

# Panoramic Power Energy Insight

## Installation and configuration guide



Advanced 4th generation Bridge for firmware v259

Version 1 January 2018

Advanced 4<sup>th</sup> Generation Bridge

Installation and Configuration Guide

For Firmware Version 409



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<http://www.panpwr.com>


## Regulatory Compliance

Conforms to UL Std 61010-1, certified to CAN/CSA Std C22.2 No. 61010-1



The bridge complies with the following certification requirements:

Power supply	Certified AC/DC adapter marked Limited Power Source (LPS), or NEC Class 2, suitably rated for voltage, current and ambient temperature
Electrical rating	5VDC, maximum 1A
Environmental rating	Maximum ambient temperature 60°C Pollution degree 2 Indoor use Relative humidity up to 80%

Product end of use handling (WEEE) - Waste of Electrical and Electronic Equipment:	
	Panoramic Power is committed to protecting the global environment and helping our customers with recycling responsibilities. Disposal of electrical and electronic products must be done according with the local and national regulations. You can return your product to a local collection point. For information about your disposal or collection points, call your distributor or vendor, or contact <a href="mailto:support@panpower.com">support@panpower.com</a> . For more information, visit us at: <a href="http://www.panpwr.com">http://www.panpwr.com</a> .

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## About Panoramic Power® and the Bridge

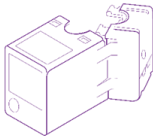
The Panoramic Power System monitors electrical energy consumption at the site level as well as at the individual circuit level. It detects excess usage, allowing organizations to identify and reduce energy, maintenance expenses and monitor site level consumption.

The system consists of wireless, self-powered sensors engineered to allow for rapid, non-invasive installation, with almost no disturbance to operations. Sensors are easily attached to circuit breakers by snapping them on to the outgoing electrical wire. They monitor the flow of electricity through the magnetic field it creates and also use it as a power source. The sensors do not require any maintenance.

Sensors report the power consumption to the bridge. The bridge in turn transfers the circuit level information, along with readings originated by the utility meter and read through a pulse input on the bridge, to PowerRadar, the solution's cloud-based analytics platform. A single bridge can collect data from up to 250 sensors and two utility meters, and multiple bridges can be used in a single site to increase coverage.

Key Features	Basic Entry Level Bridge	Advanced Cellular Bridge	Advanced 3 <sup>rd</sup> Gen Bridge	Advanced 4 <sup>th</sup> Gen Bridge
Plug and Play Installation	✓	✓	✓	✓
Flexible Mounting Options	✓	✓	✓	✓
Wi-Fi / Ethernet connectivity	✓	✓	✓	✓
Cellular (3G GSM) connectivity	Via external USB dongle	Via SIM card slot or external USB dongle	Via SIM card slot	Via SIM card slot
Store and forward capability in case of network loss	X	✓	✓	✓
Modbus interface	X	X	✓*	✓*
Two KY pulse inputs	X	X	X	✓
Field-upgradeable firmware	X	✓	✓	✓
Initial configuration	Via the bridge Configuration Tool (Windows application)	Via built-in web interface	Via built-in web interface	Via built-in web interface

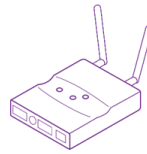
1



## Sensor installation

Easily attach the non-invasive self-powered sensors to the outgoing electrical wire. Each individual sensor will start tracking the energy usage of the device, equipment or process.

2



## Monitoring and data

Data is continuously received from the sensors and wirelessly transmitted to the analytics platform via cloud technology, all in real-time.

3



## Analysis and action

Capturing energy data in a single platform provides a powerful interface to monitor, measure, report, and understand energy consumption from multi-site level to individual device level.

Four generations of bridges were developed, with the fourth generation now available:

- Basic Entry Level Bridge (PAN-2-E-EWC-US/EU)
- Advanced Cellular Bridge (PAN-2-H-3G-US/EU), featuring a SIM card slot.
- Advanced 3<sup>rd</sup> Generation Bridge (PAN-2H-3G-US/EU V3), featuring a SIM card slot and Modbus interface\*.
- Advanced 4<sup>th</sup> Generation Bridge (PAN-2H-3G-US/EU V4), featuring a SIM card slot, Modbus interface\* and two KY pulse inputs.

The table below lists the key features of each bridge.

\* The Modbus interface is reserved for future use.

The Advanced 3<sup>rd</sup> and 4<sup>th</sup> Gen Bridge provide store-and-forward capability. In case of a network loss that impacts connectivity with PowerRadar, the bridge stores measurements until communication is restored.

The bridge storage capacity is shown in the table below:

# Connected Sensors	# Days Stored
10	10
20	5

Pulse input data is stored for up to 30 days.

This guide explains how to install and configure the Advanced 4<sup>th</sup> Gen Bridge. For information on previous generations of bridges, see the corresponding installation and configuration guides.

## Unpacking the Hardware

We recommend that you follow these unpacking instructions before installing the hardware.

### How to Proceed

1. Check the box. If any damage occurred during shipment, contact your sales representative.
2. Open the box. It should include the following items:
  - Bridge
  - Cellular antenna
  - RF antenna, labeled **Rx-1** (Europe) or **Rx-2** (USA)
  - Pluggable adapters for the pulse inputs
  - Pluggable adapter for the Modbus input
  - DIN rail adapter with mounting screws
  - 5V DC wall adapter
  - 4-piece reclose able fastener with adhesive
3. Keep the box in case you need to repack the bridge later.

## Attaching the Antennas

Before performing any connections, mount the antennas onto the bridge as follows:

1. (European model) Screw the RF antenna labeled **Rx-1** into the connector marked **Rx-1**, as shown below.



- (US model) Screw the RF antenna labeled **Rx-2** into the connector marked **Rx-2**.
2. Screw the cellular antenna into its connector.
3. Position the antennas as shown below.



## Mounting the Bridge

You can install the bridge on a flat horizontal surface, mount it on a wall using screws or the re-closeable fastener, or mount it on a DIN rail.

### How to Proceed

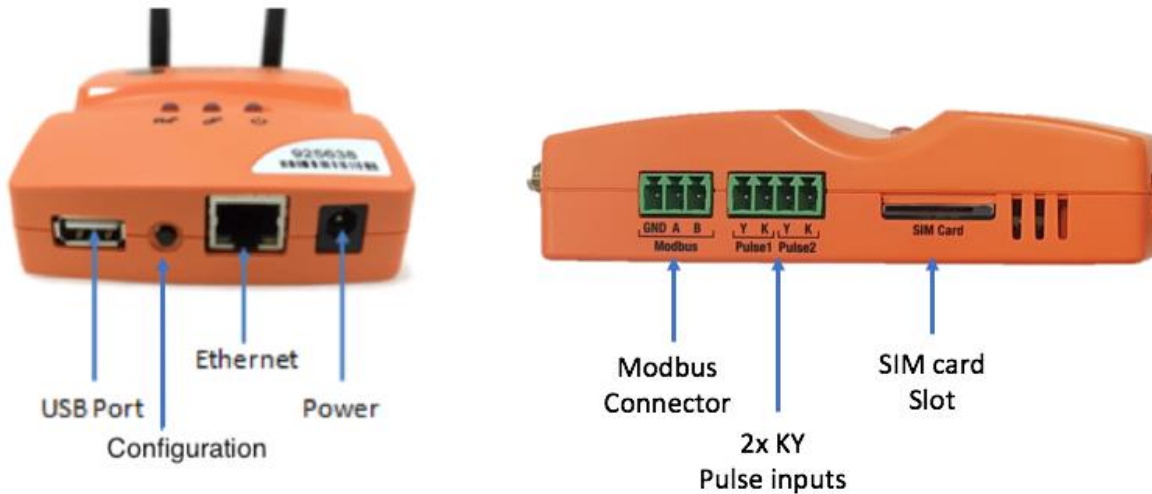
1. Configure the bridge as explained in this guide.
2. Position the bridge at a distance as follows:
  - Up to 2 meters from the electrical panel, if the panel is covered with a metallic cover.
  - Up to 5 meters, if the panel is not covered.
3. Choose a clean and even surface, located near a power source.
4. Make sure the bridge side vents are not blocked.
5. Attaching with screws: Use the template on the back of the bridge to measure the distance between the two screws.
6. Adhering to the wall: Peel the adhesive backing off two pieces of the re-closeable fastener and attach them to the back of the bridge.

In the same way, attach the two remaining pieces of the re-closeable fastener to the wall, making sure they are aligned with the pieces on the bridge.

7. Attaching to a DIN rail: Attach the included DIN rail adapter to the bridge using the two screws provided. The adapter clips on to a standard DIN rail.

## Connecting the Bridge

Depending on the required network configuration, you can connect the bridge to the Internet using Wi-Fi, a cellular network, or wired LAN.



## Prerequisites

- An Ethernet cable for configuring the bridge.
- An Ethernet cable if you connect to the Internet via wired LAN.
- A SIM card if you connect to the Internet via a standard GSM network.

## Connecting Pulse Inputs

You can connect the bridge to a KY or KYZ pulse output of a meter.

### How to Proceed

1. Screw the pulse wires into the adapter connected to the pulse input. Make sure to screw the K wire into the K input, and either the Y or Z wire into the Y input.
2. Plug the adapter into one of the pulse inputs on the side of the bridge.



## DC specification

- Maximum current (at K-Y short): 0.9 mA
- Internal pullup voltage: 5 VDC
- Absolute maximum K-Y voltage input range: 0-26 VDC



## Pulse specification

- Minimum pulse width: 5 mS
- Maximum pulse rate: 100 Hz
- Maximum LOW state voltage: 1.2 V
- Minimum LOW state current: 0.6 mA
- Minimum HIGH state voltage: 2 V
- Maximum HIGH state current (leakage): 0.4 mA

## Configuring the Bridge

This section assumes you are familiar with networking procedures.

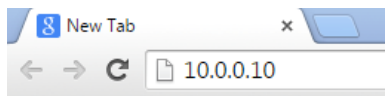
### 1.1.1 Accessing the Bridge Web Interface

This section describes how to access the bridge web interface for configuring the relevant data communication mode.

Prerequisite: Use Internet Explorer 9.0 (and up), Google Chrome, or Firefox to access the bridge web interface.

#### How to Proceed

1. On your PC, disable your Wi-Fi and disconnect the LAN cable.
2. Connect the bridge to the power source.
3. Once the bridge powers up, it performs a self-test after which all LEDs light up in sequence. For more information on LED status, see [Understanding the Bridge LEDs](#).
4. Make sure **no USB** device is connected to the USB port of the bridge.
5. Press the **Configuration** button for approximately **5 seconds**, until the **Rx** LED lights solid red.
6. Connect the bridge to the PC using the LAN cable, **only after the Rx LED lights solid red** (indicating that the bridge is in configuration mode).
7. Activate your web browser. In the address bar, enter IP address **10.0.0.10**.




The **Status** page appears and displays the current configuration.

Note: It may take a few minutes for the computer to connect to the bridge's DHCP server; you can release and renew your IP address on your computer to speed up the process.

## Note

In some cases, first-time loading can take several minutes. If the **Status** page does not appear, wait a few more seconds and refresh the page in the browser.

If the page does not load, use Ctrl+F5 to refresh the page and force clearing the browser's cache.

		<b>Status</b>	
Status	Bridge ID:	979132	
Connection Setup	IP Address:	192.168.12.38	
Administration	Subnet Mask:	255.255.255.0	
Pulse Logger Meter	DNS Server:	192.168.12.8	
Diagnostics	Default Gateway:	192.168.12.1	
	Ethernet MAC Address:	70:B3:D5:07:D2:E8	
	Wi-Fi MAC Address:	20:F8:5E:C7:AB:1E	
	Connection Type:	Wi-Fi	●●●●●
	Connection Info:	Panoramic , WPA2 Enterprise	
	Connection To Panoramic Server:	00:01:49	●
	Connection To Local Network:	00:01:59	●
	Authenticated by Panoramic Server:		●
	Firmware Version:	444	
	Hardware Version:	0	

## 2.1.1 Entering Credentials

You need to enter your credentials only once for accessing any of the pages (except **Status**).

### How to Proceed

1. Select the required page in the side menu.
2. Enter the **Username** and **Password** in the **Authentication Required** screen.

By default, both are *panpwr*. We recommend changing them once you access the tool. See [Modifying the Default Credentials for the Bridge Web Interface](#).

3. Select **Login**.

## 3.1.1 Configuring the Bridge for Wi-Fi Connection

If the bridge communicates with the server over Wi-Fi, you will need to configure which wi-fi network and settings to use.

### Prerequisites

Ask your network administrator for the following information:

- SSID and password to access the network.
- Username, certificate text, and RSA private key for networks requiring certificates.

- For wi-fi and ethernet connections, verify that the system administrator has opened port 8051 for inbound/outbound TCP/IP traffic. In addition, verify that DHCP & DNS ports are open (67/68, 53).


## How to Proceed

- In **Connection Type** select **Connect via Wi-Fi**.
- To let the system find the **SSID** (network name) and **Security** (encryption method used), click **Find networks**.

Otherwise, enter these values manually.



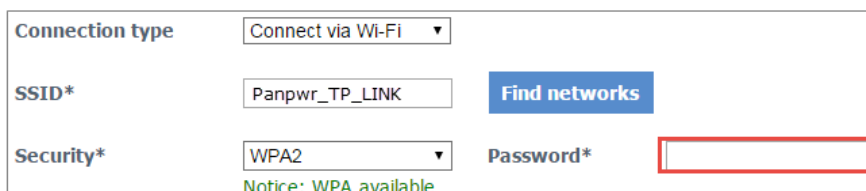
The display shows a list of networks in your vicinity.



## Note

*If the expected wi-fi network was not found, or if no network was found at all, you can click the **Find Networks** button again to reattempt to search for networks.*

- Select the network you want to use and click **Apply**. If the network supports a mixed encryption mode, the WPA available notice appears on the screen.



- For Open, WEP, and WPA security, enter the password in the field highlighted in the screen above.
- For enterprise WPA and enterprise WPA2 security, enter your password in the field shown below (this is for use with RADIUS server authentication).

Connection type	Connect via Wi-Fi ▼		
SSID*	Panoramic	<b>Find networks</b>	
Security*	WPA2 Enterprise ▼	Password	
<input type="checkbox"/> Use SSL3/TLS1 Certificate			
Username	user	Password	.....
Certificate		RSA Private Key	
IP settings	DHCP (Automatic IP Configuration) ▼		

- For a network using certificates, select **Use SSL3/TLS1 Certificate**, and enter the **Username**, **Certificate**, and **RSA Private Key**.

Connection type	Connect via Wi-Fi ▼		
SSID*	Panoramic	<b>Find networks</b>	
Security*	WPA2 Enterprise ▼	Password	
<input checked="" type="checkbox"/> Use SSL3/TLS1 Certificate			
Username		Password	
Certificate		RSA Private Key	

- In **IP Settings**, select whether you want the bridge to get an IP address automatically (DHCP), or to assign an IP address yourself.

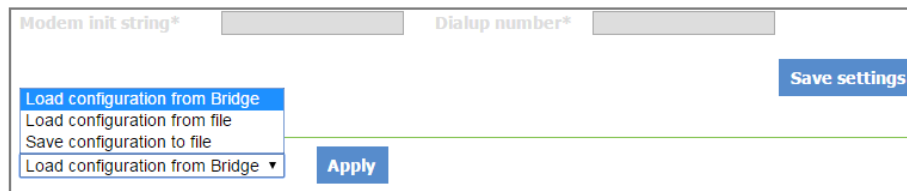
IP settings	DHCP (Automatic IP Configuration) ▼			
IP address*	■ - ■ - ■ - ■	DNS server 1*	■ - ■ - ■ - ■	
Subnet Mask*	■ - ■ - ■ - ■	DNS server 2	■ - ■ - ■ - ■	
Gateway*	■ - ■ - ■ - ■			

If you select to enter the IP address manually, a number of fields become active (**IP Address**, **Subnet Mask**, etc.). Fill them in according to your required network settings.

- There is also an option to use only a static DNS + automatic IP configuration, meaning that only the DNS address will be static and configured by the local IP DNS server.
- To save the configuration to the bridge, click **Save Settings**.

## IMPORTANT

If you leave this page before saving your settings, they will not be saved.



10. To discard changes made to an unsaved configuration and return to the saved settings, select **Load Configuration from Bridge**.
11. To use the settings displayed on the screen to configure another bridge, select **Save Configuration to File**.

This allows you to create different settings and save them to a file, without updating the bridge configuration.

For more information, see [Loading the Bridge Configuration from a Configuration File](#).

12. To exit configuration mode, disconnect the bridge from the power source.
13. Install the bridge as explained in [Mounting the Bridge](#).
14. Reconnect the bridge to the power source.

### 4.1.1 Configuring the Bridge for Cellular Connection

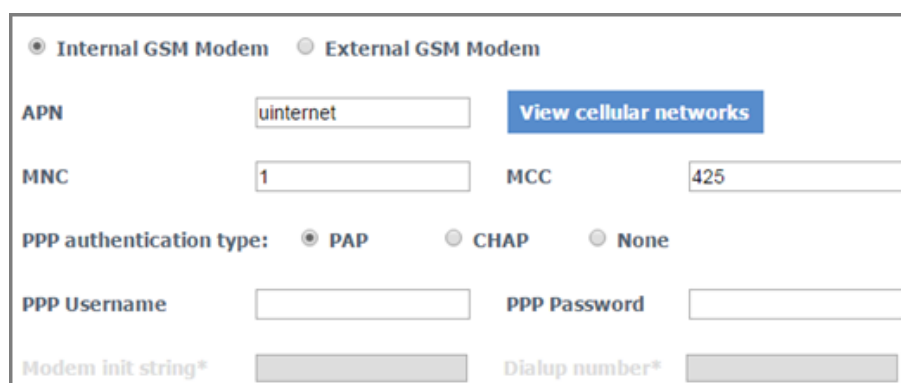
Use a SIM card if you connect to the Internet via a standard GSM network.

#### Prerequisites

For some SIM cards, the system fills in details automatically in the **Connection Setup** page. For others, you need to get the information from the SIM card supplier or the service provider.

#### How to Proceed

1. In **Connection Type**, select **Connect via Cellular**.
2. You should always select the **Internal GSM Modem**. The **External GSM Modem** configuration is deprecated as of this version of the hardware.



3. Use the **View cellular networks** button to verify reception of the relevant cellular network (this can take up to 30 seconds). Then enter the **APN** you received from the cellular network operator. If required, enter PPP details.

4. To save the configuration to the bridge, click **Save Settings**.

## IMPORTANT

If you leave this page before saving your settings, they will not be saved.

Modem init string*		Dialup number*		
<div> <div>Load configuration from Bridge</div> <div>Load configuration from file</div> <div>Save configuration to file</div> <div>Load configuration from Bridge ▼</div> </div>				<div>Save settings</div> <div>Apply</div>

5. To discard changes made to an unsaved configuration and return to the saved settings, select **Load Configuration from Bridge**.
6. To use the settings displayed on the screen to configure another bridge, select **Save Configuration to File**.

This allows you to create different settings and save them to a file, without updating the bridge configuration.

For more information, see [Loading the Bridge Configuration from a Configuration File](#).

7. To exit configuration mode, disconnect the bridge from the power source.
8. Install the bridge as explained in [Mounting the Bridge](#).
9. When using the **Internal GSM Modem**, insert the SIM card into the slot with the truncated end, as shown below.



10. Reconnect the bridge to the power source.

\*Note: This functionality does not exist in all versions.

### 5.1.1 Configuring the Bridge for Wired LAN

If you use a wired connection to access the Internet, there are two methods to allocate an IP address: automatically (DHCP) or manually (Static IP).

#### Prerequisites

- If you need a static IP address for the bridge, make sure to have the network setting information ready before starting the procedure.

- For wi-fi and ethernet connections, verify that the system administrator has opened port 8051 or 443 (if using a SSL version or inbound/outbound TCP/IP traffic). In addition, verify that the DHCP & DNS ports are open (67/68, 53). Please review [Modifying the Bridge Administration Settings](#) for URL modifications.

## How to Proceed

- In **Connection Type**, select **Connect via LAN**.
- In **IP Settings**, select whether you want the bridge to get an IP address automatically (DHCP), or to assign an IP address manually (Static IP).
- If you select to enter the IP address manually, a number of fields become active (**IP Address**, **Subnet Mask**, etc.). Fill them in according to your required network settings.
- To save the configuration to the bridge, click **Save Settings**.

## IMPORTANT

If you leave this page before saving your settings, they will not be saved.



- To discard changes made to an unsaved configuration and return to the saved settings, select **Load Configuration from Bridge**.
- To use the settings displayed on the screen to configure another bridge, select **Save Configuration to File**.

This allows you to create different settings and save them to a file, without updating the bridge configuration.

For more information, see [Loading the Bridge Configuration from a Configuration File](#).

- To exit configuration mode, disconnect the bridge from the power source.
- Install the bridge as explained in [Mounting the Bridge](#).
- Reconnect the bridge to the power source.

### 6.1.1 Configuring the Pulse Inputs

If you connect the bridge to a meter's pulse output, you will need to enable the pulse inputs in the bridge configuration.

#### Prerequisites

Have the pulse outputs connected to the pulse input connectors on the side of the bridge.

#### How to Proceed

- In the **Pulse Input** tab, select the checkbox next to the pulse input you wish to enable
- Make sure the measurement frequency in the **Send Interval** field is set to 1 or 5 minutes – this interval is the sending time to the server based on the time the meter sent its data.
- You can use the pulse counters to verify that pulses are counted. The counters update every 10 seconds.

Send interval [secs]

☒ Enable pulse input 1

☒ Enable pulse input 2

Pulse input 1 count: 0

Pulse input 2 count: 0

[Save settings](#)

## Loading the Bridge Configuration from a Configuration File

You can use the configuration file for configuring other bridges that have similar configuration requirements. For example, if bridges in a chain of stores share the same Internet connection type and access points, you can prepare one configuration file and use it for configuring other bridges in these locations.

You can also load the configuration file onto the same bridge if its configuration gets corrupted.

### How to Proceed

1. Access the bridge web interface.
2. Access the **Connection Setup** page.
3. Select **Load Configuration from File**.
4. Select the relevant file and click **Apply**.
5. If necessary, enter the password manually (for example, Wi-Fi password, SSL Password, RSA Private Key).

## Modifying the Bridge Administration Settings

You can modify the bridge's default settings or reset all settings, including connections, to factory defaults.

### 7.1.1 Modifying the Default URL and/or Port of the Panoramic Power Server

#### IMPORTANT

Do not change the pre-configured address of the Panoramic Power server (col.panpwrws.com) and/or port number (8051) without explicit instructions from Panoramic Power customer support. The bridge uses these settings to transmit sensor data to the Panoramic Power cloud.

For SSL Bridge versions the address will be: (bridges.powerradar.energy). and the port number is 443 (standard secure port). The bridge will not connect with different parameters.

To access these fields, select **Administration** in the bridge web interface.





**Administration**

Main Panoramic server host  Port

Second Panoramic server host  Port

☐ Enable remote firmware update

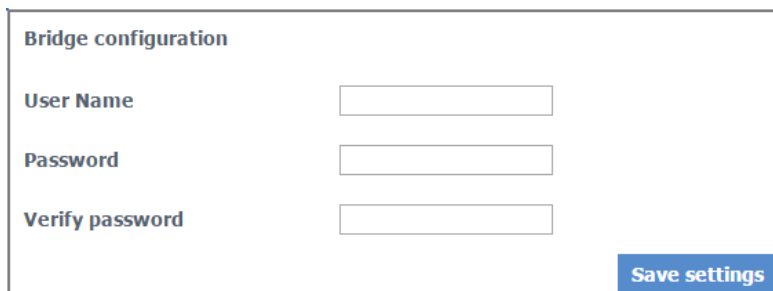
**Save settings**

## 8.1.1 Modifying the Default Credentials for the Bridge Web Interface

You can change the default username and password required to access the bridge configuration and **Diagnostics** pages.

### How to Proceed

1. Access the bridge web interface.
2. Select **Administration**.



**Bridge configuration**

User Name

Password

Verify password

**Save settings**

3. Enter the new **Username** and **Password** (up to 15 characters for each).
4. In the **Verify Password** field, enter the new password again.
5. Select **Save settings**.

## 9.1.1 Resetting the Bridge Configuration to Factory Defaults

### IMPORTANT

Restoring to factory defaults will erase all of your connection settings!

### How to Proceed






1. Access the bridge web interface.
2. Select **Administration**.
3. Click **Reset to factory default** at the bottom of the page.
4. At the prompt, click **OK**.

## Viewing the Configuration Status


Access the **Status** page to view information such as:

- Bridge versions (if asked by the support team)
- Configured interface

- Connection details (allocated IP, etc.)
- Connection status (for example, if the bridge managed to connect to the local network)
- Quality of connections.

 <b>Status</b>	
Status	Bridge ID: 979132
Connection Setup	IP Address: 192.168.12.45
Administration	Subnet Mask: 255.255.255.0
Pulse Logger Meter	DNS Server: 192.168.12.8
Diagnostics	Default Gateway: 192.168.12.1
	Ethernet MAC Address: 70:B3:D5:07:D2:E8
	Wi-Fi MAC Address: 20:F8:5E:C7:AB:1E
	Connection Type: Wi-Fi 
	Connection Info: Panoramic , WPA2 Enterprise
	Connection To Panoramic Server: 00:02:07 
	Connection To Local Network: 00:02:20 
	Authenticated by Panoramic Server: 
	Firmware Version: 400
	Hardware Version: 0

## How to Proceed

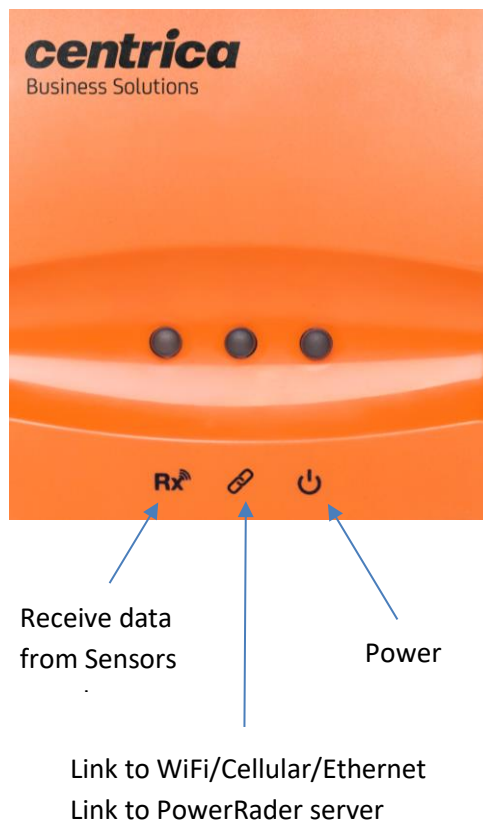
1. Disconnect the bridge from the power source and reconnect it. Note that this is only if you just saved configuration settings.
2. Press the **Configuration** button for approximately 5 seconds, until the  LED light is solid red.
3. Access the bridge web interface by entering **10.0.0.10** in the browser.
4. Check the status of the configuration.


Green indicators appear in the **Status** page if the bridge connects with the local network and the cloud-based Panoramic Power server.


If the system does not reestablish connection with the Panoramic Power server, access the **Diagnostics** page for further testing.


## Understanding the Bridge LEDs

Use the following information to familiarize yourself with the bridge status during normal operation in wi-fi, cellular, or ethernet.



Power  LED	Bridge Status
Solid green	Connected to the power source
Blinking Orange	Firmware upgrade in progress (Gen2 and Gen 3)
Solid red	Firmware upgrade has failed

Rx  LED	Bridge Status
Blinking green / orange	Receiving sensor or meter data
Solid red	Configuration mode

Link  LED	Physical Link (Ethernet/ Wi-Fi/Cellular)	Panoramic Power Server Connected
Off	X	X
Blinking orange - slow	While connecting to L2 layer	X
Blinking orange - fast	While acquiring IP address	X
Blinking green - fast	Resolving server URL	X
Blinking green - slow	Connecting to server	X
Solid orange	Authentication error	✓ (Connection was established but the data was rejected by the cloud)
Solid green	✓	✓

Note: In some cases, it may take up to several minutes for the bridge to obtain an IP address, and at that stage the Link LED may be off.

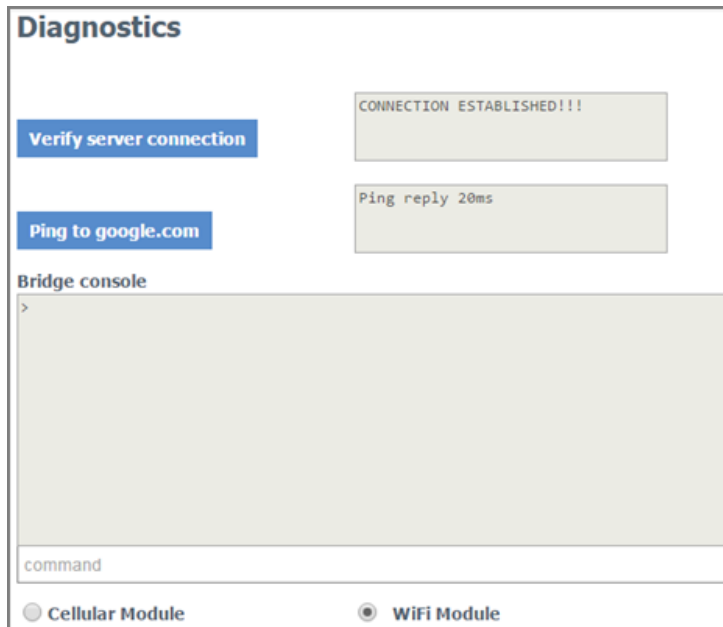
It is recommended to wait a few minutes before troubleshooting.

## Verifying the Wi-Fi or Cellular Connectivity

You can test the connection to the Panoramic Power server or the Internet as described in this section.

### How to Proceed

1. Access the bridge web interface.
2. Select **Diagnostics**.



3. Click **Verify server connection** to make sure the bridge communicates with the Panoramic Power server.

If there is no connection, check the bridge configuration parameters and network settings. The connection to the Panoramic Power server uses port 8051 or 443 (SSL version).

### Note

*This method will not work if you configured the bridge to work in LAN, and your PC is connected to the bridge.*

4. Click **Ping to google.com** to make sure the Internet connection is working.

If there is no connection, check the bridge configuration parameters and network settings.

## Upgrading the Firmware Version

This section explains how to upgrade the bridge to the latest firmware version.

### Prerequisites

Make sure you have the following items:

- USB flash drive with the upgraded firmware, or a FAT-32 formatted USB flash drive if you need to download the firmware from your email account.

### How to Proceed

1. Download the firmware to the root directory of the USB flash drive, if necessary.
2. Make sure the firmware file is the only .bin file in the root directory of the USB flash drive.


3. Connect the USB flash drive to the USB port on the bridge.




4. Boot and wait for the LED self-test sequence to end. Note that this is relevant only if the bridge is not yet operational.

#### Note

*If you proceed to Step 5 before the self-test sequence ends, the bridge enters configuration mode rather than upgrade mode.*

5. If the bridge is connected to the LAN network, **Disconnect it from the LAN network.**
6. Press the **Configuration** button for approximately 10 seconds.
7. The  LED lights orange and green. All other LEDs are off.
8. Wait several minutes for the upgrade process to complete (up to 5 minutes).

After a successful upgrade the bridge will reboot. The  LED lights green, and the bridge returns to normal operation. A LED self-test sequence occurs, and the bridge returns to normal operation.

9. Disconnect the USB flash drive.

#### Note

*If the firmware version on the USB drive is identical to the one installed, the bridge will not update, and the power LED will turn red. A lower version will result in downgrading the bridge's firmware and a reset of the bridge configuration.*

## Troubleshooting


If you encounter a problem, try the solutions listed in this section.

Otherwise, contact Customer Support for help at [support@panpwr.com](mailto:support@panpwr.com).

#### Problem

The bridge is not receiving sensor data (the  LED is off).

#### Solutions


- Try moving the bridge closer to the electrical panel.
- Verify the position of the sensors in the electrical panel: make sure they are visible, or try moving them to the front of the panel.
- Make sure the RF antenna is tightly screwed into the antenna connector of the bridge.
- Make sure the bridge is not in configuration mode (the  LED lights red).

## Problem


The bridge does not connect to the Panoramic Power server (the  LED does not turn solid green).

## Solutions

If you are using ethernet:

- Look at the LAN port (RJ-45 connector) on the bridge. It contains two small built-in LEDs. One of them should light solid green and the other should be blinking orange. If this does not happen, tighten both ends of the LAN cable or replace it.
- If the  LED blinks green but does not turn solid, it means that local network connectivity is established but the bridge cannot access the Panoramic Power server. This is often caused by local firewalls blocking TCP port 8051. Please verify this with your system administrator.

If you are using wi-fi:

- Verify the wireless network reception strength in the status page. The level should be at least two, preferably three (out of five).
- If no reception level is showing and “Connecting...” is shown instead, it means that the bridge cannot establish wi-fi network connectivity. In this case, please verify your wi-fi credentials (SSID, Security Type or password).
- If the  LED blinks green but does not turn solid, it means that local network connectivity is established but the bridge cannot access the Panoramic Power server. This is often caused by local firewalls blocking TCP port 8051. You can verify this using the [Diagnostics](#) tool or with your system administrator.

If you are using cellular:

- Verify the cellular network reception strength in the status page. The level should be at least three (out of five).
- If no reception level is showing and “Connecting...” is shown instead, it means that the bridge cannot establish cellular network connectivity. In this case, please verify your cellular credentials (APN, PPP credentials where needed), and make sure the SIM card has a valid and enabled data plan.
- You can test the cloud connectivity using the [Diagnostics](#) tool.

## Problem

The bridge does not connect to the cellular network when using the SIM card ( LED is off).

## Solutions

- Make sure the SIM card is in place before connecting the bridge to the power source.
- After verifying that the SIM card is tightly secured in its slot, disconnect the bridge from the power source and reconnect it.
- Verify with your service provider that a data plan is enabled for your SIM card. The bridge connects to the cellular data network only if the SIM card has a data plan.
- In low reception areas it may take a while for the bridge to connect. Enter configuration mode and check the reception bar in the **Status** page.

## Problem

The bridge does not return to normal operation after a firmware upgrade (⏻ LED lights red).

## Solution

The upgrade was unsuccessful, and the bridge rolled back to the previous firmware version.

## How to Proceed

1. Disconnect the USB flash drive from the bridge.
2. Disconnect and reconnect the power cable to the bridge.

The bridge performs a self-test and the ⏻ LED lights green. The bridge is ready for normal operation with the rolled-back version.

3. Enter configuration mode and check the running firmware version in the **Status** page.
4. Contact Customer Support if you need additional assistance.

## Resolving Bridge Connection Issues

These are the following steps to investigate and resolve bridge connectivity issues.

1. Open the command line.
2. Ping our server (col.panpwrws.com, or beidges.powerradar.energy in SSL versions) from a local device (not our bridge).
3. Try to connect a bridge via a hotspot. (checking the method for connectivity issues in the bridge).
4. Type: telnet our server URL port (for example: telnet col.panpwrws.com 8051), or a local IP if the URL command fails. If the process was successful you will see a blank black screen. Please check to make sure that the PowerRadar URL isn't blocked.
5. If a bridge cannot connect via a hotspot, it means there is an issue with the unit and a new bridge needs to be installed.
6. The bridge uses Google's Open DNS (8.8.8.8), and an IT network is blocking this DNS. Please test connectivity by using the **Diagnostic** tab in the bridge configuration page. If a ping from the **Diagnostic** tab to Google is successful, it means there is no problem with the local network. In this case please connect PowerRadar support.
7. If the Google's DNS is blocked, change the DNS option to be static and enter a valid DNS IP.
8. The bridge uses different SNTP servers to acquire clock sync. The following is the list of SNTP servers in use:
  - "europe.pool.ntp.org"
  - "0.europe.pool.ntp.org"
  - "1.europe.pool.ntp.org"
  - "2.europe.pool.ntp.org"
  - "3.europe.pool.ntp.org"
  - "nist.netservicesgroup.com"
  - "utcnist.colorado.edu"



- "utcnist2.colorado.edu"

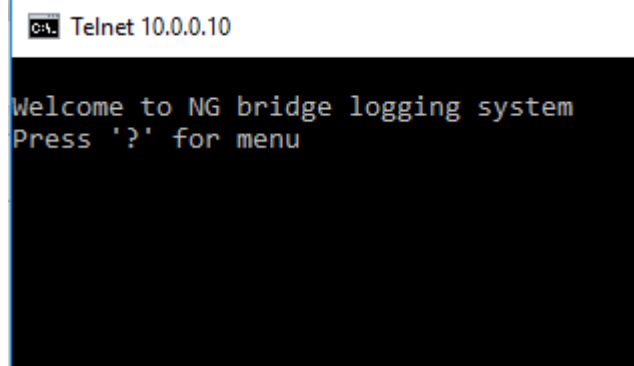
9. If the issue is not resolved, please contact support for a static IP.

## Bridge Log Extraction

In cases where we want to investigate issues in the bridge, there is a debug log in the bridge.

To extract the log, please follow these steps:

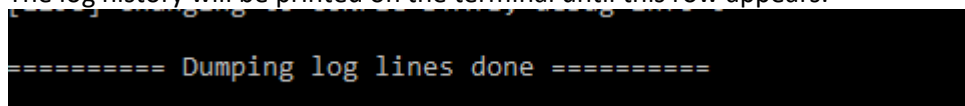
1. Disconnect the PC from all communication (Bluetooth, WIFI etc.).
2. Connect the PC to the bridge and enter configuration mode (see [Configuring the Bridge](#)).
3. Open the command line in the console.
4. Type: ipconfig.
5. If the default gateway is 10.0.0.13, you can connect the computer to the bridge. If not, type ipconfig /release.
6. After the operation is done, type: ipconfig/renew. Then type: telnet 10.0.0.10.
- 7.
8. You will see this screen:



```
C:\> Telnet 10.0.0.10

Welcome to NG bridge logging system
Press '?' for menu
```

9. Click 'd' (NOT capital D as this is case-sensitive).
10. The log history will be printed on the terminal until this row appears:



```
===== Dumping log lines done =====
```

11. Copy the log by right-clicking on the CMD, and then Edit→select all→ctrl c and copy the information to a Notepad or Word file and send the file to PowerRadar Support.