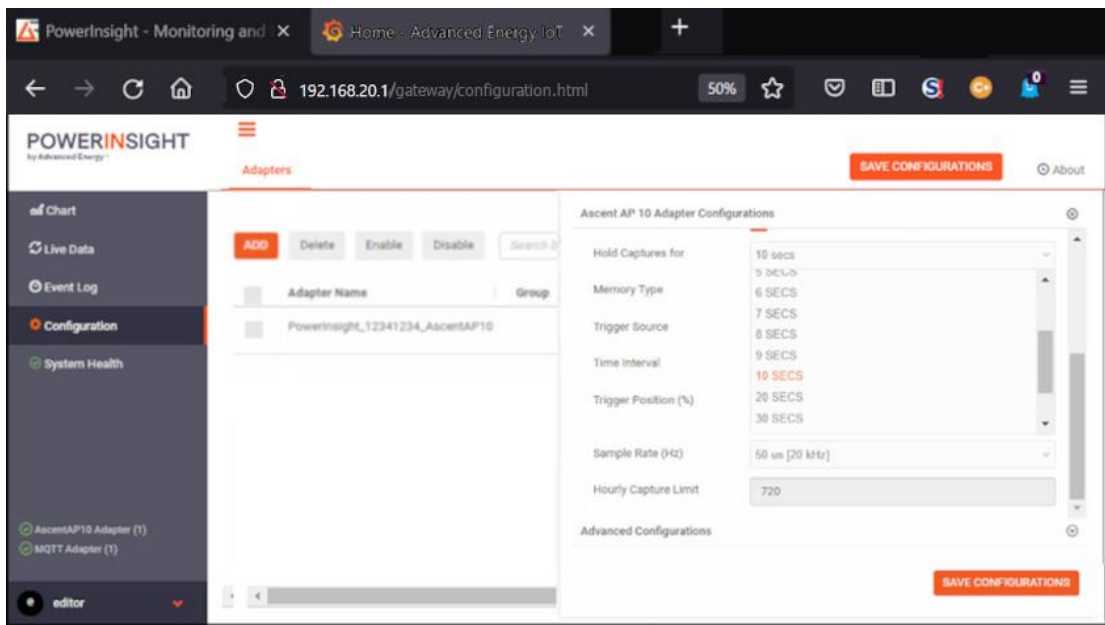
5. On the **Adapter Configuration** menu, scroll down to the **FastDAQ Configuration** section.
6. In the **FastDAQ Configuration** section, check **Enable FastDAQ**.

Figure 25: Enable FastDAQ



7. Next, select a value from the **Hold Captures for** drop-down list.

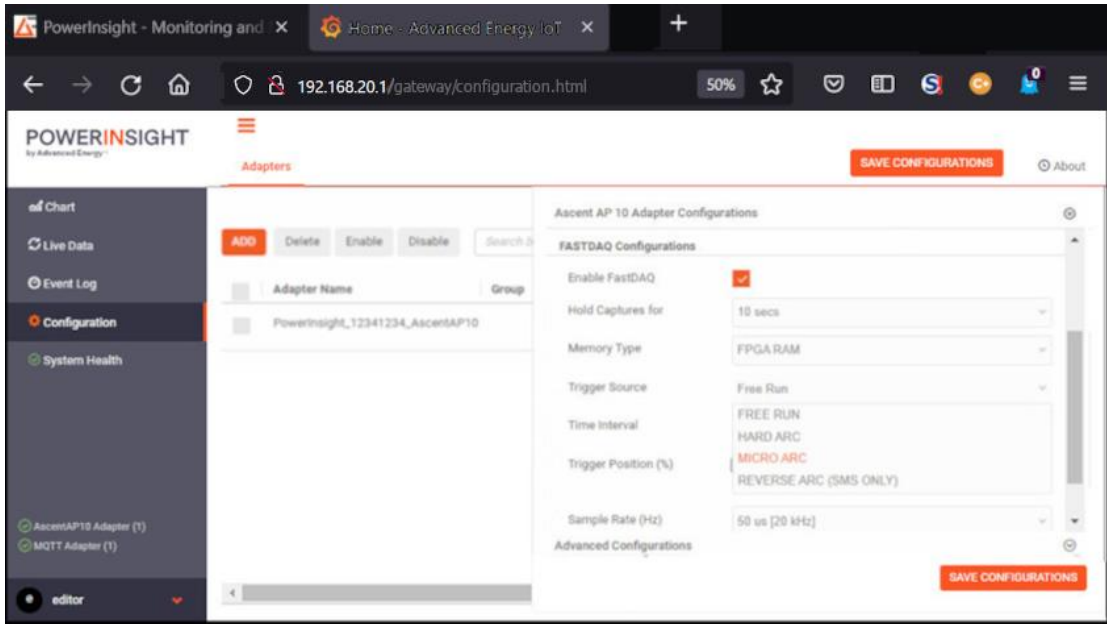
Figure 26: Select a value from the Hold Captures for drop-down list



9. Then select a **Trigger Source**.

A **Trigger Source** defines the type of data that FastDAQ presents.

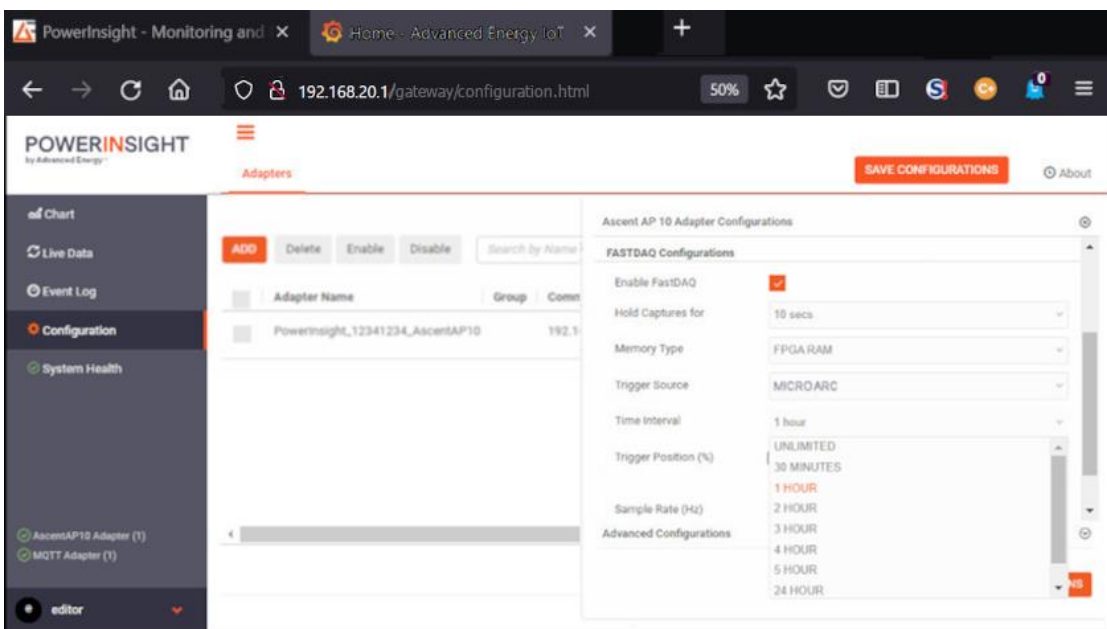
Figure 27: Select a Trigger Source



10. Now select the **Time Interval** during which FastDAQ watches for trigger events and collects data. Choose an interval that lets you collect required data without consuming too many system resources.

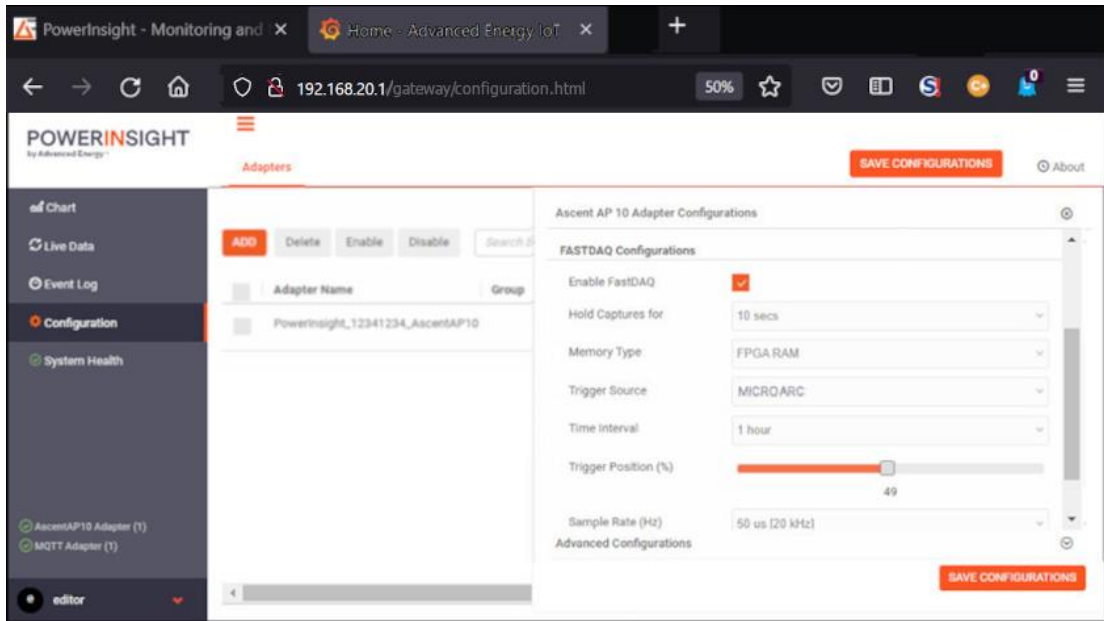
FastDAQ can collect a lot of data in a short time.

Figure 28: Select a Time Interval



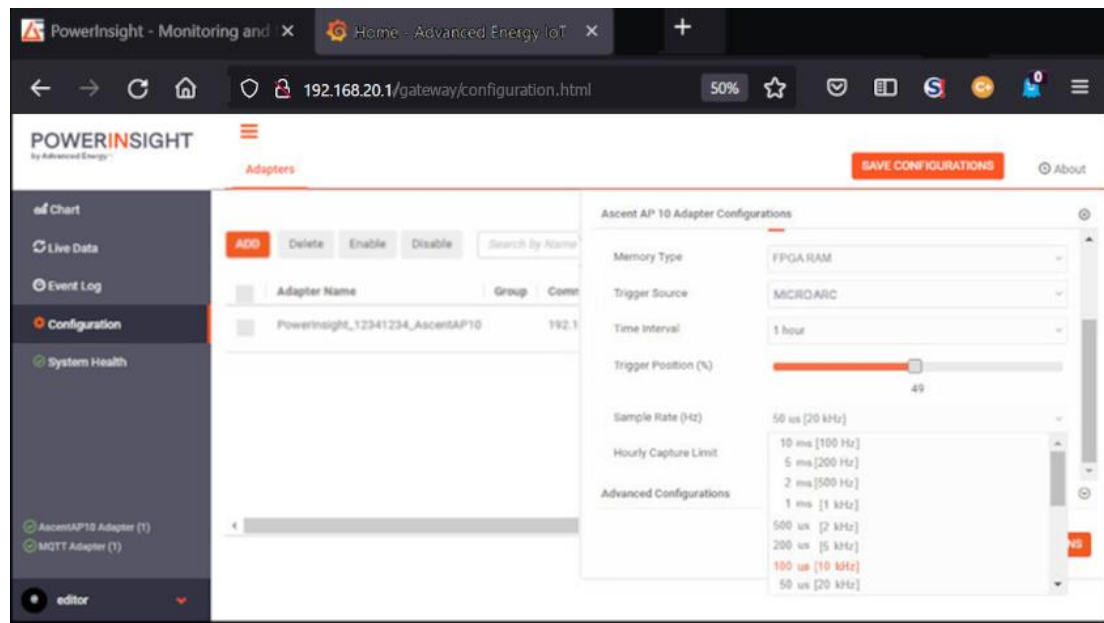
- Adjust the **Trigger Position (%)** slider to define a percentage of the data collected prior to a trigger event and a percentage collected thereafter.
In the example, we set the slider to 50%.

Figure 29: Set the Trigger Position



- Select a sampling rate from the **Sample Rate** drop-down list.
The list is calibrated in microseconds (μs) and Hertz (Hz or kHz).

Figure 30: Set the sampling rate



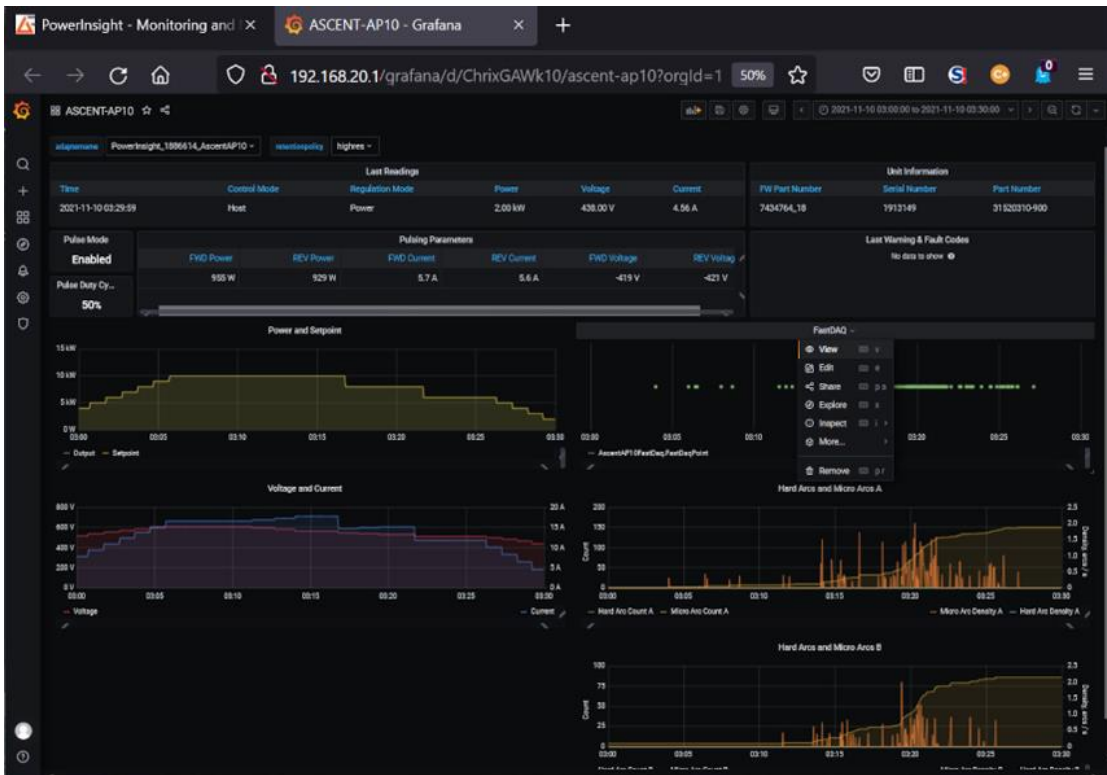
15. Finally, save your changes. Press the orange **SAVE CONFIGURATION** button at the top or bottom of the page.

16. Now, [work with the FastDAQ™ data](#).

Work with FastDAQ™ Data

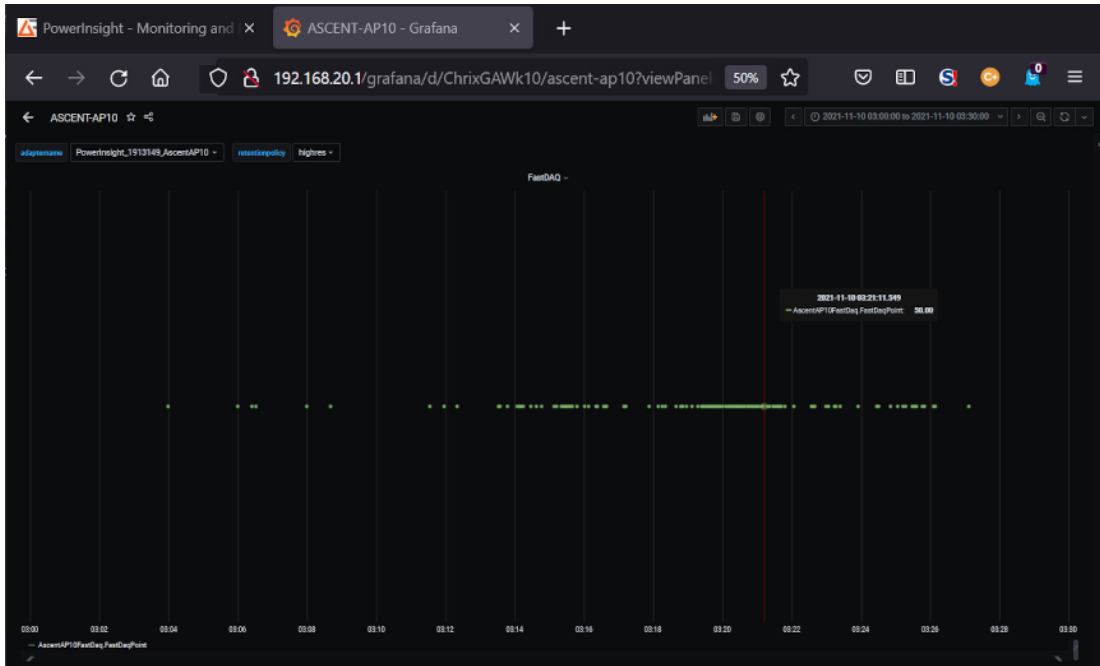
1. View the FastDAQ data in the lower right quadrant of the PowerInsight dashboard.
2. To view the data in a separate browser window, right click on the dashboard display and select **View** from the context menu.

Figure 31: Viewing the FastDAQ data screen



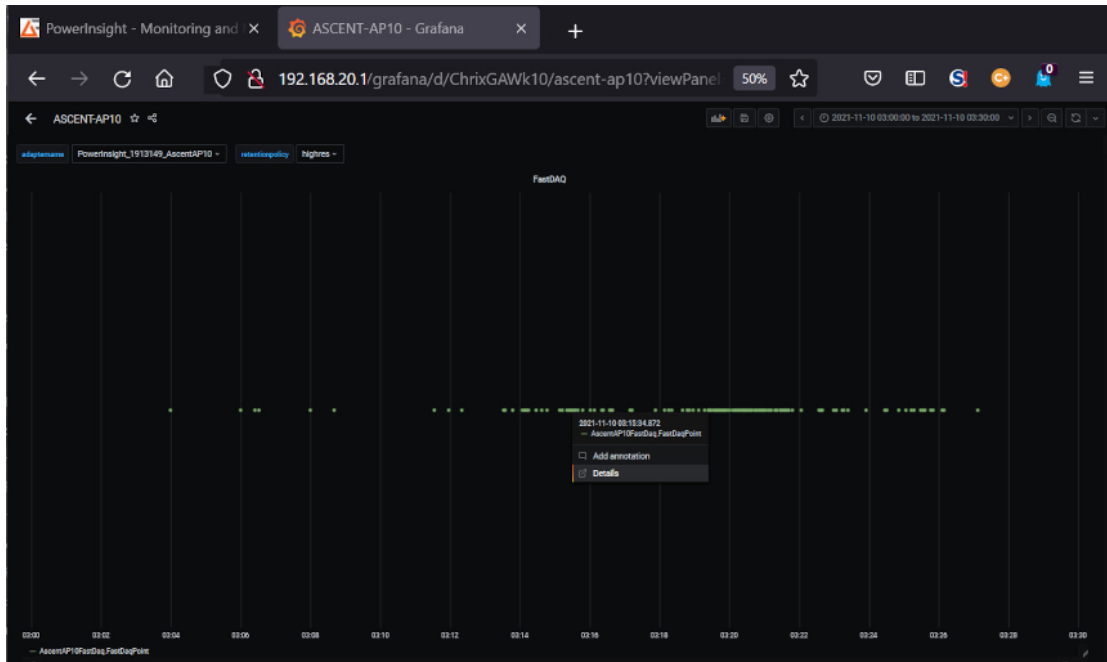
A FastDAQ window appears.

Figure 32: FastDAQ data screen



3. To view detailed data for a particular time interval, right-click on the desired point and select **Details** from the context menu.

Figure 33: Requesting FastDAQ details



A detailed graphic display opens in a new window. In the example, we display the **V Out A (V)** data field.

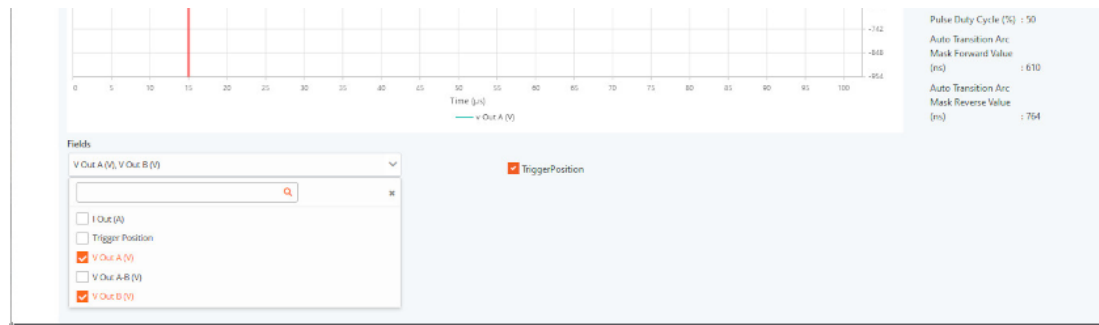
Figure 34: Viewing detail FastDAQ data



- To add or remove fields from the graph, open the **Fields** list at lower left, and check and uncheck the checkboxes.

In the example, we add the **V Out B (V)** field to the display.

Figure 35: Adding and removing fields from a FastDAQ display



The additional field data appears in the graph.

Figure 36: A second field added to the graph

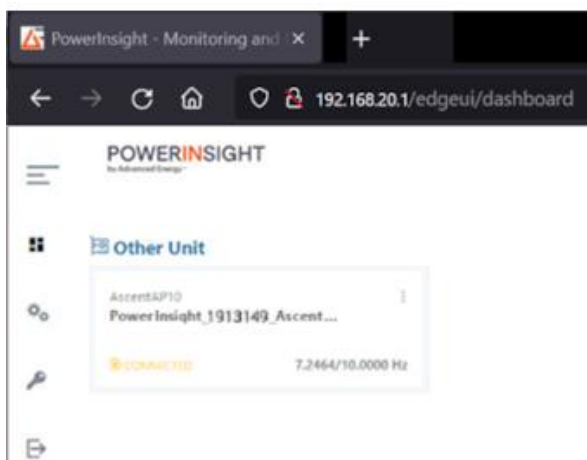


- To download the displayed data in spreadsheet-compatible .csv format, press the **CSV EXPORT** button at upper right.
- To download the graph in .jpg format, press the **JPG EXPORT** button at upper right.

Use the Menu

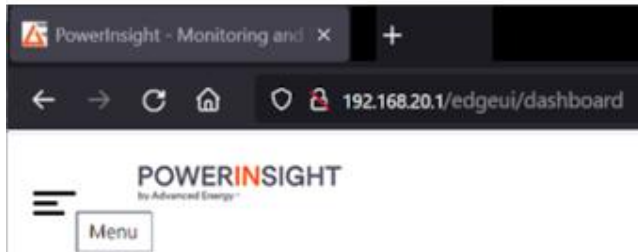
- Locate the PowerInsight menu bar on the left side of the landing page. Icons represent the available selections.

Figure 37: The menu bar



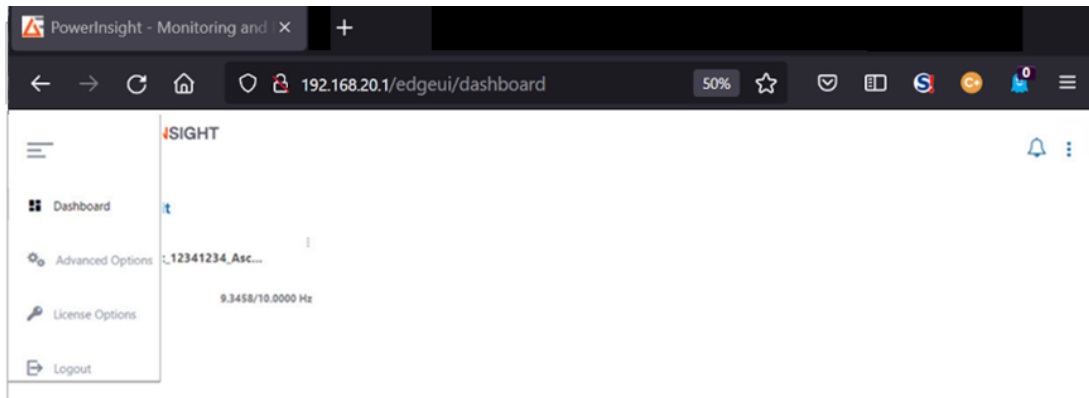
- To view the menu text, click the three horizontal bars that form the Menu icon at the top of the menu bar.

Figure 38: Viewing the Menu Text



The menu text appears.

Figure 39: The menu text



3. Click on the icon to select the desired option.

Check for Alerts

1. Click on the bell icon in the upper right portion of the PowerInsight landing page.
The **Notifications** panel appears.

Figure 40: Checking for Alerts



2. Read any alerts that appear.
3. If you wish to delete the alert entries, click the **Clear all** control in the top right corner of the panel.

4. To close the **Notifications** panel, click on the bell icon again.

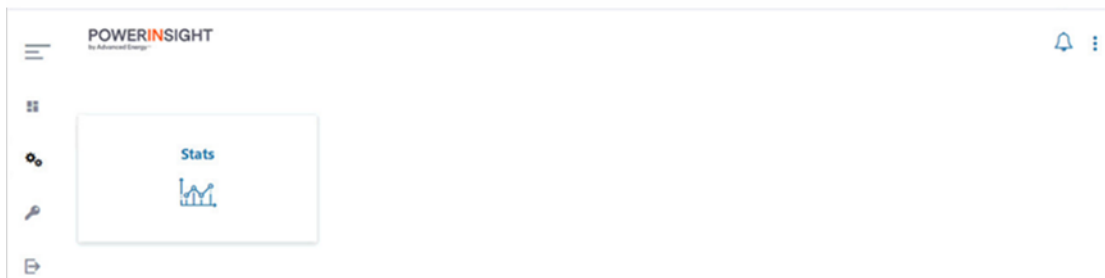
Open the Advanced Features Page

1. Click on the gear icon in the menu bar at the left side of the landing page.

The feature tiles shown in the examples are representative and may vary depending on the product that the PowerInsight software is monitoring.

If you are logged in as the PowerInsight viewer, the following screen appears:

Figure 41:Advanced features (viewer)



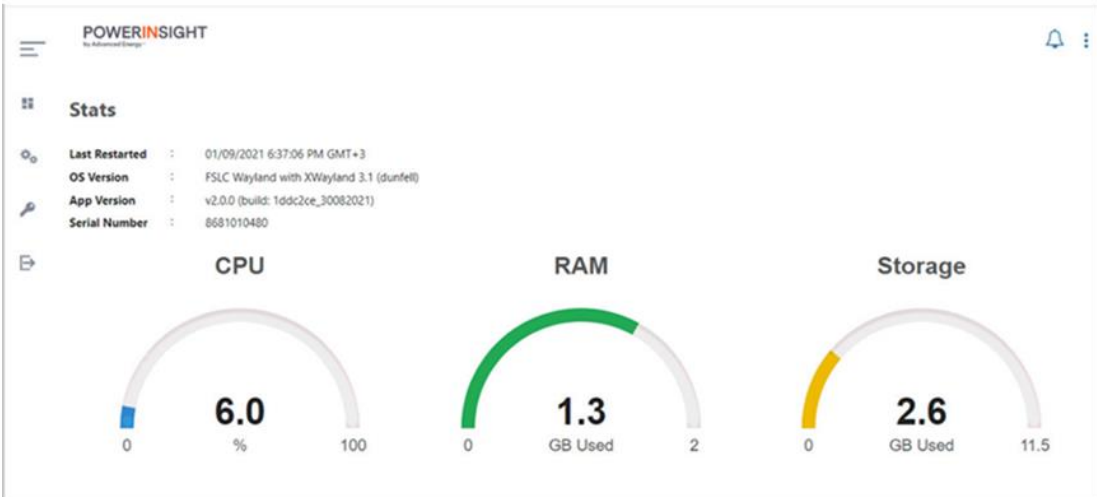
If you are logged in as the PowerInsight editor, this screen contains more options:

Figure 42: Advanced features (editor)



2. To select a feature, click on the corresponding feature tile.
In the example, we click on the **Stats** tile:

Figure 43: The statistics feature

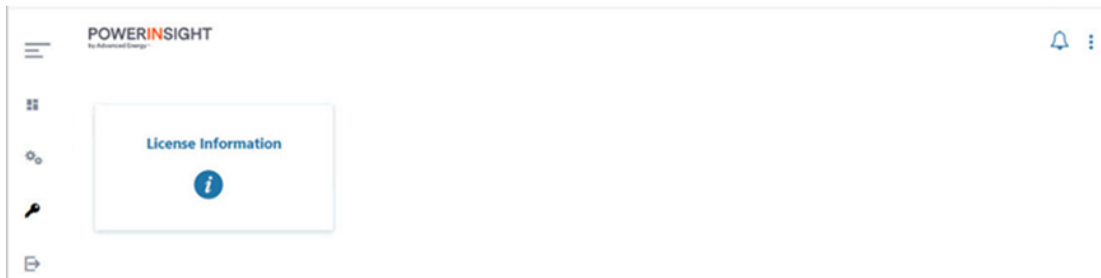


Check Licensing

1. Click on the key icon in the menu bar at the left side of the landing page.

If you are logged in as the PowerInsight viewer, the following screen appears:

Figure 44: The licensing page (viewer)



If you are logged in as the PowerInsight editor, this screen contains more options:

Figure 45: The licensing page (editor)

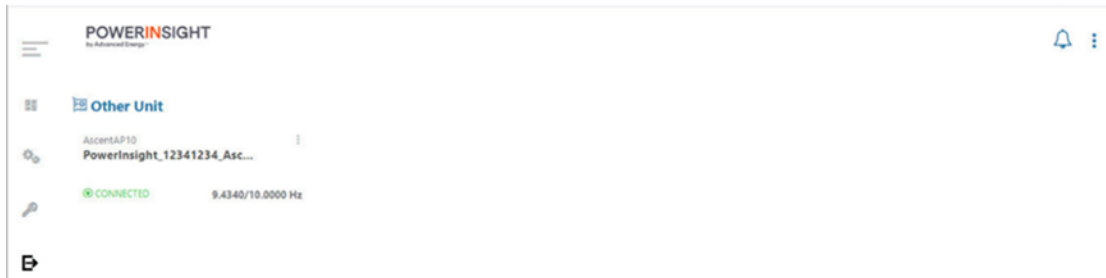


2. To see the license, click on the **License Information** tile.
3. To download a license from the editor view, click on the **License Import** tile.

Log Out

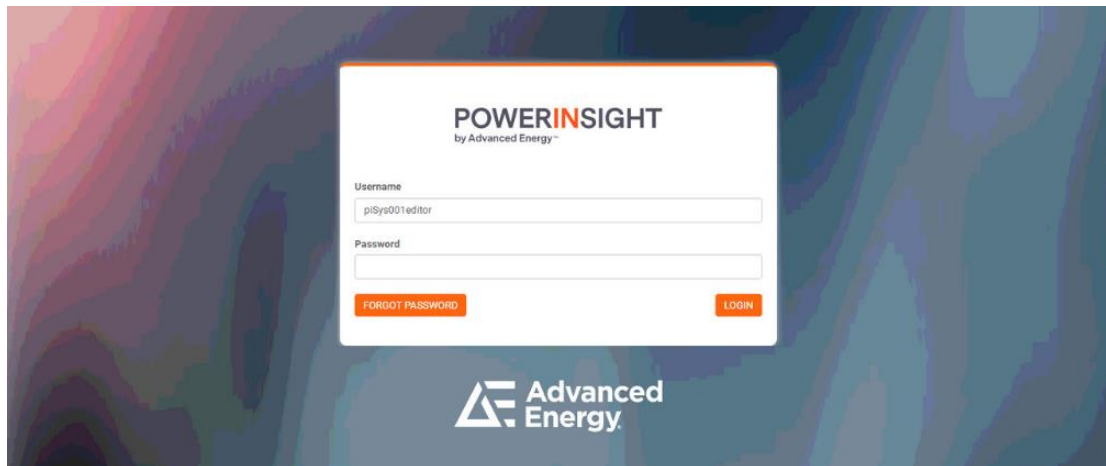
1. Click the **Logout** icon at the bottom of the menu bar on the left side of the PowerInsight landing page.

Figure 46: Logging out



2. When the login screen appears, you have successfully logged out.

Figure 47: Successfully logged out




Resetting the System Passwords

If you forget the editor or viewer password, you need to power down your Advanced Energy product and then reset both passwords.

1. Schedule a time when you can power down your Advanced Energy product without seriously disrupting operations.
2. Connect a computer to the PowerInsight Ethernet cable.
3. On your laptop or workstation, open a compatible web browser (see [Check the Web Browser Installed on the Computer](#), above).
4. In the address (URL) bar of the browser, enter the IP address of the PowerInsight host: **192.168.20.1**
The PowerInsight Login screen appears.
5. Press the **FORGOT PASSWORD** button in the lower left corner of the login dialog.

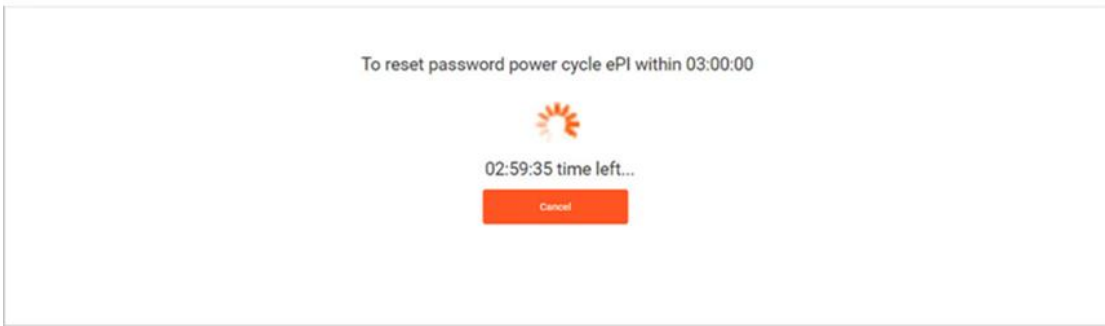
Figure 48: Pressing the FORGOT PASSWORD button



The screenshot shows the PowerInsight login interface. At the top, the logo reads "POWERINSIGHT by Advanced Energy™". Below the logo are two input fields: "Username" and "Password". At the bottom of the login dialog, there are two buttons: "FORGOT PASSWORD" on the left and "LOGIN" on the right. The "FORGOT PASSWORD" button is highlighted with a red border.

The **Forgot Password** page appears.

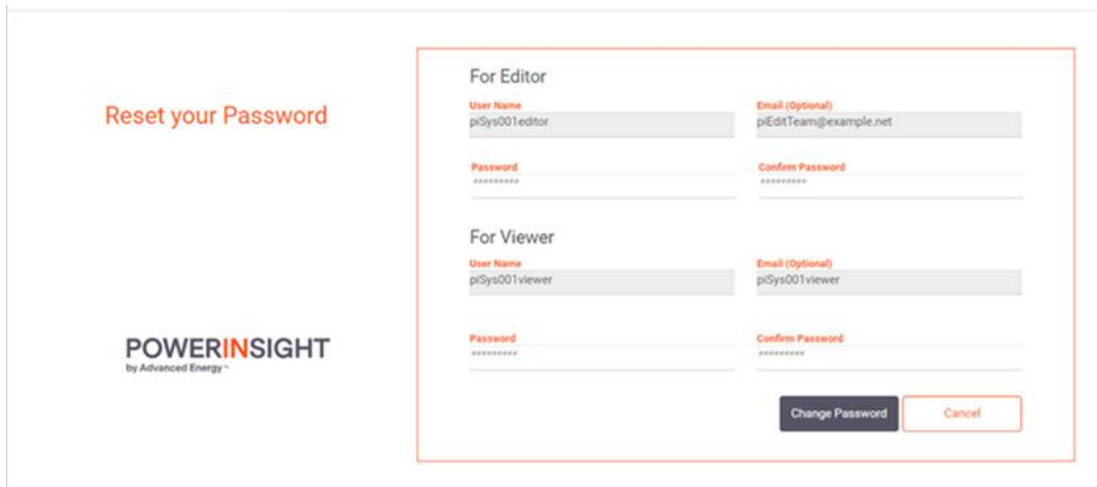
Figure 49: The Forgot Password page



To finish resetting the PowerInsight passwords, you must power cycle the Advanced Energy product that contains the embedded PowerInsight host within a specified time interval. The **Forgot Password** page reminds you how much time remains.

6. Before the allowed time interval runs out, disconnect AC input power from the Advanced Energy product.
7. Then reconnect AC input power to the Advanced Energy product.
The onboard PowerInsight host restarts as the system powers up.
8. Once the unit initializes, enter the IP address of the PowerInsight host, **192.168.20.1**, in the address (URL) bar of the web browser.
The **Change Password** page appears.

Figure 50: The Change Password page



9. In the **Password** field of the **For Editor** part of the screen, enter a replacement strong password.
10. In the **Confirm Password** field of the **For Editor** part of the screen, re-enter the editor's replacement password.

11. In the **Password** field of the **For Viewer** part of the screen, enter a strong replacement password.
12. In the **Confirm Password** field of the **For Viewer** part of the screen, re-enter the viewer's replacement password.
13. To reset the passwords, press the **Change Password** button at lower right.
14. Otherwise, press **Cancel**.

Getting Technical Support and Service

If you have questions or if troubleshooting does not resolve a problem, please contact the Technical Support Organization at technicalsupport@aei.com or +1.800.446.9167.

To return equipment for refurbishment, calibration, or repair, use one of the options listed below:

- Log in to <https://www.myaeportal.com> and select Return Materials Authorization.
- Contact your regional Advanced Energy office and ask for a Customer Advocate. You can find this office at <https://www.advancedenergy.com/contact-us/#locations>.
- Contact the Technical Support Organization at technicalsupport@aei.com or +1.800.446.9167 for assistance.