GATEWAY 2.0

Table of Contents

1. Initial configuration

The Phantom™ Gateway 2.0 is a device that connects Phantom™ condition monitoring sensors to the outside world via the cloud or your local database. Gateway devices can communicate to your network via Wi-Fi or Ethernet connectivity; and communicate with sensors using Bluetooth BLE 5.0.

When the Gateway is connected to a power source for the first time, it will start operating as a HotSpot access point with the name "EIPHANTOMGW".

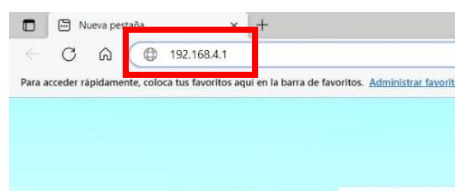To access the Gateway settings, follow these steps:
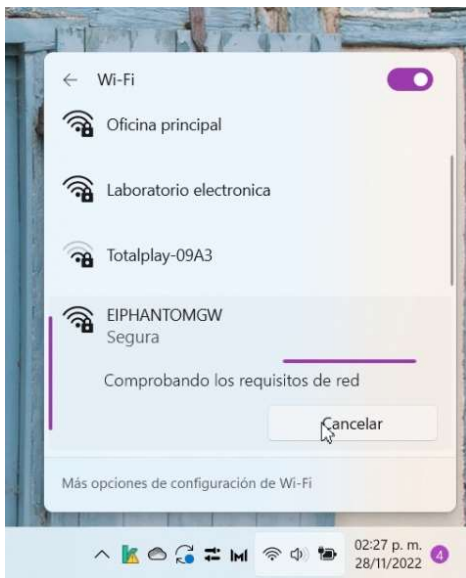
Find the Gateway among the available Wi-Fi networks on your computer.

Connect to the network by typing the password, which will always be "88888888" (the number 8 repeated 8 times).
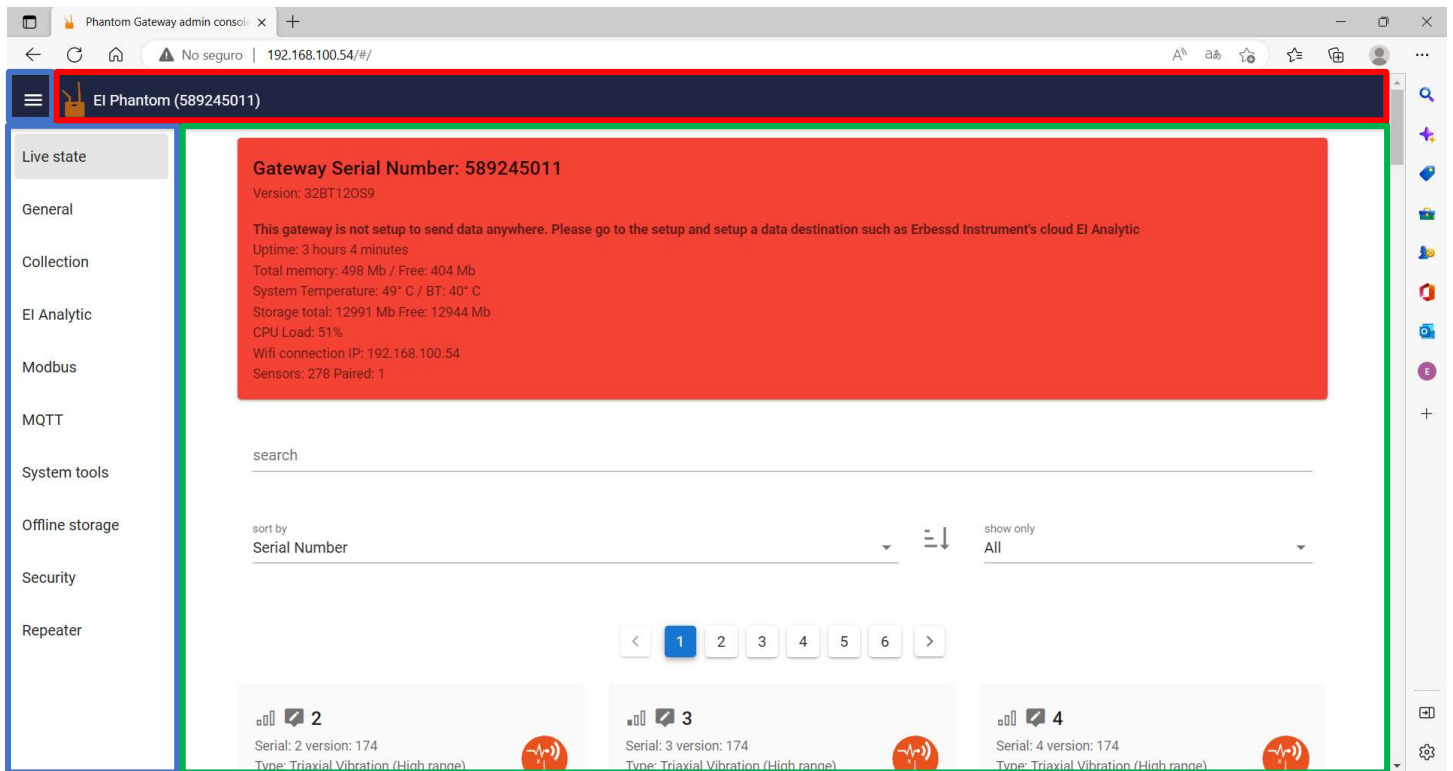
Once connected to the network, with the help of any web browser, go to the device's configuration page by entering the IP address: 192.168.4.1.

2. User interface

On the Gateway configuration page, you will find three main sections:

- Gateway serial number ☐
- Configuration menu ☐
- Display of configurations ☐

2.1 Live state

In the first panel you will find the Gateway status information.

- **Gateway Serial Number:** Gateway serial number.

- **Version**: Current firmware version.

- **Uptime**: Time the Gateway has been on.

- **Total memory**: Total and available RAM memory.

- **System Temperature:** Internal temperature of device.

- **Storage total:** Total storage and available storage on the SD card.

- **CPU Load:** System Load.

- **Wi-Fi connection IP:** Current IP address of the Gateway.

- **Sensors:** Sensors detected and sensors paired with the Gateway.

The panel will appear red until the Gateway is configured to send data to a specific site.

Gateway Serial Number: 589245011
Version: 32BT12OS9

This gateway is not setup to send data anywhere. Please go to the setup and setup a data destination such as Erbessd Instrument's cloud EI Analytic
Uptime: 3 hours 4 minutes
Total memory: 498 Mb / Free: 404 Mb
System Temperature: 49° C / BT: 40° C
Storage total: 12991 Mb Free: 12944 Mb
CPU Load: 51%
Wifi connection IP: 192.168.100.54
Sensors: 278 Paired: 1

Once the Gateway has been configured to send to a database, the panel will appear white.

Gateway Serial Number: 589245011
Version: 33BT12OS9

Uptime: 19 hours 22 minutes
Total memory: 498 Mb / Free: 401 Mb
System Temperature: 50° C / BT: 40° C
Storage total: 12991 Mb Free: 12943 Mb
CPU Load: 32%
Wifi connection IP: 192.168.100.54
Monitor IP: 192.168.100.243
Sensors: 426 Paired: 1
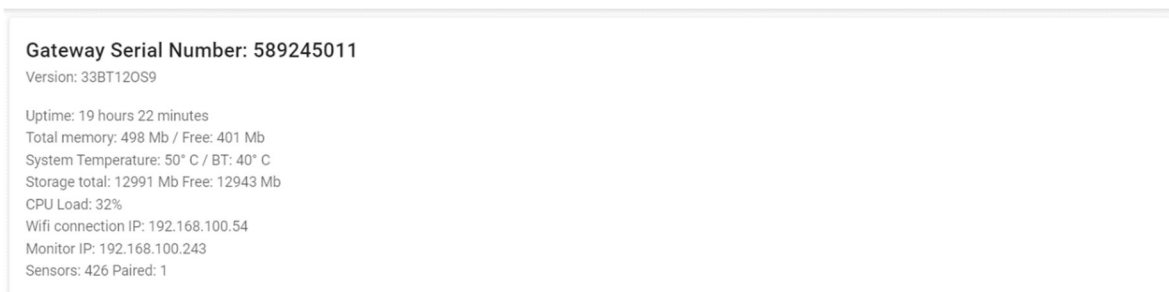
After the first panel, you will find the search options. In the search bar you can type the serial number of the sensor you want to configure.

search

search
Serial Number
Last seen
Node type
Signal strength
Battery
Last download

Erbessd Instruments Phantom Gateway v2. You

Sort by allows you to choose from several options to sort the list of sensors.

- **Serial Number**
- **Last seen** by the Gateway.
- **Node type**
- **Signal strength**
- **Battery** level
- **Last downloaded**

The next button defines the order of the sensors according to the option you have previously chosen:

≡↑ From highest to lowest

Show only will show you all sensors in the selected category.

- **All:** All sensors.
- **Paired:** Paired sensors.
- **Unpaired:** Sensors not paired.
- **Low Battery:** Low battery sensors.
- **Low signal:** Low signal sensors.
- **Favorites:** Sensors marked as Favorites.
- **Ignored:** Sensors ignored in the past.
- **Secured:** Sensors with encryption enabled.
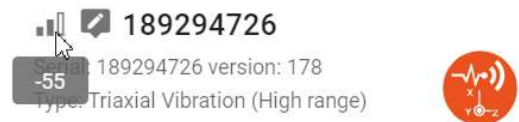- **Unsecured:** Sensors with encryption disabled.
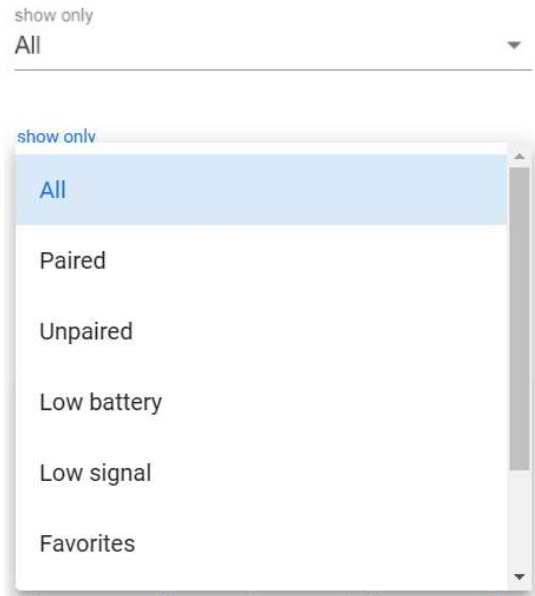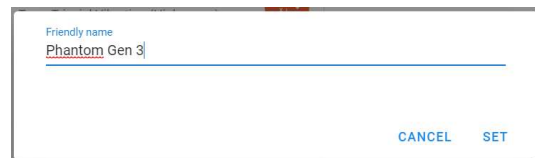
2.1.1 Phantom™ sensor configuration

You can find the sensors listed with the serial number at the top and some buttons as shown in the picture.

▮ **Signal strength:** appears when the cursor passes over the icon.

▮ **Set sensor name:** Change the sensor name and it will be displayed on the first line instead of the serial number.

Below you can see the serial number, firmware version and sensor type.

Phantom Gen 3
Serial: 189294726 version: 178
Type: Triaxial Vibration (High range)

In the frame you will also see information about the sensor.

189294726
Serial: 189294726 version: 178
Type: Triaxial Vibration (High range)

Last seen:	2 seconds
Velocity RMS X:	0.37 mm/s
Velocity RMS Y:	0.26 mm/s
Velocity RMS Z:	0.4 mm/s
Battery voltage:	2.76 V
Sensor Temperature:	25.5 °C

PAIR

- **Last seen:** Last time the Gateway saw the sensor.
- **Velocity RMS:** RMS value measured on each axis.
- **Battery voltage:** Sensor battery voltage.
- **Sensor Temperature:** Sensor internal temperature.

Pair PAIR allows you to pair the sensor with the Gateway. The sensors will not automatically connect to the Gateway if you do not link them.

After pairing the sensor with the Gateway, more configuration options will appear.

Unpair UNPAIR **:** Unpairs the sensor from the Gateway.
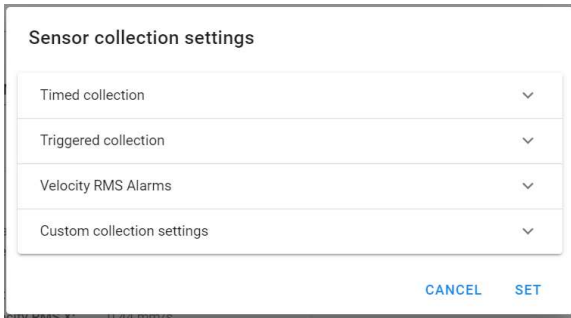
Favorite 🔖**:** Adds the sensor to the list of favorites.

Collect waveform now ⭳ **:** Request a collection of the Time Waveform (TWF) and frequency spectrum (FFT) at instantly. A blue message will appear, indicating that the signal is being downloaded.
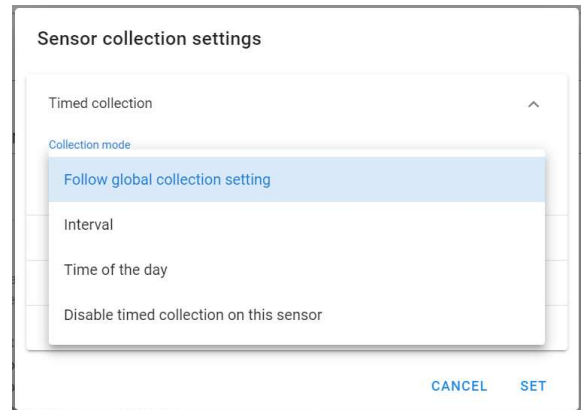
UNPAIR

Downloading waveform: downloading

189294726
Serial: 189294726 version: 178
Type: Triaxial Vibration (High range)

Collection settings 🕐 : Displays four options for the data sending configuration of the specific sensor.

Timed collection: Allows you to select the sensor collection mode, among the four available options.

Follow global collection setting: Causes the sensor to record data according to the global configuration of the Gateway.

Interval: Allows you to send data with a defined interval. You can switch between minutes, hours or days as long as you stay within the allowed range of the sensor.
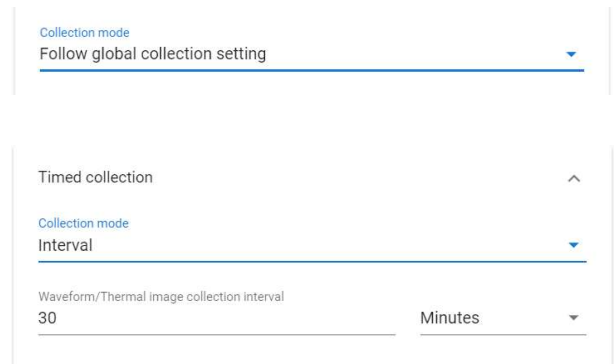

Time of the day: You can choose specific times of the day to send data. When you click on **Custom waveform collection time** a clock will appear, allowing you to choose the time you want. By clicking on ADD TIME you can add this time to the list. You can add several hours by repeating this process, and delete them with REMOVE.

7
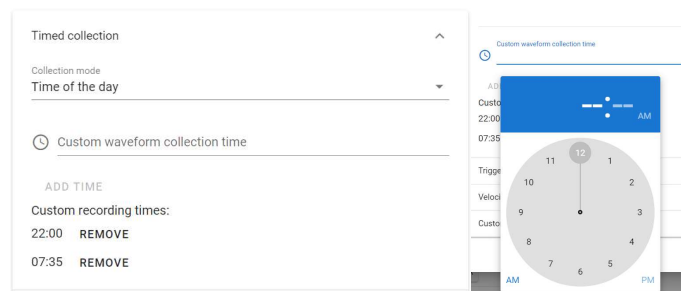
Disable timed collection on this sensor: Disables TWF and FFT collection.
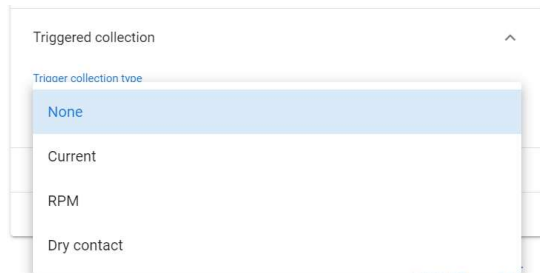
In the **Triggered collection** section, you can link your vibration sensors with sensors for other parameters, such as current, RPM speed and dry contact.
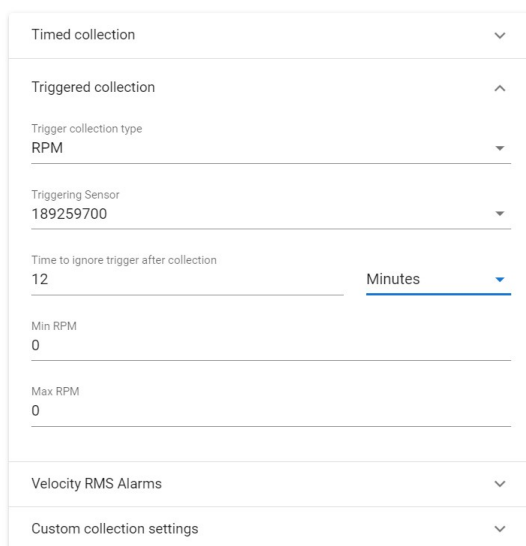
For example, when selecting RPM, you can search in the **Triggering sensor** part for the available RPM Phantom™ sensors to link to.

Then select the time in which the sensor can be reactivated.

In **Min RPM** and **Max RPM** enter the minimum and maximum speed of the range.

The vibration sensor will be activated when it detects the measured RPM value is within the configured range.

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In the **Velocity RMS Alarms** section, you can activate the sensor alarms.

Alarm level 1 will cause the sensor to send TWF and FFT if the mm/s level is exceeded in any of the measured axes.

Alarm level 2 will trigger a notification if the value in mm/s is exceeded in any of the measured axes.

Alarm count threshold is the alarm check interval; it is defined in **counts** or sequences.

Time to ignore alarm after collection indicates how much time must pass before the sensor can alarm again.

In **Custom collection settings** you can select **Override global collections settings** to modify the settings for this sensor only. Otherwise the sensor will take the global settings from the Gateway.

* These options are explained in the **Collection** section.

In sensor settings ⚙ allows you to modify the internal settings of the sensor.

9

In **General** you can change the transmission power, which is recommended to be set at 8 dbm.

Sensor update interval defines after how many seconds the sensor updates its status. This is called sequence or **count**.

You can check the **Connect to Phantom Gateway v1** option if you want this sensor to connect to a Gateway v1 receiver.

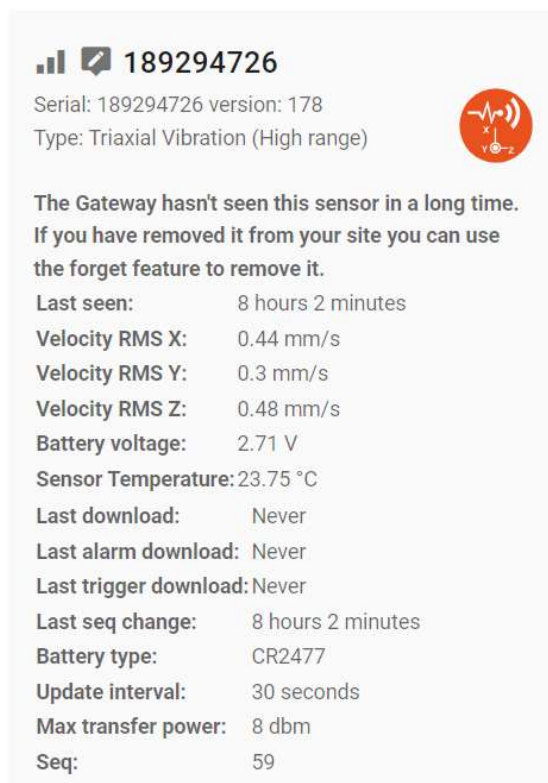Finally, in **Vibration triaxial settings** are the options for the RMS value calculation:

- **Lower cutoff or Higher cutoff**: Allows you to define the frequency range.
- **Calculation range:** Choose the dynamic range.
- **Sample rate:** Selects the sample rate and maximum frequency.
- **Lines of resolution:** Choose the resolution lines for the calculation.

Click SET to save the changes in the sensor.

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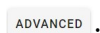The Button ⌄ will display more information and options for the sensor.

- **Last download:** Time since last downloaded signal.
- **Last alarm download:** Time since last signal downloaded by alarm.
- **Last trigger download:** Time since last signal downloaded by trigger activation.
- **Last seq change:** Time elapsed in the last sequence.
- **Battery type:** Sensor battery type.
- **Update interval:** Update interval set in sensor.
- **Max transfer power:** Maximum transfer power set in sensor.
- **Seq:** Number of sequences that the sensor has been through.

.ıl ☑ 189294726

Serial: 189294726 version: 178
Type: Triaxial Vibration (High range)

The Gateway hasn't seen this sensor in a long time.
If you have removed it from your site you can use
the forget feature to remove it.

Last seen:	8 hours 2 minutes
Velocity RMS X:	0.44 mm/s
Velocity RMS Y:	0.3 mm/s
Velocity RMS Z:	0.48 mm/s
Battery voltage:	2.71 V
Sensor Temperature:	23.75 °C
Last download:	Never
Last alarm download:	Never
Last trigger download:	Never
Last seq change:	8 hours 2 minutes
Battery type:	CR2477
Update interval:	30 seconds
Max transfer power:	8 dbm
Seq:	59

Additional buttons are also displayed:
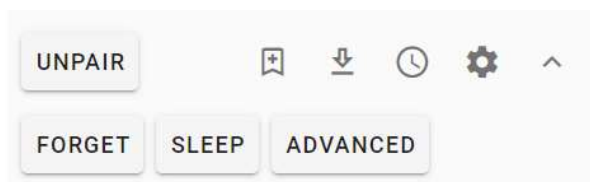
- **Unpair** UNPAIR : Unlinks the sensor from the Gateway.
- **Forget** FORGET : Forgets this sensor and its settings. It will not appear in the Gateway list until it sends data again.
- **Sleep** SLEEP : Disables the sensor for battery conservation. The sensor will not take measurements or save new settings until it is reset with the magnetic key.

UNPAIR   🗷 ⭳ 🕐 ⚙ ᐱ

FORGET   SLEEP   ADVANCED

- **Advanced** ADVANCED : Allows you to add codes for specific firmware updates. This option requires the Gateway to have internet access. To avoid damage to your Phantom™ sensors, do not enter a code without the help of a Technical Support assistant.

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Some sensors require an update to connect to the Gateway 2.0. They will appear with a red box and the following option:

- **Update** UPDATE : Updates the sensor firmware to be compatible with Gateway 2.0.

2.2 General
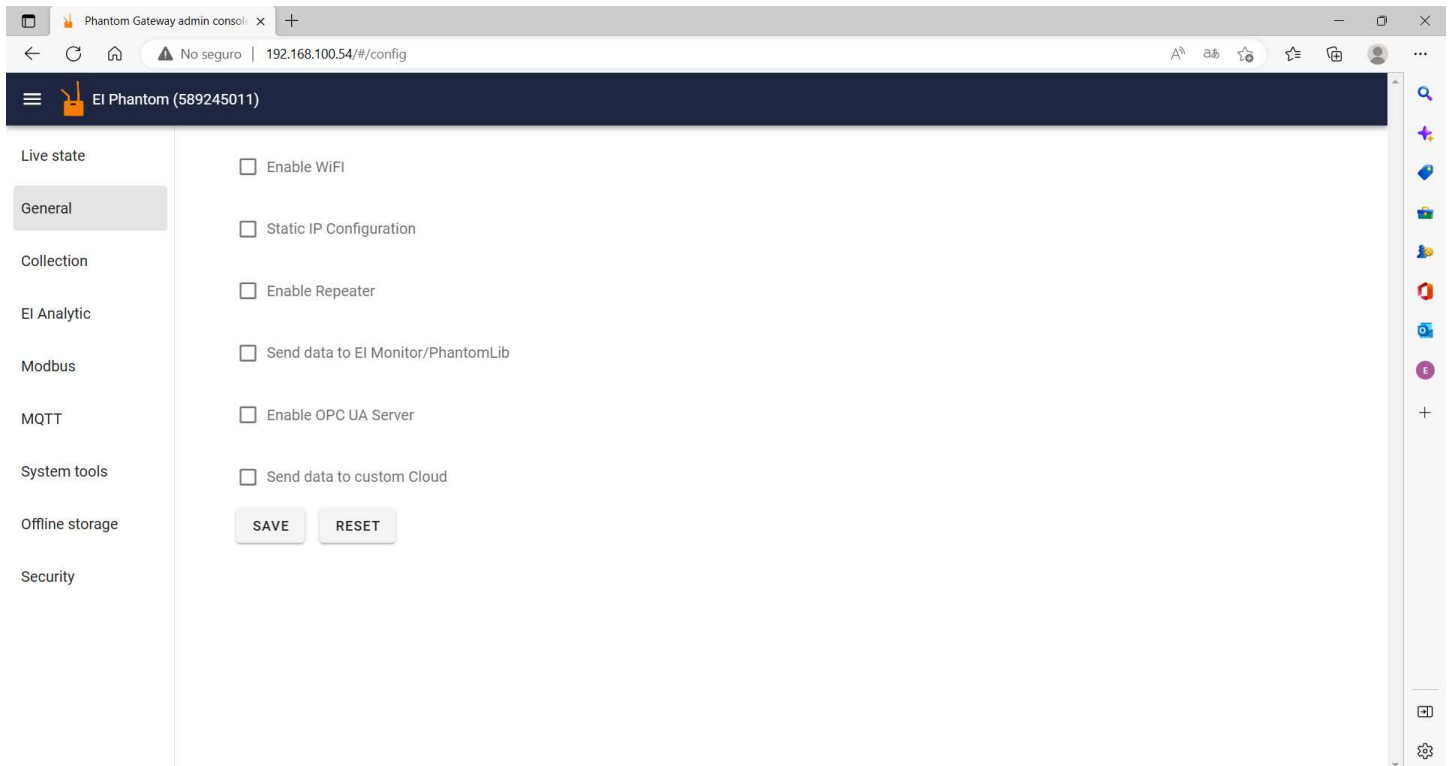
Enable Wi-Fi Displays the settings for connecting the Gateway to a Wi-Fi network.

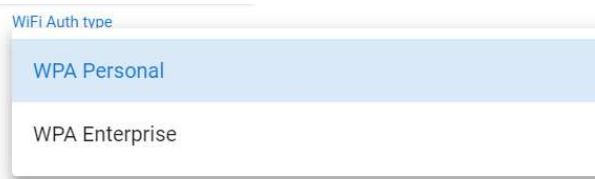The button [SCAN WIFI NETWORKS] will search for available Wi-Fi networks. In the **Wi-Fi Network** section you Will see the button ⌄ , which will display the found networks. Select the one you want to connect to.

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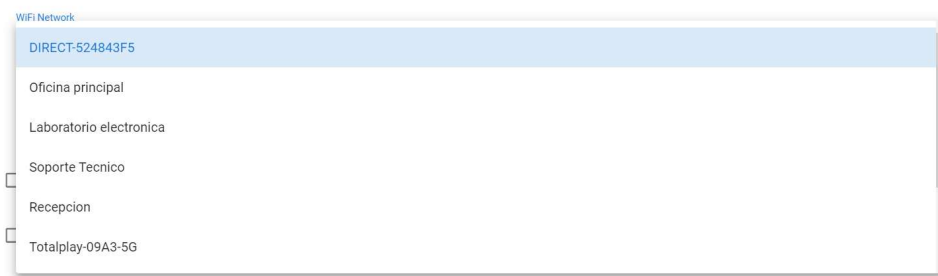
The **Wi-Fi Auth type** option allows you to select the type of network.

- WPA Personal
- WPA Enterprise

In the **Wi-Fi Password** section, enter the password of the selected network. You can view the password or hide it with the button

Static IP Configuration displays the options for configuring a static IP on the Gateway.

Enter the information for the static IP. Consult with your IT department regarding this information.

- **IP address**
- **Subnet mask**
- **Default Gateway**
- **DNS**

Enable repeater displays more options for the repeater mode.

- **Connect through repeater network:** Allows the Gateway to function as a repeater.
- **Allow other Gateways to connect through this gateway:** Allows other repeater gateways to connect directly to this gateway.
- **Override default repeater network password:** Add a password to connect as a repeater to the main gateway.

☑ Enable Repeater

☐ Connect trought repeater network

☐ Allow other Gateways to connect throught this gateway

☐ Override default repeater network password

The **Send data to EI Monitor/Phantom Lib** option will trigger the sending of data from the Gateway to the EI-Monitoring software or Phantom™ Lib API on the same network.

If necessary you can also configure a static IP for EI-Monitoring.

☑ Send data to EI Monitor/PhantomLib

☑ Static Monitor

Static Monitor IP address/Hostname
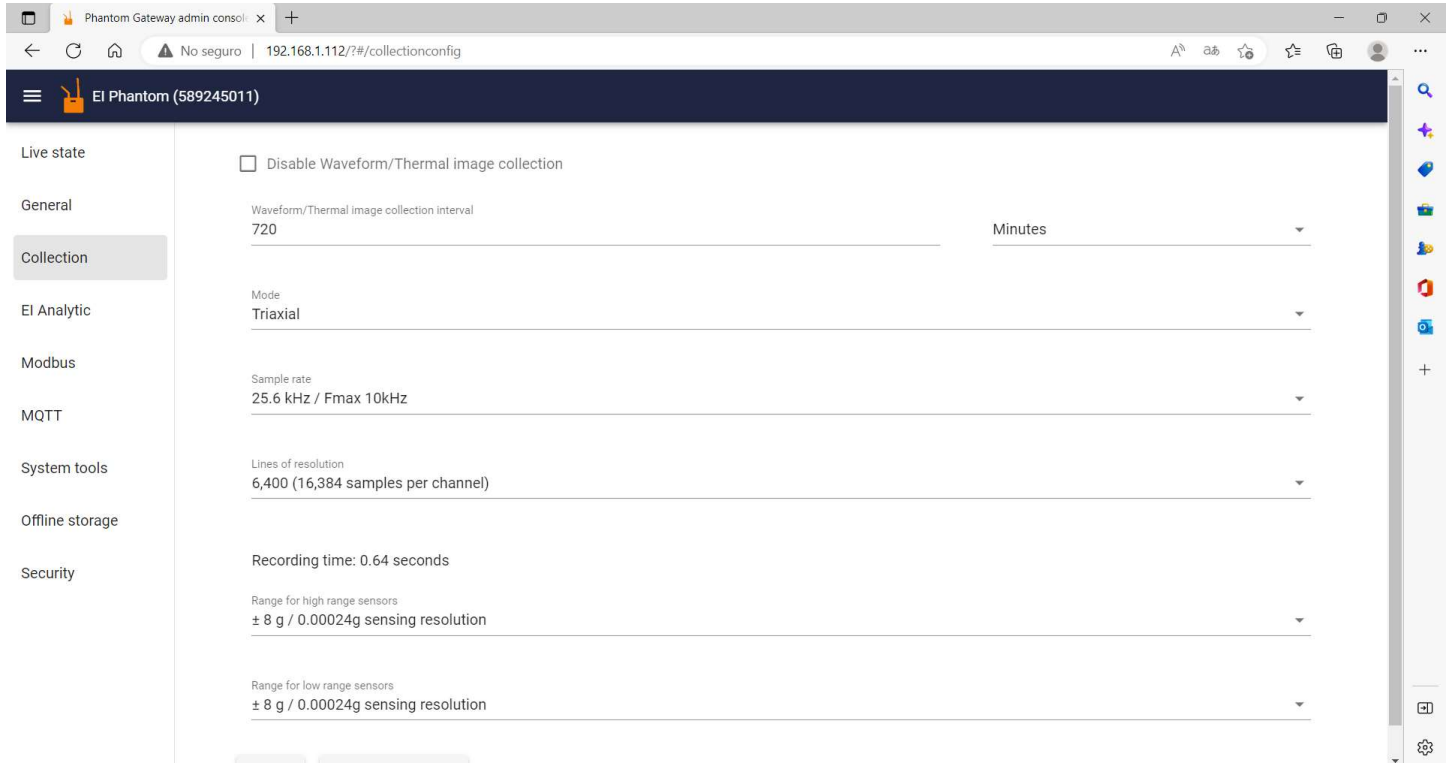192.168.100.84

☑ Enable OPC UA Server

This option allows you to enable the **OPC UA server.**

☑ Send data to custom Cloud

Custom Cloud URL
/

With this option you can configure the sending of data to a customized cloud service.


2.3 Collection

Disable Wavefrom/Thermal image collection allows you to stop the collection for only those files that contain TWF, FFT and thermographic images.

With this option you can set the collection interval for TWF, FFT and thermographic images.

Mode switches the type of data collection between **Triaxial** (three axes simultaneously) or **Single Axis** (one axis or three axes sequentially).

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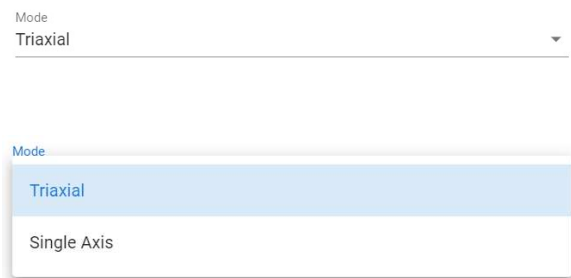
When you select **Single Axis**, the **Axis** option will appear, where you can choose the axis on which you want to collect data (**x, y** or **z**), or if you want to collect on all axes **sequentially**.
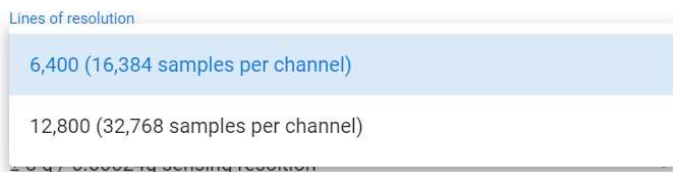

With this option you can select the **Sample rate** and maximum frequency of the sensor measurement.

If you selected **Triaxial** in the **Mode** section, you can choose between the following options for the resolution lines:
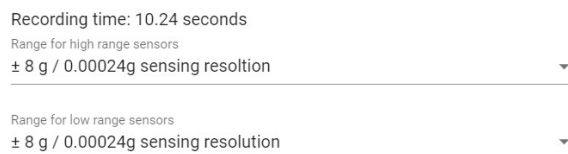
If you selected **Single axis** in the **Mode** section, you can choose between the following options for the resolution lines:

According to the selected collection type, sample rate and resolution lines, the collection time will change and will be displayed in **Recording time**.

Recording time: 10.24 seconds

You can select the dynamic range in which your sensors will collect data.

Recording time: 10.24 seconds
Range for high range sensors
± 8 g / 0.00024g sensing resoltion

Range for low range sensors
± 8 g / 0.00024g sensing resolution

For high range sensors, you can choose from the following options:

Range for high range sensors

± 8 g / 0.00024g sensing resoltion

± 16 g / 0.00048g sensing resolution

± 32 g / 0.00096g sensing resolution

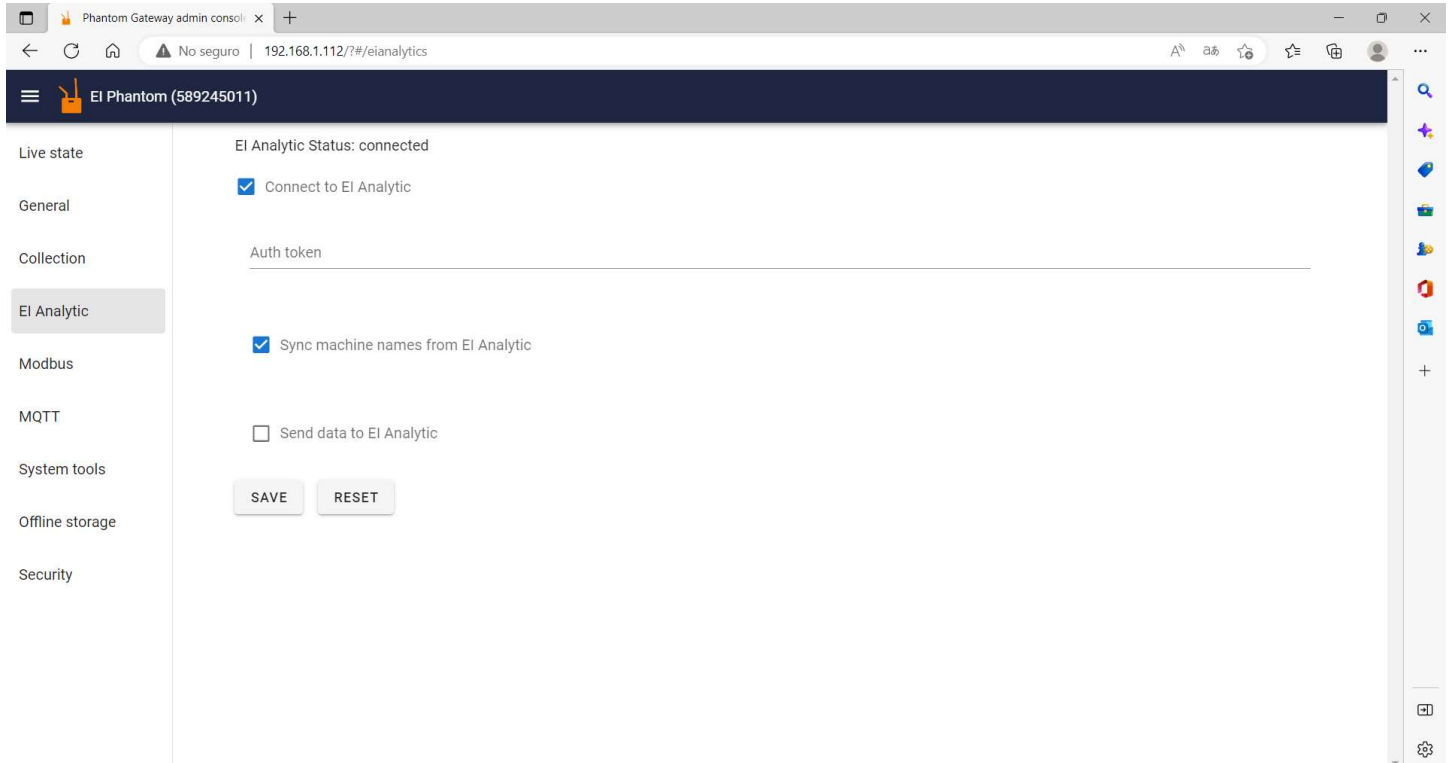For high sensitivity sensors, you can choose from the following options:

Range for low range sensors

± 2 g / 0.00006g sensing resolution

± 4 g / 0.00012 sensing resolution

± 8 g / 0.00024g sensing resolution
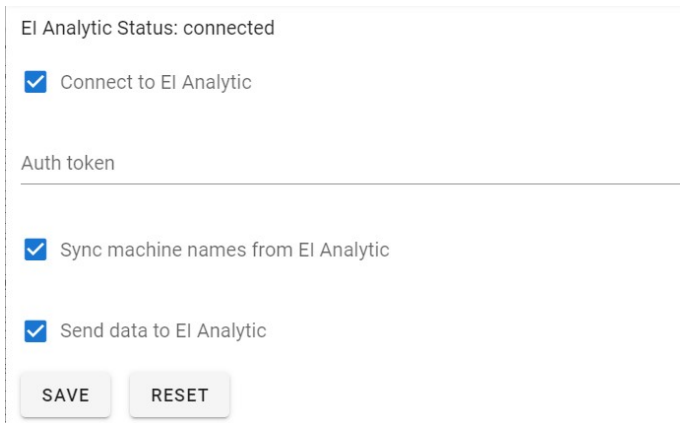
2.4 EI Analytic

In the EI Analytic window, the first thing you will see is the status of the Gateway regarding the service.

- EI Analytic Status: connected

- EI Analytic Status: disconnected

When you activate **Connect to EI Analytic**,more options will be displayed.

You will be asked for the **Auth token** to connect to the cloud. This is available in your EI Analytic account.

Send data to EI Analytic will send all collected measurements to the database on the EI Analytic platform.

Allow support representatives to access your Gateway

If you are not connected to EI Analytic but have internet access, this option will allow the Technical Support team to access your Gateway for troubleshooting.

2.5 Modbus
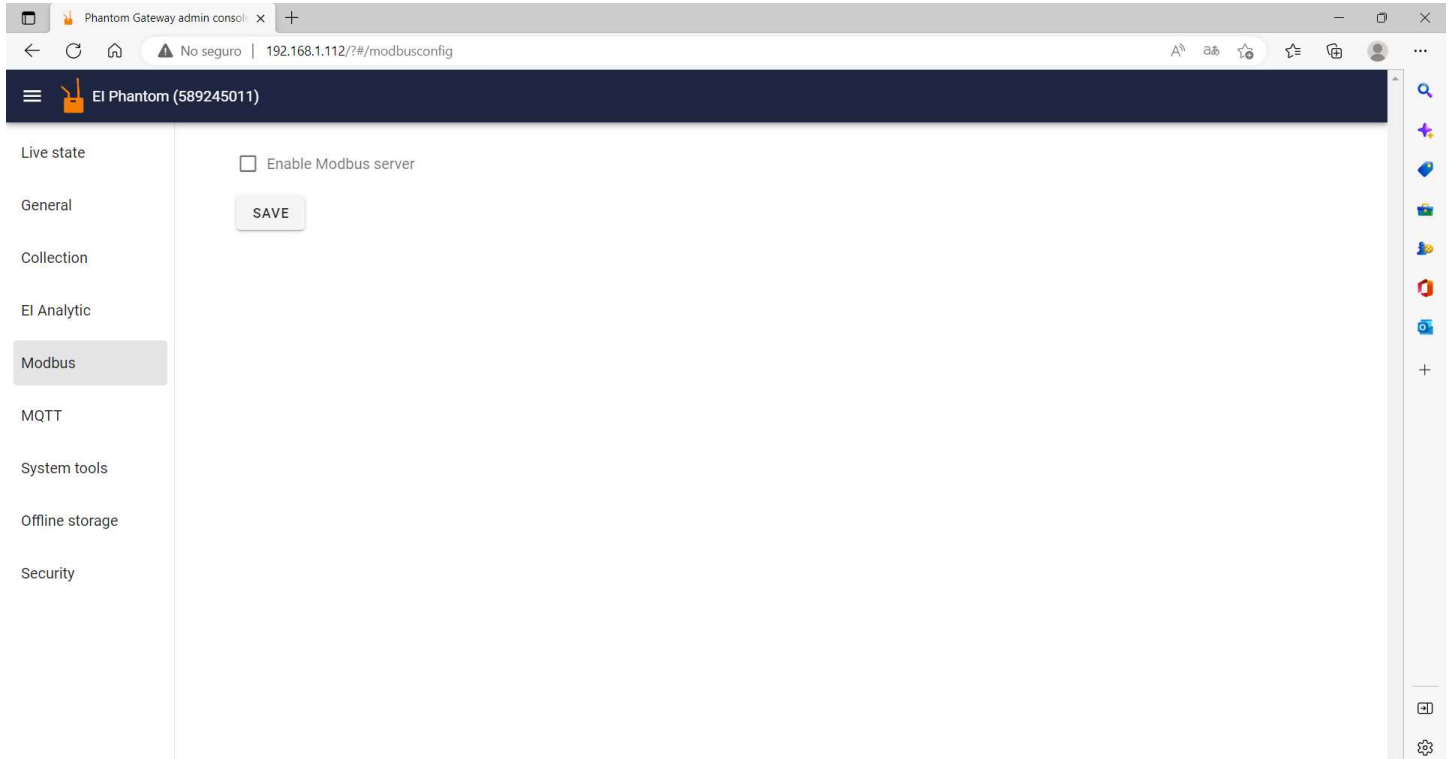
By activating **the Enable Modbus server** option you can add a sensor in **Select a sensor** and add the parameter you want to receive in **Sensor value**. Then you will be able to observe them in the register table and save them with **Save** .
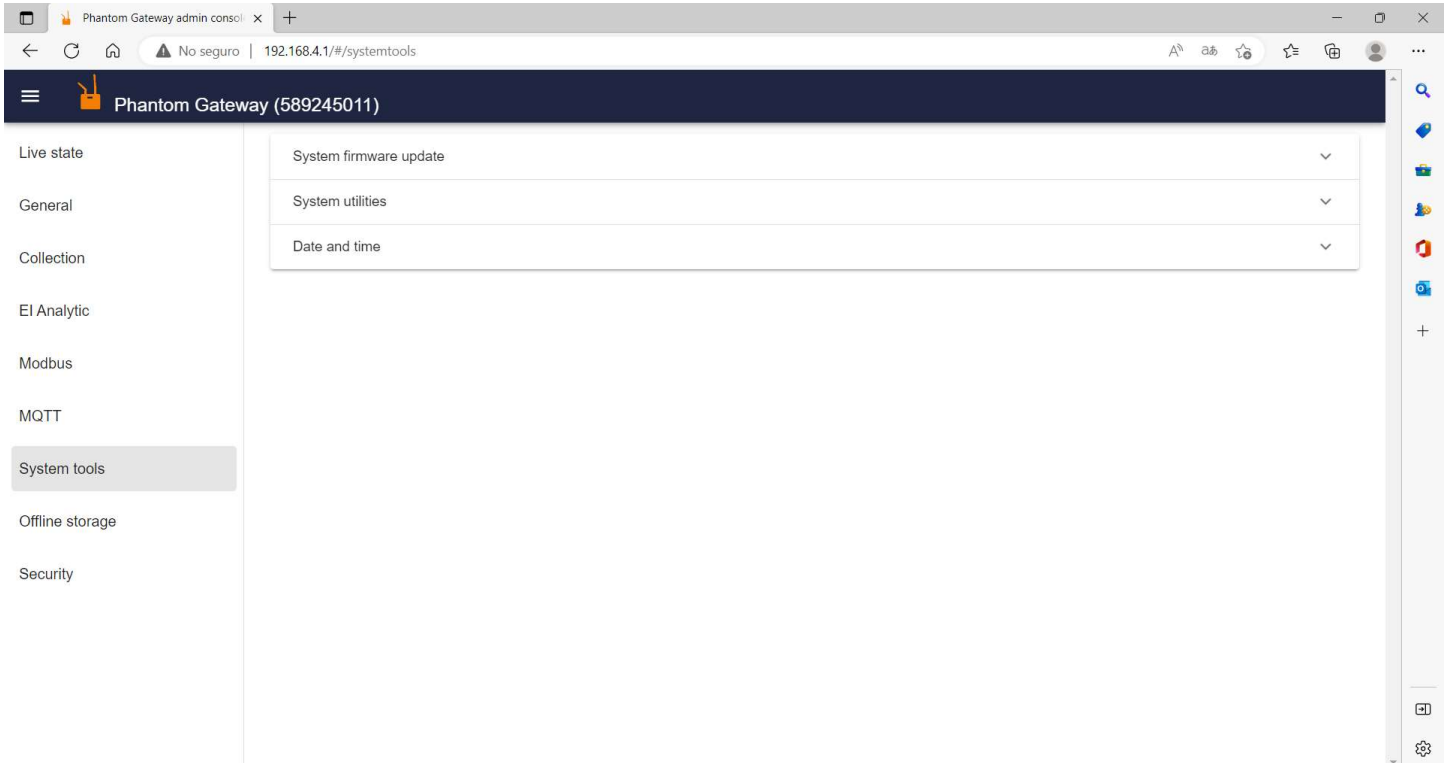
2.6 MQTT

You can connect to your MQTT server by adding your credentials and topic to login.

2.7 System tools

System Firmware Update shows you the options for updating your Gateway 2.0.

Check online update CHECK ONLINE UPDATE allows you to check for firmware updates for the Gateway. Internet access is required for this option.

Below the button, the current version of the Gateway and the latest version available will be displayed.

Firmware file 🔗 Firmware file Allows you to upload the firmware file directly from your computer to update the Gateway. This option does not require internet access.
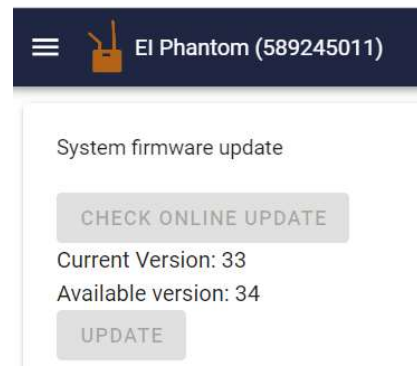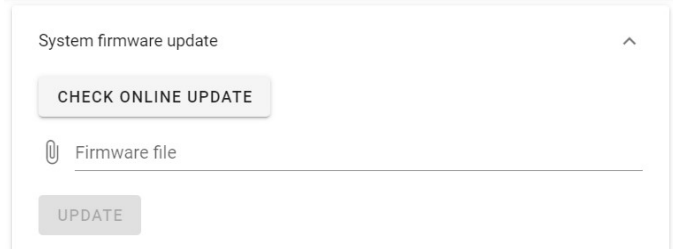
System utilities displays the following options:

Erbessd Instruments - Gateway 2.0 User manual January 2023

SYSTEM RESTART Resets the Gateway without deleting any configuration.

READ SYSTEM LOG Displays the system log.

Date and time zone You can select the time zone to set the Gateway time.

You can also enter your own Network time protocol.

If you disable the **Enable NTP Server** option you will have the **Set Gateway time to you computer time** option available, for the Gateway to use your computer time.

Erbessd Instruments - Gateway 2.0 User manual January 2023

2.8 Offline storage
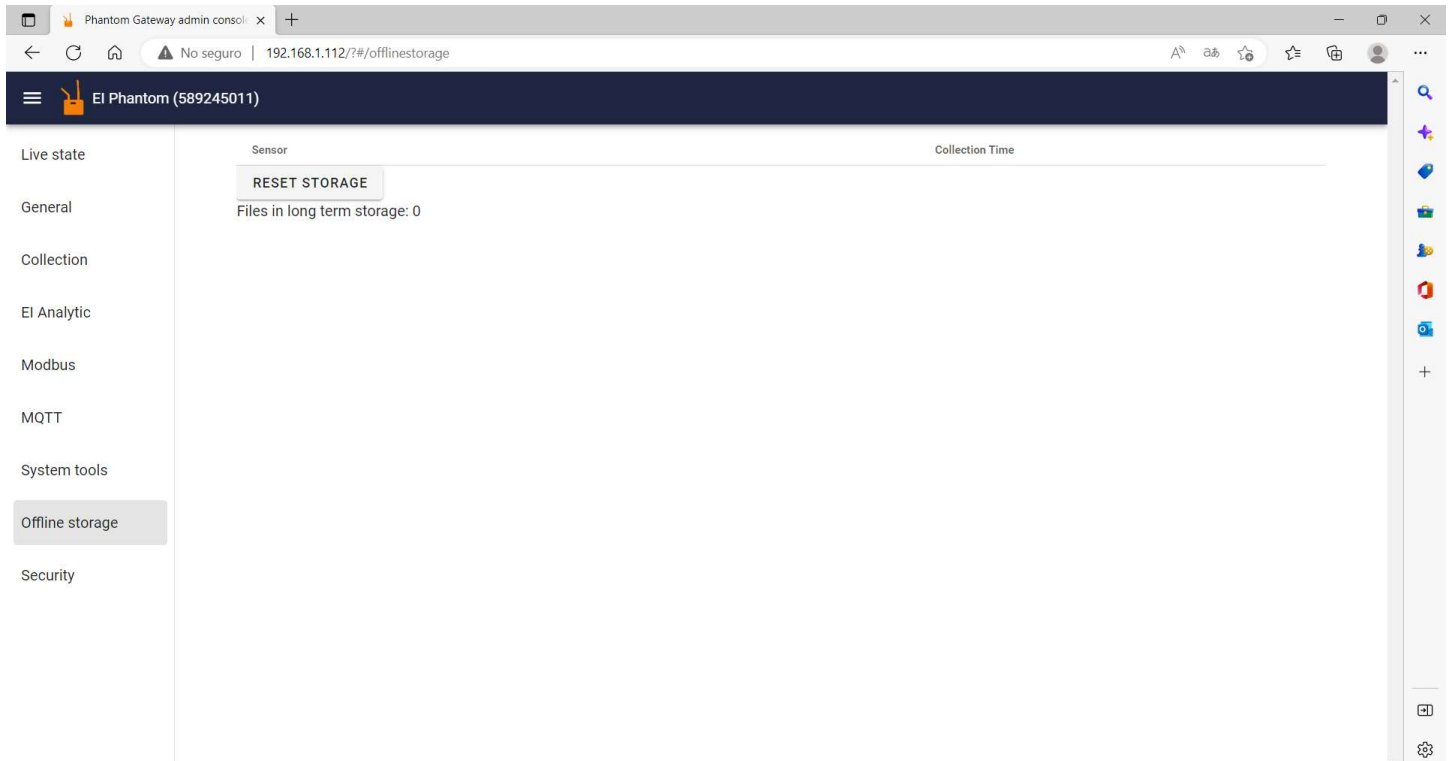
Once the Gateway is configured to send data locally or to the cloud, you can save the data from paired sensors in its memory in case you lose access to the internet or EI-Monitoring. Once the connection is restored, it will send all pending measurements.

Erbessd Instruments - Gateway 2.0 User manual January 2023

2.9 Security
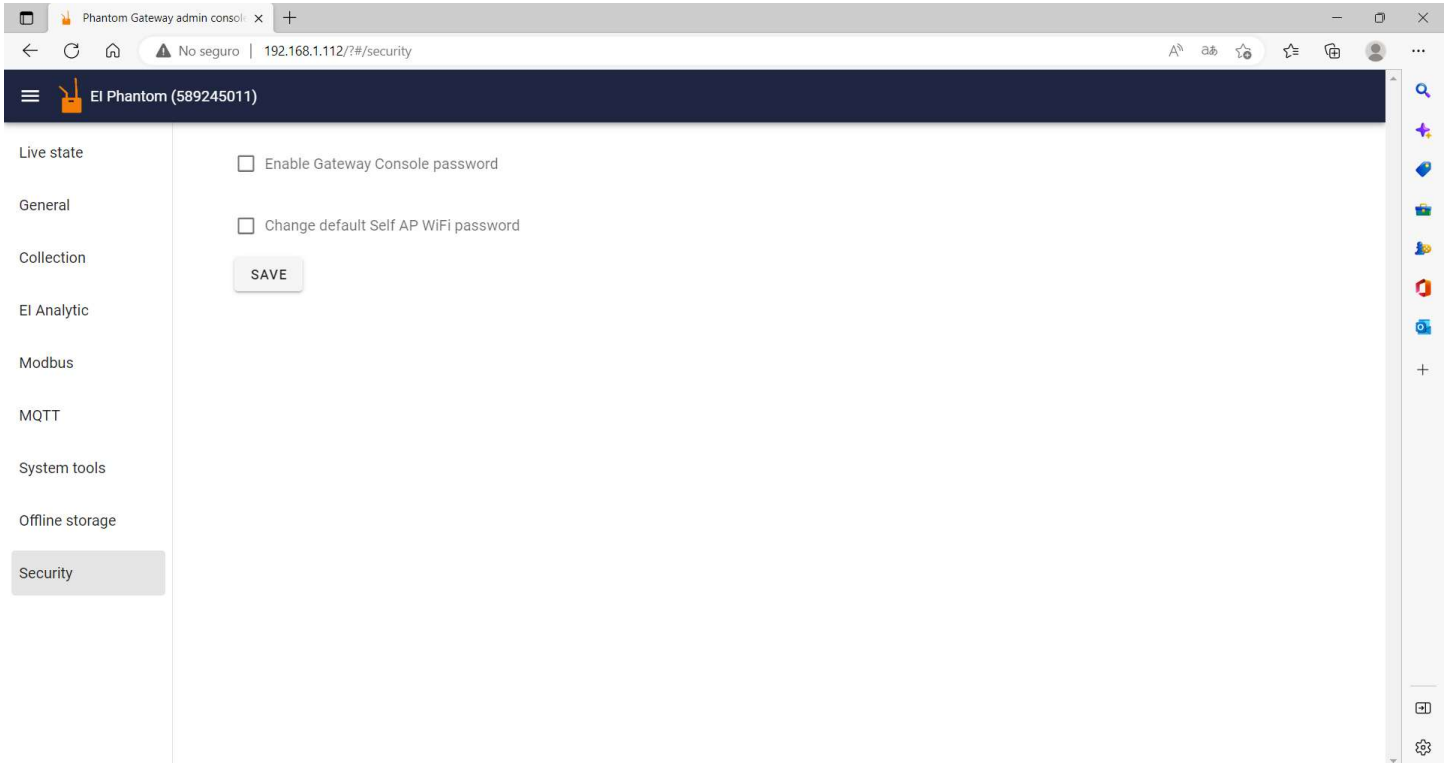
With **Enable Gateway Console password** you can enter a password to access the Gateway settings. Always use "Admin" as the user.

The next time you access the Gateway settings page, you will be asked for your previously registered username and password.

Enable Sensor Encryption

Enabling sensor encryption secures the over the air communication between the sensors and the gateway. This prevents third parties from withing radio range to eavesdrop the communication. Enabling sensor encryption requires to pair each sensor to the Gateway and will cause sensors to use more battery.

BACKUP KEYS   RESTORE KEYS

Enabling this setting prevents the Gateway from interacting with unsecured sensors.

You can also enable the **Enable Sensor Encryption** option to make the communication between the Gateway and the sensors more secure. This option requires the sensors to be paired to the Gateway and results in higher battery consumption.

Change default Self AP Wi-Fi password allows you to change the password to connect to the Wi-Fi network emitted by the Gateway.

☑ Change default Self AP WiFi password

Leaving this blank will keep the current password.

Self AP password

Confirm self AP password

SAVE

3. Gateway 2.0 reset types.

If you need to change the Gateway settings but do not have access to the network to which it is connected, you can reset the Gateway.

While the Gateway is on, insert a paper clip into the hole located to the left of the display. Press and hold the internal Gateway button with the paper clip until the display changes.

After approximately 5 seconds, the **Basic Config Reset** screen will appear on the display. If you release the button, the Gateway will restart. This will delete the Wi-Fi network configuration, keeping the sensor configurations.

Then the message **Restarting...** will appear and the Gateway will restart.

After you see the **Basic config reset** message, continue to press and hold the button for another 10 seconds. The **Factory reset** will be activated.

This reset returns the Gateway to its factory settings.